

# Smart Water Plan

An integrated approach to  
water management for the  
Mornington Peninsula





MORNINGTON  
PENINSULA  
*Shire*



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## Executive Summary

As the population across the Mornington Peninsula Shire grows, demand on the supply of urban water increases, ecological impacts on local waterways worsen, and additional pressures impact on the liveability of our neighbourhoods. Water is widely recognised as the 'enabler' of many environmental and community wellbeing outcomes. The mix of urban and rural land use on the Mornington Peninsula presents some unique challenges and opportunities in terms of new infrastructure and planning associated with integrated water resource management.

The Shire has an obligation to manage its water resources sustainably under the State Environmental Protection Policy (SEPP). Environmental protection is a key outcome of the SEPP and sustainable water management and demand management are the fundamental platforms to achieving these long term outcomes. The strategic directions and actions outlined in Mornington Peninsula Shire's Smart Water Plan will ensure the Shire continues to make significant advances towards sustainable water resource management practices in line with local and state directions.

Each year, approximately 54,770 million litres (ML) of water is consumed across the Shire by industry, residents and council. 12,500 ML is sourced from reticulated mains water (145 ML supplied to Council assets), 855 ML is rainwater (40 ML supplied to Council assets), 13,800 ML extracted from groundwater (1,770 for domestic use), 4,600 surface water diversions and 23,018 ML is recycled water from Eastern Treatment Plant (18 ML is sourced from Local Treatment Plants; Boneo, Hastings and Mt Martha).

Since 2001, Council has reduced reticulated mains water use by 52% and the community and non-residential has reduced reticulated mains water use by 45%. This has been achieved through conservative investment in demand management and alternative water solutions to augment the use of potable mains water.

It is recommended council adopt new water conservation and alternative water source targets for 2017. They are:

- 30% reduction in mains water use across council owned assets from 2013 figures (that is, additional 15 ML each year conserved or replaced with an alternative supply), and

It is recommended council support the community to continue to conserve potable water for residential and non-residential demands. To ensure long term reliability of supply, the community aspiration is;

- Encourage the maintenance of 155 litres per person per day per household
- Support the reduction in potable mains water use by the commercial and industrial sector

Each year, approximately 215,000 ML of excess stormwater flows to Port Phillip Bay or Bass Strait, carrying pollutants such as nitrogen, phosphorus and suspended solids. Analysis of stormwater pollutants from different surface types and land use zones across nine subcatchments across the Shire found that roads (including car

parks and driveways) generate significant loads of Total Suspended Solids (3,000,000 kg/yr) and Total Phosphorus (4,500 kg/yr). The largest amount of Total Nitrogen is generated from roof surfaces (14,000 kg/yr).

In line with the State Environmental Protection Policy, the proposed stormwater quality targets are an 80% reduction in Total Suspended Solids (TSS) loads, 60% reduction in Total Phosphorus (TP) loads and 45% Total Nitrogen (TN) loads across the municipality.

Many actions already undertaken locally by Council, the community and other stakeholders contribute to sustainable water management outcomes and include:

- saving mains water through demand management measures and behaviour change;
- minimising the discharge of (treated) wastewater to receiving environments through demand management and recycling;
- treating stormwater to meet water quality objectives for harvesting and reuse and/or discharge to waterways;
- managing catchment hydrology for sustaining the health of aquatic ecosystems, particularly the protection of aquatic habitats, and
- Protecting groundwater from contaminants and unsustainable extractions.

To date, stormwater treatment and harvesting measures have reduced pollutant loads by 7% for TSS, and 9% for TP and TN (measured against the baseline year 2001). Achieving the State Environmental Protection Policy objectives is a long term commitment, requiring sustained financial investment over many years. Based on Council's current average annual investment in stormwater treatment (\$270,000) best practice will be achieved over the long term. Doubling Council's annual investment to \$540K/yr (including 5km treating roads treated using WSUD), private rainwater tanks (200 installation/yr), and 1 partnership wetland (every 5 years) will significantly reduce the time frame in which best practice is reached.

The Shire's current investment in water quality is integrated across a range of existing programs and partnerships. Some new capital investment is required to achieve the target, as well as new models for investment. Further government and private partnerships will be sought to maximise the success of the strategy implementation.

It is recommended that Council adopt annual targets for stormwater quality improvement to ensure that we maintain a commitment to meeting the Policy objectives. This equates to an annual removal of 30,744kg TSS, 48kg removal of TP and 240kg TN.

If doubling Council investment scenario is adopted, the Shire will see:

- Green infrastructure such as wetlands, tree pits, rain gardens and swales will improve water quality by trapping rubbish, and removing silt and other pollutants returning clean stormwater to local waterways and lakes. This will result in healthier local waterways and cleaner beaches.
- Enhanced water security through diversification of supply. Parks and sports fields will have reliable alternative water supplies and support an active and healthy community.
- Town centres, parklands and gardens will be revitalised with green infrastructure to create a healthy living environment, provide microclimate benefits and enhanced landscapes for community wellbeing and liveability outcomes.
- Best practice stormwater management will be achieved across the Shire.

This plan outlines strategic options for the Shire to ensure it continues to meet the State obligations for water demand management and water quality protection in an integrated and sustainable way. The key actions across each of the nine catchments prioritise the strategies that will ensure the Shire continue to make a strong commitment to sustainable water resource management.

# 1.0 Sustainable Water Resource Management

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Mornington Peninsula's Smart Water Plan provides strategic direction and outlines a plan for the sustainable management of all water sources (potable water, wastewater, rainwater, stormwater and groundwater) so that water is used optimally. The plan reflects the Shire's operational use of water as well as the broader community's interest, growth and land use practices. The strategic options apply to all scales of development and including infrastructure and water conservation measures to achieve multiple beneficial outcomes that are achieved through coordinated planning, organisational commitment, sustainable development and consideration of related resources (including energy use).

## 1.1 The Shire Context

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In the face of population growth, changes in land use practices, growth in tourism and the potential change in climatic conditions, traditional water supply solutions are not seen as sufficiently robust to provide adequate security of supply into the future. Without actively addressing water management issues Mornington Peninsula is likely to become increasingly vulnerable to the impacts of reduced potable water availability, increased susceptibility to flood events and urban heat island impacts, and environmental degradation of waterways, beaches and other natural assets.

Since 2002, Victoria has faced significant water shortages and have adapted to this change through a range of effective measures. The range of water conservation initiatives lead to a significant decrease in household and industry water use and a growing awareness about the dynamic interactions of the water cycle.

For the Mornington Peninsula, the main factors that influence water consumption, whether it is potable mains water or groundwater are rainfall patterns, rural land use and water

restrictions. The cost of water, economic growth and demographics will also affect the way in which we continue to access and use water. Sustainable water resource management provides for the integration of urban water systems with appropriate uses for rainwater, groundwater, surface water, wastewater, stormwater and potable water. Long term planning and water sensitive design is fundamental in providing an integrated approach to water management that allows for a suite of fit-for-purpose water supply options and water quality management.

Without further investment in new sources of water, water efficiency programs will fail to provide water security for the community past the next decade. Water pricing was traditionally marginal; however future projections indicate a rise in potable water prices above standard inflation.

The Mornington Peninsula Shire is in a position to address the operational use of existing water supply and work to build capacity in the community to embrace the new paradigm in water resource management.

## 1.2 Vision and Principles

To ensure that the Mornington Peninsula Shire and its community continue to provide a leading role within water resource management across the State, the Shire has developed a comprehensive vision, supported by a set of guiding principles that are applied to the assessment of the range of options available to meet the overarching targets (Figure 1).

Recognising that this Strategy needs to reflect the future challenges that face a changing community and climate, it sets short actions that will achieve a vision for a resilient water resource on the Mornington Peninsula Shire into the future.

### The VISION

The Mornington Peninsula Shire inspires its community to value, protect and enhance its water resources assets to maintain the economic, social and environmental resilience of its operations and the support the broader community.

### The PRINCIPLES

- The Mornington Peninsula Shire and its community continue to protect and preserve the beneficial uses of the potable mains water, groundwater, stormwater and receiving waters.
- The Mornington Peninsula Shire and its community use water efficiently to support productivity.
- Water security and the values of the biodiversity as community assets drive the decision pathways for water resource management.



## 1.3 Integrated Water Management Principles

An Integrated approach to water management has emerged through the recognition that our water demands, water supply and water quality are not in balance. Traditional water supply strategies, stormwater management plans, and groundwater management strategies are losing significance when considered in isolation.

Integrated Water Management (IWM) recognise projects deliver multiple benefits across water security, protection of receiving waters, ecosystem services, social/political engagement, microclimate benefits, improved liveability and community well being.

Smart Water targets have been developed to assess projects benefits against water security through demand management and source substitution, and environmental protection of receiving waters (directed at stormwater quality improvement, flow management and groundwater protection). Further Smart Water cycle principles that can be achieved and should also be considered when assessing the merits of projects are:

### 1. Ecosystem services

Recognise ecosystem services such as, water quality treatment through the use of wetlands which can also provide a landscape and social amenity. Green infrastructures (such as, rain gardens, tree pits, vegetated swales and wetlands) can provide linkages to stands of fragmented vegetation located across broader open space network (such as, parks and waterway corridors). Green infrastructure can increase biodiversity through the provision of habitat for our native animals such as birds, beetles and macro-invertebrates. There is an understanding of the true value of protecting and rehabilitating natural ecosystems (such as local creeks, rivers and wetlands) and the services they provide (water quality protection, habitat etc). Values of services provided by constructed ecosystems (protecting water quality, providing landscape amenity) are also recognised.

### 2. Social/political capital

Have a smart, sophisticated and engaged community, living a sustainable lifestyle that is sensitive to the inter-dependent nature of the built and natural environments results from the progressive engagement to build social/political capital. Growing and learning from

local examples and knowledge is important in helping raise Council awareness and community understanding about IWM. More broadly, this contributes to engaging on sustainable water management practices and promoting the uptake across rural properties and the urban private domain.

### 3. Microclimate benefits

Green infrastructures (such as, rain gardens, tree pits, vegetated swales and wetlands) that are passively irrigated by alternative water sources improve the health of the vegetation and retain water within the soils and landscapes. Collectively, this is beneficial to improving urban microclimates. Higher density canopy cover can reduce heatwave impacts (by improving the thermal comfort of streetscapes and open spaces) which may benefit groups at high risk to exposure to high temperatures. Alternative water sources can provide additional water for active irrigation of open spaces that further reduced the urban heat island effect through enhanced evapotranspiration.

### 4. Improved liveability

Providing rural areas and residential suburbs that are healthy places to live and work and that exist in harmony alongside local waterways, local parks and bushland reserves. Choosing solutions that create a liveable city with a sense of place, also recognising the multiple services provided by ecosystems such as water quality treatment, landscape and social amenity. Public spaces are environments available to everyone, promoting social inclusion. Communities are actively (as opposed to passively) engaged in decision-making and respond to signals in their environments regarding responsible water use. Providing environments that protect communities from localised flood and stormwater retention.

### 5. Community well being

Green infrastructure (such as, rain gardens, tree pits, vegetated swales and wetlands) significantly contributes towards high quality streetscapes and open spaces. It's increasingly becoming recognised for its contribution towards improve community well being (mental and physical) through promoting passive recreational activities such as walking.



## 2.0 Water Policy

Figure 1. identifies the policy and operations framework that influences our community on the Mornington Peninsula. The management of water is guided by Commonwealth, State and Local requirements.



Figure 1. Policy context

## 2.1 Commonwealth

Environment Protection and Biodiversity (EPBC) ACT 1999 is the overarching legislation for the protection of native species and enhancement of their natural habitat including the waterways and the species that they support.

The National Strategy for Ecologically Sustainable Development (ESD) provides strategic directions for governments' policy and decision-making in

use and management of natural resources. The strategy facilitates a coordinated and co-operative approach to ecologically sustainable development and encourages long-term benefits for Australia over short-term gains. All states and territories adopted the strategy in 1992.

## 2.2 State Government

The Planning and Environment Act (1987) is the policy and legislative instrument that provides Councils with the greatest ability to influence water management within the community. It allows Council to require developers to incorporate water conservation, water reuse and stormwater quality measures into developments.

Clear and unambiguous planning policy mandating attainment of stormwater pollutant load reductions for all residential subdivisions exists under Clause 56.07 of the Victorian Planning Provisions.

The Victorian Government recently released Living Melbourne, Living Victoria policy reform documents that commit the State to better use of all water resources; commits to the use of recycled water (treated wastewater) and harvested stormwater to provide for growth in demand whilst delivering multiple beneficial outcomes across local environments, increased liveability and microclimate benefits.

The State Environment Protection Policies (SEPPs) established under the Environment

Protection Act (1970) set the statutory framework for protection of waterways throughout the State. The SEPPs identify a range of responsibilities for local government in protecting water quality.

The Urban Stormwater Best Practice Environmental Management Guidelines (Victorian Stormwater Committee, 1999) establish targets for annual stormwater pollutant load reductions of 80% for total suspended solids (TSS), 45% for total phosphorus (TP) and 45% for total nitrogen (TN). These targets are now referred to in the State Planning Policy Framework and form part of the attainment program for the SEPP - Waters of Victoria. These guidelines are soon to be updated and to include enhanced flow frequency targets and an increase in removal of TP to 60% (which is inherently attained when TSS and TN targets are achieved).

Melbourne Water are developing a Stormwater Strategy and Healthy Waterways Strategy 2013 - 2017 that will influence the direction and opportunities for Mornington Peninsula Shire.

## 3.0 Achievement to Date

Since 2001, Council has reduced reticulated mains water use by 52% and the community and non-residential has reduced reticulated mains water use by 45%. This exceeds the 45% reduction corporate water consumption target recommended in the Mornington Peninsula Shire Water Resource Management Plan, 2008-2012.

The Shire has a strong commitment to a water sensitive approach in its development and landscape management. With over 100 individual assets including raingardens and tree pits, the Shire is active in the implementation of effective water sensitive solutions. Over the last decade stormwater treatment and harvesting measures have reduced pollutant loads by 7% for Total Suspended Solids (TSS), 9% for Total Phosphorus (TP) and 9% for Total Nitrogen (TN).



## Special Report - Water Sensitive Urban Design in a changing climate

Climate change will have minimal impact on the efficiency and effectiveness of WSUD infrastructure.

- Analysis of future climate change impacts on the reliability of supply from stormwater harvesting and rainwater tanks found supply volumes remained within 5% of the today's calculations. For example, a typical stormwater harvesting scheme for irrigation of a sports field will still supply 3.5 ML/yr of a 5ML/yr demand (~70% reliability of supply).
- The sensitivities of pollutant removal by treatment measures including wetlands and raingardens found there will be no substantial reduction in pollutant removal performance (less than 10% under most climate change scenarios).

\*To read the full report, please visit the Shire website [www.mornpen.vic.gov.au](http://www.mornpen.vic.gov.au)

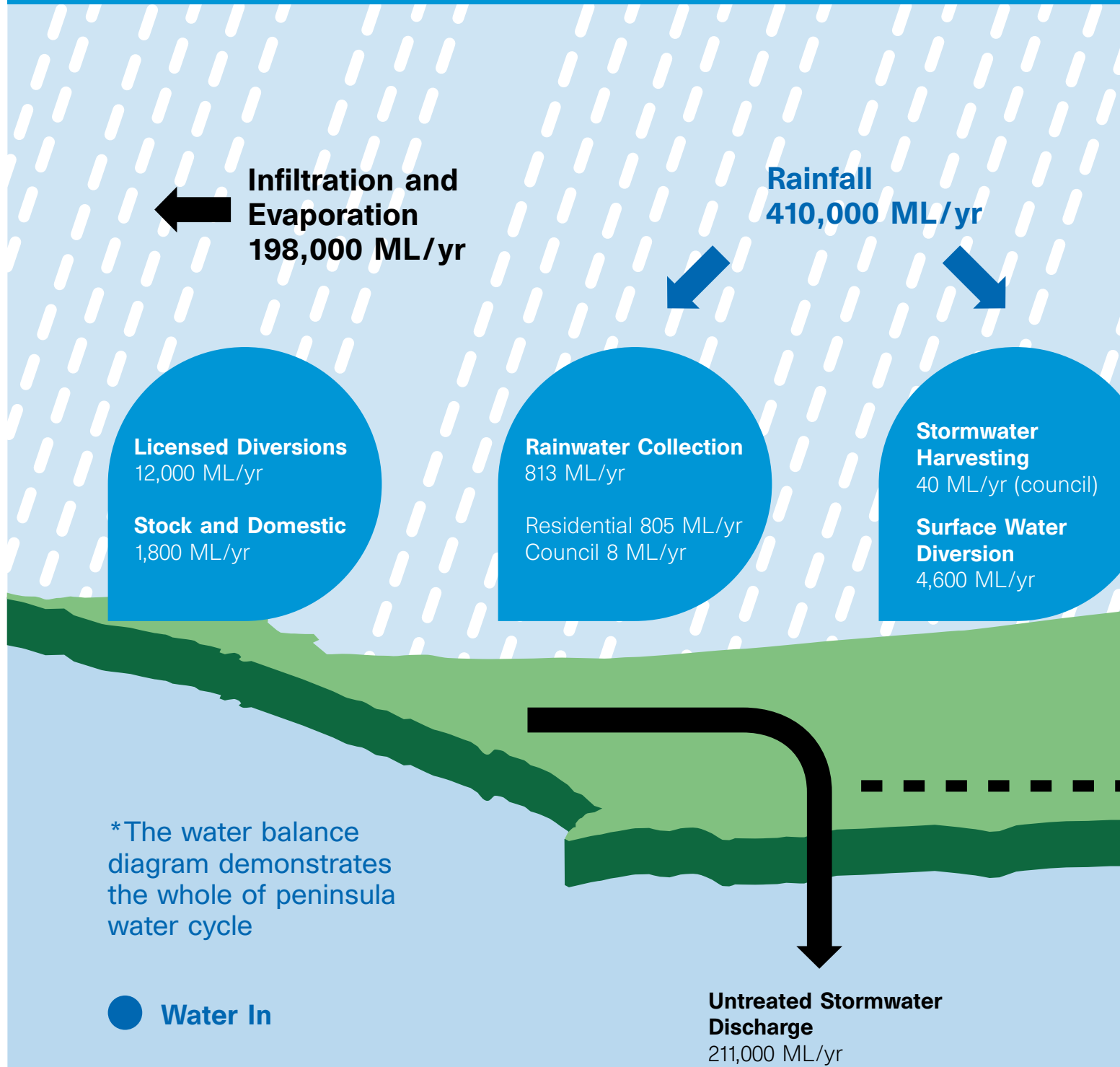
## 4.0 Mornington Peninsula's Water Balance

The Mornington Peninsula Shire is unique in its catchment hydrology, its vegetation types and supports the greatest length of coastline than any other local government in Victoria. With over 140,000 residents, over 30 unique townships, 46 Environmental Vegetation Classes, 8,000 businesses' and a world renowned tourism market, the Mornington Peninsula support a huge diversity of land uses and services.

By detailing the water balance for the entire Mornington Peninsula catchment, the Shire can work towards an approach that minimises the import and export of water resources across boundaries by maximising the use of available stormwater, rainwater and recycled water (treated wastewater) resources.

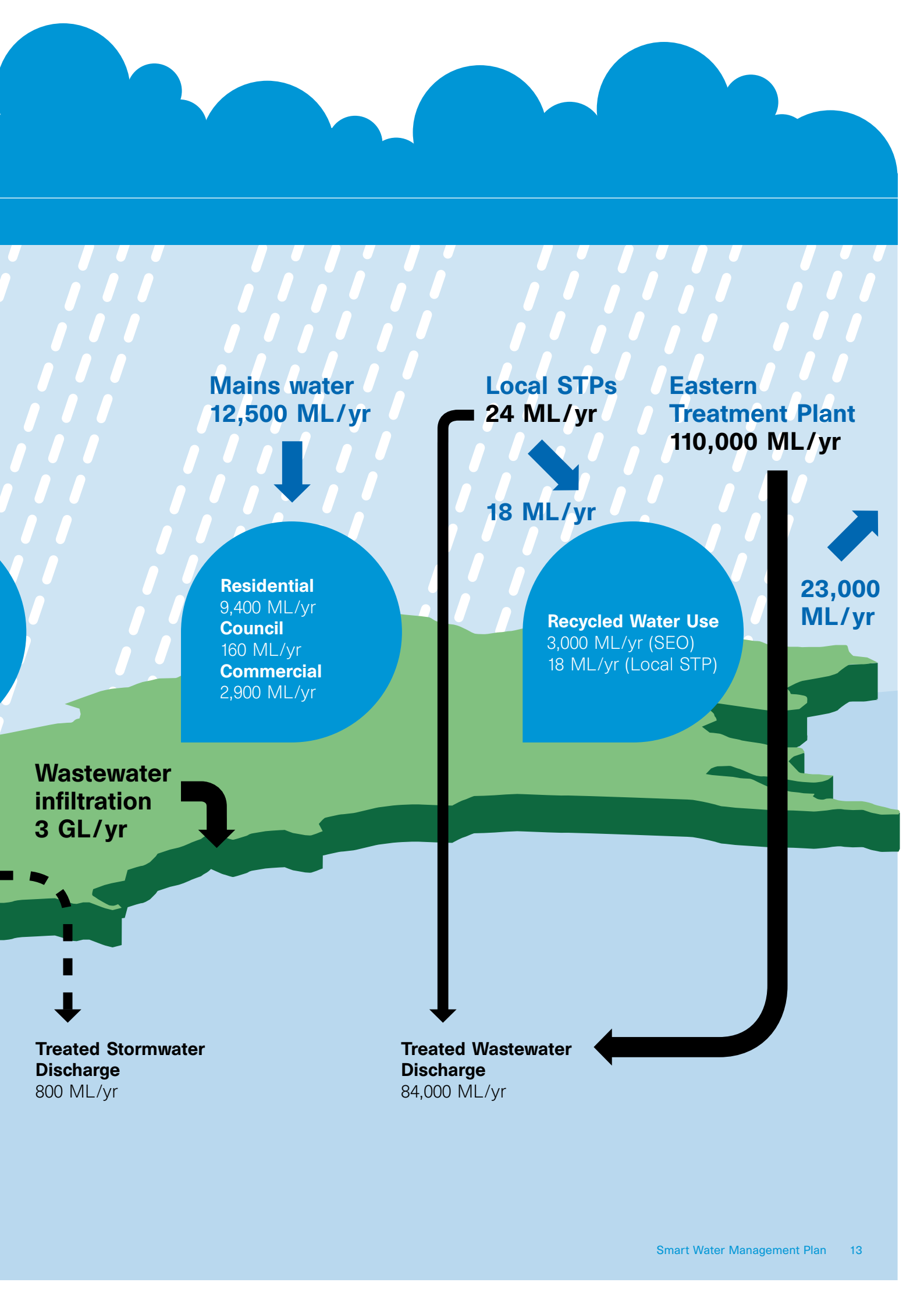


# Our Water - Mornington Peninsula's Water Balance



\*The water balance diagram demonstrates the whole of peninsula water cycle

- Water In
- Water Use
- Water Out



**Mains water**  
12,500 ML/yr



**Residential**  
9,400 ML/yr  
**Council**  
160 ML/yr  
**Commercial**  
2,900 ML/yr

**Local STPs**  
24 ML/yr



18 ML/yr

**Eastern Treatment Plant**  
110,000 ML/yr



23,000 ML/yr

**Recycled Water Use**  
3,000 ML/yr (SEO)  
18 ML/yr (Local STP)

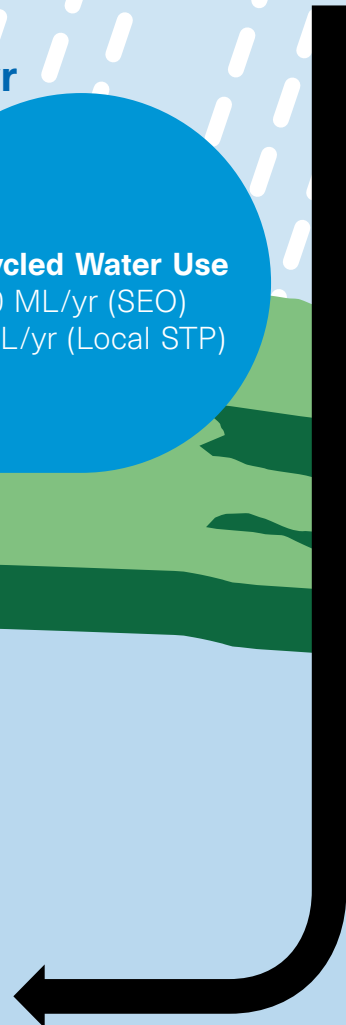
**Wastewater infiltration**  
3 GL/yr



**Treated Stormwater Discharge**  
800 ML/yr



**Treated Wastewater Discharge**  
84,000 ML/yr



## 4.0 Mornington Peninsula's Water Balance cont...

### WATER IN

- 410,000 million litres (megalitres or ML) of Water fall on the Mornington Peninsula Shire annually
- We use 12,500 ML of drinking water from Cardinia Reservoir annually
- 110,000 ML flows through the Shire from the South Eastern Sewerage Outfall annually

### WATER USE

- Household and Shire rainwater tanks collect 813 ML for reuse in our homes and facilities
- 3000 ML of recycled water each year is used in the Shire
- 13,800 ML of water infiltrates into the groundwater

### WATER OUT

- 211,000 ML of untreated stormwater enters our bays and waterways annual (about half of the rainfall)
- 84,000 ML of waste water is discharged into the ocean each year

From the water balance assessment it is clear that there are a range of alternative water solutions that the Shire can consider to meet the overall demand for water and further opportunity to protect the receiving waters. The Shire is in a unique position that it does not receive stormwater flow from any other catchments.

This plan uses best practice techniques to model the passive transfer of pollutant loads into the local waterways. This plan does not account for localised point source pollutants including direct or illegal discharge into drains. However recommendations will be made to address point source pollution including support for integral work of Waterwatch and Landcare volunteer groups.

## 5.0 Targets

Through this plan, the Mornington Peninsula Shire is committing to a set of solid, achievable and measurable targets that set the agenda for the continual improvement of assets and environmental protection across the Shire. The targets represent the degree to which Council can achieve best practice through its operations and maintain its leadership within the community.

Water security promotes the efficient use of all water resources. This can be achieved through demand management as well as source substitution using recycled water, rainwater, stormwater or groundwater. This plan identifies options to achieve the water resilient vision for the future. To achieve this, the following hierarchy is preferred in terms of implementation options taking into account smart water cycle management and cost of implementation.

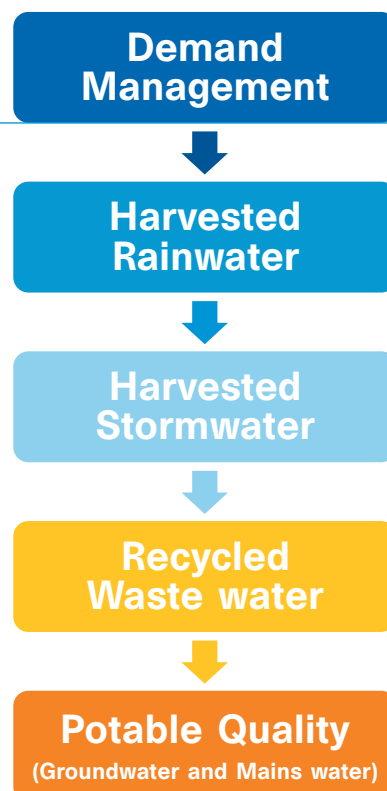


Figure 2. Hierarchy of Smart Water decision making

## 5.0 Targets cont...

The Smart Water Targets are annualised targets that work towards achievement by 2017. However meeting best practice in improving water quality is a long term objective, therefore the annual targets will ensure the Shire is on the right path for meeting the targets in the longer term.

### Smart Water Management Targets for 2017

#### Water Demand Management

##### Potable Water Conservation

| Council Objective                             | Target                | Community Direction                    | Measure                      |
|---|-----------------------|--|------------------------------|
| Cost neutral investment in water conservation | 30% reduction or 60ML | Support water efficiencies in the home | household use at 155L pp/day |

##### Groundwater Conservation and Protection

| Council Objective                                 | Target                                   | Community Aspiration  | Measure  |
|---|--|---|--|
| Reduce groundwater use for sportfields irrigation | 20% reduction in 2010 consumption - 15ML | Preference given to water tanks over stock and domestic bores | 50% reduction in the number of bore licences on the MP |

#### Source Substitution

##### Alternative Water Supply

| Council Objective   | Target              | Community Aspiration   | Measure                           |
|---|---------------------|--|-----------------------------------|
| To maximise the fit for purpose reuse of Class A recycled water | Additional new 45ML | To increase the number of rainwater tanks for retention and potable water augmentation | 60% of all homes with water tanks |

##### Stormwater Harvesting

| Council Objective   | Target               | Community Aspiration  | Measure          |
|---|----------------------|---|------------------|
| To integrate stormwater harvesting in drainage and capital works proposal where practical | 20% increase or 50ML | Best Practice stormwater management in all new developments | all applications |

#### Environmental Protection

##### Waterway Health Improvement

| Pollutant reduction - achieving best practice | Catchment Management  | Measure   |
|---|---|---|
| Total Suspended Solids                        | 3.5% reduction / year<br>30,744 kg / year   | Headwater flow protection<br>Consolidation of on stream dams          |
| Total Phosphorus                              | 3.4% reduction / year<br>48 kg / year   | Best Practice Farm Management<br>50% of PP land obtaining SFMP or LSR |
| Total Nitrogen                                | 2.7% reduction / year<br>240 kg / year  | Road - unmade roads targets<br>Treatment - 5km/road per year          |
| E.Coli  | Maintain <150 org/100ml in existing very good - good waterways<br>10% annual reduction in org/100ml in poor waterways |   |

## 5.1 Water Security and Demand Management

Water security aims to ensure future generations continue to have access to high quality potable water. It is achieved through demand management and diversification of supply. All water (mains and alternative water sources) should be viewed as a precious resource and managed to minimise it being wasted. The provision of supply for all water demands should be considered fit-for-purpose.

Mornington Peninsula Shire currently uses over 160ML of potable mains water and 75ML of groundwater for its operations that include sportfield maintenance, street sweeping, public building and facilities and road construction and maintenance. Whilst the Shire has reduced its total water consumption, there are still many opportunities to reduce the reliance on centralised potable mains and groundwater. With the cost of

mains water to increase over the next few years, the Shire would be well placed to look at potable water conservation in order to secure capital investment in new alternative supply projects.

### **Achieving the targets:**

Maintaining the current cost of potable mains water requires the Shire to reduce its consumption by 30% over the next four years, equating to 60ML and 15ML of groundwater. The total cost savings of this reduction is \$1.8 Million dollars over 4 years.

Maximising the Shire's use of existing recycled water allocation and continuing to develop recycled water reuse opportunities will further reduce the demand for potable and recycled water consumption and help to achieve the 45ML target for new recycled water in the region.

## 5.2 Environmental Protection of Receiving Waters

The Mornington Peninsula Shire supports range of significant environmental assets, including 190 km coastline 46 Environmental Vegetation Classes, 28% coverage of native vegetation and many significant groundwater dependent ecosystems.

The Shire has worked effectively in partnership with private and other land managers over many years having adopted a best practice approach to catchment health to deliver effective outcomes. However, there remains considerable work to be done to mitigate the effect of land use and climate change on our natural systems, including the Nepean aquifer and wetlands. Consideration also needs to extend to our impacts on the broader environment including the impact on energy consumption, life cycle of assets and potential innovations associated with new developments.

The groundwater of the Nepean Aquifer is impacted by reduced groundwater recharge, significant increases in extraction and nutrient enriched leakage from poorly maintained septic tanks. There is a growing amount of literature

being developed on the value of the Nepean Aquifer which supports the objective to reduce the reliance on the resource and to protect and manage the infiltration.

### **Achieving the targets:**

The Shire has an obligation to meet the Best Practice Environmental Management set out in the State Environment Protection Policy. The stormwater treatment targets reflect a doubling of Council investment over time to achieve best practice.

Further investment in integrating water quality targets into existing capital works and operations will ensure that progress towards the targets can be met through innovation in projects delivery rather than an increase in capital costs.

The Shire has also successfully delivered a range of partnership programs with Melbourne Water, leading to greater capacity within the Shire to meet the SEPP targets. Ongoing partnerships in both capital works and capacity building will be integral to the best practice implementation to the water quality targets.



## 6.0 Strategic Options

The peri urban nature of the life and work on the Mornington Peninsula presents some unique challenges and opportunities in terms of new infrastructure and planning associated with integrated water resource management. The strategic options, and key actions identified under the options, aim to apply integrated water cycle management targets and principles across new development, existing residential properties,

industry, Council assets, corporate strategies and policies. Strategic options provide benefits across the entire Shire and are deemed to be an important part of sustainable water resource management for all sub catchments. In many cases these strategic options are critical to ensuring the success of key actions across each subcatchment.

### Strategic Options – Structural

#### 1. Stormwater Quality Treatment – Rural Land

Design and construct major stormwater quality treatment opportunities to reduce sediment loads and nutrient loads conveyed from agriculture areas into waterways and eventually discharged to Port Phillip Bay, Western Port Bay and other valuable natural assets. Support stream frontage investment.

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#### 2. Stormwater Harvesting

Design and construct major stormwater harvesting opportunities for supply of water to golf courses, sporting ovals and other high water demand sites. Design harvesting projects in alignment with current best practice guidelines to ensure base flows are protected and sufficient environmental flow frequency is maintained.

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#### 3. Existing Road Renewal Program – integrated drainage

Unmade roads have been identified as one of the main contributors of pollutant loads, directly affecting the health of our catchment and waterways. Identify roads renewal projects on our capital works program that are to be sealed or having drainage upgrades so that all runoff is treated prior to discharge into underground drainage or informal swale drainage remains in place for the conveyance of runoff to the receiving waterway.

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#### 4. Existing Road Renewal – new WSUD

Identify opportunities for the integration of WSUD into drainage or road (sealed) renewal projects. Review capital work programs to develop a list of WSUD projects that are undertaken. These should be developed to functional-detailed design level so that they are ready to be constructed as the capital works projects are rolled out.

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#### 5. Rainwater harvesting

Where practical retrofit all rainwater tanks on Council owned or managed assets are connected to an indoor use (e.g. toilet flushing) to achieve maximum benefits towards reducing potable water demands and achieving stormwater quality targets.

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#### 6. Water Efficiency upgrades

Installation of water efficient showerheads, urinals, flow regulators and dual flush toilets throughout the Shire's public toilet and foreshore facilities network.

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#### 7. Integrated Irrigation Management

Continue to establish warm season grasses and such other grasses as appropriate having regard to the use of the sporting amenity and availability and use of mains, harvested, bore, recycled class A and other water and upgrade water efficient irrigation systems across sporting amenities. cont...

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## 6.0 Strategic Options cont...

### Strategic Options – Non- Structural

#### 7. Integrated Irrigation Management cont...

Hunter Irrigation systems have proved effective in providing efficient use of water through soil moisture testing and accurate climate data collection.

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#### 8. WSUD Master plan

Undertake a WSUD Master plan to identify major stormwater harvesting and treatment opportunities across the Shire. This would provide a prioritisation framework for major structural projects with opportunities developed to a concept design level to provide insight to the multiple integrated benefits and costs associated with each opportunity.

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#### 9. Road renewal – high priority investigation

Investigate funding models to address high priority roads from a water quality perspective.

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#### 10. Capital works program investigation

Review capital work programs to identify potential opportunities for the integration of WSUD into drainage or road (sealed) renewal projects.

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#### 11. Decision framework for road drainage

Guidelines for treating road runoff. Templates of different road typologies (ie unsealed roads, major access roads with informal drainage, local residential streets, commercial precincts, etc) with standard technical design drawings for each. A decision support framework could guide the preferred design attributes (such as, designed with or without a saturated zone, lined or promote infiltration to underlying soils).

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#### 12. Review use of developer nitrogen offset under Clause 56.07

Under the current planning scheme, all residential subdivisions (two lots or more) are required to meet stormwater best practice quality requirements (80:45:45) through the Clause 56.07 in the Victorian Planning Provisions. Developers have the option of offsetting pollutant load targets through nitrogen offset payments to Melbourne Water. Shire will advocate for greater on site participation rates.

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#### 13. Develop Smart Groundwater Plan for the Shire

With Southern Rural Water investigate groundwater use and quality in sufficient detail to allow clear identification of the opportunities and impacts of its use as a resource

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#### 14. Aquifer Recharge investigation

Investigate major stormwater harvesting opportunities of urban excess runoff for aquifer recharge to protect existing and potential beneficial uses of groundwaters. Use treated runoff to replenish the Nepean Aquifer.

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#### 15. Smart Water capacity building for staff

Ensure sufficient capacity building within Mornington Peninsula Shire to prompt sustainable water resource management practices to be integrated into all work activities across all Council departments – key focus area for capacity building will be determined from the results of Melbourne Water's needs analysis.

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## **16. Commitment to Smart Water Plan process**

Interlink Council strategies. As internal strategies and plans become updated, ensure commitment to WSUD and Mornington Peninsula Shire's Smart Water Plan.

- Corporate Strategic database
  - Guidelines regarding Smart Water commitment
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## **17. WSUD Guidelines – Shire specific**

Implement capacity building aimed at achieving WSUD as a standard approach for capital projects (including sealing of unmade roads, car park construction, road renewal programs and reconstruction works).

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## **18. WSUD e-team**

Interdepartmental cooperation and collaboration. Establish a Smart Water Plan working group to ensure stormwater targets and actions are integrated into everyday practice.

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## **19. Water Tank Guidelines – Shire specific**

Provide detailed information to relevant parties (e.g. developers) regarding tank size for all new rainwater tank installations, promoting connection to indoor water uses such as toilet flushing.

Advocate the uptake of rainwater tanks by residents of existing dwellings; providing information and flood mitigation on the wide-ranging benefits of rainwater collection (such as pollutant, flow reduction to receiving waters). Implement community education programs in targeted catchments. This may include supporting Melbourne Water's drainage disconnection program or using other resources from South East Water's community education program across the municipality.

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## **20. Community Education**

Develop a community education program aimed at tourists to raise awareness between their action and impact on the beaches and other natural assets that they value. Supporting new and existing water conservation programs for homes and industry.

Key information may target:

- conserve water
  - don't litter
  - clean up after pets
  - conserve groundwater
- 

## **21. Strategic Partnership process**

Strengthening partnerships with stakeholders (including Melbourne Water, South East Water, Vic Roads, Parks Vic, EPA) to deliver structural and strategic projects.

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## **22. WSUD asset management - review**

Inclusion of WSUD assets in department budgeting requirements, planning and maintenance activities and asset registers.

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## 6.0 Strategic Options cont...

### Strategic Options – Rural Community Direction

#### 23. Rural Land owner capacity building

Currently over 1700 rural land owners are eligible for the Sustainable Rural Land Rebate Scheme offered by the Shire and to the Stream Frontage Management Scheme run by Melbourne Water. Develop a community education program, aimed at promoting opportunity to further enhance or extend actions undertaken to date. The following are some key issues to address the sediment and nutrient loads from these areas:

- continue to reduce stock access to waterways by fencing them out
- reduce sediment laden runoff entering waterways by the provision of adequate buffer zones extend riparian vegetation

#### 24. Recycled Water cluster identification

Identify opportunities for groups of recycled water users to source water from Eastern treatment Plant Outfall pipeline. Many major water users adjacent to the pipeline also source recycled water. Clustering of potential users at further distances from the pipeline may create cost effective schemes.

#### 25. Septic Tanks Review

Septic tank inspection program of up to 5% of systems each year to reduce the volume of wastewater containing nutrients and bacteria seeping into the underlying aquifer (impacting on the long term viability of these systems in terms of water quality). Recharge volumes should be sought through active recharge (i.e harvested stormwater)

- Actions - Building on the Domestic Wastewater Management Plan and Wastewater Management Policy
- Upgrade of failing systems at the allotment (advocate for amendments to environment protection legislation to achieve this)
- Upgrade of systems with off site grey water discharge to ensure that grey water is re-used effectively
- Support South East Water implement the Southern Peninsula Sewerage Scheme from 2013 to 2016
- Assist South East Water to ensure that properties are connected to sewer when it becomes available
- Review and update the Shire's Domestic Wastewater Management Plan and Wastewater Management Plan in light of legislative changes and the Southern Peninsula Sewerage Scheme

#### 26. Flow Management Studies

Seek opportunities to remove disused farm dams or ones in poor condition to increase environmental flows in the upper and middle reaches of waterways.

### Strategic Options – Urban Community Direction

#### 27. Corporate communication

Develop a community education program in partnership with Melbourne Water and the EPA, aimed at residential areas to inform the community about WSUD (what it is and why it's important)

- what Council is (and has been) doing,
- activities that can impact WSUD measures (e.g. paint down the drain; oil spills),
- community actions that can improve water quality into the future (private rainwater tanks/rain gardens)

#### 28. Urban Land Owner capacity building

There are currently over 40,000 homes within the urban growth boundary with properties ranging from <500 square meters to over 1 acre. A community education program will be developed to promote the opportunity to better at source stormwater management which may include rain garden implementation, rainwater tanks or other alternative options.

## 7.0 Actions across catchments



## 7.0 Smart Water Actions Shire Wide

The success of the Smart Water Strategy will be measured by the achievement of the targets using the strategic options. Each option presents a different level of benefit to its contribution towards achieving the targets and overall integrated water management outcomes. The following assessment aims to identify priority actions, both Shire wide and for each sub-catchment, that will contribute to the achievement of the vision and objectives of the strategy. The key priority actions have been determined by analysis of the technical data as well as a range of consultation outcomes from both agencies and community stakeholders.

| Strategic option                                | Actions  | Targets           |                     |
|---|--|-------------------|---------------------|
|   |  | Demand Management | Source Substitution |
| 8. WSUD Master Plan                             | Engage consultants to undertake a WSUD masterplan in each subcatchment to provide a cost benefit and prioritisation for works  | 5                 | 3                   |
| 10. Capital Works Program Investigation         | Develop annual review process for integrated WQ or Smart water objectives into works plans   | 8                 | 8                   |
| 11. Decision making framework for road drainage | Engage consultants to develop a decision making framework to attribute standards designs to road types and priorities  | 3                 | 0                   |
| 12. Review Developer Offsets                    | Consult with Melbourne Water and participate in the review of developer offsets - advocate for offset to be attributed more effectively  | 0                 | 4                   |
| 13. Smart Groundwater Plan                      | Engage consultant to investigate the use and distribution of groundwater and forecast the impact of options ranging from greater protection to geothermal use                                | 5                 | 8                   |
| 15. Smart Water Capacity Building for staff     | Develop training and information program in response to annual Needs Analysis conducted by Melbourne Water   | 4                 | 4                   |
| 16. Corporate Commitment to Smart Water Plan    | Develop process of integrated Smart Water targets into corporate strategies  | 8                 | 8                   |
| 18. WSUD e-team                                 | Integrated water quality objectives and targets into staff KPI<br>Formalise the WSUD e-team as a sub division of the LIDS e-team   | 3                 | 3                   |
| 19. Water Tank Guidelines                       | Develop guidelines for water tank uptake in both council operated and private buildings that provide WQ outcomes and augmentation  | 9                 | 9                   |
| 20. Community Education                         | Provide a platform for other water authorities to promote education program  | 7                 | 0                   |
| 21. Strengthening Partnerships                  | Develop a smart water fact sheet for inclusion in new residents packs and sport and recreation lease agreement.<br>Formal the involvement of stakeholders in the development of key projects | 8<br>8            | 1<br>10             |
| 22. WSUD Asset Management - review              | Engage consultant to develop MPS specific asset management guideline to asset in life cycle maintenance of assets and forecasting budget requirements  | 2                 | 8                   |
| 27. Corporate Communications                    | Develop a smart water communications plan<br>Review facts sheet and corporate information to ensure it reflects current best practice  | 9<br>9            | 3<br>3              |

### 7.0.1 Smart Water Actions for Mornington Peninsula Shire \*

1. Development of a Stormwater Quality Opportunity (WSUD) Masterplan for the Shire
2. Re-establish the WSUD E-Team to include Smart Water Target accountability
3. Develop and review annual implementation plan

| Environmental protection of receiving waters |                 |                        | Targets subtotal | Integrated Water Management Principles Achieved |                    |                          |                       |                      | IWM subtotal | Ease of Implementation | TOTAL Integrated Benefit Score |
|--|-----------------|------------------------|------------------|---|--------------------|--------------------------|-----------------------|----------------------|--------------|------------------------|--------------------------------|
| Stormwater Quality                           | Stormwater Flow | Groundwater Management |                  | TOTAL   | Ecosystem Services | Social/Political Capital | Microclimate Benefits | Improved Liveability |              |                        |                                |
| 10   | 10              | 8                      | 36               | 10  | 8                  | 10                       | 10                    | 6                    | 44           | 8                      | * 33.6                         |
| 8  | 8               | 6                      | 38               | 5   | 5                  | 5                        | 5                     | 5                    | 25           | 10                     | * 27.2                         |
| 9  | 9               | 4                      | 25               | 3   | 3                  | 3                        | 6                     | 4                    | 19           | 8                      | 19.2                           |
| 10   | 10              | 5                      | 29               | 5   | 8                  | 5                        | 8                     | 5                    | 31           | 4                      | 24.8                           |
| 0  | 3               | 10                     | 26               | 5   | 0                  | 0                        | 0                     | 5                    | 10           | 5                      | 15.4                           |
| 5  | 5               | 2                      | 20               | 1   | 1                  | 1                        | 1                     | 1                    | 5            | 10                     | 12                             |
| 8  | 8               | 6                      | 38               | 5   | 5                  | 5                        | 5                     | 5                    | 25           | 6                      | 26.4                           |
| 7  | 7               | 1                      | 21               | 5   | 5                  | 5                        | 5                     | 5                    | 25           | 10                     | 20.4                           |
| 8  | 8               | 4                      | 38               | 2   | 6                  | 2                        | 6                     | 6                    | 22           | 7                      | 25.4                           |
| 5  | 0               | 5                      | 17               | 5   | 5                  | 0                        | 3                     | 5                    | 18           | 5                      | 15                             |
| 1  | 5               | 5                      | 20               | 2   | 2                  | 2                        | 2                     | 2                    | 10           | 7                      | 13.4                           |
| 10   | 10              | 8                      | 46               | 1   | 5                  | 2                        | 5                     | 2                    | 15           | 8                      | 26                             |
| 10   | 10              | 6                      | 36               | 7   | 5                  | 5                        | 5                     | 5                    | 27           | 7                      | * 26.6                         |
| 3  | 3               | 9                      | 27               | 4   | 4                  | 4                        | 4                     | 4                    | 20           | 7                      | 20.2                           |
| 3  | 3               | 9                      | 27               | 4   | 4                  | 4                        | 4                     | 4                    | 20           | 6                      | 20                             |

## 7.1 Balcombe Creek

The Balcombe Creek catchment includes Balcombe and Devilbend Creeks and their tributaries. All waterways in this catchment flow to Port Phillip Bay. The catchment also includes the urban areas of Mount Martha, East Mornington and the fringe of Mount Eliza. Although very complex, there are a range of opportunities for sustainable water management in the catchment and the opportunity to build on the achievement of the past through the strong community commitment in the area.

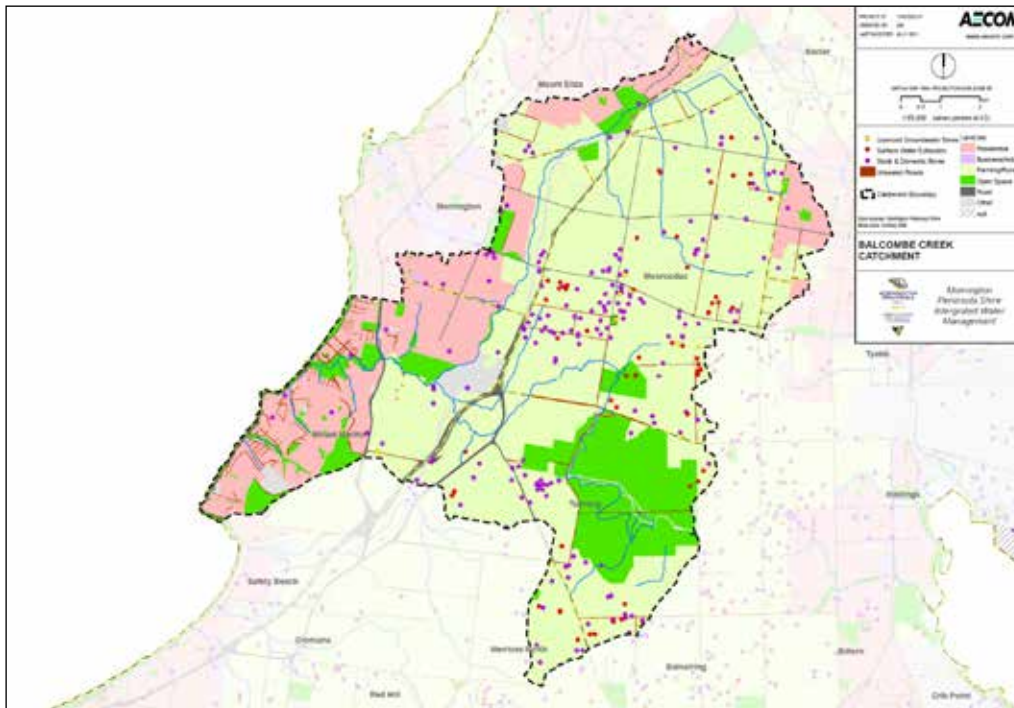


Figure 3. Analysis of Land Use and Water assets in the Balcombe Estuary

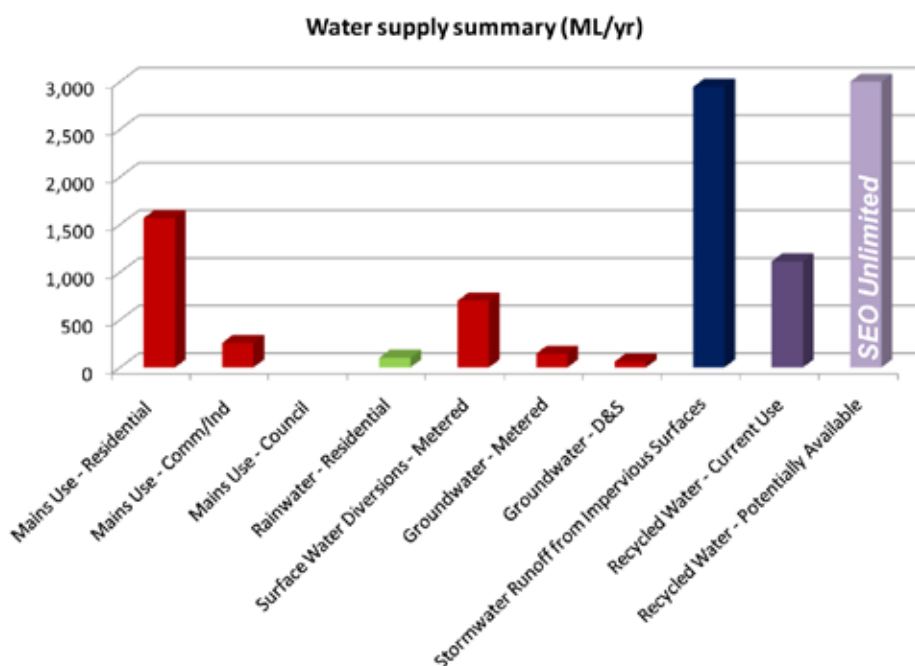


Figure 4. Water Supply for the Balcombe Creek Catchment



### 7.1.1 What the community have said

- High nutrient loads flowing into the headwater from the rural catchments
- Too much sediment from roads
- Flooding concern through Mount Martha
- Bushfire prone area
- Good access to Recycled Water
- Unstable waterways in Mt Martha large erosion heads propagating up stream, threatening the local receiving environment
- High value natural catchments such as Balcombe Creek and Sunshine Creek

### 7.1.2 Strategic options for Balcombe Creek

The Strategic options for Balcombe Creek were identified through the water balance analysis in Figure 1 and 2, community feedback through consultation and projects that met the Smart Water objectives. The options were then assessed against a range of criteria to prioritise projects that provided a maximum, integrated benefit for the catchment.

| Strategic option                               | Actions  | Integrated Benefit Score |
|--|--|--------------------------|
| 1. Stormwater Quality Treatment                | Design and construct sediment management systems in Balcombe Creek catchment   | 30.4 *                   |
|  | Investigation infiltration options in Sunshine Creek catchment   | 29.8                     |
| 3. Existing Road Renewal - Integrated Drainage | Review priority matrix for Mt Martha, Moorooduc and Tuerong  | 14.8                     |
|  | Apply standard Integrated Drainage designs to planned renewal  | 26                       |
| 4. Road Renewal - new WSUD                     | Review options for integration of new WSUD into special charge scheme projects                                       | 22.2                     |
|  | Implement finding of Strategic options 11 - standards for WSUD in road construction                                  | 24.8                     |
| 23. Rural Land Owner Capacity Building         | Provide Smart Water on Rural Land information package as part of Sustainable Land rebate request                     | 17.8                     |
|  | Deliver on site information and incentive program  | 27                       |
| 24. Recycled Water Cluster Identification      | Implement stage 2 - 5 of Mount Martha recycled water scheme  | 33.4 *                   |
|  | Work with South East Water to identify other potential clusters in the headwaters of Balcombe Creek                  | 25.6                     |
| 28. Urban Land Owner Capacity Building         | Implement targeted water quality and stormwater management program in high value catchments including Balcombe Creek | 30 *                     |
|  | Implement 10,000 Raingardens program - develop incentive program for MPS   | 29.6                     |

### 7.1.3 Smart Water Actions for Balcombe Creek \*

1. Implementation of Stage 2 – 5 of the Mount Martha Recycled Water scheme
2. Water Quality Treatment in Balcombe Estuary catchment
3. Residential scale stormwater quality treatment

## 7.2 Ballar Creek

The Ballar Creek Catchment includes several short waterways including Earimil Creek, Tanti and Ballar Creek. The land use is mainly urban and waterways are characterised by short, steep catchments.

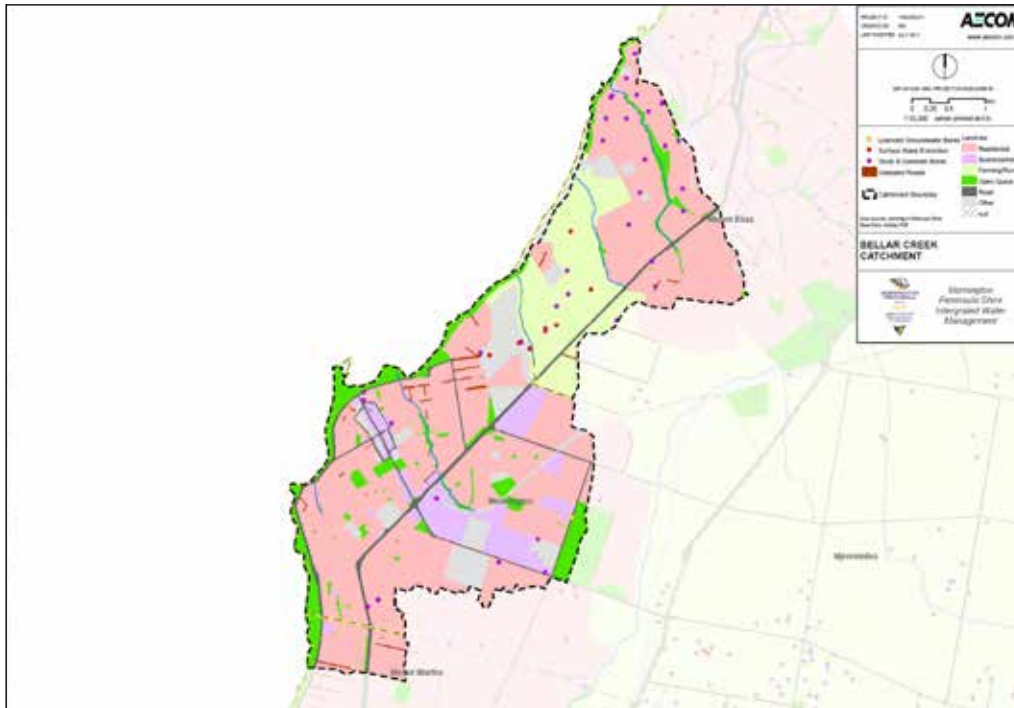


Figure 5. Analysis of Land Use and Water assets in the Ballar Creek Catchment

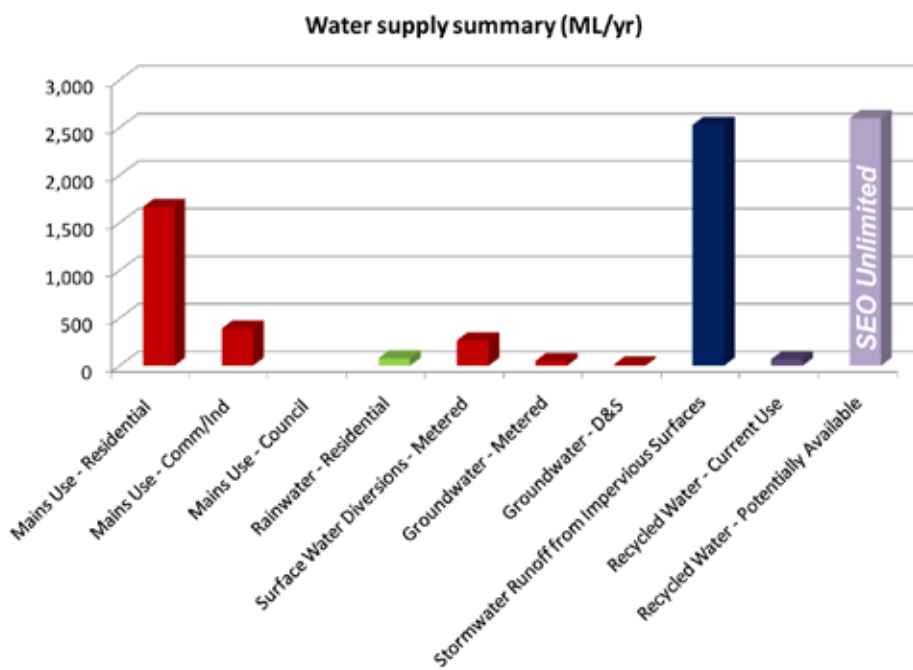


Figure 6. Water Supply for the Ballar Creek Catchment

### 7.2.1 What the community have said

- High density redevelopment has increased impervious surfaces
- Possible Marina may impact water quality
- Erosion / incision along Earimil Creek
- Stormwater harvesting for flow control would be beneficial
- Stormwater education for commercial and residents
- Treat urban runoff from Mt Eliza commercial precinct before it gets to Ballar Creek

### 7.2.2 Strategic options for Ballar Creek

| Strategic option                      | Actions  | Integrated Benefit Score |
|---------------------------------------|--|--------------------------|
| 2. Stormwater Harvesting              | Trial the implementation of an end of line solution in one drainage catchment  | 27                       |
|                                       | Engage consultants to conduct a stormwater harvesting opportunities study in Mornington  | 28                       |
|                                       | Identify and implement WSUD specifications for all strategic masterplanning and street scape planning. Trial the implementation at least one WSUD project in conjunction with masterplan development | 31.2 *                   |
| 4. Road Renewal - new WSUD            | Prioritise made roads by flow and identify opportunities for decentralised WSUD in the catchments - particularly Mornington East and Mount Eliza   | 27.8                     |
|                                       | Implement WSUD in all new car park developments  | 34 *                     |
| 12. Review of Developer Offsets       | Forecast potential development and preferred options for water quality offsets   | 31.4 *                   |
| 28. Urban Landowner Capacity Building | Advocate for rainwater tank installation in urban growth boundary - work with South East Water to provide incentive and overflow recharge opportunity in sewerred properties                         | 28.2                     |

### 7.2.3 Smart Water Actions for Ballar Creek \*

1. Implement WSUD in all new car park developments
2. Forecast potential developments and preferred options for water quality treatment
3. WSUD specification in all masterplanning – streetscape, coastal and township

### 7.2.4 Smart Water in Action

Completing an environmental risk assessment for Mornington Beach and surrounding waterways in partnership with South East Water, Melbourne Water and Environment Protection Authority

## 7.3 Cape Schanck

The Cape Schanck catchment is considered one of the Peninsula's healthiest catchments, with Main Creek and its tributaries flowing to the Marine National Park. The region supports a range of rural land uses and also includes a significant part of Greens Bush, in the Mornington Peninsula National Park

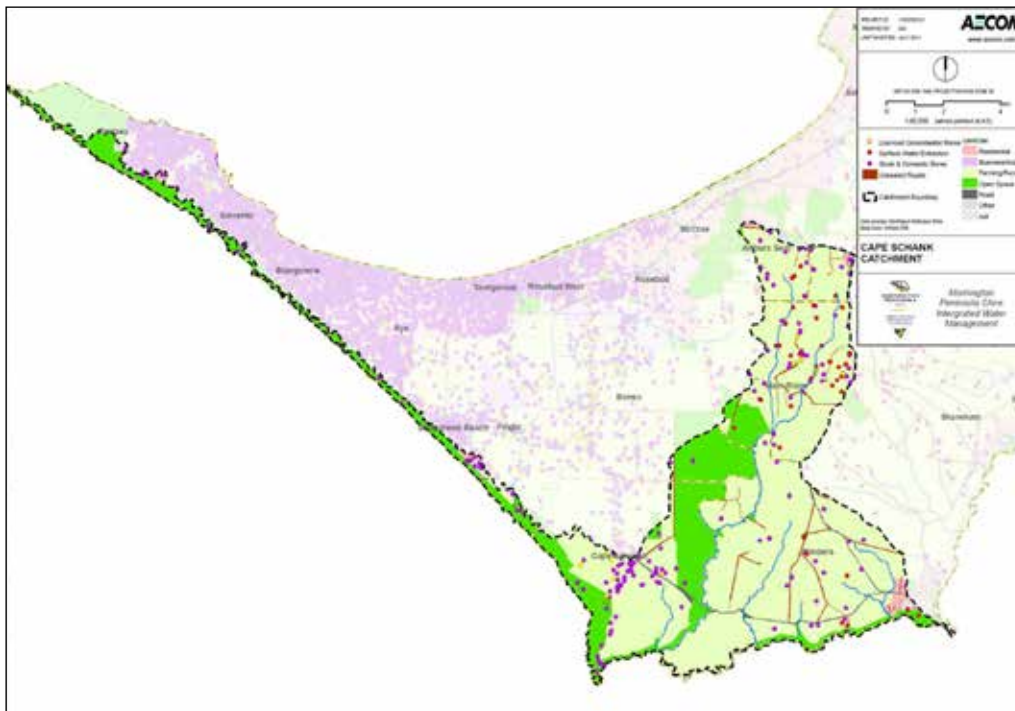


Figure 7. Analysis of Land Use and Water assets in the Cape Schanck Catchment

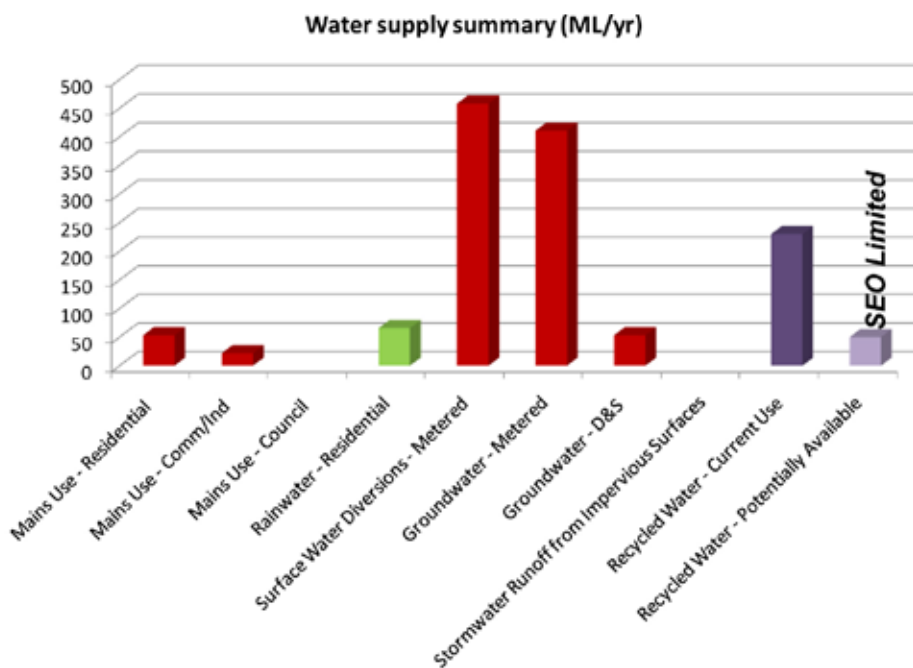


Figure 8. Water Supply for the Cape Schanck Catchment

### 7.3.1 What the community have said

- Concerned about on stream dams and effect on fish passage
- Rural runoff
- Sediment
- WSUD on private land
- Over 500 septic tanks across the Shire with potential impacts, from leakages, to waterways health and groundwater quality. Flinders area of particular concern

### 7.3.2 Strategic options for Cape Schanck

| Strategic option                               | Actions   | Integrated Benefit Score |
|--|---|--------------------------|
| 3. Existing Road Renewal - Integrated Drainage | Review informal drainage and its capacity to provide conveyance for runoff and flow management                                      | 20.8                     |
| 4. Road Renewal - new WSUD                     | Include infiltration with all new road sealing projects in the catchment to maintain low direct connectedness                       | 25.8                     |
| 23. Rural Land Owner Capacity Building         | Provide Smart Water on Rural Land information package as part of Sustainable Land rebate request                                    | 31.2 *                   |
|  | Deliver on site information and incentive program targeted along catchment corridors  | 18.6                     |
| 25. Septic Tank Review                         | Implement an inspection and compliance program for septic tank systems, focusing on systems that may be impacting on waterways      | 28.6                     |
| 26. Flow Management Study                      | Engage consultant to review the impact of head water surface diversions and provide recommendations to consolidating unused systems | 29.4 *                   |
|  | Advocate for a cap of aesthetic dam construction - develop opportunity to 'buy back' type approach                                  | 24.6                     |
|  | Advocate for complete Total Impervious / DCI data set   | 29 *                     |

#### 7.3.3 Smart Water Actions for Cape Schanck \*

1. Smart Water on Rural Land program – supporting land owners in green wedge
2. Review the number of surface water diversions in headwaters in the catchment
3. Advocate for the development of the Total Impervious dataset for the catchment

## 7.4 Chinamans Creek

This Chinamans Creek Catchment is one of the most unique catchments on the Mornington Peninsula. The catchment is considered to be significantly groundwater dependent and includes Drum Drum Alloc Creek and Tootgarook Swamp. The area supports and range of highly significant flora and fauna. The catchment also supports intensive horticulture as well and medium - low density urban development. The region is significantly groundwater dependent and the Nepean aquifer is vital to the health of the catchment.

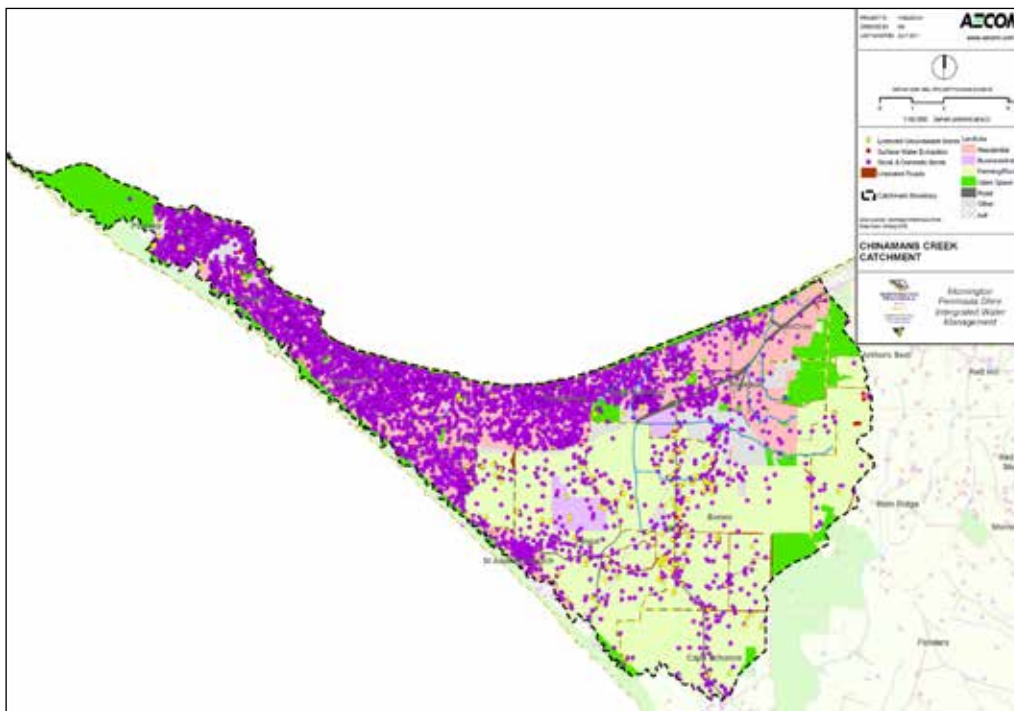


Figure 9. Analysis of Land Use and Water assets in the Chinamans Creek Catchment

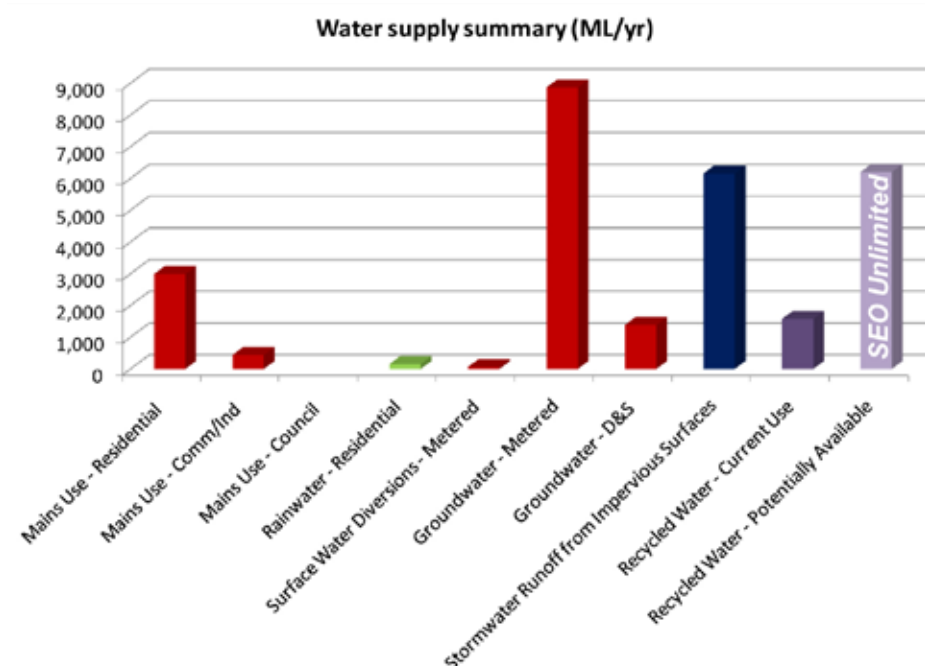


Figure 10. Water Supply for the Chinamans Creek Catchment

### 7.4.1 What the community have said

- Concern over impact of sea level rise on low lying catchment
- Clear indication to maximise stormwater capture and aquifer recharge
- Greater opportunity for rainwater tanks at domestic level to augment stock and domestic bores
- Septic tank systems leakage - high nutrients to aquifer but contributing to recharge
- Runoff from the Market Garden Areas in Chinamans Creek impacting catchment and Bay
- Protect natural assets -Tootgarook Wetlands - Potential RAMSAR site

| Strategic option                    | Actions  | Integrated Benefit Score |
|-------------------------------------|--|--------------------------|
| 2. Stormwater Harvesting            | Design and implement on large scale stormwater harvesting scheme similar to Peninsula Avenue   | 30.2 *                   |
|                                     | Engage consultants to review opportunity to harvest stormwater for aquifer recharge along the borders of the urban growth boundary   | 29 *                     |
| 3. Existing Road Renewal - new WSUD | Review road renewal program and include opportunities to infiltrate runoff to groundwater  | 28.2                     |
|                                     | Trial new approach to road maintenance and grading in Grade B roads in the catchment   | 27.6                     |
| 14. Aquifer Recharge Investigation  | Review current analysis on groundwater dependent ecosystems and work with Melbourne Water to implement the recommendations   | 28.4                     |
| 19. Rainwater Tank Guidelines       | Advocate for rainwater tank installation in urban growth boundary - work with South East Water to provide incentive and overflow recharge opportunity in sewerred properties | 27.4                     |
|                                     | Review public and leased building condition and opportunity for rainwater harvesting   | 29.6 *                   |
| 20. Community Education             | Support community education campaign to prevent litter, particularly during peak periods   | 15.8                     |
|                                     | Develop information material in conjunction with Southern Rural Water to promote responsible groundwater use   | 23                       |
| 25. Septic Tank Review              | Implement an inspection and compliance program for septic tank systems, focusing on systems that may be impacting on waterways   | 18.2                     |

### 7.4.3 Smart Water Actions for Chinamans Creek \*

1. Design and implement large scale stormwater harvesting scheme
2. Review building leases and identify opportunity to rainwater harvesting
3. Review aquifer recharge opportunities along the urban growth boundaries

### 7.4.4 Smart Water in Action

1. Completing an environmental audit of industrial and rural businesses in the Chinamans Creek catchment area in partnership with Melbourne Water and the Environment Protection Authority
2. Completing the Tootgarook Swamp management plan. For more information on the Tootgarook Swamp visit [www.savetootgarookswamp.org](http://www.savetootgarookswamp.org)

## 7.5 Hastings North

The Hastings North catchment is a mixed use catchment including growing residential, industrial and Greenwedge land. The catchment includes the subcatchments of Olivers Creek and King Creek. The Western Port Bay receiving waters a highly significant with waterways draining to the Yaringa Marine National Park. There is a significantly high volume of untreated stormwater that enters the bays in this catchment.

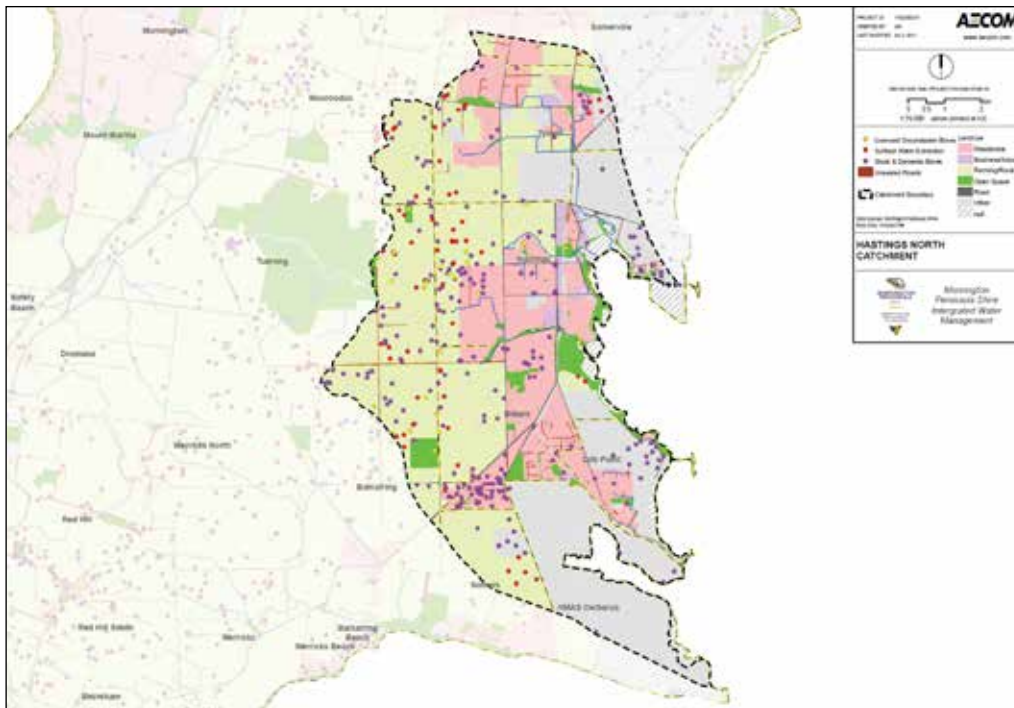


Figure 11. Analysis of Land Use and Water assets in the Hastings North Catchment

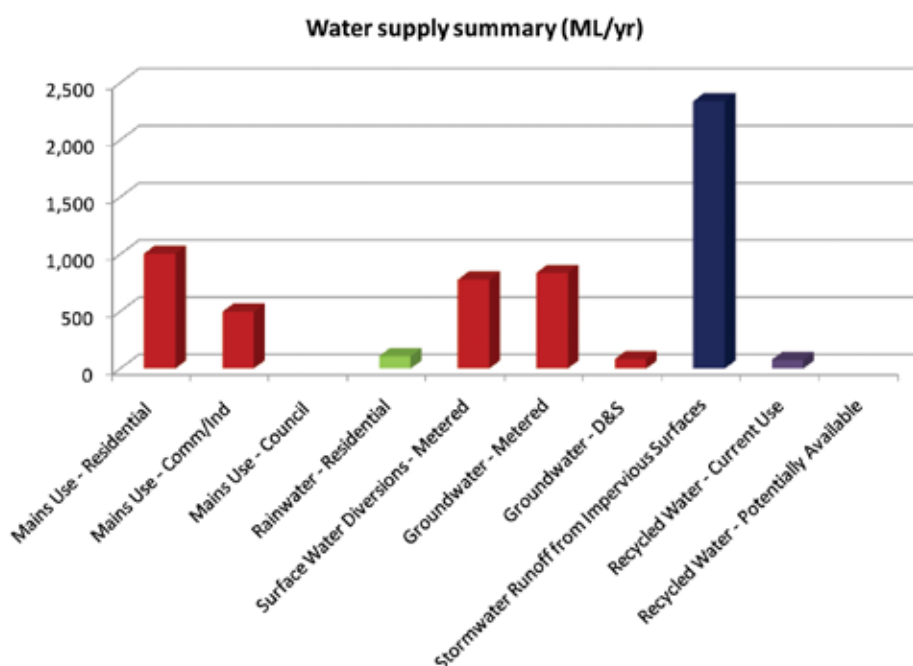


Figure 12. Water Supply for the Hastings North Catchment



### 7.5.1 What the community have said

- Concern over impact of road developed as part of port development
- Increase impervious surfaces
- Reclaimed land / mangroves
- Increased pollutant loads
- Potential urban development - in north of catchment - impacts of sediment laden runoff on receiving waters
- RAMSAR listed receiving waters – high priority
- Potential to substitute surface water extraction in Somerville – Tyabb areas using recycled water from outfall pipeline
- Unsealed roads high source of sediment laden runoff

### 7.5.2 Strategic options for Hastings North

| Strategic option                              | Actions  | Integrated Benefit Score |
|---|--|--------------------------|
| 2. Stormwater Harvesting                      | Develop criteria to prioritise stormwater harvesting schemes for open space - implement a further 3 open space stormwater harvesting schemes                     | 30.2                     |
|   | Design and implement stormwater harvesting scheme for Hastings Foreshore and Pelican Park Rec Centre   | 31.4 *                   |
| 4. Road Renewal - new WSUD                    | Design and implement roadside infiltration system for major unmade roads in Olivers Creek Catchment  | 26.6                     |
|   | Investigation opportunities for new WSUD in upper reaches of King Creek catchment  | 19.6                     |
| 5. Rainwater Harvesting                       | Rainwater tank installation at all public halls  | 30.2                     |
|   | Promote rainwater harvesting with stormwater capacity in all new developments  | 29.4                     |
| 9. Road Renewal - High Priority Investigation | Review the distribution of unmade roads in the catchment and ranking - weight Hastings North roads in connectedness to King Creek, Warringine and Olivers Creek. | 18.6                     |
| 13. Smart Groundwater Plan                    | Review the distribution of stock and domestic bores in Balnarring East and Hastings West to determine use and impact on groundwater quality and quantity         | 19.8                     |
| 23. Rural Land Owner Capacity Building        | Provide Smart Water on Rural Land information package as part of Sustainable Land rebate request   | 31.2 *                   |
|   | Deliver in site information and incentive program targeted along catchment corridors   | 18.6                     |
| 24. Recycled Water Clusters                   | Design and implement recycled water scheme for Moorooduc and Tuerong irrigation districts  | 31.8 *                   |
| 26. Flow Management Investigation             | Engage consultant to review the impact of head water surface diversions and provide recommendations to consolidating unused systems                              | 27.4                     |

### 7.5.3 Smart Water Actions for Hastings North \*

1. Design and implement recycled water precincts for Tuerong and Moorooduc precinct
2. Design and implement Stormwater harvesting for Hastings Foreshore and Pelican Park Rec Centre
3. Smart Water on Rural Land program implementation

## 7.6 Hastings South

The Hastings South catchment is predominantly greenwedge with small pockets of low - medium density residential land. There are a high number of headwater diversions in this catchment.

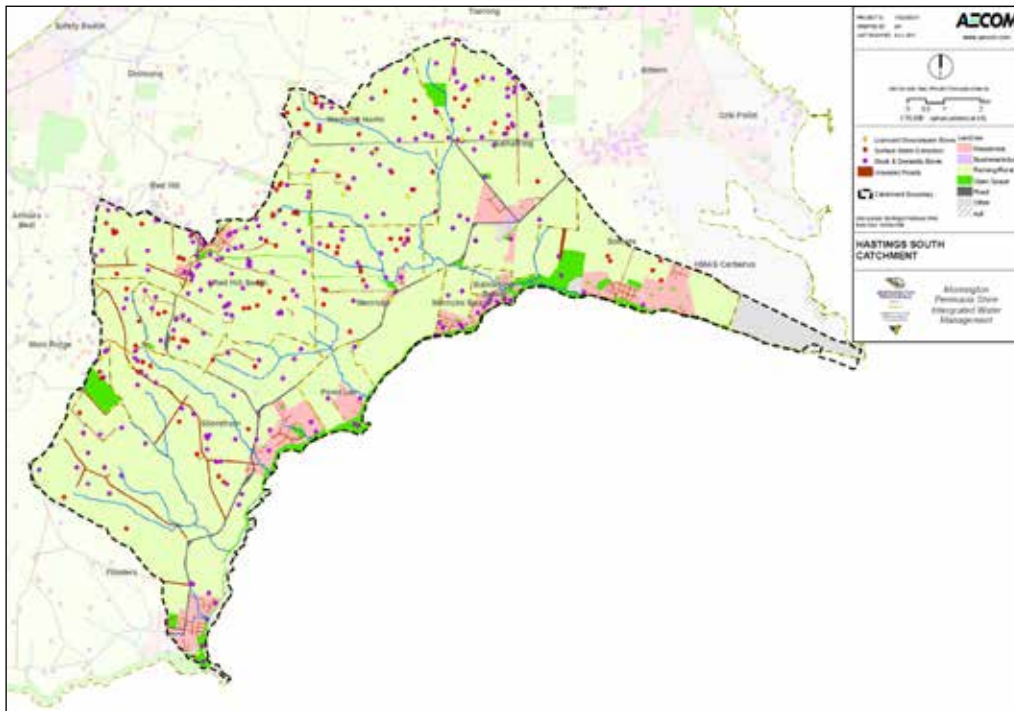


Figure 13. Analysis of Land Use and Water assets in the Hastings South Catchment

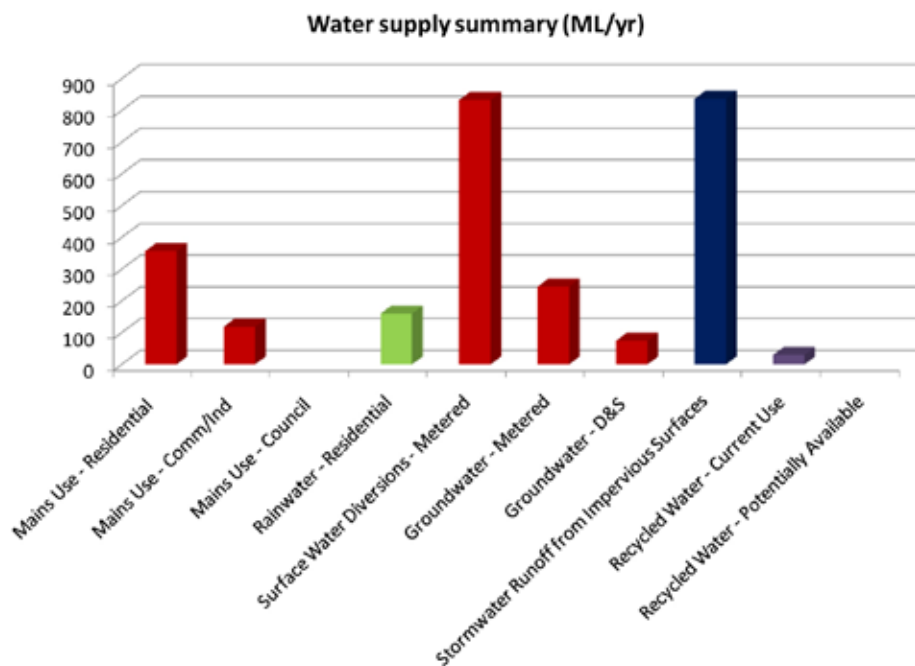


Figure 14. Water Supply for the Hastings South Catchment

### 7.6.1 What the community have said

- Review the existing 'Merricks Study' by Melbourne Water and investigate catchment hydrology
- Review online and unused dams - effect on fish passage and connectivity
- Education campaign used on conjunction with existing landcare /waterwatch programs to address flows
- Unit extractions from waterways over time = replace with recycled water to meet demands
- Landcare and Friends of Group will play an important role in working with the community
- Look at key finding from "Water Initiatives for 2050: An integrated Water Strategy for Melbourne's South East"
- Unsealed roads high source of sediment laden runoff
- Over 500 septic tanks across the Shire with potential impacts, from leakages, to waterways health and groundwater quality. Merricks and Shoreham areas of particular concern
- Upstream Balbieroo Community Wetlands, restoration for downstream asset protection

### 7.6.2 Strategic options for Hastings South

| Strategic option                       | Actions  | Integrated Benefit Score |
|--|--|--------------------------|
| 1. Stormwater quality treatment        | Streetscape scale WSUD - integration into township plans and new buildings   | 26.8                     |
|  | WSUD consideration in unmade car park strategy   | 27.2                     |
| 3. Existing Road Renewal - new WSUD    | Review unmade road Matrix - consider Flinders and Shands Road opportunity  | 23.6                     |
|  | Integrated WSUD into road making program on major road renewal   | 22.6                     |
| 23. Rural Land Owner Capacity Building | Provide Smart Water on Rural Land information package as part of Sustainable Land rebate request   | 31.2 *                   |
|  | Support information and capacity building programs as part of Landcare   | 18.6                     |
| 25. Septic Tank Review                 | Implement an inspection and compliance program for septic tank systems, focusing on systems that may be impacting on waterways   | 31.6 *                   |
|  | Assist South East Water to ensure properties have connected to sewer, particularly commercial and industrial premises  | 19.8                     |
|  | Complete a review of septic tank systems in the un-sewered townships of Red Hill, South, Point Leo and Merricks and propose suitable long-term wastewater disposal options | 28.4                     |
| 26. Flow Management Study              | Partnership program with Southern Rural Water - Review existing dams and use   | 27.4 *                   |
|  | Review Shire planning permit conditions for construction of new dams   | 23.6                     |

### 7.6.3 Smart Water Actions for Hastings South \*

1. Proactive inspection of septic tanks - promote waste water treatment systems new development and commercial developments
2. Provide Smart Water on Rural Land information package as part of Sustainable Land rebate request
3. Review existing extraction licences with Southern Rural Water to improve flow management

## 7.7 Kackeraboite Creek

The Kackeraboite Creek catchment is characterised by relatively short steep waterways in a highly modified catchment. There is a high volume of untreated stormwater entering the waterways and significantly higher mains water consumption in this catchment.

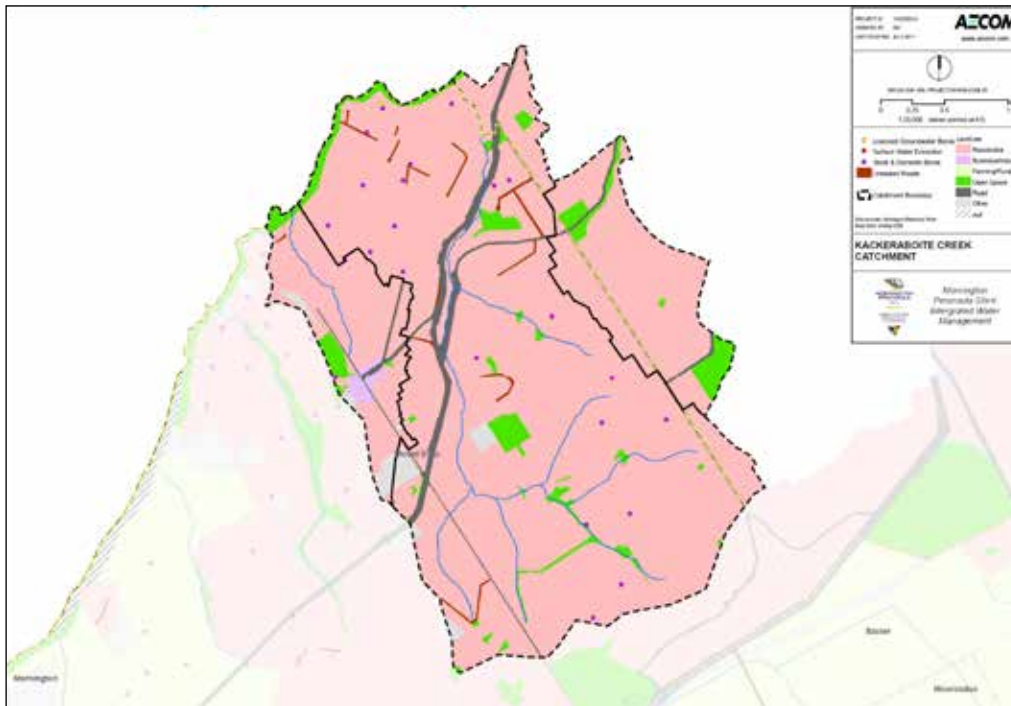


Figure 15. Analysis of Land Use and Water assets in the Kackeraboite Creek Catchment

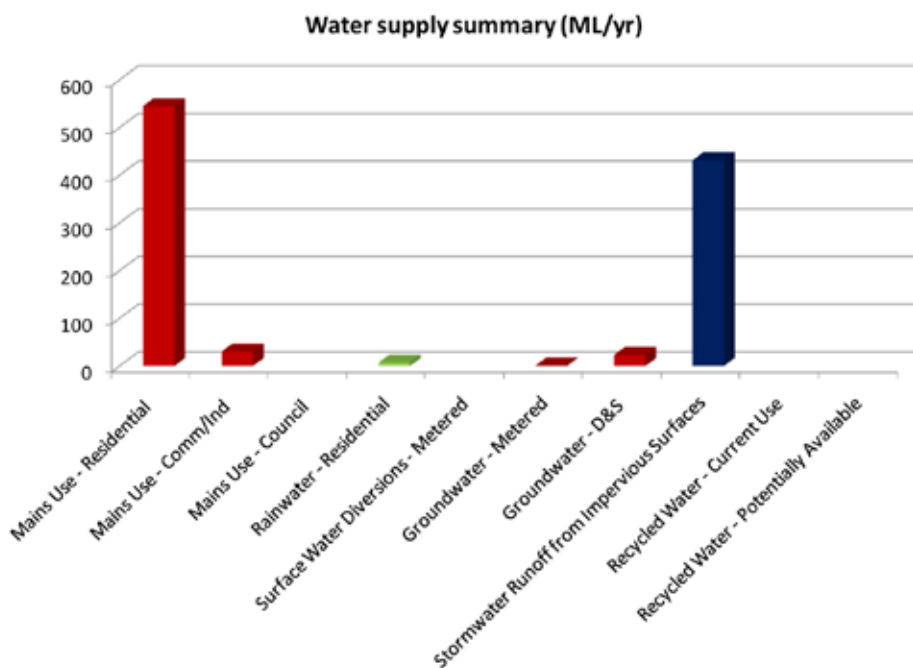


Figure 16. Water Supply for the Kackeraboite Creek Catchment

### 7.7.1 What the community have said

- Waterway based catchment priority – restore, protect, enhance
- What is the natural flow of this catchment – are there opportunities to harvest SW?
- Melbourne Water Estuary Strategy impact
- Link environmental values with groundwater dependent ecosystems
- Opportunistic retrofits – link with capital works
- Targeting works – hotspots
- Education program
- Revision of Best Practice Environment Management due – ESOS for high value catchments threatened by new developments

### 7.7.2 Strategic options for Kackeraboite Creek

| Strategic option                               | Actions   | Integrated Benefit Score |
|--|---|--------------------------|
| 1. Stormwater Quality Treatment                | WSUD masterplan for subcatchments as integrated with Flood Mapping  | 33 *                     |
| 2. Stormwater Harvesting                       | Feasibility study in stormwater harvesting opportunity in catchment   | 33.8 *                   |
|  | Lot scale WSUD programs in high priority catchments   | 27.8                     |
| 3. Existing Road Renewal - Integrated Drainage | Review remaining unmade roads in catchment and prioritisation   | 18.6                     |
| 19. Water Tank Guidelines                      | Implement Water Tank guidelines in urban areas  | 30 *                     |
|  | Proactive review of discharge points and promotion of large capacity plumbed in tanks to reduce discharge   | 29                       |
| 21. Strategic Partnerships                     | Partnership program with Vic Road and Melbourne Water to promote SW quality treatment on Vic roads property | 24.8                     |

### 7.7.3 Smart Water Actions for Kackeraboite Creek \*

1. Feasibility study in stormwater harvesting opportunity in catchment
2. WSUD masterplan for subcatchments as integrated with Flood Mapping
3. Implement Water Tank guidelines in urban areas



### 7.8.1 What the community have said

- Unsealed roads high source of sediment laden runoff

### 7.8.2 Strategic options for Safety Beach

| Strategic option                       | Actions  | Integrated Benefit Score |
|--|--|--------------------------|
| 1. Stormwater Quality Treatment        | Review centralised subsurface options in lower catchment   | 23.6                     |
|  | Decentralised WSUD in new development (maintain low DCI)   | 30.6 *                   |
| 4. Existing Road Renewal - new WSUD    | Review unmade road priorities and consider opportunities on major roads  | 18.6                     |
| 5. Rainwater Harvesting                | Review opportunities for rainwater / stormwater harvesting within Shire owned properties                                   | 26.6 *                   |
|  | Promote large tanks to internal plumbing for residents adjacent to waterways - possible overlays                           | 26.8 *                   |
| 12. Review of Developer Offsets        | Review value of developer offsets in this catchment and capacity to implement WSUD   | 28                       |
|  | Review commercial opportunity for WSUD and commercial contribution - rates rebate ?  | 23                       |
| 21. Strategic Partnerships             | Partnership program with Vic Road and Melbourne Water to promote SW quality treatment on Vic roads property                | 24.8                     |
| 23. Rural Land Owner Capacity Building | Promote smart water program as part of land sustainability rebate to landholders in headwater of catchment                 | 18.6                     |
|  | Partnership program with Melbourne Water to investigate WSUD opportunity in recycled water easement land through catchment | 21.8                     |
| 24. Recycled Water Cluster Program     | Feasibility into recycled water opportunities in catchment   | 22.2                     |

### 7.8.3 Smart Water Actions for Safety Beach \*

1. Decentralised WSUD in new development (maintain low DCI)
2. Review value of developer offsets and advocate for WSUD investment in the catchment
3. Review opportunity to promote residential scale rainwater harvesting

## 7.9 Watsons Creek

The Watsons Creek catchment supports the growing township of Somerville and the highly productive agriculture and horticulture regions in the north of the Peninsula. The Watsons Creek is classed as one of the most degraded creeks on the Mornington Peninsula despite a high level of agency intervention over time. The catchment analysis shows both a high number of surface water diversions as well as high volume of untreated stormwater entering the Creek as key priorities to address.

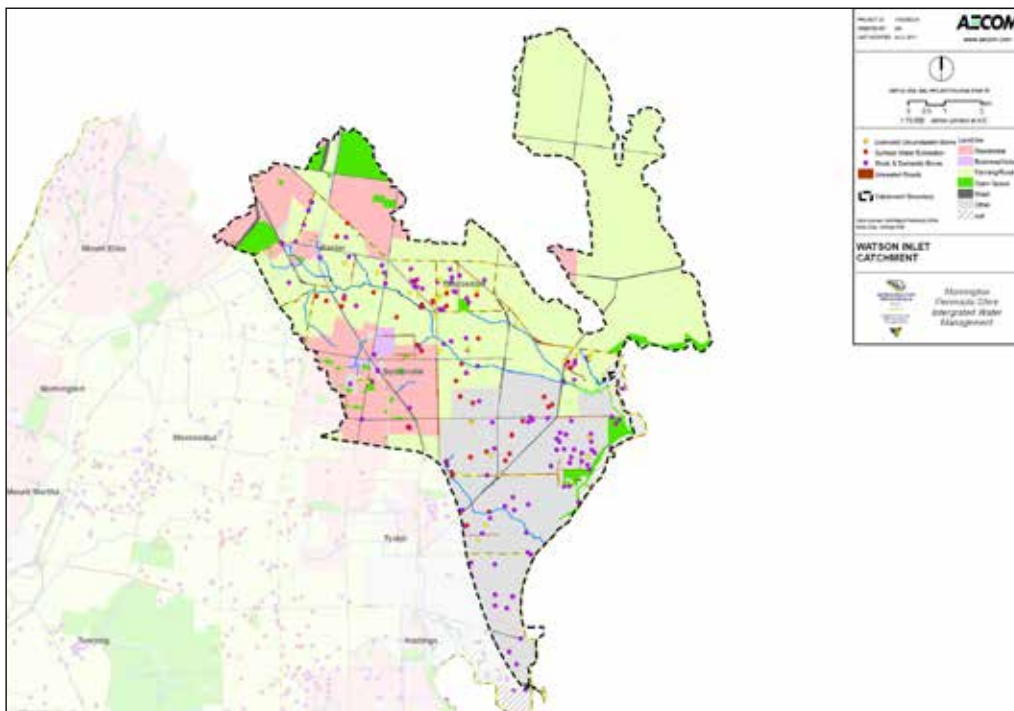


Figure 19. Analysis of Land Use and Water assets in the Watsons Creek Catchment

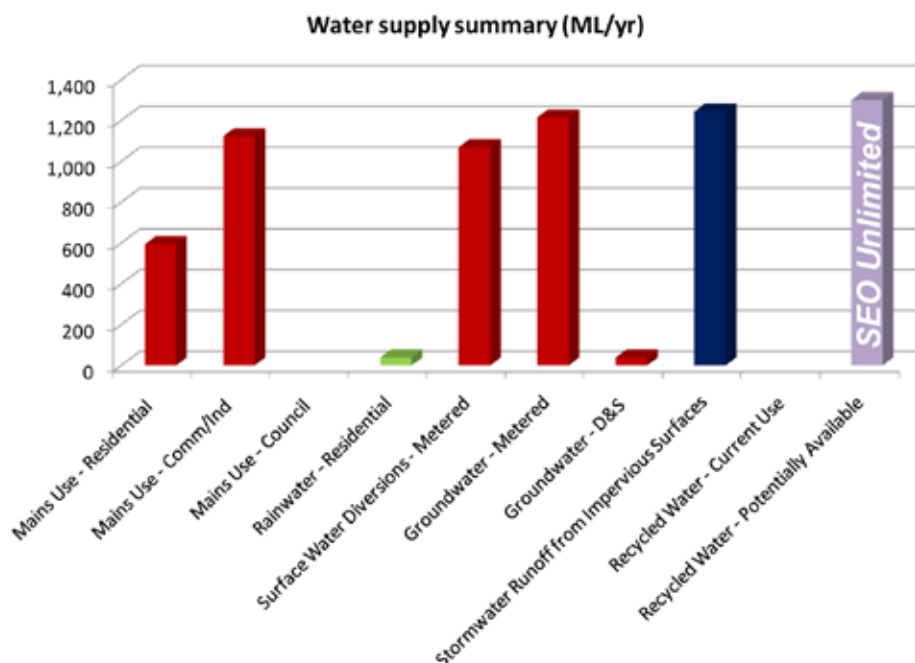


Figure 20. Water Supply for the Watsons Creek Catchment



### 7.9.1 What the community have said

- Key locations for stormwater harvesting
- Baxter – stormwater harvesting
- Peninsula Link impacts
- Runoff from the primary production areas entering waterways
- Potential to substitute surface water extraction in Somerville – Tyabb areas using recycled water from outfall pipeline (findings from another report)

### 7.9.2 Strategic options for Watsons Creek

| Strategic option                       | Actions   | Integrated Benefit Score |
|--|---|--------------------------|
| 1. Stormwater Quality Treatment        | Feasibility study - WSUD in commercial precincts  | 23                       |
|  | Decentralised WSUD in Somerville  | 30.6 *                   |
| 2. Stormwater Harvesting               | Opportunities study - Harvesting in urban growth area to manage flooding and provide reuse - commercial                               | 30.4 *                   |
|  | All new open space to include stormwater harvesting and main irrigation source  | 30                       |
| 19. Water Tank Guidelines              | Promote water tank use in existing and new developments   | 27.8                     |
| 21. Strategic Partnerships             | Partnership with Southern Rural Water and Melbourne Water to review flows in upper reaches of the catchment                           | 24.4                     |
|  | Partnership with Melbourne Water and South East Water Opportunities study - conversion of surface water extraction to recycled water. | 28.2                     |
| 23. Rural Land Owner Capacity Building | Promote smart water program as part of land sustainability rebate to landholders in headwater of catchment                            | 18.6                     |
| 24. Recycled Water Cluster Program     | Support the implementation of Bunyip Food Belt project  | 33.8 *                   |

### 7.9.3 Smart Water Actions for Watsons Inlet \*

1. Support the implementation of Bunyip Food Belt project
2. Decentralised WSUD in Somerville
3. Opportunities study - Harvesting in urban growth area to manage flooding and provide reuse - commercial
4. All new open space to include stormwater harvesting and main irrigation source

## 8.0 Costs implications of Targets/Contributions

The strategic purpose of the Smart Water Plan is to identify opportunities for efficiencies and complementary programs that achieve a range of integrated water benefits. For example, a stormwater quality asset may contribute to the reduction in potable water needs through harvesting, infiltration and reuse. In this way, the implementation plan will further realise these efficiencies; however there is a baseline investment required in order to achieve the targets.

### Water Security

The Shire committed to reducing potable water use through its Water Resource Management Plan 2008 - 2013. The Plan identified water conservation action and water quality actions. The plan was successful in driving a 52% reduction in potable water use and increasing alternative water solutions for an annual investment of \$150,000.

Therefore, to achieve the 30% reduction target ongoing investment will be necessary.

This will fund projects including;

- Data management and investigation
- Installation of water saving devices
- Water tank installation
- Alternative water infrastructure, including plumbing in recycled water supplies.
- Education and training for staff and community
- Concept and project development for water conservation opportunities



### Water Quality

The Shire has successfully implemented all actions from the 2002 Stormwater Strategy, leading to a range of new innovations in water quality management across the Shire. Since 2002, the importance of integrating stormwater management into best practice environmental management and its value as a resource has been realised.

In line with best practice objectives, the proposed stormwater quality targets are an 80% reduction in Total Suspended Solids (TSS) loads, 45% reduction in Total Phosphorus (TP) loads and 45% Total Nitrogen (TN) loads across the municipality.

Achieving the proposed water management targets is a long term objective requiring sustained financial investment over many years. Doubling Councils annual investment to \$540K annually will ensure interim targets to 2017 are met and set the Shire on the right trajectory for achieving best practice in the long term.

Investment in water quality projects will include;

- Integrating water sensitive drainage on road construction projects
- Supporting the Greenwedge to implement water sensitive farm design principles
- One partnership program with Melbourne Water
- Investment in residential scale treatment and harvesting
- Water sensitive design incorporated into Council masterplans and capital works.

Down pipe diverter

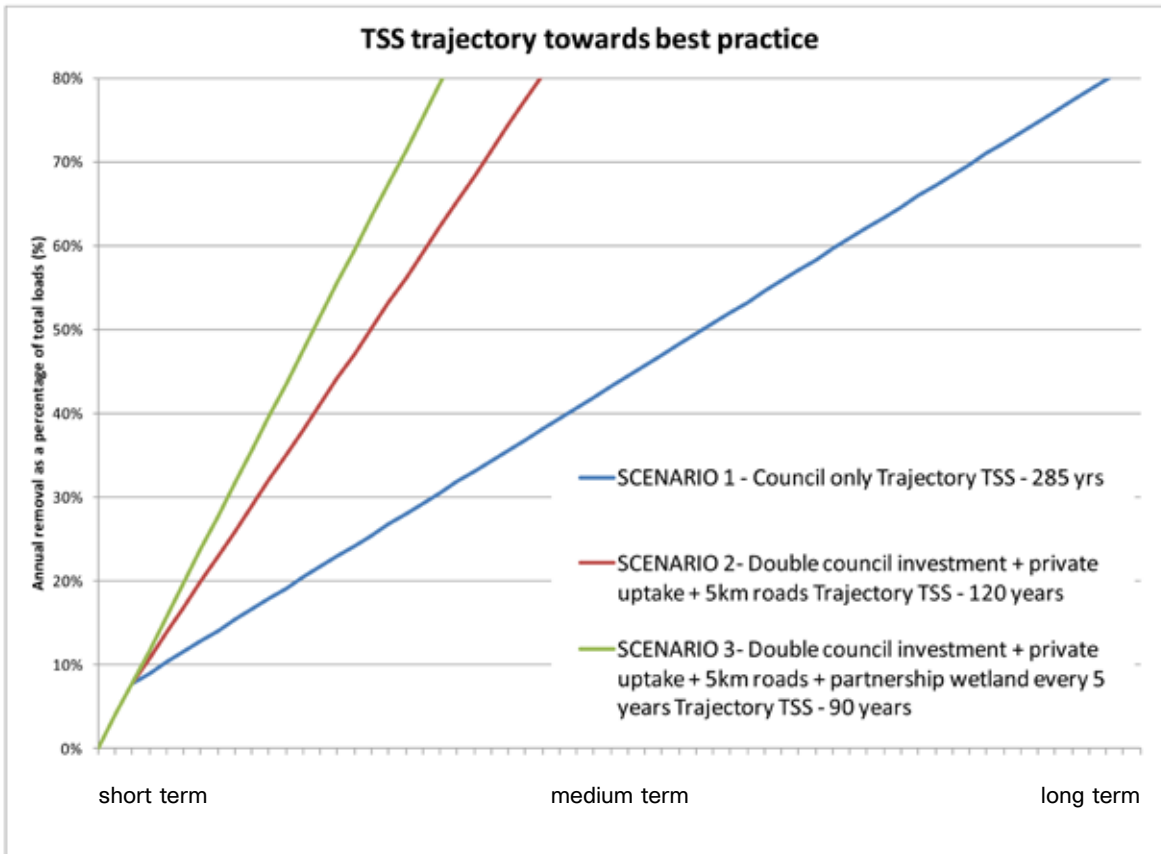


Figure 21. Scenarios of investment in achieving best practice water quality management

The total budget required to deliver the strategy will be \$2.76 Million dollars. However, the investment will identify a range of efficiencies and benefits as well as leveraging existing funding mechanisms and external water authority investment in the region.



## 8.1 Implementation and Reporting

The Smart Water Plan is intended to guide the development of an annual implementation plan from 2013 – 2017 at which point the Strategy will be reviewed. The annual implementation plan will direct reporting on Smart Water outcomes and expenditure against the Smart Water Targets.

Delivery will be integrated across the 100 + things that the Mornington Peninsula Shire does. It will also rely on high levels of community engagement and awareness to ensure that all works maximise opportunities for community engagement and commitment.

The annual Smart Water reporting template will be developed to ensure a transparent and accountable tool for managing our water assets and natural resources.



Large scale Tanti wetlands - 'Flagship' partnership project between Melbourne Water and Mornington Peninsula Shire

## 9.0 Acknowledgements

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The success of the Mornington Peninsula Shire Smart Water Plan relies on long term collaboration between agencies, government and the community. The actions and outcomes of the plan will build on the effective relationships that already exist across all sectors.

The Mornington Peninsula Shire would like to thank the following organisations and individuals for their services, financial support and collaboration.

**Melbourne Water**

Information and financial support

**AECOM**

technical papers

**E2 DESIGNLAB**

Strategic review

**South East Water**

data provisions and support

**Southern Rural Water**

Data provisions and support

**Smart Water Plan Community  
Stakeholder Reference Group**







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