Stormwater Management Plan for City of Port Phillip Volume II

For

City of Port Phillip

By

and TBA Planners

Melbourne Office

68 Ricketts Road Mt Waverley Vic Australia 3149
Private Bag 1 Mt Waverley Vic Australia 3149
telephone +61 3 9550 1000
facsimile +61 3 9543 7372

Sydney Office

51 Hermitage Road West Ryde NSW Australia 2114
PO Box 73 West Ryde NSW Australia 2114
telephone +61 2 9334 0935
facsimile +61 2 9334 0973

Brisbane Office

Unit 1, 37 Mein St Spring Hill Brisbane Australia 4000
PO Box 673 Spring Hill Brisbane Australia 4004
telephone +61 7 3832 9126
facsimile +61 7 3832 9179

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1 Process

The process for developing the stormwater management plan was composed of three key stages (Figure 1):

1. Information collation to gain a broad understanding of the current stormwater system and issues

   This task involved the compilation of information on the broad drainage features, land use activities, planning scheme and future developments. Information was presented as a series of maps showing land use, drainage, natural waterways and channels and a context map showing the catchments in adjacent municipalities.

2. Apply information gained to a broad risk assessment.

   A risk assessment is a formal method for assessing the risk or likelihood of losing significant values of receiving environments due to the impacts of urban stormwater. It enables the identification of areas where the risk of damage is the greatest.

   The process involved the identification of stormwater issues, values and threats and undertaking a risk assessment through a review of relevant legislation, policies, strategies and plans and a series of workshops with key stakeholders (Figure 1). The process involved three workshops, which were facilitated by AWT Victoria. Workshop participants included members of the stormwater project team within council, Melbourne Water (MWC), Environment Protection Authority (EPA) and the Municipal Association of Victoria (MAV). During the first workshop, participants were divided into groups and given the task to identify issues in relation to stormwater, identify objectives, opportunities and constraints of stormwater management.

   The second workshop was held to identify values of the stormwater system and activities that may pose a threat to these values. The environmental, hydraulic and amenity (social) values of receiving environments within the municipality were identified and mapped. Following the identification of values, threats (activities and or process that diminish waterway values and therefore impact on the values of the stormwater system) were identified and mapped.

   The final task undertaken during workshop 2 involved characterising the risk for receiving environments within the municipality by weighting the values according to importance and rating the threats according to the degree of impact on each value. This produced a risk ranking for each threat, on each value, enabling the prioritisation of threats within the municipality. The risk ranking for each threat and value was then added to provide an overall risk ranking to enable the prioritisation of locations within the municipality.

3. Assessment of priorities and development of management strategies

A third workshop was held to determine and assess management actions to mitigate the risks identified during the second workshop. Options were assessed and prioritised according to the following criteria: cost, capability, desirability and effectiveness. Priority options were included as strategies and actions within the plan

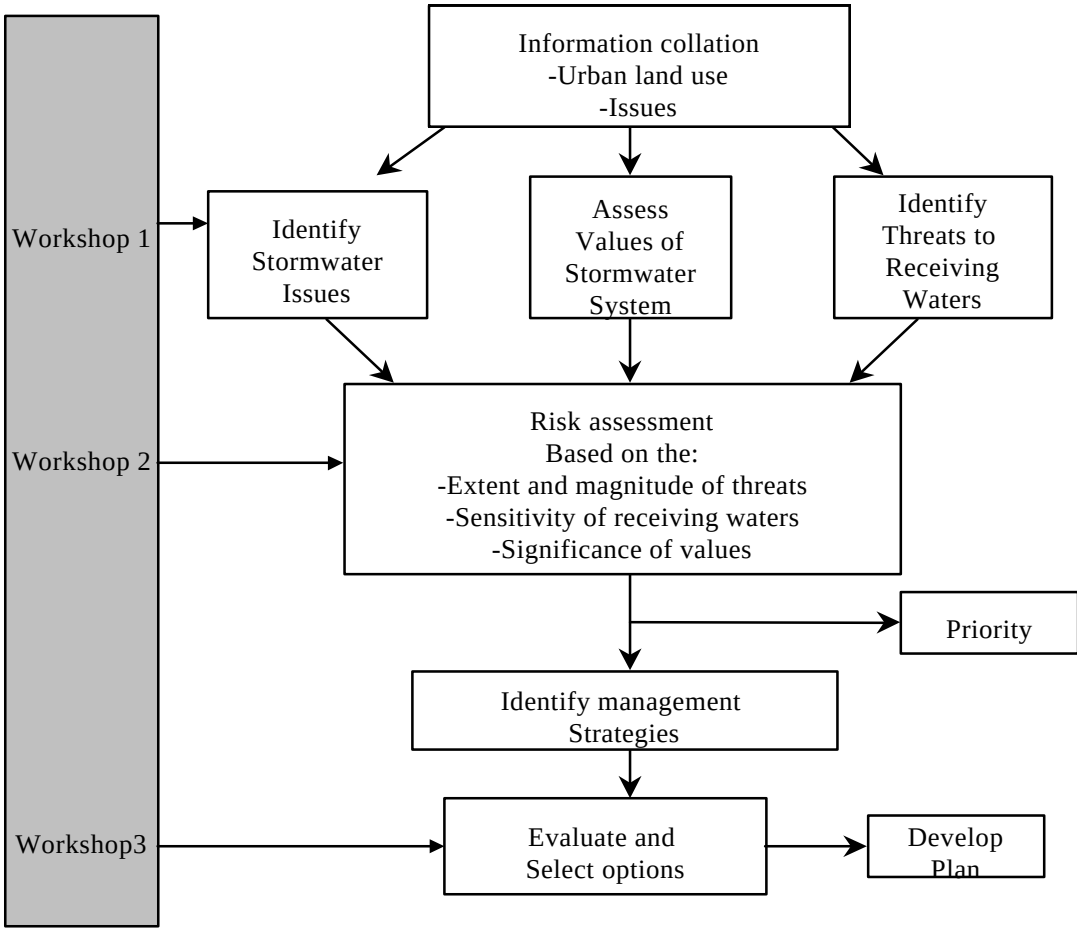

Figure 1: Stormwater Planning Process

2 Workshop One Results

2.1 Issues Identification

Generic stormwater issues identified included flooding, water quality and public health and safety. Specific stormwater issues relating to the City of Port Phillip were also identified and included increased run-off, water sensitive design and lack of education / awareness.

2.2 Generic Stormwater Issues

Flooding- Flooding is a concern in residential areas, in particular housing on known floodplains.

Community Health - Health issues in relation to stormwater may include the quality of the receiving waters and the threat associated to the community e.g. highly contaminated water.

Quality of water at beaches - The water quality at beaches, although not directly relevant to the area of Brimbank, is still seen as a major issue in relation to stormwater.

Sewer overflows- Once again this is in relation to health issues associated with stormwater and the possibilities of overflows occurring.

Age and condition of infrastructure- The knowledge of the stormwater system (or lack of) is a concern and the likelihood of the drainage system needing upgrading.

Quality of water in drains- Includes health, aquatic health and visual amenity.

Degraded aquatic habitats- Is an issue in relation to stormwater and would also effect the health of stream ecosystems.

Degraded riparian vegetation- Can increase erosion and therefore the level of sedimentation in waterways.

Channel erosion and sedimentation-Stable banks are desirable because of visual amenity, safety and perception of aquatic health. Erosion and sedimentation is a sign of decline

Catchment wide issues -Activities that occur outside council boundaries, but effect local environment.

Public safety -Safety issues may include lack of signs and fencing around drains and the likelihood of people falling into drains.

Community expectations/awareness-Stormwater may not be seen as a high priority and awareness needs to be increased.

2.3 Port Phillip Stormwater Issues

- enforcement problems in relation to stormwater
- drainage outfalls
- development contribution- infrastructure in relation to new developments
- lack of knowledge of drainage infrastructure
- lack of capacity
- overall health of community- water quality
- implications of specified flood levels
- water sensitive design
- re-vegetation
- commercial premises discharging waste
- increase in run-off
- impacts on public infrastructure
- maintenance philosophy- what is it?
- expectation of a clean city (litter)
- significant costs
- problems from building sites/construction
- incorporation of natural systems
- definitions of wastewater/ stormwater
- being at the bottom of the catchment
- ecological and recreational value
- discharging from households (education)
- motor vehicles- pollutants (washing cars)
- water tanks (alternative uses)
- user pays (incentives)
- implications of stormwater plan on services
- study for upgrade/benchmark
- drainage is low priority
- identify flood plains
- tree root infiltration
- hydraulics
- greenhouse effect
- flooding , protection and management
- quality of water at beaches
- impediments in stormwater drainage system
- litter and water quality in system, packaging, disposal
- development pressure on existing infrastructure
- building sites impact on water quality
- lack of education/ awareness
- increase fertiliser/nutrients on open spaces
- planning enforcement
- work practices-procedures for works in relation to stormwater system
- sewer overflows- connections from industry-pollution
- age and condition of infrastructure
- design of the systems
- co-ordination within catchment (upstream)
- leaded fuel
- public expectations

2.4 Objectives

Objectives of stormwater management, as determined during the first workshop are:

1. To maintain the existing flood protection function

- to identify accurate flood levels, and to ensure flood protection for 1:100yr level
- to have no net increase in run-off, and to increase the area of porous surfaces
- to ensure sewer vents are not below flood level

2. To enhance the environmental amenity of Port Phillip municipality

- to be ecologically, financially, environmentally and hydraulically sustainable
- to reduce number of complaints by increasing the water quality
- to have appropriate vegetation species
- to adopt BMP for litter collection
- to ensure clean environment (including beaches)

3. To improve the quality of stormwater.

- to ensure stormwater quality complies with SEPP
- to improve water quality monitoring
- an agreed standard of quality discharge
- to reduce sedimentation
- to ensure proper management of pollution at source (building sites)
- to protect aquatic ecosystems (SEPPs)

4 To improve awareness of all stakeholders

- to improve education, awareness, behaviour and training enforcement of the community, service authorities, contractors, developers and council staff
- to ensure contractors (development industry) are aware of communities expectations

5. To incorporate stormwater objectives in planning and development

- to require user to pay for increased impacts
- to develop environmental/system indicators
- to develop an inventory and condition assessment
- to use a risk management approach
- to improve flexibility of infrastructure (jointless pipes)

- to introduce new requirements (decrease run-off) planning controls, (development contributions)
- to have a short, medium and long term view outlook
- to improve accountability on work practices
- to explore adequacy of enforcement

6. To use Best Management Practices where possible

- to incorporate BMPs in planning schemes
- to encourage partnerships with the use of BPEMG- service authorities, councils
- to use stormwater as a recreation and water resource

2.5 Opportunities and Constraints

2.5.1 Opportunities

Planning

- To prepare and implement streetscape plans that aim to increase pervious surfaces.
- To introduce requirements on building sites to minimise run-off and improve water quality of run-off, on-site detention, use of rainwater on site, limit hardsurface/runoff area to same as existing.
- To encourage 'whole of the catchment' thinking behind strategic plan in planning schemes.
- To introduce an incentive scheme whereby ratepayers receive reductions if they can increase porous surfaces within their lot.
- To include stormwater objectives in council operations e.g. have retarding basins where possible, council buildings to have water tanks/ on-site detention as leadership examples.
- To ensure contracts include environmental work practices.
- To integrate stormwater objectives into standard condition for planning permits, councils own operations and investigate opportunities for local laws to require action/enforcement.
- Design of new systems to incorporate controls and systems to improve the quality of stormwater and to maximise infiltration of stormwater.

Environmental

- To create situations upstream that will decrease runoff/litter/sedimentation/inputs into stormwater system.
- To install litter traps in channels/pipes.
- To create incentives for people to introduce new measures like household rainwater tanks, roof gardens, use of less impervious surfaces on driveways, carparking areas.
- To exercise proper controls on potential sources of litter by various regulatory means and follow up by proper monitoring of compliance.
- To develop options for the replacement or upgrading of the existing stormwater system which are low cost, do not down grade efficiency of pipeline and protect the conduit from the ingress of tree roots.
- To monitor water quality on a regular basis.

Awareness

- To educate decision makers of importance in council.
- To educate internal EPA staff to promote enforcement of Best Practice Management guidelines.
- To advertise/facilitate how and where people can buy water tanks.
- To use current programs, such as the "litter strategy" to educate/increase awareness about stormwater issues.

- To promote education campaigns by catchment areas to raise awareness of the public, targeting schools.
- To increase community understanding/awareness of the issues and their involvement.
- To make major reports/ guidelines more widely known and available.
- To liaise with regulatory authorities Melbourne Water and EPA on drainage issues.

Infrastructure

- To carry out inventory and condition assessment of all drains in city including a hydraulic study.
- To systematically upgrade drains as part of roadworks and put strategic emphasis on where roads and drains issues exists.
- To direct more money towards drainage infrastructure, maintenance, upgrade, inspection and quality measures (litter traps).
- To develop guidelines for construction to reduce the contamination of stormwater.
- To conduct selective tree planting.
- To select and design drainage materials/systems and construction methods.

Enforcement

- To improve enforcement capability and coordination/co-operation in council/EPA.
- To increase enforcement of sediment control during developments.

EPA Opportunities

- To ensure water quality information is available to measure improvements.
- To liaise with councils to promote Best Management Practice Guidelines.
- To influence municipalities through the 'stormwater initiative' educating EPA operations staff so that they can influence councils.
- To include stormwater planning in EPA controls/instruments.

Melbourne Water Opportunities

- To provide advice on measures to improve or protect Stormwater quality.
- To provide system and assess environmental information.
- To assist in developing planning and design standards to meet performance objectives.
- To provide resources/funding to help implement measures.
- To advocate reforms to government policy, legislation, or institutional arrangements to facilitate improved Stormwater management.
- To ensure Melbourne Water policies and standards are consistent with councils.

2.5.2 Constraints

Costs

- Major funding constraint, high costs of 'end-of -pipe' treatments, lack of funds to upgrade.
- The distribution of costs and benefits when introducing alternative stormwater management practices eg. may reduce capital costs of new infrastructure for developers but increase the maintenance costs for councils.

Resources

- Limited information available about pollutant types, sources and priorities.
- Lack of resources/staff levels/knowledge in planners, enforcement.
- Lack of training in identifying breaches of quality regulations/guidelines and in what action to take to achieve a best result.
- EPA operations capability in Port Philip is less than 0.5 persons.

Awareness

- Lack of community understanding/awareness.
- Lack of awareness of stormwater management issues early on in development processes.
- Difficulties experienced in effectiveness of community education programs.
- Lack of knowledge of the performance of best practice management.

Co-operation/Communication

- Lack of communication and integration between council staff and external organisations.
- Lack of acceptance by stakeholders of alternative approaches for stormwater management and responsibility for stormwater outcomes.
- In general, community expectations are generally too high.

Regulations

- Lack of proper guidelines for monitoring and enforcing sources of pollution.
- Lack of commitment to enforce regulations.
- Lack of controls/regulations and uniform guidelines.

Responsibility

- Lack of allocation of responsibility

Other

- Large trees pose serious problem, community wants large trees retained, it is difficult for drains to be rehabilitated when directly under trees.
- Difficult to reduce the impact of existing land uses ie limited controls, existing infrastructure.
- Demonstrating benefits of best practice (and measuring performance) ie difficult to measure.
- Need to extend change in practices and co-ordination to upstream catchment managers in other municipalities.
- Frustration of staff in councils by their lack of ability to achieve improvements to quality of the environment.
- Too much red tape.
- No general ownership by developers and the community of their role in the whole stormwater management area.
- Lack of accountability by polluters where breaches occur in many cases.

3 Workshop Two Results

3.1 Values

Environmental

- Foreshore environment
- Receiving waters
- Penguins
- Flora and Fauna
- Elwood canal environment

Hydraulic

- Flood protection
- Water resource

Social/Amenity

- Public Health and Safety
- Visual/landscape
- Foreshore amenity
- Recreation and leisure
- Elwood canal amenity
- Tourism
- Economic

3.2 Activities

- Litter
- External catch activities
- Recreational
- Rubbish collect & disposal
- Syringes
- Illegal dumping
- Construction & development
- Mgt of s/w system
- Transport
- Sewer overflows
- Residential
- Land use changes/planning
- Illegal connections
- Flooding
- Retail/business
- Dog poo

3.3 Risk Assessment

A risk assessment was undertaken in the second workshop. Workshop participants were divided into three groups and each group was assigned an area of Port Phillip: South and Port Melbourne, Albert Park and Elwood-St Kilda. Values identified previously were weighted on a scale of 1-4, with 4 being the most valued for each area. Activities were then rated according to the risk/impact to that particular value (Tables 1, 2 &3).

Following the workshop, the risk assessment ratings and weightings were multiplied to determine a risk ranking for each value and activity (Tables 4,5 &6).

Table 1: Risk assessment rating table for South and Port Melbourne area

PORT PHILLIP				**Activity**																	
Sth & Port Melbourne		**Construction**				**Retail/**					**Sewer**	**External**			**Mgt of s/w**	**Rubbish collect.**					
Values	**Weighting**	**& development**	**Litter**	**Transport**	**Industrial**	**Business**	**Flooding**	**Webb dock**	**Yarra river**	**Syringes**	**overflows**	**Catchment activities**	**Illegal dumping**	**Illegal con**	**system**	**& disposal**	**Residential**	**Recreational**	**Dog poo**	**Land use changes**	
Public Health and Safety	4	4	3	3	4	3	2	1	2	4	3	1	3	2	4	4	3	3	3	1	
Water resource	3	2	2	1	2	1	1	1	1	1	1	2	2	2	2	2	3	2	1	4	
Economic	2	4	3	1	3	4	2	1	1	2	1	2	2	1	1	3	3	2	1	4	
Flora and Fauna	2	2	3	1	1	2	1	3	1	1	1	2	2	1	2	3	2	1	1	3	
Visual/landscape	4	4	4	3	3	4	3	3	4	4	1	2	3	1	3	4	2	3	3	3	
Recreation and leisure	4	3	4	2	3	4	2	2	4	4	2	2	2	1	2	3	2	3	3	3	
Foreshore environment	3	3	3	3	4	3	2	3	1	3	2	3	3	2	2	3	2	3	3	3	
Foreshore amenity	4	2	4	2	3	3	2	1	1	3	2	2	3	3	2	3	3	3	3	3	
Tourism	2	1	2	1	1	4	1	1	1	2	1	2	1	1	1	2	1	1	1	3	
Remnant saltmarsh	3	4	3	3	3	3	3	4	1	3	2	2	2	2	2	3	2	2	2	3	
Flood protection	3	4	2	2	2	2	4	1	1	1	3	2	1	2	3	2	4	2	1	3	
Receiving waters	4	1	4	3	2	2	2	1	4	1	2	2	2	2	2	3	2	2	2	2	

Table 2: Risk assessment rating table for Albert Park area

Albert Park			**Construction**							**Sewer**		**Land use**	**External**	**Mgt of s/w**	**Illegal**	**Rubbish Collection**	
Values	**Weighting**	**Litter**	**& Development**	**Retail/Business**	**Recreation**	**Dog poo**	**Transport**	**Flooding**	**Syringes**	**overflows**	**Illegal conn**	**changes**	**catchment**	**system**	**dumping**	**& Disposal**	**Residential**
Public Health and Safety	4	3	3	3	4	3	2	1	4	2	2	2	1	4	3	3	3
Albert Park Lake	4	4	3	3	4	1	2	1	1	2	2	3	2	2	2	4	3
Economic	2	2	1	1	2	1	1	2	2	1	1	1	2	2	2	2	1
Flora and Fauna	3	1	2	1	1	1	1	1	1	1	1	3	2	3	1	1	2
Visual/landscape	4	4	3	4	3	2	3	2	4	1	1	2	3	3	3	4	3
Recreation and leisure	3	3	3	3	3	2	3	2	4	1	1	2	2	2	2	3	3
Foreshore environment	3	3	3	4	3	2	2	2	4	2	2	2	2	2	3	3	3
Foreshore amenity	4	4	2	2	3	3	2	1	3	2	3	2	2	2	2	4	2
Tourism	2	2	1	3	2	3	1	1	2	1	1	1	2	2	2	2	1
Flood Protection	2	2	4	2	2	1	1	4	1	3	2	3	2	3	1	2	4
Receiving waters	4	4	1	2	3	2	3	1	1	2	2	3	3	4	2	3	2

Table 3: Risk assessment rating table for Elwood- St Kilda area

Elwood- St Kilda		Construction	Rubbish collect		External		Land use changes	Sewer	Mgt of s/w	Illegal							
Values	**Weighting**	**& development**	**& disposal**	**Litter**	**catch activities**	**Recreational**	**/planning**	**overflows**	**system**	**connections**	**Flooding**	**Dog poo**	**Transport**	**Residential**	**Syringes**	**Illegal dumping**	**Retail/business**
Public Health and Safety	4	2	3	3	2	3	2	3	2	2	3	3	2	3	4	3	2
Water resource	3	1	2	2	2	2	2	1	2	2	1	1	1	2	1	1	2
Economic	2	1	2	3	2	1	2	1	1	1	2	1	1	1	2	2	3
Flora and Fauna	3	1	2	3	2	1	2	1	1	1	1	1	1	2	1	1	1
Visual/landscape	4	4	3	4	1	3	2	1	2	1	3	2	2	2	4	3	3
Recreation and leisure	4	2	2	4	2	4	2	2	2	1	2	2	2	2	4	2	3
Tourism	4	1	2	2	1	2	1	1	2	1	1	1	1	1	4	2	4
Penguins	3	3	2	4	1	2	2	2	1	2	1	1	1	1	2	2	3
Foreshore environment	4	3	3	4	2	3	2	1	2	2	2	1	2	2	3	2	2
Foreshore amenity	4	4	3	4	2	3	2	1	2	2	1	2	2	3	3	1	2
Elwood canal environment	2	1	2	1	2	2	1	1	2	2	2	1	2	2	3	2	2
Elwood canal amenity	3	3	3	4	2	3	2	1	2	2	1	2	2	2	3	1	2
Flood protection	4	4	2	3	2	2	3	2	3	2	4	1	2	3	1	1	2
Receiving waters	4	1	3	4	2	2	2	2	2	2	1	2	2	2	1	1	1

Table 4: Risk ranking table for South and Port Melbourne area

Sth & Port Melbourne																					
Values	**Weighting**																				**SUM**
Public Health and Safety	4	16	12	12	16	12	8	4	8	16	12	4	12	8	16	16	12	12	12	4	**212**
Water resource	3	6	6	3	6	3	3	3	3	3	3	6	6	6	6	6	9	6	3	12	**99**
Economic	2	8	6	2	6	8	4	2	2	4	2	4	4	2	2	6	6	4	2	8	**82**
Flora and Fauna	2	4	6	2	2	4	2	6	2	2	2	4	4	2	4	6	4	2	2	6	**66**
Visual/landscape	4	16	16	12	12	16	12	12	16	16	4	8	12	4	12	16	8	12	12	12	**228**
Recreation and leisure	4	12	16	8	12	16	8	8	16	16	8	8	8	4	8	12	8	12	12	12	**204**
Foreshore environment	3	9	9	9	12	9	6	9	3	9	6	9	9	6	6	9	6	9	9	9	**153**
Foreshore amenity	4	8	16	8	12	12	8	4	4	12	8	8	12	12	8	12	12	12	12	12	**192**
Tourism	2	2	4	2	2	8	2	2	2	4	2	4	2	2	2	4	2	2	2	6	**56**
Remnant saltmarsh	3	12	9	9	9	9	9	12	3	9	6	6	6	6	6	9	6	6	6	9	**147**
Flood protection	3	12	6	6	6	6	12	3	3	3	9	6	3	6	9	6	12	6	3	9	**126**
Receiving waters	4	4	16	12	8	8	8	4	16	4	8	8	8	8	8	12	8	8	8	8	**164**
SUM		**109**	**122**	**85**	**103**	**111**	**82**	**69**	**78**	**98**	**70**	**75**	**86**	**66**	**87**	**114**	**93**	**91**	**83**	**107**	

Table 5: Risk ranking table for Albert Park area

Albert Park																		
Values	**Weighting**																	**SUM**
Public Health and Safety	4	12	12	12	16	12	8	4	16	8	8	8	4	16	12	12	12	**172**
Albert Park Lake	4	16	12	12	16	4	8	4	4	8	8	12	8	8	8	16	12	**156**
Economic	2	4	2	2	4	2	2	4	4	2	2	2	4	4	4	4	2	**48**
Flora and Fauna	3	3	6	3	3	3	3	3	3	3	3	9	6	9	3	3	6	**69**
Visual/landscape	4	16	12	16	12	8	12	8	16	4	4	8	12	12	12	16	12	**180**
Recreation and leisure	3	9	9	9	9	6	9	6	12	3	3	6	6	6	6	9	9	**117**
Foreshore environment	3	9	9	12	9	6	6	6	12	6	6	6	6	6	9	9	9	**126**
Foreshore amenity	4	16	8	8	12	12	8	4	12	8	12	8	8	8	8	16	8	**156**
Tourism	2	4	2	6	4	6	2	2	4	2	2	2	4	4	4	4	2	**54**
Flood Protection	2	4	8	4	4	2	2	8	2	6	4	6	4	6	2	4	8	**74**
Receiving waters	4	16	4	8	12	8	12	4	4	8	8	12	12	16	8	12	8	**152**
SUM		**109**	**84**	**92**	**101**	**69**	**72**	**53**	**89**	**58**	**60**	**79**	**74**	**95**	**76**	**105**	**88**	

Table 6: Risk ranking table for Elwood- St Kilda area

Elwood- St Kilda																		
Values	**Weighting**																	**SUM**
Public Health and Safety	4	8	12	12	8	12	8	12	8	8	12	12	8	12	16	12	8	**168**
Water resource	3	3	6	6	6	6	6	3	6	6	3	3	3	6	3	3	6	**75**
Economic	2	2	4	6	4	2	4	2	2	2	4	2	2	2	4	4	6	**52**
Flora and Fauna	3	3	6	9	6	3	6	3	3	3	3	3	3	6	3	3	3	**66**
Visual/landscape	4	16	12	16	4	12	8	4	8	4	12	8	8	8	16	12	12	**160**
Recreation and leisure	4	8	8	16	8	16	8	8	8	4	8	8	8	8	16	8	12	**152**
Tourism	4	4	8	8	4	8	4	4	8	4	4	4	4	4	16	8	16	**108**
Penguins	3	9	6	12	3	6	6	6	3	6	3	3	3	3	6	6	9	**90**
Foreshore environment	4	12	12	16	8	12	8	4	8	8	8	4	8	8	12	8	8	**144**
Foreshore amenity	4	16	12	16	8	12	8	4	8	8	4	8	8	12	12	4	8	**148**
Elwood canal environment	2	2	4	2	4	4	2	2	4	4	4	2	4	4	6	4	4	**56**
Elwood canal amenity	3	9	9	12	6	9	6	3	6	6	3	6	6	6	9	3	6	**105**
Flood protection	4	16	8	12	8	8	12	8	12	8	16	4	8	12	4	4	8	**148**
Receiving waters	4	4	12	16	8	8	8	8	8	8	4	8	8	8	4	4	4	**120**
SUM		**112**	**119**	**159**	**85**	**118**	**94**	**71**	**92**	**79**	**88**	**75**	**81**	**99**	**127**	**83**	**110**	

3.4 Risk assessment graphs

Value and activity rankings for Port Phillip are show diagrammatically in Figures 2 – 7.

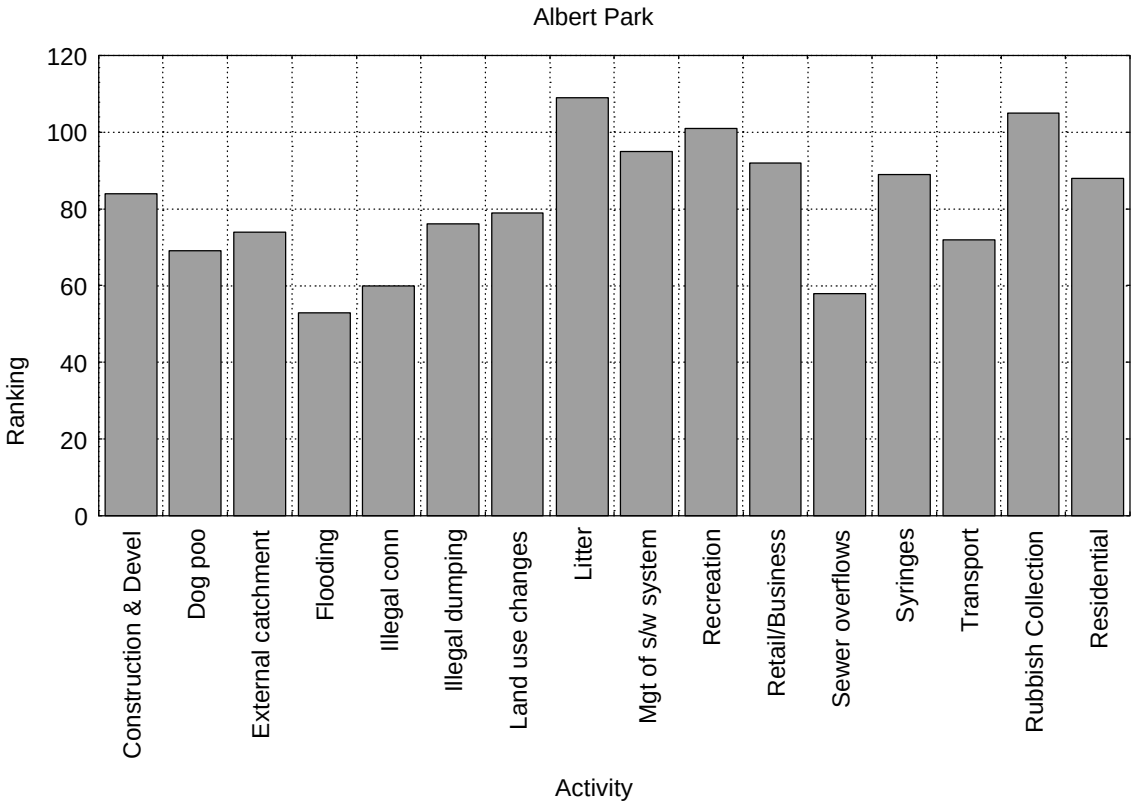

Figure 2: Ranking of activities in Albert Park area of Port Phillip

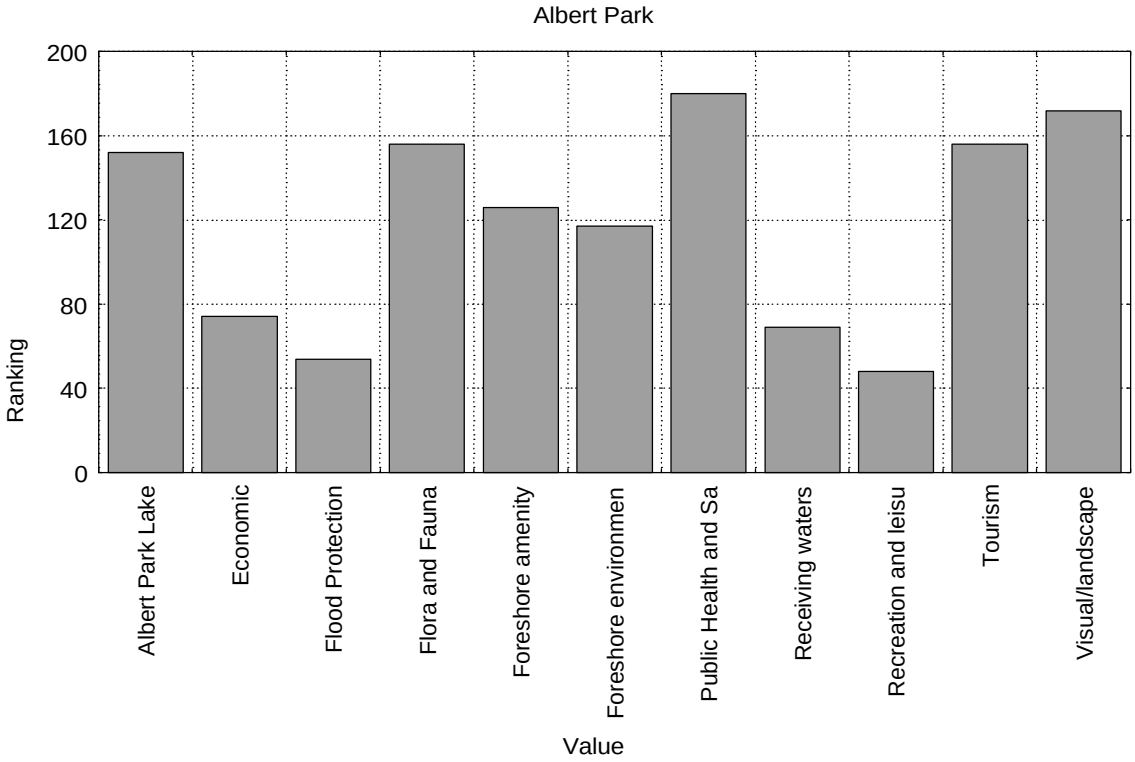

Figure 3: Ranking of values in Albert Park area of Port Phillip

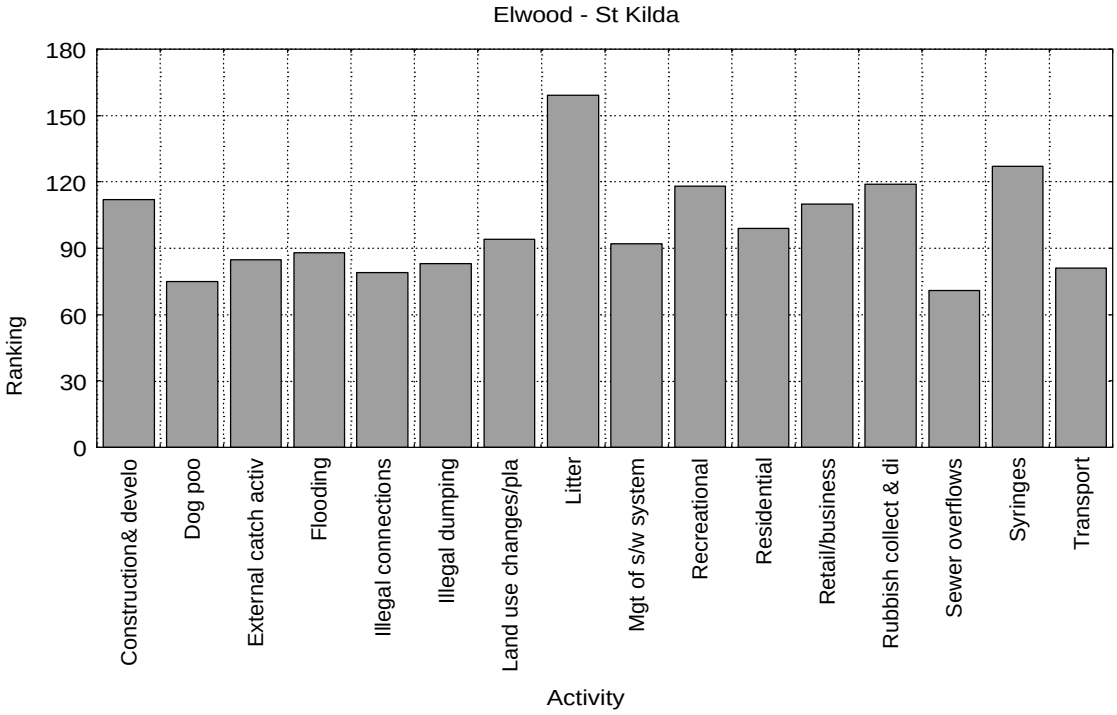

Figure 4: Ranking of activities in the Elwood - St. Kilda area of Port Phillip

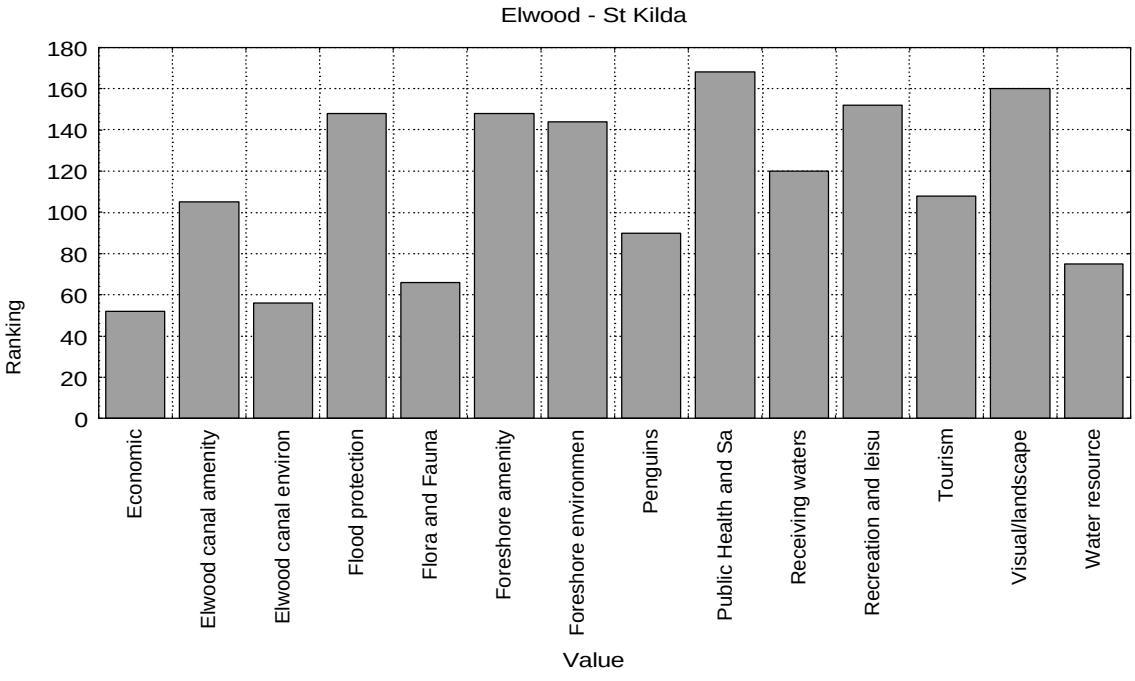

Figure 5: Ranking of values in the Elwood- St Kilda area of Port Phillip

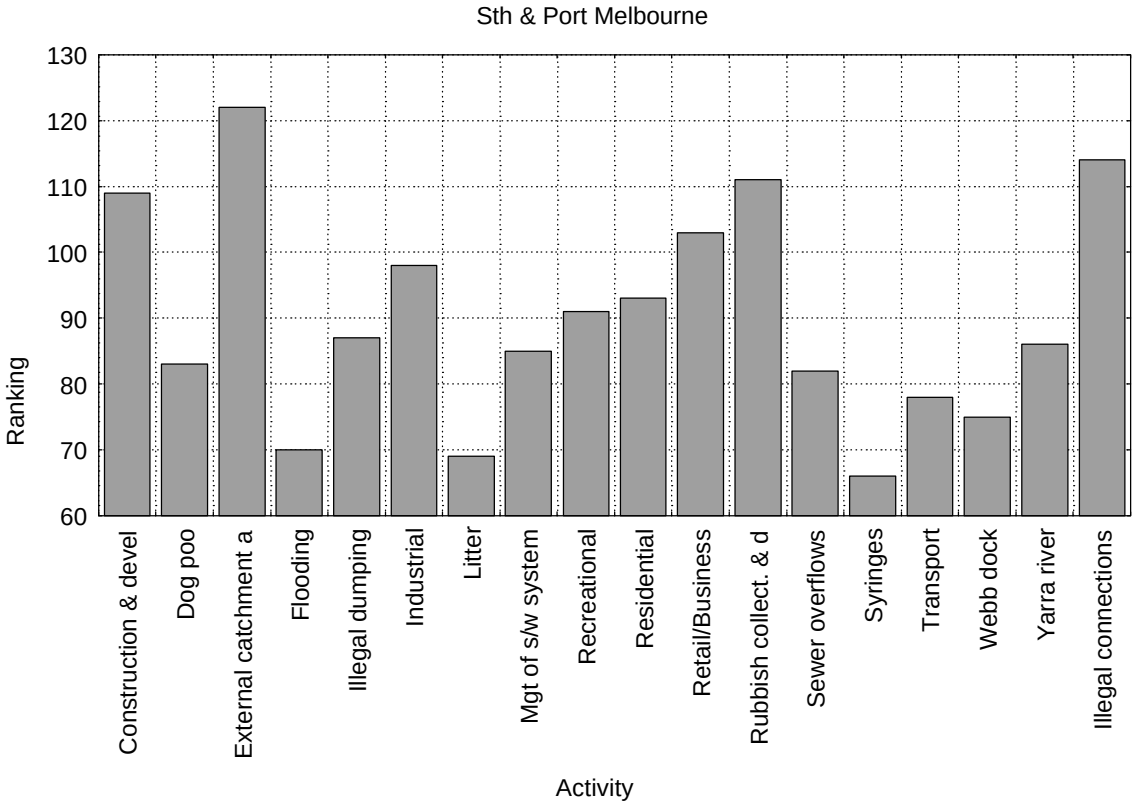

Figure 6: Ranking of activities for Sth and Port Melbourne area of Port Phillip

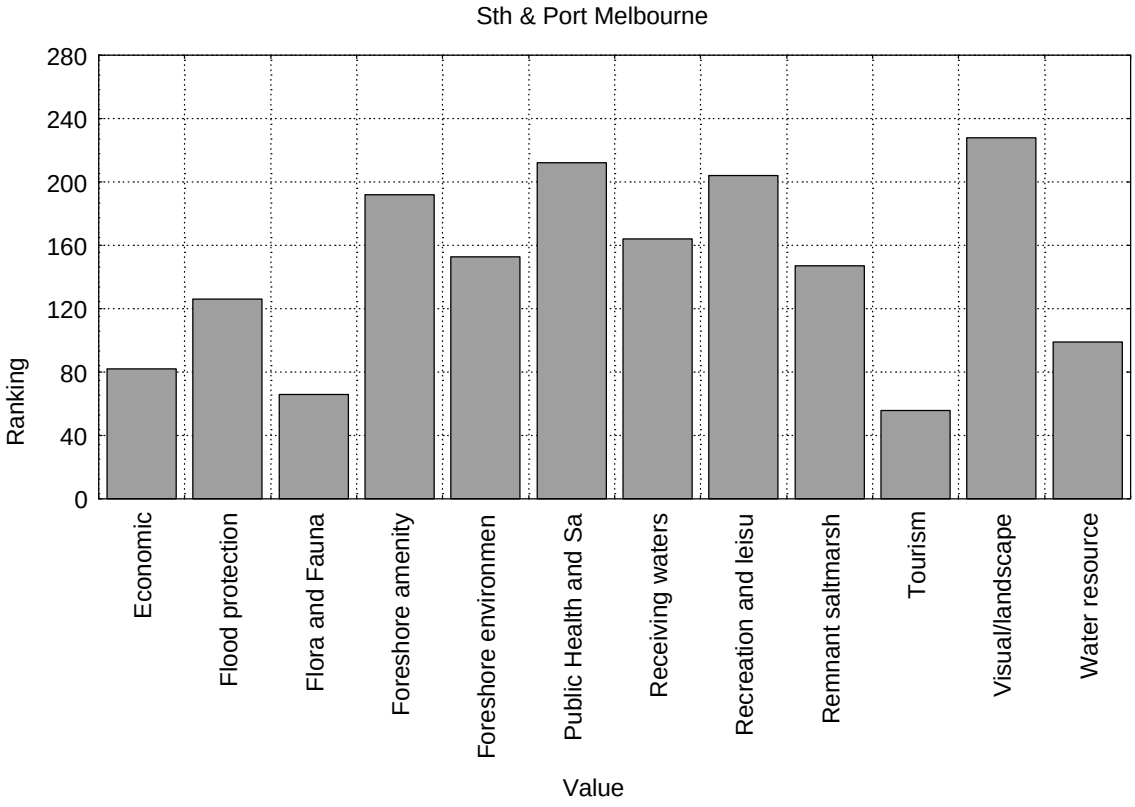

Figure 7: Ranking of values for Sth and Port Melbourne area of Port Phillip

4 Workshop Three Results

4.1 Option Assessment

Management options were assessed during the third workshop. For each threatening activity, identified in previous workshops, a number of options were assessed using four criteria, capability, cost, effectiveness and desirability. These four criteria were given a value of 1 – 4, and these numbers were then multiplied to get an overall rating for that option. The results of the option assessment are presented in Table 7.

Table 7: Option Assessment

ACTIVITIES Group One	Options	Examples	Capability	Cost	Effectiveness	Desirability	Overall rating
Land use changes/Planning	Urban Design- Council policy	Minimise development in sensitive/flood prone areas Incorporate policy mechanisms in MSS Set aside areas of minimal development Preparation of local environment plans (assessment of water quality impacts of new urban developments) at the land use planning stage Examine zoning requirements	4	3	3	3	108
	Application	Enforcement Development approval Increase requirements for stormwater management in planning Designated appropriate responsible environmental officer or environmental consultant to assess applications	4	3	3	3	108
	Design	Minimise impervious areas in new developments Water sensitive urban design Land capability assessment	2	1	4	3	24
Sewer overflows	Monitoring	Increase compliance requirements via EPA Stormwater connection to sewer Increase liaison with SE water Increase council inspection	3	3	1	4	36
	Planning	Upgrade facilities where appropriate	3	1	4	3	36
Management of stormwater system	Monitoring	Audit system for leaks/ illegal connections Regular maintenance of assets	3	3	3	4	108
	Education	Education i.e. tree roots, litter, illegal connections	4	3	3	4	144
	Capital expenditure	Upgrade with new technology where appropriate	4	1	4	4	64
Residential activities	Education	Education programs including minimising the amount of water used and undertaking washing on pervious surfaces, appropriate disposal of grass clippings/garden clippings and fertiliser use Promotion of use of carwashing facilities Label stormwater drains	4	3	3	4	144
	Capital / Maintenance works	Increased street cleaning	4	2	2	4	64
Dog poo	Monitoring and Compliance	Compulsory pickup by owners Increased fines and regulation Removal of droppings, particularly from impervious surfaces	2	3	2	4	48
	Planning	Designated dog walking areas	4	4	1	4	64
	Education	Education programs	4	3	3	4	144
Retail/business activities	Maintenance and operations	Increased garbage collection Water audit and recommendations for reductions	2	4	3	3	72
	Enforcement planning						
	Education	Waste minimisation campaign Education re: disposal and drains	3	3	3	4	108

ACTIVITIES Group 2	Options	Examples	Capability	Cost	Effectiveness	Desirability	Overall rating
Rubbish collection and disposal	Capital Expenditure	Switch to sealed wheelie bins where possible	4	1	4	4	64
		Purchase appropriately designed vehicles for refuse collection and transport					
		Increase in recycling					
	Education	Community education re. Presentation of materials for recycling	4	4	3	4	192
		Introduce lidded recycling containers	4	2	3	4	96
	Operation and Maintenance	Adequate maintenance for refuse collection vehicles					
Recreational	Capital Expenditure	Revisit recreational usage within the council	4	2	2	3	48
		Where possible provide designated paths/tracks and car parking areas					
		Irrigation systems					
		Re-use runoff in parks					
	Maintenance	Encourage community ownership of parks/reserves	4	3	3	4	144
		Education programs					
		Local laws control e.g. motorbikes/vehicles/horses/dogs					
		Appropriate water and fertiliser/herbicides use					
Illegal connections	Assessment	Audit sewer and stormwater system	3	3	3	3	81
	Education	Education programs	4	4	2	3	96
	Enforcement	on change of ownership	3	3	4	4	144
External catchment activities	Catchment Management	Work with other councils to minimise flow on effects	2	4	3	4	96
		Ensure stormwater management is priority in external councils (implement stormwater management plan)					
		Community education/involvement					
Syringes	Capital works	Syringe collection service	4	4	2	4	128
		Syringe deposit boxes increased					
	Education	Education	4	4	3	4	192
Flooding	Capital works	Installation of new drains, where appropriate					
		Levee banks, where appropriate					
		Stormwater reuse- rainwater tanks					
		Stormwater infiltration- infiltrate roof runoff					
		Porous pavements					
		Retarding basins					
		Constructed wetlands					
		Pervious stormwater pipes					
		Grass swales					
		Install seepage pits, trenches					
		Install buffer strips					
		Construction and use of lakes for recreational purposes					
	Maintenance	Clearing of existing drains					

ACTIVITIES Group 3	Options	Examples	Capability	Cost	Effectiveness	Desirability	Overall rating
Construction and Development	Environmental Management Plans for Large Construction sites	minimise the extent of disturbed areas rapid revegetating disturbed areas, increase onsite requirements for runoff diversion/minimisation/ treatment preserve existing habitats in new developments (minimise clearing where possible)	4	3	3	4	144
	Adoption and implementation of EPA's "Environmental guidelines for major construction sites"	education aimed at construction workers about erosion and sediment control wetland construction minimise impervious areas equipment and materials (e.g. fuel and chemicals) storage and maintenance Local laws - policing of off-site impacts (e.g. soil erosion) Dust suppression on construction sites					
	Small Construction areas- effective site management	the extent of disturbed areas are minimised requirements for runoff diversion/minimisation/treatment are in place impervious areas are minimised Local laws - policing of off-site impacts (e.g. soil erosion) Guidelines for site management included in development approval process	4	4	3	4	192
	Devvelopment design	revegetation	4	4	3	4	192
Illegal dumping	Capital Expenditure	Provide facilities for disposal of oils and chemicals	3	1	3	4	36
	Monitoring	Increase vigilance and monitoring (EPA) Local laws- close access points to problem areas e.g closing gates at parks	3	3	2	2	36
	Education	"Dob in a dumper" type campaign Increase community awareness of what is happening	4	3	3	4	144
Transport	Maintenance of all vehicles	Ensure all council owned vehicles are RWC and undertake car / log book inspections Keeping cars tuned	4	4	4	4	256
		Emergency response plans in place for trucks/tankers to address spills into stormwater	2	3	1	3	18
Industrial activities	Planning, design and construction	Minimise further industrial development (where possible) Reduce possibility of runoff by decreasing impervious areas EMPs	2	4	3	4	96
	Monitoring	Increase compliance requirements through EPA Regular inspections by "Health and Safety" officer	1	4	4	4	64
Littering	Capital Expenditure	Install more rubbish bins in problem areas Switch to sealed wheelie bins where possible Install litter traps (baskets, racks, booms) where possible, including regular checking (Gross pollutant traps, sediment traps)	4	2	2	3	48
	Operations (control of source)	Increase frequency of collection for bins in parks/open space and commercial areas Increase street sweeping areas					
	Education	Increase community education about where their litter ends up Increase community pride in surrounds	4	3	2	4	96

5 Review of planning schemes and Municipal Strategic Statements

The City of Port Phillip occupies the former municipal areas of St.Kilda, Port and South Melbourne. The city has an area of 20.4 square kilometres and a population of 73,092. Population densities in the residential areas of Port Phillip are high, with the city having one of the highest proportions of flats and apartments in metropolitan Melbourne. These types of dwellings make up 59% of all buildings, with 17% being detached and, 24% being attached dwellings.

Port Phillip has 9 kilometres of foreshore, stretching from Webb Dock in Port Melbourne to Head Street, Elwood.

5.1 Municipal Strategic Statement

The MSS identifies the following issues being critical to the future use and development of the City:-

- Residential Land use
- Foreshore
- Urban character, urban design and public spaces
- Heritage conservation
- Tourism
- Parkland and public open spaces
- Commercial land uses
- Industrial land use
- Retail land use
- Traffic and transport

Local policies

The Municipal Strategic Statement contained numerous local policies for each of the neighbourhood shopping centres. These policies were concerned about land uses changes within these commercial precincts that involved the establishment of bars/taverns etc. Other polices are related to gaming, urban design, telecommunications, advertising , commercial land use strategy and the Port Phillip housing strategy have also been included.

Polices that relate to stormwater and infrastructure include:-

- Drainage policy
- Port Melbourne Foreshore Strategy - Development Contributions

The Drainage policy is based on ensuring that drainage works are based on sound engineering practice. The document contains design standards and guidelines.

The Port Melbourne Foreshore Strategy was completed in response to the redevelopment of light industrial areas along the foreshore being replaced by residential uses. The development contributions relate to the extensions of footpaths, on street car parking, street furniture and urban design related issues.

Zones and overlays

The Residential (1 & 2, Mixed Use), Business (1,2,3,5), Industrial (1 & 3), Public Use, Road, Special Use, Comprehensive Development zones and, the Environmental Significance and Design and Development overlays have been applied, from the Victoria Planning Provisions. Appendix 1 identifies each of these relevant controls

Special Building Overlays - Amendment L63 to the Port Phillip Planning Scheme

A recent amendment to the Port Phillip Planning Scheme (L63) has introduced the Special Building Overlay throughout the municipal area. The amendment was prepared in consultation with Melbourne Water and relates to land affected by natural overland stormwater flows of a 1 in 100 year intensity. The amendment introduces two overlays areas, being SBO1 and SBO2.

This overlay was developed in response to the first revision to the Victoria Planning Provisions in October 1997 (V3). This overlay was not available to planning schemes that were exhibited in 1997

Special Building Overlay 1 applies to those areas which Melbourne Water is the relevant drainage management authority. Special Building Overlay 2 applies to those areas where Council is the drainage authority. A planning permit is generally required for all buildings and works. Most applications will be referred to Melbourne Water for comment within the area defined by SBO1.

The introduction of the Special Building Overlay does not relate to management of stormwater or to any improvement in stormwater quality - it is simply introducing more accurate information about flooding into the current Port Phillip Planning Scheme.

5.2 Port Phillip Corporate Plan

The corporate plan is divided into seven (7) *Key result areas and objectives (KRA).* KRA 4 deals with the environment, with one of the three year objectives being to *develop controls and guidelines to promote environmental design and management.*

The priorities for 1998/99 for KRA4, include *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.

5.3 Overview

In terms of identifying issues within the SPPF under sub clauses;

- 15.01 Protection of catchments, waterways and groundwater
- 15.02 Floodplain management
- 18.09 Water supply, sewerage and drainage
- 18.12 Developer contributions to infrastructure

The Municipal Strategic Statement does not offer any environmental or infrastructure profile. Issues concerning the natural environment, infrastructure (drainage, flooding) have also not been identified. General statements about the environment are included within Section 21.02-2 Foreshore.

The closest the MSS comes to identifying infrastructure is within section 21.02-7 Commercial land use which lists an objective as *maintaining and enhancing public and private infrastructure in commercial areas, such as roads, parking, public transport, drainage, street trees and public open space as necessary.*

No strategies are listed within either 21.02-2 Foreshore or 21.02-7 Commercial Land Use that indicate the objectives are to be achieved. The Municipal Strategic Statement does not examine or quantify any of the environmental pressures that are occurring within the Port Phillip and Yarra catchments. The concept of catchment planning has not been addressed within the Municipal Strategic Statement.

The scheme has been developed in response to those issues that are typical to an inner city municipality, i.e. built environment, design and location of buildings and control over use and developments.

The report of the Independent Panel on the new MSS and planning scheme states:-

> *Whilst the elements of these strategies can be discerned from the maps and framework plan in the MSS and the Planning Scheme Maps, the MSS as a whole suffers from having both its objectives and strategies couched in very general terms. Port Phillip was one of five pilot schemes intended to test the planning reforms. Port Phillip is not alone among the early schemes to suffer this characteristic of generalisation. The Panel considers that experience in using the MSS will demonstrate the need to be more specific about objectives and clearer about the strategies for achieving those objectives. The Panel does not consider that this is a matter which should be reviewed before adoption of the Scheme, but is something which the Council should consider as part of its first general review.*