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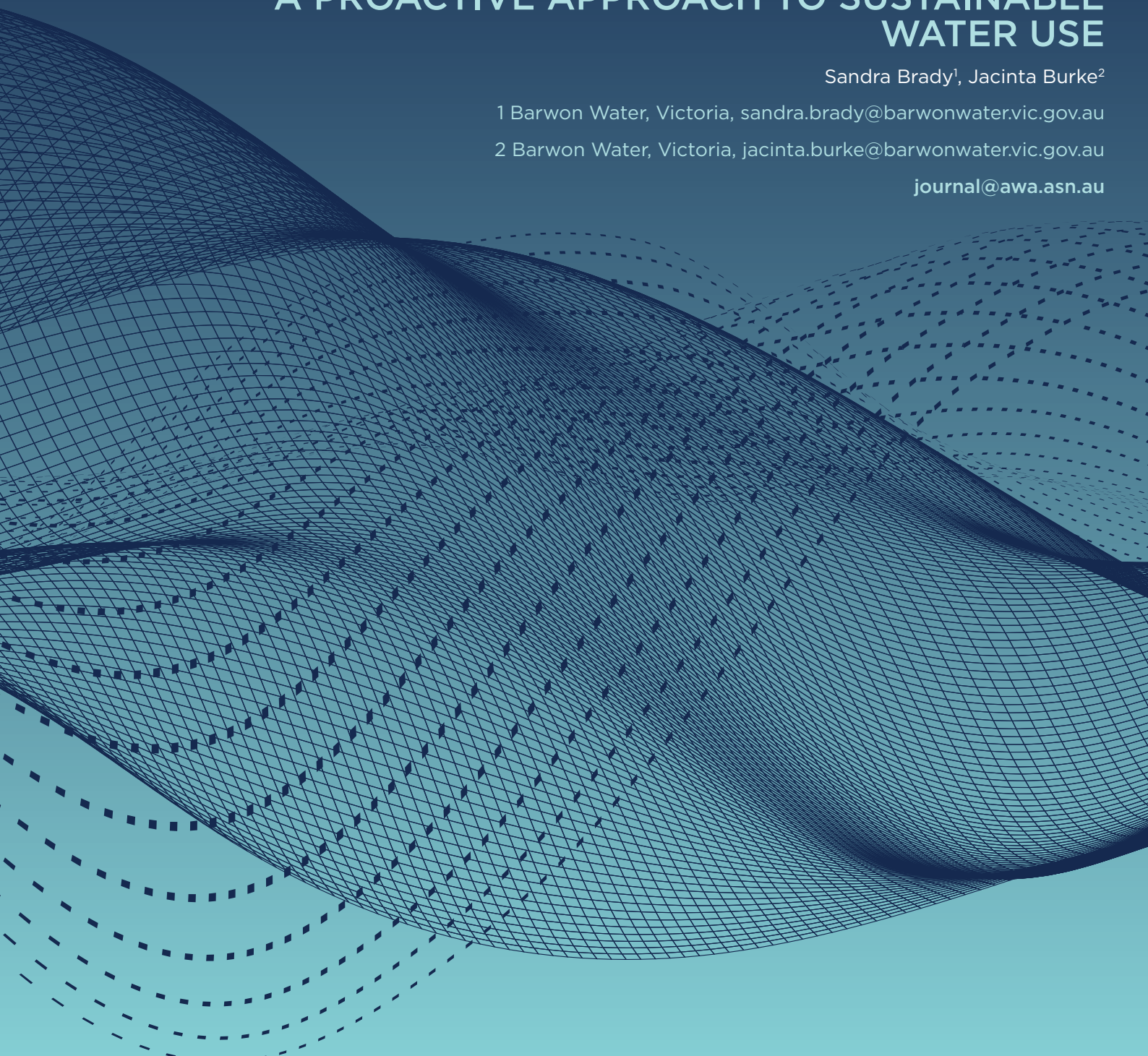
RESILIENT AND THRIVING COMMUNITIES – A PROACTIVE APPROACH TO SUSTAINABLE WATER USE

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Resilient and thriving communities – A proactive approach to sustainable water use

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ABSTRACT

Saving water is something we don't often think about until the next drought, and by then it's often too late. To ensure our communities continue to thrive under an ever-changing climate, Barwon Water undertook extensive engagement which highlighted strong community support and willingness to pay for ongoing water efficiency, which was key to an uplift in investment in year-round sustainable water initiatives. A proactive rather than reactive Sustainable Water Use Plan (SWUP) was developed to manage demand and deliver on customer expectations. The SWUP initiatives have achieved water savings of around 960 million litres between 2018-23. By meeting the needs and expectations of our customers and community other key benefits have also been achieved. These include improved customer wellbeing and affordability, reduced wastage, reduced energy consumption and positive customer experience while providing high value for investment (cost per megalitre of water saved) for Barwon Water to maintain resilient and thriving communities. The SWUP is now a key deliverable in Barwon Water's Strategy 2030 and a refreshed plan has been prepared for 2023-28, building on the achievements and lessons learnt in the previous five-year period.

INTRODUCTION

Our population is growing and our climate changing with extreme weather events occurring more frequently. Water efficiency is an important part of sustainable water management as it provides

insurance against changes in demand driven by unpredictable rainfall, as well as future uncertainty driven by population growth. It is also one of the single largest, quickest, and cheapest contributions to improving water security, both in the long term to manage supply-demand, and also during drought (AWE 2016).

Barwon Water's Sustainable Water Use Plan (SWUP) is a key deliverable in the organisation's Strategy 2030, and it supports customers and community to be water efficient and sustainable all year round, instead of just in times of drought. The SWUP is a combination of tailored programs, whole-of-region campaigns, partnership projects with stakeholders, state government funded initiatives, digital meter technology for early leak detection and place-based approaches to demand management.

BACKGROUND

Barwon Water (Barwon Region Water Corporation) is Victoria's largest regional urban water corporation. We deliver water services to more than 320,000 permanent residents, which increases up to 545,000 people during the peak holiday periods. Around 92% of our customer base is residential, with the remaining 8% a mixture of commercial, industrial, and agricultural customers. Our region has a variety of communities such as urban, rural, rural-residential, and coastal tourism communities.

Our region of responsibility stretches over 8,100 km², from Little River and the Bellarine Peninsula in the east, to Colac in the west, and from Meredith

and Cressy in the north, to Apollo Bay on Victoria's south-west coast (Figure 1).

Our mission is to strengthen the economic, social, cultural, and environmental prosperity of our region through the delivery of sustainable, affordable, innovative, and reliable water and sewerage services.

Barwon Water has a long history of supporting its customers and broader communities to be sustainable and efficient with their water use. This was particularly highlighted during the Millenium Drought in Victoria (2001-09) which reinforced the opportunity to do more with less water and to reduce reliance on traditional water sources (DELWP 2016).

After the Millenium Drought ended, the level of support for water efficiency and water conservation programs steadily declined. Barwon Water continued to offer a range of water efficiency programs as part

of our Business as Usual (BAU) offerings such as:

- A school education program including the Victorian Government Schools Water Efficiency Program (SWEP);
- A legacy showerhead exchange program for residential customers;
- An On-Farm Leak Detection Program in Colac; and
- Limited promotion of the state-wide Permanent Water Saving Rules (PWSR).

Annual customer surveys indicated a high level of support for water efficiency in our region. This, coupled with new directions for reinvigoration of water efficiency outlined in the Victorian Government's water plan, *Water for Victoria* (2016), as well as future uncertainty due to anticipated population growth and unpredictable rainfall, was timely to review our BAU offerings to ensure water efficiency continued to play a role in managing demand.

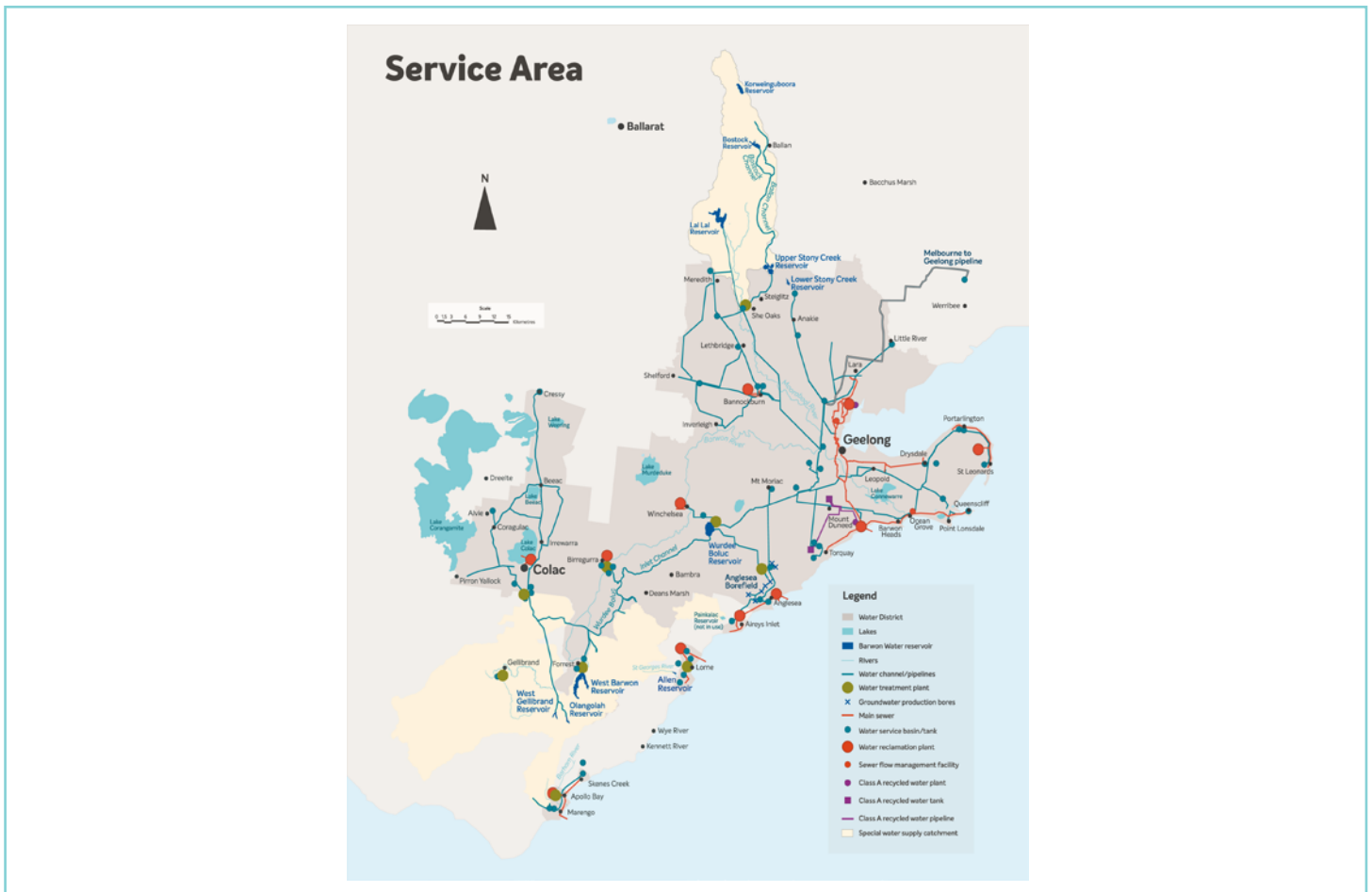


Figure 1: Barwon Water Region Service Area

DISCUSSION

Community engagement

Every five years, Victorian water corporations are required to develop a Pricing Submission to the Essential Services Commission (ESC). Barwon Water developed its 2018-23 Price Submission in partnership with customers and communities following 18 months of extensive community consultation and conversations.

In 2017 we engaged with and sought feedback from customers and community on our services and our future prices. This included determining customer and community support and willingness (or not) to pay for an uplift in investment in water conservation and water efficiency.

This engagement process was transformative for Barwon Water and vastly different to previous submissions that had been prepared. It was customer and community led, to involve customers to influence every aspect of our five-year pricing plan. There was also strong leadership and support from Barwon Water's Board of Directors, Executive and Senior Management.

Throughout the engagement process, our customers and communities had the opportunity to consider, discuss and form opinions on, proposed prices and services, the process involved:

- Discussions to determine what our customers valued about their water and wastewater services;
- Based on what we heard, testing these values with the broader community and stakeholders;
- Convening a community panel to develop and put forward recommendations on new prices and services;
- Confirming the proposed services and prices informed by customer and stakeholder feedback;
- Providing an opportunity for the broader community, stakeholders and customer panel to provide feedback;
- Finalising our new prices and services informed by community and stakeholder feedback; and
- Presenting our proposed services and prices to the regulator (ESC) for approval.

During the engagement process, the majority of customers strongly agreed to an uplift in investment in water efficiency and sustainable water use, with around 62% of residential and business customers willing to pay up to \$5 per year towards customer water efficiency (EY Sweeney 2017). This demonstrated that our customers and broader communities strongly value being water efficient and sustainable with their water use.

A highlight of the 2018-23 Price Submission was the allocation of an extra \$2.5 million for customer and community water efficiency programs, to be delivered across the five-year period. This was Barwon Water's largest investment in water efficiency since the Millennium Drought.

Sustainable Water Use Plan

Extensive research and planning was undertaken to develop a suite of new and enhanced water literacy and water efficiency programs. This led to the development of our SWUP, containing a variety of initiatives (a range of activities undertaken by the customer to reduce water demand at the point of use) to meet community needs, expectations, and value (social and economic) while also providing high value for investment (cost per ML water saved). Social value, an approach to valuing what matters to people and communities (WSP 2023) was a priority in the development of the SWUP. This included incorporating community and customer feedback from the extensive price submission engagement process and throughout the five years of implementing the SWUP initiatives.

Key principles

A variety of key principles underpin Barwon Water's SWUP including:

- Adopting sustainable water use as part of a proactive approach to future demand management, using it as insurance against rapid or gradual increases rather than reactive in times of crisis;
- Adopting a fit-for-purpose approach where programs are tailored to meet the needs of customer sectors;
- Focusing on the importance of the long-term implications of sustainable water use behaviour;
- Recognising the value of new knowledge, monitoring, evaluation, review, and feedback in adaptation-based decision making;

- Considering the broader impacts and outcomes offered by water efficiency in addition to water savings; environmental, economic and social values; and
- Recognising the need for equitable outcomes and implementing programs that can be measured and sustained.

The objectives of the SWUP are to:

- Increase awareness and understanding of sustainable water use behaviour in the community;
- Encourage sustainable water use behaviour in specific water supply systems or in specific customer sectors; and
- Establish stronger relationships with major water using customers and the community through offering appropriate levels of service in sustainable water use.

Sustainable water initiatives

The SWUP is delivered across five streams: Residential, Non-residential, Schools, Sustainable Communities and Water Literacy. It is a combination of tailored programs, whole-of-region campaigns, stakeholder projects, Department of Energy,

Environment and Climate Action (DEECA) programs and a Sustainable Communities program (Figure 2). The SWUP initiatives include:

- Residential: hardship customer home plumbing program, residential customer home plumbing program and a home plumbing program for not-for-profit organisations that provide community housing for the disadvantaged;
- Non-Residential: grants for businesses to support investment in water efficiencies and using alternate water sources, rebates for water efficient fittings/fixtures and appliances, using technology for early leak detection and monitoring water use, and a partnership program with Local Government and Coastal Committees of Management;
- Schools: School Water Efficiency Program (SWEP) using technology to support schools to monitor, detect and repair leaks;
- Sustainable Communities: an innovative place-based approach to demand management using technology for early leak detection, education and awareness, behaviour change and living laboratory initiatives; and
- Water Literacy: summer awareness campaigns and promotion of the Victorian Government Permanent Water Saving Rules (PWSR).

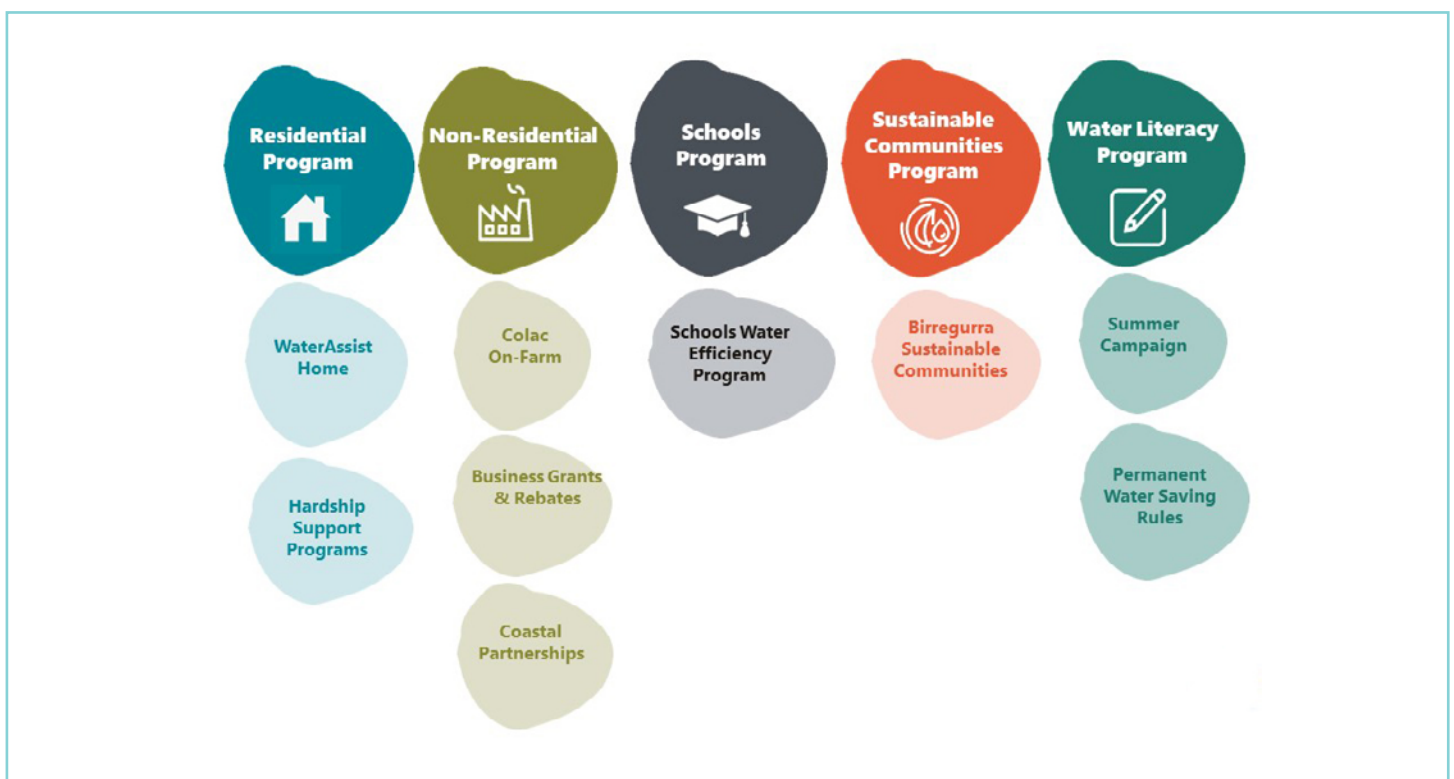


Figure 2: Sustainable Water Use Plan Streams and Programs

For Barwon Water and more broadly across Australia, voluntary sustainable water programs like these have helped change community attitudes and behaviour towards using and managing water wisely.

The residential hardship home plumbing program for vulnerable customers is a good example of not only a successful water saving program but also a program with high social value outcomes. Over the five years of the SWUP, we have helped over 2,000 vulnerable customers upgrade inefficient fittings and fixtures and repair leaks in their homes. A wide range of customers participated in the program including families with young children to pensioners (low to middle income bracket). All the customers that participated in the program had a genuine need and were highly appreciative and receptive of the free service.

The homes visited were generally older (built in the 1970's) and were neat and tidy, however, most tapware had not been maintained. Many were broken, hard to turn on/off or had missing pieces (no hot/cold labels). In many cases where a tap or toilet was leaking or broken, the customer would just turn off the tap or toilet and not use it. There were also cases where homeowners had made their own tapware. Many customers reported that they could not afford a plumber.

Promotion and uptake

An important part of the SWUP is the promotion and marketing of the initiatives to encourage customer and community uptake. We use a variety of communication channels to target customer sectors including the corporate website, monthly customer newsletters, social media, radio advertisements and spotlight interviews, pop up displays at community events as well as targeted communications via letter or email.

Case studies, media releases and industry webinars have also been effective in communicating the success of the SWUP more broadly. The variety of methods used to promote water efficiency and sustainable water use initiatives has seen an increase in the overall uptake of programs over time.

Test and trial

It is important to test and trial new initiatives to plan for future SWUP programs. For example,

we partnered with the Birregurra community, a small rural residential township, to conduct "Living Laboratory" initiatives to determine how the community could save water. The first Living Laboratory focused on showers to understand how behaviour change and more efficient showerheads could reduce water usage in households. Participants were asked to monitor their shower times before and after a new ultra-low flow showerhead that uses less than 5 litres of water per minute was installed.

The trial found that average shower times of participants ranged from 2 to 9.6 minutes before and after the new ultra-low flow showerhead was installed, which was shorter than participants expected. Seventy-one percent of participants recorded 4-minute or less shower before and after their showerhead had been replaced. The flow rate of existing showerheads ranged from 9 to 10 litres per minute. After they were replaced with water-efficient showerheads (less than 5 litres per minute), water use of showers was reduced by almost half. Eighty-five percent of participants were very satisfied with their new water-efficient showerhead and would recommend them to others.

While the trial was successful, participation rates were low (around 2% of households in the town participated). Even after the trial results were shared with the broader community, there was no interest from other households in replacing their existing showerhead with a new water-efficient showerhead.

However, a local council heard about the trial and was extremely interested in having the showerheads installed across nine facilities at their recreation reserves. Forty new efficient showerheads were installed replacing existing showerheads that ranged from 9 to 16 litres per minute. Since the upgrade, water savings of up to 530 kilolitres per year have been achieved. There has also been interest from caravan parks to upgrade existing showerheads in amenity blocks to the ultra-low flow water-efficient showerheads.

Monitoring and evaluation

Monitoring and evaluation have been key to determining the success of Barwon Water's SWUP year on year and at the conclusion of the five-year price period. In particular water savings, as well as customer feedback and social outcomes have been

used to report on and communicate its successes. Each year SWUP initiatives are evaluated and improved where needed.

For example, an annual review of the small business rebate program to support eligible businesses to save water by upgrading to more water-efficient fixtures and fittings or using an alternate water source, found that rebates did not demonstrate the value for investment originally predicted. The program was revised, reducing the rebate amount a business customer could apply for. This adjustment did not have an impact on program application rates and the rebates are now better value for investment for Barwon Water while still supporting businesses to be more water efficient.

Various monitoring and evaluation methods are used to determine if each of the SWUP program objectives have been met. These are outlined in Figure 3.

Outcomes

The SWUP is a planned and targeted approach that has achieved water savings of around 960 million litres in partnership with customers and community, by delivering initiatives of financial and social value.

In addition, we have been able to build knowledge and trust about the water related issues facing our region, such as water security and unpredictable rainfall.

Other key outcomes include improved customer wellbeing and affordability, reduced wastage, reduced energy consumption and positive customer experience.

Highlights of the 2018-23 SWUP include:

- Birregurra Sustainable Communities – Water program 2021 Winner IAP2 Core Value Award, Community Development Category;
- A 62% in increase in the number of schools participating in the Schools Water Efficiency Program;
- Helping more than 2,000 vulnerable customers upgrade inefficient fittings and fixtures and repair leaks in their homes;
- Building partnerships and stronger relationships with three Coastal Committees of Management and major water using customers, including five Local Government Authorities; and
- Improved reputation and Barwon Water brand recognition.



Figure 3: SWUP Monitoring and Evaluation

In the Barwon Region, there are three Coastal Committees of Management that manage caravan parks and coastal foreshore areas. During summer, the population of coastal towns triples due to tourism and water consumption increases significantly.

To encourage visitors to these areas to use water wisely, a Summer Campaign was developed and implemented, encouraging visitors to “take shorter showers while on holidays” and to “have a quick rinse at the beach.” This community education campaign led to the development of a Coastal Partnership Program, a partnership agreement between Barwon Water and each of the three Coastal Committees of Management. Data loggers to monitor water usage have been installed at caravan park and foreshore amenities to assist with early leak detection and to identify opportunities to save water.

The Coastal Committees are being supported to implement water saving projects such as upgrading foreshore amenity blocks with water-efficient fittings and fixtures.

Boomaroo Nurseries is a commercial nursery that supplies over 300 million wholesale vegetable seedlings annually. In 2022, Boomaroo Nurseries received a Business Water Grant to implement an innovative on-site water recycling plant saving around 40 million litres of drinking water per year.

The plant provides consistent recycled water quality and removes excess nutrients, complementing the water recycling, treatment and storage facilities already in place at the site.

The new plant means that Boomaroo Nurseries uses runoff and rainwater, reducing reliance on precious drinking water supplies and saving a significant volume of water for the region. The water recycling plant guarantees the availability of high-quality water, allowing the nursery to draw over 70% of peak water requirements from this alternate supply.

Key learnings

The key learnings (Figure 5) include:

- Customers recognise the role they play in using water wisely and they want support from us to provide them with the tools they need to be sustainable with their water use;
- Customer and community support and willingness to pay for sustainable water use was crucial to securing investment;
- There have been significant advancements in water using fixtures, fittings and appliances over the last decade so there are still opportunities for water savings by supporting customers to upgrade to more water-efficient products. For example new 5 litre per minute ultra-efficient



Figure 4: Barwon Water representatives inspecting the new water recycling plant at Boomaroo Nurseries

showerhead 4-star Water Efficiency Labelling Scheme (WELS) rated;

- Data from digital meter technology is providing the opportunity to save significant volumes of water and reduce wastage by supporting customers through early leak detection and repair programs;
- Customer feedback and satisfaction is important to capture social value. For each SWUP initiative, customers are invited to provide feedback and rate their satisfaction. Customers have indicated that SWUP programs have been well received, had a positive impact and all have high satisfaction rates;
- Reporting water savings has helped to demonstrate that SWUP programs are making a tangible difference and provide evidence to the community and Barwon Water management on the return on investment; and
- It takes time to build relationships and trust with stakeholders, for example Local Government and Coastal Committees, to deliver partnership programs.

The next phase

Customer and community engagement during the development of Barwon Water’s 2023-28 five-year Price Submission and broader Water for our Future initiative, indicated even stronger support

for residential and non-residential water efficiency programs to continue. The difference for this phase of engagement was that we were able to leverage what had already been achieved. The outcomes of the engagement were:

- 70% of customers support research into new water saving technology which is also supported by survey results from a national survey (AWA/ Arup 2022) where 45% rated technology for better water use and monitoring as a top three opportunity;
- 63% of customers support plumbing programs to help fix leaks in their home and business;
- 63% support programs that encourage changed water use behaviour; and
- Barwon Water business customers are supportive of a range of sustainable water initiatives, particularly for programs such as “Grants to support business and community organisations” (65%) which have been successfully delivered, demonstrating they meet customer expectations and achieve water savings.

Overall, continued investment in sustainable water use is strongly supported by customers with 97% agreeing that Barwon Water should facilitate “Smarter water use in the system and community” (EY Sweeney 2022).



Figure 5: Key learnings

A refreshed SWUP for the 2023-28 price period has been prepared (Figure 6), building on the achievements and lessons learned in the previous five-year period. Incorporating social value has given Barwon Water the social licence to implement programs that are now considered business as usual.

To support a secure water future for our region, there will also be an uplift of our focus and efforts to meet a water saving target of 1,000 million litres (ML) of water by June 2028.

Similar to the 2018-23 SWUP, the broader environmental, economic and social outcomes that our customers and communities value have been considered which will help us to achieve this water saving target through:

- Investment in additional place-based approaches (Sustainable Communities) in line with our Smart Networks (Water) program;
- Expansion of digital meter technology to track and capture water savings, increase customer awareness, alert customers to leaks and support sustainable water use behaviours;
- Implement collaborative water efficiency projects with our five Local Government Authorities;

- Supporting business customers to monitor and track their water usage and carry out water audits to determine where future water savings can be made; and
- A continued focus on research and development particularly in relation to new water efficiency innovations such as Hydraloop, a decentralised water recycling system.

CONCLUSION

Barwon Water has demonstrated that our customers and communities value water efficiency and being sustainable with their water use. Support and willingness to pay for ongoing water efficiency and sustainable water use programs is crucial for securing investment.

The 2018-23 SWUP achieved water savings of around 960 million litres in partnership with those living and working in our region. By meeting the needs and expectations of our customers and community other key benefits have also been achieved, including improved customer wellbeing and affordability, reduced wastage, reduced energy consumption and positive customer experiences while providing high value for investment (cost per ML water saved) for Barwon Water.

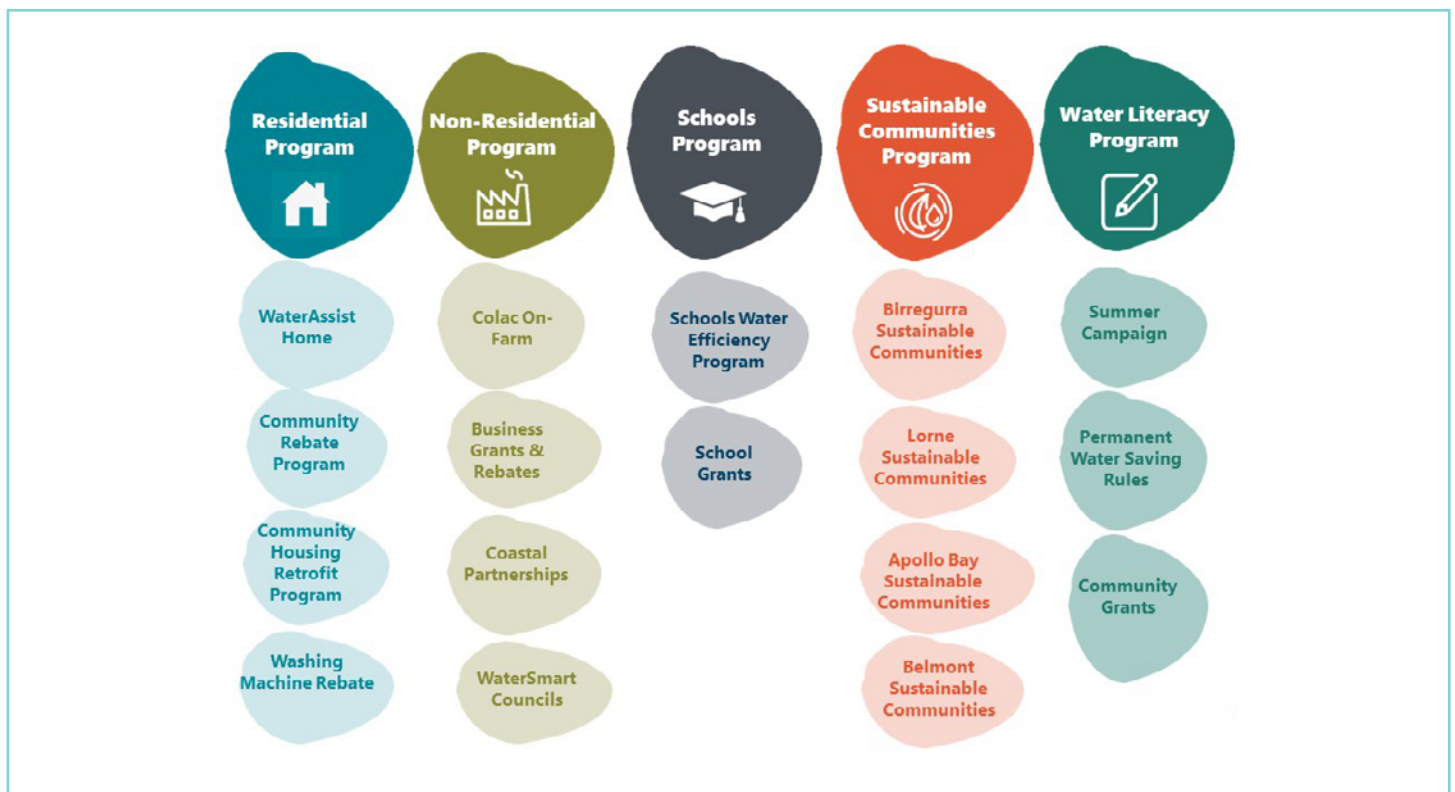


Figure 6: 2023-28 Sustainable Water Use Plan Programs

Meeting the needs of our customers and communities now will ensure that future generations can continue to have access to clean, safe drinking water, businesses can continue to thrive, and that water continues to be available for the environment. Barwon Water's SWUP is our way of making sure that our customers and communities are set up to be resilient and can continue to thrive despite future anticipated population growth and unpredictable rainfall.

Support for sustainable water use behaviour should no longer be regarded as a discretionary and variable commitment which rises in prominence during times of scarcity, rather it should be seen as an important insurance policy against future increases in demand.

THE AUTHORS



Sandra Brady

Sandra has a background in environmental and natural resource management. She is a Sustainable Water Advisor at Barwon Water and has gained 14 years' experience and expertise developing and implementing innovative water efficiency programs. Sandra is also the co-chair of the Australian Water Association Water Efficiency Specialist Network Committee.



Jacinta Burke

Jacinta has a background in science and 20 years' experience as an engagement specialist in the water industry and leads the team to deliver Barwon Water's Sustainable Water Use Plan. Jacinta is focused on the development and implementation of innovative, community-focused and environmentally sustainable programs.

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