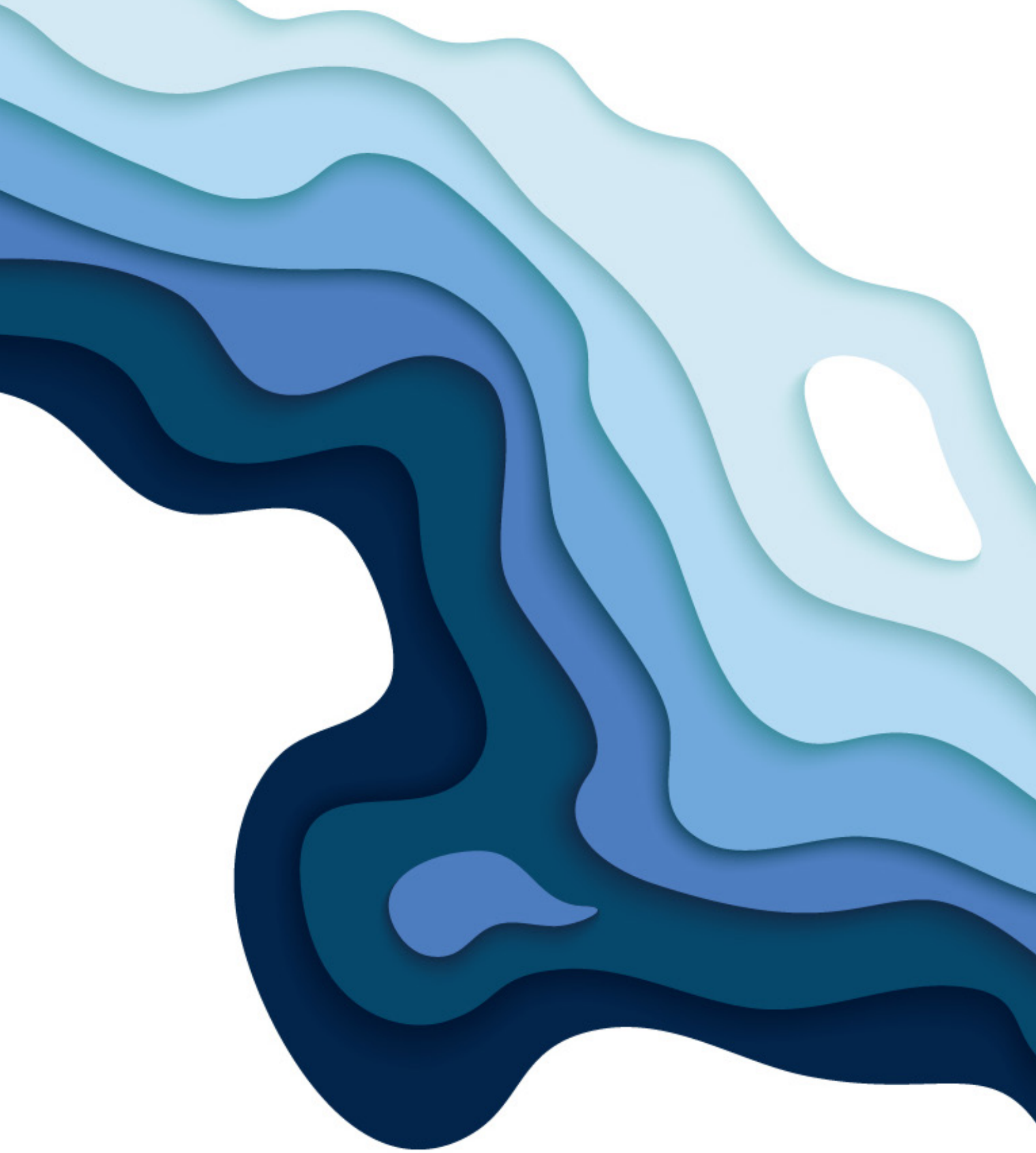

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Maribyrnong
CITY COUNCIL

INTEGRATED WATER MANAGEMENT PLAN 2023-33

CONTENTS

Maribyrnong City Council would like to recognise Alluvium Consulting Australia for their contribution towards this plan.

DEFINITIONS

Alternative water sources: In this document, predominantly refers to rainwater and urban stormwater.

Catchment: An area where water falling as rain is collected by the landscape, eventually flowing to a body of water, such as a creek, river, dam, lake or ocean; or into a groundwater system.

Community: Includes individuals, public and private landholders, community groups and business owners.

Evapotranspiration: The process by which water is transferred from the land to the atmosphere by evaporation from the soil and other surfaces, and by transpiration from plants.

Gigalitre (GL): One billion (1,000,000,000) litres.

Groundwater: All subsurface water, generally occupying the pores and crevices of rock and soil.

Gross Pollutant Trap (GPT): a stormwater treatment device that is commonly used to remove bulky pollutants such as litter, plastic bottles and leaves.

Impervious area: A surface or area within a catchment that significantly restricts the infiltration of water. Impervious surfaces can include concrete, road surfaces and roofs.

Infiltration: the downward entry of water into the soil.

Megalitre (ML): One million (1,000,000) litres.

Potable: Water of suitable quality for drinking.

Rainwater: Water that has fallen as rain or been collected from rainfall.

Recycled water: Water derived from sewerage systems or industry processes that is treated to a standard appropriate for its intended use.

Riparian: things that are related to or situated alongside a waterway (such as riparian wetlands, habitats, trees etc.).

Runoff: The portion of rainfall which actually ends up as streamflow, also known as rainfall excess.

Stormwater: Runoff from urban areas, which increases due to the introduction of impervious surfaces such as roofs and roads within urban development.

Urbanisation: The process by which towns and cities are formed and become larger as more people begin living and working in central areas. It affects the water cycle by increasing the amount of impervious surfaces.

Urban water cycle: The cycle of water through urban environments. Distinguished from the natural urban water cycle by the transfer of water through built infrastructure and the high runoff rates generated by impervious surfaces.

Acknowledgement of Country

Council is proud to represent a municipality filled with important and significant Aboriginal history. It acknowledges the Traditional Custodians of this land, the Kulin Nation, and acknowledges the rich culture and considerable contributions Aboriginal and Torres Strait Islander Peoples have made and continue to make to this City.

INTRODUCTION

The Maribyrnong Integrated Water Management Plan 2023-2033 (IWM Plan) considers key challenges surrounding issues such as population increase, rise in water demand, climate change adaptation and waterway health as they relate to the water cycle, and outlines Council's local commitment to water planning and management over the next ten years.

What is Integrated Water Management?

Integrated Water Management (IWM) is a collaborative approach to water planning that brings together all elements of the water cycle including wastewater management, water supply, stormwater management and water treatment, considering environmental, economic and social benefits.

Council plays a key role in delivering IWM through:

- Management of its own water use and provision of community facilities and services that require water, such as aquatic centres and irrigation of sports ovals
- Management of local stormwater treatment assets including wetlands, gross pollutant traps, raingardens, swales and tree pits
- Management of local civil and drainage assets, such as pits, pipes, roads and small retarding basins
- Implementation of the Planning Scheme and related IWM requirements
- Management and restoration of nature, including public open space, street trees, waterway corridors and wetlands
- Working in partnership with other key stakeholders, such as government agencies, community organisations, businesses and residents, and delivery water education programs locally.

Delivery of these water related services are critical and provide significant benefits to the City of Maribyrnong and its community, such as improved physical and mental health, contribution to cooling, local habitat improvements and provision of attractive and enjoyable spaces.

CONTEXT AND DRIVERS

Projected population increase

In 2023, Metropolitan Melbourne's population exceeded five million and officially overtook Metropolitan Sydney as Australia's most populated city. As one of the fastest growing municipalities within the Metropolitan area, the City of Maribyrnong's current population of 91,000 is projected to grow by about 30 per cent to approximately 118,000 by 2033 (refer to Figure 1). This growing population drives urbanisation and an ever-increasing demand for water resources.

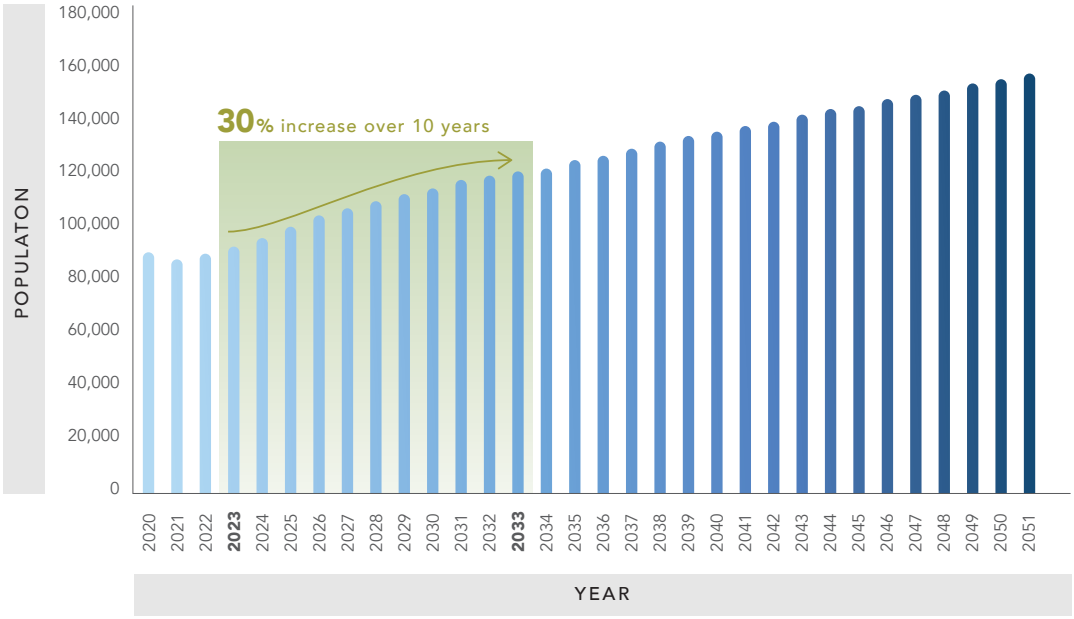


Figure 1. *City of Maribyrnong population growth (data from forecast.id, accessed 2023)*

Increasing water demand

With Greater Melbourne's population predicted to double by 2070, Melbourne Water expects that it will need to double the volume of water supplied to its customers. This equates to an additional 12 GL (or 4,800 Olympic sized swimming pools) of water per year. Taking into account climate change and assuming a 'high water demand' scenario, Melbourne may require an additional 85 GL per year by 2030 and a total of 600 GL each year by 2070[1].

A critical part of meeting this shortfall is having access to a diverse range of water sources. The *Central and Gippsland Regional Sustainable Water Strategy*[2] identified the need to use 'manufactured water' such as desalinated water, recycled water and treated stormwater. The plan calls for these sources to make up 14 per cent of Melbourne's water supply by 2030, climbing to 65 per cent by 2050 and 80 per cent in 2070. Greater Western Water (GWW), the City of Maribyrnong's water retailer, has also expressed a commitment to diversifying water sources by increasing the use of "alternative water… to increase green open spaces and improve public amenity"[2]. The impact of the Millennium Drought (1997-2009) highlighted the vulnerability of traditional water sources and the need to diversify supply options to build resilience and meet community expectations.

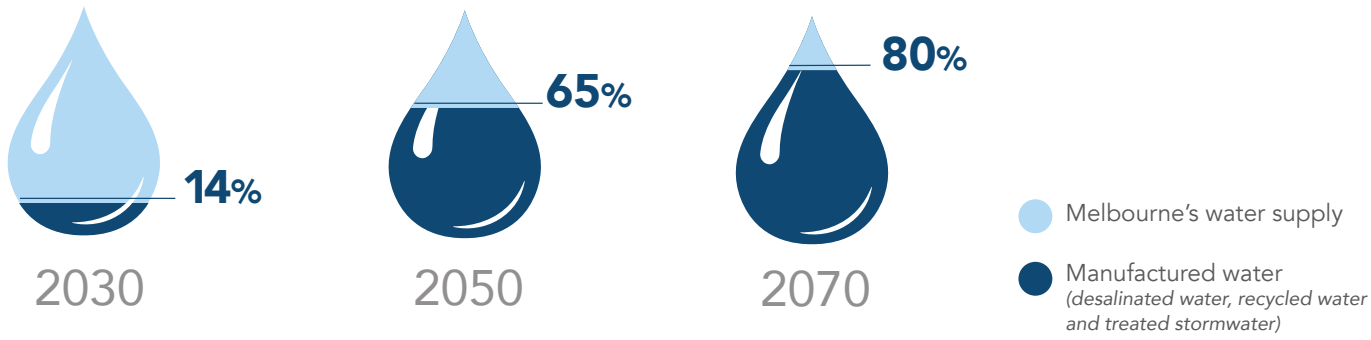


Figure 2. *Target percentage of Greater Melbourne's future water supply that will be manufactured water (DELWP, 2022)*

1. Greater Western Water, Melbourne Water, South East Water, & Yarra Valley Water. (2022). *Greater Melbourne Urban Water & System Strategy – water for life.* Greater Melbourne Urban Water & System Strategy – Water for life. https://waterforlifestrategy.com.au

2. DELWP (2022). *Central and Gippsland Region Sustainable Water Strategy*. Water and catchments. https://www.water.vic.gov.au/planning/long-term-assessments-and-strategies/central-gipps-sws

Climate change and urban heat

Maribyrnong City Council acknowledged a state of 'climate emergency' at the Council Meeting on 19 February 2019 requiring "urgent action by all levels of government." One of the four main approaches to restore a safe climate outlined in Council's *Climate Emergency Strategy* (2020) is "embedding the climate emergency response in Council's planning, operations, infrastructure, strategies and organisational culture". Integrated Water Management has a role assisting in climate change mitigation, resilience and reduction of the urban heat island effect, and this plan will further embed it in to council's processes and operation.

Urbanisation has replaced the cooling effect formerly provided by trees, shrubs, grasses and bodies of water, with hard, predominantly dark, surfaces such as concrete and tiled roofs that absorb and re-radiate heat. This 'urban heat island' effect increases heat stress and amplifies the impacts of extreme heat events above what they would otherwise have been. As well as reducing human comfort, the urban heat island effect has been implicated in increased levels of mortality, such that when daily minimum temperature exceeded 30°C average daily mortality for those over 65 increased by 15–17 per cent[4].

Figure 3 shows the urban heat island effect across the City of Maribyrnong reaching 6˚C on an average summer day, illustrated by the temperature in industrial areas such as Tottenham, exceeding 31˚C when the local Bureau of Meteorology weather station shows a temperature of 25.5˚C. The temperature is significantly cooler in areas of green space and along Stony Creek and the Maribyrnong River, as shown in blue. Taking into account the effects of climate change, with a predicted increase in warming of approximately 1˚C by the end of this IWM Plan[5], Figure 3 shows what the temperature in the City is anticipated to be on a 26.6˚C day.

Research shows that vegetation, particularly trees, can mitigate urban heat with cooling influenced by multiple factors including canopy cover, tree health and water availability. Trees provide maximum human thermal comfort (HTC) benefits when they have access to water during heat waves.[3]

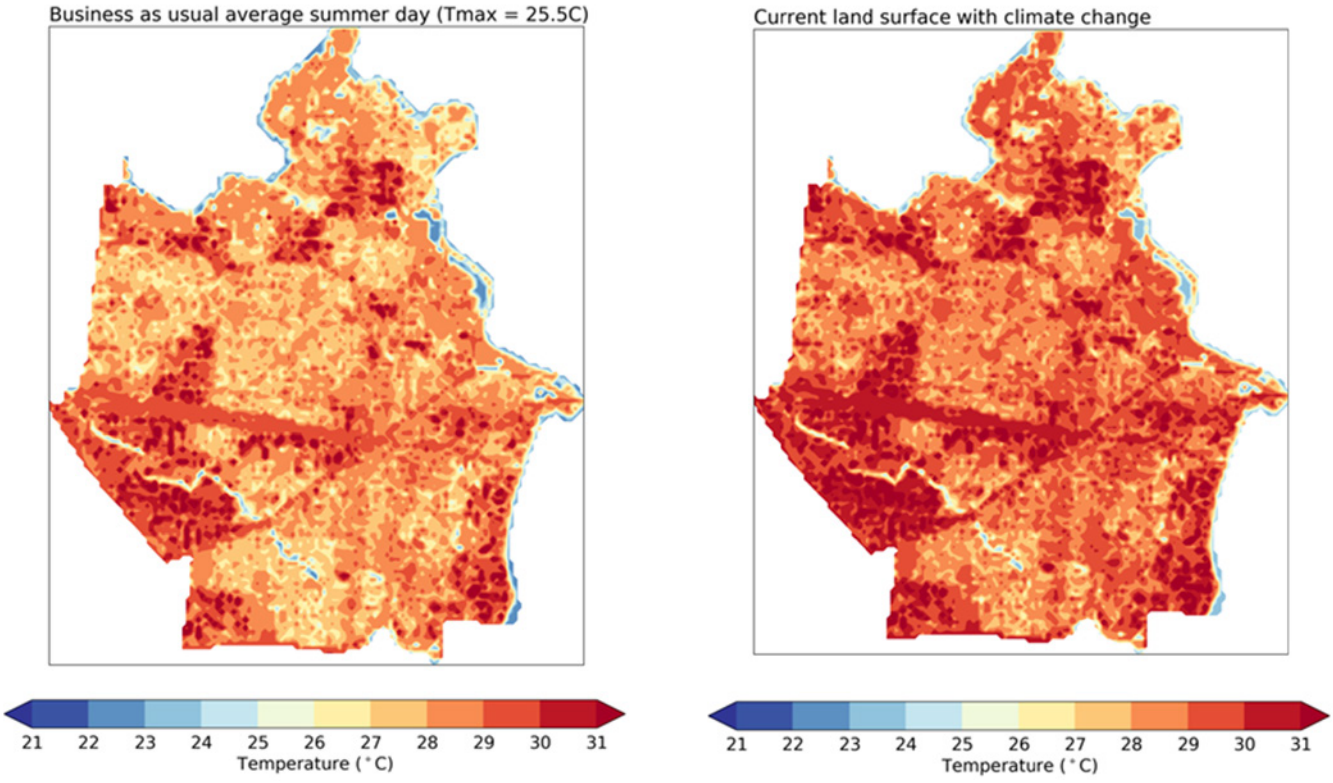


Figure 3. *City of Maribyrnong temperature forecast (data from forecast.id, accessed 2023)*

3. CRC for Water Sensitive Cities. (2017). The climatic benefits of green infrastructure. Melbourne, Australia: Cooperative Research Centre for Water Sensitive Cities. https://watersensitivecities.org.au

Land use and imperviousness

The City of Maribyrnong is predominantly residential, however it also contains numerous industrial precincts (the largest in Tottenham) and commercial and retail areas such as Footscray and Highpoint activity centres. From a water cycle perspective, the catchment is highly impervious, with rainfall in many areas unable to pass through the soil and into the groundwater table, which results in increased stormwater runoff during rainfall events.

While there is significant population growth projected for the City of Maribyrnong and residential infill developments are anticipated to continue (i.e. increasing housing density), this does not directly translate to significantly higher imperviousness, as much of the catchment is already developed or impervious. Furthermore, stormwater modelling undertaken has predicted that despite land use changes, there is likely to be an overall decline in stormwater generated throughout the period of the plan due to the reduction in rainfall and increase in temperature (and resultant evapotranspiration) expected under climate change.

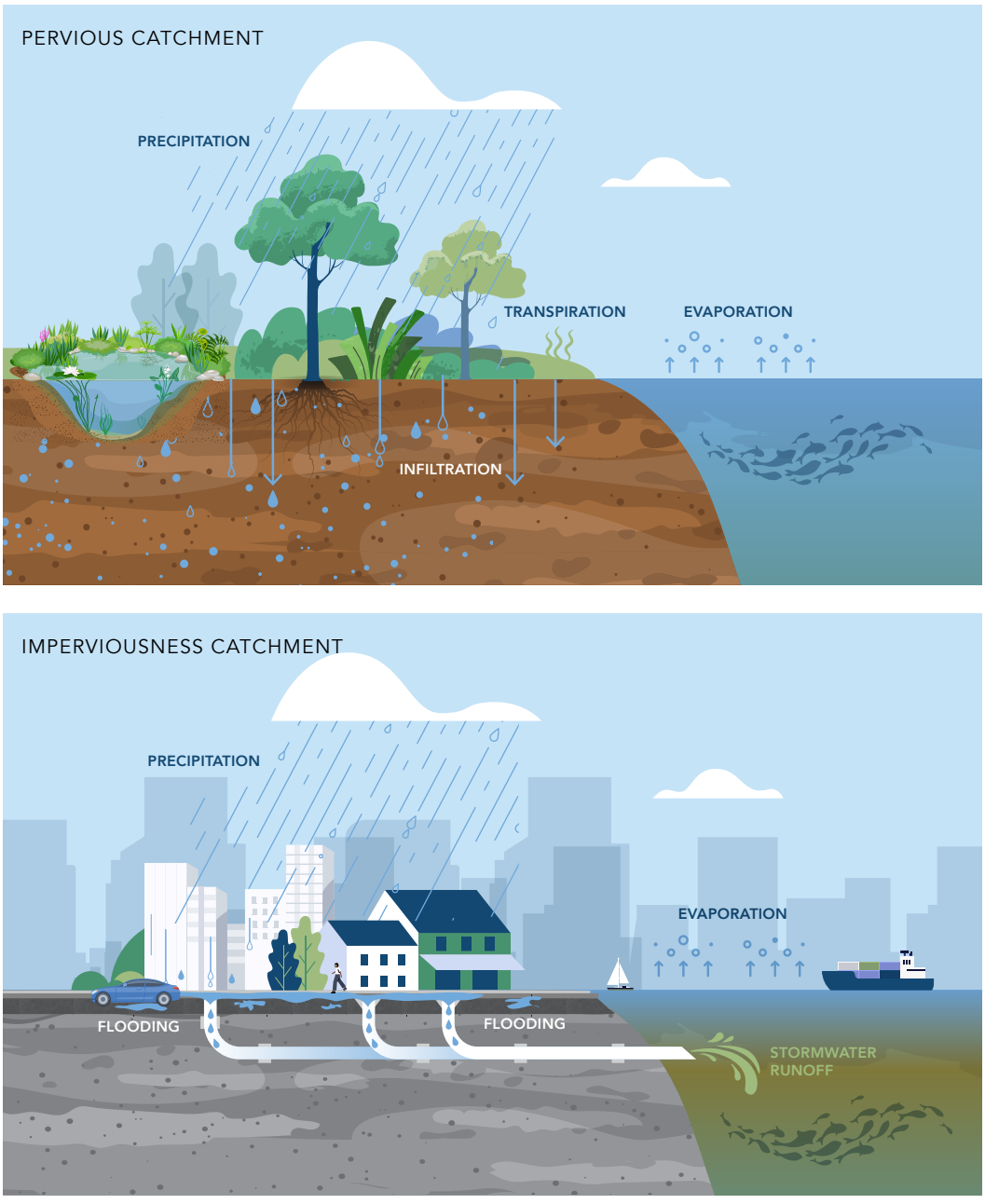


Figure 4. *Diagram of pervious verses impervious catchment*

PROTECTION OF WATERWAYS AND WETLANDS

The City of Maribyrnong is located within the Maribyrnong Catchment Region at the lower reaches of the *Mirrangbamurn* (Maribyrnong River), see Figure 5. The stormwater runoff generated flows via drainage pipes into one of the City's two major waterways, *Mirrangbamurn* (Maribyrnong River) or Stony Creek (refer to Figure 6). In general terms, the *Mirrangbamurn* (Maribyrnong River) receives predominantly residential and commercial stormwater runoff, while Stony Creek receives stormwater from the industrial area of Tottenham and residential areas.

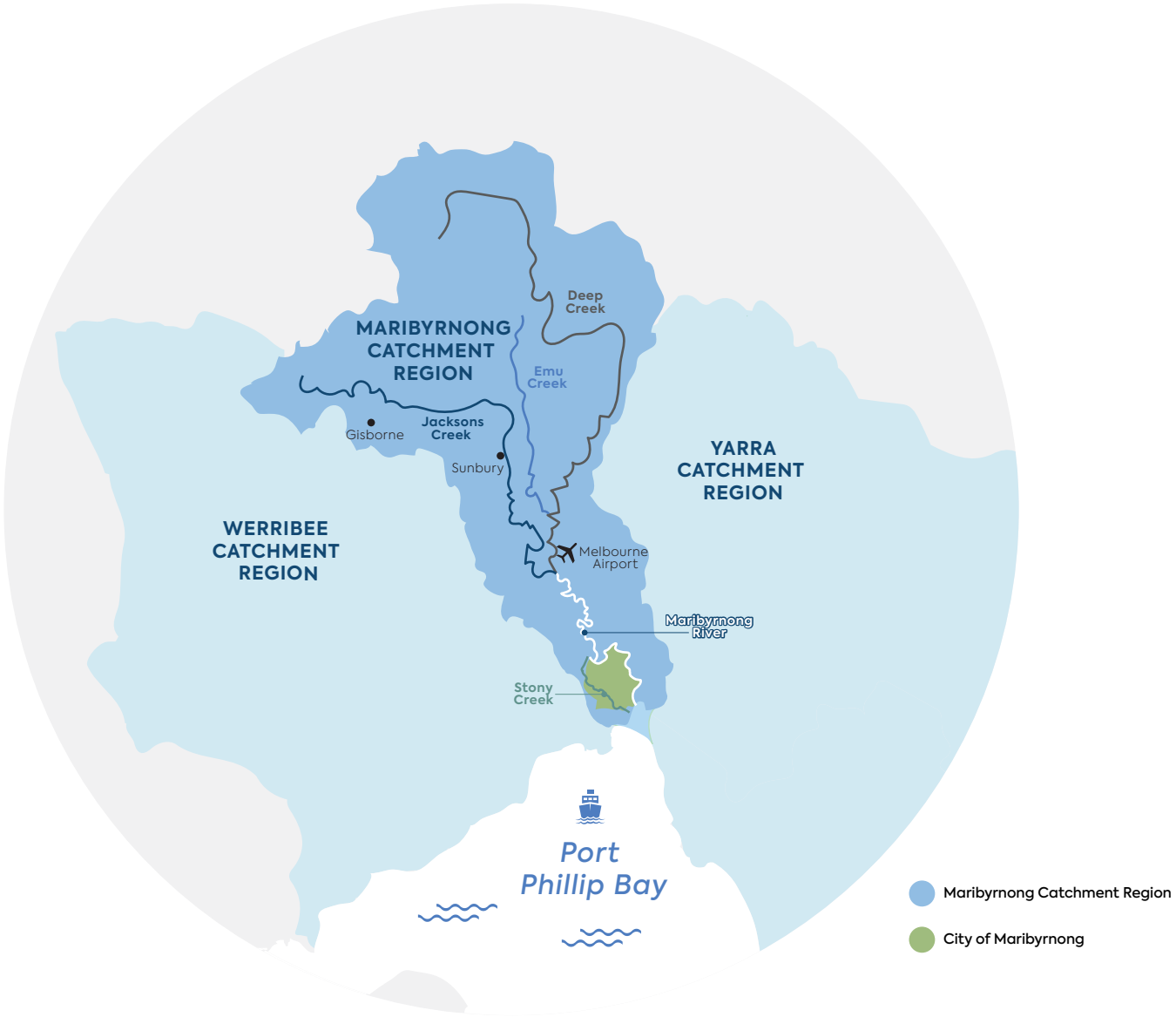


Figure 5. *The City of Maribyrnong located at the bottom of the Maribyrnong Catchment.*

Mirrangbamurn (Maribyrnong River)

The *Mirrangbamurn* (Maribyrnong River) is Metropolitan Melbourne's second largest river and an icon in the west. It is of cultural, social and ecological significance; a place where people come together to connect, exercise and play. It is also a critical habitat corridor for the movement of native animals, including threatened species such as the Growling Grass Frog and Grey-headed Flying-fox.

The river's floodplain includes two substantial wetlands within the City of Maribyrnong, Frog's Hollow Wetland (in Pipemakers Park) and Newell's Paddock Wetland Reserve. These wetlands not only provide important public open space, frog and waterbird habitat, they also improve the quality of stormwater prior to discharge into the *Mirrangbamurn* (Maribyrnong River).

Stony Creek

Stony Creek, once adjacent to quarries, landfills and major industry, now includes areas of community parkland, such as the much-loved Cruickshank Park. While the CREEK still traverses industrial areas, the local community value the public open space as a place to connect with nature and for recreational activities such as dog walking, jogging, playing and cycling.

Both the *Mirrangbamurn* (Maribyrnong River) and Stony Creek are critical to the amenity, character and natural values of the City, providing important habitat for native animals and refuge to residents from a highly urbanised landscape. The direct connection of stormwater, through the drainage network, to these waterways causes issues such as bank erosion, changes to natural flow patterns and a decline in water quality, aquatic plants and animals. For these reasons it is important that stormwater discharge is minimised and treated appropriately prior to discharge into our local waterways.

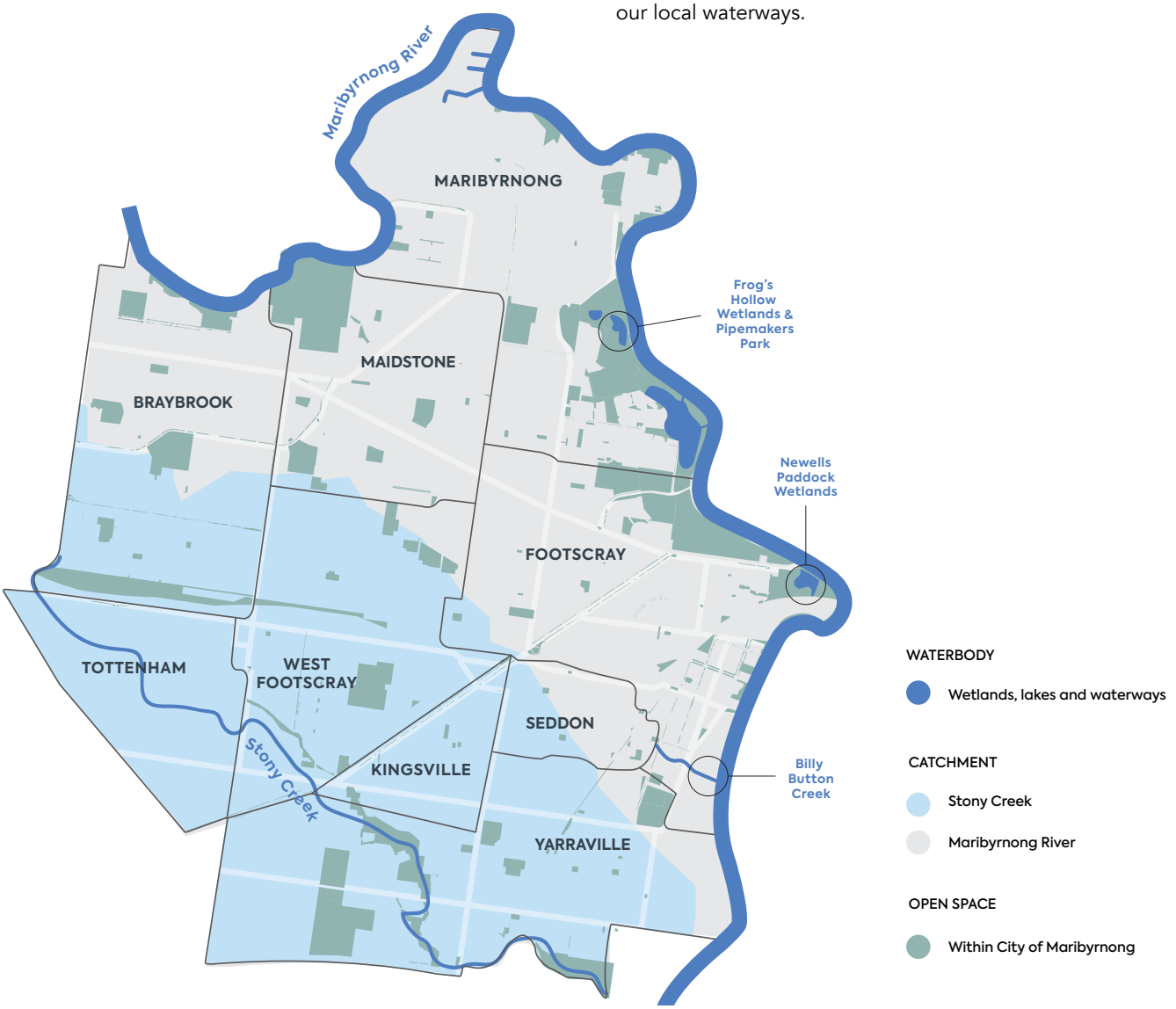


Figure 6. *Mirrangbamurn (Maribyrnong River) and Stony Creek Catchment areas*

STRATEGIC CONTEXT

Stony Creek, Yarraville

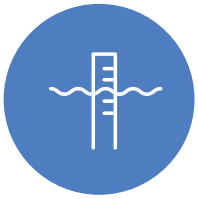
Maribyrnong Catchment Scale IWM Forum

In 2017 DEECA (formally DELWP) created a framework for the State Government, water sector and the community to work together to better plan, manage and deliver water in Victoria's towns and cities. Central to the framework was the establishment of five catchment-scale IWM forums across Victoria, one of these was the Maribyrnong Forum.

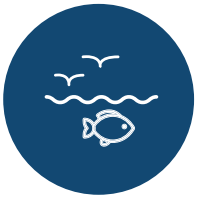
In 2018 the *Maribyrnong Strategic Directions Statement* (SDS) was published by the Forum, and a few years later, the State Government delivered a *Maribyrnong Catchment Integrated Water Management Plan*, which includes the following catchment scale outcomes:

Safe, secure and affordable supplies in an uncertain future

Effective and affordable wastewater systems



Opportunities are optimised to manage existing and future flood risks and impacts

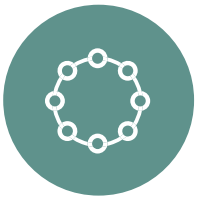


Healthy and valued waterways and marine environments

Healthy and valued landscapes

Community and Traditional Owner values are reflected in place-based planning

Opportunities are optimised to manage existing and future flood risks and impacts



Healthy and valued waterways and marine environments

Figure 7. *State Government's Maribyrnong Catchment IWM Plan outcomes (Integrated Water Management Forums, 2022)*

The State Government's *Maribyrnong Catchment Integrated Water Management Plan* (2022) provides Indicators and Measures to drive toward these outcomes such as:

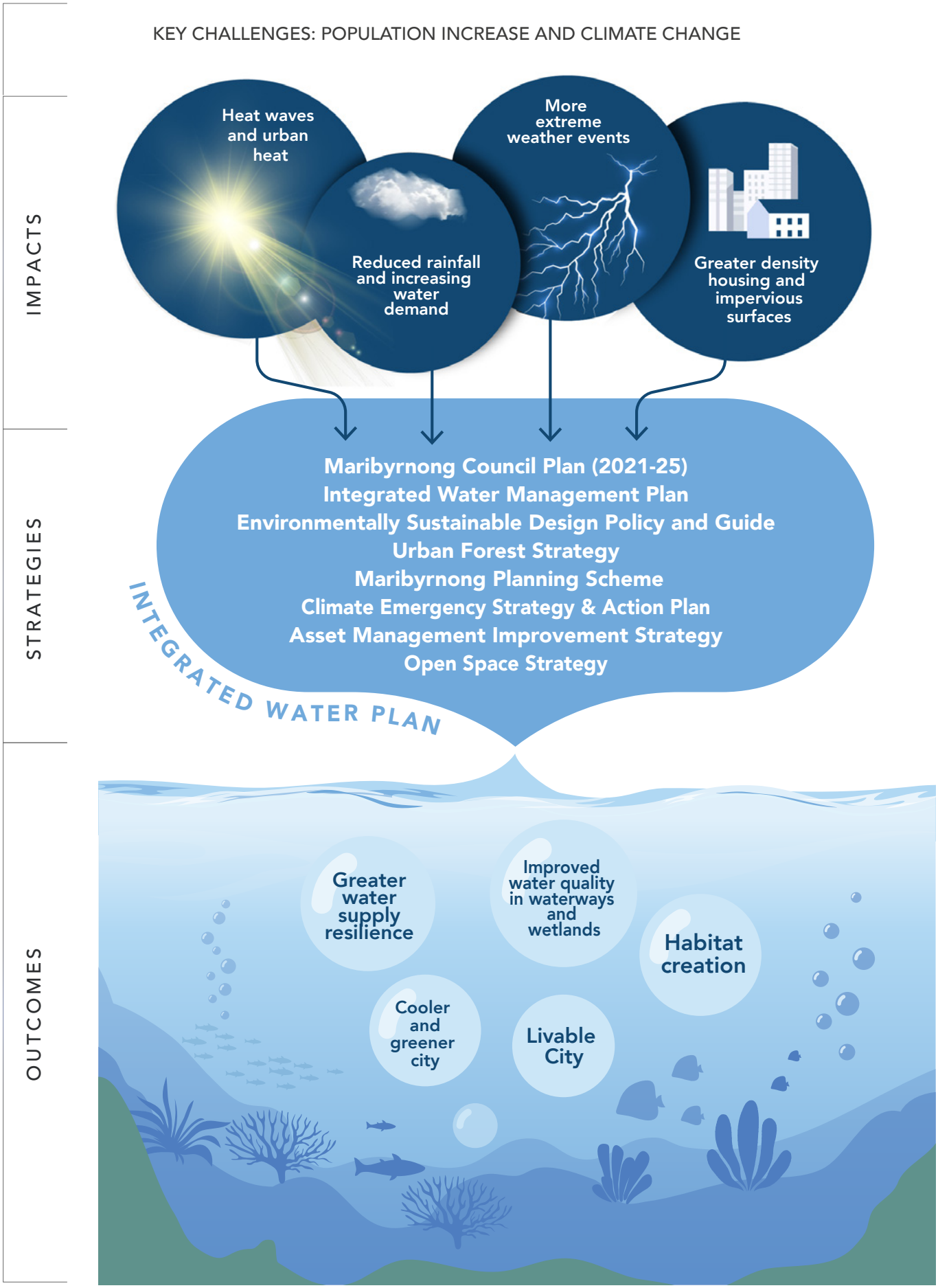
- Decrease potable water use / increased use of fit-for-purpose water source.
- Reduce the total urban stormwater volume/ Decrease pollutants discharged to receiving waters.
- Percent of street trees supported by irrigation from an alternative water supply / Reduce urban heat for the purposes of enhancing human thermal comfort.
- Improve the community's' connection with and understanding of the water cycle / Increase consideration of the water cycle in town planning.

Other organisations responsibilities

A number of other organisations are also involved in the delivery of water cycle services in the City of Maribyrnong. Table 1 provides an introduction to each of these, highlighting their key responsibilities and guiding strategic documents in relation to IWM. A good understanding of the organisations and their drivers presents opportunities for IWM advocacy and collaboration for Maribyrnong City Council.

Organisation	Roles and responsibilities	Key guiding IWM strategic documents
Melbourne Water	Waterway health Major drainage infrastructure and systems (>60Ha) Bulk water and sewerage services, including large recycled water, to Greater Western Water Flood management	*Healthy Waterways Strategy* (2018) Includes an assessment of waterway condition against nine waterway values with trajectories for the improvement of those values over time.
Greater Western Water	Delivery and provision of drinking water Sewerage and trade waste services Recycled water services	*Greater Melbourne Urban Water & System Strategy (2022)* A 50-year plan developed by Melbourne Water and the water retailers, including Greater Western Water, to address challenges in order to ensure a reliable water supply. This includes making use of a diverse range of water sources, using water efficiently and transitioning to a more climate resilient supply of resilient water.
Southern Rural Water	Manage water allocation licensing and compliance: - Water extraction from waterways - Groundwater use, management and licensing	
Environment Protection Authority Victoria	Regulation, policy and guidelines relating to prevention and reduction in human health and environmental harm from pollution and waste Guidance on stormwater harvesting and infiltration	*Urban Stormwater Management Guidance* (2021) Sets out the need for managing stormwater to protect waterways, and harvesting and infiltration targets across a range of average annual rainfall bands.
Department of Energy, Environment and Climate Action	Regulation in relation to public land, water, energy and environmental resources Facilitation of the Catchment Scale Maribyrnong IWM Forum and Working Group, and Waterways of the West program	*Central and Gippsland Region Sustainable Water Strategy* (2022) Identifies the likely shortfall in water supply to meet the ongoing need of cities, towns and the environment, and options to meet that deficit, including manufactured water. *Waterways of the West Action Plan (2021)* The plan responds to the rapid transformation occurring in Melbourne's west and the need to ensure that waterway and natural values are protected, through creation of numerous directions and associated actions. *Water for Victoria* (2016) The Victorian Government action plan for water throughout the state. There is a focus on planning for a future with less water in response to the impact of climate change and population growth.
Department of Transport and Planning	Regulations in relation to land use and development i.e. manager of the legislation for planning, environmental assessment and land subdivision	
Victorian Planning Authority	Strategic planning and coordinated infrastructure for future growth Preparation and approval of precinct structure plans	

KEY CHALLENGES: POPULATION INCREASE AND CLIMATE CHANGE



WATER IN THE CITY OF MARIBYRNONG

Figure 8 provides a high-level summary of current yearly water cycle volumes for the City of Maribyrnong and projected estimates by the conclusion of this plan (2033).

In the last financial year (2022-23) the City of Maribyrnong used 8,133 ML of potable water. Of this, approximately 60 per cent (4,874 ML) was for residential use, and the remaining 40 per cent (3,259 ML) for non-residential uses such as industrial and commercial. Residential use increased over the summer months during this period.

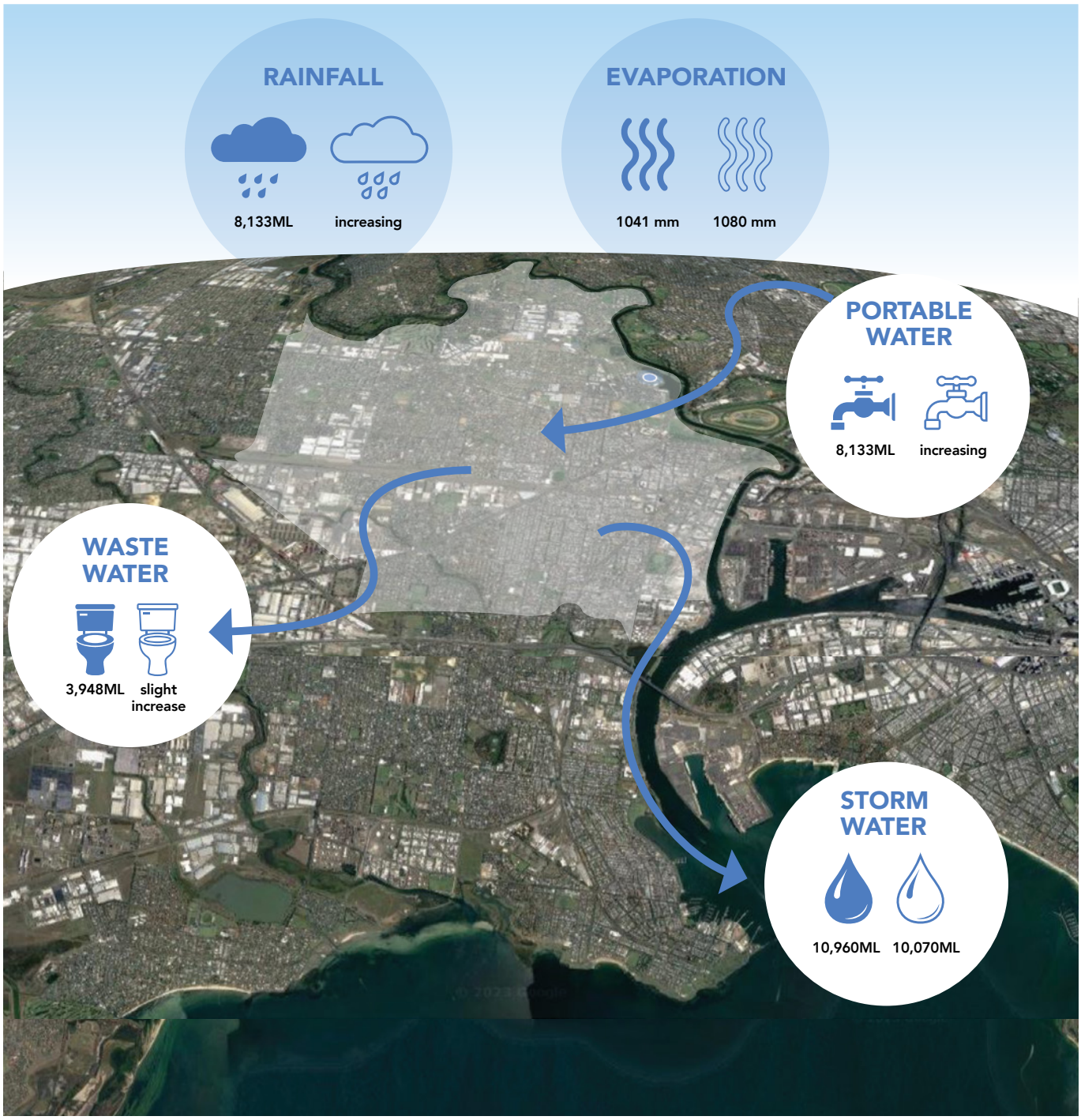


Figure 8. *Yearly water cycle volumes for the City of Maribyrnong*

Maribyrnong City Council's water use

During the 2022-23 financial year, Maribyrnong City Council used approximately 230 ML of potable water. Figure 9 shows the water use over this period.

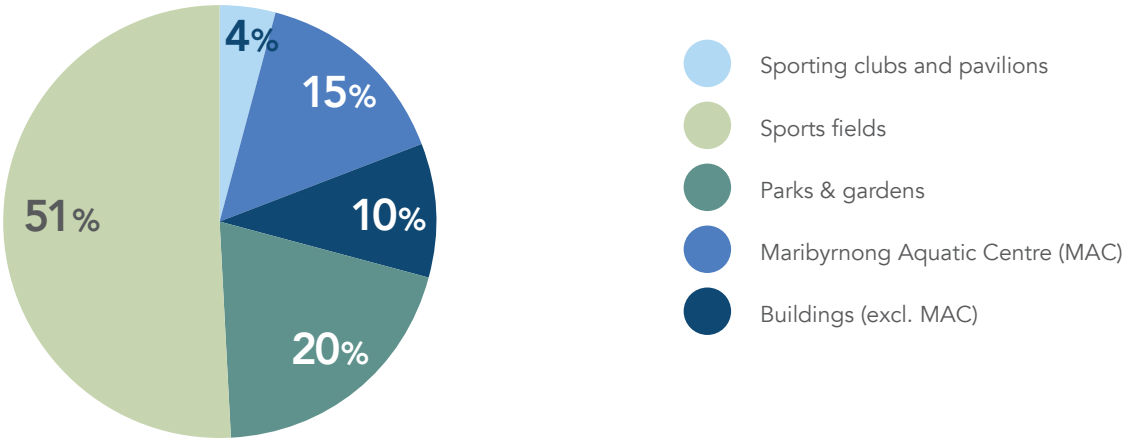


Figure 9. *Maribyrnong City Council's water use*

Irrigation and maintenance of open spaces, including sports fields, parks and gardens, use the most water, while the largest single 'building' use is for the Maribyrnong Aquatic Centre.

Figure 10 illustrates Council's annual water use from 2016/17 to 2022/23 by category. It shows that in recent years overall water use has been falling. This is most likely due to 2017/18 and 2018/19 being warmer and drier years than average, and rainfall higher from 2020 onwards, reducing the need for irrigation

It also demonstrates an approximate 33 per cent reduction in water use at MAC between 2019/20 and 2021/22.

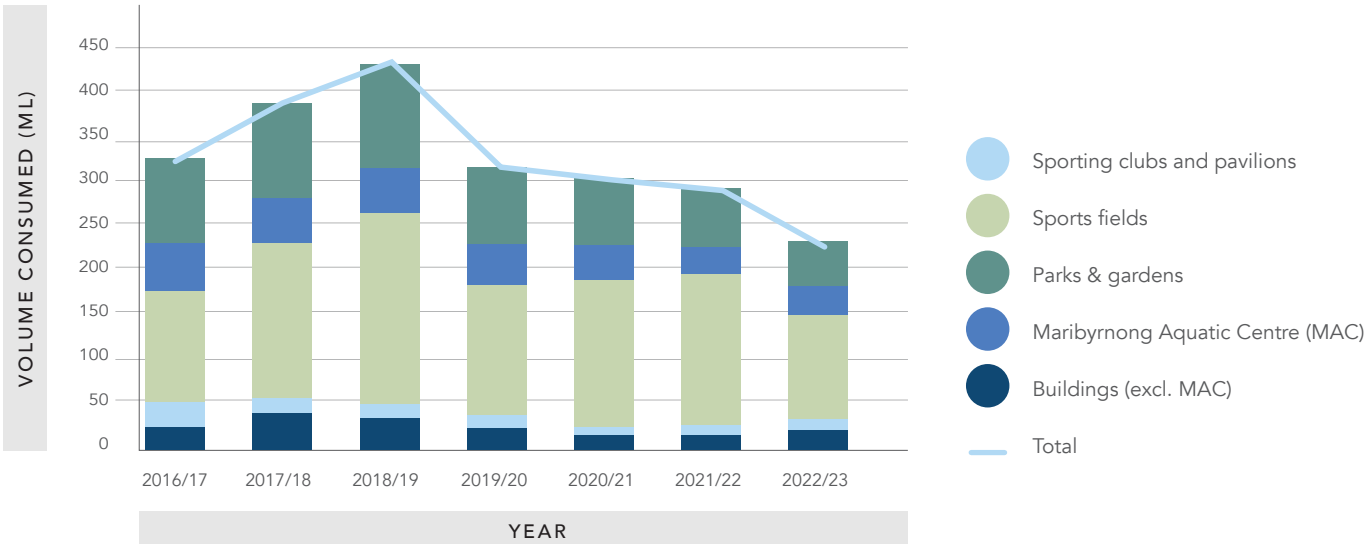


Figure 10. *Council's annual water use from 2016/17 to 2022/23 by category.*

A large percentage of Council's total water use is correlated with the need to irrigate parks and sports fields for community use. On this basis, it is assumed that irrigation, and the impact of climate, will continue to be the main driver behind Council's water use. This is based on the assumptions that:

- Council will continue to irrigate open space to provide greener, cooler spaces for the community.
- There will be irrigation of new open spaces associated with redevelopment and creation of new open space, in accordance with the *Open Space Strategy.*
- Growing population density may mean that additional irrigation will be required to maintain current and expected levels of service.

Irrigation of Footscray Park, Footscray

VISION AND OBJECTIVES

Our vision:

Maribyrnong City Council values water and uses it sustainably to conserve nature, support community and build resilience to climate change.

OBJECTIVES

1 Efficient and fit for purpose use of all water

- All water (from any source), is used efficiently
- Alternative water sources used (i.e. stormwater and rainwater)

2 Healthy and valued waterways and wetlands

- Litter from urban catchments does not enter Maribyrnong's waterways
- Stormwater treatment wetlands function as per their design and deliver multiple benefits
- Waterway corridors are accessible, protected and enhanced

3 An urban landscape that is resilient to the impacts of climate change

- Mitigate urban heat
- Retain water in the urban landscape through wetlands & water sensitive urban design
- At risk populations have access to greener/cooler spaces

4 An informed, engaged and active community

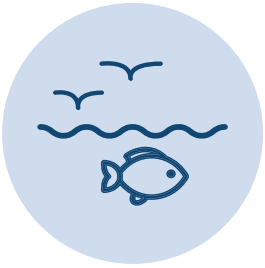
- INFORMED: Community is aware of the connection between the urban environment, the water cycle and natural assets like waterways
- ENGAGED: Council will engage with relevant stakeholders in relation to the planning and delivery of key infrastructure projects outlined within this plan.
- ACTIVE: Council will undertake active and visible IWM projects to build community understanding

OBJECTIVE 1:

Efficient and fit for purpose use of all water

Using all water efficiently, while identifying alternative water source options such as rainwater and stormwater, will be crucial steps in reducing Maribyrnong City Council's potable water use. Investigating alternative water sources is particularly relevant in relation to irrigation of public open space, as approximately 80 per cent of Council's long-term average water use is for this purpose. While water use associated with Council buildings and facilities (other than the Maribyrnong Aquatic Centre) is small by comparison, improving water efficiency in this area is an important way to demonstrate leadership in water management to our local community.

VISION	Maribyrnong City Council values water and uses it sustainably to conserve nature, support community and build resilience to climate change.	
OBJECTIVE	1. Efficient and fit for purpose use of all water	
OUTCOMES	All water (from any source), is used efficiently	Alternative water sources used (i.e. stormwater and rainwater)
ISSUES AND OPPORTUNITIES SUMMARY	**Open space** • review open space irrigation systems and practices to ensure optimum efficiency (as per the water action plan) • convert all sports playing surfaces to warm season grass • use and apply smart irrigation controls to optimise performance and minimise water use **Council buildings** • improve efficiency by upgrading fixtures in existing buildings • new buildings to meet the highest efficiency standards possible **Maribyrnong Aquatic Centre** • improve efficiency and identify reuse opportunities including upgrading fixtures, plant efficiency improvements and additional rainwater harvesting	**Rainwater harvesting** • identify rainwater harvesting opportunities across council and community buildings • identify rainwater harvesting opportunities in locations where large commercial and industrial roofs are adjacent to open spaces • encourage retrofitting of rainwater tanks to existing residences • require rainwater harvesting in new developments and sub-divisions **Stormwater harvesting** • identify stormwater harvesting opportunities, beginning with the largest water users • collaborate with stakeholders to support and encourage stormwater harvesting within new residential and commercial developments (e.g. defence site maribyrnong) • seek funding partnerships for stormwater harvesting schemes



OBJECTIVE 2:

Healthy and valued waterways and wetlands

The City of Maribyrnong has two significant waterways that receive its stormwater runoff: the Maribyrnong River and Stony Creek. It also has a number of ecologically important wetlands, particularly along the Maribyrnong River floodplain. Ensuring that these waterways and wetlands are healthy and continue to provide valuable habitat for native animals and much-needed connection to nature for our community, is vital.

VISION	Maribyrnong City Council values water and uses it sustainably to conserve nature, support community and build resilience to climate change.		
OBJECTIVE	2. Healthy and valued waterways and wetlands		
OUTCOMES	Litter from urban catchments does not enter Maribyrnong's waterways	Stormwater treatment wetlands function as per their design and deliver multiple benefits	Waterway corridors are accessible, protected and enhanced
ISSUES AND OPPORTUNITIES SUMMARY	**Gross Pollutant Traps (GPT):** An improved understanding of the location, function and effectiveness of GPTs across the municipality **Education and awareness** • build awareness of the connection of urban environment to maribyrnong's waterways • stop litter and toxic runoff from reaching stony creek • collaborate with melbourne water to undertake community education programs	**Function** • rectify existing stormwater treatment wetlands that aren't functioning as designed • protect natural and constructed wetlands if/when construction activities are undertaken upstream • protect natural and remnant ecologies and wetlands **Multiple benefits** • new wetlands and wsud enhance amenity and contribute to urban heat island mitigation objectives	**Improve stormwater quality** • reduce pollution from industrial areas (particularly along Stony Creek) • retrofit wsud as part of council's capital works program • ensure new development meets best practice stormwater quality requirements **Riparian vegetation** • plant out riparian areas • irrigate plantings with non-potable water • overlays or protections for riparian areas during redevelopment **Access** • connect 'broken' waterway walking and cycling links • shadeways link the community to natural assets

OBJECTIVE 3:

An urban landscape that is resilient to the impacts of climate change

As a highly urbanised area with decreasing rainfall predicted due to climate change it is important that rainwater and stormwater are retained in the landscape to support cooling, the growth of vegetation and tree canopies and to mitigate the urban heat island effect.

VISION	Maribyrnong City Council values water and uses it sustainably to conserve nature, support community and build resilience to climate change.		
OBJECTIVE	3. An urban landscape that is resilient to the impacts of climate change		
OUTCOMES	Mitigate urban heat	Retain water in the urban landscape through wetlands and water sensitive urban design	At risk populations have access to greener/cooler spaces
ISSUES AND OPPORTUNITIES SUMMARY	**Council policies** • urban heat reduction/ mitigation targets for new developments & redevelopments • policy support for cooling initiatives including increased tree canopy cover over hard surface **Tree canopy cover** • investigate passive irrigation along priority streets • carefully choose species to be planted into a passively irrigated environment • seek tree canopy cover along priority streets and open spaces	**Wetlands:** • support new wetlands required as part of development / redevelopment opportunities **WSUD / Infiltration:** • implement wsud through retrofitting, new development, capital works, open spaces and along waterway embankments (sponge zones) • encourage raingardens in existing and new developments	**Cool zones:** • Identify shading and irrigation priorities near at risk communities (see the Open Space Strategy)

OBJECTIVE 4:

An informed, engaged and active community

While this plan focusses on Council's direct areas of responsibility, the key challenges outlined in it are being faced by our wider community. A crucial element to ensure successful delivery of the plan will be an informed, engaged and active community that understand water cycle issue and passionately advocate for natural environments across the City of Maribyrnong.

VISION	Maribyrnong City Council values water and uses it sustainably to conserve nature, support community and build resilience to climate change.		
OBJECTIVE	4. An informed, engaged and active community		
OUTCOMES	Informed	Engaged	Active
ISSUES AND OPPORTUNITIES SUMMARY	**Education and information** • build awareness of the connection between the urban environment and maribyrong's waterways • improve the community's understanding and appreciation of landcape and natural values • monitor and publish water and ecology metrics and information • work with melbourne water to deliver waterway education programs **Transparency** • develop a database of priority water cycle opportunities	• engage with industrial and commercial land users to promote plan objectives • engage the community to understand their expectations and preferences for water-related capital works	• include signage and information to increase community understanding of ecological values and council's work to protect and maintain those values • install signage and information at ecologically significant or interesting locations • establish ecological destinations for the community and visitors e.g. a wetlands walk, a shadeways plan, the coolest route from a to b Partnerships: Collaborate with neighbouring councils to co-ordinate actions across municipal boundaries

MONITORING, EVALUATION, REPORTING AND IMPROVEMENT (MERI)

Council will monitor and report on the progress of the IWM Plan, and undertake an evaluation midway throughout the life of the plan, to provide a basis for learning, improvement and accountability.

Monitoring, evaluation, reporting and improvement will comprise:	Frequency
Recording the achievement of individual actions as completed.	As required
Reporting on the Action Plan to Councillors, to monitor progress towards completing actions within the Plan.	Yearly
Reviewing and updating (if required) the Plan.	After 5 years (2028)
Reviewing and reengaging to support the development of the next ten year IWM Plan.	After 9 years (2032-33)

Raingarden, Stony Creek

ACTION PLAN

The following Action Plan has been developed to guide Council toward achieving its four IWM objectives. Implementation of the plan will be subject to annual budget cycles and available resources. Actions are categorised according to the IWM objectives and outcomes, demonstrating a clear link between the objectives and the actions required to meet them.

For the purposes of the Plan, the following timeframes are described: Short term: 0-3 years / Medium term: 4-6 years / Long term: 7–10 years.

Rowers on the Maribyrnong River

Objective 1: Efficient and fit for purpose use of all water

Outcome: All water is used efficiently

Category	Ref	Action	Timing
Open space irrigation	1.01	**Review the status of irrigation actions under the Water Action Plan (2018):** Review the status of the Water Action Plan actions. Outstanding actions to be scheduled for completion in the period of this IWM Plan. Introduce a transparent process (e.g. 'decision tree') for the introduction of and/or upgrade of irrigation infrastructure across open spaces. Decision making will take into account water saved as well as social factors including amenity (e.g., the reduction of urban heat), and value to local community.	Short/Medium term
	1.02	**Low water demand grasses:** New open spaces to be sown with warm season & low water demand grasses. This requirement should be reflected in open space, public realm and redevelopment guidelines.	Short/Medium term
Building water use	1.03	**Maribyrnong Aquatic Centre (MAC) Improvement Plan:** Assess current water use at MAC. Undertake an audit of current water use within MAC as well as a review of recently completed water efficiency improvement works. Develop a list of further required improvements to optimise water use efficiency within MAC.	Short term
	1.04	**Council buildings:** Apply the Maribyrnong City Council *Environmentally Sustainability Design (ESD) Council Buildings and Infrastructure Policy* to council building projects to ensure water efficient design and operation (including rainwater for toilet flushing, stormwater management plan, efficient appliances etc.).	
	1.05	Undertake regular Building Performance Reviews for water use in Council buildings. Document all water related works that has been undertaken to date. Include the results of these audits (including water savings) within an asset registry.	
Data and smart technologies	1.06	**Information and data:** Continue roll out and use of smart irrigation controls for open spaces and consider integration of the system with the Smart Cities program. Include specific requirements for smart controls within irrigation related design briefs, contracts and guidelines.	Medium/Long term (with ongoing maintenance of the 'water data hub')
	1.07	Longer term action to develop a 'water data hub' that collects and presents all of Council's water use data. This can be used to inform future decision making around water use, efficiency and the use of non-potable water supplies (see also reference to Smart Controls under 1A above). Ensure data collection is occurring for relevant parameters that the Council need to report on under the Catchment Scale Maribyrnong IWM MERI Plan.	

Outcome: Identify and implement alternative water source opportunities

Category	Ref	Action	Timing
Alternative water use opportunities	1.08	**Greater Western Water's alternative water sources project:** Use preliminary findings from Greater Western Water's *Investigation of alternative water for open space irrigation in the Western Metropolitan Region* project to inform potential projects. This project identified priority open spaces for alternative water supply and opportunities for stormwater and rainwater harvesting and recycled water use. Include opportunities identified within the *Stony Creek Stormwater Treatment and Harvesting Opportunities* report (2019) and new opportunities as they arise, in this project's database.	Short term and use ongoing
	1.09	**Leverage major projects:** Identify stormwater harvesting and treatment opportunities within State Government led major strategic projects and precinct redevelopments e.g. the Westgate Tunnel Project, Defence Site Maribyrnong, existing Footscray Hospital site and new Footscray Hospital. Advocate and engage with State Government early in the process to identify IWM and water focussed initiatives.	Ongoing
	1.10	**Leverage developments:** Ensure stormwater retention, treatment and rainwater harvesting opportunities are incorporated in precinct scale developments such as the Emu Road, Braybrook Regeneration and Bradmill sites.	Ongoing
	1.11	The ***Stony Creek Future Directions Plan*** identified a number of raingarden/harvesting projects. Further investigate the feasibility of these projects to progress as funding becomes available. Prioritise projects that include partnership opportunities with Greater Western Water and Melbourne Water.	Short/Medium term
Building non-potable water use opportunities	1.12	**New and upgraded Council and community buildings:** Implement the *Maribyrnong City Council Environmentally Sustainability Design (ESD) Council Buildings and Infrastructure Policy* so all new and upgraded Council buildings meet outlined Green Star water demand requirements or equivalent. Note that all new and upgraded Council and community buildings are required to have rainwater harvesting to a) flush toilets and/or b) irrigate gardens. **Large private redevelopments:**	Short/Medium term
	1.13	• Require IWM Plans from all larger private redevelopments that do not already require them through existing Development Plan Overlays. The mechanism for this requirement could be considered as part of the WSUD Guidelines (Action 2D) and would outline requirements for the development itself and how those requirements align with the objectives of the Maribyrnong IWM Plan.	
	1.14	• Create capacity within Council to advise on IWM requirements in new developments and to assess developer plans.	

Raingarden, Stony Creek

Raised raingardens, Yarraville

Carpark cutouts and swales, West Footscray

Carpark cutouts and swales, West Footscray

Objective 2: Healthy and valued waterways and wetlands

Outcome: Litter from urban catchments does not enter Maribyrnong's waterways

Category	Ref	Action	Timing
Gross pollutant trap (GPT)	2.01	Develop a gross pollutant management and maintenance plan: • Continue and complete work to confirm location, and map Council GPTs • Review GPT maintenance regime. Ensure existing GPTs are functioning and maintained before new GPTs are added • Identify locations for the installation of new GPTs should funding become available (based on litter hot spots, treatment train locations and consideration of waterway impacts in consultation with Melbourne Water). • Develop and document a policy position, including criteria, for when and where GPTs are considered a suitable form of treatment.	Short/Medium term
Community awareness		Waterway and wetland awareness:	Medium term
	2.02	• Continue to participate in and implement actions assigned to Council within the Waterways of the West Program	
	2.03	• When renewing Council's grey and green infrastructure, consider incorporating signage to improve community awareness of the link between litter, stormwater and waterway condition. For example: - Labelling on street sweeping vehicles and public bins - Stencils (e.g. of fish, frogs etc.) on stormwater drain lids - Signage around litter hot spots.	
	2.04	• Utilise data to inform targeted campaigns and litter reduction activities e.g. audits of litter traps.	

Outcome: Stormwater treatment wetlands and WSUD function as per their design and deliver multiple benefits

Protecting natural assets	2.05 2.06 2.07	Protect and increase Council's wetlands and natural spaces: • Clarify maintenance and ownership responsibilities for all wetlands within the LGA between Council, DEECA, Melbourne Water and Parks Victoria and continue with a collaborative management approach to waterways and wetlands. • Advocate for further investigation into the desilting, rectification and enhancement of Newell's Paddock Wetland (as per the Alluvium 2015 Design Report) in discussion with DEECA, Parks Victoria and Melbourne Water. As part of this project add community awareness signage. • Investigate issues associated with lack of flow to Pipemakers Park wetland and suitable rectification measures including the function of pre-treatment in Thompson Reserve.	Short/Medium term
	2.08	Investigate options for creation of new stormwater treatment wetlands in alignment with existing plans and strategies.	Medium/Long term
	2.09	Develop a Council policy that protects Council's wetlands from the impacts of land development and construction upstream (including Frog Hollow and Newell's Paddock). For example, incorporating stormwater flow and quality requirements within planning permits of upstream developments within the City of Maribyrnong.	Medium term
WSUD policy and practice	2.10	**WSUD Capacity 1** WSUD Officer: Employ a WSUD Officer to support the planning team in applying relevant IWM Planning Provisions. WSUD Officer to support IWM capacity building within all Council departments, provide technical advice on IWM matters, develop IWM works for capital works consideration and undertake compliance audits.	Short/Medium term
	2.11	**WSUD Capacity 2** Establish a cross-organisational working group to build internal capacity, collaboration and advocacy for IWM/WSUD. The group should have a clear purpose, regular meetings and broad representation across Council (including officers and senior managers) and support implementation and evaluation of the IWM strategy.	Short term
	2.12	**WSUD Guidelines** Develop Maribyrnong City Council specific internal and external facing guidelines that outline expectations regarding the design and construction of IWM assets. Consideration must be given to alignment with draft Sustainable Building Design Guidelines prepared by CASBE for the Elevating ESD Targets Amendment and State government reforms through the ESD Roadmap. This document would provide support to the relevant teams within Council, including but not limited to the strategic and statutory planning teams, to ensure consistency across the municipality and to provide greater clarity to developers. The guideline will be incorporated into the City Design Manual and considered as part of the review of Council engineering standards and specifications.	Short term

	2.13	Ensure Council led projects consider design and construction solutions to increase permeable surfaces e.g. design renewals to create greater open space/greening or use of permeable products such as permeable paving rather than traditional materials.	Short term
		WSUD Design standards	Short/Medium term
	2.14	Develop standard design templates for common / conventional WSUD capital works (e.g. street and car park biofilters and passive street tree irrigation) to guide developers and support standardisation of assets within Council. - Identify opportunities for implementation of standard designs as part of Council's capital works (e.g. road works, open space renewal and car park construction). These design standards will be incorporated into the City Design Manual and considered as part of the review of Council engineering standards and specifications.	
		Asset Management	Short term (audit and register) Medium term (rectification and monitoring)
	2.15	• Ensure that existing WSUD assets are operating as designed. - Undertake an audit of existing WSUD assets. - Prioritise identified rectification requirements. - Commence rectification program.	
	2.16	• Add all existing Water Sensitive Urban Design (WSUD) assets into Council's Asset Register and create corresponding spatial information for each asset in Council's GIS system (Ringtail).	
	2.17	• Identify monitoring requirements for reporting, as part of the Catchment Scale IWM MERI Plan and commence monitoring for inclusion in water data hub (Action 1C).	
	2.18	• Create a regular maintenance program, undertaken by appropriately experienced contractors for WSUD assets.	
Outcome: Waterway corridors are accessible, protected and enhanced			
Improve stormwater quality – Stony Creek	2.19	• Prioritise and implement actions from the *Stony Creek Future Direction's Plan* that will improve water management within industrial areas that impact Stony Creek. Examples might include: - Investigate additional evidence and policy needed to create a 'Riparian zone buffer' that requires a wider waterway corridor when industrial sites are sold or redeveloped along Stony Creek. - Advocate for bunding / physical containment infrastructure within industrial sites adjacent to waterways to contain spills. - Information and signage within industrial areas that illustrates the link between land use to waterway health. - Develop and implement the *Stony Creek Industrial Guidelines* for adjacent properties, that have been prepared and included in the draft Tottenham and West Footscray Employment Precinct Framework Plans 2020, to be implemented into the Maribyrnong Planning Scheme via Amendment C166.	Long term

Objective 3: An urban landscape that is resilient to the impacts of climate change

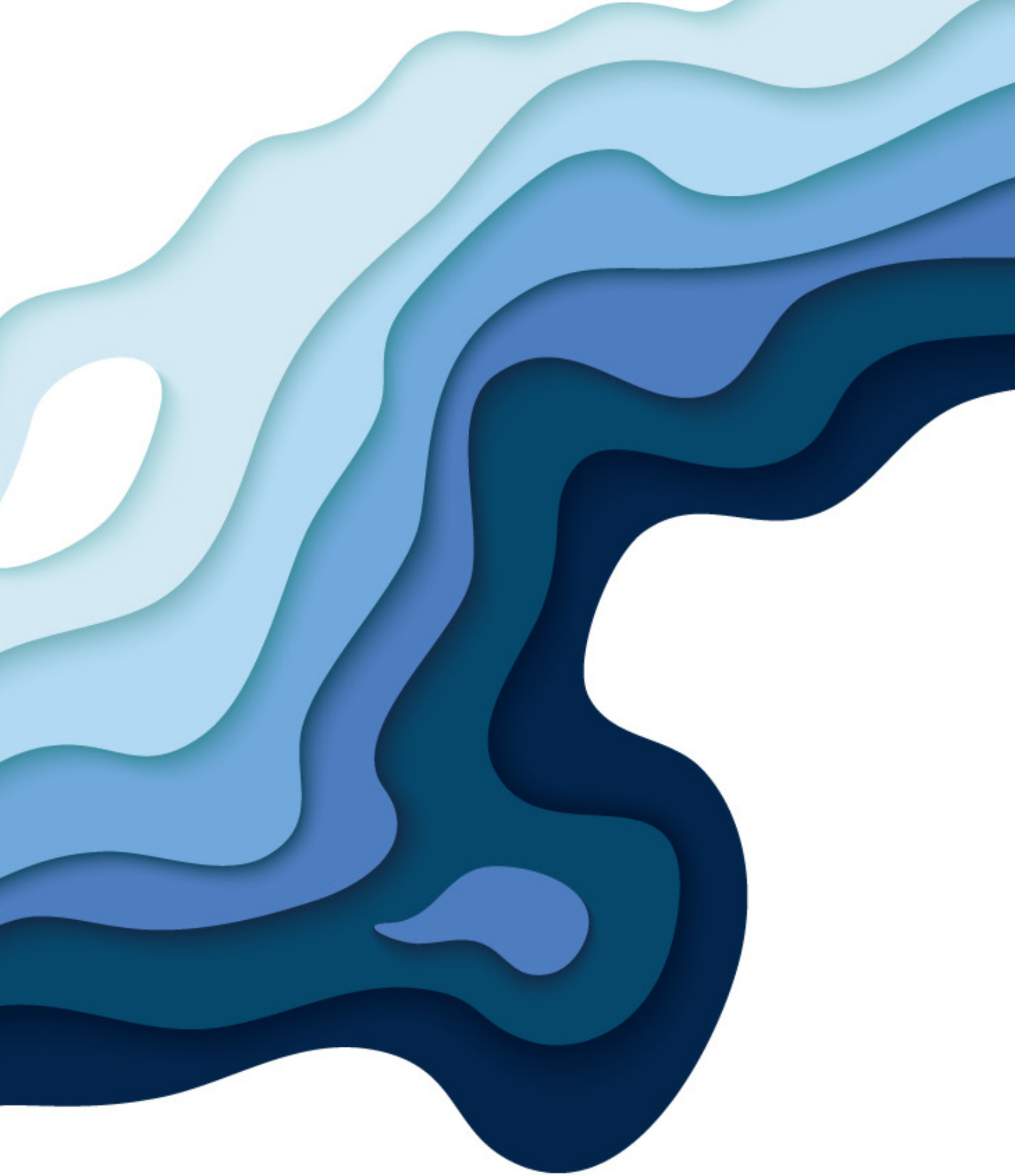
Outcome: Mitigate urban heat/Retain water in the urban landscape through wetlands & water sensitive urban design

Category	Ref	Action	Timing
Tree canopy cover and passive stormwater irrigation	3.01	**Feasibility study into passive stormwater irrigation of street trees** • Undertake a feasibility study into the use of stormwater for passive irrigation of street trees within the City. With a goal of increased shading and urban cooling. Use findings to inform targets in the next iteration of the Urban Forest Strategy.	Medium term
	3.02	• Develop a position on when and where it is best to introduce passive irrigation: - Literature review including, but not limited to asset designs, scientific trial results and tolerance of various tree species (to fluctuations in frequency of wetting/drying and water quality). - Identification of priority areas and contexts for passively irrigated street trees. For example, should retrofitting or redevelopments be the priority? What will deliver better outcomes? - In principle, prioritise shading of hard surfaces over other spaces (e.g. green spaces).	
Processes and designs		**Making passive irrigation business as usual**	Medium term
	3.03	• Collaborate with civil and maintenance teams to review and further develop: - designs for passive tree irrigation assets and WSUD associated with supporting tree growth. - designs that respond to different typologies across Maribyrnong e.g. industrial precinct, dense urban environments (e.g. Footscray)	
	3.04	• Review civil design processes (including road and drainage renewals) to consider opportunities to incorporate passive irrigation.	
	3.05	• Undertake internal capacity building (led by WSUD / IWM Officer) to grow organisation support for canopy and passive irrigation investment e.g. through information sharing, workshops and the co-design of passive irrigation assets.	
	3.06	• Monitor and assess passive irrigation technologies, porous pavements and other innovations to incorporate into future trials and projects.	
Industry engagement		**Water Industry Projects and Programs**	Ongoing
	3.07	• Continue to participate in water related industry programs including Greening the West, Waterways of the West, IWM Forums and CASBE. Also participate in stakeholder led projects that further the aims of this IWM Plan.	

Planning	3.08	**Protecting trees on private land** Encourage protection of existing significant or larger trees on private property (e.g. this may be defined as having a diameter at breast height (DBH) of 300mm or greater). This may include resident education or incentives for tree retention (e.g. plants giveaways, reduction in green waste levy or council plantings on private land, such as industry buffers). Refer to the Significant Tree Register.	Medium
Planning	3.09	**State Government advocacy** Continue to advocate for an amendment to the Victorian Planning Provisions to elevate sustainability requirements, including better management of water quality, use and collection, in addition to a greater resilience to changing climate impacts.	Short
Greening Strategic Redevelopments		**Major public and private redevelopments**	Long term
	3.10	• Incorporate canopy cover and passive irrigation requirements for major redevelopment sites where Council is the planning and responsible authority. Implement with Action 1E.	
	3.11	• Develop a guidance/policy that outlines agreed targets in relation to the number or density of trees required for new developments and ensure compliance. Relates to Action 2D WSUD Guidelines.	

Objective 4: An informed, engaged and active community

Category	Ref	Action	Timing
Traditional Owner Engagement	4.01	**Traditional Owner Engagement:** Undertake meaningful engagement with the Traditional Owners, Wurundjeri and Bunurong people, and active First Nations people within the City of Maribyrnong, in relation to Integrated Water Management. Seek guidance and input regarding First Nations priorities	Ongoing
Public space		**Community information:**	Medium Term
	4.02	• Work with Melbourne Water and the EPA Victoria to align waterway and wetland health education activities. - Integrate water literacy, with themes including the water cycle and waterways health elements such as litter, into existing education offerings for schools. - Increase the visibility of Maribyrnong's natural assets (including wetlands and waterways) on the Maribyrnong website and ways in which the community can responsibly enjoy them e.g. bike paths to get there, facilities available once there etc. - Promotion at community events like the Stony Creek festival. - Invite citizen scientists and 'Friends of' groups to build data on local species e.g. via an app or online form	
	4.03	• Engage friends' groups to undertake maintenance and planting days along priority reaches of Stony Creek and the Maribyrnong River.	
		Educational signage:	
	4.04	• Install interpretive signage adjacent to WSUD assets that are located within public spaces e.g. Cruickshank Park and Birmingham Street Raingardens.	
	4.05	• Collaborate with Melbourne Water to install educational signage at high priority sites highlighting litter issues, species present, unique vegetation or ecosystems.	
Private space		**Private greening**	Medium term
	4.06	• Review the connection between the Urban Forest Strategy and lot scale greening to encourage protection of Significant Trees on private space e.g. plant giveaways and working with commercial and industry.	
	4.07	• Encourage planting in private space by preparing educational materials that illustrate the value of trees & greening, cooling & property value and consider suggested designs or suitable species.	
Industrial land		**Industrial land WSUD:** Develop and communicate materials in relation to WSUD approaches and outcomes for the redevelopment of industrial land (particularly within creek corridors).	Medium Term
	4.08	• Prepare fact sheets that set out the social and economic benefits of greening industrial precincts	
	4.09	• Begin to build relationships with land owners and industrial developers • Work with Council and IWM Forum partners to develop and learn from their experiences	



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