Mornington Peninsula Shire Council
Stormwater Management Plan
Volume 1

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Synopsis:	This report outlines Volume I of the Stormwater Management Plan Developed for Mornington Peninsula Shire Council. It presents a summary of the process used to develop the plan and its key outcomes

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1 INTRODUCTION

WBM Oceanics Australia was commissioned by Mornington Peninsula Shire Council to develop a Stormwater Management Plan (SWMP) for the shire. The SWMP provides a framework for integrating stormwater management as part of Council's existing management and planning activities. In this regard, the SWMP is intended to provide the basis for an ongoing process to ensure receiving environments currently threatened by stormwater are protected.

The Stormwater Management Plan has been prepared in 3 volumes. Volume 1 forms the executive summary of the Stormwater Management and provides details of:

- Why the plan has been developed;
- How the plan has been developed; and
- Details of the key outcomes and recommendations.

Information presented in Volumes II and III of the plan include:

- **Volume II** –details of the approach adopted in developing the Plan, recommendations aimed at responding to existing threats to environmental values and suggested improvement to Council's management framework to limit the future occurrence of stormwater threats.
- **Volume III** – provides the Appendices to Volume II.

1.1 Why Has The Stormwater Management Plan Been Developed?

Mornington Peninsula Shire Council's Stormwater Management Plan has been developed to improve the environmental management of stormwater within the municipality. Improvements in environmental management of stormwater are necessary to meet the communities expectations and values regarding the health and quality of local receiving environments.

A number of regional management strategies and action plans have identified urban stormwater management as a key priority for protecting the environmental values of the Port Phillip, Western Port and their catchments. In accordance with this, a State Government initiative to develop Stormwater Management Plans for all local authorities in the Greater Melbourne Metropolitan Area has been enacted. Melbourne Water, the Environment Protection Authority and the Municipal Association of Victoria are supporting the "Stormwater Initiative". Mornington Peninsula Shire Council's SWMP has been developed as part of this initiative, with Council participating in its role as a manager of stormwater and the environment within the Shire.

1.2 What is Stormwater Pollution and how is it Managed?

Modification of the natural characteristics of a catchment, through processes such as land use change and development, has a significant impact on the nature of stormwater runoff. With

changes to natural catchments, such as urbanisation and the establishment of agricultural areas, the range and load of pollutants delivered to receiving environments has increased. Their accumulation within the receiving environment can result in severe and often irreversible impacts, which ultimately affect the quality of life enjoyed by the community.

Stormwater management is concerned with the development and implementation of strategies to minimise the impacts of stormwater pollution and protect the receiving environment. Strategies to manage stormwater can include a range of site specific structural and non-structural measures as well as plans, policies and procedures aimed at managing activities which could potentially result in stormwater pollution.

The development of a Stormwater Management Plan involves the selection, grouping, prioritisation and recommendation of different measures as part of strategies aimed at protecting receiving environmental values defined by the community.

In addition to strategies intended to minimise the impact of current landuses and activities stormwater management is also concerned with a number of regulatory activities undertaken by council and other agencies. The activities in relation to stormwater management are referred to as the Management Framework. The ongoing effectiveness of any stormwater management program will be dependent on the Management Framework operating effectively to ensure potential threats are minimised or avoided.

2 PROCESS – HOW WAS THE PLAN DEVELOPED?

2.1 Overview

The process adopted in developing the Stormwater Management Plan follows the revised process (August, 2000) outlined in Chapter 3 of the Best Practice Environmental Management (BPEM) Guidelines for Stormwater Management (The Stormwater Committee, 1999). These guidelines define a staged process based on four separate study phases, as follows:

1. Preliminary Activities;
2. Priority Management Issue Identification;
3. Development of Stormwater Management Plan; and
4. Finalise Stormwater Management Plan.

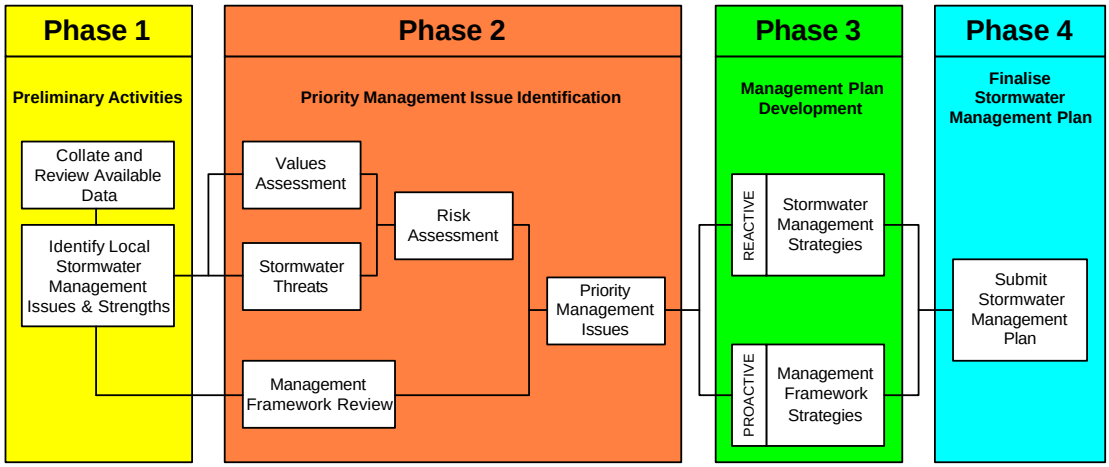
This process has been applied in developing Mornington Peninsula Shire Council's Stormwater Management Plan by considering stormwater management in terms of Council's current management framework and responses to existing risks. The specific tasks and their relationships are outlined in Figure 2.1. Council's day to day management function with respect to land use planning, infrastructure and the provision of services provides an ideal basis for managing stormwater to achieve local and regional environmental outcomes. In this regard, stormwater management activities usually occur within local government via:

- The implementation and management of infrastructure, programs and plans specifically aimed at mitigating a known stormwater pollution threat (eg. a gross pollutant trap to protect a waterway from litter); and

- Ongoing day to day activities which form a part of Council's management framework including planning, coordination, communication, development approvals, policy, regulation and education.

The first of these activities can be labelled as reactive stormwater management, while the second can be labelled as pro-active. If Council's Management Framework (ie. pro-active management) is operating effectively, this reduces the need for reactive stormwater management.

Table 2.1 Stormwater Management Planning Process



2.2 Stakeholder Involvement

A key feature of the study process was the involvement of stakeholders as part of regular workshops at key stages throughout the development of the SWMP. These stakeholders participated as part of a Project Working Group (PWG) that met on four separate occasions during the study. The PWG was made up of:

- Council Officers (engineers, planners, technical and maintenance staff); and
- Representatives from regional management authorities (Melbourne Water and Environment Protection Authority);

Stakeholder involvement and commitment as part of the Stormwater Management Plan's development is critical to its ultimate ability to achieve the proposed SWMP objectives. In this regard, the PWG played a critical role in identifying local issues, defining receiving environmental values and participating in decisions regarding the prioritisation of values and threats, risk assessment and strategy development.

2.3 What are the Key Outcomes of the Stormwater Management Plan?

The SWMP contains a number of outcomes that are targeted to assist Council to improve its management activities and respond to priority threats that may impact on environmental and amenity values. In this regard, key recommendations of the SWMP include:

- Specific **Stormwater Management Strategies** that aim to respond to priority risks in the municipality;
- Recommendations for improvement of Council's **Management Framework** to prevent stormwater degradation before it occurs; and
- Identification of an **Implementation and Review Program** to guide Council in the implementation of the SWMP and continued Best Practice in Stormwater Management.

3 MORNINGTON PENINSULA SHIRE COUNCIL BACKGROUND

Mornington Peninsula Shire Council is a large municipality (720 square kilometres) located 50 km to the south of Melbourne. The municipality includes all of the Mornington Peninsula and supports a variety of landuses including residential, agricultural, commercial and industrial areas.

Urban areas within the municipality are divided into more than 20 townships. Many of these townships are located on or near the coastline and are bordered by rural areas. The urban development boundaries within the municipality are fixed, with many of the townships approaching full development. The major area of residential growth is occurring in Mornington and Mount Martha. Large parts of the municipality support a variety of agricultural industries that includes grazing, market gardens, orchards, vineyards and poultry producers. A major industrial precinct is located at Hastings and includes the BHP Western Port Works, the Esso/BHP Petroleum Complex and an area proposed to be developed as a major port and freight handling centre.

3.1 Major Waterways and Subcatchments

The Shire is characterised by a high number of small catchments draining over relatively short distances to Port Phillip, Western Port or Bass Strait. With a few exceptions, the catchments of the waterways are contained within the municipal boundaries. Typically the upper reaches of the catchments are either in rural or undeveloped areas, with urban areas along or near the coast.

The character of the waterways varies significantly over the municipality, reflecting the variations in geology and landuse. The waterways vary from the flood plains on the eastern side of the municipality, to the short steep waterways that characterise the escarpments of Mt Martha and Mornington. On the Nepean Peninsula, stormwater infiltrates into the groundwater table via soakage pits. As a result this area does not contain any significant overland drainage lines.

For the purposes of this study, the municipality has been separated into a series of sub-catchments. The breakdown of study subcatchments has been based on hydrological catchment boundaries and major land use precincts. Using this approach, 18 separate study subcatchments have been defined and are described in Table 3.1.

Table 3.1 Study Subcatchments and Waterways

Reach Number	Catchment	Waterway/s
1	Watsons Creek	Watsons Creek and Pearcedale South Drain
2	Olivers Creek	Olivers Creek and McKirdys Drain
3	Kings Creek and Hastings Township	Kings Creek and Hasting Local Drainage System
4	Warringine Creek	Warringine Creek
5	Crib Point	Crib Point Drain & Marmaduke Creek
6	Merricks Creek	Merricks Creek
7	Shoreham	Stony Creek, East Creek and Camp Buxton Creek
8	Flinders	Dodds Creek, Spring Creek and Manton Creek
9	Cape Schanck	Main Creek, Burrabong Creek, Stockyard Creek and Tea Tree Creek
10	Nepean	Nepean Infiltration Area
11	Chinamans Creek	Chinamans Creek and Tootgarook Wetlands
12	Rosebud	Wonga Creek, Coburn Creek, Waterfall Creek and Rosebud South Creek
13	Dromana	Sheepwash Creek, Boundary Road Creek, Kangerong Creek and Dromana Local Drainage System
14	Safety Beach	Brokil Creek and Dunns Creek
15	Mt Martha	Sheoak creek, Seaside Creek, Finlayson Creek Sunshine Creek and Hearn Creek
16	Balcombe Creek	Balcombe Creek
17	Mornington	Tanti Creek, Cook Street Drain, Manmangur Creek and Caraar Creek
18	Mt Eliza	Gunyong Creek, Earimil Creek, Ballar Creek and Kackeraboite Creek

Table 3.2 shows the extents of each of the 18 subcatchments. These subcatchments are referred to throughout the development of the Stormwater Management Plan, forming the basis for values, threats and risk assessments and management action recommendations.

Figure 3.1 Study Subcatchments

3.2 How is Stormwater Managed on the Peninsula?

3.2.1 Existing Stormwater Management and Related Environmental Practices

Stormwater quality and environmental management initiatives adopted by Mornington Peninsula Shire Council include a combination of both structural and non-structural measures and programs. Key management measures and activities contributing to stormwater and environmental management within the Shire are summarised in Table3.2.

Table 3.2 Stormwater Management Activities currently undertaken by MPSC

Activity	Details
Education and Awareness Programs	Programs and strategies include the • Waste Wise Program • Ongoing media releases via the Shire newsletter and local papers • Community education programs within the community
Source Controls	Current activities include • street sweeping • beach cleaning • waterway rehabilitation • waste management in developed areas and on building sites.
Structural Treatments	Structural measures have typically been implemented via, incorporation of structural measures as part of new residential developments, retrofitting of structural measures and management initiatives instigated regional authorities such as Melbourne Water or South East Water. Examples of structural treatments commissioned include gross pollutant traps and artificial wetlands.
Regulation and Enforcement	A strategy is in place to target construction site waste. It includes an opportunity to issue infringement notices ($200 fine) to building contractors who do not maintain their sites in an adequate manner.

Responsibilities for waterway and water infrastructure management within the Shire are also shared amongst a number of other management authorities (local and regional) and stakeholders. Each of these organisations works with Council to manage stormwater. The roles and responsibilities of key organisations are summarised as follows:

- The **Environment Protection Authority** establishes environmental standards and applies regulatory and non-regulatory means to achieve these standards (eg. licensing, legislation and enforcement). The EPA also administers the Victorian Stormwater Action Program (VSAP), which is responsible for improving the environmental management of urban stormwater throughout the state.
- The **VSAP program** is overseen by a committee, which has representation from EPA, Municipal Councils, Melbourne Water, Catchment Management Authorities, Department of Infrastructure, Department of Natural Resources and Environment, Environment Victoria and the community. A key program of VSAP is the distribution of grants to municipal authority to undertake on ground works and implement programs.
- **Melbourne Water Corporation** is responsible for regional drainage in the areas of the municipality that were formerly parts of the Shire of Hastings and the City of Frankston. In the remainder of the municipality there is no designated regional drainage authority, although the Shire assumes much of this responsibility. Melbourne Water have also

completed Drainage Scheme Studies, Waterway Activity Plans, Waterway Condition Assessments and other studies which will facilitate improved stormwater management within their area of responsibility.

- **South East Water** – Although not a specific stormwater management program, South East Water is responsible for the Southern Peninsula Shared Cost Sewerage Scheme. This program is designed to accelerate the provision sewerage services to commercial areas with commerce contributing to the cost of the scheme.
- **Southern Rural Water** is responsible for the management of the groundwater resource within the Shire.
- **Vic Roads** control and manage major transport corridors through the municipality.
- **VicTrack** own lands which support railway infrastructure within the municipality.
- **Port Phillip Catchment and Land Protection** (CaLP) **Board** coordinate catchment management activities at a regional level to ensure protection of the receiving environment.
- A number of special interest, environmental, landcare and "friends" groups are active in the municipality.

4 LOCAL STORMWATER MANAGEMENT ISSUES

4.1 What are the Key Stormwater Threats on the Peninsula?

Stormwater threats in Mornington Peninsula Shire Council were identified and ranked for each subcatchment. A range of generic threats was identified in accordance with dominant land uses and activities. Volumes II and III provide a more detailed explanation of each of these stormwater threats including the key pollutants generated from each threat.

Key Stormwater Threats identified within the municipality included;

- **Unstable and Degraded Waterways** – in many of the catchments the waterways have been degraded by a number of human activities resulting in the generation of sediment and nutrient runoff (e.g. waterways within Mt Martha, Merricks Creek and Balcombe Creek);
- **Agriculture** – areas of intensive agriculture pose a significant threat as they are responsible for the export of high loads of nutrients to waterways (e.g. Watsons Creek and Chinamans Creek);

- **Septic and Sewer Leakage** – poses a threat in many areas of the municipality where septic systems are widely used and interaction between the septic systems and groundwater occurs or where leakage to surface waters occurs (e.g. Nepean Peninsula and unsewered hamlets along Westernport);

- **Established Residential Areas** – established residential areas pose a threat due to the area of the municipality that they occupy and their proximity to sensitive receiving environments (e.g. Mt Eliza, Nepean Peninsula and Mornington;
- **Sub-divisional Development** – the Shire contains a number of areas of new residential development. These areas pose a threat to receiving environments, as they are responsible for the generation of large sediment loads when construction activities are poorly managed. Key areas of sub-divisional development are contained within Mornington East, Mt Martha and Hastings.

- **Unsealed Roads** – were identified as having the potential to generate stormwater pollution across of the municipality.
- **Building Site Runoff** – Buildings sites throughout the municipality are often poorly managed and generating large loads of sediment and litter.

4.2 Receiving Values – What Are We Trying To Protect?

The community's expectations regarding their utilisation and interaction with the environment are defined as part of the SWMP. These expectations are termed values and are defined to reflect the beneficial uses the community enjoys. Each of the value types has the potential to be either directly or indirectly affected by stormwater threats.

Within Mornington Peninsula Shire Council the following values were considered:

- Environment (In-stream Habitat, Riparian Flora and Habitat, Geomorphology and Groundwater);
- Cultural Heritage (European and Indigenous);
- Amenity (Recreation and Visual and Landscape);
- Stormwater (Flood Conveyance and Water Quality Treatment);
- Economic (Property Value and Irrigation Supply); and
- Receiving Environment (Local (Estuarine) and Regional).

The characteristics of each value type within each subcatchment have been assessed through a process of literature review, field investigation and discussions with stakeholders. Each value type has been assigned a significance rating by the Study Team and Project Working Group in accordance with their perceived importance to the community.

Key Receiving Environmental Values are summarised as follows;

- **Local Receiving Environmental** and **Regional Receiving Environmental** values in the Western Port (Very High). The rating reflects that Westernport is listed as a RAMSAR site due the high quality of its aquatic and tidal flat habitats. It also reflects that Westernport is a site of regional visitation for recreation and tourism;

- The **Regional Receiving Environmental** values associated Port Phillip (High) and Bass Strait (High) reflect their important regional environmental and recreational values;
- The importance of **Recreational and Visual Amenity** throughout much of the municipality was identified, reflecting the regional visitation to coastal areas and particular landscape features such as Arthurs Seat and Mornington Peninsula National Park;

- Balcombe Creek and Merricks Creek estuaries were identified as having Very High value due to their unique **Geomorphology** and **Local Receiving Environments**; and
- **Groundwater** in parts of the municipality is classified as a potable supply under the State Environmental Protection Plan and therefore is of High value.

4.3 Stormwater Risk Assessment

The aim of the Stormwater Risk assessment is to identify areas where the risk of losing or degrading environmental values is greatest. To calculate the magnitude of each risk the qualitative significance ratings placed against the values and threats (i.e. low, moderate, high and very high) were given a numerical score from 1 to 4 (i.e. from low to very high). The scores for values and threats were then multiplied for all combinations in each subcatchment to derive scores for risks (refer Figure 2.2). For each value and threat combination, a sensitivity score was also applied to reflect the sensitivity of a particular value to a given threat. The risk scores were ranked from highest to lowest for all risks in the municipality.

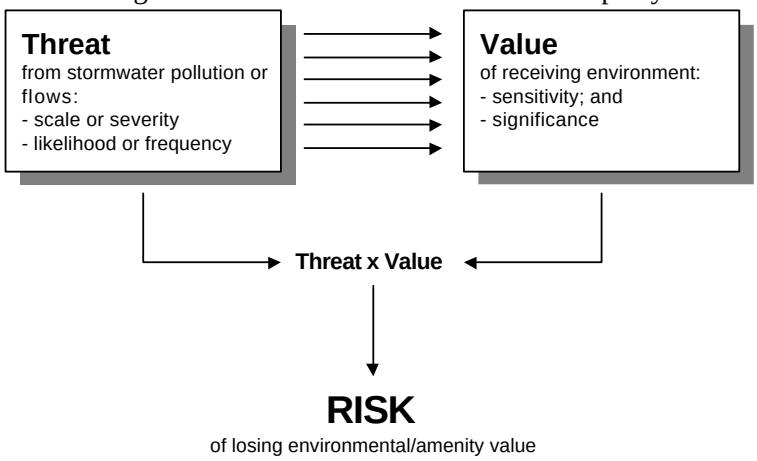


Figure 4.1 Risk Assessment in Stormwater Management Planning

The key stormwater risk issues that need to be addressed in achieving Best Practice Management of Stormwater are summarised as below. These issues have been placed in a prioritised list based on the results of the risk assessment. The ranking of the priority management issues will be discussed and confirmed during Project Working Group #3 and presented to Council prior to adoption.

1. **Runoff from the Market Garden Areas in Watsons Creek** - Watsons Creek has been identified as having high nutrient levels generated from intensive agricultural activities. The high nutrient levels have the potential to significantly degrade receiving environments within Westernport and at the outlet of Watsons Creek (Quail Island);
2. **Septic Tank Systems with the Nepean Peninsula** - Leakage from septic systems is polluting the groundwater table within the Nepean and Chinamans Creek catchments;
3. **Residential subdivisional development within the Balcombe Creek, Hastings and Mt Martha subcatchments** - Poor sediment and erosion control practices within new residential subdivisions are generating high sediment loads that have the potential to impacts on downstream receiving environments;
4. **Runoff from the Market Garden Areas in Chinamans Creek** - Farming practices associated with the market garden areas are resulting in the export of nutrients, which are impacting groundwater resources, Tootgarook Swamp and Port Phillip;
5. **Unstable Waterways in Mt Martha** - Several waterways suffer from on-going erosion, with large erosion heads propagating up stream;
6. **Building Site Runoff in Balcombe Creek and Mt Martha** – Buildings sites throughout the municipality and in these areas in particular are often poorly managed and generating large loads of sediment and litter;
7. **Runoff from Residential areas within Mt Eliza, Nepean and Balcombe Creek subcatchments** – Existing residential areas in a number of catchments have been identified as posing threats to receiving environments;
8. **Unsealed Roads throughout the Municipality** – The municipality contains many unsealed roads, which have the potential to generate large sediment loads;
9. **Septic Tank Leakage in Flinders** – The township is unsewered and overflow from septic systems has the potential to impact on the recreational amenity associated with the foreshore and adjacent aquatic environments.
10. **Commercial areas within the Nepean Catchment** – The Nepean catchment contains several commercial areas that are located adjacent to Port Phillip and have significant potential to deliver pollution to the foreshore;
11. **Waterway Degradation in Merricks Creek and Shoreham catchments** – Ongoing waterway degradation has been identified within these subcatchments and the generated sediment and nutrient loads is impacting on estuarine environments; and
12. **Septic Tank Leakage in Merricks and Shoreham** – These small hamlets are unsewered and overflow from septic systems has the potential to impact on the recreational amenity associated with the foreshore and adjacent aquatic environments.

5 MANAGEMENT FRAMEWORK REVIEW

Council's Management Framework is concerned with the way in which Council undertake their 'day to day' planning and management activities. This includes strategic planning, development assessment, infrastructure management, regulation and enforcement, coordination and communication with internal and external stakeholders.

The following provides a summary of Mornington Peninsula Shire Council's Management Framework and how it performs in relation to Stormwater Management. The Management Framework Review was based on a series of interviews with council officers and a workshop session where the issues presented here were discussed and prioritised. The Management Framework has been considered in relation to the following key aspects:

- Resourcing, Coordination and Communication;
- Development application and approvals process;
- Key documents, information and the planning scheme; and
- Regulation and enforcement.

5.1 Co-ordination, Communication and Resourcing

Co-ordination

It is generally recognised that there is ongoing fragmentation of responsibilities for regional drainage on the Peninsula. This follows the process of council amalgamations, at which time the existing regional drainage management system was rolled over without adjustment. The area of the municipality that was formerly the Shire of Hastings and parts of the City of Frankston continue to fall under the jurisdiction of Melbourne Water, while regional drainage responsibilities in the former municipalities of Flinders and Mornington remain with the Shire. This arrangement has broad implications on stormwater management for the municipality.

The Environmental Protection Agency, Southern Rural Water, Department of Natural Resources and Environment and South East Water also contribute to management of the water cycle within the municipality. Clarification of roles regarding stormwater management should extend to include all agencies to ensure co-ordination is optimised and outcomes are not impeded by confusion regarding responsibilities. An example of where an integrated approach is necessary is the management of unsewered areas such as the Nepean Peninsula. In this area an integrated approach is required between multiple agencies to manage groundwater, wastewater and stormwater.

Communication

The distribution of staff between three offices has an affect on 'day to day' communication between departments. The geographic separation reduces the opportunities to make informal contacts about specific projects and establish networks in other departments. This has impacted on the referral process as the staff of the former municipalities were contained within the same office and were able to meet informally.

Opportunities to nurture and extend existing links between EPA, Melbourne Water, NRE, Council and so on, particularly at officer level were identified as significant. Closer liaison with external authorities will provide opportunities to ensure that permit conditions imposed following referral are clear, concise and easy to translate directly into suitable planning permit conditions. This process will also assist external authorities in gathering information about activities within the municipality and provide increased opportunities for the exchange of information and technical material between the various organisations.

New members of the planning staff often have metropolitan experience and therefore have a limited understanding of the sort of stormwater issues specific to the Shire. There is a need to develop an induction program for new staff, outlining particular issues of drainage and stormwater in the municipality. The induction program could include stormwater issues, the role of the referral system in identifying and managing stormwater and where within the organisation referrals should be sent.

Council has recently appointed a Regional Education Officer within the Waste Management Group whose role is to consider education programs both within Council and the community regarding waste management issues. This is a positive step that will improve education and communication both internally and externally. The appointment also provides an important opportunity to identify and link into resources outside of Council such as the Municipal Association of Victoria and the Building Control Commission.

There is ongoing potential to continue to strengthen communications between Council and the community regarding their contribution to sound stormwater management practices. Linking into community groups in this way will assist in raising awareness of stormwater management issues.

Resourcing

Increased staff numbers will be necessary to contribute to the more effective monitoring of permit conditions, undertaking inspections of building sites, stormwater assets under construction and enforcing local laws. At a strategic development level, additional staff could be used to develop tools such as Outline Development Plan's.

There is substantial local knowledge amongst officers within the Shire and this resource could be better harnessed in the referral process. This provides an opportunity to introduce experienced staff to the referral process and relieve the workload that currently falls on one or two officers. In addition, there is no one group or individual who has responsibility for stormwater referrals. This could be addressed by focusing the existing skills base, possibly into a drainage infrastructure section.

5.2 Applications and Approvals

Some weaknesses were identified in the planning system that are not unique to the Shire. For example, a planning permit is only required where on site retention of wastewater is needed. Therefore the planning system has no mechanism or opportunity to deal with or impose conditions on a significant proportion of developments. It was also identified that many of the

development problems have arisen since the privatisation of the building permit process occurred.

The referral process within Council also appears to be operating successfully. Matters raised elsewhere in relation to improved communication and co-ordination both internally and externally, allocation of responsibility for stormwater to a group or individual, a referrals checklist and the sharing of local knowledge are all initiatives that will contribute to a more effective referral process. The planning approval and referral process could be enhanced by clearly documenting the process and developing tools such as checklists that triggers the need to consider stormwater issues and ensures referrals are made.

Issues relating to external referrals were predominantly about communication with other agencies and have been discussed previously.

5.3 Key Documents, Information & the Planning Scheme

The Community Plan has a clear environmental directive that could be enhanced to provide stronger emphasis of appropriate actions for better stormwater management, particularly given the Peninsula's location adjacent to key receiving environments.

The Shire's Municipal Strategic Statement (MSS) identifies that stormwater is an important issue for the Shire, in particular the need for the provision of appropriate stormwater treatment measures for new developments. Council's commitment to achieving environmental objectives with regards to stormwater is expressly stated in the MSS through the strategic objective of developing stormwater management plans.

There may be an opportunity to explore the better use of existing tools in the planning scheme such as Local Policy 22.13 Township Environment. This policy has a broad application across the Shire and is already geared towards addressing matters such as stormwater. There are several opportunities to convert the strategic directive to a statutory obligation, including the placement of provisions on planning permits, empowerment of planning department staff and the development and implementation of new technical standards that are aimed at reducing the environmental impacts of stormwater.

There are some specific stormwater drainage policies in the planning scheme. This philosophy could be extended to create a broad policy for the municipality.

It was noted through discussions that areas where on-site retention is known to be required are not currently identifiable through the planning scheme. There may be an opportunity to develop a trigger to alert buyers or developers at an early stage that on-site retention will be required and that there are implications and obligations regarding stormwater when developing.

The availability of data describing the stormwater system has been compiled from the records of the three amalgamated municipalities and has limitations due to difficulties accessing the data and questions regarding its accuracy. Accessing of the data is often difficult as the drainage system is recorded on hard copy and records are not complete. In addition, some of

the mapping information is based on design drawings and is not consistent with the constructed system.

5.4 Regulation and Enforcement

Enforcement is closely linked to resourcing issues as a lack of officers in the field limits the opportunities to undertake enforcement activities. In addition to resourcing issues, a number of matters were raised that are specific to regulation and enforcement.

The local law framework is an effective system in relation to ensuring good stormwater management outcomes, particularly when it is applied fully and consistently. The existing local laws of the Shire might be reviewed and/or extended to expand and strengthen their current impact. There is a good opportunity to use local laws to 'capture' some of the control lost through the deregulation of building permits and to reduce the impact of development activities on sites with planning permits. Existing tools such as the Litter Act can be employed to enhance the local law system, particularly when the objective is to control litter from building sites. Checking that permit conditions are adhered to, general monitoring and inspections could be increased with a proactive effect (catching potential problems before they arise).

5.5 Summary of Key Management Framework Issues

Based on the results of the Management Framework Review, a number of key opportunities have been defined in consultation with Council and the Project Working Group. The key management issues that were identified as needing to be addressed in achieving best practice for the management of stormwater are summarised as follows in the order of priority that they were allocated by the Project Working Group:

1. **Regional Drainage Responsibility** - Resolution of roles and responsibilities for regional drainage on the Peninsula need to be resolves;
2. **Interagency Communication** - Co-ordination and communication at various levels between Council, Melbourne Water, EPA, NRE and South East Water should be improved;
3. **Strategic Direction** – A review of Council's strategic documents including its Community Plan, Municipal Strategic Statement and local policies is considered important to allow the inclusion of stormwater management issues;
4. **Intradepartmental Communication and Education** – Informal communication within the organisation is difficult due to the geographic locations of some departments and this reduces the potential to transfer information through the organisation, particularly to newer staff;
5. **Referral Process** – The referral process is operating well but opportunities were identified to optimise the system;
6. **Resourcing** – Staff numbers in key areas such as enforcement and planning appear to be lacking;

7. **Communication with the Community** – The role of gaining community support for action on stormwater issues and recognising their environmental objectives was identified; and
8. **Drainage System Documentation –** The current system that documents the stormwater system.

6 STORMWATER MANAGEMENT STRATEGIES

Management strategies have been derived to respond to priority Stormwater Risks and their threats (refer Section 4.4). Each management strategy is made up of a combination of specific management elements relating to either:

- Education and Awareness Programs;
- Source controls;
- Site specific strategies and plans;
- Non-structural treatments;
- Structural treatments;
- Information and data collection; and
- Regulation and enforcement.

The assessment and selection of different elements as part of each strategy involved a process of elimination and opportunity assessment that considers issues relating to cost effectiveness, spatial opportunities and constraints and Council's ability to maintain each element. Volume II and III provide a detail discussion of the process and results of the management element screening process, element opportunity assessment and cost effectiveness analysis. The key objective in formulating Management Strategies is to define a combination of Management Element Opportunities that represent the best value for money in terms of providing the highest level of environmental management at the lowest cost.

Stormwater Management Strategies have been developed for each of the 12 Stormwater Risks presented in Section 4.4. Each strategy provides a balance of both structural and non-structural elements and is summarised in Table 6.1 to Table 6.12.

Each strategy is preceded by a summary of the key elements of the strategy and its intent. Each specific element is presented in order of priority and includes a description and an estimate of costs (both capital and ongoing). Capital costs for structural measures have been derived from market values for purchase/construction and implementation of each device. Costs for non-structural measures are based on typical hourly rates and estimated time. Ongoing costs reflect maintenance or cleaning costs for structural measures and costs related to supporting continued programs for other elements.

It is expected that many of the programs recommended here would be common to other municipalities and therefore generic management solutions could be applied. It is likely that the Victorian Stormwater Action Program will generate a number of solutions to generic stormwater issues over the next three years. Issues that are likely to be tackled include construction site waste management, sediment and erosion control on major development sites and pollutant loads generated in residential and industrial areas.

Table 6.1 Stormwater Risk Issue 1, Agricultural Runoff in Watsons Creek

The main focus of the strategy is the support of existing extension programs that are in place and are intended to increase awareness amongst the farming community of environmental issues and the impact of farming activities on them. The size of the catchment and high cost of purchasing farmland has resulted in many structural measures being infeasible due to a very high cost. However, it is suggested that some programs such as the construction of a regional wetland facility and stream side rehabilitation be investigated further with agencies responsible for their implementation.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS1-SS-01	Development of a Water Quality Management Strategy for the Watsons Creek catchment	MPSC, MW, EPA and other agencies and stakeholders should develop a water quality management strategy for the catchment. This action is identified in the revised SEPP (F8). MW is identified in the SEPP as having responsibility for the project and it would be expected that the Shire would be a major stakeholder. This program will be a key management tool for the catchment and would be expected to identify pollutant sources, impacts and measures to improve water quality.	$40,000	$5,000	Local	MW, EPA, NRE, SRW & MPSC
MS1-SS-02	Develop a Waterway Management Strategy for Watsons Creek	A Waterway Management Strategy is required which specifically focuses on management of the Watsons Creek and drainage line corridors. The management strategy should consider revegetation requirements (buffer planting), water quality management (eg. stormwater inflow locations) and stabilisation of banks.	$60,000		Local	MW
MS1-EA-02	Fund Community Groups	MPSC presently funds a number of community groups. It is suggested that the support is continued, as it is an important means of engaging the community.		$5,000	Local	MPSC
MS1-SC-01	Stream frontage protection works	It is expected that a large number of sites will be identified within the waterway activity plan. Many of the sites will be adjacent to private land and it will be necessary to negotiate with landholders prior to undertaking works. The location and scale of works will not be fully defined until the Waterway Management Strategy (MS1-SS-02) is complete. The funding allocated reflects the ongoing commitment that would be required to support a waterway rehabilitation program.		$10,000	Local	MPSC, MW & external funding bodies such as NHT
MS1-EA-01	Co-ordination of stakeholders	MPSC should take a lead in the co-ordination of stakeholders throughout the catchment. Actions of the large number of agencies and stakeholders should be co-ordinated and their outcomes uniformly reported. It is expected that this role would be undertaken by the council officer already appointed to the project.		$10,000	Local	MPSC

Table 6.2 Stormwater Risk Issue 2, Septic Tank Systems with the Nepean Peninsula

The combination of strategies selected is intended to use education of the community to raise the general awareness regarding the impacts septic systems are having and their correct operation and maintenance. The aim of these programs is to encourage residents to improve their systems at their own cost and generate an understanding of the issues amongst various levels of government with a view to obtaining funding for capital works. Two items, funding of septic system upgrades and connection of households to existing sewers, are extremely high cost programs but have been selected as they will be highly effective in reducing the impacts to the groundwater table.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS2-EA-04	Use regular media outlets to highlight septic tank management and impacts	The Shire newsletter, Peninsula Way, and other local media outlets should be used to alert the public to the problem and make a series of suggestions to property owners regarding the management of septic systems.		$7,500	Shire	MPSC
MS2-EA-02	Lobby MAV for funding for Municipal Waste Water Management Strategy	Shire officers should continue to lobby the MAV to provide funding for a Waste Water Management Strategy for the municipality		$5,000	Shire	MPSC
MS2-EA-03	Lobby State Government to fund construction of reticulated sewers	MPSC should take an active role in advocating for the reticulation of sewers across the municipality and in particular within the Nepean Peninsula		$5,000	Shire	MPSC
MS2-EA-01	Educational material for property owners	Development or adoption of material to educate property owners regarding septic systems, their management and the impact they are having on the environment. Distribution should include each property within Shire	$15,000	$5,000	Local	MPSC & EPA
MS2-RE-01	Funding or loans to improve the condition and operation of septics within the municipality	The Shire and other agencies responsible for wastewater and groundwater management should investigate the opportunities to fund the improvement and upgrading of septic systems to ensure that they meet with current best practice.	$150,000		Local	EPA, MPSC, NRE & SRW
MS2-EA-05	Place signs adjacent to open water bodies	The placement of signs, or augmentation of existing signs, adjacent to open water bodies will allow the declining water quality of the groundwater aquifer to be highlighted and linked to septic systems.	$5,000	$1,000	Local	MPSC
MS2-RE-02	Funding or loans to subsidise the connection of houses to sewer	Funding the connection of properties to the reticulated sewer where a sewer exists and properties have septic system	$3,000,000		Local	EPA, MPSC, NRE & SRW
MS2-DC-01	Monitor condition of Groundwater Table	The groundwater table should be regularly monitored to determine its level and concentration of a range of pollutants		$20,000	Local	NRE & SRW
MS2-SS-04	Implement Groundwater Management Strategy	Finalise and implement the groundwater management plan under development by the EPA	$20,000	$10,000	Local	EPA, MPSC, NRE & SRW

Table 6.3 Stormwater Risk Issue 3, Subdivisional Developments Throughout the Municipality

Education and site specific strategies were found to provide the most cost effective solutions for reducing the impacts of areas of subdivisional development. Many of the education strategies are relatively low cost and involve signage, distribution of guidelines to developers and consultation with other agencies to improve the legislative tools available to regulate developers. The development of site specific sediment and erosion control plans for construction sites is also recommended.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS3-EA-06	Use signs as part of general community education program	Signs should be place adjacent to environmental assets that could potentially be threatened by development activities. Signs should also be erected adjacent to any demonstration sites to highlight what works are being undertaken.	$5,000	$500	Local	MPSC
MS3-EA-01	Development of brochures for Developers and Contractors	Develop educational material for construction site management that is relevant to small scale (< 50 lot) developments. The document should be concise, outlining the issue, methods to reduce impacts and the role of local government in enforcing compliance.	$5,000		Regional	MPSC
MS3-SS-02	Require sediment and erosion control plan for all new developments	For all development applications Council should require development of a detailed sediment and erosion control plan. Plan should identify construction staging, control measures, monitoring regime (eg. visual inspection) and responsible individual (eg. site foreman). Plans should be in accordance with Council specifications and BPEM Guidelines. For major sites this should form part of an EMP.	$10,000		Local	MPSC & Developers
MS3-EA-04	Liaison with Agencies regarding changing Laws	Construction site issues require a regional focus and MPSC should lobby DOI, EPA and MBAV to develop uniform state laws, model local laws and guidelines.		$5,000	Regional	MPSC, DOI, EPA & MBAV
MS3-EA-07	Establish regular communication with developers regarding SW Issues	As part of general extension activities to development industry it may be appropriate to establish a forum or use an existing forum to communicate with developers on the Peninsula regarding SW issues. The Peninsula is likely to require its own forum as many industry forums are Melbourne based and locals may not travel to them.		$3,000	Shire	MPSC
MS3-EA-05	Use local media to educate public	Use the Shire newsletter, Peninsula Way, and other local media outlets to raise the awareness		$7,500	Shire	MPSC
MS3-EA-02	Education Workshops for Developers and Contractors	Run a half day seminar with invited representatives from major developers who are active in the municipality. Introduce the Stormwater Management Plan and outline Council's new initiatives, commitments and expectations regarding stormwater management.	$10,000		Regional	MPSC, EPA & MBAV
MS3-SS-01	Require Environmental Management Plans for Major Developments	Environmental Management Plans identify potential impacts of development, management actions for minimising impacts and processes for monitoring impacts during development. A Sediment and Erosion Control Plan would be a subset of an EMP. EMP should only be required where a development is likely to have a major impact on the receiving environment. Plans should consider flora, fauna, geomorphology, stormwater, flooding, air and noise, and site contamination (where relevant).	$40,000		Shire	MPSC

Table 6.4 Stormwater Risk Issue 4, Market Gardens in Chinamans Creek

Five management elements were selected to improve the quality of runoff from the market garden areas within Chinamans Creek. Key elements of the management strategy include education programs and demonstration projects that will be developed using experience gained in the Watsons Creek Strategy. The adoption of material from the Watsons Creek program significantly reduces cost associated with establishing this program. Consultation with the farming community via a council extension officer is also an import part of the strategy, as it will provide an opportunity for the Shire to build a network with the farming community. The consultation will also be necessary if the Shire and industry groups such as the Vegetable Growers Association and the Victorian Farmers Federation are going to convince the farmers to develop and implement environmental management plans for their farms. The capital works and monitoring programs associated with this program were not feasible due to either their high cost or limited effectiveness in reducing the threat.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS4-EA-01	Use material developed for Watsons Creek catchment and distribute to farmers	As part of the Watsons Creek Action Plan a series of education tools will be developed, these tools will be applicable to the Chinamans Creek market garden areas. The shire will be able to distribute the guidelines through extension activities undertaken in this program	$2,000		Local	MPSC
MS4-EA-02	Use the demonstration sites developed as part of the Watsons Creek Action Program	Several demonstration sites are proposed as part of the Watsons Creek Action Program. Rather than develop new sites it would be better to use the existing program and run tours through the sites. The extension activities proposed in MS4-EA-03 to be used to identify participants		$5000	Local	MPSC
MS4-EA-03	Develop relationships with market gardeners within catchment	Use long term extension activities to build links with market gardeners. The position would require an input of 1 or 2 days a month to maintain regular contact with the landholders. It may be worthwhile for MPSC to partner with another agency or group to combine the environmental objectives with an agronomy program. Alternatively the position could be incorporated into another Shire program related to the environment.	$10,000	$10,000	Local	MPSC, EPA & VFF
MS4-SS-01	Develop EMP's for large market gardens	The EMP should consider all aspects of water, nutrient and soil management on market garden sites. The successful implementation of an EMP should have benefits for the environment and economics through improved productivity.	$10,000	$2,000	Local	MPSC & Land owners
MS4-SS-02	Finalise Chinamans Creek Catchment Strategy	The Chinamans Creek Catchment Strategy contains a detailed analysis of the catchment and makes a series of management recommendations. The document should be updated to reflect current issues, in particular the market garden issues, and adopted by council. This strategy will integrate with the Water Quality Management Strategy (MS2-SS-04) proposed for the Nepean Peninsula.	$5,000		Local	MPSC

Table 6.5 Stormwater Risk Issue 5, Waterway Degradation in Mt Martha

This strategy only contains two elements and was not subjected to the screening process as the threat is well defined and solutions have been developed as parts of previously completed studies.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS5-SC-01	Undertake stream stabilisation works identified in Hearn Creek as part Due Diligence Study	3 sites have been identified within the Hearn Creek Catchment where stabilisation works are required. The works are primarily engineering works to stabilise creek beds although follow up revegetation programs will help improve the amenity offered by the creek.	$150,000	$5,000	Local	MPSC
MS5-DC-01	Regular inspections of the waterways within the catchment	The aim of the inspection program is to regularly identify the areas where erosion is occurring and to undertake works before erosion becomes a significant issue.		$5,000	Subcatchment	MPSC

Table 6.6 Stormwater Risk Issue 6, Building Site Runoff in Balcombe Creek and Mt Martha

The management elements selected to improve building site management involve strategies to require builders to better manage their sites using site specific EMP's, a number of education programs to raise the awareness of the issue amongst the general community and builders and the installation of gross pollutant traps to capture pollutants. Fining of builders for poor on-site practices and regular audit were not considered to be cost effectiveness due the expected low effectiveness and low desirability, as these activities are likely to upset the building community and inhibit other activities.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS6-SS-01	Establish a simple EMP for building Sites	Develop a pro-forma EMP. Refer to Chapter 6 of BPEM Guidelines for key considerations. Checklist would be developed as a single A4 sheet which can be faxed, emailed or mailed to builders. The EMP should include sediment and erosion control and waste management issues. Council would need to undertake trials with Council Staff explaining use of pro-forma to builders involved in trial.	$6,000	$1,000	Shire	MPSC, EPA, DOI & MBAV
MS6-EA-04	Establish links with large development and building companies	Through regular discussions with builders and developers educate them regarding their obligations to maintain clean building sites.	$5,000	$1,000	Shire	MPSC
MS6-EA-03	Use regular media outlets to highlight building site waste issue	The Shire newsletter, Peninsula Way, and other local media outlets could be used to alert the public to the problem and outline how the problem is being tackled. The Shire website contains material that would be appropriate.		$5,000	Shire	MPSC
MS6-ST-02	Construct Gross Pollutant traps at the outlet of drainage systems	At key points in the drainage system construct permanent gross pollutant traps. The costs are based on the cost per GPT and will vary depending on the size of the catchment to be treated.	$25,000 - $50,000	$9,000	Local	MPSC
MS6-EA-01	Distribute material developed by others to home builders	A number of sources of material are available that can be used to develop a brochure outlining the impact of building site runoff, builders and homeowners responsibilities and the Shire policy regarding Building Site Waste.	$5,000 (Development of Brochure)	$5,000	Shire	MPSC
MS6-EA-02	MPSC to lobby DOI, EPA and MBAV	MPSC should lobby the agencies responsible for regulating building approvals and builders to get changes to legislation implemented so building sites are better managed. Many of the activities proposed under this strategy have been targeted in a VSAP application by Melbourne Water		$10,000	Regional	MPSC

Table 6.7 Stormwater Risk Issue 7, Residential Runoff Throughout the Municipality

Given that only three elements were selected and the total cost of this strategy is relatively low it is suggested that all the elements be implemented in order to reduce the threat posed by the stormwater system. The management strategy will involve media releases, signage of waterways within urban areas and the support of community groups.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS7-EA-01	Use Shire newsletter and local press to publicise SW issues	The Shire newsletter, Peninsula Wide, and other local media outlets could be used to raise the awareness of the impacts stormwater from residential areas is having and measures that can be undertaken to minimise threat.		$7,500	Shire	MPSC
MS7-EA-02	Placement of signs near waterways and SW outfalls	Over a period of time place signs adjacent to waterways. The signs should include information about the waterway, the impacts that residential areas are having and what council is doing to offset the impacts. Signage could also include the outfalls of key drains into Port Phillip. The costing assumes that 10 signs will be placed per annum and they will require ongoing maintenance.	$15,000	$1,000	Shire	MPSC
MS7-EA-03	Liaise with and encourage community groups to be active within their local catchments	A variety of opportunities exist to support local groups who are interested in improving water quality. The specific programs to be funded would be identified following consultation with community groups. It is expected that programs containing a significant education component should be supported.		$10,000	Shire	MPSC

Table 6.8 Stormwater Risk Issue 8, Management of Unsealed Road Runoff

To manage the threat posed by unsealed roads it is proposed to implement a management strategy that includes elements to educate council officers regarding their correct management, undertake audit of the condition of unsealed roads throughout the municipality and conduct a series of briefings to Council are undertaken to raise the profile and understanding of the issue

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS8-EA-01	Provide up to date education material to Shire officers	A number of sources of information are available such as the revised "Unsealed roads manual: guidelines to good practice". These materials should be purchased and distributed to Shire Officers	$1000		Shire	MPSC
MS8-EA-02	Briefing of Councilors	As a first step towards resolving the maintenance of unsealed roads Council should be briefed regarding the outcomes of the SWMP regarding the perceived impact of unsealed roads. It will be necessary to gain Council support for any of the other elements to be accepted.		$5,000	Shire	MPSC
MS8-SS-01	Develop an EMP for the management of unsealed roads throughout the municipality	The EMP would identify all unsealed roads throughout the municipality, their condition and impact on downstream environments. This information would be used to conduct a risk assessment of the impact of unsealed roads to set management priorities. The study would also need to include a significant amount of community consultation.	$60,000		Shire	MPSC

Table 6.9 Stormwater Risk Issue 9, Management of Septic Tanks in Flinders

Management of the threat posed by septic tank system within the Flinders Township is in many cases similar to Strategy 2, with at least 3 of the strategies developed for Strategy 2 applicable. The management elements developed specifically for this issue include the lobbying of State Government to provide resources for sewer reticulation, liaison with the community to raise the awareness of the issues and monitoring of surface waters within the catchment to identify the sources of pollution.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS9-DC-01	Monitor quality of surface waters to identify source of pollution	Regularly monitor the surface waters to develop a understanding of the source and magnitude of pollution.	$35,000	$9,000	Local	MPSC & EPA
MS9-EA-05	Education of community regarding issue	Identify through regular forums with the community that the shire is aware of the issue and that a range of management strategies are being considered.	$6,000		Shire	MPSC
MS2-EA-04	Use regular media outlets to highlight septic tank management and impacts	Part of Management Strategy 2	$5,000	$1,000	Shire	MPSC
MS9-EA-03	Lobby Treasury and DOI to fund construction of reticulated sewers	MPSC should take an active role in advocating for the reticulation of sewers across the municipality and in particular within townships draining to Westernport		$5,000	Westernport Catchments	MPSC
MS2-EA-01	Educational material for property owners	Part of Management Strategy 2	$5,000	$5,000	Shire	MPSC, & EPA
MS2-EA-02	Lobby MAV for funding for Waste Water Management Strategy	Part of Management Strategy 2		$10,000	Shire	MPSC
MS9-EA-06	Place signs adjacent to Dodds Creek and its outfall	The placement of signs adjacent to Dodds Creek and near outfall warning of potential faecal contamination of waters by wastewater.	$20,000	$9,000	Local	MPSC

Table 6.10 Stormwater Risk Issue 10, Management of Commercial Areas on the Nepean Peninsula

The management strategy developed to treat the runoff from commercial areas includes a variety of measures including a number of education programs and several structural measures. The education activities to be undertaken are intended to improve the waste management practices of the shop owners via extension activities in conjunction with the EPA and raise the awareness of the public regarding the issue through a media program and signage along local beaches to highlight the impacts of litter. The isolated nature of the threat has resulted in the recommendation of a number of gross pollutant traps on drain outlets downstream of the commercial areas.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS10-EA-01	Distribute Wastewise information to shop owners	During visits by EPA and council officers distribute material to each commercial premise outlining there responsibilities regarding waste management. The material should be based on MPSC's local law requirements, EPA and EcoRecycle Material.	$5,000		Local	MPSC & EPA
MS10-EA-02	Council and EPA officers should regularly contact commercial operators	Council and EPA officers should have regular contact (quarterly) with commercial premises to raise awareness of waste management and SW issues.		$8000	Local	MPSC & EPA
MS10-EA-03	Use Shire newsletter and local press to publicise SW issues	The Shire newsletter, Peninsula Wide, and other local media outlets could be used to raise the awareness of pollution generated in commercial areas. The material could be based on a number of sources such as EPA, MW or EcoRecycle.		$7,500	Shire	MPSC
MS10-EA-04	Placement of signs near waterways and SW outfalls	Over a period of time place signs adjacent to waterways. The signs should include information about the waterway, the impacts that residential areas are having and what council is doing to offset the impacts. Signage could also include the outfalls of key drains into Port Phillip. The costing assumes that 10 signs will be placed per annum and they will be maintained.	$15,000	$1,000	Shire	MPSC
MS10-ST-02	Install gross pollutant trap	ϕ 1500 mm Sorrento Pier	$182,000	$9,000	Local	MPSC
MS10-ST-02	Install gross pollutant trap	ϕ 450 mm Hygeia Street	$30,000	$9,000	Local	MPSC
MS10-ST-01	Install release net devices	ϕ 1500 mm Portsea Pier	$26,400	$9000	Local	MPSC
MS10-ST-01	Install release net devices	ϕ 450 mm Hunt Avenue	$9,000	$9,000	Local	MPSC
MS10-RE-01	Audit and Inspection of Commercial Premises	Audit commercial premises to ensure waste management practices in place are adequate. It may be beneficial to involve EPA in the process. The audit is an important means of establishing contact with the stakeholders.	$8,000		Local	MPSC & EPA
MS10-RE-02	Use Local Laws and EPA powers to issue infringement notices.	The use of infringement notices should be seen as a tool of last resort.		$50,000	Local	MPSC & EPA

Table 6.11 Stormwater Risk Issue 11, Management of Waterway Degradation in Merricks Creek and Shoreham Subcatchments

Of the opportunities identified to mitigate waterway degradation within the Merricks Creek and Shoreham catchments. The highest priority elements are the establishment of demonstration projects and financial incentives to encourage landowners to undertake stream frontage protection works. The development of a waterway management strategy for the catchments is also recommended.

Element Number	Management Action Opportunity	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS11-EA-01	Undertake works on private land with co-operative landholders	Through existing networks, e.g. Landcare, identify sites for stream rehabilitation and protection. Support would be in the form of a funding contribution to the landowner, who would be responsible for the implementation of the works and their maintenance. In general, properties containing sites identified within the due diligence study should be targeted first.	$7,500	$7,500	Local	MPSC, Landcare & Land Holders
MS11-RE-01	Fund stream rehabilitation works on private property	Develop a system of partially funding or facilitate funding applications to other funds sources such as MW to fund stream rehabilitation works on private property. A number of funding models could be adopted and examples of schemes that have had success in other areas include cost sharing for all works or funding of stream and revegetation works with fencing the responsibility of the landowner. In all cases it is assumed the landowner will be responsible for maintenance.		$10,000	Local	MPSC
MS11-SS-01	Develop Waterway Management Strategy for Waterways	Develop a waterway management strategy for waterways within the catchments. The strategy should identify the condition of the stream, location of any existing works and who owns the surrounding land. The findings of the Due Diligence study forms good basis, however, it will require a more detailed study to be completed.	$20,000		Local	MPSC
MS11-EA-02	Liaise with community groups to improve waterway management	The regional drainage authority should develop links with farmers via an existing community group such as Landcare. Extension activities would include information about funding opportunities such as MS11-EA-01, assistance with grant applications and co-ordination with groups within the region.		$5,000	Local	MPSC & Landcare
MS11-SC-01	Undertake works outlined in Due Diligence Study for Merricks Creek and Shoreham catchments	A number of sites of significant waterway erosion were identified within the Due Diligence Study. The cost associated with the works reflects the estimates in the Due Diligence Study.	$140,000	$10,000	Local	MPSC
MS11-DC-01	Undertake regular waterway condition assessments within	Regular inspections of the waterways should be undertaken to identify sites where erosion is developing. The early identification of problem spots will allow works to be undertaken to prevent the erosion sites developing. It is suggested that the initial survey be thorough and form part of the Waterway Management Plan and bi-annual inspections be carried out.		$5,000 (Bi-Annual Survey of $10,000 each)	Local	MPSC

Table 6.12 Stormwater Risk Issue 12, Management of Septic Tanks Systems in Merricks Creek and Shoreham Subcatchments

This strategy is similar to strategies 2 and 9 and contains many of the similar elements to minimise the threat posed by poorly performing septic systems within the Merricks Creek and Shoreham catchments. The strategy includes elements that are aimed at educating and consultation with the community to raise the awareness of the issue and its impacts and lobbying of state government to provide funding for sewer reticulation.

Element Number	Element Type	Location & Description	Approximate Cost		Extent of Application	Responsibility
			Capital	Ongoing		
MS2-EA-01	Literature Guideline Development and Distribution	Educational material for property owners (Part of Management Strategy 2)		$5,000	Shire	MPSC
MS2-EA-02	Long Term Consultation	Lobby MAV for funding for Waste Water Management Strategy (Part of Management Strategy 2)		$5,000	Shire	MPSC
MS12-EA-01	Long Term Consultation	MPSC should take an active role in advocating for the reticulation of sewers across the municipality and in particular within townships draining to Westernport		$5,000	Westernport Catchments	MPSC
MS2-EA-04	Media Release	Use regular media outlets to highlight septic tank management and impacts (Part of Management Strategy 2)		$7,500	Shire	MPSC
MS12-EA-02	Community Consultation	Identify through regular forums with the community that the Shire is aware of the issue and that a range of management strategies are being considered.		$7,500	Local	MPSC

MPSC – Mornington Peninsula Shire Council
MW – Melbourne Water Corporation
EPA – Environment Protection Authority
MBAV – Master Builders Association of Victoria
VFF – Victorian Farmers Federation
NRE – Department of Natural Resources and Environment
SRW – Southern Rural Water
DOI – Department of Infrastructure
NHT – National Heritage Trust

7 MANAGEMENT FRAMEWORK RECOMMENDATIONS

Based on the review of Mornington Peninsula Shire Council's management framework, a number of recommendations have been made to incorporate stormwater management as part of Council's planning and management activities. Volume II of the Stormwater Management Plan provides specific recommendations relating to individual elements of the management framework review. Table 7.1 provides a summary of the key recommendations.

Many of these recommendations can be implemented by modifying or improving existing Council management and planning practices. The order of the strategies has been prioritised based on a series of discussions with Council officers. It would be expected that the completion of the actions outlined will take a considerable period of time (in the order of 10 years). Recommendations requiring modification of corporate documents (eg. the MSS) or the planning scheme should be implemented when opportunities arise as part of scheduled regular revisions.

Table 7.1 Framework Strategy 1 – Regional Drainage Responsibility

Action Number	Purpose	Action	Responsibility
1	Assign responsibility for regional drainage	Continue senior level discussions between Council, relevant authorities and the Minister to achieve the best outcomes for regional drainage on the Peninsula.	MPSC & MW

Table 7.2 Framework Strategy 2 – Interagency Communication

Action Number	Purpose	Action	Responsibility
1	Clarify organisational roles and responsibilities	In addition to the regional drainage issue outlined previously, identify and allocate responsibility for actions relating to stormwater management in each of the following organisations: • Environment Protection Authority • Department of Natural Resources & Environment • Parks Victoria • Department of Infrastructure • Southern Rural Water • Port Phillip CaLP Board	Agencies & MPSC
2	Explore opportunities for other organisations to contribute to the achievement of the plan's objectives	Identify opportunities for involvement and spheres of influence of the following groups in the implementation of the stormwater management plan: • Adjoining municipal Councils, Frankston and Casey • Municipal Association of Victoria • Building Control Commission • Master Builders Association • Housing Industry Association	Agencies & MPSC
3	Facilitate interagency links at officer level.	Identify a client manager within relevant agencies (particularly Melbourne Water and EPA) and allocate liaison responsibility with the relevant Council officer.	Agencies & MPSC
4		Establish a regular visiting program between agencies and Council (where one doesn't already exist) to allow the agency client manager to gain exposure within Council organisation and discuss matters with Council on a regular basis	Agencies & MPSC
5		Encourage agencies to make available or prepare a position and skills register. The register should include contact details, roles and responsibilities and will need to be regularly updated and circulated throughout Council.	Agencies & MPSC
6	Ensure effective dissemination of information between organisations	Regularly prepare and distribute a bibliography of new information available from each agency, including where the documents are held, how they can be accessed and a brief outline of what they contain and when/how they might be useful.	Agencies & MPSC
7		Update Council websites to include links to the various organisations.	Agencies & MPSC

8		Collate monitoring data from external organisations in relation to waterway quality (incident logs, annual reporting and audits).	Agencies & MPSC

Table 7.3 Framework Strategy 3 – Strategic Direction

Action Number	Purpose	Action	Responsibility
1	Review Council's Community Plan to consider stormwater management	Review Council's Community Plan with a view to including recommendations of Appendix F in Volume 3.	MPSC
2		Refer to the SWMP and express commitment to achieving improved stormwater management outcomes.	MPSC
3	Review Council's Municipal Strategic Statement to better address to stormwater management	Review MSS with a view to including recommendations of Appendix F in Volume 3.	MPSC
4	Review Council's Local Policies to better address stormwater management	Amend existing local policies to give statutory effect to the SWMP	MPSC
5		Develop and implement a Regional Stormwater Drainage Policy – this has the potential to become an important tool and should be considered as a priority.	Regional Drainage Authority
6	Update the Planning Scheme	Review existing Outline Development Plans and identify the need for new ones.	MPSC
7		Include Best Practice Environmental Management Guidelines for Urban Stormwater on Schedule to Clause 81 as an Incorporated Document to the Scheme.	MPSC
8	Insert cross strategy links when revising existing strategic documents or policies and when developing new strategies or policies.	Council should maximise the findings, outcomes and/or recommendations of the Urban Stormwater Best Environmental Practices Guidelines (1999) and its own SWMP when reviewing or preparing new documents. Specific Areas to consider include: • Introduction of suburban design and layout guidelines; • Public open space buffers along waterways; • Site development and construction practices; • Landscaping species; and • Protection of waterway values and flood plain areas	MPSC
9		Council should ensure clear links between strategies to highlight the value that one action may have on outcomes highlighted elsewhere (i.e. related strategies might include Urban Design Guidelines, Litter Strategy, Conservation Strategy, Environmental Management Systems,)	MPSC

Table 7.4 Framework Strategy 4 – Inter-Departmental Communication and Officer Education

Action Number	Purpose	Action	Responsibility
1	Documenting and utilising the existing knowledge base within Council	Prepare a position and skills register with relevant contact details, roles and responsibilities. This document should be updated annually and be stored on the intranet.	MPSC
3		Following the development of the skills register knowledge gaps should be identified and form the basis for the development of a staff training program.	MPSC
4	Equip Council officers with the skills they need to achieve the stormwater management plan objectives	Develop a series of workshop/information sessions to launch the stormwater management plan within the organisation. These workshops provide an opportunity to outline the existing stormwater management system and highlight where changes will be made.	MPSC
5		Develop an ongoing program of forums or workshops to enable the sharing of knowledge and experiences from both within the organisation and from outside sources (such as guest speakers from other municipalities or agencies).	MPSC
6		Arrange site visits for staff to demonstrate various stormwater systems including examples where stormwater management practices and or tools have been implemented or used successfully and where they have failed.	MPSC
7		Develop an education program for Enforcement Officers highlighting existing tools (local laws, Litter Act) available to them in relation to stormwater management practices; educate to recognise potential threats on the field that require referral to other authorities.	MPSC
8	Develop practices that reflect Councils leadership role in stormwater management.	Develop a set of designs, standards and/or operations that improve stormwater management outcomes with respect to Council's own activities.	MPSC
9		Require Environmental Management Plans as appropriate for Council contracts and program activities.	MPSC

10	Encourage continued informal communication between Council departments.	To communication between officers from different departments and offices introduce a system of regular meetings such as quarterly lunch meetings. These meetings could be used to hold seminars about different departments activities or discuss particular issues relating to ongoing programs or specific issues such as a planning application.	MPSC

Table 7.5 Framework Strategy 5 – Referral Process and Planning Permits

Action Number	Purpose	Action	Responsibility
1	Streamline the system of referrals both within Council and externally.	Develop a flow chart illustrating the referral process both internally and externally.	MPSC
2		Develop a checklist including examples of typical triggers that demonstrate when and why a referral is appropriate and to which department or authority.	MPSC
3		Develop an induction program for new officers to outline organisational structure, internal and external referral mechanisms, unique characteristics of drainage and stormwater on the Peninsula and Council goals and tools in relation to stormwater management.	MPSC
4		Work with authorities to ensure that referrals from Council, when made, are explicit in the feedback they require from that authority to avoid incomplete responses and the possible omission of relevant permit conditions.	MPSC & Agencies
5	Review standard permit conditions.	Review standard permit conditions with relevant authorities and enforcement officers to: • ensure plain English is used in order to make them easily understood • ensure they are worded to achieve the desired outcomes • ensure they are worded to enable measurable and/or quantifiable conditions that are enforceable	MPSC
6		Develop a standard permit condition relating building sites, litter cages, sediment runoff, and so on.	MPSC
7		Review internally applied standard conditions to ensure they reflect Best Practice Environmental Management Guidelines for Urban Stormwater (1999).	MPSC
8	Review statutory planning permit requirements.	Require the development of an Environmental Management Plan (EMP) for all subdivision developments. The EMP should include reference to the impact of the development on stormwater quality and detail how construction site and ongoing impacts will be mitigated. The EMP would form the basis for setting development conditions and would include an inspection and audit program to check compliance with the EMP	MPSC
9	Encourage best practice through the planning permit application phase of a proposal.	Develop a package of best practice guidelines and standard drawings for issue on new applications (could be developed in conjunction with the FACTfile information sheets).	MPSC
10		Highlight issues and options in relation to stormwater when pre-application meetings are held to improve the understanding of stormwater issues and outline requirements for improved stormwater management.	MPSC

Table 7.6 Framework Strategy 6 – Resourcing and Plan Implementation

Action Number	Purpose	Action	Responsibility
1	Assign accountability within Council for the implementation of the stormwater management plan, utilising existing resources.	Assign responsibility for the implementation of the stormwater management Plan to an appropriate Council manager. During the development of the SWMP, Infrastructure and Physical Services was nominated as the most appropriate group to undertake this role.	MPSC
2		Appoint an individual who is assigned responsibility for the implementation of SWMP. This position is outlined in Chapter 12 and would be broadly responsible for day to day activities associated with the plan.	MPSC
3		Establish a Stormwater Management Coordinating Committee within Council that would include: • to be chaired by the accountable manager; • to include members of the existing stormwater management plan Steering Committee but to be broadened to include representation from across Council disciplines (such as strategic planning and communications); and • Agency representatives. The role of the Committee is to • implementation and monitoring of the SWMP; • monitor involvement of agencies; • regularly report activities and implementation progress to Council; and • prepare an Annual Review of SWMP progress.	MPSC
4	Expand resource base to facilitate the implementation of the stormwater management plan.	Appoint additional enforcement staff to undertake site inspections of building and construction sites.	MPSC
5		Appoint a specialist drainage engineer and/or a drainage infrastructure section to liaise between departments and keep updated information in relation to stormwater and other drainage matters. A key aspect of this role would be the commenting on planning applications and approvals	MPSC

Table 7.7 Framework Strategy 7 – Community Communication, Education and Local Laws

Action Number	Purpose	Action	Responsibility
1	Raise community awareness of Council's stormwater objectives.	Launch the stormwater management plan to the community through a series of information sessions. This process will be facilitated by utilising existing local community and friends groups.	MPSC
2		Provide regular community updates outlining the status of the plan and achievements resulting from its implementation through existing community information vehicles such as Peninsula Wide.	MPSC
3		Dedicate part of the Council's website to stormwater management.	MPSC
4	Encourage community behaviour that contributes to meeting the objectives of the stormwater management plan.	Develop a series of stormwater FACTfile information sheets that may include: • obligations of developers in meeting the objectives of the stormwater management plan (including reference to relevant local laws and statutory controls) • best practice measures and/or design standards for application by industrial, commercial and rural land uses in achieving stormwater objectives • ways for the community to contribute to improved stormwater outcomes on a day to day basis	MPSC
5	Encourage monitoring of waterways and 'hot spots' by the community.	Provide a system of reporting on local waterway conditions to Council and encourage the use of existing reporting mechanisms (such as via the EPA).	MPSC
6	Use local laws in conjunction with education programs.	Enforce local laws as consistently and regularly as possible.	MPSC
7		Review local laws and maximise opportunities to integrate stormwater management actions.	MPSC
8		Consider using local laws tied to Environmental Management Plans to affect business and industry operations such as materials storage, waste management and sediment and erosion control.	MPSC

Table 7.8 Framework Strategy 8 – Drainage System Documentation

Action Number	Purpose	Action	Responsibility
1	Ensure sufficient mapping data is available for the implementation of the SWMP.	Review existing mapping and flooding data for the Peninsula, from both within Council and from external agencies such as Melbourne Water, and develop a single, digitalised mapping system.	MPSC
2		During the revision of Physical Infrastructure Maintenance Contract, ensure Council retains ownership of data collected regarding its assets.	MPSC

8 SWMP IMPLEMENTATION AND REVIEW

The ultimate effectiveness of this Stormwater Management Plan will be dependent on Council's ability to implement the recommendations of the plan and progressively review its effectiveness. A suggested framework for the implementation of the plan is provided along with guidance on how Council can consistently review its effectiveness.

8.1 Implementation Approach

It is important that the implementation approach reflects the nature of recommendations made in the Plan and builds on the commitment which has already been achieved from key stakeholders involved in the development of the Plan (ie. both internal and external to Council).

To enable this to occur, roles and responsibilities need to be clearly defined. The following individual and group roles are recommended in this regard:

- **Stormwater Management Coordinator (SMC)** – it is considered essential that Council identify an individual within the organisation (or create a position) who is assigned the specific responsibility of coordinating environmental and stormwater management activities.
- **Stormwater Management Coordinating Committee (SMCC)** – a committee of between 4 to 6 people should be formed to oversee and coordinate the progressive implementation of the Reactive Management Strategies and Management Framework Strategies. This committee should be made up of internal Council Officers from different departments within Council, with Executive and or management level representation.
- **Project Working Group (PWG)** – it is recommended that the existing PWG be maintained throughout the implementation of the Plan to provide a review role for the activities of the Coordinating Committees and the ESMC.

8.2 Priorities For Implementation

Each of the proposed Subcatchment Management Strategies and Management Framework Recommendations have included suggested priorities or ranking for implementation. These priorities have been formulated to guide Council in the implementation of the Plan.

Priorities which have been identified for Management Framework Recommendations reflect the proposed order in which specific amendments to the framework should be undertaken. It is recommended that Council should adopt an approach of progressively implementing these recommendations with modification to key documents coinciding with regular revisions.

Council will need to adopt a certain degree of flexibility in selecting and implementing various elements proposed as part of Reactive Management Strategies. This will need to reflect the nature of the decision making and funding process within Council. It is recommended that the first activity of the Stormwater Management Coordinating Committee will be to prepare a detailed schedule for Management Strategy implementation. The detailed schedule should be reviewed and updated on an annual basis in accordance with budget planning activities.

8.3 Implementation Monitoring and Review Process

As part of the development of a detailed implementation schedule, Council should identify specific milestones, objectives enabling benchmarking, and review of the implementation process. Performance of the Stormwater Management Plan in achieving the key milestones should be based on an annual review of specific Stormwater Risks. This review should consider:

- changes to the magnitude and exposure of specific threats in accordance with the implementation of management measures; and
- improvements to the quality of receiving values associated with implementation of management measures.

8.4 Funding and Budget Allocation

The successful implementation of the Stormwater Management Plan will require a substantial funding commitment from Council. The final selection of this funding value should enable the complete implementation of all strategies identified in the Plan within a realistic timeframe (say 10 years).

To assist local authorities in the implementation of Stormwater Management Plans the State Government has announced a funding commitment of $22.5Million as part of the Victorian Stormwater Action Program commencing in 2001. To access funds it will be necessary for Council to demonstrate that they have a clear plan (ie. a Stormwater Management Plan) which defines how they intend to manage stormwater in their municipality. In addition, if Council can demonstrate a financial commitment to the implementation of their Stormwater Management Plan, it is likely that Council will be better positioned to receive matched financial contributions from State Government.

In accordance with this, it is strongly recommended that Council should commit to, and "fast track", the implementation of the SWMP to capitalise on the available funding opportunities.

9 CONCLUSIONS

Mornington Peninsula Shire Council's Stormwater Management Plan provides a basis for Council to manage stormwater using Best Practice and to protect the community's enjoyment of the region's natural and built assets, now and into the future. The plan establishes Council's objectives for improving stormwater quality by clearly defining the receiving environmental assets which are valued by the community. In addition, the Stormwater Management Plan provides a sound basis for Council to apply and secure funding from external sources for implementation of the various strategies recommended in the Plan.

The Stormwater Management Plan has been developed with the involvement of a range of stakeholders whose members include Council staff from various departments and levels of the organisation and external agencies. In this regard, the Plan has been developed to reflect the specific requirements of Council and the practical implications of applying the various strategies and recommendations. Council's continued commitment to the implementation of the Plan will be critical to its success and final effectiveness as it will be necessary to regularly update the plan to reflect changes in stormwater management priorities. Changes in priorities will occur as the communities perception changes over time, management strategies are implemented and new threats arise.

While the Plan provides many reactive strategies and recommendations to address current stormwater threats, it also identifies many opportunities for Council to integrate practices throughout its day to day planning and management activities. Adoption of these recommendations, accompanied by ongoing reviews, will help to secure the protection of receiving environmental values for years to come. The final success of the Plan relies on Council's ability to embrace and implement its recommendations so that stormwater management becomes an integrated and seamless part of Council's management framework.