



Brimbank
City Council

Draft Brimbank Integrated Water Management Strategy 2025-2035

February 2025

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Cover front and back image: Waterfield Park North, Cairnlea. Jarrod Gaut, Water_Insites

Acknowledgment of Country

Brimbank City Council respectfully acknowledges and recognises the Wurundjeri Woi Wurrung and Bunurong peoples as the Traditional Custodians of this land and its' waterways and pays respect to their Elders past, present and future. For the Traditional Custodians the lands and waterways in the City of Brimbank have always been a significant trading and meeting place.

Acknowledgment

This draft strategy was developed with the insights of traditional custodians, other key water sector partners, stakeholders and representatives of Brimbank Community panel. Brimbank Council appreciates their interest, knowledge, and feedback for developing the directions and actions of this strategy that aim to continue improving water management in the council area and related catchments.

Executive Summary

Water has an important role in Brimbank City Council. It's vital for our waterways and ecosystems. It is critical for the needs of our residents, Traditional Custodians and businesses. We use water to sustain our parks and gardens, to service our aquatic centres and to support many other Council operations and facilities. We manage water through our drainage system to reduce flooding and we set stormwater management requirements for developments. Council has a role in planning for the future growth and development of the municipality and water is a key consideration in this planning.

Water is also a living entity for Traditional Custodians, with water, land and life all interconnected. Aboriginal stories and perspectives stress the involvement of ancestor spirits and creative beings in the formation of water sources as well as the continued supply and management of these waterways.

Managing water comes with a set of challenges. The population is growing and so is our need for water. This is coupled with climate change reducing rainfall and therefore the amount of water to go around. Climate change is also bringing heavy rain events with increased risks of flooding.

Integrated Water Management (IWM) is a way of managing water that considers all aspects of the water cycle. It recognises that we must work closely with other groups with a stake in water management to get the best outcomes for the community and environment.

Brimbank Council developed this Strategy in 2025 as a way to highlight the importance of water and to guide our work moving forwards. The Strategy development involved feedback and insights from key stakeholders and partners in the water sector. It also included feedback from Brimbank's community panel during a preliminary consultation phase developed in March 2024. Please see Appendix 1 for further information.

The Strategy looks at how we manage water going forward and key areas of focus which include actions to increase water security and urban resilience, strengthen governance, and improve monitoring programs. It also looks at working with Community groups in the management of water resources across Brimbank as well as with Traditional Owner groups to determine the appropriate approach and level of involvement in IWM process.

The Strategy is aligned with the State Government's IWM Forums, the IWM Framework Strategic Outcomes and the Catchment Scale IWM Action Plans for the Maribyrnong and Werribee Catchments.

1 Introduction

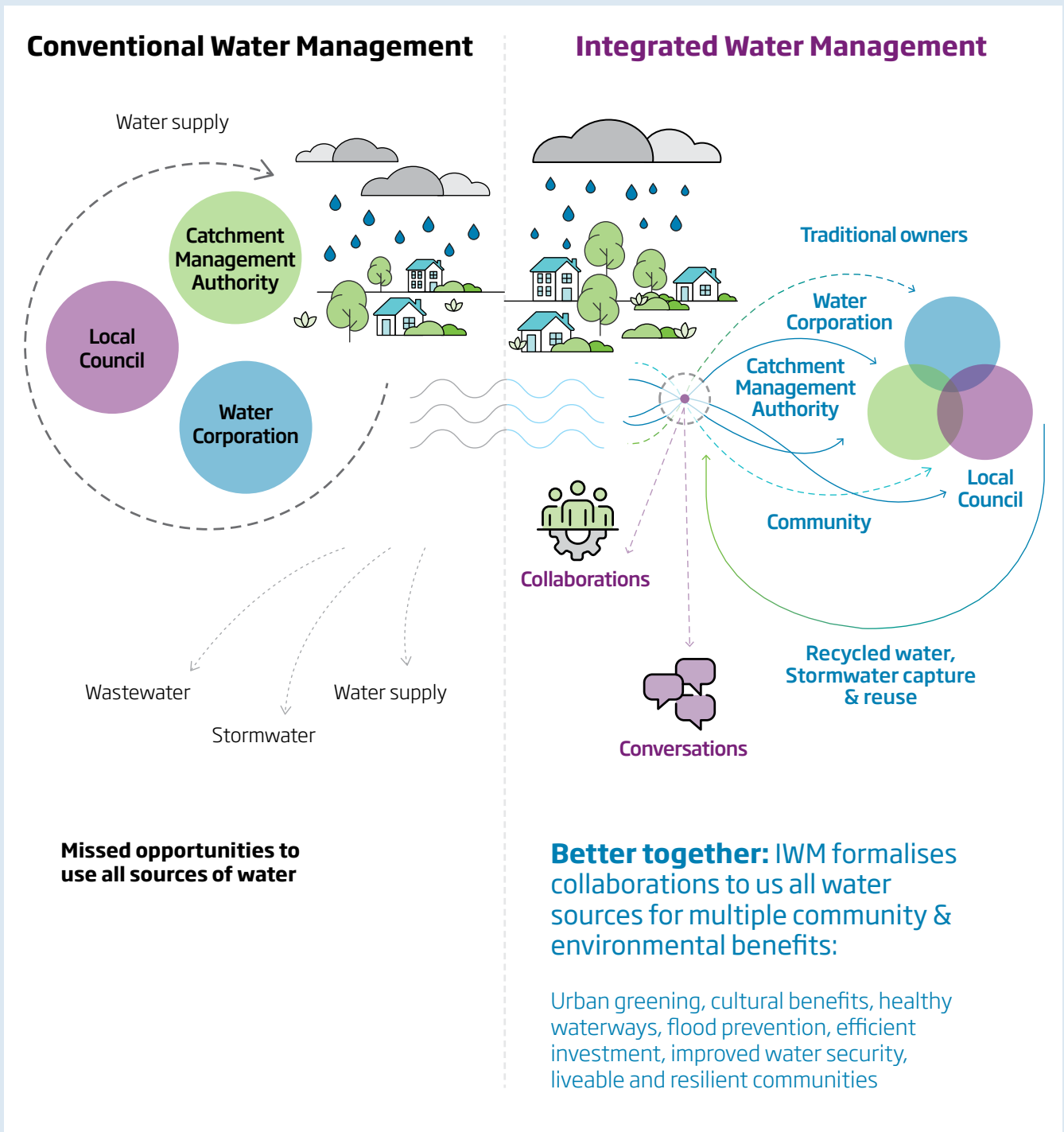
Imagine what our cities and suburbs would be like if they didn't have tree-lined streets, parks and gardens, where most exposed surfaces were asphalt, concrete or paving. Where buildings and structures provide the only protection from the sun or rain. Where any water that falls is rapidly swept away to underground pipes as quickly as possible. Where our creeks and rivers are polluted and devoid of life. This is the reality if water isn't managed for the benefit of our waterways, green spaces and the community.

While we may not think much about water beyond turning on a tap, water is an integral part of all our lives. Water presents challenges when there's too much of it (i.e. floods) and when there's too little (i.e. droughts). Water flows across borders, in open rivers, underground aquifers and built assets such as pipes and drains. Water is the key component of all ecosystems, both aquatic and terrestrial yet can also be a carrier of pollution and rubbish. When we consider that in southern Australia, climate change is already leading to a decrease in average annual rainfall and an increase in rainfall intensities the situation becomes even more challenging. Added to this is population growth and the need for more water to support that larger population.

Managing this complexity involves multiple stakeholders including Water Authorities, Water Agencies, State Government, Local Government, Traditional Owner groups and private developers and landowners. In order to work together effectively, an approach called 'Integrated Water Management' (IWM) was developed. Traditionally, the focus of water management has been on drainage and reducing flooding; seeking to move water from 'point a' to 'point b' as quickly as possible. But we now understand that keeping water in the landscape is necessary to support green space, manage pollution and protect waterways. IWM is a collaborative approach to managing water that reflects these elements. IWM brings together organisations that influence all elements of the water cycle, including waterways and bays, wastewater management, alternative and potable water supply, stormwater management and water treatment. It considers environmental, social, cultural and economic benefits (see Figure 1).

Brimbank City Council has long recognised the importance of water management; the municipality is even named after the 'brim of the banks' of the Maribyrnong River. Council previously put in place a Sustainable Water Management Strategy 2013 - 2023 to reflect the critical nature of water and guide projects to help manage it effectively. This new IWM Strategy builds on that previous work and incorporates the elements of IWM that can help direct how Council can best work together with partner organisations and the community to manage water across Brimbank.

Figure 1. IWM benefits versus Conventional Water Management



Source: DELWP 2022

2 Strategy Vision

Water is an essential part of the landscape of Brimbank. Water underpins healthy waterways, green spaces and our community’s way of life. Managing water effectively is key to ensuring our waterways, environment and community can continue to thrive in the face of climate

change and increasing human pressures. We will work with Traditional Custodians, community, research centres and other partner organisations to improve water outcomes in Brimbank.

3 Outcomes and Objectives



IWM brings together all facets of the water cycle at different scales to maximise social, cultural, environmental and economic outcomes. IWM looks at rainwater, alternative and potable water, stormwater, and wastewater as well as green spaces. IWM in the urban context includes three concepts:

- Water sensitive cities: An aspirational state that seeks to protect and enhance the health of waterways, reduce flood risk, and create public spaces that harvest, clean, and recycle water.
- Water Sensitive Urban Design (WSUD): Designs that focus on treating and reducing stormwater flows, increasing soil moisture, urban greening and providing an alternative water source. Raingardens, sediment ponds, wetlands and swales are examples of WSUD.

- Connection to water: From Traditional Custodians through to the wider community, we all have meaningful and diverse connections to water resources, culture, spirituality and ancestry. Understanding and supporting those connections is a crucial part of IWM.

IWM requires a collaborative approach. As a result, the Department of Energy, Environment and Climate Action (formerly known as DEECA) created an IWM framework in 2017 that includes seven strategic outcomes and a set of cross-cutting enablers with indicators and measures that are being used to track progress in IWM (see Table 1).

Table 1. IWM strategic outcomes and enablers

IWM strategic outcomes and enablers	Main objectives of the strategic outcomes and enablers
 <p>Safe, secure and affordable water supplies in an uncertain future</p>	<p>Understand how to protect and conserve potable water resources and use effectively alternative water supplies.</p>
 <p>Effective and affordable wastewater systems</p>	<p>Identify how wastewater is better utilised as a resource and transition towards a circular economy.</p>



Existing and future flood risks are managed to maximise outcomes for the community

Find ways in which flood risk management initiatives can deliver multiple benefits to the water cycle, and stormwater management and greening initiatives can reduce flood risk.



Healthy and valued waterways and marine environments

Identify how IWM can improve the health of waterways and bays and the amount of water available for the environment in waterways.



Healthy and valued urban and rural landscapes

Understand how IWM can support and enhance vegetation and green spaces to provide greater amenity, improved ecological value and localised cooling that gives relief to communities during hot weather. Also, how landscapes that harness alternative water supplies can also enhance resilience during droughts.



Community values are reflected in place-based planning

Explore how IWM initiatives incorporate Aboriginal values and support amenity, health and well-being which are important values to all communities.



Traditional Owner values, opportunities, and inclusion



Jobs, economic benefits and innovation

Investigate How IWM can enhance business and local economies by supporting food production, tourism and commercial activities.



Enablers: Commitment, Capacity and Collaboration

Underpin the success of the seven key strategic outcomes. Measures are vision, leadership, and long-term commitment; knowledge skills and organisational capacity and cross-sector institutional arrangements and processes.




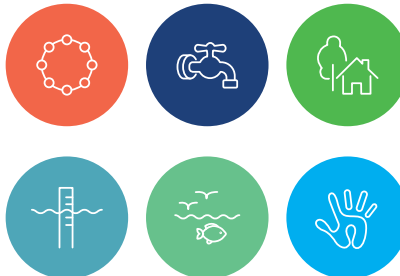
These strategic outcomes and enablers highlight the need to:

- Raise the engagement and water literacy of the community in the urban water cycle, particularly culturally diverse and vulnerable people by including IWM solutions and local water-related risks and issues. Ultimately, this should build to empowering the community to influence water-related planning processes.

- Implement comprehensive Traditional Custodian consultation and engagement in order to integrate Traditional Custodian values, knowledge and practices from the earliest stages of water projects through to delivery and maintenance. Where possible and relevant, Council should partner with Traditional Custodians in IMW programs, planning, policy and project delivery.

This Strategy looks to provide a comprehensive approach (see Table 2) to managing water resources in Brimbank based on the IWM strategic outcomes and enablers described above that is sustainable in the long term and meets the needs of the community.

Table 2. Objectives of the IWM Strategy

Objectives	Key areas of focus	Linked IWM outcomes and enablers
<p>Objective 1. Preparing for more severe and frequent heat waves, drought and flood events.</p>	<p>Continue finding ways to improve water efficiency and increase the use of alternative water sources.</p> <p>Look for opportunities for new WSUD projects considering flood and drought scenarios in a changing climate.</p> <p>Consider IWM opportunities and flood risks through planning processes.</p> <p>Urban greening and cooling.</p>	
<p>Objective 2. Improve IWM systems, processes and asset management.</p>	<p>Improve systems and processes for effective IWM implementation.</p> <p>Improved asset management including regular maintenance and rectification works.</p> <p>Strengthen partnerships with internal and external stakeholders to deliver IWM outcomes.</p>	
<p>Objective 3. Strengthen communication, advocacy, education and participation.</p>	<p>Improving community engagement around water projects to increase water literacy and build support for a greener and cooler municipality.</p> <p>Work closely with the water industry, Traditional Custodians and environmental groups on water projects.</p>	
<p>Objective 4. Increase efforts in monitoring, evaluation, reporting and improvement (MERI)</p>	<p>Improve data collection, evaluation and reporting to ensure Council's water assets are well maintained and future projects are developed to get the best outcomes for the environment and community.</p>	

4 Victorian IWM context

Central to the framework, five IWM forums were established across Werribee, Maribyrnong, Yarra, Dandenong, and Western Port Catchments. The forums bring together the leaders of the organisations involved in water management in each catchment such as the urban and rural water corporations, waterway and catchment managers, local governments, Traditional Custodian groups and the Victorian Planning Authority. Brimbank Council participates in the Maribyrnong and Werribee Forums.

The purpose of the IWM Forums is to identify, prioritise and oversee the implementation of collaborative water opportunities considering key planning processes such as Healthy Waterways Strategy; Urban Water Strategies; Council's plan and strategies; Central and Gippsland Sustainable Water Strategy and Water is life: Traditional Owner Access to Water Roadmap, among others.

Since their inception, the five IWM Forums in the Region have developed strategic directions statements and catchment scale integrated water management (CSIWM) plans. A Monitoring, Evaluation, Reporting and Improvement (MERI) Plan is under development.

Multiple stakeholders have a current or potential IWM roles and responsibilities (See Table 3). They also implement collaboratively different strategies, plans, initiative or projects linked to IWM:

Table 3. Current and/or potential IWM roles

Brimbank Council works with local communities, strategic partners and stakeholders in IWM planning, design, delivery and operations in parks, sport fields, community facilities and streetscapes. The council also regulates land use and development through planning schemes and urban stormwater standards and plans.

Greater Western Water (GWW) provides water services to the Western region of Melbourne and beyond and works with councils to improve green spaces and develop stormwater systems to irrigate public parks, gardens, sports fields and golf courses.

Melbourne Water (MW) advocates for improved IWM outcomes with local council partners and builds water industry capacity through guidelines and the Clearwater program. MW also manages waterways and water infrastructure and supports other groups, including Councils, with funding.

Wurundjeri Woi Wurrung and Bunurong as traditional custodians of the land including the waterways, provide advice and develop IWM projects considering their knowledge, stories, custodial obligations, and cultural expertise

Department of Energy, Environment and Climate Action (DEECA) develops IWM policy and facilitates collaborative approaches such as the Integrated Water Management Forums and Catchment Plans. (Formerly DELWP).

Department of Transport and Planning (DTP) analyses IWM approaches in creating plans and policies that guide the use of land and the development of buildings, infrastructure, and public spaces such as the Sunshine Station Masterplan and Albion Quarter Structure Plan.

Melbourne Urban Stormwater Institutional Arrangements (MUSIA) is a collaboration between DEECA, MW and the Municipal Association of Victoria (MAV) to better delineate roles and responsibilities for public stormwater assets and services within the Melbourne Water region. .

Department of Health (DH) supports the development of Municipal Public Health and Wellbeing Plans (MPHWP) which can highlight and track IWM and WSUD design benefits such as heat mitigation and equitable access to high-quality green spaces for the community.

Environmental Protection Authority (EPA) focuses on enforcement of environmental regulations and community education.

Victorian Planning Authority (VPA) delivers Precinct Structure Plans (PSP) that include guidance on embedding IWM principles.

Greening the West as a regional initiative works on alternative water and urban greening projects to make best use water resources while contributing to increased levels of native vegetation.

Developers construct water infrastructure based on IWM guidelines provided by Council and State Government.

Property owners, business and residents influence the setting of service levels and place-based outcomes through 'willingness to pay' and provide feedback on proposed solutions, projects and plans.

Environmental community groups contribute to the protection and restoration of waterways through maintenance, planting, advocacy and educational activities.

5 Maribyrnong and the Werribee catchments

Brimbank City Council lies in two catchment areas - the Maribyrnong and the Werribee.

The Maribyrnong catchment extends from the southern slopes of the Great Dividing Range at Mount Macedon, south to where the Maribyrnong and Yarra Rivers meet upstream from Port Phillip Bay.

The Wurundjeri Woi Wurrung people have resided in the Maribyrnong Catchment for at least 40,000 years with significant archaeological and Aboriginal cultural sites existing around the waterways.

The catchment encompasses fertile agricultural lands, natural grasslands and woodlands along with densely populated urban areas and essential transport and business hubs, such as Melbourne Airport and the northern banks of the Port of Melbourne. In Brimbank, the Maribyrnong catchment includes the Maribyrnong River, Taylors Creek and Stony Creek (see Figure 2).

The Werribee catchment extends along the southern reaches of the Great Dividing Range at the Wombat State Forest, south across dry, flat to gently undulating plains scattered with volcanic features, to where grasslands join wetlands on the western shoreline of Port Phillip Bay.

The Werribee catchment is in the land of Wurundjeri Woi Wurrung and Bunurong (East) and Wadawurrung people (West). There are almost 3,500 Aboriginal cultural sites along the Werribee River and associated waterways.

Agriculture dominates much of the catchment with 67 per cent of the area devoted to the production of leafy vegetables, fruit and turf, as well as poultry, large scale grazing and crop operations. While only a small portion of the catchment is zoned for urban land use, it contains several densely populated urban areas and some of the fastest developing suburbs in Victoria. In Brimbank, the Werribee catchment includes the Kororoit Creek, Laverton Creek and Cherry Creek (see Figure 2).



Kororoit Creek

Figure 2. Main waterways and water assets in Council area



Table 4 describes the use of different water sources to supply the demands of the communities in the Werribee and Maribyrnong Catchments based on Targets Driving Outcomes summary of the Werribee, and Maribyrnong Catchment Scale Integrated Water Management (CSIWM) plans (2022 a & b).

Table 4. Water sources used in the Maribyrnong and Werribee catchments

Water sources	Maribyrnong Catchment	Werribee Catchment
Potable water is provided by Melbourne water supply system.	51,750 ML/year 68% increase in potable water use in the catchment expected by 2050.	56,491 ML/year 42% increase in potable water use in the catchment expected by 2050.
River water and groundwater are used for the significant demands of the Werribee Irrigation District (WID) and the Bacchus Marsh Irrigation District (BMID). The WID has access to a recycled water supply, but use of this resource varies with the climate, drawing more heavily on recycled water when river flows are low.	River Water: 361 ML/year	River Water: 7,750 ML/year
	Groundwater: 1,344 ML/year	Groundwater: 4,999 ML/year
	Recycled Water: 523 ML/year	Recycled Water: 3,5210 ML/year
Alternative water sources are expected to increase in the catchments. Rainwater runoff from roofs and stormwater runoff from hard surfaces will increase as our catchment becomes more urbanised.	Rainwater: 622 ML/year	Rainwater: 553 ML/year
	Stormwater: 353 ML/year	Stormwater: 265 ML/year
	26% increase in runoff from urbanised areas generated in the catchment expected by 2050.	79% increase in runoff from urbanised areas generated in the catchment expected by 2050.
The majority of the wastewater is transferred out of the Maribyrnong and Werribee Catchments to the Western Treatment Plant. Other wastewater treatment plants are located in Altona, Melton, Parwan, Ballan, Sunbury, Gisborne, Riddells Creek and Romsey.	Treated wastewater produced in 2019: 2 GL. It is expected an increase of 3 GL in 2050.	Treated wastewater produced in 2019: 165 GL. It is expected an increase of 212 GL in 2050.
	46% increase in wastewater is expected by 2050.	71% increase in wastewater is expected by 2050.

Source: DELWP (2022 a,b)

6 Council's role

Brimbank City Council has a number of roles relating to water management. These include:

- Managing public open space, including parks and gardens.
- Irrigation of open spaces including Keilor Public Golf Course and 57 sports grounds.
- Management of large WSUD assets such as sediment basins and wetlands.
- Management of small WSUD assets such as swales, raingardens and street trees.
- Management of riparian ecosystems along waterways such as the Maribyrnong River.
- Design, implement and maintain alternative water supply projects.
- Following Obligations of Managers of Land or Infrastructure (OMLI) requirements regarding stormwater and on-site wastewater management plans.
- Designing, construction and maintenance of stormwater systems, including drains, pits, and kerb and channel.
- Planning to ensure appropriate land-use and development to protect drainage assets, waterways and properties.
- Community education and advocacy.

At Brimbank Council, there are a number of plans and strategies that are linked to IWM including:

- Sustainable Water Strategy 2013-2023 (which this new Strategy replaces)
- Urban Forest Strategy 2016-2046
- Biodiversity Strategy 2012-2022 (to be updated in 2025)
- Climate Emergency Plan 2020-2025 (to be updated in 2025-26)
- Climate Adaptation Framework 2017-2022 (to be incorporated in new Climate Emergency Strategy)
- Creating Better Parks - Open Space and Playground Policy and Plan (2016)
- Creating Streets for People Policy 2022
- Habitat Connectivity Plan 2018-2023 (to be incorporated into a new Biodiversity Strategy in 2025)
- Innovate Reconciliation Action Plan (RAP) 2024 - 2026
- Flood Management Plan 2017
- Open Space Strategy (in development)

There are other plans and strategies which include water related themes including precinct specific plans for example the Brooklyn Industrial Precinct Strategy.

Figure 3 shows the water management events from 1989 to 2025.



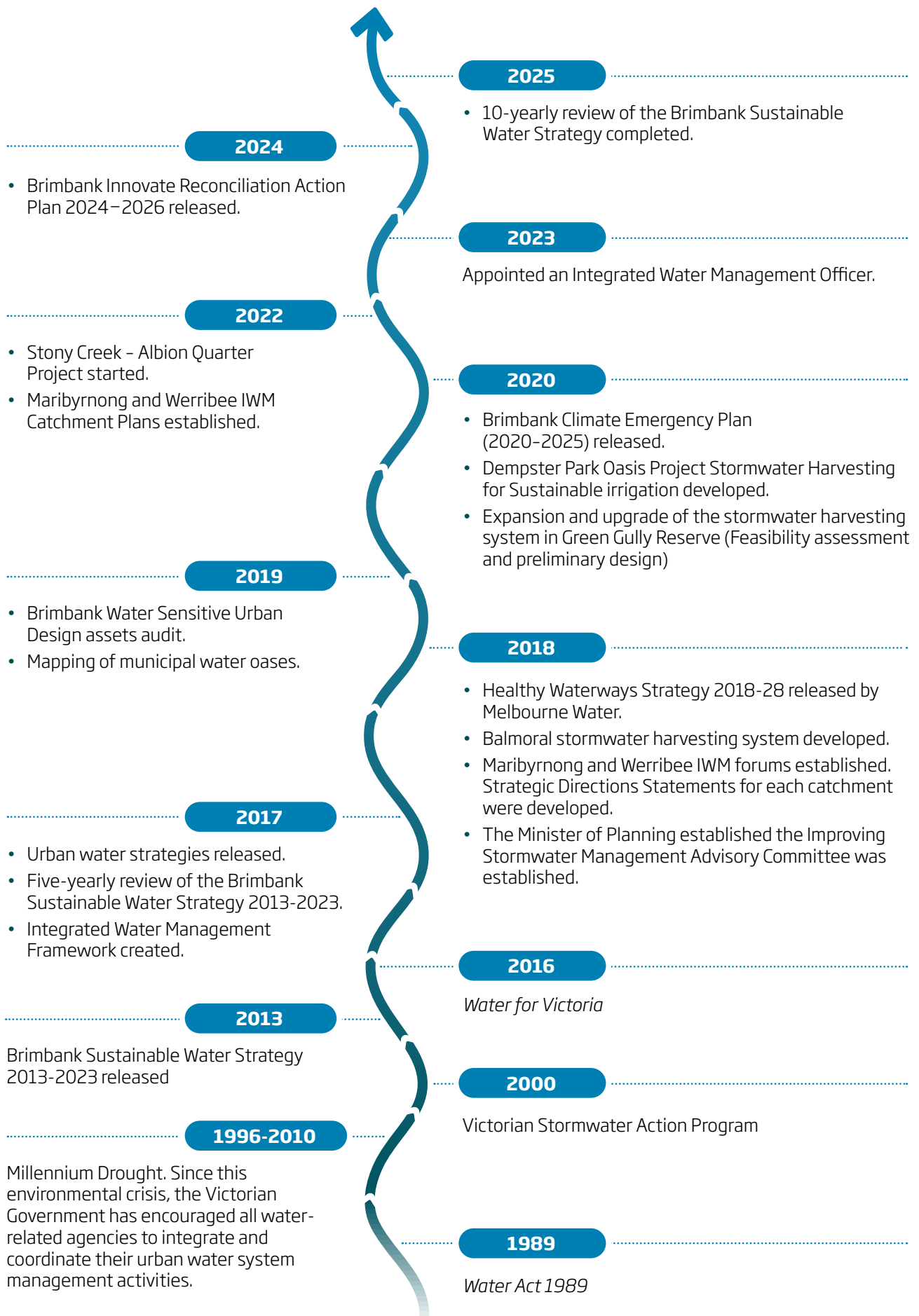
Stormwater Harvesting project at Dempster Park, Sunshine North

The Victorian Minister for the Environment issued an Order for Obligations of managers of land or infrastructure (Urban stormwater management and On-site wastewater management) on 7 May 2024.

The stormwater aspects of the order are described below:

1. Councils must develop and publish on its website a plan that so far as reasonably practicable:
 - a. identifies risks of harm to human health and the environment posed by urban stormwater;
 - b. identifies actions with implementation timeframes to minimise the risks of harm to human health and the environment posed by urban stormwater, including but not limited to actions that:
 - i. minimise the generation and transport of pollutants in urban stormwater; and
 - ii. minimise the generation, velocity and volume of urban stormwater flows.
2. When developing a plan, councils must consult with relevant stakeholders, including the relevant Catchment Management Authorities, relevant water corporations and the community, about the plan and where relevant, costs, timelines and prioritisation of actions proposed for the plan.
3. Councils must, at intervals of no more than 5 years:
 - a. review and update the plan; and
 - b. publish a report on implementation of the plan on its website

Figure 3. Water management events 1989 - 2025



During this period, Council progressed the following:

Reducing reliance on drinking water

- ✔ The Brimbank Sustainable Water Strategy actions reduced reliance on drinking water and increased the use of alternative water for irrigation of active and passive open space via the development of large-scale stormwater harvesting systems. For instance, the project Dempster Park Oasis delivers over 11-million litres per year of harvested stormwater to irrigate the community sporting reserve and surrounding open space.
- ✔ Around half of the sports fields and open spaces are now irrigated with alternative water sources. The use of drought tolerant plant species, sports ground refurbishment and alternative surfaces reduced the need for further irrigation.
- ✔ Council encouraged the community and business to adopt more water-efficient products and practices by showing water consumption data and promoting programs at regional scale like Target 155, Make Every Drop Count, My Smart Garden, Smart Approved WaterMark, and Sustainable Gardening Australia.

Diversifying water supplies and improving efficiency

- ✔ Council participated in collaborative catchment-wide based forums and projects such as Werribee and Maribyrnong Integrated Water Management Forums, Waterways of the West, Greening the West and the restoration of the upper Stony Creek. Various water projects received funding and grants from Melbourne Water, Greater Western Water and the Department of Energy, Environment and Climate Action (DEECA).
- ✔ Stormwater harvesting systems were built in Cairnlea, Green Gully Reserve, Keilor Recreation Reserve, Keilor Golf Course, Dempster and Balmoral Parks. Feasibility studies of these projects used water demand forecasting and climate change data to ensure the systems were sized appropriately.
- ✔ Council supported clubs to upgrade shower heads, install sensors and use alternative surfaces for sports to achieve sustainable water practices.
- ✔ Multiple projects including Warwick Road Local Activity Centre and Suffolk Road Local Activity Centre upgrades incorporated permeable surfaces and maximized the use of captured rainwater by directing stormwater pipes from adjacent properties to irrigate street trees.



Raingarden at front 4 Essex St, Sunshine North. Jamie Comley, Environmental Consulting

Continue developing water sensitive urban design (WSUD)

- ✔ Internal Integrated Water Management (IWM) working group meetings were established to discuss key water projects, service efficiency, collaboration and funding opportunities. As part of these meetings, different water oases priority sites were identified in response to the hotter and drier conditions caused by climate change.
- ✔ 270 WSUD assets including wetlands, raingardens, tree pits and swales were delivered across the municipality. Some of these assets were part of road rehabilitation programs and town centres upgrades. Challenges and lessons learned from WSUD projects have been shared with internal and external stakeholders along with the water industry and academia.
- ✔ Planning processes were adjusted to ensure all development plans meet State IWM policy and Council Environmental Sustainable Development (ESD) policy requirements.
- ✔ The community was engaged in key water projects via Your Say, social media, signage, and letters. Council also engaged the community in events along waterways, like World Environment Day along Kororoit Creek (in partnership with Friends of Kororoit Creek). In these events large-scale riparian planting occurred along with delivery of waterway educational activities.

- ✔ Capital works planning and design incorporated WSUD as a standard requirement to achieve infiltration and water quality targets in open space, streetscape or hard surface areas.
- ✔ Roads and car park projects also included WSUD. Some examples are the road rehabilitation at George Street, which included passive irrigation for street trees, and the swale in Simmie Street, which incorporated stormwater treatment for the car park area and passive irrigation to future open space. In Dawson St and Keilor Village, raingardens were established to capture car park runoff and passive irrigation of tree pits and stormwater from Old Calder Highway.

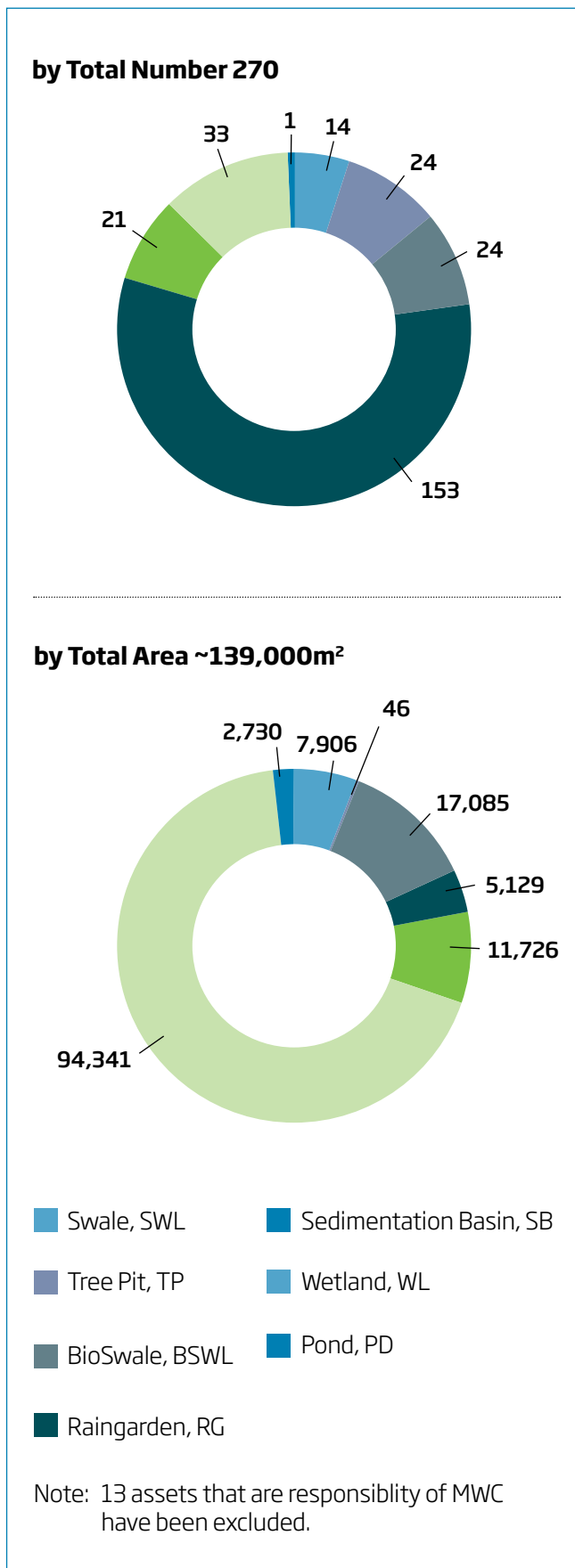
Achieving best practices

- ✔ An IWM Transition Assessment (See Figure 5) reviewed current practices and opportunities to strengthen WSUD systems and practices. This assessment included indicators from the Water Sensitive Index benchmarking.
- ✔ Multiple open space projects, facility redevelopment and roads applications evaluated the possibilities of implementing WSUD designs and their impact in climate adaptation measures and liveability.



Kevin Flint Memorial Reserve. Ella Ryan, Brimbank Council

Figure 4. Water asset audit outcomes



- ✓ An audit assessed the classification and condition of WSUD assets (see Figure 4). This audit included water quality testing and provided a maintenance framework with specific activities and costs. This audit recommended rectification works, which in most cases includes sediment removal and/or infill planting to help stabilise areas of erosion.
- ✓ Multiple gross pollutant traps were installed and maintained annually as part of WSUD approach.
- ✓ Ecological and hydrological studies were conducted to identify stresses and alternatives to conserve the health of the River Red Gum population at Taylors Creek.
- ✓ Council officers reviewed the Flood Management Strategy for Port Phillip and Westernport 2021-2031, and new flood data and reports will be released soon.

Source: Environmental Consulting and Water Insites (2025). 270 water assets were owned and managed by Council at the time of this assessment.

7 Main water challenges

More demand, less water

Greater Melbourne has a population of over five million people which is expected to double by 2070. The population of Brimbank is projected to grow to 230,795 by 2046. This will naturally increase demand for water. Modelling studies developed by Melbourne Water in 2017 calculated a 42% increase in potable water use in the Maribyrnong catchment and a 68% increase in potable water use in the Werribee catchment by 2050. Industry and agriculture are also large users of water.

Shortfalls in potable water supply could occur as early as 2028 if actions are not taken now to either reduce demand or increase supplies.

Currently much of our water in Melbourne comes from entitlements held in the Greater Yarra-Thomson system and the Victorian Desalination Project. More dams are not a viable option, and a second desalination plant will not be enough to meet the city's needs. Water efficiency and alternative water sources will be required moving forward.

Climate Change: more droughts, urban heat and heavier rain events

The Werribee Catchment is considered the driest south of the Great Dividing Range and the Maribyrnong Catchment is substantially drier than eastern catchments in the Melbourne Region (DELPW, 2022). Both catchments contain areas that are particularly vulnerable to urban heat. Climate change will markedly increase the challenges in the region. Multiple studies forecast a hotter and drier future, with decreased rainfall, reservoir inflows, and river flows. The Guidelines for Assessing the Impact of Climate Change on Water Supplies (DELPW, 2020b) calculated that by 2040 temperatures in the Greater Melbourne Metropolitan Region are anticipated to climb an average of 1.3°C under a medium climate change scenario and 1.5°C under a high climate change scenario. Fires in forests and grasslands pose a significant hazard to water supply infrastructure, communities and ecosystems of the catchments under this scenario. While average annual rainfall may decrease, both catchments will see more frequent and strong rainfall events, increasing the danger of floods like we saw in the flooding of the Maribyrnong River in 2022. Flood mapping gives insights on prevention, management and recovery costs. For example, Melbourne Water (2021) calculated \$735.5 million is the estimated annual average damage caused by floods in the Werribee region.

The urban heat effect coupled with less water will also have a significant impact on our population's health, particularly on the more vulnerable parts of our community. Council's Municipal Public Health and Wellbeing Planning, and other relevant strategies, will continue to consider and address this challenge moving forward.



Organ Pipes National Park

Institutional and organisational constraints

In Victoria, the framework and policies around IWM have been in place since 2017. Over that time there's been considerable effort by partner organisations to increase the focus on IWM collaboration.

However, governance is still a challenge, lacking a clear structure to allow a truly integrated and holistic approach to IWM. Organisations operate according to their own internal processes and each have different viewpoints on what IWM entails and how to implement it. As a result, a fully integrated approach to water management is still difficult to achieve. Resourcing can also be a major hurdle with some organisations lacking capability and capacity, suffering from 'silos' and in need of increased funding (Productivity Commission, 2020).

To help determine how councils are going, Melbourne Water and E2Designlab developed a tool to assess how individual councils are transitioning toward IWM and water sensitive urban design (WSUD) as mainstream practice. The tool was based on the IWM transition framework developed by the CRC for Water Sensitive Cities but adjusted and tailored specifically for council use (see Figure 5).

This is an independent assessment of current practice and opportunities for strengthening IWM and WSUD systems. The IWM transition framework represents six phases of transition (from issue emergence to embedding new practice) across five enabling factors (champions, knowledge, projects and applications and tools and instruments). As you move through the phases of transition you see a greater maturity in IWM in the organisation.

A three-colour rating scale for each indicator quantify the degree to which IWM/WSUD systems and practices are embedded within each council:

- Evident and embedded in practice (green)
- Evident but not fully embedded (yellow)
- Not evident in practice (grey).

Overall, Brimbank Council is sitting between '4. Knowledge Dissemination' and '5. Policy & Practice Diffusion' which means there's been some good work done at making IWM a part of Council business-as-usual but there's still a way to go until it's fully embedded.

Figure 5. Brimbank City Council IWM Transition Overview

		Enabling Factors				
		Champions	Platform for connecting	Knowledge	Project and applications	Tools and Instruments
Transition Phase	1. Issue Emergence	Issue activists		Issue highlighted	Issue examined	
	2. Issue Definition	Individual champions	Sharing concerns & Ideas	Causes & Impacts examined	Solutions explored	Basic information
	3. Shared Understanding & Issue Agreement	Connected champions	Developing a collective voice	Solutions developed	Solutions experimented with	Preliminary practical guidance
	4. Knowledge Dissemination	Influential champions	Building broad support	Solutions advanced	Solutions demonstrated at scale	Early policy, regulation & targets
	5. Policy & Practice Diffusion	Organisational champions	Expanding the community of practice	Capacity building	Widespread implementation and learning	Effective policy, regulation & targets
	6. Embedding New Practice	Multi-stakeholders networks	Guiding consistent application	Monitoring & evaluation	Standardisation & refinement	Comprehensive policy & regulation

Source: Melbourne Water (2022)

- Evident and embedded in practice
- Evident but not fully embedded
- Not evident in practice

Management of existing assets

Over the past decade, there has been a significant surge in the construction of stormwater treatment and harvesting systems by Council and developers. These assets support the natural and built environment and are critical elements of our parks and green spaces. While this is a positive step forwards in water management, the required maintenance and rectification works have not always kept pace.

Moving forward, increased monitoring of water assets, scheduled maintenance and targeted rectification is required for Council's WSUD assets. This way we can ensure that we are looking after Council's past investments and ensuring those assets function as intended. Ongoing funds for rectification and renewal of Council's water assets has been planned for in the 10 Year Capital Works Program.

Funding

One of the biggest barriers to deliver IWM outcomes is funding. All water infrastructure projects tend to require considerable capital and operational expenditure. This is true for more conventional water management solutions such as drains and pipes and well as IWM. There can be misconceptions that IWM incurs more capital and operational cost relative to conventional approaches which has made implementing IWM in the past somewhat sporadic and fragmented. This can change through partnerships to deliver IWM infrastructure, IWM planning at the sub-catchment or precinct level and appropriate monitoring which can demonstrate asset performance and return on investment.

Pollution impacts on waterways

Maintaining good water quality is essential to human health, the environment, agricultural industries and the cultural and recreational values of waterways and wetlands throughout Brimbank.

Consideration of the environmental conditions and human activities that influence water quality is an important part of effective water management. This is particularly true for urban environments where environmental impacts are concentrated in small areas, including waterways. The quality of urban stormwater can be significantly impacted by point and diffuse sources of contamination from legacy land-use, industry and transport, and residential homes.

Urban water catchments have large areas of impervious surfaces such as roads, rooftops and pavement which increase flow velocity, and reduce natural ponding and infiltration. When water comes in contact with these surfaces, it can become contaminated with oil, metals, nutrients, sediment, litter and other pollutants. Stormwater drains do not usually have any treatment systems, so pollutants are carried directly into our waterways which produces water with low dissolved oxygen levels, and negatively impacts the aquatic environment. In addition, poor land management and irrigation practices can increase salinity levels in soils and waterways. Emerging contaminants such as Per- and polyfluoroalkyl substances (PFAS) are also a risk to water quality due to its ubiquitous presence in urban environments and persistent nature.

More broadly, water management will need to consider evolving regulation and be resilient to changing requirements.

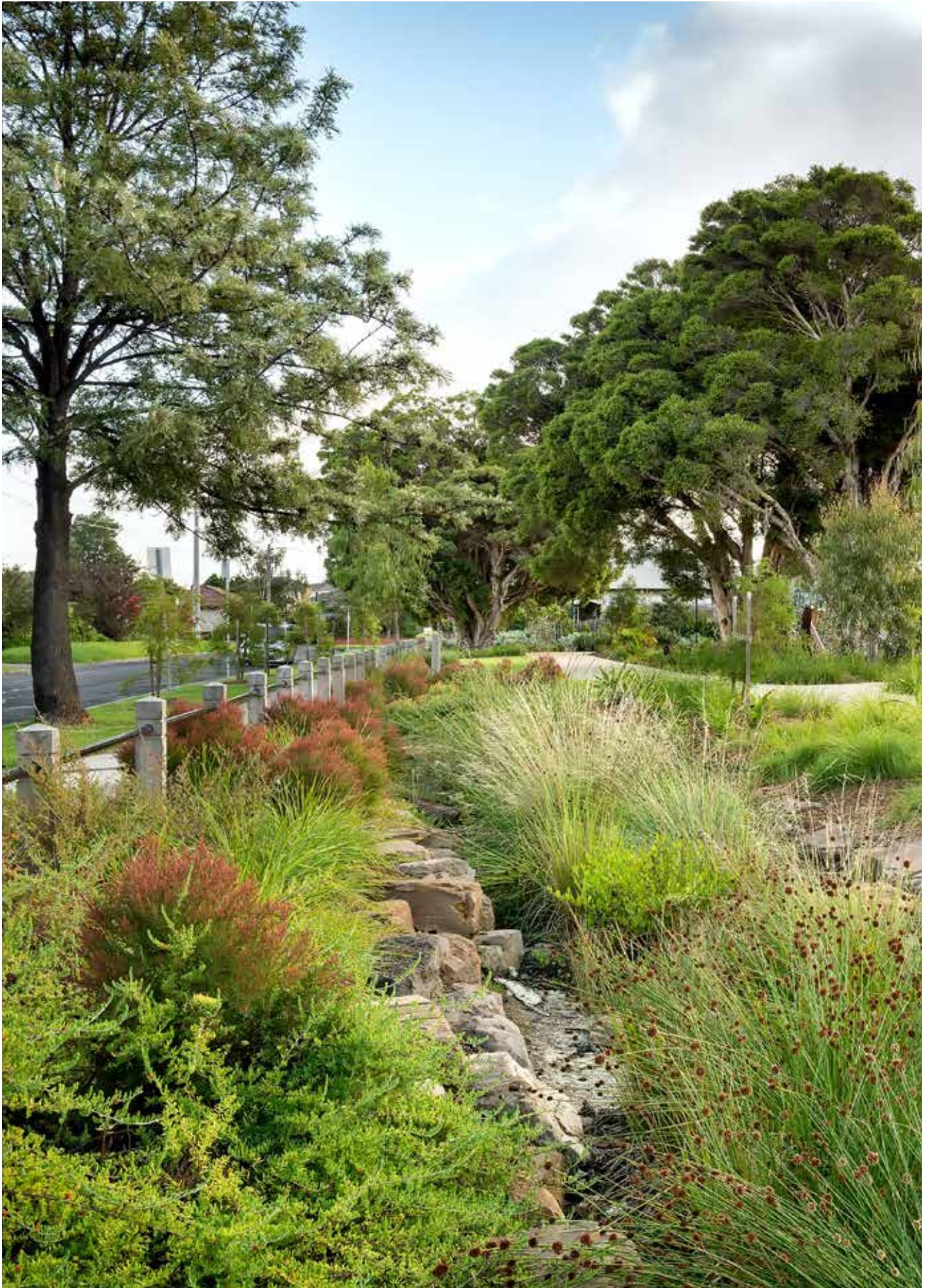
Community, Traditional Custodian groups, and business expectations

The community have a greater appreciation and expectations concerning water. People are increasingly interested in having better amenity, improving physical and mental health, and managing heatwaves through local cooler and greener environments. 74% of Australians have a clear or general sense of how the water cycle works (Fielding et.al, 2015).

Awareness and support for Traditional Custodians' current work and future aspirations in water resource management has grown. People are recognising that hydrology, sediments, and pollutants have had a strong impact on Traditional Custodians' connections and cultural water values. Council is committed to working with Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation and Bunurong Land Council Aboriginal Corporation to identify opportunities for implementing the Integrated Water Management Strategy. Council will need to continue to invest resources and capacity to establish opportunities for learning and alignment with the work of Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation and Bunurong Land Council Aboriginal Corporation in the management of waterways.

Businesses and industry in the region also rely on safe, secure and affordable water supplies. The Maribyrnong and Werribee catchments support some of Australia's most productive food growing regions and provide Victorians with a range of fruit and vegetables.

Managing the expectations of all these stakeholders is a challenge. While IWM can be a great tool to achieve a range of positive outcomes, solutions that are perfect for everyone are often impossible to achieve.



Sunvale Community Park

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Appendix 1. Preliminary consultation phase outcomes

Brimbank City Council held a workshop 5 March, 5.30pm to 7:30pm with 28 members of Brimbank Community Voice (See Figure 6). As an ice-breaker, participants were asked if they were proud of Brimbank’s natural resources. The top response for why participants were proud was the parks and parklands (14) such as Brimbank Park, Horseshoe Bend while the top response for why participants weren’t proud was maintenance of natural resources (8).

Participants were asked to consider their vision for water which could include the various roles of Council, community and other agencies. Planning and design was the most recurring with specific mentions of rain gardens and more permeable surfaces. The second most recurring theme was collective and individual action, especially relating to education and care of waterways in Brimbank.

A water management strengths, weaknesses, threats and opportunities analysis (SWOT) was developed. Council’s proactive stance on improving water management in line with their existing policies was highlighted by participants as a strength. Communication was identified as a weakness, with the feedback that information regarding water management needs to be more accessible to the diverse demographics of Brimbank. Opportunities for more Water WSUD and Environmentally Sustainable Development (ESD) was a recurring theme mentioned by participants, specifically in relation to planning permits. Human impact on waterways from waste was the most mentioned threat to water management in Brimbank.

Figure 6. Demographics of participants

Who was on the community workshop?

Residential postcodes of participants



Gender of participants

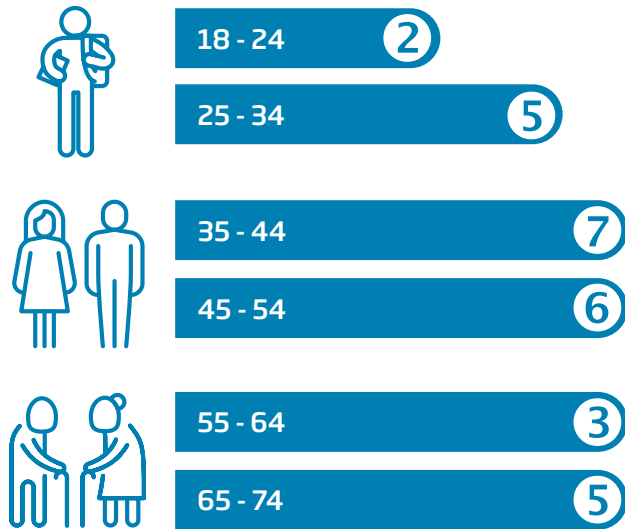


Female **19**



Male **9**

Age group of participants



Other identifiers



ATSI:
Aboriginal
and Torres
Strait
Islander

1



LGBTQIA+:
Lesbian, gay,
bisexual,
transgender,
queer, questioning,
intersex, asexual

5



NESB:
Non-English
Speaking
Background

14



A person with a
disability

3



Carer of a person
with a disability

3

Level of education of participants



High school

1

Certificate

1

Diploma

7

Bachelor & above

18

Prefer not to say

1

Living situation of participants



Owner / occupier

20

Tenant

4

Other

4



26

Resident



2

Both resident
and business
owner

Brimbank City Council

Telephone 9249 4000

Email info@brimbank.vic.gov.au

Post PO Box 70, Sunshine, VIC 3020

Hearing or speech impaired?

- TTY dial 133 677
- Speak & Listen 1300 555 727
- www.relayservice.gov.au, then enter 03 9249 4000



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