

Recycled Water Strategy 2018-23

Developing sustainable recycled
water supplies

Recycled water supports resilient and liveable communities

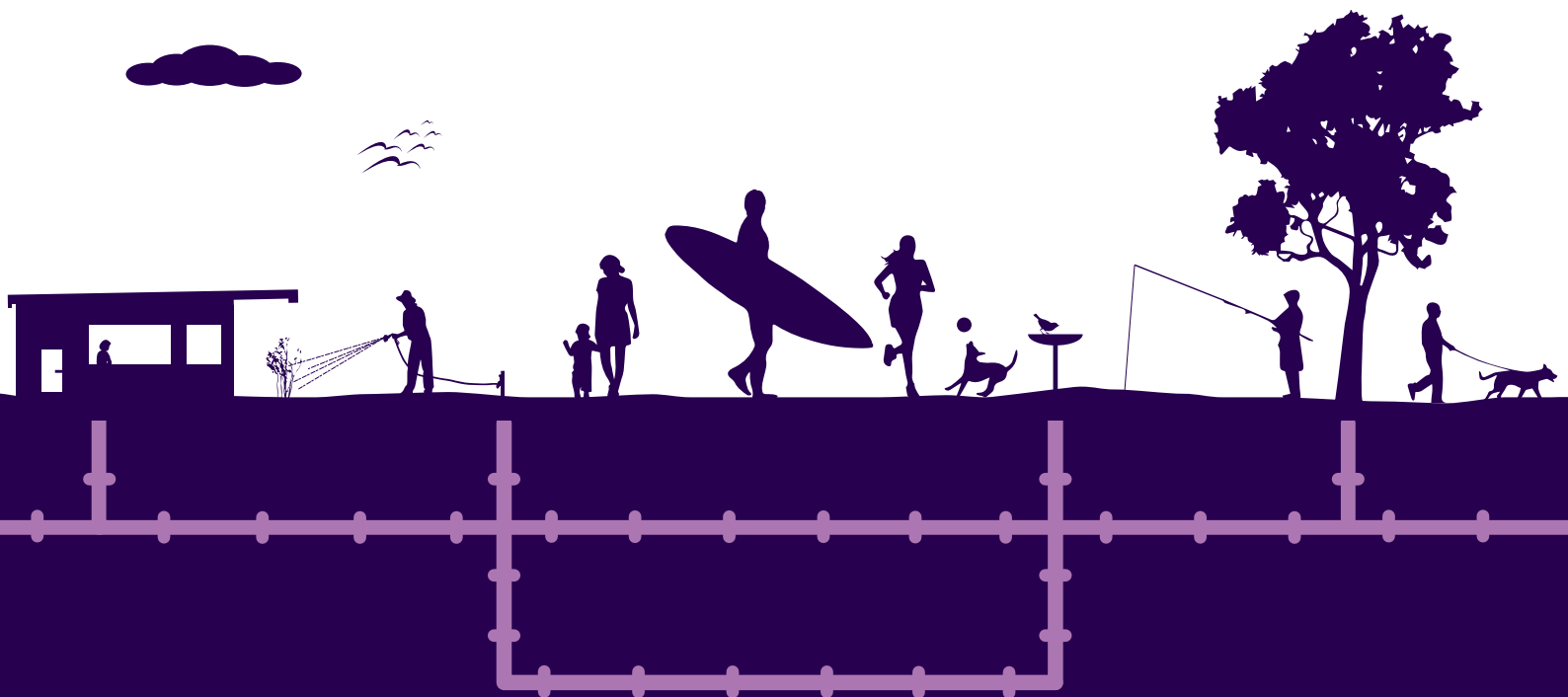


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Our environment vision

To be an environmentally sustainable organisation through minimising environmental impacts, mitigating and adapting to climate change, protecting and enhancing our environment as well as empowering the community to use water in a sustainable manner.



Introduction

At Westernport Water we strive to be an environmentally sustainable corporation; our approach is simple – use the most appropriate water for its intended purpose.

While we have a range of diverse local water sources that can be supplemented by the Melbourne Water Supply System, the uptake of recycled water provides an important weather independent water supply for non-drinking purposes. In addition, by increasing recycled water use we directly reduce the volumes of treated effluent discharged to Bass Strait.

The use of recycled water in our community builds local resilience in the face of climate variability. This means improving the liveability of our townships by allowing for the upkeep of watered recreation areas and providing water to support local food production, particularly during periods of drought.

Westernport Water see this strategy as an important legacy for future generations. This was further reinforced at our most recent customer consultation sessions for our Price Submission. Customers clearly noted the importance for Westernport Water to reduce its treated effluent discharges to the ocean while at the same time find ways to ensure the cost to provide recycled water to customers does not have to be subsidised by the wider customer base.

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What is recycled water

Recycled water is treated wastewater (primarily from sewage) that is treated to a standard that is safe for its intended use.

Wastewater is water that carries waste from businesses, industries and homes. It is a mixture of water and dissolved or suspended solids. The water from homes includes the water flushed down toilets, and water from the bath, sink, washing machine and other domestic sources. This strategy addresses recycled water sourced from Westernport Water's wastewater treatment plants.

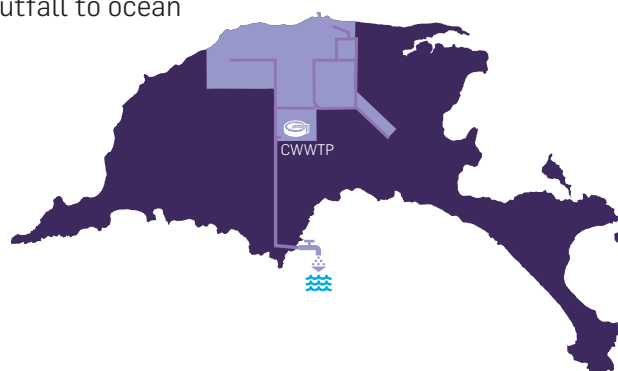
Our wastewater network

Westernport Water operates two wastewater treatment plants. The Cowes Wastewater Treatment Plant (CWWTP) and the King Road Wastewater Treatment Plant (KRWWT) in Corinella.

CWWTP treats sewage from major towns on Phillip Island (excluding Silverleaves) and San Remo. This treatment plant receives 86 per cent of inflow from Westernport Water's sewerage network. Based on the past five year average, around 5 per cent of inflow from CWWTP is treated to a Class A recycled water quality and distributed to residents in new housing estates in Cowes & Ventnor, and to non-residential users such as the Phillip Island Golf Club and recreation reserves. A further 5 per cent is used onsite to water tree plantations and the remaining 90 per cent of treated effluent is discharged to Bass Strait at Pyramid Rock.

KRWWT treats sewage from Grantville, Coronet Bay, Corinella, Tenby Point & Pioneer Bay, receiving around 14 per cent of Westernport Water's sewage inflow. All of KRWWT's treated wastewater is irrigated on company owned farmland surrounding the treatment plant. Sewage collected from Kilcunda and Dalyston is treated at South Gippsland Water's wastewater treatment plant in Wonthaggi through a trade waste agreement.

- Current recycled water supply areas
- Westernport Water service area
- Future recycled water supply area
- Outfall to ocean



Are treated effluent discharges harmful to the marine environment?

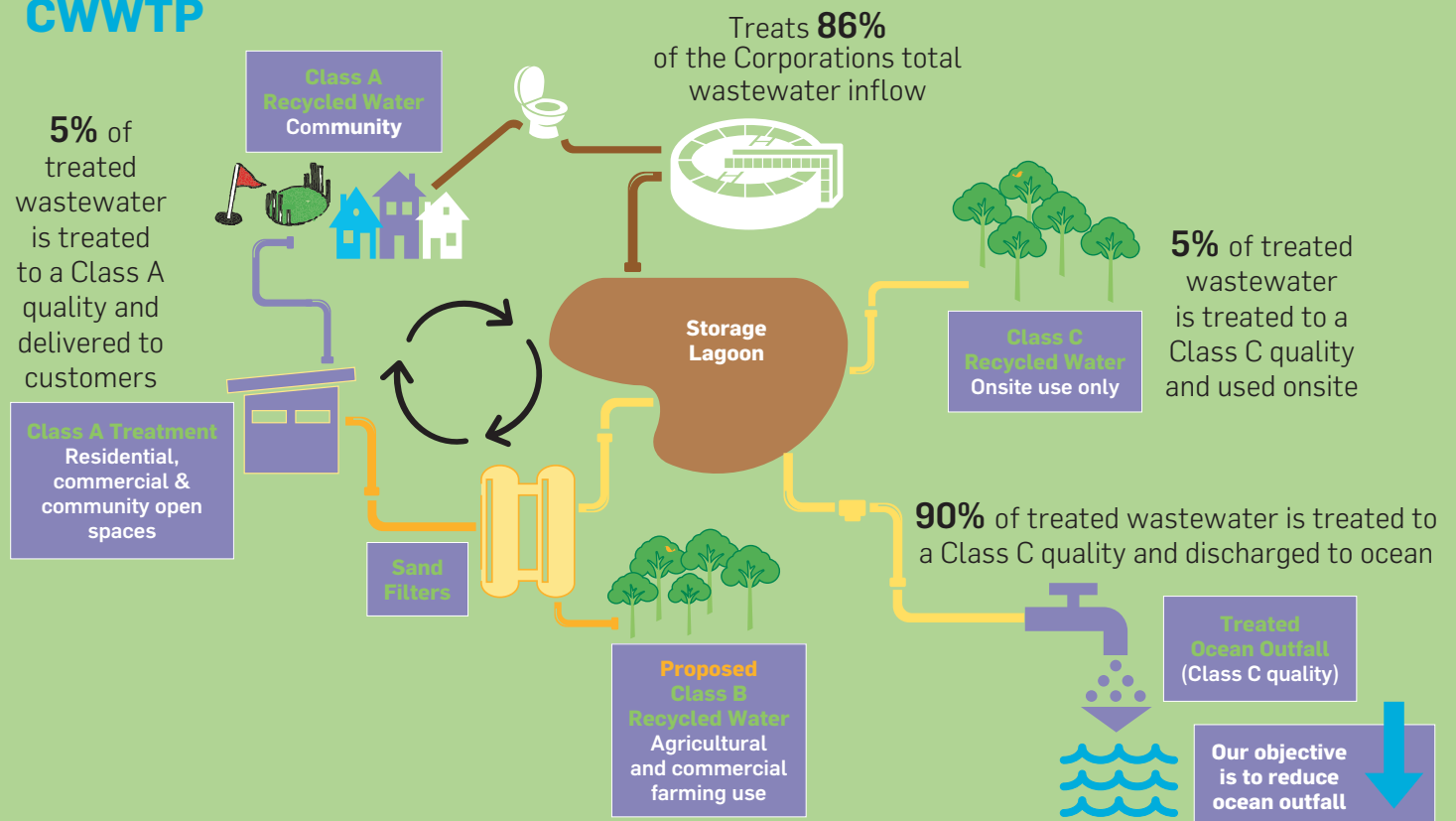
Our treatment plant uses biological processes to remove solids along with some nutrients. The remaining dissolved nutrients (nitrogen and phosphorous) and other inorganics that remain in the effluent discharged can promote growth of marine life different to those naturally occurring, altering the ecosystem of the receiving environment.

Recycled water in San Remo

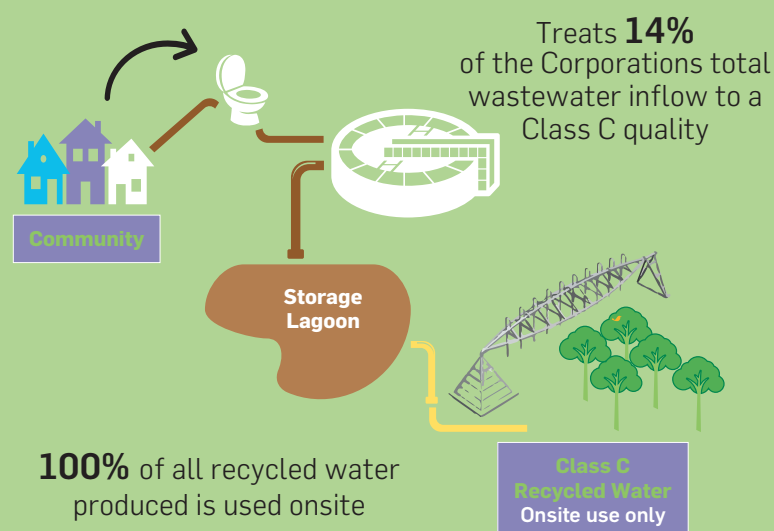
Westernport Water is further investigating the integrated water options to service the high growth area of San Remo. Together with the Bass Coast Shire Council, Westernport Water has set the planning condition for developers to install recycled water pipework in new developments for the future.

Recycled water treatment and end use

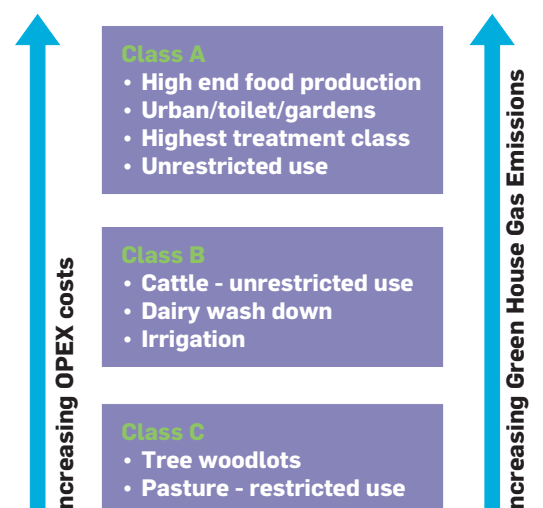
CWWTP



KRWWTP



Recycled water quality and controls



Recycled water from our treatment plants

As you increase the treatment of wastewater, a higher quality of recycled water is produced. However, a higher quality of recycled water has a higher energy demand and operational cost to produce. We follow guidance from the EPA Victoria and the Victorian Department of Health and Human Services, on the required recycled water treatment level, suitable end uses and management controls, ensuring protection of human health and the environment.

Why we need a Recycled Water Strategy

Population growth & climate change

Our current forecasts indicate annual wastewater inflows will increase by 669 million litres (ML/year) by 2050. Without a targeted approach, recycled water use from our wastewater treatment plants will increase by less than half of this volume (237 ML). This means without setting clear targets and guiding our business decisions moving forward the impact of our treated effluent will invariably increase in response to the increases in population growth from both the permanent population and peak holiday periods.

The impacts of climate variability will mean prolonged drought and more intense rainfall events. This Strategy provides an avenue for Westernport Water to prepare and build local resilience to manage future challenges.

Legislative and policy drivers

Westernport Water holds an amalgamated licence for its wastewater treatment plants that have conditions on the quality and quantity of its treated effluent discharges. There is a condition within this licence to reduce the impact of our treated effluent discharges over time. The Statement of Obligations 2015 issued by the Victorian Minister for Water under the *Water Industry Act 1994* also requires the Corporation to minimise the impacts of its activities on the environment and to support sustainable and liveable communities.

The Water for Victoria Water Plan sets out the long-term direction for management of Victoria's water resources. The Plan sets out key actions to address the challenges from population growth and climate change that will impact on Victoria's water resources. Specifically, this strategy addresses Action 5.4 of The Plan to maximise waste to resource opportunities to support a healthy environment, a prosperous economy and thriving communities.

This Strategy will guide the development of our recycled water supplies in into the future ensuring better outcomes for the community, customers and the environment.

What our customers are telling us

There is overwhelming support from our customers to reduce the volume of treated effluent that is discharged to the ocean. However customers are less willing to continue subsidising the higher cost of producing Class A recycled water, which has been our primary avenue for reducing our treated effluent discharge volume. Customers have indicated a preference for Westernport Water to explore options that would increase our onsite non-Class A recycled water usage, reducing production costs.

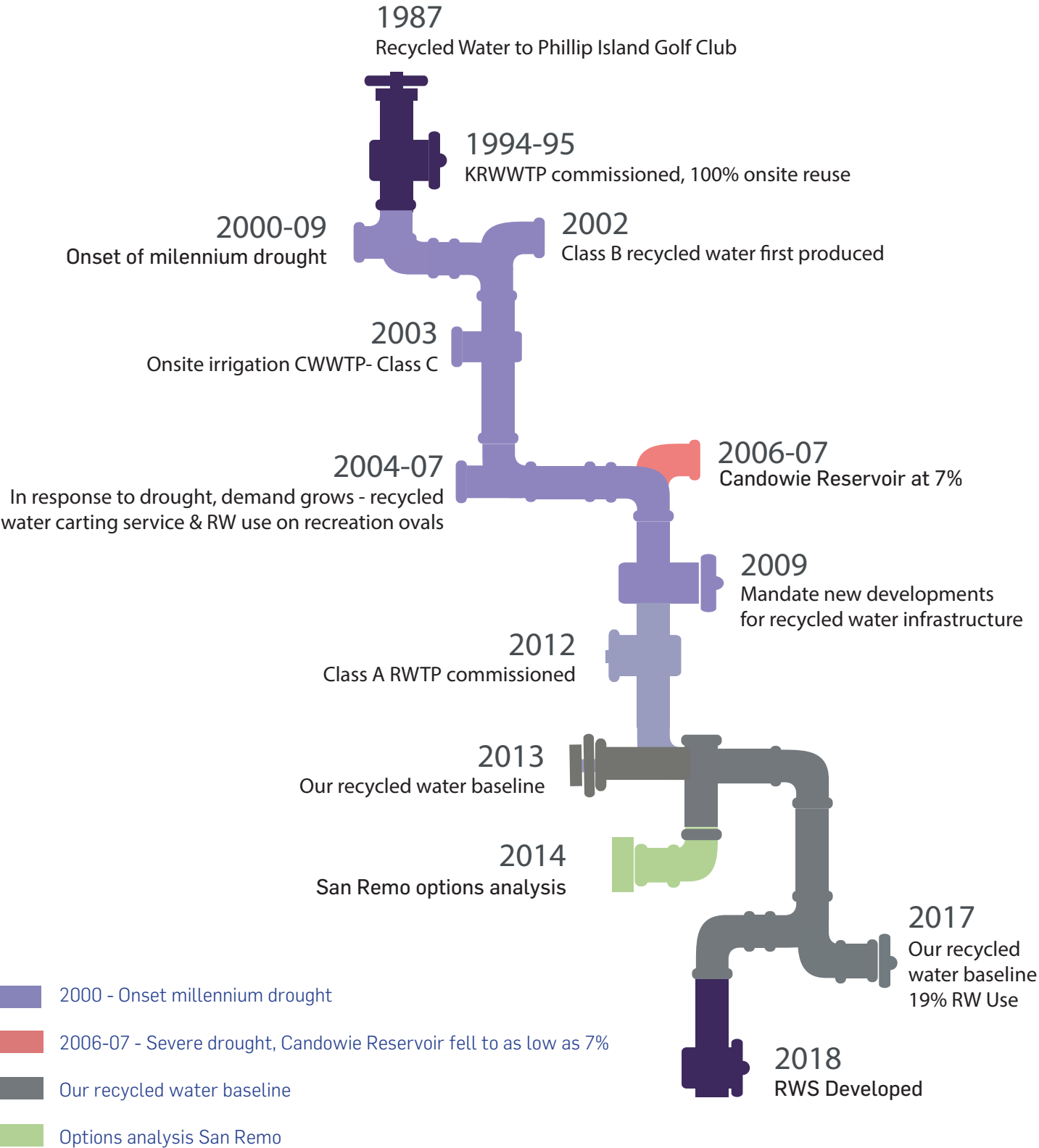
"It's important to increase Class A and B to a reasonable price to reduce ocean outfall."

"Get it out into the community for those businesses that can utilise recycled water. Schools could use recycled water on their gardens and toilets and save fresh water, as well as sporting and recreational areas."

"Consider lease or partnership arrangements to utilise Class B recycled water rather than outright land purchase"

"Disappointing if non recycled water clients need to pay for service they cannot use."

Our recycled water history

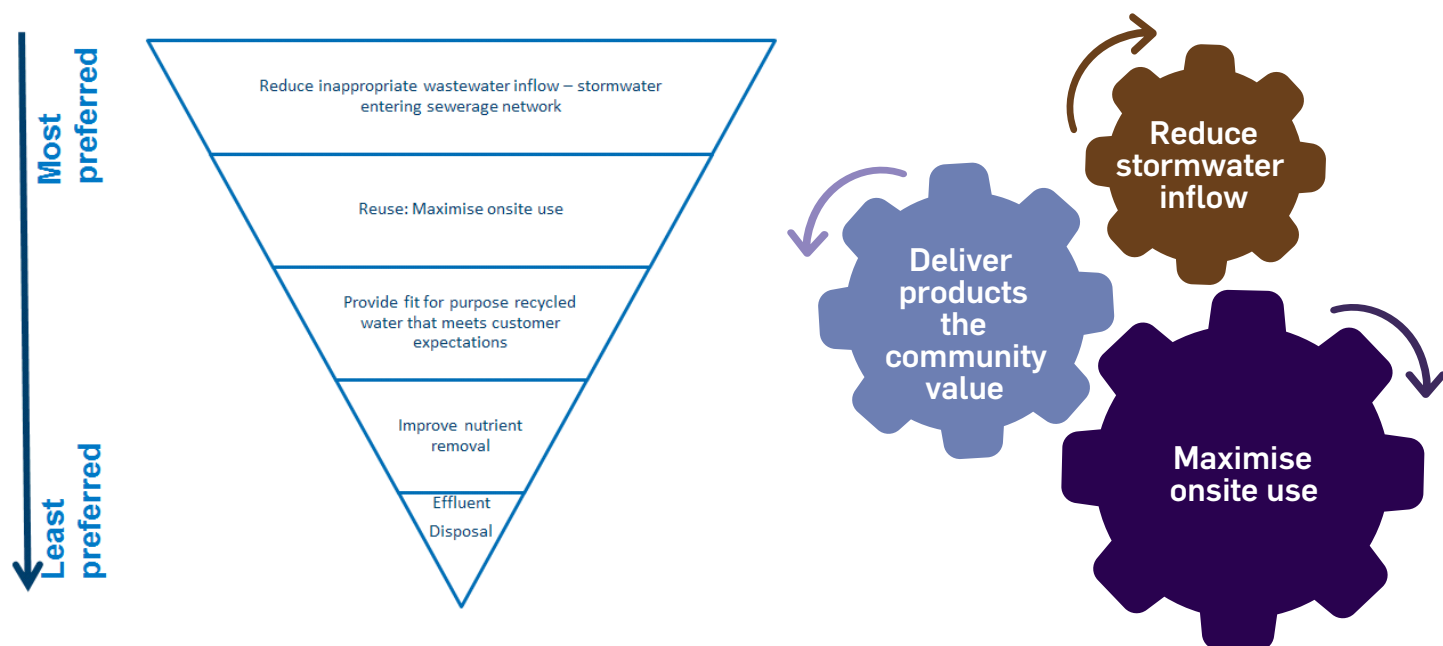


Our recycled water history

Westernport Water has a long history of commitment supporting the community and local business through periods of drought with a safe, reliable supply of recycled water. WPW was awarded a grant of 2.85 million by the federal government to partly fund the establishment of a state of the art recycled water treatment plant (RWTP) to produce Class A recycled water. The RWTP was commissioned in 2012 and supplied to all customers through the distribution network. The following summer recycled water use grew by ten percent .

Our approach

Our recycled water strategy is underpinned by the following approach:



Alignment with the climate change strategy

The growth of any supply inherently means greater amounts of energy are required causing an increase in the generation of GHG emissions. We pledge to reduce our GHG emissions by eight per cent by 2025 and become net zero by 2050. To meet this pledge, all parts of our business need to have a focus on efficiency measures, so there will be a lower energy demand ensuring the financial sustainability of future environmental offsets or renewable energy investments.

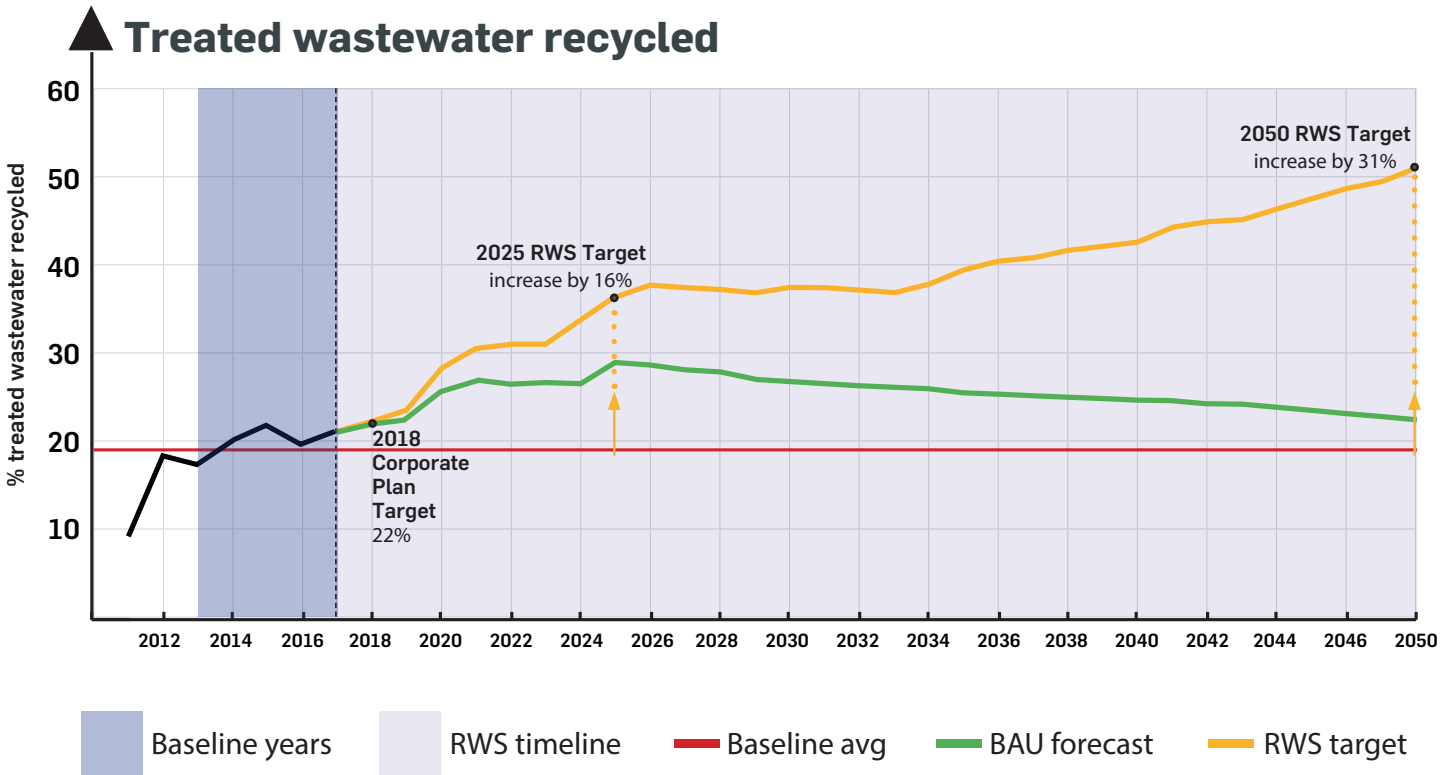
We address this issue in this strategy with a focus on making a lower class (Class B - with one fifth of the energy input) of recycled water available to customers and maximising the onsite use of Class C recycled water ensuring the most appropriate water is provided for its intended end use.

We are tracking the energy used to produce our different recycled water supplies. Our RWS targets aim to produce greater volumes of recycled water with a lower energy demand and lower operational cost per ML produced to what we do today.

Growing recycled water supplies sustainably



Where are we now? Our baseline & targets



Baseline	
19%	Treated wastewater recycled
31.95 tonnes	Nutrients discharged per year
3.5 tCO ₂ -e	CO ₂ -e avg. per ML of recycled water produced
268 ML	Recycled water used

Our recycled water use baseline

The percentage of treated wastewater that is recycled from both plants is summarised in the chart above. The variation in recycled water use is largely due to the weather; hotter drier summers increase the demand for recycled water which is mostly used for outdoor purposes.

Our baseline 19 per cent of treated wastewater recycled is based on a five year average from 2013 to 2017. We use this baseline in the strategy to assess our progress. We have a corporate target of 22 per cent recycled water use for 2017-18 financial year.

Our business as usual recycled water use forecasts (green in chart above) reduce over time due to the higher proportion of forecasted wastewater inflows from population growth. This strategy will address this by ensuring a targeted approach to increasing our recycled water use sustainably, which will reduce the volume and impact from our effluent discharges over time.

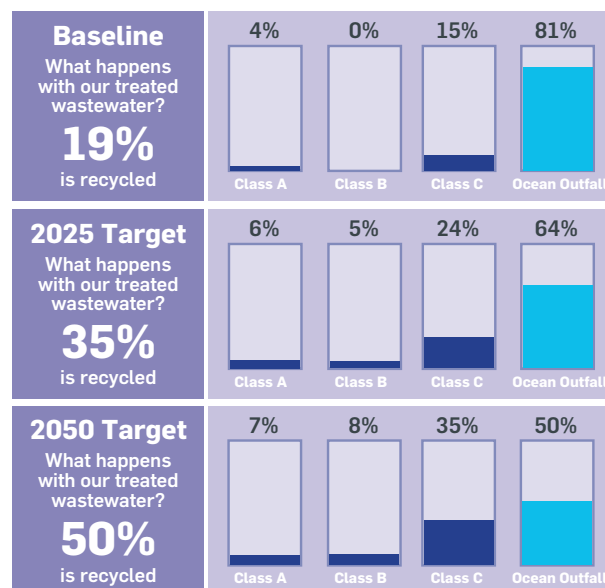
Our targets

These targets were developed based on ensuring we continue to meet the requirements of our EPA licence for our WWTP sites and reduce the impact from our effluent discharges over time.

The forecasted proportions of different classes of recycled water use and volumes of effluent discharge that we aim to reach are shown below.

Realise a 16% increase in our recycled water use from our baseline by 2025 and a 31% increase by 2050.

These target increases equate to 35% of all treated wastewater being recycled by 2025, increasing to 50% by 2050.



How will we know if our recycled water strategy is successful?

We will measure our success by:

Increasing our recycled water use sustainably

We aim to increase the amount of recycled water usage, but do it sustainably by also reducing emissions generated from recycled water production. This can be achieved by building demand for lower classes of recycled water.

	2025	2050
 Growing recycled water use sustainably	Increase recycled water use by 238 ML Decrease of 2.36 CO₂e per ML produced	Increase recycled water use by 675 ML Decrease of 2.68 CO₂e per ML produced

Reducing the nutrient loads discharged to Bass Strait

By increasing recycled water usage, we will be diverting the associated nutrient load away from the ocean outfall and sending it towards beneficial reuse schemes such as farm irrigation.

	2025	2050
	Reduce the nutrients discharged to the environment by 6.76 tonnes	Reduce the nutrients discharged to the environment by 15.31 tonnes

Assumptions

Forecasts do not currently include future recycled water use from the new housing developments currently under construction in San Remo. These new recycled water customers will be included in the next review of the Recycled Water Strategy in 2023.

Risks and opportunities

Population Growth
Impacts on Water and
Wastewater Systems



Risks

Increased demands on drinking water system.

Increased volumes of wastewater inflow to cause increased volumes of treated effluent discharged.

Opportunities

Increased recycled water use reduces demands on our drinking water system particularly during peak periods.

Increased opportunity to expand recycled water network to meet customer expectations.

Climate Change



Risks

Reduced predictability of seasons and the timing of recycled water demand.

Generally drier days & more severe droughts.

More frequent and severe rainfall events which will increase stormwater inflows to WWTP's.

Opportunities

Drier days and more severe droughts will increase demand for recycled water & its value in the community.

More severe droughts will increase the need to support local food production, water recreation spaces with weather independent sources.

Reducing stormwater ingress and inflow to our sewerage network will reduce impacts from severe rainfall events.

Operational Costs and
Energy Production
for Recycled Water
Supplies



Risks

Costs to produce Class A recycled water are not fully recovered by the current recycled water customer base.

Greater energy is required to produce higher classes of recycled water which has less restrictions on its end use.

Lower classes of recycled water generally require greater management controls.

Opportunities

Increase in dual pipe residential developments will increase revenue from the recycled water customer base.

Class B recycled water is suitable for agricultural purposes (cattle drinking and irrigation) which has lower production cost and energy demand.

Peak demands for recycled water production coincide with summer months when solar generation is greatest and nutrient loads entering our wastewater treatment plants are highest.

Find efficiency gains at WWTP sites to offset power requirements.

Ensure recycled water end uses are fit-for-purpose (appropriate quality/class suited to end use).

Reducing stormwater ingress and inflow to our sewer networks will delay the onset of costly WWTP upgrades.

Contaminants in Reuse
Products



Risks

Unknown/unregulated and emerging contaminants such as PFAS (per and poly fluorinated substances)/ microplastics in wastewater streams could impact on the quality of our recycled water supplies – as these inputs are not regulated their inputs and impacts are difficult to manage and understand.

Accumulation of known contaminants e.g. nutrients build up in soils from over application of recycled water.

Opportunities

Manage contaminant inputs to our sewer network at their source through risk assessment, monitoring in the network and trade waste agreements.

Collaborate with and engage in research opportunities within the water industry to better understand emerging contaminants in sewerage systems.

Assess soil monitoring records from recycled water commercial sites and identify preventative measures if adverse impacts from over application of recycled water is observed.

Maintain transparency with the community and recycled water users of known and emerging contaminants that may be present in recycled water supplies.

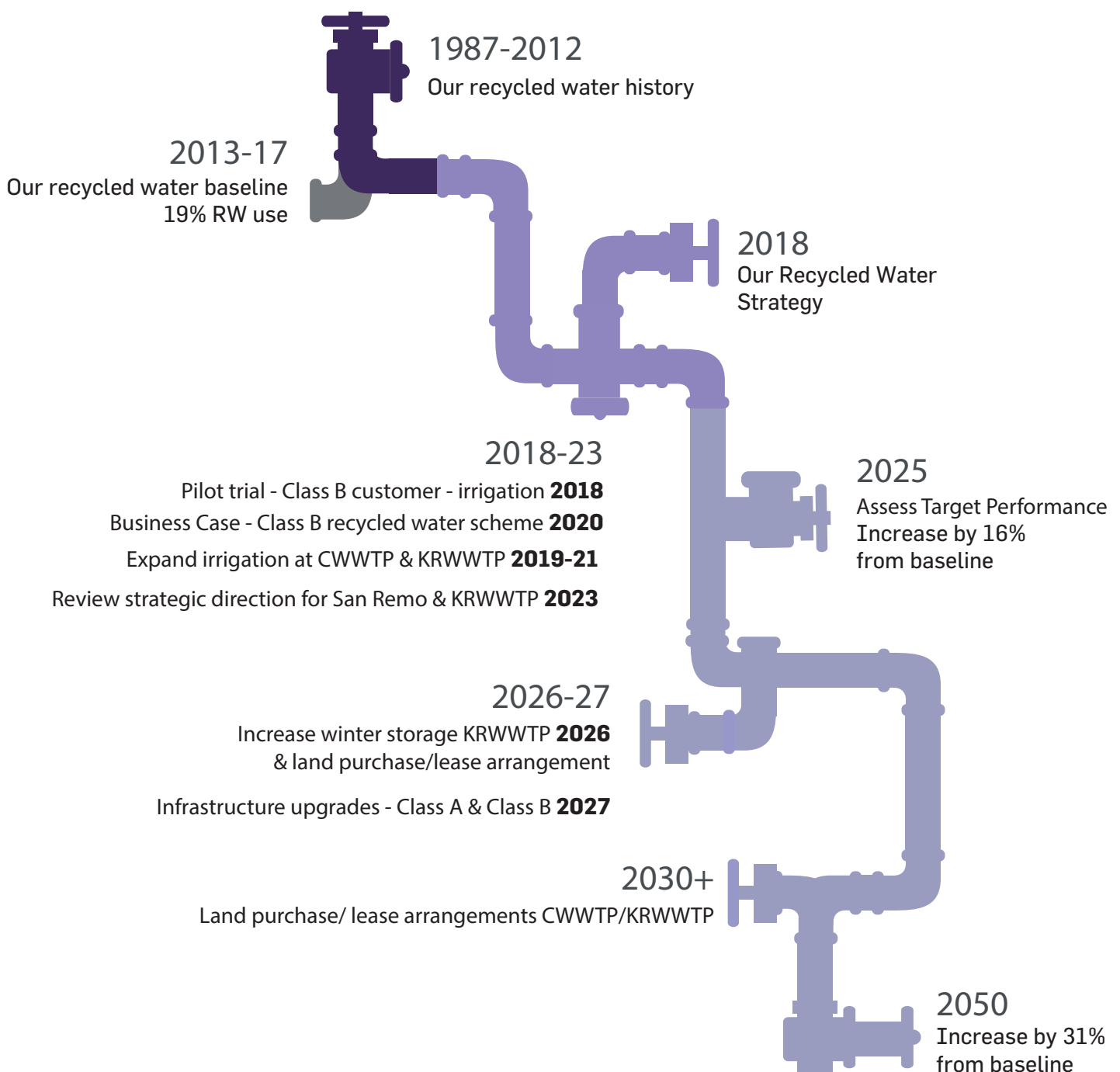
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How we will get there

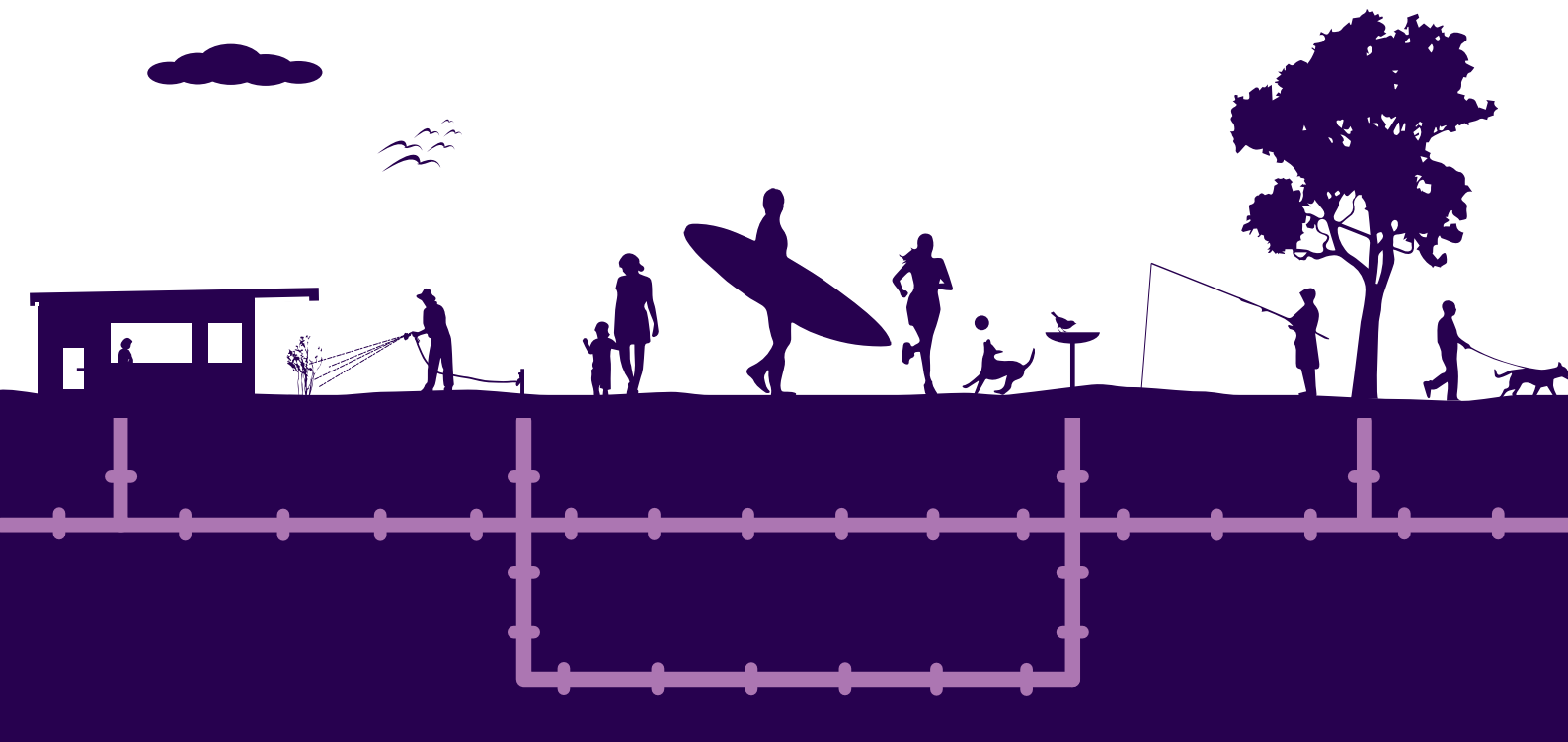
The key projects in the timeline will guide us in meeting our recycled water strategy targets. This involves:

- a pilot trial for Class B, which will inform the future development of the recycled water scheme to service irrigation and agricultural customers near the CWWTP
- expansion of irrigation areas within our existing Wastewater Treatment Plant sites
- assessment and land purchase/ lease arrangements near our Wastewater Treatment Plant sites to meet growth and review of the strategic direction for San Remo reuse
- upgrades of our recycled water infrastructure to meet customer demands
- reduce inflow and infiltration of stormwater into our sewer network (ongoing)

Project initiatives to meet our targets



Recycled Water supports resilient and liveable communities



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