

Moving conversations about water

Australian attitudes to alternative water sources –
what do we really think of purified recycled water?

February 2024



aurecon
Bringing ideas to life

 **ORIMA**

Section 1 - Talking with Australians about purified recycled water (PRW)	3
Executive summary	4
What is PRW and is it safe to drink?	5
PRW in Australia and around the world	6
The benefits of PRW	7
Section 2 – Survey approach	8
Section 3 – Survey findings	12
Finding 1 – Water education must improve	14
Finding 2 – Water scarcity experience linked to greater acceptance of PRW	17
Finding 3 – Experience with PRW is linked to acceptance	21
Finding 4 – Consumer trust in water authorities is critical to accepting PRW	23
Finding 5 – There is a willingness to have further conversations about PRW	24
Section 4 – Lessons learned	28
About the authors Reference List	30
About Aurecon	31
About ORIMA	32

Talking with Australians

Section 1



Executive Summary

Many Australian communities have experienced water scarcity in the past two decades, including metro and regional communities from the coast to inland.

There are many reasons for water scarcity, such as the lack of freshwater resources to meet human and environmental demands. This is intensified by climate change resulting in increasingly variable rainfall – either too much or too little. This calls for the water industry to consider alternative water supply options to plan for more severe peaks and troughs in extreme weather events.

Aurecon progresses this conversation for increasing water security through Australia's first nationwide research into everyday Australians' attitudes towards purified recycled water for drinking (PRW) and other alternative water sources in their water supply.

Together with ORIMA, an Australian-owned market research, evaluation and data analytics consultancy, we uncovered that Australians are open to learning more about PRW as a potential water supply option. This was particularly evident in interviewees with a lived experience of water scarcity.

The research also revealed a few important lessons learned about the need to improve the public's water education around alternative water sources, and how a customer's trust in their water entities is central to their confidence in accepting alternative water treatment technology.

This research allows water entities and community planners to understand feedback gathered first-hand from everyday Australians and have the confidence to progress conversations around PRW as a potential water supply option for a sustainable water future.

Research results are grouped into five main findings:

- 1. Water education must improve:** Among the 41 per cent of respondents that were neutral about supplementing their water supply with PRW, most simply did not know enough about it to have an opinion (21 per cent) or were still undecided (15 per cent). This indicates that there is a significant opportunity to increase acceptance of PRW by improving the water education of Australians, especially among respondents who are neutral towards PRW.
- 2. Water scarcity experience is linked to greater acceptance of PRW:** A deeper understanding of how water supply systems are managed and an openness to further discussion about PRW was seen amongst respondents who had lived experience of water scarcity.
- 3. Experience with PRW is linked to acceptance:** The topic of PRW is marked by uncertainty, with fear of the unknown. The national survey showed evidence that when people have lived in a region with PRW as part of their drinking water supply, this correlates with a greater acceptance of PRW as a possible future water source.
- 4. Trust in water entities:** It is crucial that water supply authorities build and maintain their customers' trust that any alternative water supply, including PRW, adheres to drinking water standards. This is often referred to as having a social licence.
- 5. There is a willingness to have further conversations about purified recycled water:** Nationally, just over a quarter of respondents were comfortable to have a serious conversation about PRW, with another 33 per cent having no set opinion either way.

This research is one step in the long-term effort to explore the technical and operational feasibility of climate-independent water supply options as demand for water increases with population growth, and rainwater becomes scarcer due to climate change. Aurecon also recently published a white paper, *'Water's recovery'*, that discusses how PRW might shore up water supply in major cities, using Melbourne as a case study example (Aurecon, 2022).

PRW has the potential to provide reliable, cost competitive, climate-independent drinking water supplies to Australian communities, but its local implementation to date has been limited. This is not due to the limitations of science or technical expertise, but predominantly due to the perception that the public do not support its use. However, as water scarcity is predicted to intensify, traditional infrastructure may not meet our needs and the necessary resilience for some regions.

What is purified recycled water and how is it made safe to consume?

All water is recycled as part of the natural water cycle. A town downstream of another town already participates in what is known as unplanned water recycling as the downstream community is reusing water from upstream. Modern developments in water treatment technologies are used to accelerate this cycle using multiple stages of treatment, transfer, and storage before supply to the drinking water system.

PRW is wastewater that has been thoroughly treated to remove microbial pathogens and chemicals that are a risk to human health. The first step involves collection and treatment at a wastewater treatment plant (WWTP). From there, this already highly treated wastewater is passed through a number of processes at a PRW treatment facility. The processes used to produce this safe, high quality water typically include

various combinations of ozonation, media filtration, membrane filtration, reverse osmosis, ultraviolet advanced oxidation and chlorination to produce high quality PRW. The exact combination of processes is site specific to meet the needs of an individual system.

It is then typically pumped to a dam or reservoir where it blends with rainwater runoff stored in the dam and re-enters the existing potable water system. This total combined water is treated again at water treatment plants before being delivered to homes and businesses (Figure 1).

PRW production is managed to ensure that the water provided to the public meets Australian Drinking Water Guidelines at a minimum, and often far exceeds these requirements. The quality of PRW is continuously maintained and managed using the water quality risk management framework contained within the Australian Guidelines for Water Recycling, ensuring that only water that meets all water quality standards makes it into the drinking water supply.

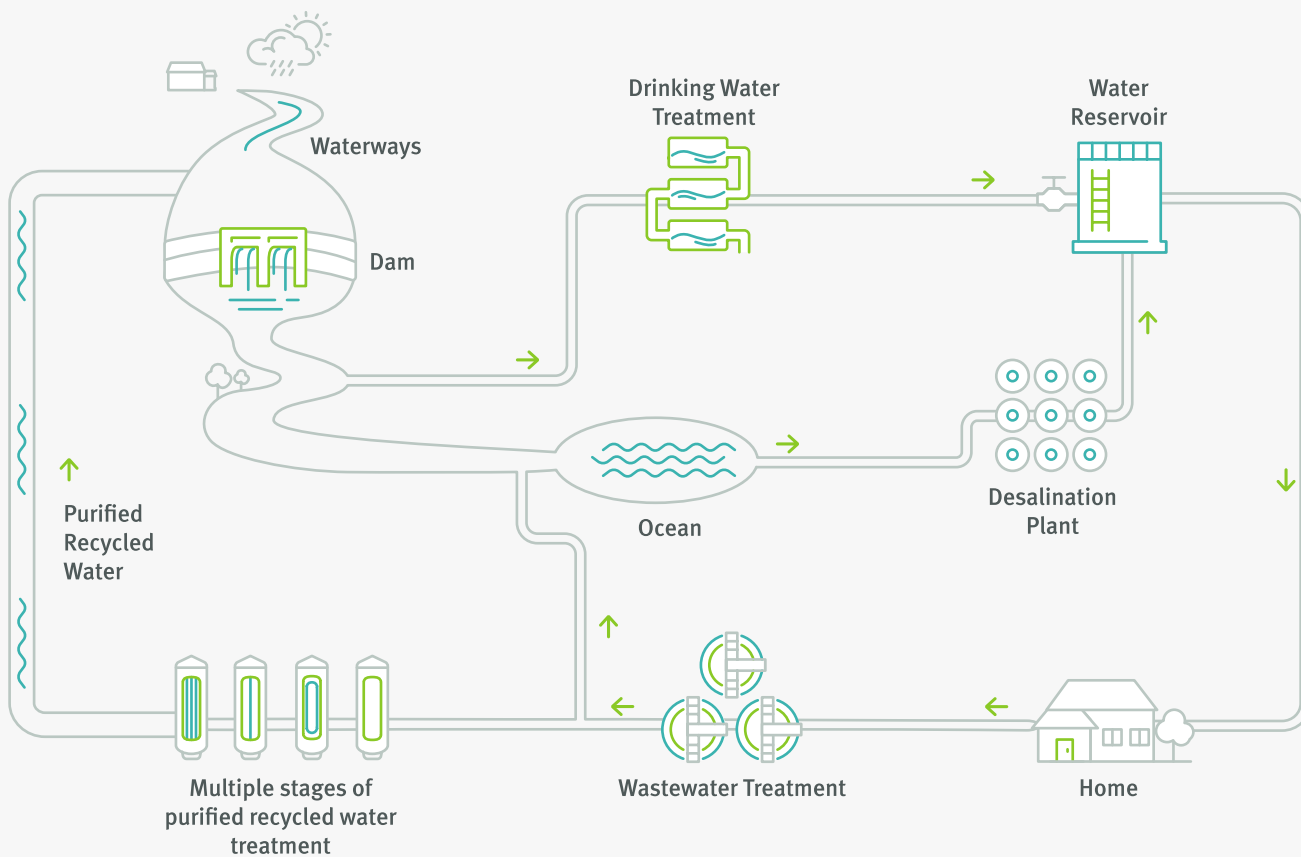


Figure 1: Water treatment and filtration process of a typical urban water supply showing PRW.



Purified recycled water in Australia and around the world

Australia has a long history of successful and safe water recycling schemes where wastewater is highly treated at water recycling plants and distributed in a dedicated network for non-drinking purposes such as industrial uses, irrigation, toilet flushing, and clothes washing.

One example of an Australian city where PRW is already incorporated into its drinking water supply is Perth. The first stage of Perth's groundwater augmentation scheme was commissioned in 2017. After its success, the second stage was commissioned in 2020, doubling the city's water supply capacity. By 2030, Perth anticipates that 8 per cent of its urban drinking water supply will be PRW. (WSAA, 2020)

In Queensland, the government previously established the Western Corridor Scheme in 2008 in response to the Millennium drought (1997 to 2009), building a 200 km network of pipelines and PRW treatment plants to feed PRW into Lake Wivenhoe, a primary source of drinking water for Brisbane and Southeast Queensland. Whilst the scheme has not yet been used to supplement drinking water supplies, it is currently supplying some industrial users and remains part of the state's water security program.

Another state highlighting the need to develop PRW is New South Wales, with the release of its Greater Sydney Water Strategy. Aurecon, along with partner Arup, helped Sydney Water develop its PRW options for inclusion into the strategy as part of the Sydney Water Planning Partnership. The concept has progressed with the recent construction of a PRW demonstration plant with engineering support.

PRW is not only being considered in Australia. Regions across the world are increasingly considering PRW as a potential alternative water supply solution to address water security and population growth. Actually, more than 35 global regions have already successfully and safely incorporated PRW into local water supply for drinking and non-drinking purposes.

The benefits of purified recycled water

The two most common climate independent water sources available today are PRW and desalination.

PRW is sustainable and embraces a circular economy approach by recycling and reusing a readily available product that is currently being disposed of into the environment. It is not directly influenced by climatic conditions such as droughts, floods or bushfires, and may offer an economically viable solution, particularly for inland towns where desalination cannot reach.

Assessments conducted by WSAA during 2020 indicated that PRW can represent substantial savings in terms of the capital required and the ongoing cost, compared with desalination. Although PRW typically has a lower development cost, the relative ongoing costs are scheme dependent and will depend on the location of the different water networks and how each is operated. When compared with desalination costs across a broad range of Australian projects, PRW schemes, on average, produce water at approximately a 15 per cent lower cost to customers (WSAA, 2020) – Figure 2.

Costs of water supply options included in WSAA study levelised \$/kl 2019-20

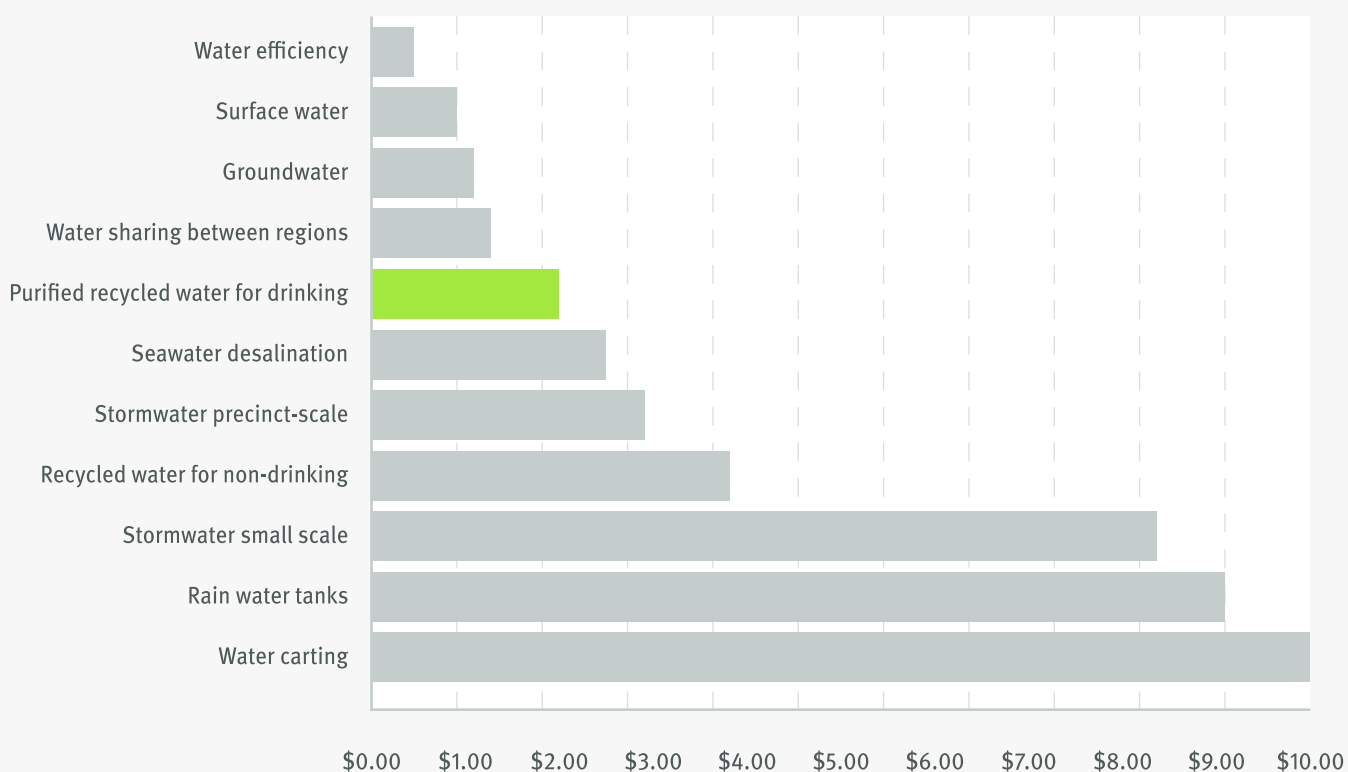


Figure 2: Costs of water supply options included in the WSAA study, 2020.

Survey approach

Section 2



Survey approach

Aurecon's survey, designed and delivered in collaboration with ORIMA, represents an Australian-first, nationwide, independent study of attitudes to alternative drinking water sources, including PRW.

More than 1,400 people were surveyed nationwide, including a significant sub-set in Orange, New South Wales, through a combination of telephone surveys (over 300) and online surveys. Orange was selected given its recent experience with severe water restrictions caused by drought, and its successful reuse of harvested stormwater from its urban water catchment for drinking supply – the only such system in Australia. Interviewees in the national survey were representative of broad demographics across gender, age and income (Figure 3).

Survey Coverage

National Survey

- Regional & Metro
- State to State

Focused Community Survey

- Orange, NSW

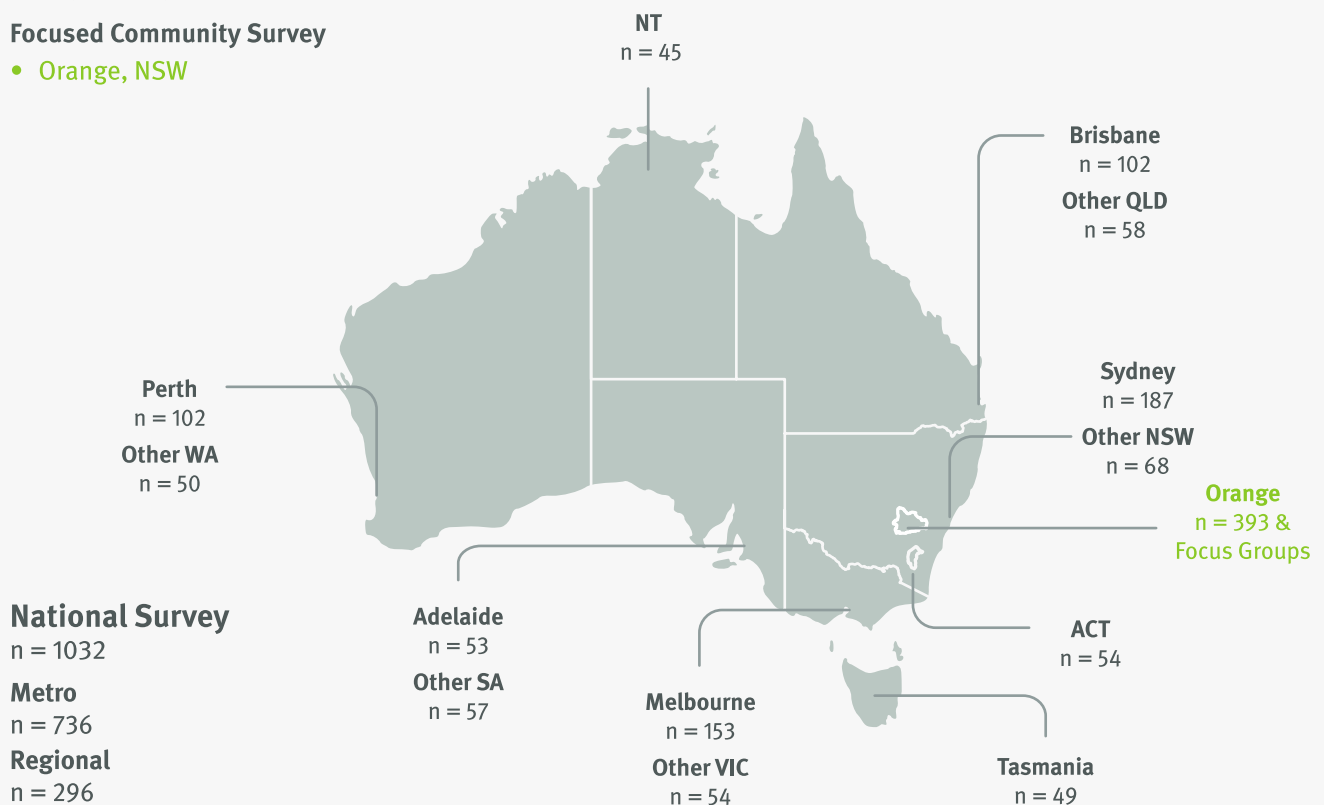


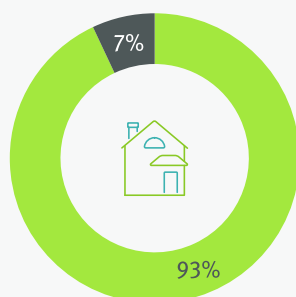
Figure 3: The geographic breakdown of survey respondents.

In total, 40 questions were asked of each respondent. The questions covered:

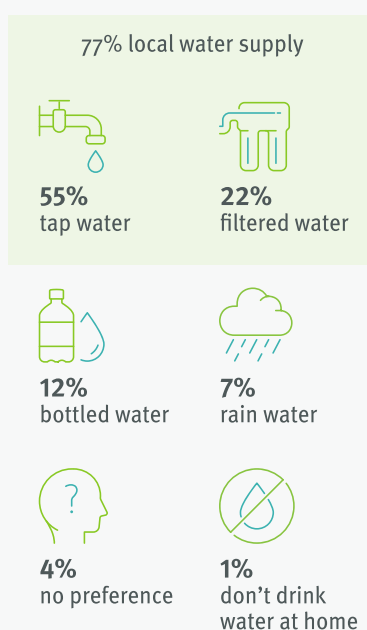
- Drinking water usage (Figure 4)
- Rating of local drinking water supply and the agency that provides the water
- Water education and understanding of urban water supply
- Feelings towards various alternative water supply options

Demographic Snapshot

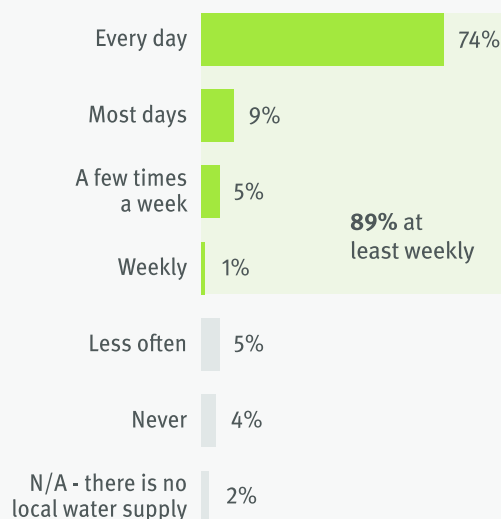
93% of respondents lived in a home or at a property connected to the local water supply



Preferred source of water for drinking at home



Frequency of drinking water from the local water supply (metropolitan residents)



Metropolitan residents drink tap water more frequently (89% at least weekly) than regional residents (80% at least weekly).

Figure 4: Drinking water usage: Survey respondents' interactions with their drinking water.

Broadly, the survey was designed to understand respondents' relationship with their drinking water and how they felt about alternative water sources to supplement it.

The underlying dispositional model used by ORIMA to frame the survey consisted of seven detailed categories to evaluate if respondents were broadly positively disposed, negatively disposed, or neutral towards having further conversations about the possibility of alternative water supply options in their water supply (Figure 5).

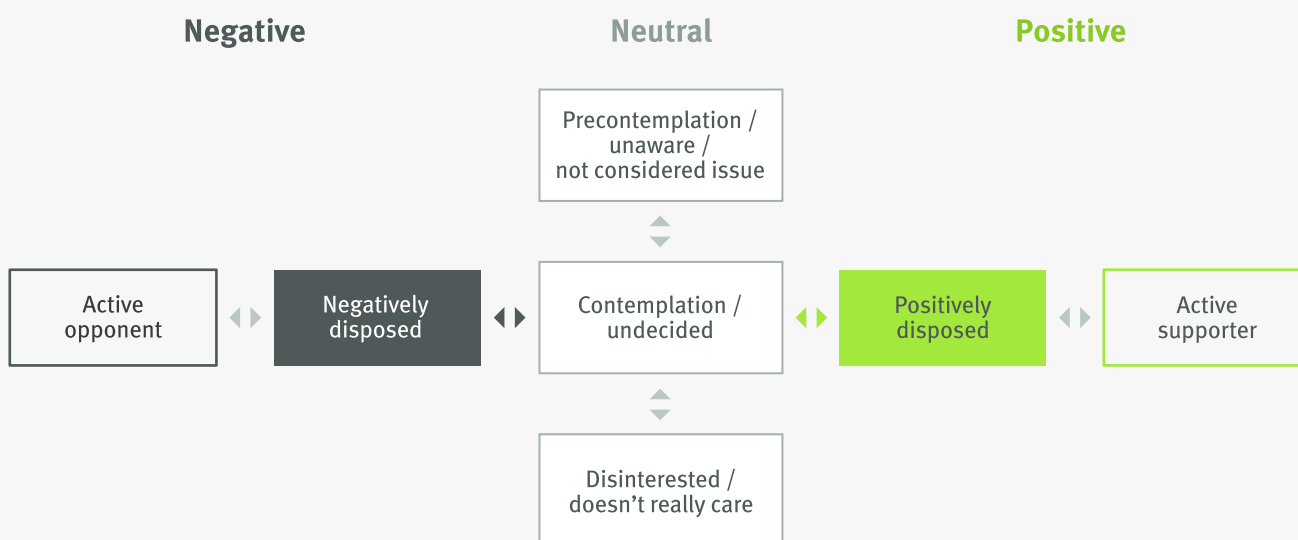


Figure 5: ORIMA's seven-category framework used to model dispositions towards further conversations on alternative water source options included in the future water supply mix .

This broad range of factors was covered to obtain a fair and accurate disposition of the community, allowing both the relative strength of dispositions to be considered and subtle changes to be trended over time if future surveys are conducted. The survey was designed so that it can be replicated in the future with specific communities around Australia to help identify common patterns and localised differences.

Survey findings

Section 3

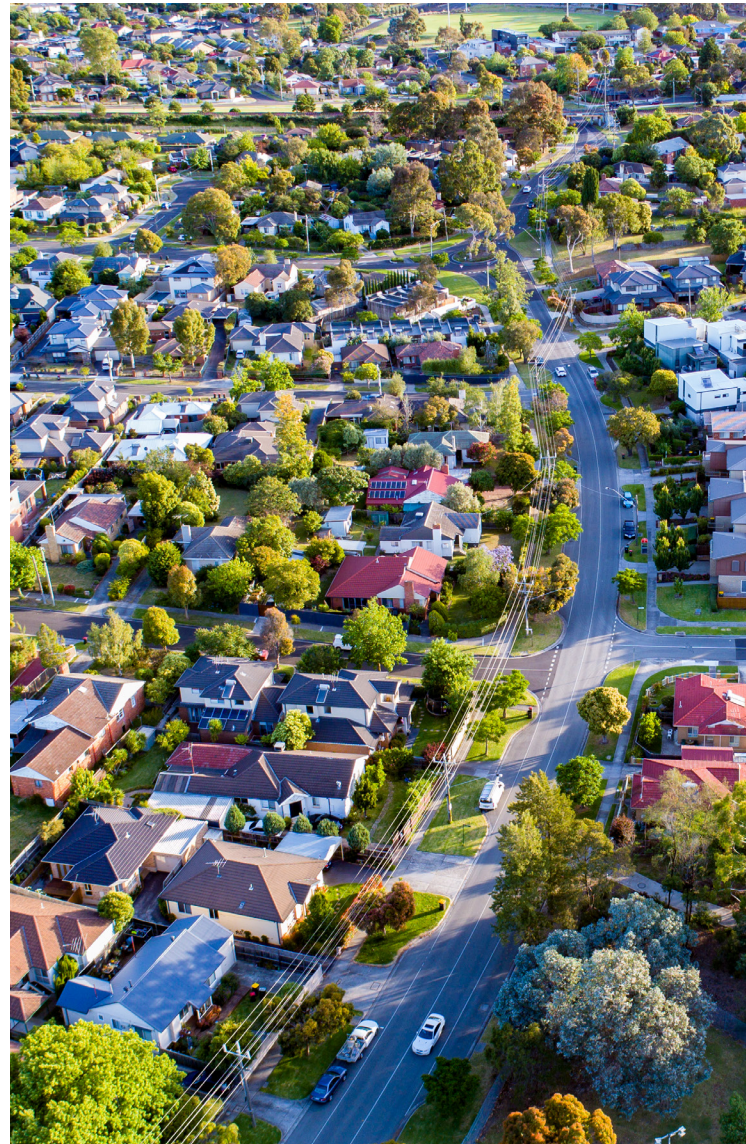


Survey findings

The survey revealed that Australian communities are aware of local water security risks and recognise the need for action to improve water supply quality, resilience and reliability, and are open to discussing a future that includes alternative water supply options, such as PRW. It shows that while PRW is not an immediately preferred option, it is seen as a possible future option to be further discussed. The survey also indicates that the majority of respondents would at least cautiously consider PRW if it was added to their water supply.

We confirmed in this research that there are at least two precursors to community acceptance of PRW. The first being that those water entities which have earned a social licence with their communities through years of building up trust are more likely to have support from their communities to consider different alternative water sources. The second is that water education levels correlate with the willingness to engage on, or consider, PRW as an alternative water source. Because of the breadth of the survey, we hypothesised a third precursor, that awareness of water scarcity is linked to a greater acceptance of PRW as a possible source of water supply. It will be harder to engage people on alternative sources, including PRW, if they do not have lived experience of water scarcity that has impacted their daily life at some point in time.

Aurecon presents the five major findings from the survey of Australian communities.



Finding 1 - Water education must improve

The survey revealed that 82 per cent of respondents think it is very or moderately important for their community to consider integrating alternative water sources into local water supply (Figure 6).

Also, 91 per cent of survey respondents said they care about where their drinking water supply comes from.

However, when asked to rate their understanding of their existing water supply, the average respondent reported limited understanding about their supply and how it is managed, with some minor variations between states and territories. Their understanding of PRW was even more limited (Figure 7).

How important do you think it is for your community to consider integrating alternative water sources into local water supply?

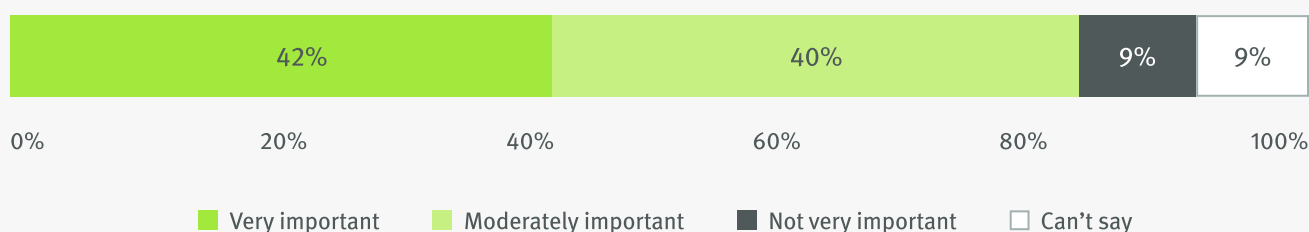
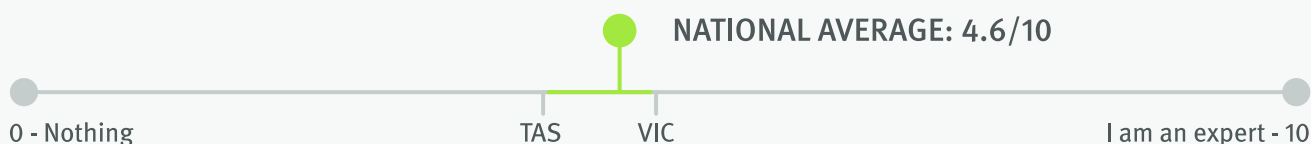


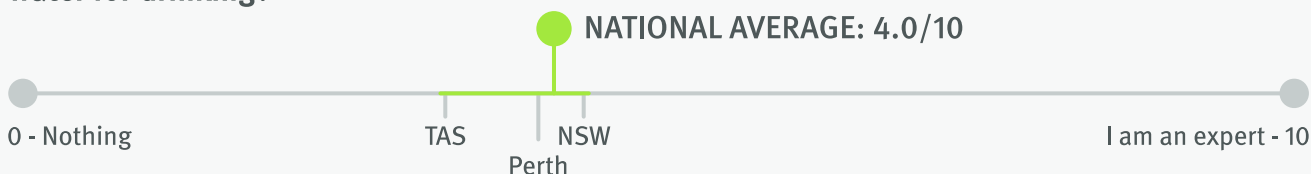
Figure 6: Respondents were asked how important it is to consider alternative water sources.

On a scale from 0-10, how much would you say you know about your local water supply and how it is managed?



Knowledge levels varied by state, lowest in Tasmania (3.9/10), and highest in Victoria (4.9/10)

On a scale from 0-10, how much would you say you know about purified recycled water for drinking?



Knowledge levels varied by state, lowest in Tasmania and highest in New South Wales.

Perth has been used as a benchmark because the city has already incorporated PRW as part of its drinking water supply.

Figure 7: Respondents were asked how much they knew about their local water supply and PRW.

Among the 41 per cent of respondents who were neutral about supplementing their water supply with PRW, most simply did not know enough about it to have an opinion (21 per cent) or were still undecided (15 per cent). This indicates that there is a significant opportunity for water education to increase acceptance of PRW (Figure 8).

How favourable or unfavourable would you consider purified recycled water as an alternative source of water for your local water supply?

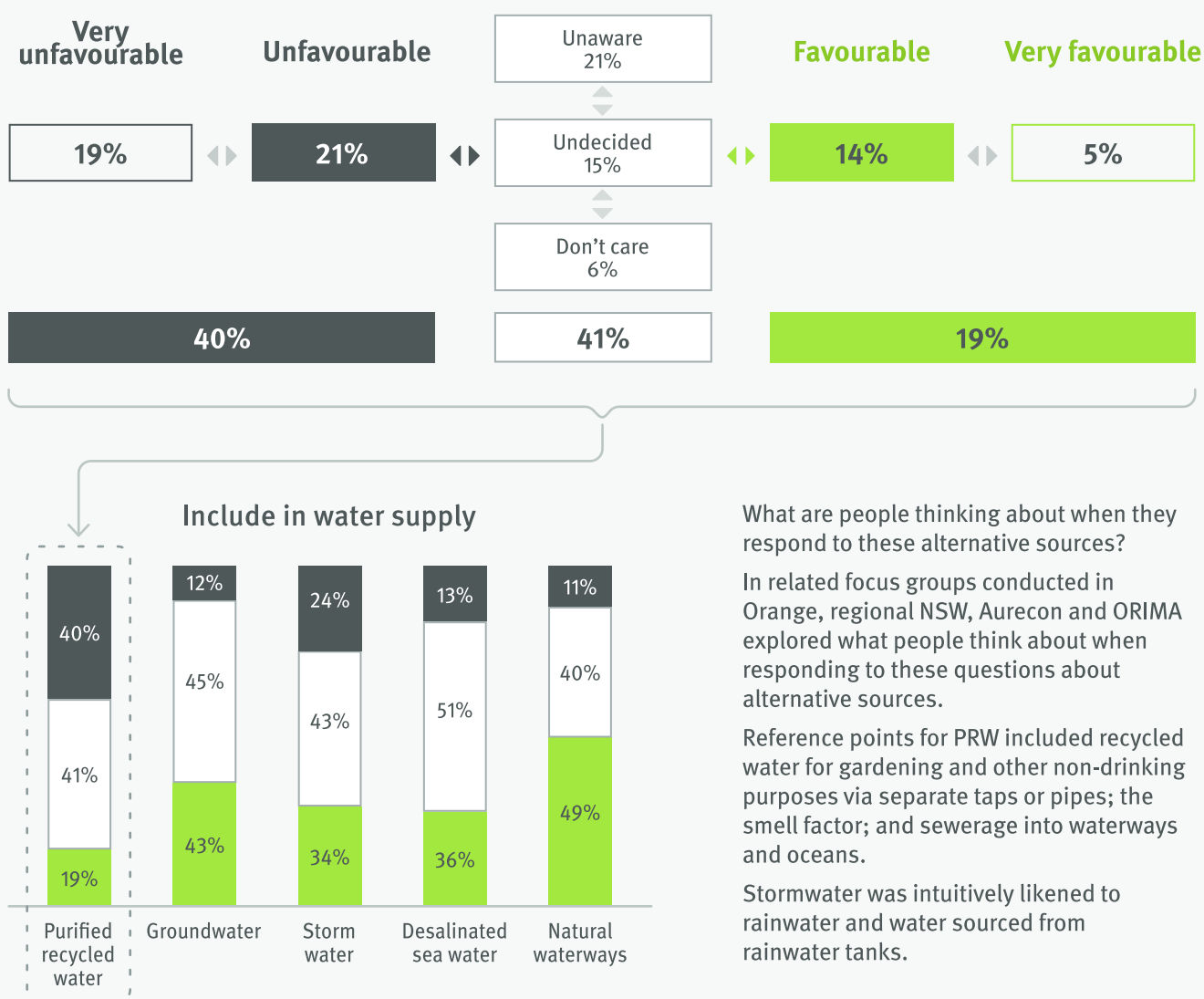


Figure 8: What national respondents think about alternative water supply sources.

The survey gauged respondents' disposition towards PRW at the start and end of the participant interview. Despite the survey consisting of questions rather than information, the data in Figure 9, from the national survey, shows consistent increases in disposition to PRW during the survey process. This suggests that educational instruments including surveys, community conversations and training can move the dial in water knowledge, even when just a small amount of information is conveyed in a relatively short timeframe. This data also shows the strong correlation between water education and openness to consider alternative sources of water supply.

Following the initial survey, focus groups were held with residents in Orange, bringing together groups of respondents from the survey to explore in more detail their attitudes towards PRW. These sessions revealed that consistent, and repeated, information and communication with communities on PRW will be required.

It was observed that while the cohort of respondents from Orange (in the initial survey) had shifted their opinion to be more accepting of PRW, this reversed for some people when being interviewed in groups. Some readily shifted away from the emotional gut reaction towards PRW of "ewwww" to a more positive stance in the groups, but even those tended to cycle back to their emotional reactions at times. This indicates that regular and diverse reinforcement of information over a long period of time will be required to elicit longer-term positive sentiment towards PRW.

Disposition to purified recycled water before and after the survey

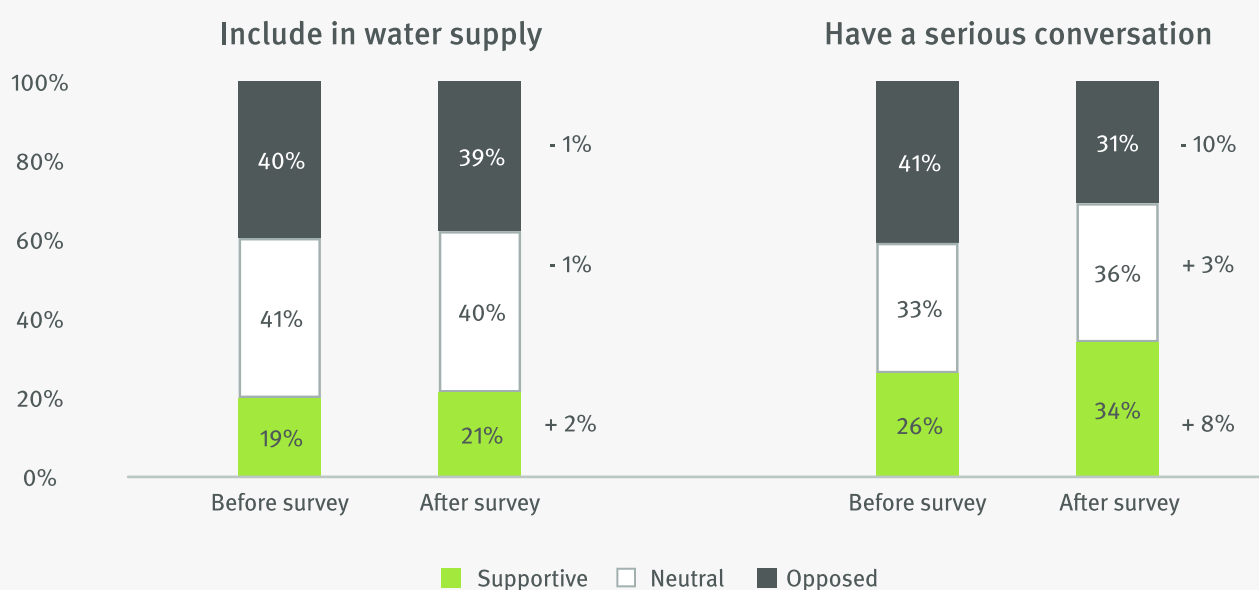


Figure 9: Respondents' disposition to PRW before and after the national survey process.



Finding 2 - Water scarcity experience linked to greater acceptance of purified recycled water

One of the strongest observations from the research is that respondents in Orange were much more positively disposed to PRW than the national average (Figure 10). We hypothesise from this that people who have a lived experience of water shortage and scarcity are more open to having a conversation about PRW in their drinking water supply.

If you lived in a place where the water supply did include purified recycled water for drinking, how would you feel about drinking it? Would you drink it?

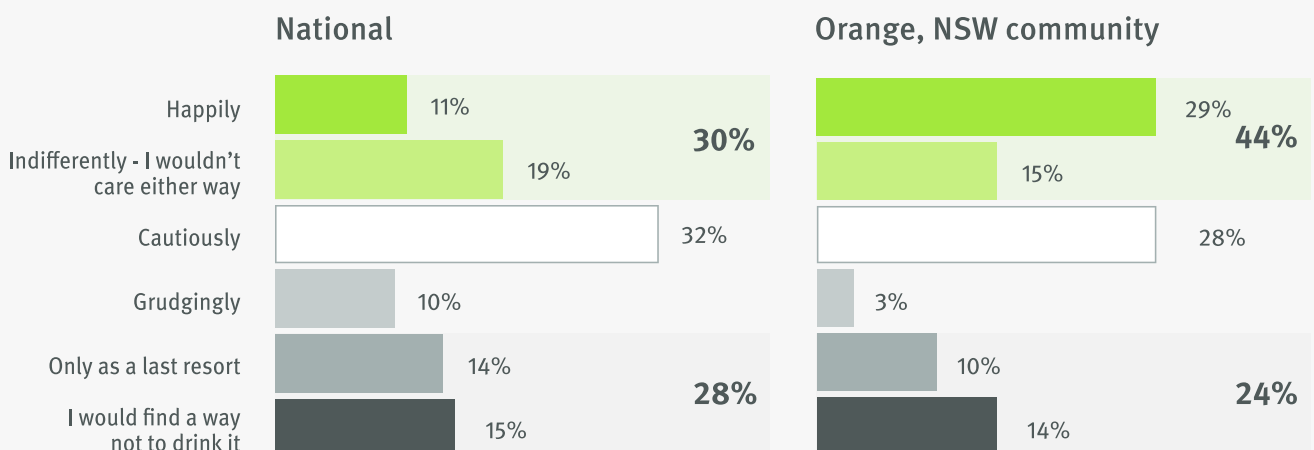
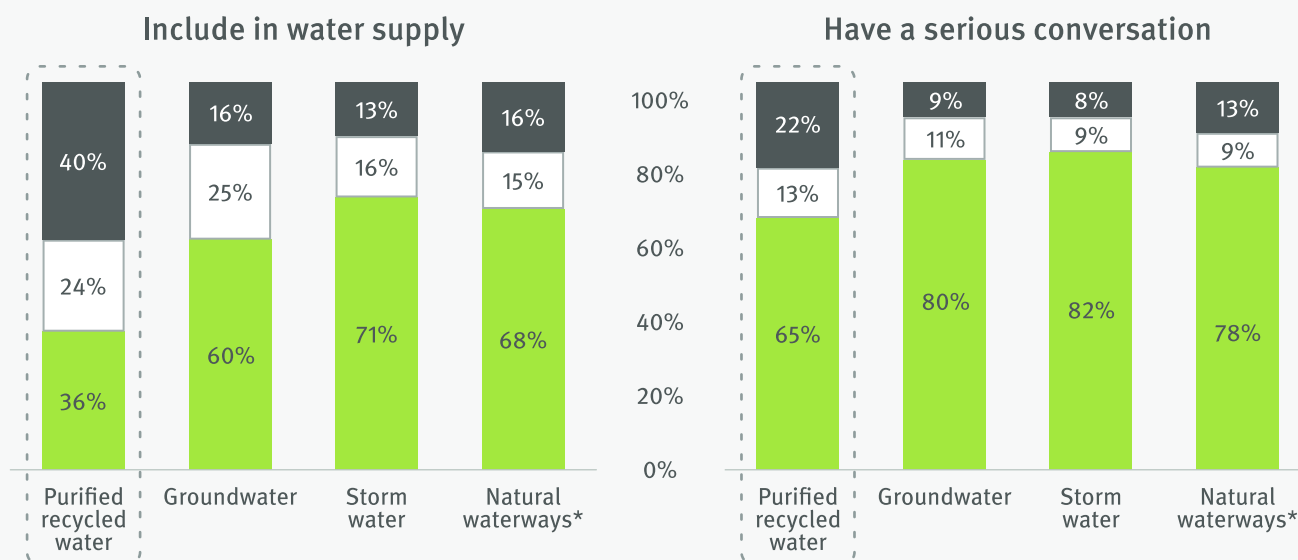


Figure 10: This survey response comparison shows that people with lived experience of water shortages may be more open to a discussion about PRW.

When asked about how supportive the national survey respondents were to include various alternative water sources in their water supply, Orange responses were substantially more positive (between 36 per cent and 71 per cent), compared with the national responses

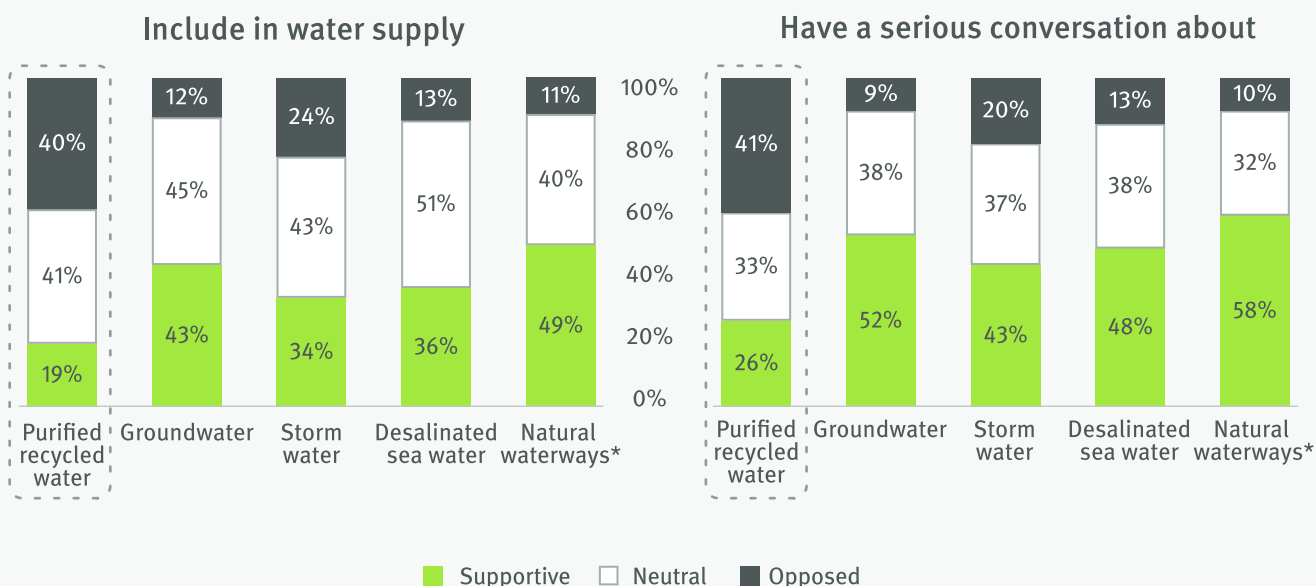
(between 19 per cent and 49 per cent). Respondents in Orange were also more positively disposed to having a serious conversation about PRW (65 per cent) compared with the national response (26 per cent) – Figure 11.

Orange, NSW Community



Note: excluding desalinated sea water as an option given Orange's distance to the coast makes it unfeasible.

National



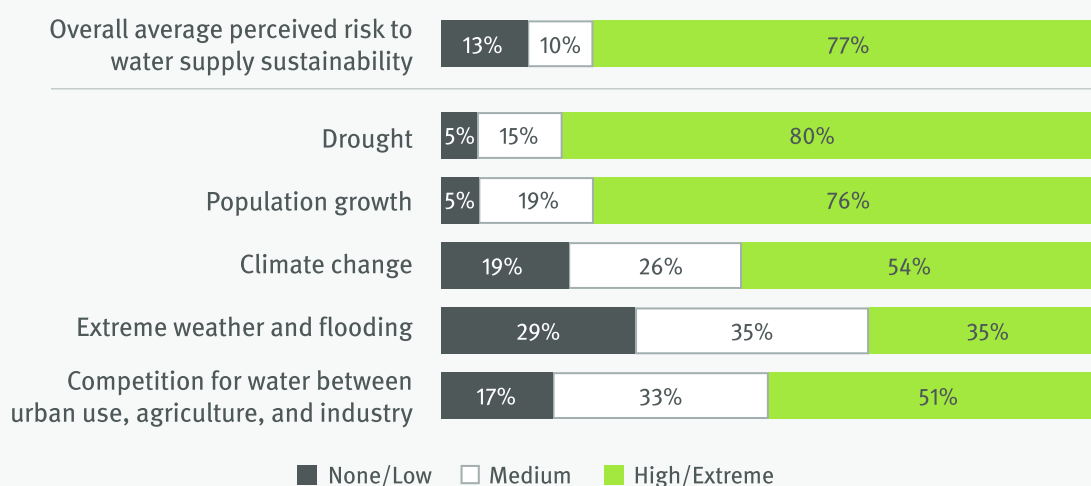
*Natural waterways are the typical 'default' source of water in local water supplies across Australia, however research suggests that awareness of this is inconsistent.

Figure 11: The survey response comparison shows that the responses from Orange were more supportive when it comes to including various alternative water sources in water supply, and/or having a serious conversation about them.

Those surveyed from Orange were more acutely aware of the challenges to a sustainable water supply, with 77 per cent of respondents indicating this challenge was 'high/extreme', compared with 54 per cent in the national survey (Figure 12). From the focus groups, Aurecon concluded that a contributing factor to this result was Orange residents having previously experienced prolonged drought and therefore were more open to alternative water supply options. The 2017 to 2019 drought in the region was the hottest and driest three-year stretch ever recorded for the Murray-Darling Basin. Drought was considered the greatest individual challenge to water supply in both the Orange sub-set survey (80 per cent) and the national sample (43 per cent).

In your opinion, how big a challenge does each of the following pose to your local water supply over the next 2-5 years?

Orange, NSW community



National

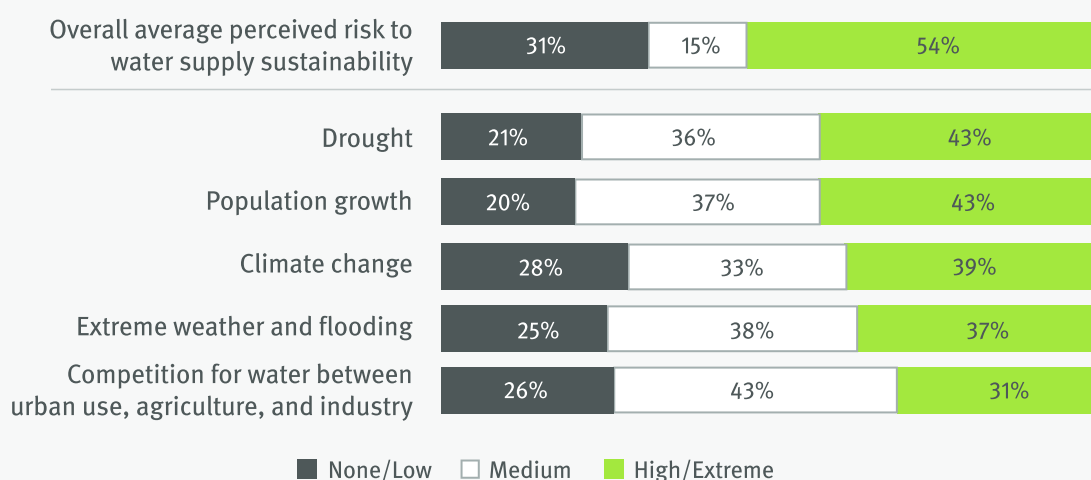
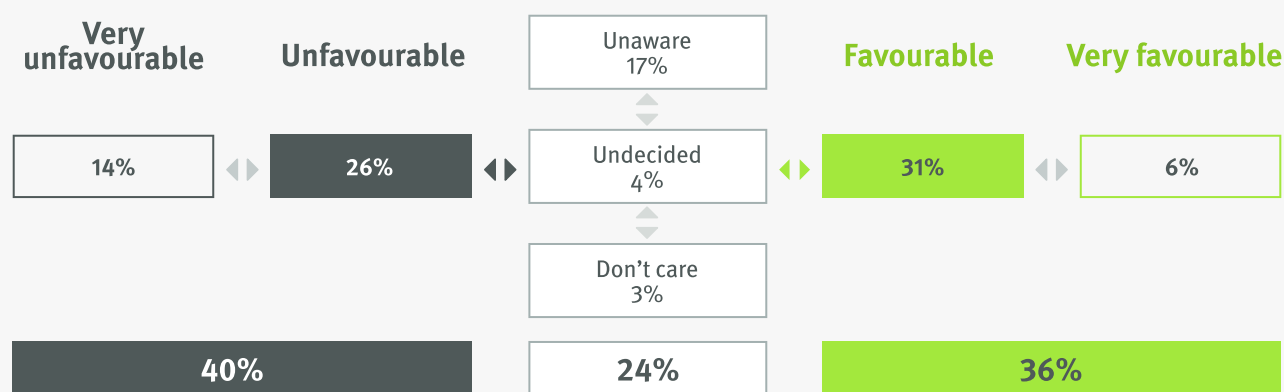


Figure 12: How big a challenge do these factors pose to local water supply.

When asked about how favourable or unfavourable it is to consider PRW as an alternative source of water supply, only 40 per cent of national respondents viewed it as strongly unfavourable. Compared with a generalised view of public perception of PRW even only a decade ago, Aurecon considers this a significant improvement as the data shows that close to 60 per cent of respondents are not opposed to PRW. When the respondents from Orange were compared with the nationwide respondents, there are marked differences in their attitude towards PRW as an alternative water source (Figure 13). More people in Orange are favourable to PRW as an alternative water source than people who are undecided.

How favourable or unfavourable would you consider purified recycled water as an alternative source of water for your local water supply?

Orange, NSW community



National

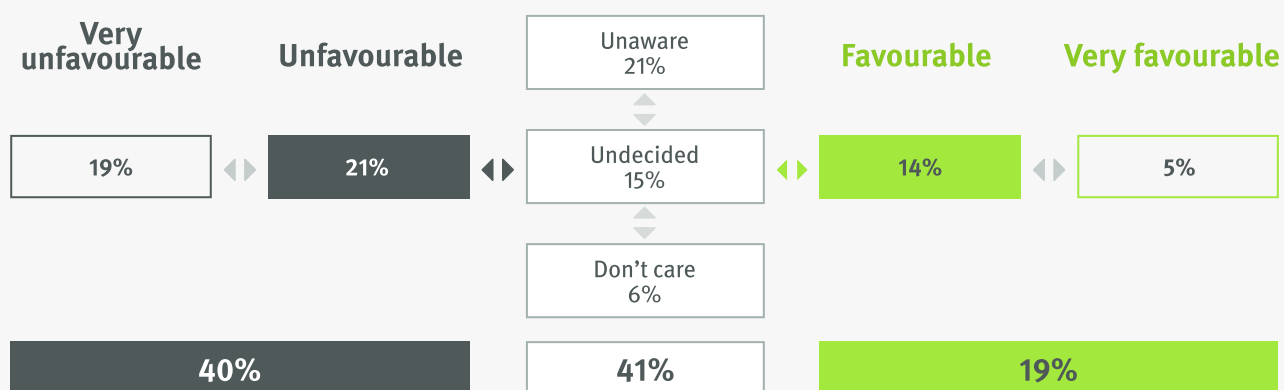


Figure 13: Attitudes to PRW as an alternative water source.

Finding 3 – Experience with purified recycled water is linked to acceptance

The topic of PRW is traditionally marked by uncertainty, with fear of the unknown and the potential consequences of getting it wrong top of mind for many. The national survey showed evidence that when people believe that they have experience with PRW in their water supply, this equates to a greater acceptance of it as a possible alternative water supply option.

Figures 14 and 15 show that respondents who were aware of PRW forming a component of their drinking water supply are significantly more likely to agree that PRW could be included in future water supply (42 per cent), compared with respondents who have not lived in, or visited, an area where PRW is part of the drinking water system (15 per cent).

Similarly, respondents who believe that PRW forms a component of their drinking water supply are much more willing to engage in a detailed conversation about its increased inclusion in Australia's water supply network (57 per cent), compared with those that have little knowledge or experience of PRW (19 per cent).

Disposition to purified recycled water - by awareness of purified recycled water consumption

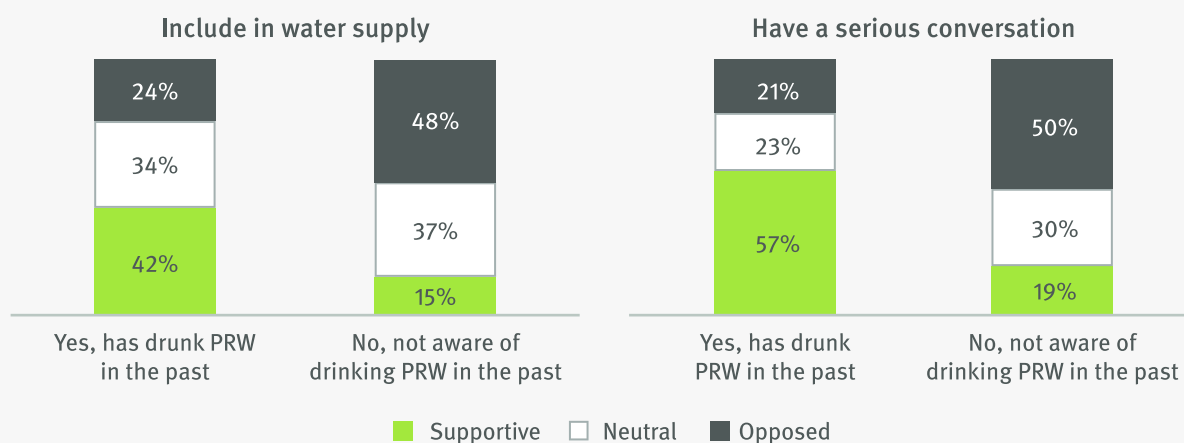


Figure 14: Illustrates that disposition to considering PRW as part of their water supply system (national survey).

Aversion to drinking purified recycled water - by awareness of purified recycled water consumption

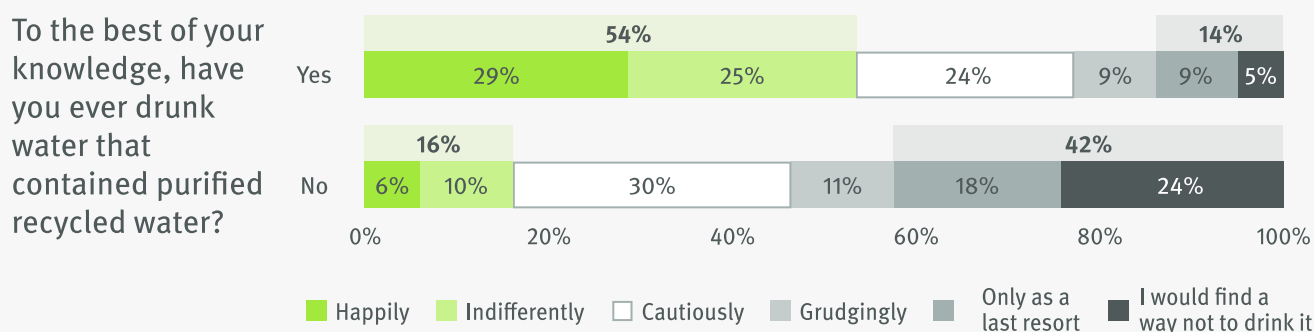


Figure 15: Illustrates that aversion to drinking PRW is linked to awareness of having previously consumed drinking water with a PRW component. Note: About 10% of the respondents were from Perth where it has already incorporated PRW as part of the city's drinking water supply.

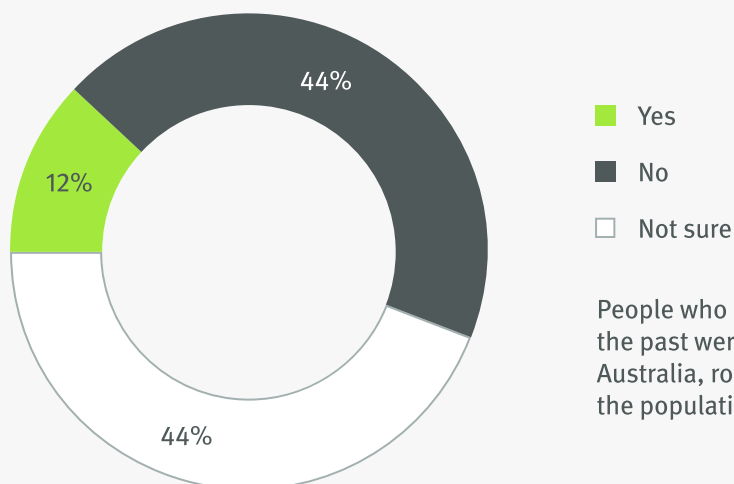


It's important to note, that public may have consumed water from an international city or town with PRW as part of the water supply without directly knowing. Europe, Singapore, South Africa and parts of the USA, all popular travel destinations, are some of the global regions with PRW forming part of their drinking water supply network.

In Perth, 16 per cent of respondents had knowledge of PRW as part of their water supply, which is slightly above the nationwide figure of 12 per cent, and most likely attributable to awareness driven by the state's heavily promoted groundwater augmentation scheme (Figure 16).

Awareness of purified recycled water consumption

To the best of your knowledge, have you ever drunk water that contained purified recycled water?



People who are aware of drinking PRW in the past were from all states and regions in Australia, roughly distributed in line with the population.

Figure 16: Awareness of PRW in consumable drinking water supply.

Finding 4 – Consumer trust in water authorities is critical to accepting purified recycled water

National survey research respondents were clear in their feedback that local water entities and state governments are instrumental in making decisions that suit the long-term interests of communities.

The Orange survey findings are instructive in this regard. Orange City Council implemented an innovative

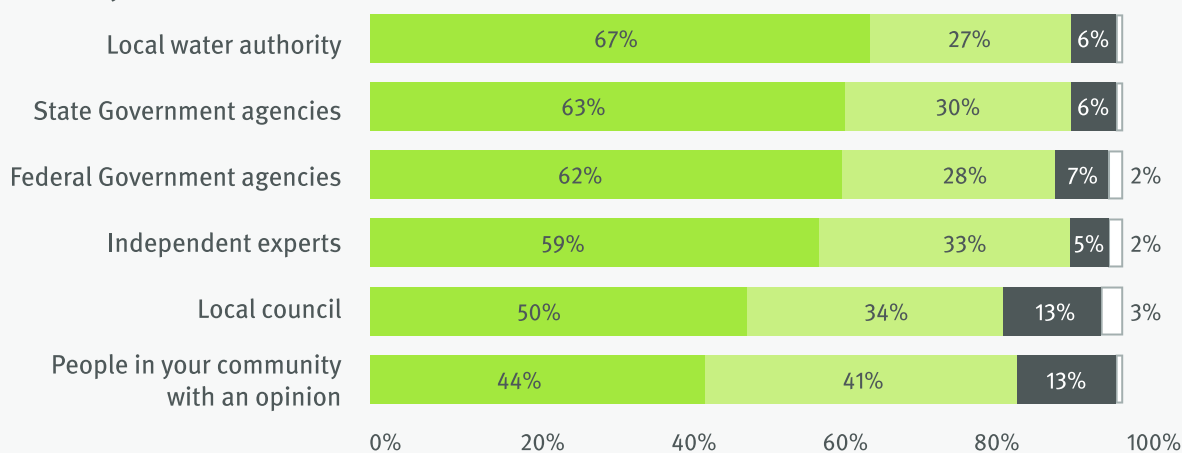
stormwater harvesting scheme in 2009 following several years of historically low dam levels.

That scheme has been highly successful and likely helped to engender trust in the local community that recycled stormwater is safe to consume (after relevant treatment process).

It is worth noting that respondents to the Orange survey had a higher level of trust in their local authorities (67 per cent), compared with the nationwide survey sample (56 per cent) – see Figure 17.

How much would you like each of the following to contribute to making decisions about your local water supply, so the end result is in the best long-term interests of the community?

Orange community



National

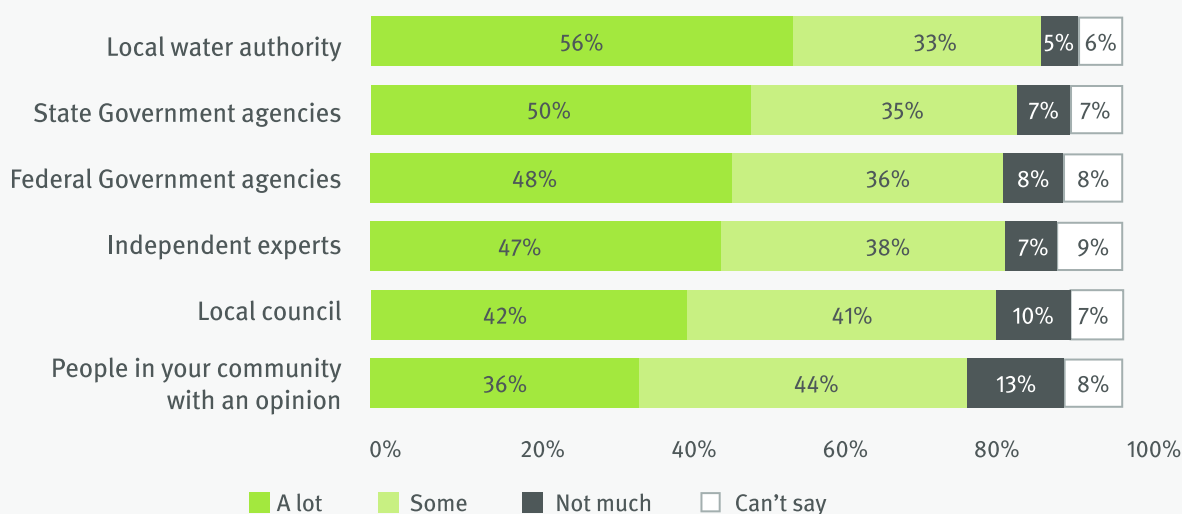


Figure 17: Trust in local authorities – response from survey respondents.

A further analysis and breakdown of the Orange respondents' satisfaction with local water supply is provided in Figure 18.

How would you rate your local water supply with respect to the following things?

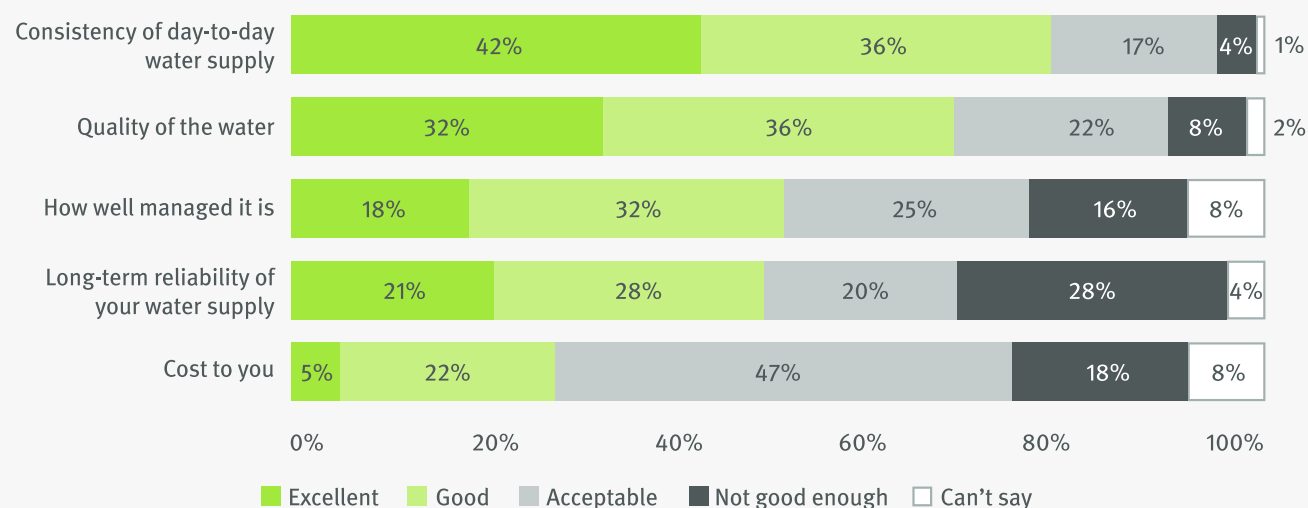


Figure 18: Rating local water supply – Orange sub-set survey.

From the results of the national research, Aurecon has come to the conclusion that there is a link between the level of trust people have in government entities and their willingness to accept new water treatment and supply technologies. This shows there is an incredible opportunity for water entities to have genuine conversations with their customers about possible alternative water source options. These conversations would go a long way to engaging customers on their thoughts and feedback, including them in the discussion around adopting new technologies, and increasing levels of water education.

Finding 5 – There is a willingness to have further conversations about purified recycled water

From the national survey data, Aurecon found that communities have a willingness to discuss PRW as a result of the social licence that a water entity has earned with its respective community. In addition, respondents, with some level of water education on the topic, also have knowledge of their region incorporating PRW into the drinking water supply, or have enough trust in their local water entity to discuss PRW as a water supply option.

Nationally, just over a quarter of respondents were comfortable to have a serious conversation about possibly incorporating PRW into future drinking water supply, with another 33 per cent having no set opinion either way (Figure 19).

Willingness to have a conversation about PRW

- Comfortable + very comfortable
- No opinion / unsure / don't mind
- Uncomfortable + very uncomfortable

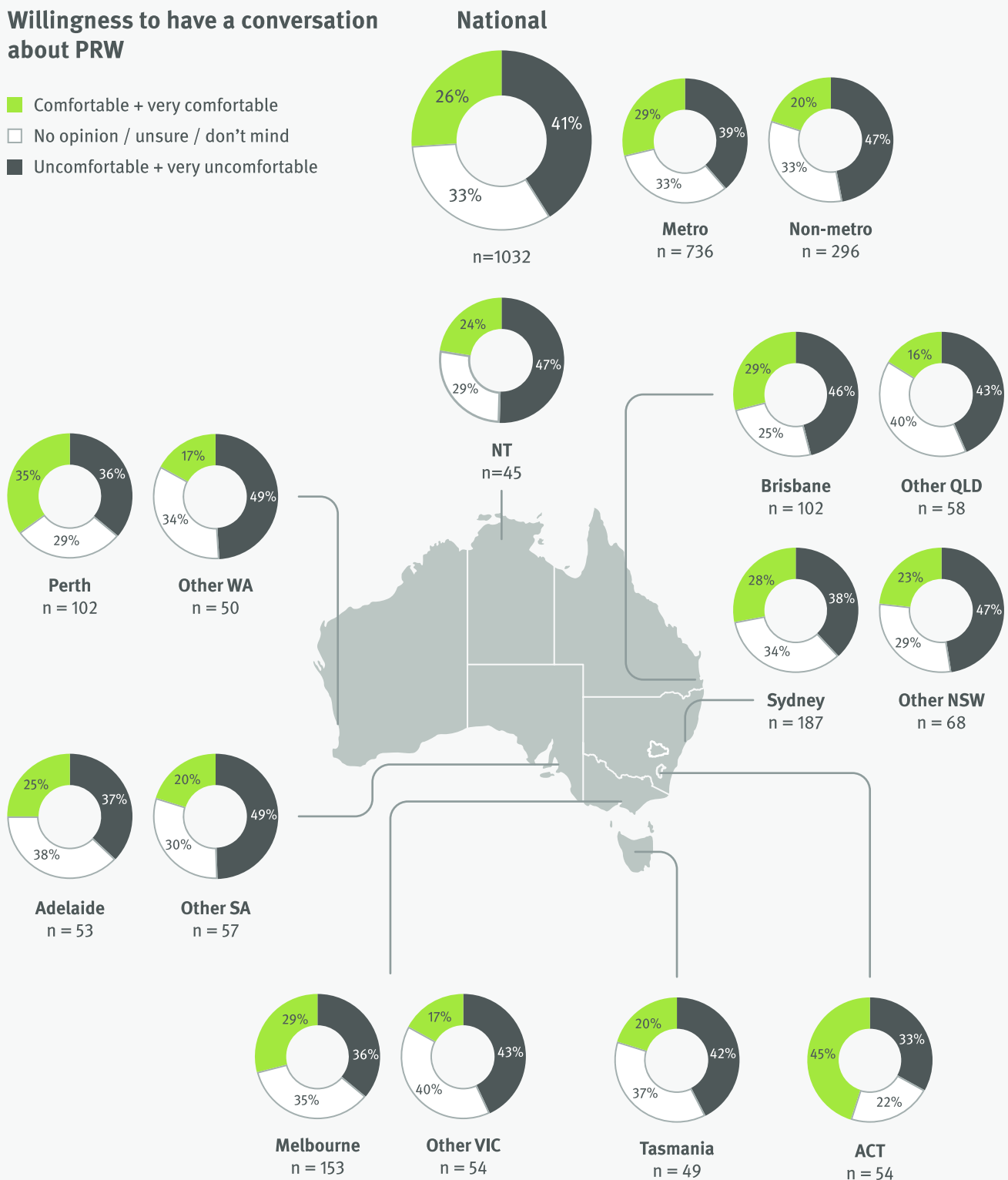


Figure 19: Survey respondents were asked how willing they were to have further conversations about PRW as part of water supply.



Respondents from regional areas were less inclined to explore a conversation on PRW compared with respondents from metropolitan areas.

Based on what the respondents know about PRW, over half of them believed PRW would be a reliable long-term water source, safe to drink, and practical to deliver, if PRW was included in their local water supply. Their perceptions are shown in Figure 20.

Perth, the one Australian region with PRW already a component of the drinking water supply, and ACT, were the two areas with the highest proportion of respondents comfortable to have further conversations about PRW.

Based on what you know about PRW for drinking, if it were included in your local water supply, to what extent do you believe that it would...

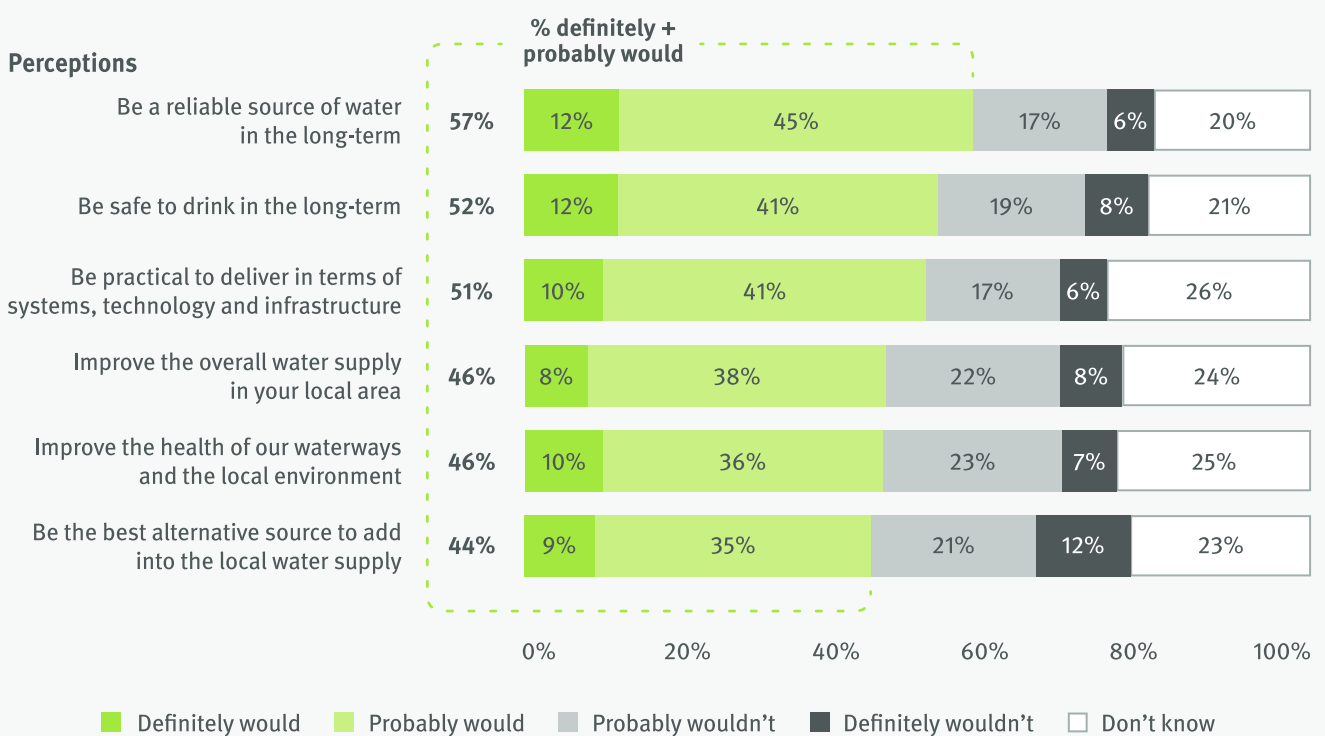
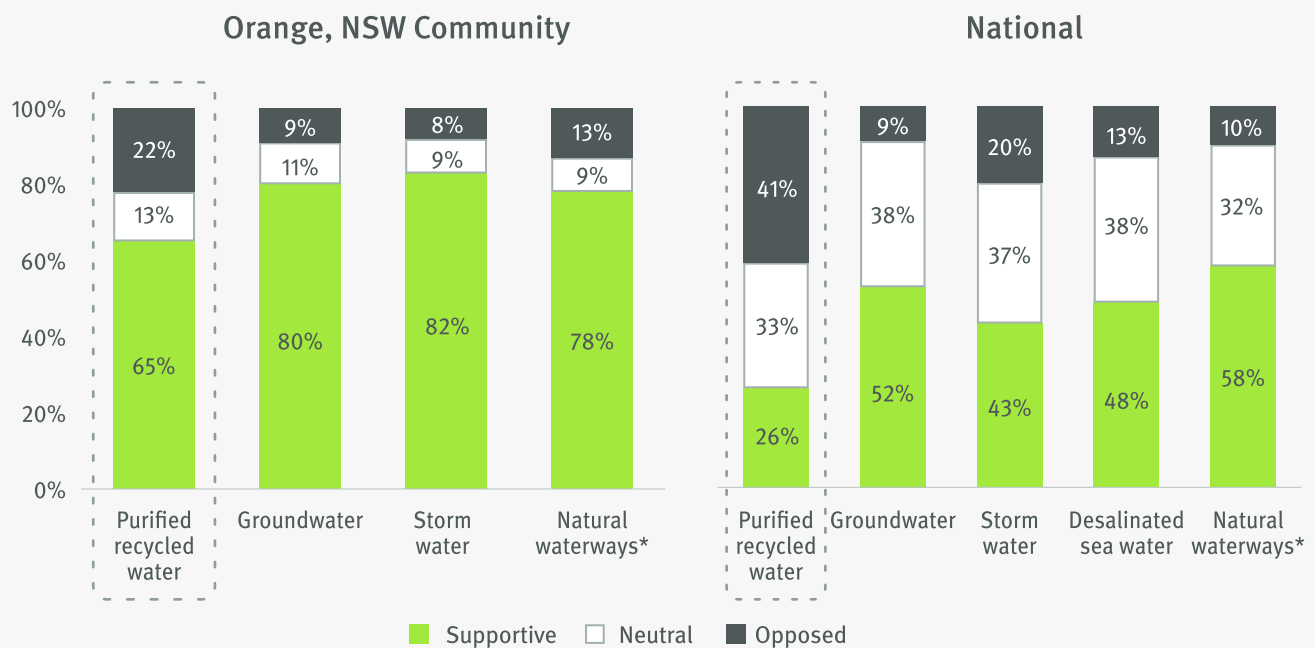


Figure 20: Perceptions of PRW as a long-term water supply option and its ability to improve environmental and human health.

Those interviewed as part of the Orange sub-set survey were not opposed to continue the conversation about PRW (78 per cent) compared with 59 per cent for the nationwide respondents. There is similar opposition to the other alternative water sources nationally, compared to Orange residents' responses (Figure 21). The notable exception is both Orange's PRW and stormwater opposition is less than half of the national average, which is consistent with the hypothesis that positive experiences with alternative water supplies increases acceptance and understanding.



*Natural waterways are the typical 'default' source of water in local water supplies across Australia, however research suggests that awareness of this is inconsistent.

Figure 21: Respondents from the Orange survey compared with the national survey on their level of openness to being part of a future conversation on PRW.

Lessons learned

Section 4



Lessons learned

As the global climate continues to change and populations are projected to continue to increase, it is essential to adapt approaches to sourcing safe and reliable drinking water. Through this research conducted both nationally, and more deeply in Orange, Aurecon has found that improving water supply education, and awareness of PRW among communities, is both vital and achievable.

The data shows that respondents to the surveys were more willing to have a serious conversation about PRW at the end of the survey process, compared with the beginning, with only a small amount of information about PRW being offered, and in a short timeframe. Importantly, conducting this type of balanced and objective survey process did not prompt overwhelmingly negative responses from respondents.

“Cities and towns should have the confidence to initiate discussions with their communities to inform long-term alternative water supply decision-making.”

Darren Romain, Urban Water Resilience Market Lead, Aurecon

Drawing on the results of both surveys, and our wider water market experience, Aurecon deduces that PRW may be a cost competitive, climate-independent, and sustainable solution for many Australian regions, with a relatively low carbon footprint compared to similar alternatives such as desalination.

We acknowledge that many water entities and governments are thinking strategically and openly about their future water supply to ensure resilience. In conducting this research with the community, water entities and community planners can gain a deeper understanding of their opinions of PRW, and have the confidence to progress conversations around potential future supply options.

The survey results did not generate an overwhelmingly negative response— if anything, quite the opposite – and this baseline survey data provides a useful and balanced perspective of the range of views across Australia.

By extrapolating the results of both surveys, Aurecon has uncovered that the wholehearted perception of negativity towards PRW may now be in the past, and that the public is today, more positive about exploring PRW in a thoughtful manner. To have a baseline survey such as this one means that any future surveys can be measured against this data for comparison.

To inform long-term decision-making on which water supply mix is right from a social, environmental and economic perspective, informed discussions are key.

The takeaway from these surveys is that community planners and water entities should not shy away from further discussing alternative water supply options, including PRW, because a significant proportion of respondents are wanting a voice in what their future water supply mix includes and are willing to participate in informed discussions. This type of survey data is an important part of those discussions.



This research represents one step in an important and timely discussion among Australians about the future of drinking water supply. Here is a list of ideas to constructively move the conversation forward:

- **Be candid and realistic about potential opportunities**
- **Recognise there isn't one perfect solution, but rather it's about making the most of the water and infrastructure available**
- **Focus on the quality of the water produced, not only on the source of the water**
- **Improve water education on different types of water supply technology and the Australian standards that apply to any water approved for drinking**
- **Help communities share in the journey when developing and integrating alternative water source supply options**
- **Acknowledge the “ewwww” factor with PRW but focus on how it may address the risks that come with dwindling freshwater supplies and climate change**
- **Improve water supply education on how water is purified and discuss the similarities and differences of PRW compared with other water source options**

Water supply will continue to shape the places where people live, work, study and play, feel happy and healthy, and stay connected, to their communities.

With prolonged and more regular drought periods predicted because of climate change and population growth, water supply security and reliability are imperative. In addition, cities and towns are under pressure to decarbonise and increase circularity, which includes using water more wisely, and therefore, alternative water sources are likely to become increasingly relied on to offset the demand for freshwater to maintain drinking water.

About the authors



Darren Romain

Water Resilience Expert

Darren has over 25 years of experience in water treatment is familiar with all aspects of drinking and recycled water supply and treatment from strategy to delivery and optimisation. His experience spans strategic planning, options assessment and selection, design, construction, commissioning, and operational trouble shooting and optimisation.

Darren is passionate about creating conversations around alternative water supplies for communities to ensure Australia has a sustainable future in the face of a changing climate and increasing competition for limited freshwater supplies.



Shane Tyrrell

Technical Director,
Water

Shane.Tyrrell@
aurecongroup.com

Shane Tyrrell has over 17 years of experience in strategic planning of water and wastewater services and integrated water management. His strength is dealing with complexity and helping to find robust solutions to the water market's biggest challenges. Shane has a passion for helping to navigate an uncertain future by providing direction in response to future trends and shocks. He has been instrumental in advancing adaptive planning in the water industry.

Contributing authors & reviewers:

ORIMA: David Bruce and Paulina Hryniewiecka

Aurecon: Kylie Cochrane, Jake Gerrard, Saanika Rana, Sally Williamson

Reference List

1. **Aurecon. (2022). Water's recovery. [online] Available at:** <https://www.aurecongroup.com/insights/benefits-purified-recycled-water>
2. **Water Services Association of Australia. (2020).** All options on the table. Urban water supply options for Australia.



About Aurecon

Aurecon is a design, engineering and advisory company that brings ideas to life to create a better future for people and the planet.

Aurecon is addressing some of the world's most urgent needs around climate change, access to clean drinking water and creating liveable, water sensitive cities. What allows us to do this is the unique combination of our collective experience and expertise of our water teams in Australia, New Zealand, and Asia, and our complimentary advisory solutions.

In joint venture, we recently helped a client develop its alternative drought strategy which investigated the feasibility of PRW. The study developed high level concepts to test the feasibility of supplying PRW from each of the water utility's water resource recovery facilities as well as nominating new potential decentralised locations. This work was a catalyst for the inclusion of PRW as a possible future drinking water supply option for the region's long-term operating strategy.

Aurecon applies comprehensive knowledge of the water market with design led engineering to create out of the box and cost-effective solutions. Our planning, design, and construction processes for water projects consider several key areas: water security, water use efficiency, climate resilience, sustainable sanitation, and reduced risk from water pollution and floods.

As part of an integrated team, we are developing the technical basis and underlying principles for a PRW demonstration plant. It will be used to demonstrate PRW safety to stakeholders, provide operators with a platform to gain experience with different technology types and process, and offer opportunities for communities to see the process in action.

To effectively manage increasing social and environmental pressures on water resources, we apply an interdisciplinary approach on water infrastructure engineering and blend this with a local understanding of conditions and infrastructure to deliver truly transformational projects.

We recently contributed to the recycled water roadmap for an Australia state government. Our work involved engaging with organisations connected to the water market for their perceptions of the barriers that may prevent widespread implementation of recycled water schemes, including PRW.

www.aurecongroup.com



About ORIMA

ORIMA is an Australian-owned professional services firm that provides market and social research, data analytics, organisational performance improvement and related advisory services. Established in 1996, ORIMA now has over 60 professional staff and offices in Melbourne, Canberra, Sydney and Brisbane, and is the largest provider of market and social research, organisational performance and data analytics services to Government (by contract number). ORIMA's intention is to make a positive difference to Australians and Australian society through providing the highest possible quality, independent and professional research.

www.orima.com.au

Document prepared by

Aurecon Group Pty Ltd
ACN 133 838 187
Aurecon Centre
Level 8, 850 Collins Street
Docklands VIC 3008
PO Box 23061
Docklands VIC 8012
Australia

T +61 3 9975 3000

F +61 3 9975 3444

E melbourne@aurecongroup.com

W aurecongroup.com

Disclaimer:

The views and opinions expressed in this publication are those of the authors and do not necessarily reflect the views, opinions and policies of Aurecon, its clients, or other organisations and bodies.