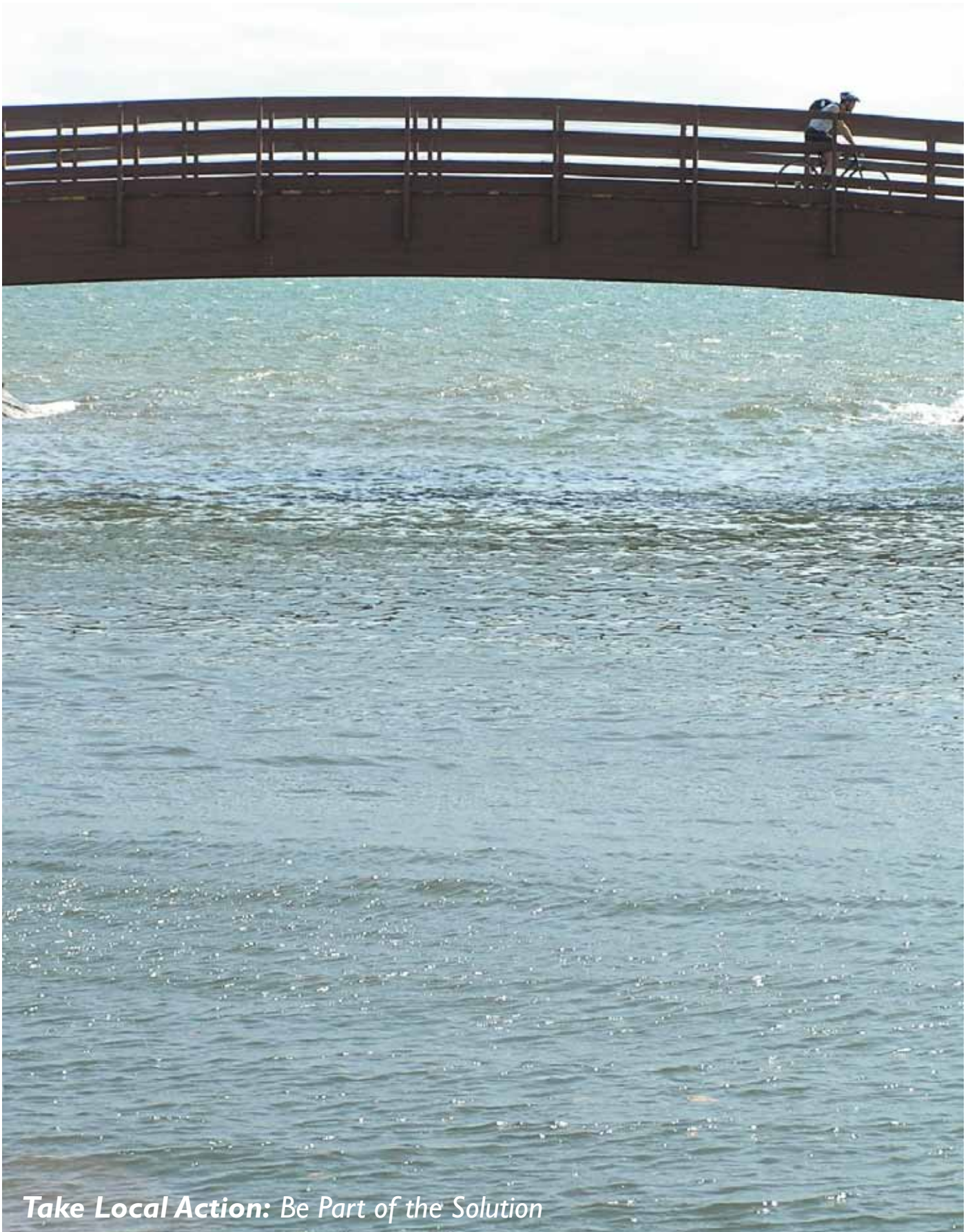


WATER PLAN

TOWARD A WATER SENSITIVE CITY



Take Local Action: Be Part of the Solution

SUSTAINABLE WATER MANAGEMENT TOWARD A WATER SENSITIVE CITY

Why do we need to manage our water resources?

Water is a key ingredient for a liveable and sustainable city. It is essential for sustaining our life, and lifestyle. It keeps our gardens, parks and open spaces alive and green, it makes the food we eat, and the products we buy - clothes, books, appliances, and even electricity.

After 10 consecutive years of drought, our water supplies are at all time lows. Water restrictions and hotter, drier conditions are impacting the health and sustainability of our open spaces. As our climate continues to change we are likely to experience even hotter and drier summers.

Another challenge facing the city is protecting local water quality. Our city's iconic Elwood Canal, Albert Park Lake and Port Phillip Bay are affected by stormwater carrying pollutants, such as litter, nitrogen, sediments and phosphates, from roads, open space, households and businesses. These areas need to be protected to maintain their biodiversity and recreational value.

The City of Port Phillip's population is growing and this will lead to an increase in the demand for mains water as well as increased sewage discharges. To continue to meet the State Government's water target of 155 litres of water per person per day, and Council's 2020 targets for community water use, we will need to continue to save water as our population increases.

To better meet these challenges the City of Port Phillip is planning to become a 'water sensitive city'.

Council's vision for a water sensitive city

A water sensitive city is an adaptive city that is resilient to low water availability and the impacts of climate change. It is a city that uses many different water sources, not just mains water. It manages its water to meet the needs of the environment, and improve the health of our waterways and open spaces. In this city, we use water sourced locally and actively enjoy its presence in our local neighbourhoods. In this city, we value and understand water and we all play a role in sustainable water management.

Introducing Council's water plan

The City of Port Phillip Water Plan describes the city's water cycle, including all water that goes in and out of the city, and the pollutants stormwater carries to Port Phillip Bay. It also identifies different water sources that can be used to make the city more liveable. It sets targets and strategies for sustainable and integrated water management for 2020.

This is the first step in our long term journey to build future climate resilience. Sustainable water management is a key way of ensuring the city can adapt to the potential impacts of climate change.



Water sensitive urban design trees on Coventry Street, South Melbourne

OUR URBAN WATER SOURCES

There are four key water sources running through the city:

- **Potable (mains) water:** This is Melbourne's main water source. It is drinking quality water from protected catchments outside the city. This water is used for a range of purposes. Only a small fraction is used for drinking.
- **Wastewater:** Residential and commercial wastewater (water that runs down our household and commercial drains from kitchens, toilets, showers and commercial processes) is piped to treatment plants before it is discharged to Port Phillip Bay and Westernport Bay. Some of this is recycled and reused.
- **Rainwater and stormwater:** Rainfall that has fallen on our hard surfaces, such as roads and roofs, runs through a network of waterways and underground drains into Port Phillip Bay. Rainwater from our roof is relatively clean, however stormwater carries significant pollutants from litter, organic matter, oil, chemicals, fertilisers and other sources, which can impact on the health of the bay and our beaches. The amount and quality of stormwater runoff can vary depending on where it has fallen, with water-absorbant surfaces such as gardens generating less than hard surfaces such as roads and roofs.
- **Groundwater:** Groundwater, or borewater, is located in aquifers or underground water-absorbant layers of rock, sand, clay or other materials. In Port Phillip, it is high in salinity from a shallow water table and its close proximity to the coast. Council does not currently use groundwater as it is too saline for irrigating our parks and gardens. Its quantity is largely unknown.

OUR WATER AND POLLUTANT BALANCE A SNAPSHOT OF 2007/08

We have modelled our urban water sources and put together an annual water and pollutant balance for the municipality. This helps us identify how much water we use each year and the different water sources available to help meet our needs. It also helps us plan for an improved water and pollutant balance for 2020.

Water is measured in megalitres (ML) with one ML equal to one million litres, and 2.5 ML equal to one olympic swimming pool. Pollutants carried by stormwater runoff to the bay are measured in kilograms.

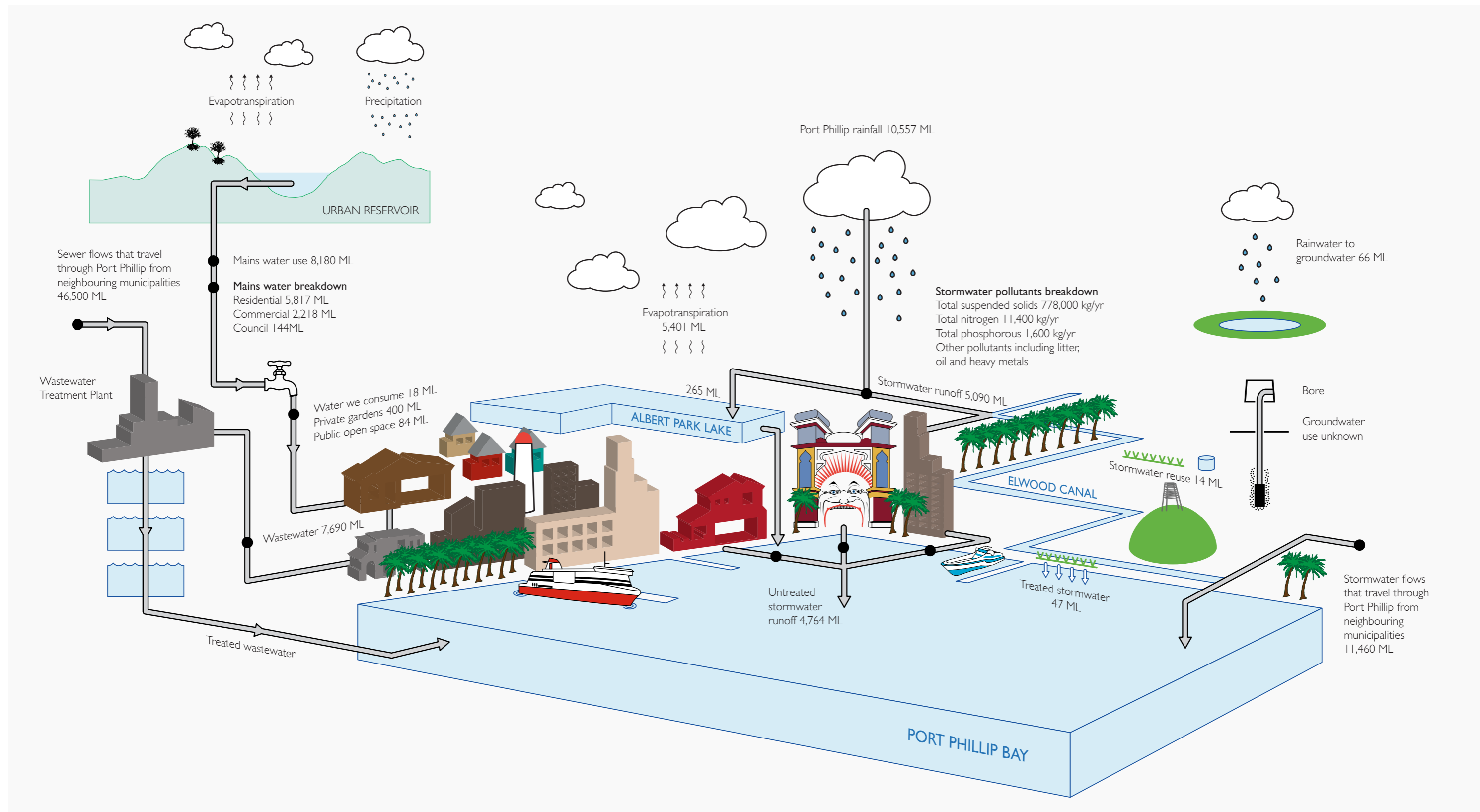




Image provided courtesy of Melbourne Water

WHAT DOES THE BALANCE TELL US?

- 10,557 ML of rain falls on the city per year. That is equivalent to filling the MCG with water over six times! Just under half of this rainfall (5,090 ML) is available for harvesting (or capture and re-use) as it flows to the bay. The rest is returned to the atmosphere through evaporation and plant transpiration, with only small amounts going to groundwater recharge.
- the city uses 8,180 ML of mains water per year. Approximately 70% of the mains water the city uses is for residential use. Only a small proportion of this is consumed (e.g. drinking) with most going directly to gardens and the wastewater system (e.g. toilets and showers).
- the City of Port Phillip is predominately hard surfaced and a large amount of stormwater runoff is generated across the city. Of this, 32% is generated by Council roads and streets alone, and 44% is generated by roofs. This stormwater can generate flooding and flows to the bay unless it is captured for re-use.
- stormwater carries significant pollutants, with 778 tonnes of sediments from the City of Port Phillip carried to the bay. Road runoff carries mainly sediments, solids and litter, and residential and commercial roof runoff carries mainly nitrogen, which over time can have a big impact on our bay. Solids, nitrogen and phosphorous should be treated and cleansed prior to reaching the bay and as part of any harvesting and reuse project.
- large flows of wastewater and stormwater travel through the municipality on the way to the bay and wastewater treatment plants. Not all of this can be easily accessed as drains are deep underground.

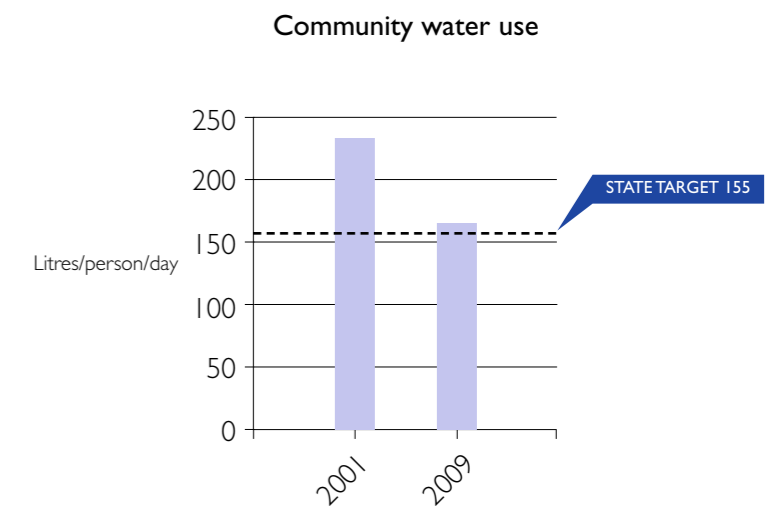
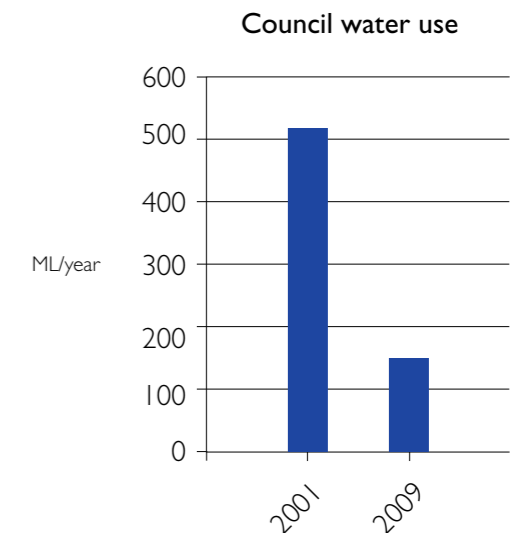
Alternative water sources present opportunities to meet the city's current and future water challenges.

Water sources, such as rainwater, stormwater and wastewater, offer abundant flows that could help us to meet some of our water needs. Rainwater and overland stormwater flows are the most easily accessible sources. Access to stormwater drains and wastewater will depend on how deep our sewer and drainage infrastructure is located.

WHAT WE HAVE ACHIEVED SO FAR?

We have made good progress to date in water management

- Council has reduced its water use by 71% since 2000, through water efficiency and water restrictions. This includes improved irrigation systems, drought tolerant planting, and more efficient water fixtures and appliances.
- the community overall has reduced its water use by almost 20% since 2000, even with population growth.
- residents are using approximately 179 litres per person per day, a 23% reduction since 2000.
- businesses are using approximately 598 litres per business per day, a 41% reduction since 2000.
- approximately 14 ML of stormwater per year is being harvested for re-use by Council and the community, and 47 ML of stormwater per year is being treated and cleansed prior to it reaching the bay.



You have made great savings in reducing your water use. Continue to make savings to meet Melbourne's target of 155 litres per person per day. More efficient appliances and shorter showers each day can help us get there.

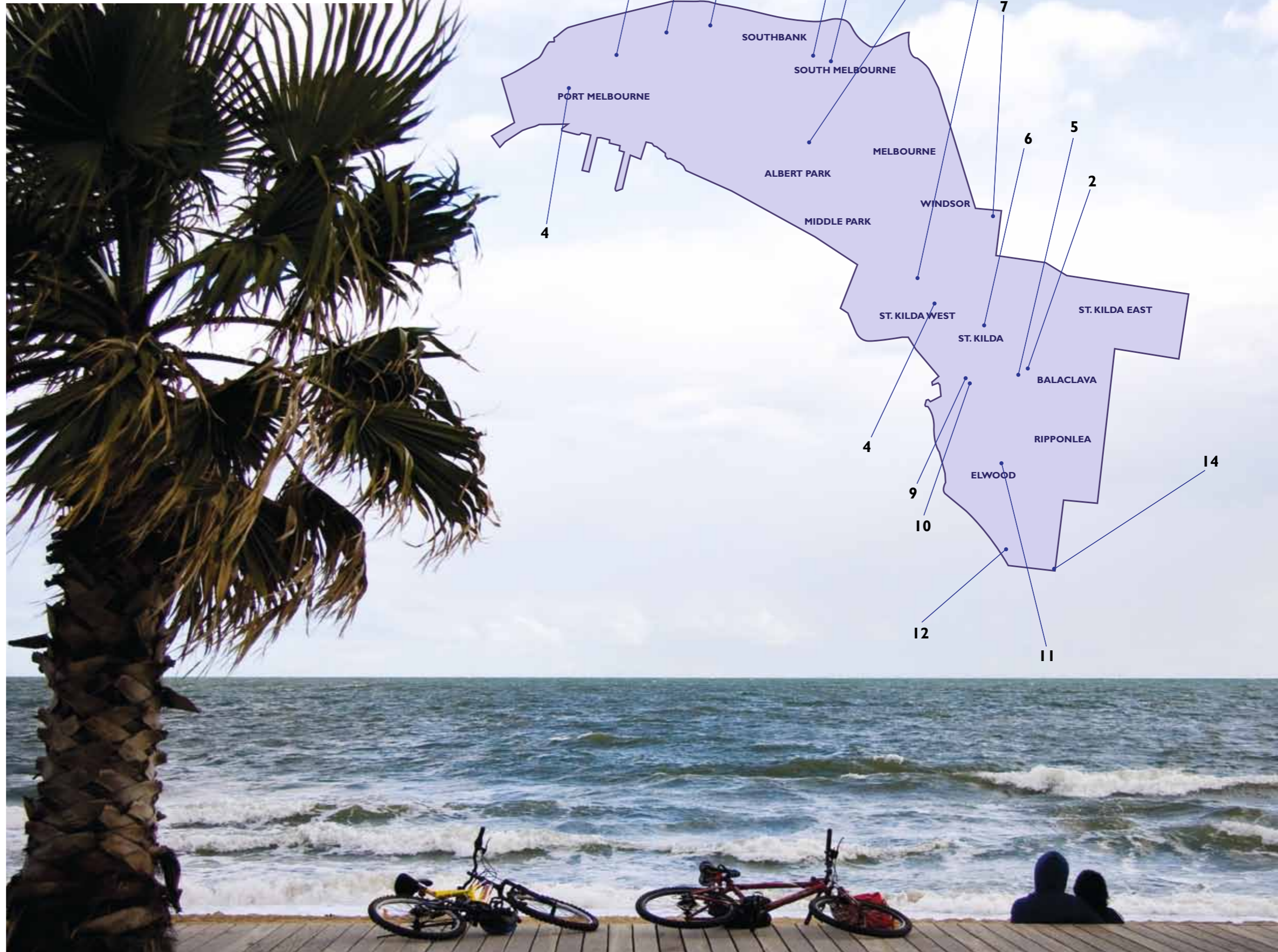
HERE'S HOW PORT PHILLIP HAS MADE ITS SAVINGS AND IMPROVED STORMWATER QUALITY

Our Water Actions

- 01** Waterless urinals at the South Melbourne Market
- 02** Rainwater tanks at the St Kilda Town Hall
- 03** Rainwater tanks at the South Melbourne Depot
- 04** Stormwater treatment raingardens at Coventry Street, Fitzroy Street and Howe Parade
- 05** Stormwater treatment tree pits at Carlisle Street, St Kilda East
- 06** Greywater recycling at Inkerman Oasis, St Kilda
- 07** Rainwater tanks and greywater recycling at K2 Apartments, Windsor
- 08** Raingardens at Toyota Green, Port Melbourne
- 09** Wastewater treatment and rainwater tank at the Port Phillip EcoCentre, St Kilda
- 10** Drought tolerant display gardens at St Kilda Botanical Gardens and St Vincent Gardens
- 11** Passive irrigation of open space along Lindsay Avenue and Clarke Reserve, Elwood
- 12** Stormwater treatment swale at Elwood Carpark
- 13** Stormwater recycling at the Barry Brothers Recycling plant at JL Murphy Reserve, Port Melbourne
- 14** Limited water harvesting from Elsternwick Park Lake and Albert Park Lake

Citywide Actions

- 15** Rainwater tanks at primary schools across the city
- 16** Water sensitive irrigation practices, planting and management of open space across the city
- 17** Household rainwater tanks and greywater systems across the city
- 18** Water efficient showerhead exchange across the city
- 19** Water sensitive urban design in the planning process



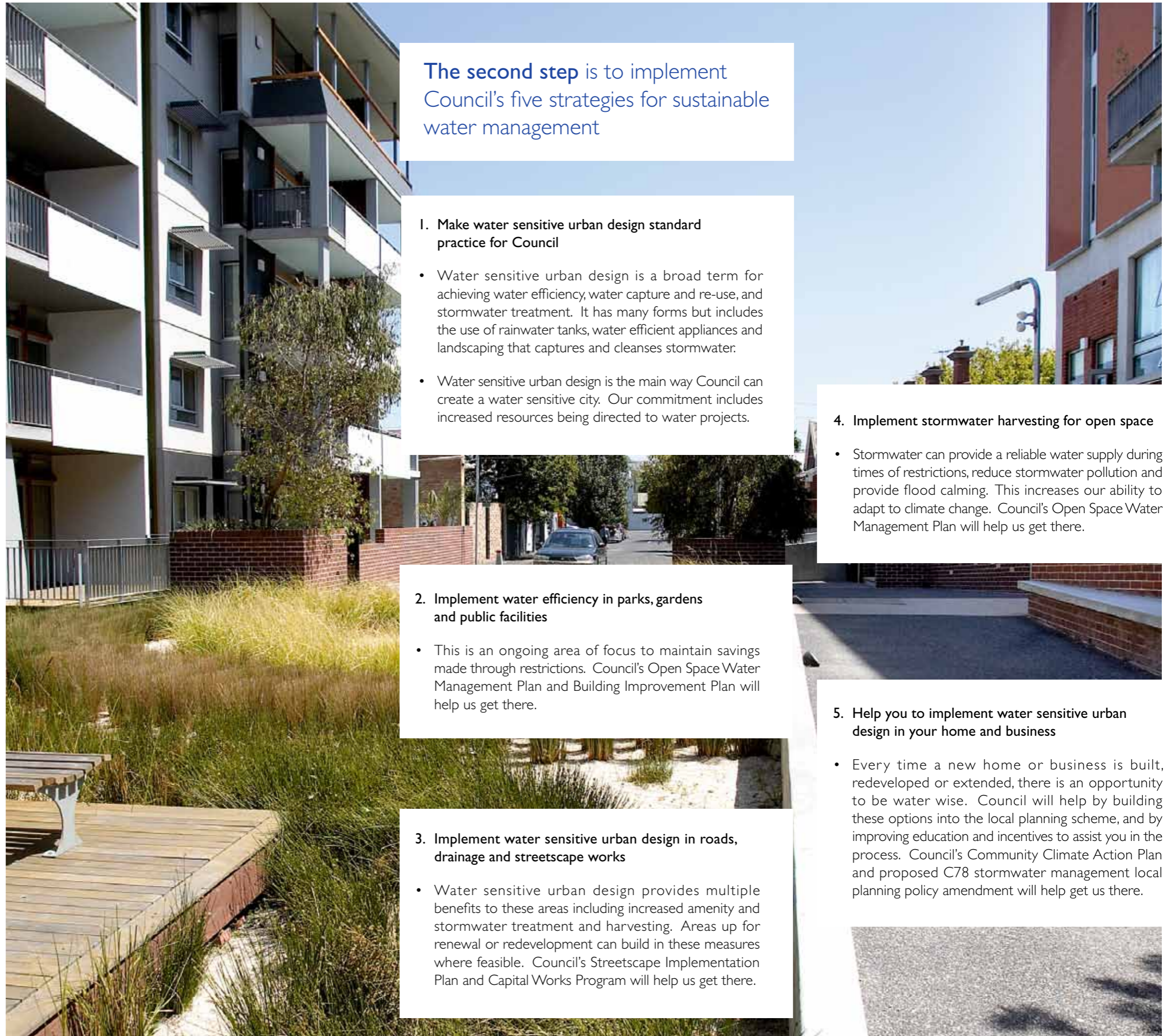
OUR NEW TARGETS AND STRATEGIES FOR A WATER SENSITIVE CITY

The first step is to adopt new sustainable water management targets for 2020.

Targets can help Council become a water sensitive city. The Water Plan sets the following targets:

- Mains water conservation – Council will retain its existing targets of a 70% reduction in Council mains water use, and 50% reduction per capita in community mains water use by 2020.
- Alternative water sources – Council has a target to meet 50% of Council's ideal open space irrigation needs, or approximately 80 ML, with alternatives to mains water such as rainwater, stormwater and wastewater.
- Stormwater quality improvement – Council has targets to remove the suspended solids and nutrients contaminating our stormwater; to protect our waterways and our bay. By 2020, Council aims to reduce pollutant loads generated by the municipality by:
 - Suspended solids: 19%
 - Nitrogen: 15%
 - Phosphorous: 10%

These targets are integrated with one another. This means that by taking action in one area, such as rainwater harvesting, we are also helping meet other targets, such as water saving and stormwater quality improvement.



The second step is to implement Council's five strategies for sustainable water management

1. Make water sensitive urban design standard practice for Council

- Water sensitive urban design is a broad term for achieving water efficiency, water capture and re-use, and stormwater treatment. It has many forms but includes the use of rainwater tanks, water efficient appliances and landscaping that captures and cleanses stormwater.
- Water sensitive urban design is the main way Council can create a water sensitive city. Our commitment includes increased resources being directed to water projects.

2. Implement water efficiency in parks, gardens and public facilities

- This is an ongoing area of focus to maintain savings made through restrictions. Council's Open Space Water Management Plan and Building Improvement Plan will help us get there.

3. Implement water sensitive urban design in roads, drainage and streetscape works

- Water sensitive urban design provides multiple benefits to these areas including increased amenity and stormwater treatment and harvesting. Areas up for renewal or redevelopment can build in these measures where feasible. Council's Streetscape Implementation Plan and Capital Works Program will help us get there.

4. Implement stormwater harvesting for open space

- Stormwater can provide a reliable water supply during times of restrictions, reduce stormwater pollution and provide flood calming. This increases our ability to adapt to climate change. Council's Open Space Water Management Plan will help us get there.

5. Help you to implement water sensitive urban design in your home and business

- Every time a new home or business is built, redeveloped or extended, there is an opportunity to be water wise. Council will help by building these options into the local planning scheme, and by improving education and incentives to assist you in the process. Council's Community Climate Action Plan and proposed C78 stormwater management local planning policy amendment will help get us there.



THINKING ABOUT YOUR LOCAL AREA, CAN YOU IDENTIFY ANY WATER SENSITIVE URBAN DESIGN?

Image provided courtesy of Melbourne Water



Raingardens on Fitzroy Street, St Kilda

WHAT IS WATER SENSITIVE URBAN DESIGN?

Water sensitive urban design describes all measures that will help us achieve a water sensitive city.

These include:

- rainwater tanks
- water efficient fixtures and appliances
- raingardens, swales and other stormwater treatment measures
- greywater and wastewater treatment systems.

Water sensitive urban design is a common sense way of designing our cities and means using the right quality of water for the right purpose. For example, not using our valuable drinking water for watering open space. It can help us reduce our mains water use, adapt to hotter, drier conditions and improve the quality of water that goes to the bay.

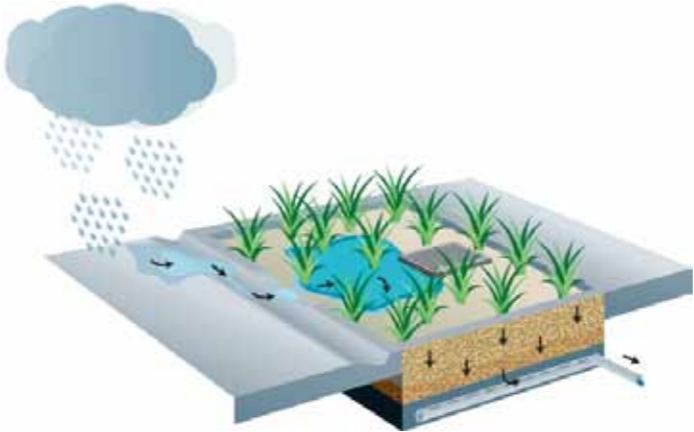
Raingardens: trees and gardens that aren't watered

Raingardens are a new form of landscaping our streets and open space. Raingardens are depressed garden beds that are self-watered as they receive stormwater runoff from the surrounding hard surfaces (e.g. roads, pavements and roofs). They can be constructed in a range of scales and shapes, making them ideal for both small and large spaces. They can be incorporated into nature strips, roundabouts, traffic calming and other streetscape features as well as open spaces.

Raingardens also act as a natural filter to remove pollutants from stormwater. Stormwater is filtered through different layers of soil and the cleansed stormwater is then collected at the bottom, and either discharged to the bay (or to groundwater) or collected for re-use.

Recently raingardens have been installed in Fitzroy Street, Carlisle St and Coventry Street where they are helping to achieve multiple benefits including amenity, flood calming, stormwater treatment and harvesting to meet the raingarden's water needs.

Raingardens can be installed anywhere, in city streets or your own courtyard. Gardens or planter boxes harvesting and feeding off rainwater from your down pipe is a great way to help treat stormwater.



Raingardens at work
Image provided courtesy of Melbourne Water

How much does it all cost?

Water sensitive urban design is a common sense way of designing our cities but it does have some additional costs.

- raingardens: the cost of a raingarden may not be much greater than the cost of conventional landscaping. The need for different soils to filter stormwater can add an additional \$350-\$1,700 to every square meter landscaped, depending on the site. There are also some additional costs in maintaining these treatment systems.
- tanks: in addition to tanks, there are costs for plumbing and installation. Above ground tanks generally cost less than underground tanks, which may be required for large scale stormwater harvesting schemes. Costs will vary depending on the scale of the project, but a good benchmark is \$1,000 for every thousand litres of storage.

Costs can be kept down if the water objectives are built into the design phase. In any case, these costs are substantially reduced when you consider the multiple benefits offered by these systems, such as improved liveability and sustainability of open space, less dependency on mains water, lower operational costs and flooding control.

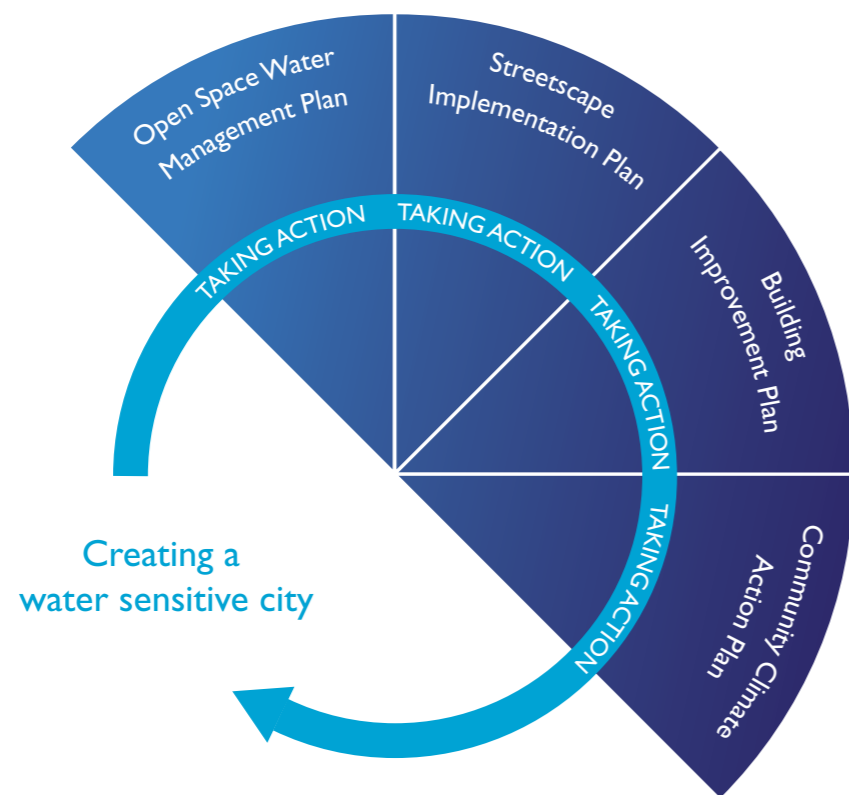
TAKING ACTION DEVELOPING A WATER SENSITIVE CITY

Planning for a water sensitive city will require everyone's involvement and effort. Both Council and the community will need to increase efforts in implementing water sensitive urban design, and a range of strategic, capital and maintenance actions will be required.

These actions will be identified and delivered through four key implementation plans, addressing all five strategies for sustainable water management.

These plans will ensure that any opportunities for water sensitive urban design are built into our streetscapes, parks and facilities, and that our community programs and advocacy actions are helping you to implement water sensitive urban design.

To make sure we are on track to 2020, these plans will be supported by education, training, communications and monitoring programs.



Funding the water plan

Delivering to the strategies and actions in this plan will require additional funding of water efficiency, stormwater treatment and water harvesting actions.

To meet the water plan's targets by 2020, Council must invest an average of \$1.6 million dollars per year, or about 5.6% of its current capital works budget, in water sensitive urban design. The community will also need to increase its efforts in implementing water sensitive urban design, with an estimated \$750,000 required per year by businesses and residents.

What are the benefits of increased action?

There are many benefits associated with funding water plan actions, including improved amenity of our parks, streetscapes and facilities, flooding control through reduced stormwater flows, increased security of supply in times of drought, and reduced operational costs. A healthy, green city is a better environment and will support Council in its other efforts to adapt to a changing climate and improve social wellbeing.

TURNING ISSUES INTO OPPORTUNITIES

Creating a water sensitive city will take time – stormwater treatment and harvesting schemes need to be carefully designed and constructed, and sometimes designs need to be changed to meet the city's needs.

THINKING ABOUT YOUR LOCAL AREA, CAN YOU IDENTIFY ANY OF THE FOLLOWING CURRENT ISSUES THAT COULD BENEFIT FROM WATER SENSITIVE URBAN DESIGN?





Image provided courtesy of Melbourne Water

WHAT THE WATER PLAN WILL MEAN FOR YOU

You are an important contributor to achieving a water sensitive city and there is a lot you can do at home and at work to help us get there. Here's a quick guide to what we need to do to become more water-smart.

UNDERSTAND, REDUCE, REUSE, HARVEST and CLEAN... the five steps to a water-wise home and business!

- **Understand:** Use your water bills to measure and monitor your water use. Then identify the largest water uses and focus your action to what matters most.
- **Reduce:** Conserve at home, by taking shorter showers, turning off the tap, fixing leaks, washing full loads and converting lawns to drought-resistant groundcovers. Become water efficient by installing a triple-A rated showerhead (Council will exchange your old one for a new one for free!), dual-flush cistern, four- to six-star water-rated appliances, efficient irrigation systems and a trigger nozzle on your hose.
- **Reuse:** Reuse greywater from your laundry and showers to flush the toilet or feed your garden. Storage comes in all shapes and sizes, and can be placed outside or under your home.
- **Harvest:** Rainwater and stormwater can be harvested for use, giving you an alternative water source for baths, showers, toilets and the garden. Storage comes in all shapes and sizes, and can be placed outside or under your home, and even underground.
- **Clean:** Clean up your act with what you put down the drain. This includes paints, chemicals, and washdown water. Consider installing a raingarden to treat stormwater runoff from your property. A planter box under your down pipe is a good start! But remember, these should not be put into a stormwater drain or into a drain in your home.

For more information on being waterwise and to find out more about Council's sustainable living programs go to www.enviroehub.com.au

FOR MORE INFORMATION

To learn more about water, other Council environmental plans, or action you can take to make your lifestyle, home or business, and your neighbourhood more water sensitive, visit www.enviroehub.com.au

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