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Water Sensitive Cities Australia

MONASH CLIMATE CHANGE COMMUNICATION RESEARCH HUB

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Building community water literacy

Technical report

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Technical report

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KEY FINDINGS

Building people's water literacy—or water-related knowledge—through community engagement is key to creating water sensitive cities. This project used a mixed methods approach to develop and test practical recommendations to propose guidance for building water literacy through community engagement. It involved a rapid review of research from the Cooperative Research Centre for Water Sensitive Cities (CRCWSC) to develop practical recommendations for conducting effective community management. We tested these recommendations in pilot projects in Melbourne and Perth, and then used insights from those pilots to develop the guidance.

1. The pilots' topics and materials were typically well received, but with room for improvement.

- Participants were generally interested in learning about the role that water plays in keeping their city healthy and a great place to live, and think the topic is important for their community to understand.
- The campaign materials were typically well received, and seen as representing people's local contexts.
- However, there was some confusion over the materials' purpose. The connection between water and wellbeing was not well understood, and participants expected behavioural advice messages, such as is common in water-related campaigns but these were not the focus of these pilots.

2. The pilots' messages significantly increased participants' knowledge about the role of water in supporting community wellbeing, but this varied across messages.

- Some of the messages were already generally well understood by participants before they engaged with the pilot materials.
- The greatest improvements for both pilots related to water knowledge not commonly included in traditional water campaigns, such as the value of irrigated grass for cooling.
- Knowledge improvements from a single exposure to the campaign messages did not always last, and did not always change people's understandings of the underlying processes expressed in the messages, suggesting that repeated messages may be required to build process understanding over time.
- Access to baseline information on community knowledge and interests relating to the new topic covered in this campaign could have greatly improved the pilot outcomes by allowing more efficient focusing on knowledge gaps and more effective identification of audiences for targeting.

3. There was limited opportunity to test specific channels within the pilot timeframes, however, water utility company channels were the most preferred by participants for receiving information on the role of water for wellbeing.

- Water utility bills and emails were participants' most preferred channels for both pilots. Melbourne participants' next preferences were local council newsletters, emails or mail, then television, with limited preference for other options. Perth respondents' next preferences were television, then social media and local council correspondence. Offline channels were also suggested (e.g., banners at sports grounds), which could reach audiences where they naturally gather.
- Including messages within another campaign was unsuccessful at engaging audiences, as were isolated social media posts, suggesting that specifically targeted campaigns and collaborative boosting of messages might be more successful.

4. Multi-organisation collaboration was highly valued in the campaign design, but somewhat more challenging in delivery and in maintaining momentum.

- Including a diverse team of collaborators with local knowledge and experience was critical for ensuring the local relevance of the pilot campaigns' focus and messages.
- Pilot timelines were too short to accommodate organisational planning timelines for some channel options or for seeking additional, like-minded partners (e.g., local councils) who could have added value to the pilots' design and delivery, which considerably limited the available delivery channels.
- The resultant experimental designs were effective for testing messages, and were supported by the qualitative focus group findings.
- Maintaining transparency, momentum, and engagement with the right staff at the right time, was especially challenging across the diverse organisations, and could have been improved through better understanding of partner operations and agreed approaches for documentation.

These findings generally supported the draft guidance for water literacy campaigns and provided the basis for refining some of the guidance. The main refinements can be summarised into 6 themes, some of which have implications for multiple stages in the campaign development process—from planning to measurement.

1. Understanding the target audience's baseline literacy, knowledge gaps, interests and social contexts is critical for effective literacy campaigns. For example, the pilots found people did not understand the connection between water and wellbeing The guidance should highlight the need to collect this information where it doesn't already exist, especially for new topic areas such as was the focus of these pilots.
2. It is important that the audience clearly understand the purpose of the campaign messages, especially for campaigns that are aiming to build literacy rather than encourage behaviour change. This was the case with the pilots, where participants expected advice about how to change their behaviour. The guidance should make this point overt, especially for campaigns without behavioural calls to action.
3. Longer timelines are necessary for effective campaigns, to allow for repeated messages that build community understanding and for organisational planning requirements. The guidance should be expanded to address both of these rationales, especially for multi-organisational, collaborative campaigns.
4. Testing campaign messages and materials with members of the target audience prior to finalisation is important to ensure effective engagement, interpretation and understanding. The guidance should be expanded to highlight the value of including this qualitative message testing.
5. Broadening delivery channel options can be beneficial for reaching audiences and promoting repeated exposure, however tracking engagement across these may be critical for adaptive management of channels where their reach is uncertain. The guidance should be expanded to encourage consideration of a wider range of channels (both online and offline), especially in locations where the audience is already attending and channels are offered by like-minded organisations who may wish to partner on the campaign.
6. Considering longer-term literacy goals within evaluation processes—both improvement-focused assessments conducted during campaigns and impact-focused assessments after campaigns—can support future campaign efforts. The guidance should be expanded to capture the opportunity offered by building these wider considerations into baseline and outcome evaluation data collection. Broadening this data collection may provide insights to inform the focus of future campaigns and for tracking community literacy change over time and across campaigns.

The table below summarises the revised guidance based on these suggestions. The industry guidance note—*Practical advice for building water literacy*—explains each recommendation in detail.

Practical advice for building water literacy

Phase	Objective	Recommendations
PLANNING	Know your audience	Identify the target audience and factors affecting engagement Consider what interests the target audience or what will engage them
	Have clear water literacy goals	Identify which water knowledge gaps to address Address the water 'issues' that are least understood Define clear engagement outcomes (not content outcomes)
DESIGNING	Respond to constraints	Design engagement activities to address existing interest positions and social contexts
	Be engaging	Clearly articulate the 'why' behind each call to action
	Messages	Focus key messages on water's role in liveability Tailor your messages to resonate with specific audience segments Align water literacy messages with existing sustainability, health or related campaigns Craft messages that connect various water management concepts
	Language matters	Use simple, community-friendly language and avoid technical jargon
	Use visuals	Use local images as much as possible Use images that include local people Explain the relevance of the visuals Use images that resonate positively with the audience
	Get the framing right	Frame messages and campaigns in ways that guide people's thinking about the issue Engage delivery partners early Make it personal by clearly aligning imagery, message and campaign purpose with the target audience's values Align messages with broader community values and community perspectives Consider a new angle on an established topic by leveraging baseline audience knowledge and conducting early message testing Monitor for unintended consequences
DELIVERING	Respect sensitivities	Respect cultural issues
	Channels	Move away from a 'talking heads' approach Use recognised community leaders as advocates Incorporate offline / in-person delivery Collaborate with like-minded organisations Amplify the channels where people already expect to get information about water Ensure campaign delivery is accessible by removing barriers
EVALUATING	What to evaluate	Track process indicators Evaluate overall effectiveness Assess the effectiveness of various communication channels Evaluate immediate outcomes Measure intermediate outcomes Measure impact
	How to evaluate	Establish a comprehensive monitoring and evaluation framework at the outset Conduct a baseline survey Utilise a diverse mix of success indicators Combine multiple evaluation methods

1. INTRODUCTION

Building people's water literacy—or water-related knowledge—through community engagement is key to creating water sensitive cities. This project used a mixed methods approach to develop and test practical recommendations to propose a guidance for building water literacy through community engagement.

This report explains the project methodology:

- Identifying and refining the recommendations by reviewing research from the Cooperative Research Centre for Water Sensitive Cities (CRCWSC)
- Testing the recommendations in pilot projects in Melbourne and Perth
- Refining the recommendations.

An industry guidance note—*Practical advice for building water literacy*—presents recommendations across 4 stages of designing and delivering community campaigns to build water literacy:

1. **Planning your campaign**
2. **Designing your campaign**
3. **Delivering your campaign**
4. **Evaluating your campaign.**

WHAT IS WATER LITERACY?

Water literacy is defined as 'water-related knowledge' (Fielding et al., 2015). A national survey of 5,172 respondents conducted by the CRC for Water Sensitive Cities (Fielding et al., 2015) found a substantial portion of Australians demonstrate a good understanding of specific water issues, but overall water literacy levels remain low. For example, many are aware that fertilisers and pesticides can adversely affect waterway health, and a majority comprehend the workings of the water cycle (Fielding et al., 2015).

However, gaps in knowledge remain, particularly concerning water treatment, and drinking water's costs and sources. For instance, only one-third of people understand that domestic wastewater is treated before entering waterways, that stormwater from roofs and roads is often not treated before entering waterways, that wastewater and stormwater are carried through different pipes to get to waterways, or what catchment their household is part of. Community members also lack familiarity with water-related terms (Fielding et al., 2016).

In explaining these results, Fielding et al. noted these current levels of water literacy may be a barrier to realising water sensitive cities. Low levels of water literacy affect the community support and thus authorising environment for novel water sensitive solutions, and limit community engagement in shared water services (e.g. managing stormwater on lot) or participation in governance (e.g. joining forums to influence long term water strategies). The implication is that if urban and water managers wish to engage community members in more complex issues, such as implications for a changing climate or the liveability benefit of urban water management, they need to change their approach to engagement and invest in lifting base water literacy levels.

Historically community engagement often employed ineffective strategies, including the use of jargon and water-related terms that are not easily understood by the general community, despite water managers being aware this is a barrier (Fielding et al., 2016). Community engagement also focused on behavioural change without developing a well-rounded understating of why this new behaviour is required. For example, citizens in Australian cities understand the importance of conserving water but may question the merits of this outside of drought conditions. This may be because they are unaware of where their water comes from and the long-term pressures facing these supplies.

Therefore, it is crucial to evolve our community engagement approach to bridge these fundamental knowledge gaps and improve overall water literacy.

ABOUT THE CRCWSC AND ITS SOCIETY RESEARCH PROGRAM

The CRCWSC aimed to foster a transformation in urban water management, both in Australia and globally. The CRCWSC envisioned future cities and towns to be sustainable, resilient, productive and liveable. To realise this vision, it focused on helping change the way cities and towns are designed, built, and managed by "valuing the contribution water makes to economic development and growth, our quality of life, and the ecosystems of which cities are a part" (CRCWSC, 2021a). The CRCWSC's foundational research undertook 34 projects under 4 programs focusing on social transformations, water sensitive urbanism, future technologies and adoption pathways.

Program A: Society focused on understanding the social change needed to support water sensitive cities. It investigated methods to change community attitude and water-related behaviours, improve the economic valuation of sustainable management water outcomes, and identify changes in institutional and urban water governance.

This Program aimed to:

- influence the rules (regulatory environment) in which our cities are developed and planned
- support investment and decision making (business case) processes for urban development and water management
- ensure communities are engaged in the development of water and urban planning sectors.

Research on water literacy

Two projects in Program A investigated community engagement to build literacy.

Engaging communities with water sensitive cities (Project A2.3) identified community engagement strategies to promote knowledge about water management, build trust in water institutions, and leverage support for policies that promote sustainable water management. To realise this aim, the project explored the community's water literacy, namely, their current water-related knowledge and collected community-friendly terminology to support conveying key messages relating to sustainable urban water management and promoting effective community engagement. Key outcomes included:

- a database of community friendly water terminology and visuals
- recommendations for community engagement about sustainable urban water management
- a report on Australian citizens' water literacy—based on national survey data or current levels of knowledge about key water issues among Australian citizens
- capacity building of researchers, experts and practitioners to effectively engage diverse communities, and communicate new or complex information about sustainable urban water management.

The project's technical reports included in the literature review stage included:

- Community engagement in the water sector: An outcome-focused review of different engagement approaches
- Getting the message right: The use of frames, community-friendly terminology and visuals
- Community knowledge about water: Who has better water-related knowledge?
- Community understanding of water terminology
- Community profiles of engagement with water.

Understanding social processes to achieve water sensitive futures (Project A2.1) explored the social and historical processes of domestic water use and current social practices around water use in Australian cities and used these insights to better inform future policy and interventions. The project produced a typology of water use cultures and contexts—including information about community values, ideals, and perceived risks and recommendations for developing effective and socially acceptable water sensitive interventions. That project produced 3 technical reports:

- Water, history and the Australian city: Urbanism, suburbanism and water in a dry continent, 1788–2015
- Australian Domestic Water Use Cultures: A Literature Review
- Community profiles of engagement with water.

2. PROJECT RESEARCH APPROACH

This project used a mixed methods approach to develop and test practical recommendations to propose guidance for building community engagement in water literacy.

Our method followed 4 stages: rapid literature review; developing draft guidance; conducting 2 pilots; and finalising the guidance (see **Figure 1**). This process was enhanced by consultation with partners, industry experts and a focus group process with community members in Western Australia. More information about the pilot and focus groups can be found in the following chapters.

Figure 1. Research process

3. LITERATURE REVIEW

The rapid literature review focused on CRCWSC technical reports related to community engagement as described above. This approach supported the mainstreaming of CRCWSC research related to building water literacy, rather than behaviour change initiatives. Both communication approaches have a place in contemporary urban water management and indeed both are required to successfully create water sensitive communities (Wong and Brown, 2009).

From the 7 technical reports noted above, we identified and collated recommendations about community engagement in building water literacy. This review produced a long list of *166 raw* recommendations—i.e. direct quotes from the reports without any wording changes or categorisation. Some recommendations contained more than one point. For example:

> "Cognitive engagement refers to knowledge about key water-related issues, and the capacity to apply this knowledge. Emotional engagement incorporates positive attitudes about water and water management. Behavioural engagement reflects how involved the individual is in water sensitive behaviours, such as reducing water use, or reducing pollution. Therefore, a water sensitive citizen is someone who is knowledgeable about water, is supportive of water sensitive policy initiatives, and indicates willingness to participate in water sensitive practices" (Schultz et al., 2017, p. 11).

And often, similar points were included in more than one recommendation. For instance, the following recommendations from 2 studies suggest the same point about understanding audience:

- "All engagement and communication initiatives need to identify which group they are aiming to communicate with. Messages intended for "everyone" are unlikely to reach everyone. Our findings indicate that it is important to think about tailoring messages for each target audiences." (Schultz et al., 2017, p. 48)

- Know your audience/community: the effectiveness of engagement processes rests on ensuring that you understand who you are targeting with the engagement program. A consideration of the audience's current issues, constraints, knowledge, and behaviour will help to ensure you develop a program that is relevant to the audience/community (Dean, Fielding et al., 2016, p. 5).

4. DEVELOPING THE DRAFT GUIDANCE

We refined the long list of recommendations, applying an analytical framework containing 4 phases of community engagement: planning, designing, implementing and evaluating (see **Table 1**).

Table 1. Analytical framework for community engagement

Phase	Goals	Tasks undertaken by communication managers
Planning	Set the direction and scope of the engagement, identify audiences, set objectives for engagement	Define the engagement objectives and scope. Identify the audience (community, stakeholders) and their level of influence, consider segments. Research and select communication channels, trusted voices. Decide purpose—whether this is for awareness, to change behaviour, to consult and enable input. Determine which level of the IAP2 spectrum the engagement will use: informing (inform, educate, change behaviour, build policy support), consulting (gauge community opinion and preferences), involving (promote active communities to participate in decisions, build trust and build stewardship), collaborating (build partnership), engaging (place decisions in the hands of the community). Choose the engagement methods and tools. Develop an engagement plan and monitoring, evaluation and learning (MEL) framework.
Designing	Prepare the materials and resources for the engagement	Design the engagement methods for each audience segment. Create the engagement materials and resources such as surveys, flyers, posters, newsletters, websites, etc. This includes the design of tailored messages for each segment. Design messages, communication collateral, communication channels. Design for inclusiveness.
Delivering	Conduct the engagement activities according to the plan	Deliver the engagement activities and campaigns. Ensure that the engagement activities are inclusive, accessible, transparent and respectful.
Evaluating	Evaluate the outcomes and impacts of the engagement activities	Use various methods such as surveys, interviews, focus groups, social network analysis, etc. to measure the outcomes and impacts as part of MEL framework. Provide feedback and recommendations to the community and other stakeholders.

Based on the analytical framework, we broke down the *raw* recommendations and grouped them into a list of ***197*** coded recommendations. This list was organised into 4 phases as stated in Table 1.

We then ranked all the recommendations within each list based on following criteria:

- relevant (i.e. recommendations must be relevant for communication managers who design community engagement activities in the water sector)
- testable (i.e. each recommendation must be specific enough to be tested or measured)
- easy to understand (i.e. each recommendation must be clear and straightforward for those managers).

This ranking process was cross-checked with industry experts and led to draft guidance that consisted of a short list of *33* unique recommendations. This guidance was used by the pilot delivery team to design and deliver the 2 pilots in Melbourne and Perth.

5. BACKGROUND TO THE PILOTS

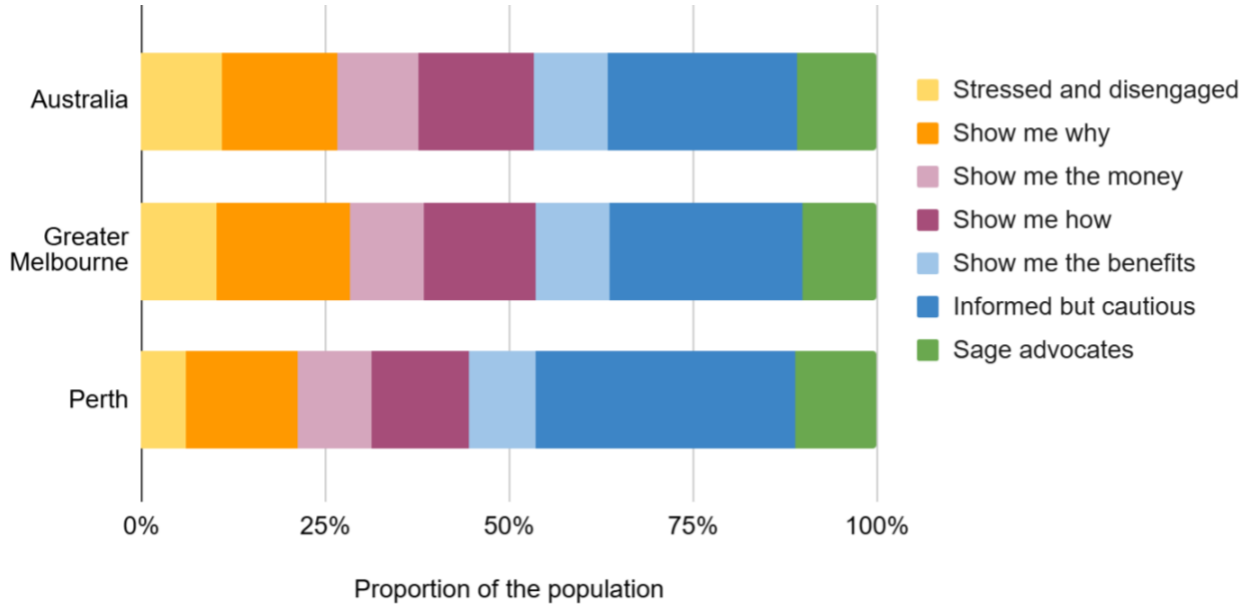
The pilots were undertaken in partnership with the Monash Climate Change Communication Research Hub, Water Sensitive Cities Australia (WSCA) and the Project Steering Group, which included representatives from Melbourne Water, South East Water, the Victorian Department of Energy, Environment and Climate Action, Water Corporation, the Western Australian Department of Water and Environmental Regulation, the Western Australian Department of Biodiversity, Conservation and Attractions, and the Water Services Association of Australia (WSAA).

The pilot campaigns used outputs of earlier work by government bodies and research organisations to develop practical interventions that build water literacy across diverse social groups and pilot tested these interventions in Perth and Melbourne.

Background research indicated residents of Perth and Greater Melbourne have moderate levels of general water literacy (SECNewgate Research, 2023). However, this is believed to be insufficient for effective engagement in water policy discussions and private action for managing water to achieve healthy, liveable and affordable communities into the future (e.g., low national levels of perceived likelihood of drought in the next 10 years, SECNewgate Research, 2023). Water policymakers will need to engage the community in such discussions and action in the near future, and so need effective ways to increase community water literacy.

Water literacy research conducted by SECNewgate Research (2023) for WSAA identified 7 unique segments of the public as illustrated in **Figure 2**.

Figure 2. Water literacy segments



Of these segments, 4 were assessed as most suitable for targeting in water literacy interventions: *Show me the money*, *Show me how*, *Show me the benefits* and *Informed but cautious*. These were chosen as target audiences for these pilots.

The *Show me the money* segment has moderate knowledge and interest in water, and weaker environmental values (SECNewgate Research, 2023). They are typically aged 60 years or older, more likely to be men, generally retired, have no children living at home, and have a trade, diploma or certificate qualification (SECNewgate Research, 2023).

The *Show me how* segment also has moderate knowledge and interest in water, but moderate environmental values and are conscious that they could be doing more for the environment (SECNewgate Research, 2023). People in this segment tend to be women, are generally younger (aged 18–39 years), rent their home and have lower levels of education up to Year 12 (SECNewgate Research, 2023)

The *Show me the benefits* segment has high levels of water knowledge and interest, and moderate environmental values (SECNewgate Research, 2023). They are typically aged 60 years or older, more likely to be men, generally retired, have no children living at home, have university education and are financially secure homeowners (SECNewgate Research, 2023).

The *Informed but cautious* segment also has high levels of water knowledge and very strong environmental values, but lower interest in water knowledge and may need reminding of the importance of protecting our natural resources and tackling climate change (SECNewgate Research, 2023). People in this segment tend to be university educated, born overseas, homeowners and have higher income (SECNewgate Research, 2023).

The messages and interventions in this project were designed to be suitable for implementation by water management organisations such as water utilities and local governments. The pilots tested the practicality and effectiveness of these interventions, produced communication assets that can be reused and/or replicated for other locations, and provided recommendations for refining the overarching project's practical water literacy guidance recommendations.

Key messages were co-designed with a broad range of project partners, and testing of these key messages and communications channels was from a mass audience perspective.

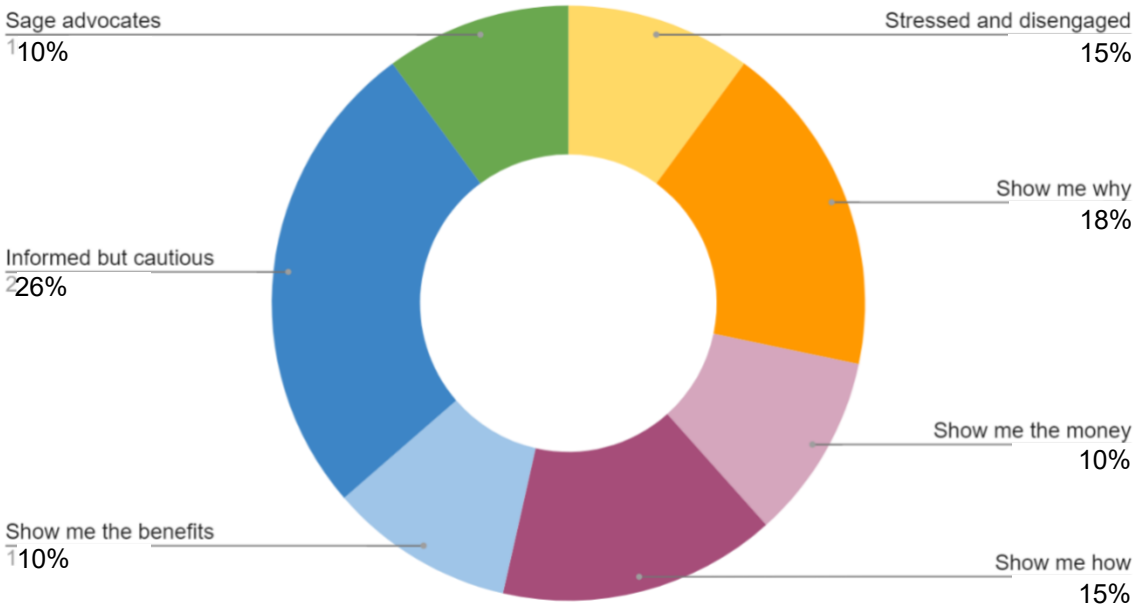
6. MELBOURNE PILOT

The Melbourne pilot was co-designed with WSCA, Melbourne Water, South East Water and the Department of Energy, Environment and Climate Action.

SECNewgate Research's (2023) assessment of water literacy levels across Australia found Greater Melbourne residents have water literacy levels (average score of 55 out of 100) very slightly below the national average (57 out of 100).

Greater Melbourne's distribution of the water literacy segments was like those for the nation as a whole (SECNewgate Research, 2023) as shown in **Figure 2**. Melbourne's target segments make up 61% of the population as illustrated in **Figure 3**.

Figure 3. Water literacy segment distributions in Greater Melbourne



METHODOLOGY

Pilot design

This pilot adopted a mixed method design that included message delivery via electronic direct mail (EDM), social media posts and an experimental survey.

Target audience

The audience segments targeted in this pilot are diverse: the *Show me the money* segment (estimated at 10% of Melbourne's population), the *Show me how* segment (15%), the *Show me the benefits* segment (10%) and the *Informed but cautious* segment (26%). These segments collectively make up 61% of the Melbourne population. These segments' informational needs are specifically relevant for awareness raising and literacy-focused communication interventions (SECNewgate Research, 2023).

Evaluation approach

The pilot initially planned for a field survey of South East Water customers based on those who had followed the EDM link to the pilot website. However, an insufficient number of EDM recipients followed the link so an experimental approach was also adopted. The experimental survey provided treatment group participants with each of the pilot's 5 images containing messages, and measured literacy and attitudes before and after exposure to the messages. The control group participants were not provided with these images and messages, and were asked the same baseline literacy and attitude questions as the treatment group to isolate the treatment effects. The pilots' monitoring and evaluation (M&E) framework is detailed in **Appendix 1**.

ACTIVITIES AND OUTPUTS

Activities conducted as part of this pilot include:

- agreement on the overall focus of the pilot
- co-design of images, messages, animations and website
- circulation of campaign materials
- an experimental survey to evaluate the pilot campaign
- partner lessons learnt reflection workshops to evaluate the collaboration process and record learnings.

These activities resulted in 3 outputs:

- co-designed Melbourne pilot
- campaign materials
- this report.

Agreed pilot focus

An agreement on both pilots' overall 'water for wellbeing' focus was reached through 2 Project Steering Group meetings involving participants from 6 different water-related organisations as well as out-of-session feedback. WSCA also facilitated earlier discussions on the messaging focus via a workshop with the Project Steering Group and others, before the Monash Climate Change Communication Research Hub joined the project. A pilot proposal document identified the intended pilot designs, although ongoing engagement and emerging challenges required adaptive changes to the original plan as the pilots progressed. A spreadsheet documented which of the guidance recommendations for water literacy engagement were applied in the pilots, and how (refer to **Appendix 2** for a copy of this information).

Co-designed messages and materials

Reviews of prior research specific to Melbourne and at national scale identified a range of messaging priorities (see DELWP, 2017, 2018, 2022; Greater Melbourne Urban Water & System Strategy: Water for Life, n.d.; Dean, et al., 2015, 2016; Fielding, Dean & Newton, 2016; Lote Agency, 2023; Schultz, et al., 2017; South East Water, n.d.).

We incorporated partner organisations' local knowledge, experience and priorities into the design during meetings and through out-of-session feedback. Five representatives from partner organisations participated in one or more of 5 co-design workshops and provided out-of-session feedback. This resulted in 6 revisions of the messages, 4 revisions of the 5 main associated images, and 2 revisions of the EDM insert.

This process resulted in 23 core and sub-messages associated with 6 images (see **Figure 4** to **Figure 9**), including one email insert. We converted 5 of these images into animations: one for the primary image that draws together all of the sub-contexts, and one for each of the sub-contexts (i.e., urban centres; suburban homes; parks, gardens and natural areas; and sports grounds).

We included these messages and images in a website containing 5 pages. The main landing page contained the primary image as an animation, along with its messages. Each of the other pages included one of the sub-context animations and its associated messages. We revised the website 6 times.

Figure 4. Primary Melbourne messaging image

Figure 5. Melbourne parks and natural areas messaging image

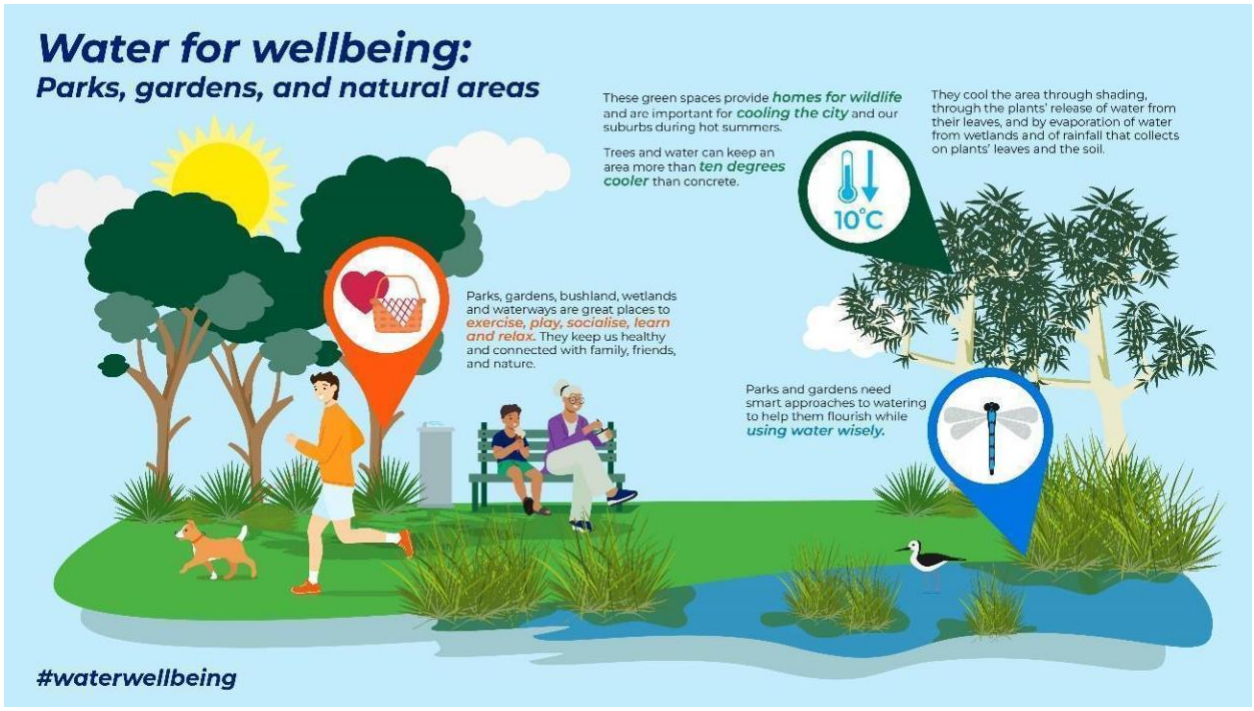


Figure 6. Melbourne urban centres messaging image

Figure 7. Melbourne suburban homes messaging image

Figure 8. Melbourne sports grounds messaging image

Figure 9. Electronic direct mail campaign insert

Circulation of campaign materials

South East Water circulated the EDM campaign image (**Figure 9**) that linked to the pilot's website to 10,955 of their customers within emails sent for another EDM campaign. Just over half (54%) of recipients opened the emails, and 2% of recipients clicked the link. **Table 2** details the metrics associated with these emails, including comparison information showing similar rates of opening and link-clicks for customers who received the campaign email without the pilot insert.

Table 2. Electronic direct mail metrics

Metric	No. of recipients	
	Received pilot insert	No pilot insert
Emails sent	10,955	10,877
Emails received	10,768 (98%)	10,702 (98%)
Emails opened	5,937 (54%)	5,920 (54%)
Weblink followed	264 (2%)	295 (3%)

Figure 10 depicts the landing page, while Table 3 summarises the website's engagement metrics.

Figure 10. Melbourne website landing page

Table 3. Engagement metrics for Melbourne pilot website

Web page	Page views	Page visitors	Views per visitor	Time on page	
				Per view*	Per visitor
Home page	189	50	3.8	22s	1m 23s
Urban centres	47	14	3.4	25s	1m 25s
Suburban homes	44	13	3.4	20s	1m 8s
Parks, gardens and natural areas	76	27	2.8	15s	42s
Sports grounds	61	21	2.9	7s	20s

* The time on page per view has been multiplied by the number of views per visitor to populate the final column of time per visitor for each page, to better reflect people returning to read more after browsing other pages.

WSCA shared 5 social media posts on both *LinkedIn* and *X*, containing animations (see **Table 4** for engagement metrics associated with these posts, and **Figure 11** for an example social media post).

Evaluation survey

We evaluated the pilot campaign messages and images via an experimental survey. South East Water circulated this online survey via email to 21,626 customers who received the original EDM (10,700 control customers who hadn't received the pilot insert, and 10,926 treatment customers who had received the pilot insert), resulting in 305 (1.4%) survey participants (188 control and 117 treatment).

The survey included questions on the following topics (see **Appendix 3** for full list):

- recognition of and engagement with the EDM insert
- how they reached the survey (to identify any social media/web traffic)
- enjoyment of certain activities (e.g., visiting or living in the city)
- pilot-specific water literacy questions (asked twice for the treatment group)
- previous questions in WSAA general water literacy surveys
- self-reported pilot topic knowledge (asked twice for treatment group)
- preferred channels and sources for pilot messages
- issue importance, interest and prior thinking about the issue
- demographic information

Table 4. Engagement metrics from WSCA for social media posts

Metric	Social media post				
	1 – Primary image animation	2 – Parks image animation	3 – Suburban animation	4 – Sports ground animation	5 – Urban centre animation
LinkedIn					
Impressions	801	908	815	818	313
Video views	374	326	266	249	139
Reactions	20	29	13	18	14
Reposts	4	5	4	3	2
Comments	0	0	1	1	0
Clicks	53	44	45	43	19
Engagement rate	9.6%	8.9%	7.7%	8.0%	11.2%
Click-through rate	6.6%	4.9%	5.5%	5.3%	6.1%
X					
Views	59	64	120	76	52
Comments	0	1	1	0	0
Reposts	1	1	3	2	1
Reactions	2	4	4	2	2
Clicks	15	10	4	5	2
Engagement rate	30.5%	25.0%	10.0%	11.8%	9.6%
Click-through rate	25.4%	15.6%	3.3%	6.6%	3.8%

Figure 11. Example LinkedIn post featuring one of the pilot's animated images

Reflection workshops

We evaluated the collaboration and delivery process via 2 lessons-learnt reflection workshops. Each workshop focused on a different part of the pilot process and was attended by both pilots' contributing partners together. The first workshop reflected on the planning and design phases of the project, and was attended by 3 Melbourne partners representatives. The second workshop focused on the implementation and evaluation phases, and organisation-specific learnings, and was attended by 3 Melbourne partner representatives.

Reporting

This report is the key reporting output for the Melbourne pilot. It summarises the Melbourne pilot's processes and findings, including implications specific to the Melbourne pilot and suggestions for improving the guidance recommendations for building water literacy.

OUTCOMES

The outcome targets for this pilot are listed below:

- Melbourne pilot learnings are captured.
- Melbourne audiences increase interactions with the water literacy campaign by 20% [initially set to June 2024, but extended to accommodate delivery timing].
- Melbourne campaign recipients (i.e., treatment group) have higher average literacy on the role of water in healthy, liveable communities when compared with the control group [initially set to June 2024, but extended to accommodate delivery timing].

This report details the results of the pilot on audience perceptions and impacts (this section), and partner perceptions and impacts. The achievements and evidence relating to these outcomes are outlined in the following sections.

Channel outcomes

Engagement with the EDM insert was very low, with only 2% of recipients clicking on the provided website link. This result likely reflects several factors that could be improved in future campaigns. Due to time constraints, the insert was included within an already planned EDM campaign with substantially different focus to that of the pilot, and appeared towards the end of the email after the primary EDM information was conveyed. Future campaigns could be designed with sufficient lead time for planning and approvals to allow for a dedicated campaign that provides more space for messaging and more flexibility in who is targeted.

Social media dissemination of the messages also had low engagement, with click-through rates of between 4.9% and 6.6% for LinkedIn posts and between 3.8% and 25.4% for posts on X. Again, this result likely reflects several factors that could be improved in future campaigns. First, the WSCA social media audience largely comprises water practitioners—with high water literacy—rather than the general public. Second, due to the limited number of partner organisations involved in Melbourne, the team could not on their own push the posts very widely within the Melbourne context. Engaging additional partners such as local governments and state government departments in dissemination could greatly increase reach and hopefully reach sufficient critical mass to push the messages beyond those networks. Reflecting the low rates of click-through from the EDM and social media, engagement with the website was limited.

Experimental survey

The survey was completed by 305 South East Water customers, with 188 (62%) respondents being from the control group and 117 (38%) from the treatment group. Most respondents were older (75% aged 60 years or older) due to the EDM's target audience. 46% of respondents identified as women and 50% identified as men, with the remainder identifying as non-binary or preferring not to say. Respondents were relatively evenly split across education categories, with 32% completing primary or high school, 34% having a trade or diploma/certificate, and 32% holding a Bachelor degree or above.

Two-thirds of respondents (across the whole sample) indicated that they had not previously seen the EDM insert. All treatment group respondents were shown the pilot messages and images during the survey.

There were no significant differences between the control and treatment groups' age, gender or education distributions, or their baseline water literacy (general or pilot-specific) prior to exposure to the pilot messages. There were, however, significant differences between the groups' initial levels of interest in learning about the issue, the importance they place on the issue, and how much they had previously thought about the issue (refer to **Table 5**).

In contrast to the lack of statistically significant baseline differences in pilot-specific water literacy, the control and treatment groups did show differences for some of the comparative baseline questions taken from WSAA's (SECNewgate Research, 2023) traditional water literacy survey. Questions showing these differences related to 2 topics:

- It costs water utilities a lot to manage fats and oils disposed of via the wastewater (sewerage) system.
- Delivering water to households and businesses is an energy intensive process for utilities.

In both cases, more of the control group selected the correct response (74% correct for fats and oils; 64% correct for energy intensiveness) than did the treatment group (62% correct for fats and oils; 48% correct for energy intensiveness). As the pilot focused on new messages, these differences are not considered problematic and are mentioned here for context.

Issue interest and importance

Respondents tended to be moderately to very interested in learning about the role of water in keeping Melbourne (Naarm) healthy and a great place to live when asked early in the first survey (M = 3.22 out of 5). They also felt the issue is moderately to very important for the community to understand (M = 3.89 out of 5).

As shown in **Table 5**, the initial levels of interest, rated importance and amount of thought spent on the issue of water for wellbeing significantly varied across groups, requiring consideration when interpreting treatment effects. The control group were more interested, saw the issue as more important and had previously thought more about it than the treatment group.

Self-reported knowledge

There was no significant difference in participants' ratings of their own knowledge of the role of water at the start of the survey (see **Table 5**), with both groups rating their knowledge slightly below 'moderate'. People who expressed more interest in the issue were more likely to have higher initial self-reported knowledge. A similar trend was evident for ratings of issue importance, but only for those who rated it as extremely important.

There was a significant increase in self-reported knowledge of the role of water due to exposure to the pilot messages. There was no difference between men's and women's ratings of their knowledge before or after treatment. There was also no significant difference in the improvements to self-reported knowledge across age groups.

Table 5. Melbourne survey analysis significant results

Key survey question or compared questions	Control group	Treatment group	Test statistics
How interested are you in learning about the role water plays in keeping Melbourne (Naarm) healthy and a great place to live?	M = 3.36	M_{before} = 2.98	t = -3.017, p = 0.003
How important do you think it is for people in Melbourne to understand the role water plays in keeping Melbourne healthy and a great place to live?	M = 3.99	M_{before} =3.74	t = -2.139, p = 0.033
How much have you thought about the role water plays in keeping Melbourne healthy and a great place to live?	M =2.61	M_{before} =2.86	t = -2.027, p = 0.044
How much do you know about the role that water plays in keeping Melbourne healthy and a great place to live? [referred to as *self-reported knowledge*]	M = 2.86	M_{before} = 2.61	t = -1.919, p = 0.057
Self-reported knowledge: Before-after change	-	M_{before} = 2.61, M_{after} = 3.17	t = 6.215, p < 0.001
Self-reported knowledge x Level of interest	-	-	$F(4)$ = 12.919, p < 0.001
Self-reported knowledge x Issue importance	-	-	$F(4)$ = 14.861, p < 0.001
Overall literacy (number of correct responses relating to pilot messages)	-	M_{before} = 4.87, M_{after} = 5.27	$t_{before\text{-}after}$ = 4.056, p < 0.001
Overall literacy x Self-reported knowledge	-	-	r = 0.223, p < 0.001
Overall literacy increases (before-after exposure) x a 'moderate' level of interest	-	-	$\chi^2(12)$ = 62.868, p < 0.001
Overall literacy increases (before-after exposure) x 'a little bit' interested	-	-	$\chi^2(12)$ = 24.819, p = 0.016

Notes: M indicates the mean or average response, which for most questions was on a scale from 1 to 5, with 5 being the highest or best value (e.g., 'very interested');M_{before} indicates the mean before exposure to the pilot messages and M_{after} indicates the mean after exposure; *t*, *F,* χ^2 and *r* values are the test statistic's value, with a higher value generally indicating higher difference from the control or comparison (e.g., before exposure compared with after exposure); *p* indicates the statistical significance value, where p-values lower than (<) 0.05 suggest that the test statistic is large enough to not be due to random chance, but rather indicating a real difference.

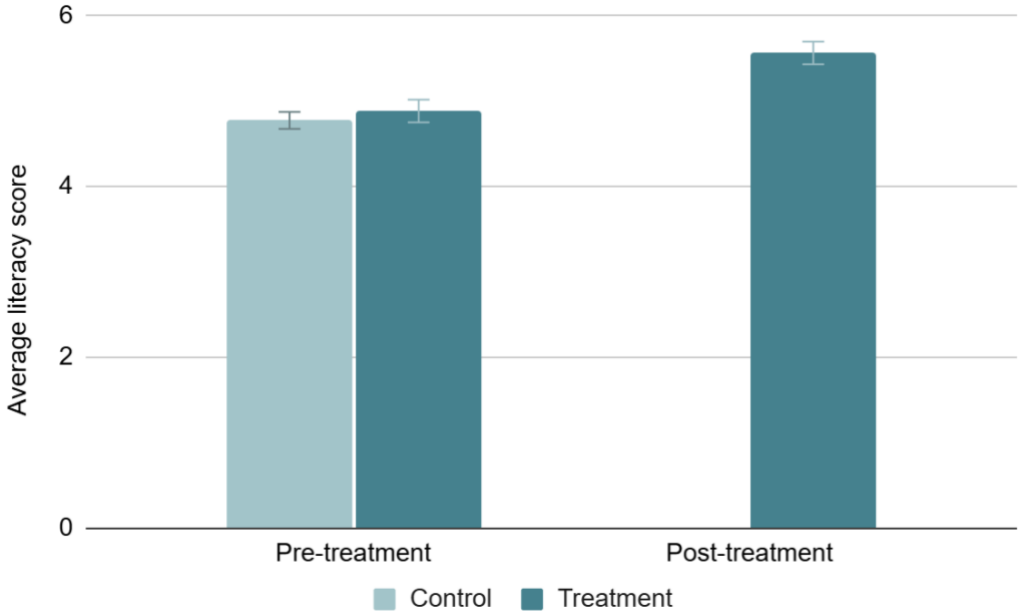
Overall literacy scores

There was a significant, but only small to moderate, correlation between participants' self-reported knowledge and overall literacy scores at the beginning of the survey (refer to **Table 5**). People were only moderately accurate at gauging their own levels of knowledge on the topic.

At the start of the survey, there was no significant difference in overall levels of pilot topic literacy between the control group and treatment group, or based on overall responses to general WSAA water literacy questions.

After exposure to the pilot messages and images, the treatment group's overall literacy scores significantly increased. **Figure 12** provides a comparison of these average literacy scores. The largest changes were seen in those whose levels of interest were 'moderate' followed those who were 'a little bit' interested.

Figure 12. Melbourne overall literacy score comparisons



Note: Error bars indicate the standard error of the mean, highlighting no significant difference at pre-treatment, and significant increase post-treatment.

Specific literacy

Literacy in the treatment group increased significantly after they interacted with the pilot messages (see **Table 6**). For some questions (see **Figure 13**), literacy was already high before treatment, so the average Likert response (range from *definitely false* to *definitely true*) did not increase significantly after engaging with the pilot messages. Recoding *probably true and definitely true* as correct responses for the Likert questions highlights nearly universal correct responses pre-treatment for several pilot messages. Literacy levels increased the most for messages relating to irrigating sports grounds and climate change impacts on groundwater.

One question with low literacy levels and substantial improvement post-exposure to the campaign messages was: *Which of the following are ways that gardens, trees and other vegetation help keep our urban communities cool?* While most respondents (88%) recognised that shading helps with cooling, considerably fewer respondents understood that the release of water through plants leaves (43%) or evaporation of rainfall off leaves and soil (49%) helps cool the surrounding area. After being shown the campaign material all of these had increased, with almost all (93%) of respondents recognising the value of shading, and a majority recognising the importance of release of water from leaves (67%) and of evaporation of rainfall (70%).

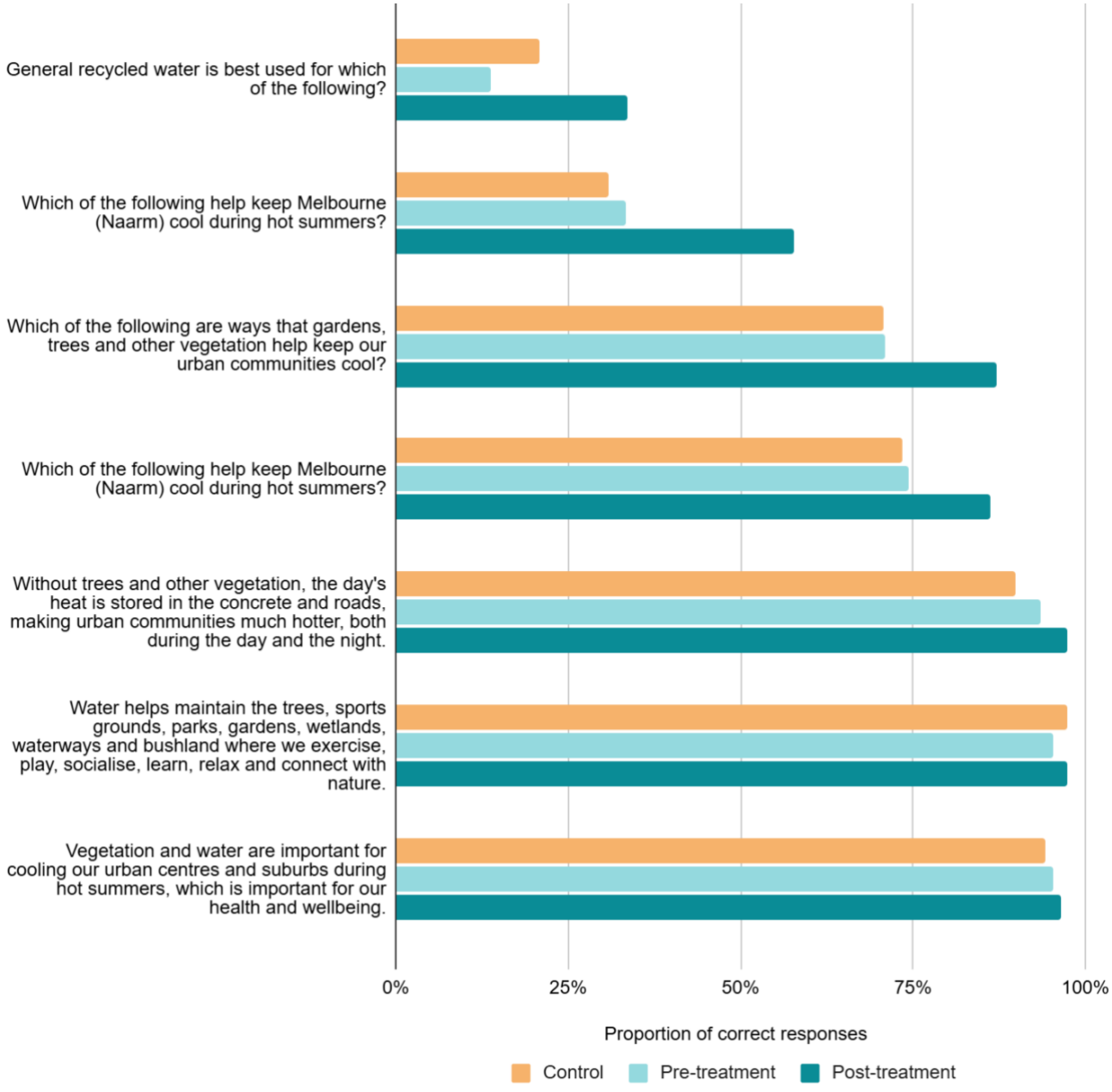
However, there were also slight increases in the proportion of people who mistakenly thought the dropping of leaves also helped with cooling (18% before and 27% after reading the material) and that green canopies help with cooling by encouraging wind production (19% before and 21% after reading the material). These latter increases suggest some responses may reflect changes to conceptual shortcuts (heuristics) rather than true knowledge of these mechanisms. Those respondents may have updated their conceptual association of vegetation with cooling without fully integrating the mechanisms they read that led to those heuristic changes.

Table 6. Treatment effects identified for specific Melbourne literacy questions

Question	Pre-treatment mean (% correct)	Post-treatment mean (% correct)
Water helps maintain the trees, sports grounds, parks, gardens, wetlands, waterways and bushland where we exercise, play, socialise, learn, relax and connect with nature.	4.77 (87%)†	4.78 (97%)
Vegetation and water are important for cooling our urban centres and suburbs during hot summers, which is important for our health and wellbeing.	4.68 (87%)†	4.73 (96%)
Without trees and other vegetation, the day's heat is stored in the concrete and roads, making urban communities much hotter, both during the day and the night.	4.57 (86%)†	4.71 (97%)*
Irrigating sports grounds can keep an area around 20 degrees cooler than dry grass.	3.77 (65%)†	4.34 (86%)*
Which of the following help keep Melbourne (Naarm) cool during hot summers? (Select all that apply) – Home gardens, footpath verge trees, parks and public gardens, concrete, asphalt/bitumen	(74%)	(86%)*
Which of the following are ways that gardens, trees and other vegetation help keep our urban communities cool? (Select all that apply) – Direct shading, releasing water through leaves, proximity to trees, parks and public open space, dropping their leaves, green canopies encourage wind production, they don't keep it cool, not sure	(16%)	(23%)*
General recycled water is best used for which of the following? (Select all that apply) – Flushing toilets, washing clothes, watering gardens, watering sports groups, drinking, not sure, none of the above	(13%)	(21%)*
Overall literacy score (Number of correct responses)	4.87	5.27*

* Indicates a significant increase from pre- to post-treatment ($p \leq 0.05$).
† 5 = Definitely true (correct) to 1 = Definitely false (incorrect); ratings 4 and 5 were coded as 'correct' for percentage calculations.

Figure 13. Relative proportion of correct responses to pilot literacy questions



Activity interests

Of the 5 activities tested, the most commonly enjoyed activity was living in suburbs (70% of respondents), followed by visiting local parks, wetlands, waterways or bushland (64%) and gardening (60%). Around only a third of respondents (30%) enjoy either watching or participating in sports, and 1 in 6 participants (16%) enjoy visiting or living in urban centres.

Analysis of the relevance of these activity interests for engagement with the campaign topic of water for wellbeing shows respondents with an interest in visiting local parks, wetlands, waterways or bushland were significantly different from those who did not enjoy this. The former group recorded a higher level of interest in the topic ($t(303) = 3.369$, $p < 0.001$), have previously thought about the issue more ($t(303) = 2.807$, $p = 0.003$), and place

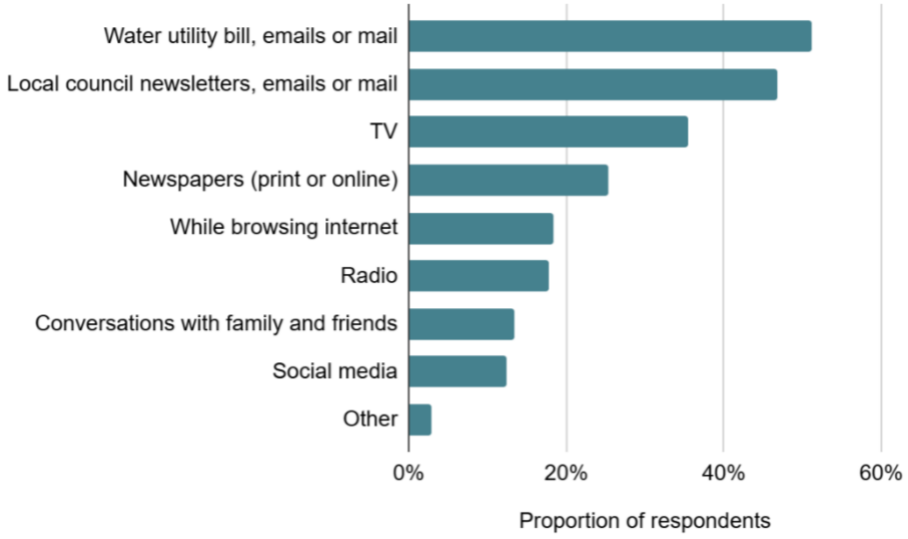
more importance on the need for people to understand the role water plays in keeping Melbourne healthy and a great place to live ($t(303) = 3.479$, $p < 0.001$). At the start of the survey, respondents who enjoyed spending time in parks and natural areas also tended to have higher literacy across all pilot message topics (all $p \leq .016$). For all other activity interests, there was no significant difference in their levels of interest in the issue, prior thought on the issue, issue importance and overall pilot-related literacy.

There were also some interest-specific literacy differences. Participants who enjoyed gardening tended to better recognise the value of gardens (as opposed to concrete and asphalt) for keeping urban areas cool than those who did not enjoy gardening ($\chi^2(1) = 12.838$, $p < 0.001$). Similarly, people who enjoyed watching or participating in outdoor sports tended to better recognise the best uses for general recycled water than those who did not ($\chi^2(1) = 6.016$, $p = 0.014$).

Message channel preferences

When asked 'Through which of the following would you prefer to receive information on the role that water plays in keeping Melbourne healthy and a great place to live?', the most preferred option was water utility correspondence (e.g., bills and emails), followed by local council correspondence and then television (**Figure 14**).

Figure 14. Melbourne message channel preferences



IMPLICATIONS

The approaches used in this pilot improved literacy in participants, but faced challenges that impeded its reach and the generalisability of its findings. Several valuable insights from these evaluations highlight opportunities for improving the materials and processes for future campaigns and campaigns in general.

The key opportunity for improving the reception and outcomes of the pilot materials is to refine the focus of messages in each context. In particular, future campaigns should build on public understanding of the processes by which the water and vegetation etc. achieve their wellbeing effects (e.g., how vegetation actually cools) and reduce focus on higher order messages that are already well understood. For these new concepts and processes, it would be particularly beneficial to incorporate message repetition and cumulative building on messages to help embed knowledge about the processes and nuances covered in the messages.

A key challenge for achieving the greatest impact from messages is that those who benefit most (greatest increases in literacy) tend be those who do not already have strong levels of interest in the topic. This result suggests engaging audiences through adjacent issues that they may be interested in is particularly important. Such approaches may be challenging depending on the level of audience targeting available through different channels, and multi-channel approaches (including online and offline) may be more effective. Partnering with local councils and state government for delivering the materials would be particularly relevant for expanding channel options and reach.

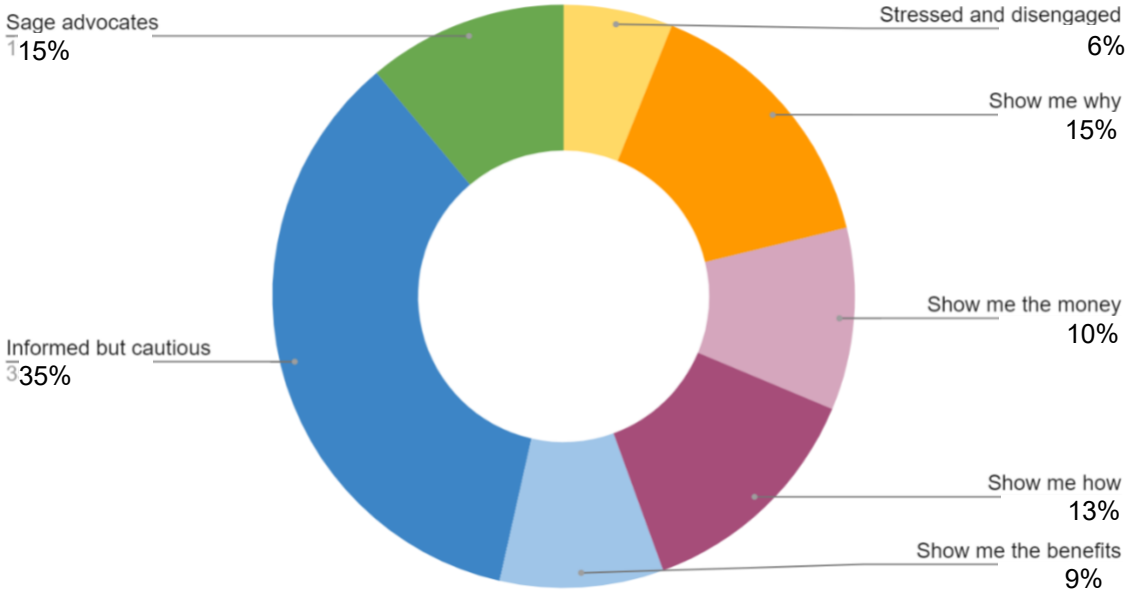
7. PERTH PILOT

This pilot was co-designed with WSCA, Water Corporation, the Department of Water and Environmental Regulation and the Department of Biodiversity, Conservation and Attractions.

SECNewgate Research's (2023) assessment of water literacy levels across Australia found Perth residents have water literacy levels (average score of 58 out of 100) very close to the national average (57 out of 100).

Perth's distribution of the water literacy segments was somewhat different to those for the nation as a whole (SECNewgate Research, 2023), primarily due to a larger *Informed but cautious* segment (see **Figure 2** for a comparison). Perth's 4 target segments make up 67% of the population as illustrated in **Figure 15**.

Figure 15. Water literacy segment distributions in Perth



METHODOLOGY

Pilot design

This pilot adopted a longitudinal experimental survey design.

Target audience

The audience segments chosen for targeting in this pilot are diverse: the *Show me the money* segment (estimated at 10% of Perth's population), the *Show me how* segment (13%), the *Show me the benefits* segment (9%) and the *Informed but cautious* segment (35%). These segments collectively make up 67% of the Perth population. These segments' informational needs are specifically relevant for awareness raising and literacy-focused communication interventions (SECNewgate Research, 2023).

Evaluation approach

The pilot undertook a longitudinal experimental survey and focus groups to evaluate message effectiveness. The experimental survey included 2 separate sampling events approximately 3 weeks apart. The first survey presented treatment group participants with the pilot's website embedded in the survey form, allowing respondents to navigate through to each of the pilot's 4 individual messaging contexts (i.e., urban centres; suburban homes; sports grounds; and parks, gardens and natural areas). The control group participants were not provided access to any of the pilot's messages or materials, and were asked the same baseline literacy and attitude questions as the treatment group to isolate the immediate treatment effects. The second survey was the same for both control and treatment participants, and asked the same literacy and attitude questions as the earlier survey, allowing for identification of the longevity of the messages. The pilots' monitoring and evaluation (M&E) framework is detailed in **Appendix 1**.

ACTIVITIES AND OUTPUTS

Activities conducted as part of this pilot include:

- agreement on the overall focus of the pilot
- co-design of images, messages and website
- experimental survey to evaluate the pilot campaign
- focus groups to evaluate the pilot messages and materials
- partner lessons learnt reflection workshops to evaluate the collaboration process and record learnings.

These activities resulted in 3 outputs:

- co-designed Perth pilot
- campaign materials
- this report.

Agreed pilot focus

An agreement on both pilots' overall 'water for wellbeing' focus was reached through 2 Project Steering Group meetings involving participants from 6 different water-related organisations as well as out-of-session feedback. WSCA also facilitated earlier discussions on the messaging focus via a workshop with the Project Steering Group and others, before the Monash Climate Change Communication Research Hub joined the project. A pilot proposal document identified the intended pilot designs, although ongoing engagement and emerging challenges required adaptive changes to the original plan as the pilots progressed. A spreadsheet documented which of the guidance recommendations for water literacy engagement were applied in the pilots, and how (refer to **Appendix 2** for a copy of this information).

Co-designed messages and materials

Reviews of prior research specific to Perth and at national scale identified a range of messaging priorities (see Dean, et al., 2015, 2016; DWER, n.d.; DWER & DoT, n.d; Fielding, Dean & Newton, 2016; Metrix Consulting, 2023; Schultz, et al., 2017; Water Corporation, 2023a, 2023b; WAWSTN, 2022).

We incorporated partner organisations' local knowledge, experience and priorities into the design during meetings and via email. Ten representatives from partner organisations participated in one or more of 5 co-design workshops and provided out-of-session feedback along with 3 additional colleagues. This resulted in 9 revisions of the messages and 7 associated images.

This process resulted in 18 core and sub-messages associated with 6 images (see **Figure 16** to **Figure 20**). We included these messages in a website containing 5 pages; the primary image that draws together all of the sub-contexts, and one for each sub-context and its associated messages. We revised the website 4 times.

Figure 16. Primary Perth messaging image

Figure 17. Perth parks, gardens and natural areas messaging image

Figure 18. Perth urban centres messaging image

Figure 19. Perth suburban homes messaging image

Figure 20. Perth sports grounds messaging image

Figure 21 shows the website's landing page and **Table 7** outlines website engagement metrics.

Table 7. Engagement metrics for Perth pilot website

Web page*	Page Views	Page visitors	Views per visitor	Time on page
Home page	62	15	4.1	54s
Urban centres	20	5	4.0	26s
Suburban homes	10	4	2.5	35s
Parks, gardens and natural areas	12	3	4.0	54s
Sports grounds	8	3	2.7	52s

* Note that this excludes survey treatment group views of the website solely from within the survey form.

Figure 21. Perth pilot website landing page

Evaluation survey

We used an initial (Wave 1) and a follow-up (Wave 2) experimental survey to evaluate the pilot campaign messages and images. Perth residents received these online surveys as part of Qualitrix's survey panels, resulting in 892 participants in the Wave 1 survey (307 control and 585 treatment participants), 150 of whom also completed the Wave 2 survey (56 control and 94 treatment participants).

The surveys included questions asked of everyone. Some of these were repeated immediately after exposure to the pilot materials for those in the treatment group, and most were asked of everyone in the second survey.

The survey included questions on the following topics (see **Appendix 3** for full list):

- pilot-specific water literacy questions presented to all participants in both surveys
- previous questions in WSAA general water literacy surveys
- self-reported pilot topic knowledge
- issue importance, interest and prior thinking on the issue
- preferred channels and sources for pilot messages (Wave 1 only)
- demographic information.

Focus groups

Metrix Consulting ran 3 focus groups (2–3 September 2024) to evaluate the effectiveness of the pilot materials. The extended collaborative design of the campaign images and messages delayed the focus groups, which meant they could not be undertaken before the experimental survey. These focus groups provided qualitative insights into what is behind people's responses to the materials. Specifically, the groups examined how engaging (interesting, important and relevant) and clear the images and messages were and how they could be improved, and provided insights into which organisations and channels were appropriate for sharing these messages.

Reflection workshops

We evaluated the collaboration and delivery process via 2 lessons-learnt reflection workshops. Each workshop focused on a different part of the pilot process and was attended by both pilots' contributing partners together. The first workshop reflected on the planning and design phases of the project, and was attended by 3 Perth partners representatives. The second workshop focused on the implementation and evaluation phases, and organisation-specific learnings, and was attended by 3 Perth partner representatives.

Reporting

This report is the key reporting output for the Perth pilot. It summarises the Perth pilot's processes and findings, including implications specific to the Perth pilot and suggestions for improving the guidance recommendations for building water literacy.

OUTCOMES

The outcome targets for this pilot are listed below:

- Perth pilot learnings are captured.
- Perth residents interact with the water literacy messages [initially set to June 2024, but extended to accommodate delivery timing].
- Perth campaign recipients (treatment group) have higher average literacy on the role of water in healthy, liveable communities when compared with the control group [initially set to June 2024, but extended to accommodate delivery timing].

This report details the results of the pilot on audience perceptions and impacts (this section), and partner perceptions and impacts. The achievements and evidence relating to these outcomes are outlined in the following sections.

Experimental survey

Wave 1 of the survey was completed by 892 people, 150 Wave 1 participants also completed the Wave 2 survey; 37% of the final sample was from the control group and 63% was from the treatment group. The Wave 1 sample was roughly evenly spread across age groups, 53% identified as women and 41% had a Bachelor degree (refer to **Table 8**). By contrast, respondents who also completed the Wave 2 survey were slightly older, more likely to identify as men and more likely to have a lower level of education.

Table 8. Participant demographics across survey waves

Variable	Wave 1	Wave 2
Age		
18–29 years	138 (15%)	23 (15%)
30–39 years	170 (19%)	18 (12%)
40–49 years	180 (20%)	17 (11%)
50–59 years	146 (16%)	26 (17%)
60–69 years	131 (15%)	33 (22%)
70 years or older	127 (14%)	33 (22%)
Gender		
Man	422 (47%)	88 (59%)
Woman	469 (53%)	62 (41%)
Education		
Primary or secondary school	224 (25%)	42 (28%)
Trade/diploma/certificate	301 (34%)	59 (39%)
Bachelor degree or above	367 (41%)	49 (33%)
Totals	892	150

Before analysing the results, we conducted several checks to establish context. First, we examined the equivalence of participants in the initial control and treatment groups. These checks found no significant difference between control and treatment groups for age, education or personal income. However, there were slightly more women than men in the treatment group and more men than women in the control group. There were no significant differences in overall baseline pilot-specific or general WSAA question literacy across groups. Second, we investigated whether those who completed Wave 2 were different from those who did not (attrition). These checks revealed participants who completed both waves of the survey tended to be older, were slightly more likely to be men and have slightly more people living in their household than those who completed only Wave 1. However, there were no significant differences in their levels of education, home ownership, home types or their baseline interest in and importance ratings of knowledge of the role of water in keeping Perth healthy and a great place to live. Respondents who completed only Wave 1 also had slightly higher overall baseline pilot-related literacy than those who completed both surveys, but there was no significant difference evident for overall baseline general water literacy based on WSAA questions. These few attrition-related differences should be considered when interpreting any persistence effect differences relating to age and gender.

Pilot materials reception

Treatment participants found the information on the pilot website interesting (M = 3.43 out of 5), as well as the images (M = 3.48 out of 5). On the other hand, the images were moderately reminiscent of their local area (M = 2.98), and the information they read on the website was moderately new to them (M = 2.92 out of 5). There was no significant difference between genders. However, younger age groups reported finding more new information on the website than older age groups (r = -.193, $p < 0.001$).

Issue importance and interest

Respondents generally felt it is very important for people to understand water's role in keeping Perth healthy and a great place to live, with no significant difference between control and treatment group responses in Wave 1 or the Wave 2 sample. There were significant differences in importance ratings for men and women in Wave 1, with women rating the issue slightly lower in importance than men (refer to **Table 9**), however these differences were not evident for respondents in the Wave 2 sample. Those who completed both surveys showed no significant gender differences in the Wave 1 or Wave 2 surveys, suggesting the higher loss of women participants between surveys may have skewed this persistence result.

Respondents tended to be moderately to very interested in learning about the role of water when asked early in the first survey (M = 3.64 out of 5). Treatment group interest in learning about the role of water significantly decreased immediately post-treatment, but increased to pre-treatment levels again by the Wave 2 survey (M = 3.61). This result suggests the initial loss may be due to the initial learning interest being met rather than a negative effect such as being put off by the messages, as the interest returns after the learning 'wore off'. These changes in interest levels did not significantly vary for men and women or across age groups.

Early in both Wave 1 and Wave 2 surveys, participants were asked how much time they had spent thinking about water's role in keeping Perth healthy and a great place to live. Respondents generally reported thinking about this a moderate amount (M_{wave1} = 3.12, M_{wave2} = 3.02). There was no significant change in time spent on this for either the treatment or control group between waves. Women tended to report having thought less about this issue than men in Wave 1, but this difference was not evident in Wave 2 or for those who completed both surveys, suggesting similar attrition effects to those discussed above. There were no significant differences across age groups for time spent thinking about this.

Table 9. Perth survey analysis significant results

Key survey question or compared questions	Control group	Treatment group	Test statistics
How important do you think it is for people in Perth to understand the role water plays in keeping Perth healthy and a great place to live?	Wave 1: M_{women} = 3.90, M_{men} = 4.03,		t = -2.149, p = 0.032
How interested are you in learning about the role water plays in keeping Perth (Boorloo) healthy and a great place to live?	-	M_{before} = 3.63, M_{after} = 3.32	t = 8.877, p < 0.001
How much have you thought about the role water plays in keeping Perth healthy and a great place to live?	Wave 1: M_{women} = 2.97, M_{men} = 3.29		t = 4.254, p < 0.001
How much do you know about the role that water plays in keeping Perth healthy and a great place to live? [referred to as *self-reported knowledge*]		M_{before} = 2.79, M_{after} = 3.05	t = 6.676, p < 0.001
Self-reported knowledge: men-women before exposure	-	M_{women} = 2.62, M_{men} = 3.02	t = 4.669, p < 0.001
Self-reported knowledge: men-women after exposure	-	M_{women} = 2.95, M_{men} = 3.17	t = 2.810, p = 0.005
Self-reported knowledge: men-women at Wave 2	-	M_{women} = 2.71, M_{men} = 3.11	t = 2.289, p = 0.023
Self-reported knowledge before-after change: women	-	M_{change} = 0.333	t = 6.496, p < 0.001
Self-reported knowledge before-after change: men	-	M_{change} = 0.151	t = 2.718, p = 0.007
Overall literacy (number of correct responses relating to pilot messages) - baseline	M = 6.62	M_{before} = 6.58	t = 0.315, p = 0.753
Overall literacy – immediate exposure impact	-	M_{after} = 7.14	t = 8.885, p < 0.001

Notes: M indicates the mean or average response, which for most questions was on a scale from 1 to 5, with 5 being the highest or best value (e.g., 'very interested');M_{before} indicates the mean before exposure to the pilot messages and M_{after} indicates the mean after exposure; *t*, *F*, and χ^2 values are the test statistic's value, with a higher value generally indicating higher difference from the control or comparison (e.g., before exposure compared with after exposure); *p* indicates the statistical significance value, where p-values lower than (<) 0.05 suggest that the test statistic is large enough to not be due to random chance, but rather indicating a real difference.

Self-reported knowledge

At the beginning of the survey, participants rated their own knowledge of water's role as slightly below 'moderate' for both the control (M = 2.86) and treatment groups (M = 2.79).

Self-reported knowledge of the role of water increased significantly due to exposure to the pilot messages. Men tended to rate their knowledge higher than women at each stage of the surveys (see **Table 9**). However, women tended to show greater increases in this self-reported knowledge than men. There was no significant difference in the improvements to self-reported knowledge across age groups.

The increases in self-reported knowledge did not persist at Wave 2, with no significant difference between the control and treatment groups' self-reported knowledge change from pre-treatment levels. This result persisted across genders and age groups.

Overall literacy scores

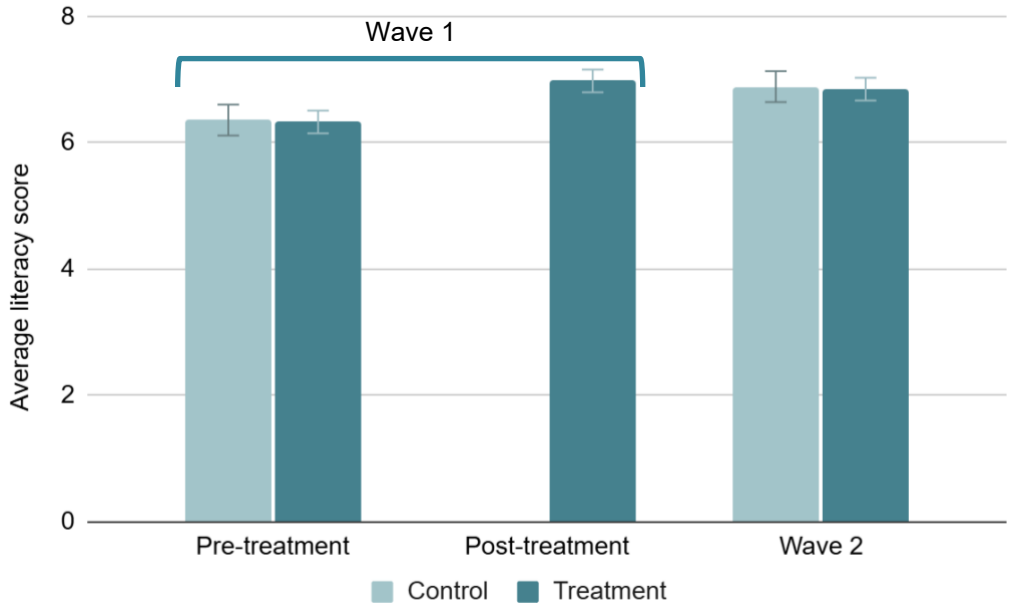
Overall literacy scores were calculated as the sum of correct responses to the 9 literacy questions that directly relate to the pilot messages. There was no significant difference in overall literacy scores for the control group and treatment group prior to exposure to the pilot messages at Wave 1 as illustrated in **Figure 22**. Exposure to the pilot messages significantly increased the treatment group's overall literacy scores, and these scores did not significantly reduce for the treatment group by Wave 2. There were no significant differences in respondents' overall literacy improvements based on their initial level of interest in the topic.

However, by Wave 2 the control group's overall average score had also increased and there was no significant difference between control and treatment groups' overall scores, although both were above pre-treatment levels ($M_{control}$ = 6.89, $M_{treatment}$ = 6.85). This result suggests either that exposure to the survey questions in Wave 1 or broader societal shifts occurred to raise the control group's pilot-specific literacy between waves. A check of control group participants' scores in Wave 1 who did and did not continue to Wave 2 showed no difference between these sub-groups, suggesting the issue was not simply due to only more knowledgeable control group participants continuing to the second wave.

There were no significant differences in the changes to overall literacy scores across age groups for either immediate treatment effects or in persistence effects at the final survey.

How locally relevant respondents found the images was also unrelated to their overall literacy levels or changes in overall literacy across the 3 surveys.

Figure 22. Average overall literacy scores over time by group



Note: Error bars indicate the standard error of the mean, highlighting no significant difference between groups at pre-treatment and at the second survey, but significant increase from pre- to post-treatment.

Specific literacy

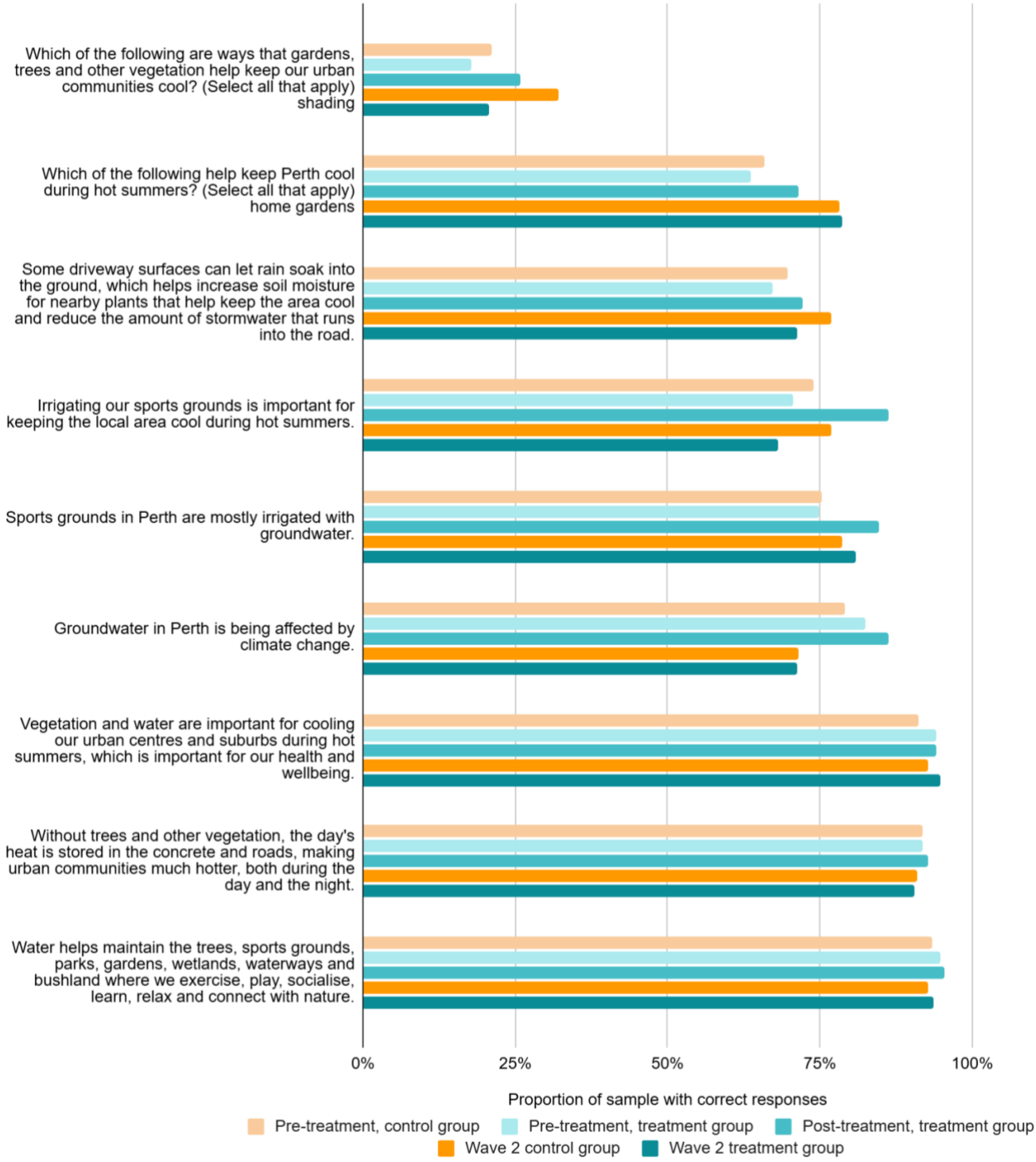
The treatment group recorded significant increases in literacy relating to specific pilot messages after they interacted with the pilot materials (see **Table 10**). For some questions, literacy was already high before treatment so the average Likert response (*definitely false* to *definitely true*) did not increase significantly after engaging with the pilot messages. Recoding *probably true and definitely true* as correct responses for the Likert questions highlights nearly universal correct responses pre-treatment for several pilot messages, such as the overall roles of water and vegetation for maintaining community wellbeing (both > 90% correct). Literacy levels increased the most for messages relating to irrigating sports grounds and climate change impacts on groundwater.

Table 10. Treatment effects identified for specific Perth literacy questions

Question	Wave 1		Wave 2
	Pre-treatment mean (% correct)	Post-treatment mean (% correct)	Mean (% correct)
Vegetation and water are important for cooling our urban centres and suburbs during hot summers, which is important for our health and wellbeing.†	4.59 (94%)	4.61 (93%)	4.62 (95%)
Water helps maintain the trees, sports grounds, parks, gardens, wetlands, waterways and bushland where we exercise, play, socialise, learn, relax and connect with nature.†	4.59 (93%)	4.59 (93%)	4.62 (94%)
Some driveway surfaces can let rain soak into the ground, which helps increase soil moisture for nearby plants that help keep the area cool and reduce the amount of stormwater that runs into the road.†	4.43[b] (91%)	4.49[a] (91%)	4.50 (90%)
Sports grounds in Perth are mostly irrigated with groundwater.†	3.96[b] (77%)	4.13[a] (83%)	3.98 (81%)
Groundwater in Perth is being affected by climate change.†	3.94[b] (76%)	4.25[ac] (80%)	3.91[b] (71%)
Irrigating our sports grounds is important for keeping the local area cool during hot summers.†	3.79[b] (63%)	4.32[ac] (84%)	3.90[b] (68%)
Without trees and other vegetation, the day's heat is stored in the concrete and roads, making urban communities much hotter, both during the day and the night.†	3.70[b] (67%)	3.84[a] (65%)	3.82 (71%)
Which of the following help keep Perth cool during hot summers? (Select all that apply) – Home gardens, footpath verge trees, concrete, asphalt/bitumen, not sure, none of the above	(60%)[bc]	(76%)[ac]	(79%)[ab]
Which of the following are ways that gardens, trees and other vegetation help keep our urban communities cool? (Select all that apply) – Shading, releasing water through leaves, evaporation of rainfall off leaves and soil, dropping their leaves, not sure, they don't keep it cool	(14%)[bc]	(26%)[ac]	(21%)[ab]

[a] Indicates a significant difference from Wave 1 pre-treatment measure ($p \leq 0.05$).
[b] Indicates a significant difference from Wave 1 post-treatment measure ($p \leq 0.05$).
[c] Indicates a significant difference from Wave 2 measure ($p \leq 0.05$).
† 5 = Definitely true (correct) to 1 = Definitely false (incorrect); ratings 4 and 5 were coded as 'correct' for percentage calculations.

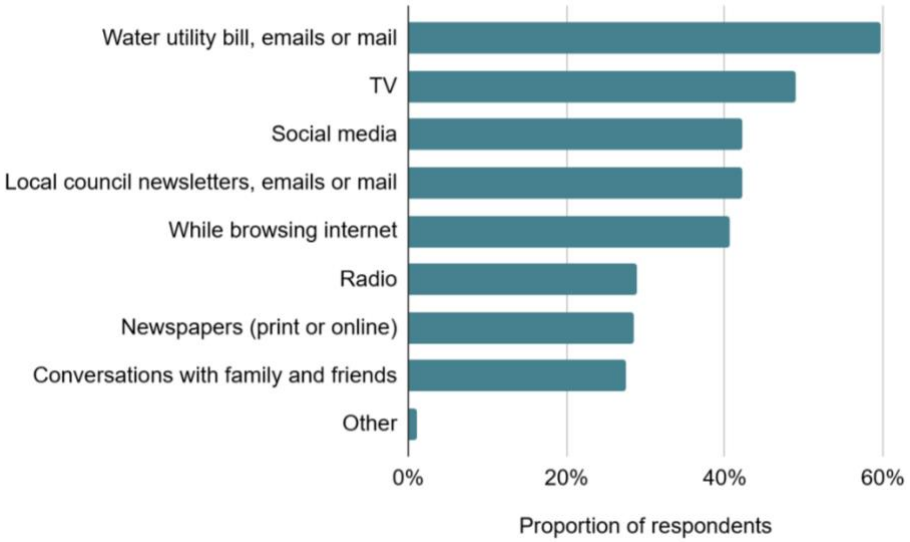
Figure 23. Relative proportion of correct responses for each question over time



Message channel preferences

The most preferred channel for receiving information about the role of water for wellbeing in Perth was water utility correspondence (e.g., bills and emails), followed by television (refer to **Figure 24**).

Figure 24. Perth message channel preferences



Focus groups

Metrix Consulting conducted 3 focus groups and produced a report (Metrix Consulting 2024). The information in this section is compiled from that report. The first focus group included 9 participants with either single income and no children (SINKs) or double income and no children (DINKs), aged from 18 to 39 years. The second focus group included 8 parents (aged from 25 to 34 years) with their youngest child under 18 years of age. The third focus group included 8 'empty nesters' with no children living at home (aged from 40 to over 65 years).

Pilot materials reception

There was some confusion over the materials' purpose, as the connection between water and wellbeing was not well understood. The theme resonated more with the SINKs, DINKs and Families groups than the Empty Nesters. The materials need to more clearly define the concept of *wellbeing* so the connections with water are clearer.

Also related to overall purpose, there was confusion over the lack of a call to action—actionable steps community members can take. As the purpose was literacy- rather than action-focused, the longer-term purpose of ensuring the community had the basic literacy necessary to evaluate future policy options could have been made clearer. This approach would also have provided an opportunity to incorporate links with what councils and other organisations are doing to support wellbeing.

The visual design of the materials was well received, and conveyed a sense of health, prosperity and inclusiveness. Focus group participants suggested additional inclusivity of disabled people. The materials generally resonated with participants; however, the Empty Nesters were less enthusiastic about the design and less engaged with the messages, overall.

Issue interest and importance

The concept of wellbeing is considered important, despite not generally being top of mind or well understood by participants. Some respondents had not thought about water in the community beyond household water saving efforts. Empty Nesters were less likely to see the value in learning about this issue, feeling that messaging about reducing water use was more important (due to cost-of-living pressures). Participants in the Family group felt that the messages are important, but that they had little time and space to consider these kinds of issues due to their already busy lives.

The lack of control or responsibility of participants for managing public sports grounds, parks and gardens etc. made the messages less relevant—especially without a clear purpose for the campaign.

New knowledge

Empty Nesters and the SINKs/DINKs felt they already knew the information provided in the materials. Information in the materials that was seen as new (e.g., the link between green spaces, cooling and wellbeing) was more engaging. This result is somewhat counter to what was found in the survey, where younger participants tended to find more new information in the materials than older participants. This difference is likely due to the nature of the samples. The larger survey sample was more representative of the general public than the smaller focus groups.

Channels and sources

Short extracted messages are more likely to be engaged with, suggesting interactive social media posts with links to the website could drive engagement. Participants also considered location-specific posters and banners (e.g., at sports grounds) as relevant.

Participants considered it appropriate for Water Corporation to share these kinds of messages, with local councils and state government departments also seen as relevant sources.

IMPLICATIONS

The approaches used in this pilot improved literacy in participants, but the surveys and focus groups identified a range of challenges to engagement. Several valuable insights from these evaluations highlight opportunities for improving the materials and processes for future campaigns and campaigns in general. For example, the low knowledge scores about how gardens, trees and other vegetation keep our urban communities cool suggests this as a possible topic for future water literacy campaigns in Western Australia.

The reception and outcomes of the pilot materials could be improved by refining their clarity and focus, as well as their inclusivity. Suggestions included the following:

- Clearly define *wellbeing* and establish the overall purpose of the materials clearly from the start.
- Append the existing messages with explanatory statements to strengthen connections with wellbeing. For example, ‘Parks and gardens need smart approaches to watering to help them flourish, while still being waterwise, *which helps to create healthy places for the community to enjoy*.’
- Refine focus of messages in each context to build public understanding of the processes by which the water and vegetation achieve their wellbeing effects (e.g., how vegetation actually cools) and reduce focus on higher order messages that are already well understood.
- Adjust the design of some of the people in the images to be more inclusive of people with disabilities.

- Incorporate a QR code or URL (depending on delivery channel) for people to learn more, including how they can help (calls to action) where appropriate, such as what the mentioned *smart watering practices* include.
- Incorporate examples of council and other organisations' actions for messages where calls to action are not appropriate, potentially highlighting points where future policy changes may be necessary (linking to longer-term purpose as mentioned above).
- Adjust the sports ground watering imagery such that people are not on the sports ground during watering. This separation would particularly suit an animation for social media and web delivery.

The reach and engagement of these materials and those of other future campaigns might be strengthened by:

- slowly building on knowledge through repeated messages over a longer-term campaign to reinforce messages until they are integrated into people's mental models of these concepts
- sharing the materials via interactive social media posts as short bites of information
- engaging local councils and state government as partners for delivering the materials
- considering the best channels for delivering messages to each interest group within the target audience.

The best delivery channels may include online and offline options, such as posters or banners to display in public spaces relevant to specific messages/contexts (e.g., sports grounds, parks and gardens). Providing versions of campaign materials in locations where busy families already spend time (e.g., sports grounds) might be a valuable way to reach these busy audiences.

8. REFLECTIONS

As well as evaluating the audience outcomes from the pilots, the project also captured insights from the collaborative design and delivery processes, which are the focus of the guidance being tested.

METHOD

Two workshops captured the project team's and steering group's learnings. Workshop 1 (20 March 2024) reviewed experiences and achievements in the planning and design phases of the pilots, and was attended by 9 partner team members. Workshop 2 (31 January 2025) examined experiences and achievements in the implementation and evaluation phases, and was attended by 6 partner team members.

Each workshop asked questions regarding what worked, what did not work, and what could have been done to make the project more effective. Participants each noted their own responses to the prompting question using post-it notes on a virtual whiteboard, then discussed the evident themes. These learnings are captured below.

LEARNINGS

What worked

In the planning and design phases, the team felt the project's strengths were in:

- its collaborative and iterative approach that brought together diverse stakeholders right from the start
- knowledge exchange such as sharing and integrating research and knowledge from outside this project, and hearing the different states' messaging priorities
- building on the long history of water literacy research with independent and innovative thinking
- the opportunities offered to brainstorm ideas and follow through to testing pilots
- identifying the local needs of each state, and tailoring pilot messages specific to those local priorities
- involving partners with strong local, expert knowledge to ensure effective designs.

In the implementation and evaluation phases, the team felt the project's strengths were in:

- ongoing collaboration with a diverse team
- using different methods and approaches, including tracking and evaluation
- demonstrated flexibility, adaptability and problem-solving as challenges arose
- resultant improvements in participant water literacy due to the pilot messages and materials.

What did not work

During the planning and design phases, the partner team members felt the project faced the following challenges:

- Individual team members had limited capacity and time available and it was unclear what skills/roles were most necessary at different points in the project, which restricted partners' ability to contribute effectively.
- Institutional timelines for incorporating new campaigns are longer than was available to the pilots, which restricted options. Questions were also raised about how momentum could be maintained if the longer lead times had been available.
- Objectives and transparency around the processes and integration of feedback were unclear, which was especially challenging with the turnover of partner team members throughout the project.
- The early planning stage did not scan widely enough for research and campaigns previously done by partners that may not have been published externally, which meant early versions of the messaging were not as well tailored as they could have been.
- Victorian Government representatives were not sufficiently included in the message design for the Melbourne pilot, which may have overlooked state priorities.

In the implementation and evaluation phases, partner team members identified the following challenges:

- The timeline for implementing the project was longer than anticipated due to a range of similar challenges to the early phases, such as unexpected organisational timeframes, competing organisational priorities and extended material revisions, and this made it hard to maintain engagement and momentum.
- There was insufficient baseline knowledge of the target audience and associated inability to effectively segment and target audiences, which meant the messages and their timing were less effective and somewhat confusing for audiences (e.g., expecting calls to action to change their behaviour).
- Clear links between implementation and the original guidance recommendations were not visible to the wider team.
- The pilots' inability to field test the materials (including through co-delivery) in dedicated campaigns limited their reach and the generalisability of the insights achieved.

What could have made it better

Ideas for improvement for the planning and design phases included:

- having a clearer understanding of partner operations—including timelines, staff roles and prior research and campaigns—to ensure the right people are engaged at the right time, and prior learnings are integrated
- providing clearer outline of how prior research was used to inform the work, to better understand the best practice nature of the work
- implementing processes to transparently communicate project status and the outcomes from each co-design step that works for all partners (considering technological restrictions and preferences)
- broadening (i.e., partners and their teams) and lengthening (i.e., timelines) the project to include more partners and individual staff with the necessary roles, so that the right people are designing and approving messages and more delivery channels are available.

For the delivery and evaluation phases, improvement suggestions included:

- allocating sufficient time for the project conception and design phases to allow for the necessary organisational approvals for longer-term, highly targeted campaigns with repeated messages that build on messages over time
- conducting more formative audience research to better understand baseline knowledge, areas of interest and likely responses to messages for better targeting, clarity of purpose and selection of relevant channels (offline and online) to match interests/attention
- exploring options for involving other stakeholders with aligned interests (e.g., local councils) to broaden channel options and reach.

Partner skills and knowledge

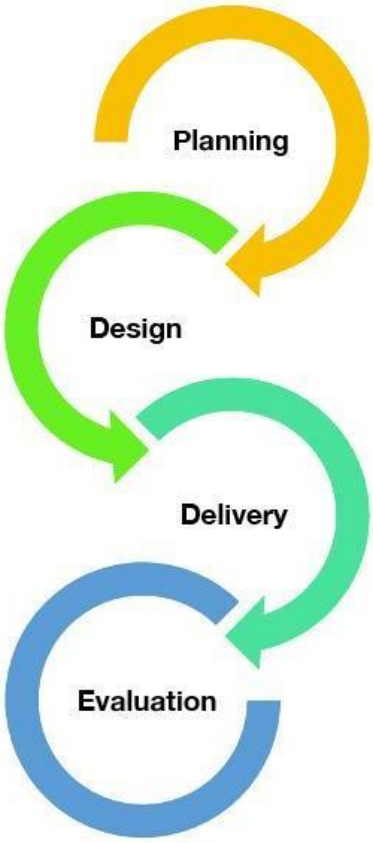
As a result of participation in this project, partners felt they had a better appreciation for the complexity of working with a group of other organisations who are all trying to improve water literacy. Partners also recognised the community still sees water utility companies as responsible for ‘all things water’.

9. GUIDANCE IMPLICATIONS

APPLIED RECOMMENDATIONS

The specific recommendations applied in these pilots are listed in **Figure 25** and detailed in **Appendix 2** with descriptions of how each was integrated.

Figure 25. Summary of guidance recommendations applied in the pilots



Planning recommendations applied:

R1–3: Know your audience; R4–6: Have clear literacy goals

Design recommendations applied:

R8: Respond to constraints; R11: Be engaging; R12–15: Messages; R16: Language matters; R17–20: Use visuals; R21–22: Framing matters

Delivery recommendations applied:

R23: Respect sensitivities; R24–26: Channels; R27–31: Crafting messages

Evaluation recommendations applied:

R32: What to evaluate; R33: How to evaluate

IMPLICATIONS FOR GUIDANCE

The applied recommendations were effective at improving water literacy in the targeted audience. However, some additional insights have implications for the guidance recommendations for each phase of water literacy engagement activities, as discussed below.

Planning implications

Broadening who is included in community water literacy campaigns can help create messages that are relevant, engaging, accessible and effective. This includes the types of organisations (e.g., water utilities, local government, state government) as well as the range of disciplines (e.g., water practitioners, communications, social researchers).

When building teams—especially multi-organisational teams—and setting project parameters for water literacy efforts, it is critical to fully understand the structure of staff roles, team members' availability, their available communication and collaboration technologies (and limitations), any prior (especially unpublished) research and experience of each partner organisation, and institutional timelines for approvals for campaigns. This will help ensure the right people can be included in the right steps of the process, collaboration can be transparent and inclusive, available messaging channels can be optimised, and the project can make the most of learnings from prior effort and experience.

Diverse approaches may be required to sufficiently understand your audience and their likely responses to messages—especially if the topic or audience are being engaged with for the first time. Key things to understand about the audience include: their baseline knowledge, attitudes and interests relating to the focal topic, their preferred engagement channels and sources, and their language preferences and capacities. Community surveys (whether they represent the whole population or just a specific target audience) are especially good for establishing baseline audience topic-relevant knowledge and interests, and preferred channels and sources. This approach can ensure messages focus on top priority literacy gaps and avoid spending time and money on points that the community may already know. These surveys can also be used as baseline measures against which later monitoring can evaluate change.

Design implications

Once there is a strong understanding of the audience baseline, focus groups are particularly good for pre-testing language and conceptual understanding, as well as the resonance of draft messages and imagery. Importantly, however, focus groups may not be fully representative of the wider community due to small participant numbers. Running some experimental or field testing of the messages may provide more representative responses if sufficient time and funding are available.

Interest-based messages that are short and specific with local links are more engaging, and alternative (interest-based) channels may be necessary depending on the topic and audience. For example, location-specific messages may suit posters or banners presented at sports grounds or other interest-relevant sites.

It is also important to make the purpose of the communication clear, so the audience knows what is expected of them after engaging with the messages. People may expect to see calls to action, so literacy-only campaigns should be particularly conscious of how to clarify their purpose for audiences.

Designing in sufficient lead time for institutional approvals will provide more opportunities to align with other campaigns, other partners and any other events expected to occur during the campaign.

Delivery implications

When choosing a wholly new topic for a campaign (as opposed to a new twist on an old topic), it is even more critical to have strong foundations (planning and design as discussed above). The wellbeing angle chosen for these pilots was effective at highlighting some particularly new information, but was sufficiently beyond the experience of the audience. This meant prior water literacy information failed to provide sufficient insights on base levels of knowledge related to these messages, and gaps in conceptual understanding was not sufficiently addressed. When the topic being covered is sufficiently outside past water literacy engagement, collecting strong foundational information on the audience during the planning and design stages is critical to ensure the messages are effective.

As previously discussed, longer timelines are necessary for some channels to be available, so incorporating these limitations in the planning phase is critical for effective implementation. It will be critical to ensure ongoing engagement throughout those longer timelines, to maintain campaign momentum.

When considering which channels to use in a campaign, a multi-channel approach may help achieve the message repetition needed for retained knowledge. It may also reach wider audiences than single channels on their own as different channels may be preferred by different audiences. Including offline and digital messaging may be a particularly effective combination for reaching larger audiences. Including diverse partners can also open up channels that might otherwise not have been available.

Evaluation implications

Including both formative (during design) and summative (after the intervention) evaluations can provide critical insights for more effective campaigns. Formative evaluations may include focus groups that help assess specific aspects of the messages (e.g., resonance), reveal unexpected gaps in conceptual knowledge and suggest new channels for consideration.

Understanding the usual audience engagement across channels is important for designing the most effective implementation strategies for engaging with audiences. Ensuring channel engagement statistics are available to inform future campaigns is particularly valuable for improving designs over time. Considering engagement statistics for diverse channels across partner organisations during the planning and design phases could significantly improve the implementation design, allowing the focus to remain on the most effective channels for the target audience. Tracking channel engagement during implementation also allows for adjustments and improvements as the campaign is rolled out.

10. FINAL GUIDANCE

The pilots' results provided evidence to confirm or refine recommendations from the literature review. Based on these results, we proposed specific suggestions for each recommendation, outlined in **Appendix 2**. These suggestions fall into 6 key themes that relate across the campaign process from planning to evaluation. These themes suggest the guidance recommendations should be expanded to:

1. highlight the need to collect baseline information on the target audience's literacy, knowledge gaps, interests and social contexts where it does not already exist, especially for new topic areas such as was the focus of these pilots (i.e., understanding the link between water and wellbeing)

2. overtly acknowledge the importance of audience ability to recognise the campaign purpose, especially for campaigns that are aiming to build literacy rather than encourage behaviour change

3. recognise that longer timelines are necessary to allow for repeated messages that build community understanding, and to account for organisational planning requirements, especially for multi-organisational, collaborative campaigns

4. promote the testing of campaign messages and materials prior to finalisation for delivery, to help ensure effective engagement, interpretation and understanding

5. encourage consideration of a wider range of channels (both online and offline) to expand audience reach and achieve repeated exposure, however tracking engagement across these may be critical for adaptive management of channels where their reach is uncertain

6. capture the opportunity offered by considering longer-term literacy goals within evaluation processes (formative and summative) to provide insights that could inform the focus of future campaigns and for tracking community literacy change over time and across campaigns.

Table 11 summarises the revised recommendations based on these suggestions. The industry guidance note—*Practical advice for building water literacy*—explains each recommendation in detail.

Table 11. Practical advice for building water literacy

Phase	Objective	Recommendations
PLANNING	Know your audience	Identify the target audience and factors affecting engagement Consider what interests the target audience or what will engage them
	Have clear water literacy goals	Identify which water knowledge gaps to address Address the water 'issues' that are least understood Define clear engagement outcomes (not content outcomes)
DESIGNING	Respond to constraints	Design engagement activities to address existing interest positions and social contexts
	Be engaging	Clearly articulate the 'why' behind each call to action
	Messages	Focus key messages on water's role in liveability Tailor your messages to resonate with specific audience segments Align water literacy messages with existing sustainability, health or related campaigns Craft messages that connect various water management concepts
	Language matters	Use simple, community-friendly language and avoid technical jargon
	Use visuals	Use local images as much as possible Use images that include local people Explain the relevance of the visuals Use images that resonate positively with the audience
	Get the framing right	Frame messages and campaigns in ways that guide people's thinking about the issue Engage delivery partners early Make it personal by clearly aligning imagery, message and campaign purpose with the target audience's values Align messages with broader community values and community perspectives Consider a new angle on an established topic by leveraging baseline audience knowledge and conducting early message testing Monitor for unintended consequences
DELIVERING	Respect sensitivities	Respect cultural issues
	Channels	Move away from a 'talking heads' approach Use recognised community leaders as advocates Incorporate offline / in-person delivery Collaborate with like-minded organisations Amplify the channels where people already expect to get information about water Ensure campaign delivery is accessible by removing barriers
EVALUATING	What to evaluate	Track process indicators Evaluate overall effectiveness Assess the effectiveness of various communication channels Evaluate immediate outcomes Measure intermediate outcomes Measure impact
	How to evaluate	Establish a comprehensive monitoring and evaluation framework at the outset Conduct a baseline survey Utilise a diverse mix of success indicators Combine multiple evaluation methods

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APPENDIX 1: M&E FRAMEWORK

The whole project						
Project Levels	Statements		Indicators		Methods	
Project Name	Building water literacy		NA		NA	
Project Goal (Long-term outcome - impact)	To keep communities healthy and liveable under a changing climate by ensuring the public has the water cycle understanding needed to contribute meaningfully to water policy and management decisions		1. Increase in WSC Index Score in relation to community capital (Goal area 2) in next WSC Index workshop undertaken by industry partners		1. Undertaken and reported back by industry partners	
Project Outcomes (Intermediate outcome - change in awareness or behaviour)	To provide communication teams within water resource management agencies with **a practical water literacy guidance** containing lessons learnt and communication collateral (that help them improve their work/communication actions in water literacy).		1. Partners have one practical water literacy guidance containing lessons learnt and communication collateral approved by the PSG and water agencies		1. Report writing and data analysis that combines review of CRCWSC litera 2. Lessons learnt reflection workshops.	
	Project partners have changed their awareness and behaviours in carrying out water literacy interventions.		1. Partners report a changed awareness of water literacy interventions in their reflection; 2. Partners report a changed behaviour in designing and carrying out water literacy interventions in their reflections; 3. Water managers report a changed in their communication campaign organisational skills in their reflections.		1. Lessons learnt reflection workshops designed to reflect changes in awareness and behaviours	
Melbourne Pilot						
Pilot Outcomes (immediate outcome - as the result of implementing the pilot)	General statement	Melbourne Pilot Statement	Indicators	Control group/Baseline	Treatment group/Endline	Methods
	Pilots learnings are captured	Melbourne pilot learnings are captured	1. Project report containing results on audience perceptions and impacts	None	1. 1 project report containing results on audience perceptions and impacts	1. Field survey (see below)
			2. Project report containing results on partner perceptions and impacts	None	2. 1 project report containing results on partner perceptions and impacts	2. Partner reflection workshops (held jointly with Perth pilot)
	Audience engagement increased	Melbourne audiences increase interactions with the water literacy campaign by 20% by June 2024.	In post-pilot assessment: 1. Proportion increase in conversion rates from email inserts. 2. Proportion increase in social media click-through, likes, shares and comments from animation posts. 3. Proportion increase in web traffic and time on page.	Pre-campaign engagement and conversion metrics.	In post-pilot assessment: 1. 10% increase in conversion rates from email inserts. 2. 15% increase in social media click-through, likes, shares and comments from animation posts. 3. 10% increase in web traffic and time on page	1. Webpage and social media analysis
	Audience knowledge on the role of water in healthy, liveable communities is increased	Melbourne campaign recipients have higher average literacy on the role of water in healthy, liveable communities in comparison with control group by June 2024.	1. Score on knowledge about the role of water in healthy, liveable communities. 2. Information seeking behaviour	1. Control group score on knowledge about the role of water from the field survey	1. 20% higher treatment group average score on knowledge of the role of water in comparison with control group 2. 20% of respondents reported seeking more information after seeing images	1. Field survey comparison of control and treatment groups.
Pilot outputs (products resulting from pilot activities)	General Statement	Melbourne Pilot Statement	Indicators	Control group/Baseline	Treatment group/Endline	Methods
	Approved summaries from both pilots	Approved summary of Melbourne pilot's processes and findings, including best practice recommendations	1. A pilot summary report approved by Melbourne partners and PSG 2. Number of best practice recommendations identified.	None	1. One pilot report; 2. At least 5 actionable best practice recommendations.	1. Review of pilot outcomes and report write-up 2. Lesson learnt workshop with Melbourne partners

Pilot outputs (products resulting from pilot activities)	General Statement	Melbourne Pilot Statement	Indicators	Control group/Baseline	Treatment group/Endline	Methods
	Co-designed campaign messages and materials	Campaign materials including email insert, images, website, animations, social media posts have been produced	1. Number of core and sub-messages 2. Number of email inserts written for the campaign. 3. Number of animations developed. 4. Number of social media posts written for the campaign. 5. Number of images designed for the campaign 6. Number of webpages developed for the campaign 7. Number of partners involved in co-design 8. Number of design revisions for each output	None	1. 1 core message with 4 sub-messages 2. 1 email inserts written for the campaign. 3. 4 animations developed. 4. 4 social media posts written for the campaign. 5. 5 images designed for the campaign 6. 5 web pages developed for the campaign 7. 4 partner organisations involved in co-design 8. 3 design revisions for each output	1. Co-design workshops and out-of-session reviews
	Two co-designed pilots	Melbourne pilot co-designed	1. Number of partners involved in design 2. Number of documents of alignment with best practice recommendations	None	1. 4 partner organisations involved in design 2. 1 document of alignment with best practice recommendations	1. Co-design workshops and out-of-session review notes 2. Alignment notes
Pilot activities (planning, design, implementation and evaluation)	General Statement	Melbourne Pilot Statement	Indicators	Control group/Baseline	Treatment group/Endline	Methods
	Develop and implement monitoring and evaluation plan	Partner lessons learnt reflection workshops designed and implemented to evaluate the collaboration process and record lessons learnt.	1. Number of lessons learnt workshops organized.	None	1. 2 reflection workshops designed and implemented.	1. Workshop records & summary via Miro Board
		A field survey designed and implemented to evaluate the pilot campaign	1. Number of field surveys; 2. Number of respondents reached. 3. Response rate	1. 1 field survey including control group; 2. 250 control group respondents surveyed. 3. 30% of invited control group completed the survey	1. Field survey including campaign recipients (treatment group); 2. 250 treatment group respondents surveyed. 3. 30% of invited treatment group completed the survey	1. Number of control and treatment participants; 2. Survey responses.
	Pilots implemented	Campaign materials circulated	1. Number of EDM recipients 2. Number of social media posts shared	None	1. Number of EDM recipients 2. 4 social media posts shared	1. EDM campaign records 2. Social media metrics
	Collaboratively design campaign materials	Co-design of images, messages, animations and website.	1. Number of co-design workshops. 2. Number of partners participating in the workshops 3. Number of partners providing out-of-session feedback 4. Number of revisions of each material	None	1. 3 Number of co-design workshops. 2. 4 partner organisations participating in the workshops 3. 4 partner organisations providing out-of-session feedback 4. 3 revisions of each material	Workshop and email records
	Planning meetings held to agree on pilot goals and focuses	An agreement on overall focus of the pilot has been reached.	1. Number of planning meetings held; 2. Number of pilot proposal documents. 3. Number of documents capturing links between best practice recommendations and the pilot designs	None	1. 3 Number of planning meetings held; 2. 1 pilots proposal document covering both pilots. 3. 1 document capturing links between best practice recommendations and the pilot designs	Meeting minutes and documents.
Perth Pilot						
Pilot Outcomes (immediate outcome - as the result of implementing the pilot)	General statement	Perth Pilot Statement	Indicators	Control group/Baseline	Treatment group/Endline	Methods
	Pilots learnings are captured	Perth pilot learnings are captured	1. Project report containing results on audience perceptions and impacts	None	1. 1 project report containing results on audience perceptions and impacts	1. Experimental survey (see below) 2. Focus group (see below)
			2. Project report containing results on partner perceptions and impacts	None	2. 1 project report containing results on partner perceptions and impacts	3. Partner reflection workshops (held jointly with Melbourne pilot)

Pilot Outcomes (immediate outcome - as the result of implementing the pilot)	General statement	Perth Pilot Statement	Indicators	Control group/Baseline	Treatment group/Endline	Methods
	Audience engagement increased	Perth residents interact with the water literacy messages by June 2024.	1. Proportion increase in web traffic and time on page	1. Other campaign engagement and conversion metrics if available.	1. 15% increased web traffic and time on page	1. Webpage analysis.
			2. No of experiment participants 3. Average ratings on how engaging the messages and images are	None	2. 250 treatment group participants 3. Average rating of 4 for how engaging the messages and images are	2. Experimental survey
			4. Feedback on how engaging (interesting and relevant) images and messages are and why	None	4. Overall positive feedback on how engaging images and messages are 5. Reasons why messages/images is interesting by focus group participants 6. Reasons why messages/images is locally relevant by focus group participants	2. Focus group
	Audience knowledge on the role of water in healthy, liveable communities is increased	Perth campaign recipients (treatment group) have higher average literacy on the role of water in healthy, liveable communities in comparison with the control group by June 2024.	1. Score on knowledge about the role of water in healthy, liveable communities.	1. Control group score on knowledge about the role of water from the experimental survey	1. 20% higher treatment group average score on knowledge about the role of water in experimental survey in comparison with control group	1. Experimental survey (treatment group exposed to campaign material during survey, control group not exposed until after survey is completed)
			2. Evidence of understanding of messages during focus group discussions 3. Feedback on message clarity during focus group discussions 4. Feedback on messages for stimulating information seeking	None	2. Participants' discussion demonstrates understanding of the role of water after seeing campaign messages 3. Reasons why messages/images is easy to understand by focus group participants 4. Reasons why feeling/not feeling motivated to seek more information by focus groups' participants	2. Focus group
Pilot outputs (products resulting from pilot activities)	General Statement	Perth Pilot Statement	Indicators	Control group/Baseline	Treatment group/Endline	Methods
	Approved summaries from both pilots	Summary of Perth pilot's processes and findings, including best practice recommendations	1. A pilot summary report approved by Perth partners and PSG 2. Number of best practice recommendations identified.	None	1. One pilot report; 2. At least 5 actionable best practice recommendations.	1. Review of pilot outcomes and report write-up 2. Lesson learnt workshop with Perth partners
	Co-designed campaign messages and materials	Campaign materials including images and website have been produced	1. Number of core and sub-messages 2. Number of images designed for the campaign 3. Number of webpages developed for the campaign 4. Number of partners involved in co-design 5. Number of design revisions for each output	None	1. 1 core and 4 sub-messages 2. 5 images designed for the campaign 3. 5 web pages developed for the campaign 4. 4 partners organisations involved in co-design 5. 3 design revisions for each output	1. Co-design workshops and out-of-session reviews
	Two co-designed pilots	Perth pilot co-designed	1. Number of partners involved in design 2. Number of documents of alignment with best practice recommendations	None	1. 4 partner organisations involved in design 2. 1 document of alignment with best practice recommendations	1. Pilot proposal design 2. Co-design workshops and out-of-session review notes 3. Alignment notes
Pilot activities (planning, design, implementation and evaluation)	General Statement	Perth Pilot Statement	Indicators	Baseline	Target	Methods
	Develop and implement monitoring and evaluation plan	Partner lessons learnt reflection workshops designed and implemented to evaluate the collaboration process and record lessons learnt.	1. Number of lessons learnt workshops organized.	None	1. 2 reflection workshops designed and implemented.	1. Workshop records & summary via Miro Board

	General Statement	Perth Pilot Statement	Indicators	Baseline	Target	Methods
Pilot activities (planning, design, implementation and evaluation)	Continued	One experimental survey and one focus group designed and implemented to evaluate the pilot	1. Number of experimental surveys 2. Number of participants.	1. 1 Experimental survey including control group; 2. 250 control group respondents surveyed.	1. 1 experimental survey including treatment group; 2. 250 treatment group respondents surveyed.	2. SEW records of number of invited control and treatment participants; 2. Survey responses.
			1. Number of focus groups 2. Number of participants	None	1. 1 focus group 2. 10-12 participants	
	Pilots implemented	Experimental survey	1. Number of surveys 2. Number of survey participants (control and treatment groups)	1. 1 survey with control group 2. 250 control group participants	1. 1 survey with treatment group 2. 250 treatment group participants	1. Survey records
	Collaboratively design campaign materials	Co-design of images, messages and website.	1. Number of co-design workshops. 2. Number of partners participating in the workshops 3. Number of partners providing out-of-session feedback 4. Number of revisions of each material	None	1. 3 Number of co-design workshops. 2. 4 partner organisations participating in the workshops 3. 4 partner organisations providing out-of-session feedback 4. 3 revisions of each material	Workshop and email records
	Planning meetings held to agree on pilot goals and focuses	An agreement on overall focus of the pilot has been reached.	1. Number of planning meetings held; 2. Number of pilot proposal documents. 3. Number of documents capturing links between best practice recommendations and the pilot designs	None	1. 3 Number of planning meetings held; 2. 1 pilots proposal document covering both pilots. 3. 1 document capturing links between best practice recommendations and the pilot designs	Meeting minutes and documents.
Previous packages	Providing a list of recommendations based on the CRCWSC literature		Indicator: A list of recommendations on community engagement has been provided and approved by partners		Method: Literature review of CRCWSC reports; Internal discussion; Partners feedback	

APPENDIX 2: BEST PRACTICE LINKS

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
Planning					
Know your audience					
1	Identify the audience you're engaging with, factors that influence current levels of water literacy (including the impact of income, gender, waterway use and length of residence) and factors that may be barriers to participation/ engagement (such as time or language constraints).	Identifying the audience informed the pilot design and evaluation design. Decided based on their literacy levels, trust in utility and science institutions, and the channels they want to receive water information through.	Used the classification of the identified target segments by the WSAA research: the *Show me the money* segment, the *Show me how* segment, the *Show me the benefits* segment and the *Informed but cautious* segment. This was originally reviewed by the PSG.	**Knowing the audience was shown to be important for effective and efficient campaigns.** However, the original segments were less helpful than initially expected when determining relevant interests and initial literacy associated with the new topic of water for wellbeing. Prior water literacy studies had not examined knowledge on topics related to water for wellbeing. Some of the pilots' messages had higher than expected literacy levels prior to exposure (see **Figure 13** and **Figure 23**). Assuming no background knowledge was not necessarily the most effective or efficient approach. Attempts to target different interest groups through social media had insufficient reach (see **Table 4**) to test interest-specific message engagement (e.g., sports-related). There was, however, interest-related differences in literacy (see the Melbourne pilot's **Activity interests** section) that suggests differentiation and targeting based on these interests may be effective if these relationships are understood beforehand.	**Add a Guidance Recommendation to obtain information on baseline literacy levels and knowledge gaps prior to campaigns where this is not already available, as it allows for more effective and efficient targeting of messages.** **Include in the new Guidance Recommendation the need to choose the investigative approach that best matches the nature of the desired information.** For example, surveys can provide community-level prevalence, but with limited nuance. Focus groups can provide nuanced insights, but may not be representative. A combination of these may be appropriate.
2	Assume the target audience has no background in water knowledge nor understanding of your organisation. Assume there is a wide variation in cultural experiences around water. For example, water from taps is not always clean in some countries, and cultural connections to waterways may vary between cultures. Consider what this means for your campaign framing, topic, key messages and calls to action.	Based on the identification of different target segments, it was important to assume this variation in the audience.	The messages were to go out to the full spectrum of audiences. The messages were adjusted to maximise the hooks for as diverse an audience as possible (e.g., sports, home gardens, inner city living).		
3	Consider what interests the target audience or what will engage them? Disengaged groups often exhibit characteristics that reduce exposure to water-related information, or the comprehension, interpretation and retention of this information. Engagement planning can consider which aspects can be designed to be more engaging to the audience.	As the overarching literacy focus (water for wellbeing) had not been covered before, it was particularly important to tie messages to local interests to optimise engagement.	Partner local knowledge was augmented with online research into relevant activities and environs to depict in the messages and materials (including visuals).		
Have clear water literacy goals					

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
4	Identify which water knowledge gaps to address. Review available water literacy benchmarking research and prioritise knowledge gaps that align with current water sector priorities (e.g., a gap in understanding water sources for a city aligns with policy needs to explore alternative water sources; a gap in understanding fate of stormwater aligns with industry priorities to adopt blue–green infrastructure).	Identifying knowledge gaps was important for designing messages and channels. Key knowledge needs were identified based on local water strategic plans and knowledge gaps identified from previous research by utility companies (e.g., focus group work), WSAA and WSCA/CRCWSC. The PSG wanted to empower the community with water knowledge from a new angle to prepare them for later policy debates, making the project not focused on behaviour.	Both pilots chose to focus on raising understanding of the role of water in keeping our communities liveable and healthy under a changing climate. Each pilot had slightly different foci within the same overarching message: heat management in Perth; recycled water management in Melbourne.	**Having clear water literacy goals** was **shown to be important for effective and efficient campaigns.** However, as discussed above, the lack of prior understanding of knowledge gaps on the new issue of water for wellbeing meant some messages were less necessary than others, and more nuanced and differentiated messages could have been designed if such data had been available prior to the campaign. Where knowledge gaps existed, exposure to the campaign messages tended to significantly improve literacy (see **Figure 13** and **Figure 23**). Focus group responses suggested that the pilot information was not new to younger participants (see Focus group **New knowledge** section), but the opposite was found in the surveys (see survey **Pilot materials reception** section). The smaller sample size of the focus groups may have contributed to this. The focus group responses, however, gave more nuanced insights into why people responded as they did than the surveys allowed. This highlights the different values each approach offers for informing message tailoring.	**Expand the Guidance Recommendations to specify that the campaign's purpose should be evident to the audience to avoid confusion over what's expected of them, whether that be current or future behaviours or decisions.** Specific calls to action for certain behaviours makes that behaviour-change purpose clear, but may be less evident for campaigns aiming to build literacy to inform future behaviours and policy support. **See also the suggested changes for Guidance Recommendations 1-3**
5	Address the water 'issues' that are least understood. Bust myths. For instance, it is common for the roles of utilities to be poorly understood; and for there to be limited awareness of where water urban water supplies come from, or go to, in their city's water system.	Same as above	Same as above		
6	Think about the engagement outcomes you want to achieve in citizens (as opposed to content outcomes): Cognitive engagement refers to knowledge about key water-related issues, and the capacity to apply this knowledge. Start with the 'basics' and build from there so community members have foundational knowledge as context for more specific behaviours and decision making. Incorporate emotional engagement elements into the engagement plan, to build positive attitudes about water and water management. People adopt habits when the action/outcome makes them feel good. Build messages around the personal and cultural values of water. Incorporate behavioural elements into the engagement plan. Behaviour refers to actions by individuals, such as reducing	Due to the limited scope and resources, the pilots focused only on cognitive engagement (increasing knowledge) and emotional engagement (building a positive attitude), leaving behaviour elements for future campaigns.	Cognitive and emotional engagement were targeted by focusing on key knowledge gaps and tying images and messages to local interests and activities. These needed to be diverse (e.g., sports ovals vs suburban homes vs local parks and bushland) to match the diverse audience segments targeted.	**Having clear engagement outcomes was shown to be important for effective campaigns.** However, the focus on literacy through cognitive and emotional engagement, without calls for specific action, led some focus group members to report confusion over the aims of the campaign (see the Focus group **Pilot materials reception** section). Participants seemed to have an expectation that they would be asked to undertake certain behaviours. The pilots could have highlighted the need for community understanding of the topic to	

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
	water use or reducing pollution. Individuals need to understand what actions they can take in their daily lives so the engagement has a purpose and they have agency.			contribute to decisions on future water management.	
Plan to build water literacy over the long term					
7	Invest adequate resources and time to see long-term water literacy results. Don't expect quick results when building water literacy in disengaged community segments. Plan reach individual engagement activity as one component part of an ongoing campaign/strategy to build water literacy.	The pilots weren't able to include long-term components due to time constraints, but the evaluation included survey questions that have been part of previous long-term surveys. The mix of materials was also designed to provide diverse resources for ongoing roll-out after the pilots end if desired.	Not applicable	**This recommendation wasn't specifically tested.** However, longitudinal survey results (see **Figure 23**) suggest that knowledge gained from messages do not necessarily persist, and repetition may be necessary.	**Expand the Guidance Recommendation to highlight the importance of repeated exposure to campaign messages for persistence of learning.**
Designing					
Respond to constraints					
8	Address existing interest positions and social contexts that are relevant to the engagement topic. For instance, people may approach engagement through the lens of their current understanding of a topic (e.g., a personal position on climate change) or their personal history with an organisation (has there been any negative experiences in the past). Information is also more likely to be trusted and retained if it fits easily with individuals' existing perceptions or experience about the issue. Accommodating these 'starting points' is a way to 'meet people where they are at' as a basis for moving forward. Engagement activities can be designed to acknowledge and address diverse interest positions.	As the overarching literacy focus (water for wellbeing) had not been covered before, it was particularly important to tie messages to local interests to optimise engagement.	To address the diverse interest positions and contexts of the target audience segments, the messages and materials were adjusted to maximise the hooks (social contexts) for as diverse an audience as possible (e.g., sports, home gardens, inner city living), as a way to connect their interest and likely experiences with water in those contexts, with the new messages. Messages explained mechanisms behind key concepts to help bridge understanding from diverse 'starting points'.	**Some aspects of responding to constraints and being engaging were shown to be valuable for increasing water literacy.** Delivery challenges associated with limited social media reach (see **Table 4**) prevented testing of the value of targeting specific social contexts and activity interests such as sport and suburban gardening for engaging audiences. However, focus group participants recommended some additional channels specific to social contexts (e.g., posters at sports grounds) for sharing these tailored messages (see the Focus group **Channels and sources** section), suggesting that the integration of these contexts may have been effective if able to be field tested.	**Expand the Guidance Recommendation to specify consideration of interest positions and social contexts both in terms of message content and channel selection to maximise relevance and engagement.** **Link this Guidance Recommendation with the Recommendation 7 such that longer-term messaging is planned that allows for repeated engagement and**

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
9	Don't 'blame' individuals for inappropriate behaviours; rather address barriers to better behaviours.	The pilots' goals were not behaviour-focused.	Not applicable	Explanations of the mechanisms behind key message concepts as a way to accommodate 'starting points', appear to have been effective as is evident by the significant literacy improvements associated with these messages. However, this may have occurred through changes to conceptual shortcuts (heuristics) rather than true knowledge of these mechanisms. For example, respondents' may have updated their conceptual association of vegetation with cooling without fully integrating knowledge of the mechanisms they read that led to those heuristic changes (see the Melbourne pilot's **Specific literacy** section).	**iterative development of conceptual nuances for audiences, to help embed knowledge beyond the simple heuristics that can lead to misunderstanding and misinterpretation.** This could be especially important for assessing and supporting future actions and policy options.
Be engaging!					
10	Consider that information absorption is an active process. This means community engagement is more effective when it 'actively engages' participants. It is often, incorrectly, assumed that disengaged individuals just need greater exposure to information to promote engagement.	Due to the constraints in terms of available channels, we could not test this recommendation.	Not applicable		
11	Address the 'why' and make it relevant. Behaviour change research stresses the importance of explaining why a call to action is necessary, in terms that are relevant and important to the audience. An audience may ask: 'why should I care', or 'why should this be my priority' (given barriers such as lack of time or money). It is difficult for people to become engaged if they don't know why it is important (e.g., I have no garden) or if they face more immediate barriers (e.g., affordability is my biggest issue) to adopt the call to action.	The 'why' was considered critical 'hooks' to maximise engagement and were integrated into the messaging and materials as part of the target literacies.	Local values were integrated into the messaging as 'hooks' to maximise engagement. These intended to blend the 'why' with the 'what' and focused on a range of wellbeing functions that water provides across diverse contexts (e.g., heat management for health/liveability in urban areas and maintaining sports grounds for valued wellbeing outcomes such as health and socialising).		
Messages					
12	Tailor your messages. Messages intended for 'everyone' won't actually appeal to 'everyone'. Consider how you can present the messages in a way that resonates with the target audience.	Due to time constraints, the pilots were limited to piggy-backing off other campaigns or experimental designs.	The messages and materials had a layered design so specific target messages could be highlighted depending on the available channels and timing of any release (including post-pilot if desired). The messaging materials covered diverse social contexts (e.g., sports, urban heat, gardening) to allow for targeted delivery, however issues with social media reach and shifting to experimental	**The applied messaging strategies were shown to collectively improve water literacy.** Both pilots showed increased literacy due to exposure to the campaign messages (see **Figure 13** and **Figure 23**). Insufficient clarity of message purpose made some contexts' (e.g., parks and sports grounds) messages confusing (see Focus group **Pilot materials reception** section), highlighting the need to make these connections more overt.	**Expand the Guidance Recommendation to include clarity of message purpose, so that the audience know what to do with the resonating messages.**

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
			designs precluded testing the individual effectiveness of these.		
13	Align water literacy messages with appropriate (existing) sustainability, health (etc.) campaigns to gain traction. For example, health campaigns encouraging people to exercise more will align with messages on the amenity value of waterway corridors; a climate change narrative aligns well with resource recovery initiatives in the water sector.	It's important to take advantage of our partners' current campaigns to maximise effectiveness. Channel delivery options were limited due to the timeframe of the pilot (campaigns usually have long lead times), so we needed to insert our messages within another campaign delivery in Melbourne. We wanted to ensure the materials could be used in later aligned campaigns if desired.	Messages included reference to traditional, long-term campaigns in the pilot areas: 'make every drop count' in Melbourne and 'waterwise' in Perth; although the former was later removed due to that campaign not being funded in the year of the pilot.	The long timeframes involved in planning and approving campaigns for many of the Project Steering Group organisations precluded strong integration with related campaigns in the pilots' short timeframes (see Lessons learned workshops' **Learnings** section). Including links to the Melbourne pilot materials within an unrelated EDM campaign led to negligible engagement (see **Table 2**).	**Expand this Guidance Recommendation to include ensuring sufficient time is built into planning and design stages to allow for resourcing and approvals where campaign alignment and/or mutliorganisational campaigns are intended.**
14	Connect the dots. When building water literacy (e.g., as opposed to (say) behaviour change or emergency information broadcasts), craft messages in ways that establish connections between different water management concepts. For example, some community members have a poor understanding of the link between stormwater management in cities and towns and the wider catchment health.	We wanted to help the audience connect the new ideas surrounding water for wellbeing with existing concepts to establish more diverse roles for water and connect those with things of value to the community.	Messages were designed in a way that links across contexts (e.g., urban or suburban) and link different concepts within contexts (e.g., watering trees and the vegetation's associated heat management effects).	**See outcomes for Gudance Recommendations 8-11**	**See suggestions for Guidance Recommendations 8-11**
15	Use messages to communicate social norms. Because individuals respond to community norms, showing that a high proportion of the population or a social group already engages in a particular behaviour is a powerful influence.	This was not tested as norms usually relate to behaviour and the pilots did not focus on behaviour	Not applicable	Not applicable	Not applicable
Language matters					
16	Use simple or familiar language. A key part of 'getting the message right' is ensuring the language used allows the reader, etc., to understand the content. Further, utilising community-friendly language results in greater interaction with the message. Avoid water industry jargons like potable water, alternative water, 'right' water, fit for purpose. This phenomenon can be explained by a concept from social psychology known as 'fluency'. When statements are	This is a central principle in designing messages that makes it easy for the audience to engage with the messages—especially when introducing new topics.	We used simplified terms (e.g., 'driveways that let rain soak into the ground' instead of 'pervious driveways').	**Having clear and familiar language was shown to be important for effective audience understanding.** The concept of wellbeing, and the connections between wellbeing and water weren't sufficiently clear in the messages, according to focus group responses (see the Focus group **Pilot materials reception** section). For example, additional explanation	**Add a Guidance Recommendation for testing proposed messages with members of the target audience prior to finalisation to identify and address any challenging concepts and gaps in message**

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
	perceived to be more fluent (i.e., people have a sense of ease in reading and understanding them), they are also judged as more true, likeable and frequent, and to come from more intelligent sources.			was required for participants to recognise that wellbeing was related to access to healthy parks and to water usage at home.	**connections prior to release.** This is especially important for campaigns covering new concepts/issues.
Use visuals					
17	Use local images as much as possible as they are more engaging. The familiarity of images was closely tied to both the degree to which the image elicited positive emotions and the personal relevance of the image.	Locally relevant images were considered critical for maximising relevance and resonance with the audience.	The colour palettes, native animals, vegetation types and activities in the images were chosen based on local images and knowledge.	**Visuals were shown to offer engaging and relatable ways to engage with campaign messages.** Participants found the pilot images moderately to very interesting and moderately reminiscent of their local area (see Survey **Issue importance** section). The visual look and feel were generally well received, although thought somewhat 'childlike' by older focus group participants (see Focus group **Pilot materials reception** section). Having locally iconic components (e.g., the cockatoo for Perth) was valuable for prompting a local feel, and the inclusion of diverse 'neutral' companions in scenes allowed for personal interpretation of relationships between them that maximises inclusivity. Additional representation inclusive of disability could have been added to strengthen this. The challenge in portraying both water and people in the sports context was problematic.	**Add a Guidance Recommendation for testing proposed images with members of the target audience prior to finalisation, to maximise effectiveness.**
18	Use images that include people, as this is perceived to be more engaging.	People doing these actions were intended to help the audience connect with the contexts (e.g., walking the dog) and messages—so they can see themselves in the actions.	People doing contextually relevant activities were included in each image.		
19	Explain the relevance of the visuals. If there is a need to use images of creeks, rivers or oceans, explain the relevance of the image to the key messages, call to action.	These explanations were considered particularly important since we were introducing new concepts (e.g., urban heat management).	Call out pins and associated messages were included in images. The pins aimed to highlight the key components of the images that we wanted the audience to focus on, and the messages were placed adjacent to the pins to make the connections clear.		
20	Use images that resonate positively with the audience. Do not use images that elicit disgust (e.g., litter in waterways, dead fish). For example, photos depicting flood clean-up efforts and images that have flowers or vibrant green foliage will likely elicit more positive emotions and greater engagement than images of pollution or damage.	Images were designed to maximise positive reception of messages for 'approach' rather than 'avoidance' responses, and to maximise resonance for the audience—so they could see themselves in the actions.	Visually pleasing and locally relevant images were created, avoiding the kinds of images prior WSCA research showed were negatively received. We also represented some diversity in the people included in images, although not every kind of diversity could be included.		

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
Get the framing right					
21	Frame messages and campaigns in ways that guide people's thinking about the issue. However, be aware that strategically framing messages can be a double-edged sword. Some things to consider are:	We wanted to make campaign materials that could connect with diverse audiences, and to avoid unintended negative responses from non-target audiences for each context (e.g., people who don't watch/play sport, or don't visit parks).	We included diverse contexts and activities in the images and messages to frame the topic in local values (e.g., playing/watching sports, walking the dog, gardening) and framed the overall messages in the context of healthy and liveable communities as no-one wants unhealthy or unliveable communities.	**Visual and textual framing were shown to be important for effective campaigns** The framing around wellbeing resonated with focus group participants (see **Pilot materials reception** section), although the term and its connections with water were not well understood (see Recommendation 16 outcome above). There was also some confusion over the campaign purpose in the context of this framing, especially for contexts were individuals felt they had no responsibility for management (e.g., parks and sports grounds) and where there was no clear call to action. The visual framing used across the images resonated with people, even if they didn't frequent those spaces (e.g., sports grounds).	**Refine these Guidance Recommendations to include clear establishment of links between framing and purpose for participants, with messages tested to ensure they capture the frame adequately (e.g., no confusion over terminology or expectations)**
21.1	Framing can be used to foster a sense of identity as a water literate/water sensitive citizen by reinforcing positive social norms. Stewardship initiatives are especially popular with communities. They can be very effective at attracting participants and generating social learning.	Place- and activity-based framing aimed to boost connection with local community- and activity-based identities.	Place-based framing involved repeating city name and localising images. Activity-based framing was built into the images of playing sports or walking the dog etc.		
21.2	Make allowances for the possibility that the key water sensitive messages are heavily influenced by emotions related to symbolism and status. This is likely to be an important influence on certain behaviours, such as car use or consumption of high-status items.	We weren't targeting specific behaviours, so this wasn't as relevant.	Not applicable		
21.3	Sustainability framing increases support for water sensitive cities for those who are disengaged or indifferent towards environmental issues. Support for water sensitive cities is highest when participants read information that discusses the benefits framed as a sustainability initiative. Information framed in terms of economic arguments do not resonate.	A sustainability frame underpinned the focus on 'wellbeing' into the future.	Sustainability concepts were built into most of the messaging, although this may not be overt in every instance. Some examples include messages relating to urban heat management, recycled water use, biodiversity habitat maintenance etc.		
21.4	Messages that appeal to closely held values have more traction although such framing has less effect for individuals with strongly held opposing values.	Messages were tied in with diverse local values relating to wellbeing.	While not all the values included in the messages and images will resonate for all audiences, the wellbeing focus hoped to avoid negative reactance.		

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
21.5	Establish cognitive dissonance—e.g., through messaging, remind the audience of their values (e.g., healthy waterway ecosystems) and highlight ways in which they don't act on waterway pollution. This will stimulate behaviour to re-align personal actions with their values.	The pilots did not have a behaviour focus.	Not applicable		
22	Engage delivery partners early to proactively invest in baseline stakeholder trust and organisational engagement capability.	Delivery partners were key drivers of the project.	Delivery partners were engaged from the beginning of pilot design to maximise relevance and opportunities for delivery. These partners had the local knowledge of literacy needs and delivery options that were critical for campaign designs.	**Early engagement was critical, but the insufficient available project length significantly limited delivery options through these trusted sources.** Organisational engagement with trusted sources early in the design was important for developing messages seen to address local needs, however the short project timeline was insufficient to meet organisational needs for internal campaign approvals (see Lessons learned workshop **Learnings** section).	**Expand this Guidane Recommendation to include sufficient timeframe for organisational delivery planning**
23	Make it personal. Showcase personal/individual benefits, and the role of water/waterways in everyday life.	Tying messages to specific activities and contexts was important to show personal relevance and wellbeing benefits.	Diverse individual (and collective) wellbeing benefits were highlighted in the images and messaging, including health, social and environmental benefits that were designed to resonate with local audiences.	**Personal and community relevance was shown to be important but are multilayered.** The images were generally seen to represent local contexts (see Perth's **Pilot materials reception**), however this perception of local relevance did not appear to influence changes in overall literacy (see Perth's **Overall literacy scores**). This may be partly due to the breadth of participants included in the survey, rather than the more specific targeting that might occur through EDM or social media messaging. Focus group confusion over relevance for context (e.g., sports grounds) over which they feel they have no control (see Focus group **Pilot materials reception**), however, highlights the importance of additional layers of relevance. Images, messages, and purpose must all be clearly relevant to the audience for messages to be effective.	**Expand Guidance Recommendations to include clear alignment of imagery, messages, and purpose with the target audience (individual and community relevance and values).**
24	Align messages with broader community values and community perspectives. Does this identify any obstacles that need to be addressed in the key messages or the campaign delivery approach?	While the message foci were somewhat new (the role of water for liveability and health), being liveable and heathy communities is crucial. As such, we wanted to highlight what makes the local area 'liveable' and 'healthy' to connect these values/concepts with water—new ways of thinking.	We focused on valued liveability 'hooks' (e.g., sports, walking the dog, gardening) as context for the messages.		

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
25	Consider a new angle on an old topic. Individuals are often more receptive to new ideas than being asked to remember, or change, an old idea. Consider applying a new rationale or context for the particular message.	We aimed to tap into a new, but highly valued angle. We used a wellbeing angle rather than traditional messaging.	New liveability and health messaging was adopted, focusing on the role of water (including for maintaining valuable vegetation).	**Approaching from a completely new angle can be engaging and stimulate new ways of thinking about the issue, but requires considerable preparatory research for truly effective messaging.** There was moderate to high interest in learning about the issue (see Melbourne survey's **Issue interest and** importance and Perth survey's **Issue importance and interest**). The topic was not top of mind when thinking about water issues, with some respondents not having thought about water in the community beyond household water saving (see Focus group **Issue interest and importance**). Lack of understanding of baseline community knowledge about the issue, coupled with audience confusion over message purpose in the absence of calls to action, were particularly problematic for approaching a topic mostly new to the audience.	**Expand on Guidance Recommendations to highlight the critical importance of baseline knowledge of the target audience and early testing of messages, to ensure the right knowledge is targeted in the right way to maximise effectiveness and minimise unintended consequences.**
26	Look for unintended consequences. When designing communication initiatives, it is important to not inadvertently generate a counter-reaction.	Possible negative reactance was considered for each image and message, and designs chosen to maximise 'approach' rather than 'avoidance' responses.	To minimise 'avoidance' responses and maximise 'approach' responses, we adopted positive framing, highlighting the desirable (goal) aspects for maintaining into the future (rather than things to avoid). To minimise disengagement, we focused on liveability and health as values no-one would argue against.		

Delivering

Respect sensitivities

27	In delivery, ensure that local culture is respected by integrating local knowledge into water literacy efforts and aligning engagement activities with existing community activities and practices.	Localisation was used to maximise resonance for the audience—so they could see themselves in the people and actions depicted.	People in images were diversified to reflect community diversity. In Melbourne, we used the SEW diversity report for ideas. Locally relevant activities were included in each context based on PSG local knowledge and online research (e.g., for uses of wetlands etc.)	**Locally relevant and inclusive visuals were shown to be well received.** See outcomes for Guidance Recommendations 17-20.	**No change suggested for this Guidance Recommendation**

Channels

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
28	Move away from 'talking heads' approach and use more visual imagery in engagement activities that allows people 'to see' practical examples.	In storytelling, 'show, don't tell' is a recognised technique for maximising audience engagement. We did the same with our visuals.	We adopted illustrations rather than photos, and animations rather than videos. We included representations of contexts and activities rather than focusing on a 'speaker'—'show, don't tell'.	**Visualising practical examples can be valuable, but require additional explanation of purpose when there is no call to action.** The expectation of a behavioural call to action and confusion around purpose for context within which individuals feel they have no responsibility for water management (see Focus group **Pilot materials reception**), makes it imperative that the purpose of these kinds of non-behavioural literacy messages are clear to the audience.	**Expand the Guidance Recommendation to highlight the importance of ensuring the audience can clearly see the connections between these examples and the campaign purpose.**
29	Use recognised community leaders as advocates, to show the support for your projects. The credibility of the message is influenced by the spokesperson, and so ensuring credibility of the message presenters is important for building trust and information retention. When delivering challenging or controversial content, consider using experienced science communicators and/or trusted community figures, such as sports people.	Trusted information sources (organisations rather than individuals) were considered critical delivery partners for messages to be accepted.	The WSAA segmentation research identified utility companies and CSIRO as trusted sources of information. We hoped that CSIRO could be assumed to represent scientists as trusted information sources, and that this would mean WSCA were also likely to be trusted. We hoped that the combination of the messages going out through media that the audience already follow/trust, would raise the messages' profile with a wide audience. The messages were to initially to be distributed by utility companies and by WSCA, but project timeframes precluded field testing in Perth and limited EDM options in Melbourne. We planned to include media releases involving events with high profile community leaders as one messaging channel, but timelines didn't support this.	**Project timelines precluded testing across most channels, and those able to be tested were not optimal and highlight several cautions.** Water utilities remain trusted sources for water information, however local councils were also suggested by community as relevant sources for these messages (see **Figure 14** and **Figure 24**). Inclusion of pilot links within a separate campaign EDM was ineffective, with minimal engagement (see **Table 2**). Lack of social media post promotion by the broader partners significantly limited post reach (see **Table 4**). Additional options for delivery were identified by community, including posters and banners at relevant offline sites where target audiences attend, such as sports grounds (refer to Focus group **Channels and sources** section).	**Expand this Guidance Recommendation's channel examples to include offline options at key, relevant locations for audience attendance. Expand channel amplification to consider collaboration with like-minded organisations for joint message delivery and cross-promotion of messages (e.g., through social media) for greater reach**
30	Amplify the channels where people already expect to get information about water. The most commonly cited sources of water-related information were water utility bills, television and newspapers (Dean et al., 2015).	These were the channels readily available for the delivery partners within the timeframe of the pilot.			

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
31	Make it accessible in the delivery of the campaign. Remove time or language barriers to participation in the campaign (or the intended behaviour).	This was seen as critical for ease of understanding and engagement.	We used simple language, short messages and visual anchors for messages, concepts and animations. Links were provided to more information, and web pages included easy navigation links to make moving through the material easy.	**Accessibility was shown to be important for effective messaging.** Focus group responses to pilot messages highlighted the confusion that can arise when new terminology is introduced (see Focus group **Pilot materials reception**). Limitations on field testing prevented effective investigation of the accessibility aspect of diverse channels (e.g., social media's short messages). Focus group suggestions reinforced the potential of short social media-style messages, and included valuable offline suggestions that may improve accessibility for some audiences (see Focus group **Channels and sources**).	**No change suggested.**

Evaluating

What to evaluate

32.1	Process indicators (e.g., the number of community members effectively targeted, representativeness of targeted individuals in the broader community, perceptions of the behaviour change initiative). Processes include 'how many' and 'how' aspects of intervention implementation, like public sign installation or community-directed engagement.	Process indicators are particularly important for understanding the effectiveness of different channels for reaching target audiences.	Measures of reach and engagement (e.g., how many people clicked on links) were included to help gauge channel effectiveness.	**Process indicators were shown as valuable to highlight channel effectiveness (reach and engagement), including identification of issues to be addressed.** Process indicators such as tracking social media and EDM engagement were critical for identifying issues, and led to adoption of an experimental survey to test messages in the Melbourne pilot due to initially low reach (see **Table 2** and **Table 4**). It provided valuable insights into reach and design and delivery challenges across channels	**When uncertain of the reach of certain channels, process indicators tracking message reach can offer early warning of engagement challenges to support adaptive changes to campaign strategies.**
32.2	Effectiveness. Evaluating effectiveness is important because not all campaigns are effective and, in some cases, campaigns can inadvertently trigger the opposite response.	Effectiveness for improving literacy and topic attitudes were key foci in evaluations.	Surveys included assessments of the literacy and attitude effects of campaign messages.		
32.3	Effectiveness of channels. Most common sources of water information: water bills, TV, newspapers. Over half reported no exposure in the past 6 months.	Evaluation of process indicators are particularly important for understanding the effectiveness of different channels for reaching target audiences.	Measures of reach and engagement (e.g., how many people clicked on links) were included to help gauge channel effectiveness.		
32.4	Immediate outcomes. Engagement; understanding of issue; perception/opinion.	Initial responses to messages provide critical insights into the potential for longer-term impacts.	Channel engagement measures (e.g., click throughs) and survey measures of literacy and attitude	**Measurement of immediate outcomes was shown to be valuable for confirming**	**When designing evaluation of immediate outcomes,**

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
			change were included in the evaluation.	**campaign effectiveness, and can provide a new baseline for future campaigns.**	**factor in long-term literacy goals and consider if there is capacity build in the capture of key information to 'know your audience' as part of potential ongoing tracking of change or as 'baselines' for new topics.**
32.5	Intermediate outcomes include changes in awareness or behaviours.	Longevity of impacts is important for long-term change.	Measurement of literacy, interest and attitudes sometime after message delivery was integrated into the Melbourne pilot to help assess the persistence of impacts. The Perth pilot was unable to include delayed measurement of these due to budget constraints.	Experimental surveys provided critical insights on learning effects and their longevity. Focus groups provided important insights into community reception, sensemaking and expectations.	
32.6	Impact (change in water knowledge over time; change in sentiment toward technologies). Long-term goals such as improved water quality, reduced water use, environmental stewardship or policies fostering community wellbeing. It may include perceptions about the behaviour, awareness about the issue or environmental indicators relevant to the behaviour.	The pilots' time constraints made this out of scope.	Not applicable	Not applicable	Not applicable
How to evaluate					
33.1	Design the monitoring and evaluation indicators in the beginning of the project. Developing an early M&E framework helps guide the data collection for evaluation purposes.	Consideration of evaluation needs throughout campaign design right from the start is critical for ensuring the necessary data (especially process indicators) can be collected at the right time and within budget.	A tentative design and costing for the evaluation were developed at proposal stage for each pilot, and then refined as the pilot designs evolved over time.	**Early monitoring and evaluation design and a mix of evaluation approaches was critical for maintaining focus and identifying issues and impacts.** See outcomes for Guidance Recommendations 32.1-32.5 The combination of channel engagement metrics, surveys and focus groups was particularly valuable, as no one method could have provided the rich diversity of insights achieved through the mixed methods approach. This was particularly important for pilots on a previously untested topic, but would be valuable for broader campaigns as well.	**Expand on the recommendations in this section to highlight the value of:** **(a) a mix of qualitative and quantitative methods (not just a mix of one or the other).** **(b) baseline data collection that is conducted early enough and broadly enough to establish**
33.2	Baseline survey is important for impact evaluation. Conduct baseline assessment before the project starts to capture the changes as the result of the project.	Evaluation designs were developed that considered practical limitations and need for comparative controls.	Each pilot adopted tailored comparative controls based on their delivery designs. Melbourne's pilot included control and treatment groups sampled after message delivery. Perth's experiment included both baseline measures for the treatment group and a control group.		

No.	Guidance recommendations (blue = chosen for testing)	Reason for choice	Application	Pilot testing outcomes	Suggested guidance changes
33.3	Mix indicators. Evaluations benefit from including a diverse mix of indicators of success, including processes, outcomes and impacts.	A mix of measures were incorporated to provide multiple lines of evidence of success.	A mix of process, immediate and intermediate measures allowed for triangulation of data relating to process and outcome success.		**knowledge gaps, interests, and channels to guide design** **(c) qualitative, formative message testing such as through focus groups.**
33.4	Combine diverse methods in evaluation. Given the diversity of potential outcomes that can be achieved by community engagement, it is important to use multiple methods to evaluate them.	A mix of methods were incorporated to provide diverse forms of evidence of success.	A mix of methods were incorporated to provide diverse insights regarding success. Process methods included web and social media analytics. Field and experimental surveys provided quantitative information at immediate and intermediate time points. Focus groups provided qualitative insights into process and outcome successes.		

APPENDIX 3: SURVEY QUESTIONS

MELBOURNE SURVEY

How interested are you in learning about the role water plays in keeping Melbourne (Naarm) healthy and a great place to live? [5-point Likert from Extremely interested to Not interested at all]

Through which of the following would you prefer to receive information on the role that water plays in keeping Melbourne (Naarm) healthy and a great place to live? (Select all that apply) [TV; Radio; Newspapers (print or online); While browsing internet; Social media sites like Facebook/Meta, Instagram, TikTok or Twitter/X; Local council newsletters, emails or mail; South East Water bill, emails or mail; Conversations with family and friends; Other (please specify)]

How much have you thought about the role water plays in keeping Melbourne (Naarm) healthy and a great place to live? [5-point Likert from A great deal to Not at all]

How important do you think it is for people in Melbourne (Naarm) to understand the role water plays in keeping Melbourne healthy and a great place to live? [5-point Likert from Extremely important to Not at all important]

Have you seen this image before? [Yes; No; Don't remember]

Did you click on the image to read more? [Yes; No; Don't remember]

How much do you know about the role that water plays in keeping Melbourne (Naarm) healthy and a great place to live? [5-point Likert from A great deal to Nothing at all]

General recycled water is best used for which of the following? (Select all that apply) [flushing toilets; washing clothes; watering gardens; watering sports grounds; drinking; not sure; none of the above]

Which of the following help keep Melbourne (Naarm) cool during hot summers? (Select all that apply) [home gardens; footpath verge trees; parks and public gardens; concrete; asphalt/bitumen]

Which of the following are ways that gardens, trees and other vegetation help keep our urban centres cool? (Select all that apply) [direct shading; releasing water through leaves; proximity to trees, parks and public open space; dropping their leaves; green canopies encourage wind production; they don't keep it cool; not sure]

Without trees and other vegetation, the day's heat is stored in the concrete and roads making urban centres much hotter, both during the day and the night. [5-point Likert from Definitely True to Definitely False, with Not sure]

Irrigating sports grounds can keep an area around 20 degrees cooler than dry grass. [5-point Likert from Definitely True to Definitely False, with Not sure]

Water helps maintain the trees, sports grounds, parks, gardens, wetlands, waterways and bushland where we exercise, play, socialise, learn, relax and connect with nature. [5-point Likert from Definitely True to Definitely False, with Not sure]

Vegetation and water are important for cooling our urban centres and suburbs during hot summers, which is important for our health and wellbeing. [5-point Likert from Definitely True to Definitely False, with Not sure]

It costs water utilities a lot to manage fats and oils disposed of via the wastewater (sewerage) system. [True; False; Not sure]

Delivering water to households and businesses is an energy intensive process for utilities. [True; False; Not sure]

To what extent do you agree or disagree with the following statement about water supply and management? Current water sources might be unavailable in future due to climate change. [5-point Likert from Strongly agree to Strongly disagree]

Do you know what desalination is? [Yes; No; Not sure]

How likely do you think it is that severe droughts will occur in Melbourne (Naarm) in the next 10 years? [10-point slider from Extremely likely to Not at all]

As you might already know, purified recycled water is the wastewater that has been disposed of via the sewerage system that has been highly treated to meet strict drinking water standards. Before today, how much did you know about purified recycled water? [10-point slider from A great deal to Nothing at all]

How old are you? [Under 18 years; 18-29 years; 30-39 years; 40-49 years; 50-59 years; 60-69 years; 70 years or older]

What gender are you? [Woman; Man; Non-binary/gender diverse; My gender isn't listed. I identify as…; Prefer not to say]

What is your highest level of education? If you are currently studying, select your previous highest qualification. [Did not go to school; Primary or secondary school; Trade/diploma/certificate; Bachelor degree or above]

PERTH SURVEY

How old are you? [Under 18 years; 18-29 years; 30-39 years; 40-49 years; 50-59 years; 60-69 years; 70 years or older]

What gender are you? [Woman; Man; Non-binary/gender diverse; My gender isn't listed. I identify as…; Prefer not to say]

What is your highest level of education? If you are currently studying, select your previous highest qualification. [Did not go to school; Primary or secondary school; Trade/diploma/certificate; Bachelor degree or above]

Do you own or rent your home? [Own; Rent; Other (pleases specify)]

What kind of home do you live in? [House; Apartment/unit; Other (pleases specify)]

How many people usually live in your home?

How interested are you in learning about the role water plays in keeping Perth (Boorloo) healthy and a great place to live? [5-point Likert from Extremely interested to Not interested at all]

Through which of the following would you prefer to receive information on the role that water plays in keeping Perth healthy and a great place to live? (Select all that apply) [TV; Radio; Newspapers (print or online); While browsing internet; Social media sites like Facebook/Meta, Instagram, TikTok or Twitter/X; Local council newsletters, emails or mail; Water Corporation bill, emails or mail; Conversations with family and friends; Other (please specify)]

How much have you thought about the role water plays in keeping Perth healthy and a great place to live? [5-point Likert from A great deal to Not at all]

How important do you think it is for people in Perth to understand the role water plays in keeping Perth healthy and a great place to live? [5-point Likert from Extremely important to Not at all important]

How much do you know about the role that water plays in keeping Perth healthy and a great place to live? [5-point Likert from A great deal to Nothing at all]

Which of the following help keep Perth cool during hot summers? (Select all that apply) [home gardens; footpath verge trees; concrete; asphalt/bitumen; not sure; none of the above]

Some driveway surfaces can let rain soak into the ground, which helps increase soil moisture for nearby plants that help keep the area cool and reduce the amount of stormwater that runs into the road. [5-point Likert from Definitely true to Definitely False, with Not sure]

Which of the following are ways that gardens, trees and other vegetation help keep our urban communities cool? (Select all that apply) [shading; releasing water through leaves; evaporation of rainfall off leaves and soil; dropping their leaves; not sure; they don’t keep it cool]

Without trees and other vegetation, the day's heat is stored in the concrete and roads, making urban communities much hotter, both during the day and the night. [5-point Likert from Definitely True to Definitely False, with Not sure]

Sports grounds in Perth are mostly irrigated with groundwater. [5-point Likert from Definitely True to Definitely False, with Not sure]

Groundwater in Perth is being affected by climate change. [5-point Likert from Definitely True to Definitely False, with Not sure]

Irrigating our sports grounds is important for keeping the local area cool during hot summers. [5-point Likert from Definitely True to Definitely False, with Not sure]

Water helps maintain the trees, sports grounds, parks, gardens, wetlands, waterways and bushland where we exercise, play, socialise, learn, relax and connect with nature [5-point Likert from Definitely True to Definitely False, with Not sure]

Vegetation and water are important for cooling our urban centres and suburbs during hot summers, which is important for our health and wellbeing. [5-point Likert from Definitely True to Definitely False, with Not sure]

It costs water utilities a lot to manage fats and oils disposed of via the wastewater (sewerage) system. [True; False; Not sure]

Delivering water to households and businesses is an energy intensive process for utilities. [True; False; Not sure]

To what extent do you agree or disagree with the following statement about water supply and management? Current water sources might be unavailable in future due to climate change. [5-point Likert from Strongly agree to Strongly disagree]

Do you know what desalination is? [Yes; No; Not sure]

How likely do you think it is that severe droughts will occur in Perth in the next 10 years? [10-point slider from Extremely likely to Not at all]

As you might already know, purified recycled water is the wastewater that has been disposed of via the sewerage system that has been highly treated to meet strict drinking water standards. Before today, how much did you know about purified recycled water? [10-point slider from A great deal to Nothing at all]

How interesting did you find the information on the Water for Wellbeing website? [5-point Likert from Very interesting to Not at all interesting]

How interesting did you find the images on the Water for Wellbeing website? [5-point Likert from Very interesting to Not at all interesting]

How much did the images remind you of your local area? [5-point Likert from A great deal to Not at all]

How much of what you read on the website was new to you? [5-point Likert from A great deal to Nothing at all]

How interested are you in learning more about the role water plays in keeping Perth (Boorloo) healthy and a great place to live? [5-point Likert from Extremely interested to Not interested at all]

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