INTEGRATED WATER MANAGEMENT PLAN 2020-2025

HUME CITY COUNCIL

Acknowledgement of Country

Hume City Council recognises the rich Aboriginal heritage within the municipality and acknowledges the Gunung-Willam-Balluk of the Wurundjeri as the Traditional Custodians of this land. We also recognise the intrinsic connection of Traditional Owners to Country and acknowledge their contribution to the management of land, water and resources. We embrace the spirit of reconciliation, working towards the equality of outcomes and ensuring an equal voice. Council embraces Aboriginal living culture as a vital part of Australia's identity and recognises, celebrates and pays respect to the existing family members of the Gunung-Willam-Balluk and to Elders past and present.

Acknowledgement of Funding

This Project has been assisted by the Victorian Government through Melbourne Water as part of the Living Rivers Program.

Location: Deep Creek

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INTRODUCTION

The Hume Integrated Water Management Plan 2020-2025 (IWM Plan 2020-2025) builds on progress made under the Integrated Water Management Action Plan 2014–2017 and updates actions from that plan. It considers key and emerging issues in the water industry and beyond including:

- Responding to current climate change impacts and the latest future projections, especially the urban heat island effect and impacts on open space management and the stormwater system.
- Development of legislation and policy direction at the State Government level, particularly the Integrated Water Management Framework for Victoria (DELWP, 2017) and the Healthy Waterways Strategy (Melbourne Water, 2017).
- The identified need to protect and enhance community and environmental assets including streetscapes, waterways, native habitat and recreational opportunities.
- Meeting Council's increased water demand as urbanised areas increase and climate change impacts are experienced.

Council plays a key role in delivering integrated water management (IWM) through: managing its own assets and water use to deliver community services (e.g. irrigation of sporting reserves, open space and community facilities including aquatic centres); protecting waterways from urban runoff through management of wetlands and other water sensitive urban design assets; implementation of the planning scheme; partnerships with other government agencies, and; through its engagement with the community.

AIMS AND GOALS

The aims of the IWM Plan 2020-2025 are consistent with Council's overarching environmental policy, *Pathways to Sustainability Framework 2015-2019 (Pathways)*. The *Pathways Framework* includes four strategic goals which can be supported and achieved through IWM:

Pathways 1: Demonstrate Sustainability Leadership – guides the planning and decision making of the Integrated Water Management Plan, incorporating sustainability considerations in programs and demonstrating environmental best practice.
Pathway 2: Support the community to live and work sustainably
Pathway 3: Provide strong environmental stewardship, and
Pathway 4: Create sustainable places.

To meet the challenges and latest developments in IWM, Council has developed the following goals for the IWM Plan 2020-2025:

- Support adaptation to climate change through increased use of alternative water sources
- Undertake water conservation and efficiency initiatives in the delivery of Council services
- Use Hume's fit-for-purpose water resources to support healthy vegetation, community recreational needs and provide urban greening and cooling while contributing to waterway health
- Work with the water industry and key stakeholders to advocate for and progress IWM initiatives that return environmental and community benefits
- Strengthen the links between IWM, Aboriginal water values and biodiversity values of waterways
- Ensure Hume's statutory obligations for the design, management and maintenance of water quality assets are achieved

HUME CITY COUNCIL'S INTEGRATED WATER MANAGEMENT TARGETS

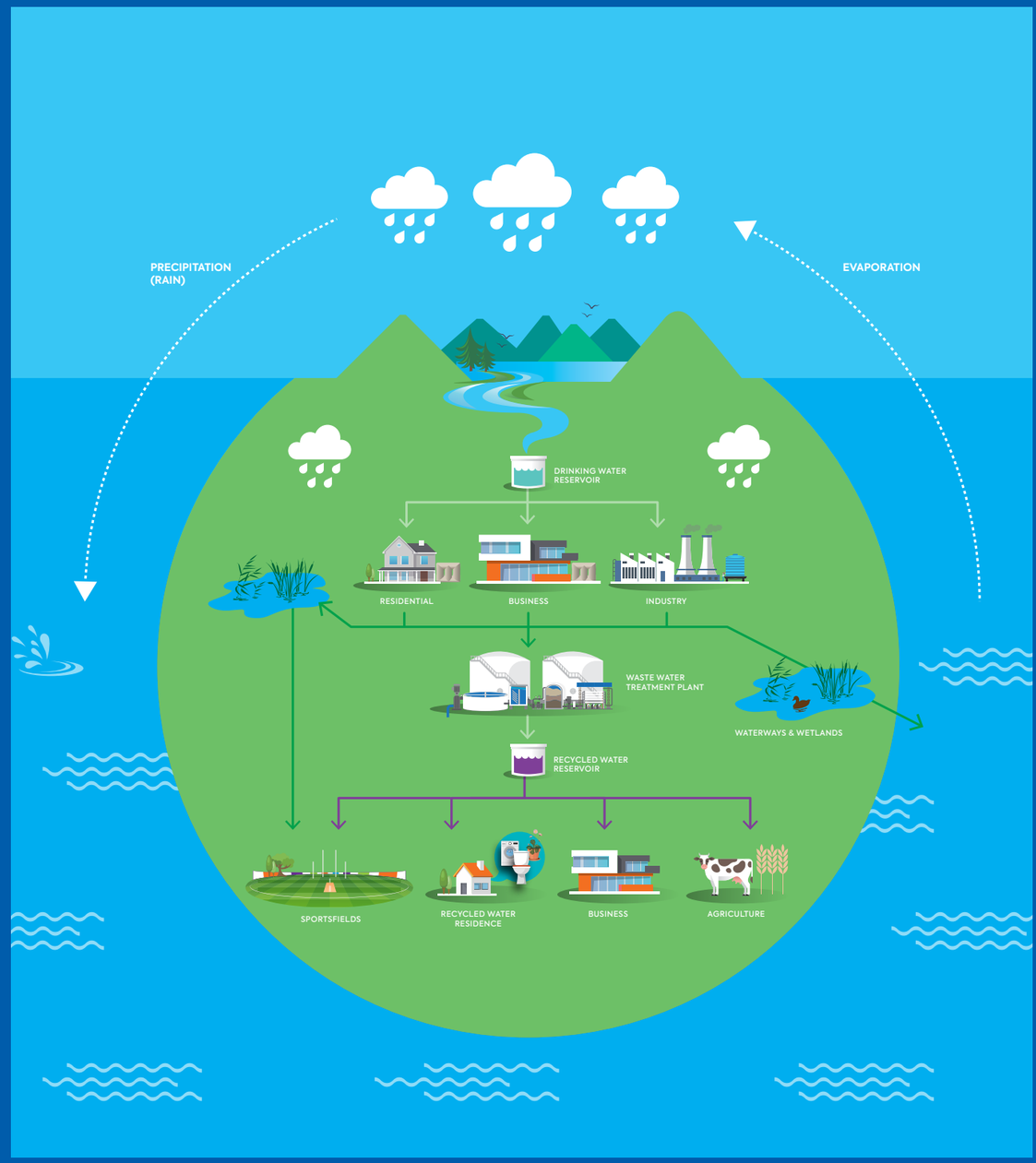
The following targets have been set to meet these goals:

- At least 65% of water used to irrigate sporting reserves to be sourced from non-drinking water sources by 2030.
- Implement at least 61ML/yr of new stormwater harvesting schemes by 2030, at least 25ML/yr of which will be implemented by 2025. By 2030, this will remove approximately 550kg/yr of nitrogen from our waterways.
- Achieve benchmark of <10L/patron at Splash Aqua Park and Leisure Centre and 40L/patron at Council's older aquatic centres: Sunbury Aquatic and Leisure Centre and Broadmeadows Aquatic and Leisure Centre, by 2025.
- Implement best practice water sensitive urban design into all Council led capital works projects.
- Trial passive irrigation of street trees to determine the effectiveness on stormwater treatment, urban cooling and tree health and maintenance implications.
- Install water quality treatment assets (in addition to stormwater harvesting schemes) to remove 400kg nitrogen per year from our waterways by 2030.
- All relevant planning permit applications compliant with urban stormwater planning provisions at the permit stage.

WHAT IS INTEGRATED WATER MANAGEMENT?

IWM is a collaborative approach to planning and managing all elements of the water cycle to deliver social and environmental outcomes.
IWM considers all elements of the water cycle as a single integrated system. It is a departure from the traditional approach to managing water where drinking water (water supply), wastewater (sewerage) and stormwater (drainage) were all treated as separate systems (see Figure 1).

Figure 1: The urban water cycle



HUME CITY COUNCIL PLAYS A CRITICAL ROLE IN DELIVERING IWM THROUGH:

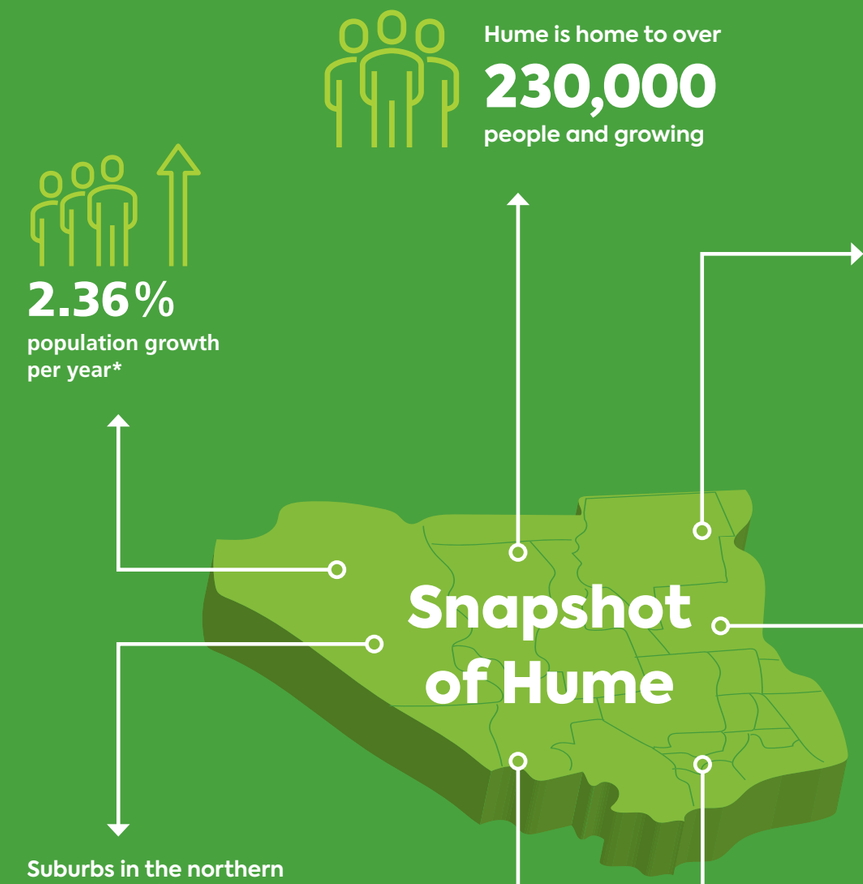
- Managing and maintaining local drainage networks and stormwater treatment assets including gross pollutant traps, wetlands and bioretention systems.
- The maintenance and management of parks, streetscapes, open space, and conservation reserves using fit-for-purpose water sources.
- Approving and ensuring compliance and/or encouraging best practice with planning permits issued under the *Planning and Environment Act 1987*.
- Collaboration with Melbourne Water, other water authorities and retailers, Government and non-government organisations regarding waterway advocacy and management.
- Co-ordination and support of community volunteers for waterway health and community education about waterway, biodiversity values and litter reduction.
- Conserving water and/or using water efficiently in its own operations to deliver services to the community.
- The regulation of onsite wastewater management (septic tanks).

SNAPSHOT OF HUME

Hume is home to over 230,000 people and growing (Forecast ID, 2017). Established suburbs in the south include Broadmeadows, Jacana, Dallas, Campbellfield, Coolaroo, Gladstone Park, Attwood, Westmeadows, and Meadow Heights.

Suburbs in the northern growth corridor, such as Greenvale, Craigieburn, Kalkallo and Mickleham, are expanding substantially. Sunbury in the west of Hume is also experiencing significant growth. The population of Hume is expected to exceed 248,000 by 2021 and 316,000 by 2031, or 2.36% growth per year (Forecast ID, 2017).

Land uses within the municipality are diverse and include established residential areas, large industrial areas and areas committed for future urban growth. The majority of the municipality remains rural in nature.



*Source: Forecast ID, 2017

CURRENT INTEGRATED WATER MANAGEMENT STATUS IN HUME

This IWM Plan builds on Hume's Integrated Water Management Plan 2014-2017 and its associated Action Plan. In the latter plan, Hume's water management was organised based on the themes of Council water management in open space; Council water management in the built environment; community water efficiency; and Hume's waterways. For each of these themes, Council aimed to achieve excellence in integrated water management, increased community learning and action, and to influence and advocate for policy and regulatory improvements.

IWM achievements to date

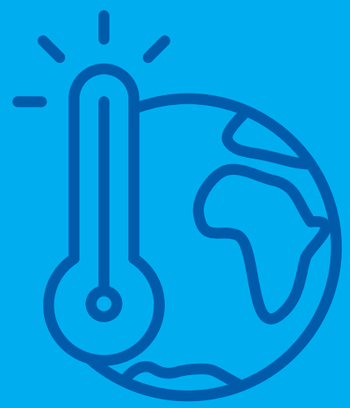
Council has made significant achievements in IWM including:

- Installation of rainwater tanks at over 70 Council-owned facilities that can store over 1 million litres of water (as of 2019). These facilities include Council's Global Learning Centres, pre-schools, neighbourhood houses, sports pavilions, local clubrooms, community gardens, and community centres to provide an alternative to using drinking water for things like toilet-flushing and watering garden beds.
- Council has carried out an audit of all existing Water Sensitive Urban Design (WSUD) assets to identify how well they were working and the remediation and maintenance needs. This audit won the Stormwater Victoria award for Excellence in Asset Management. Following this audit, Council officers began remediating WSUD assets that weren't functioning as they should, including the wetlands at Kirkham Drive Greenvale and Sassafras Drive Sunbury.
- In 2019, Council completed remediation works at Frog Court wetland in Craigieburn. This wetland was constructed to treat stormwater runoff from the adjacent industrial estate but was not working as intended. The wetland was also identified as a habitat for the endangered Growling Grass Frog. The Frog Court wetland now meets Melbourne Water's wetland design standards and is the first in Victoria to incorporate State Government Growling Grass Frog Habitat Design Standards.
- Council's warm season grass conversion program is almost complete, with the last sporting reserves scheduled for 2021.
- Splash Aqua Park and Leisure Centre has a number of water saving features, including underground rainwater tanks used to replenish water in the swimming pool, recycled water for toilet flushing and landscape watering, and water efficient toilets, taps and showerheads.
- WSUD features are progressively being incorporated into new carparks and roadside reserves.
- The Cleaner Creeks Everyone's Business Program educated 220 Hume businesses on improving work practices to minimise stormwater pollution.

Sunbury Neighbourhood House

CLIMATE CHANGE

CLIMATE CHANGE HAS ALREADY CAUSED THE GREATER MELBOURNE REGION TO BECOME WARMER AND DRIER. THE RATE OF WARMING HAS INCREASED SINCE 1950, WITH AN AVERAGE TEMPERATURE INCREASE OF 1.2-1.4°C. ANNUAL RAINFALL HAS DECLINED SINCE THE 1950S, ESPECIALLY IN WINTER AND SPRING, BY APPROXIMATELY 100-200MM (DELWP, 2015).



In the future in Hume, we can expect:

- Temperatures to continue to increase year-round. By 2030 average warming is projected to be around 0.6 to 1.3°C above the climate of 1986–2005.
- More days of extreme heat (greater than 35°C). By 2030, twelve extreme heat days per year on average are projected, compared to eight extreme heat days currently experienced.
- Less rainfall in winter and spring. By 2030, projected annual average rainfall for the Greater Melbourne region is expected to decrease by approximately 2% compared to the climate of 1986–2005.
- More frequent and more intense downpours (less overall rainfall but more of it falls in heavy storms which can cause flooding and erosion).

The outcomes for Hume include:

- Exacerbating the Urban Heat Island (UHI) effect, which occurs when vegetation is replaced with city structures, comprised of hard impermeable materials such as asphalt and concrete. These materials absorb heat, which is slowly released overnight, and along with heat from traffic and air-conditioning exhaust results in higher temperatures compared to surrounding rural areas, sometimes by up to 4°C. This is exacerbated by climate change, which will see higher temperatures and more frequent and severe heatwaves resulting in greater urban heat.
- Impacts on open space management. Rising temperatures, increased evaporation and an increase in weather extremes, such as very hot days and increased intensity of storms, has implications for selection of plant species, water use and grounds maintenance. Existing trees and vegetation will become more stressed under these conditions with increased mortality rates. This will ultimately present greater challenges and costs in maintaining usable sporting reserves, green spaces and attractive landscapes.
- Extreme rainfall places pressure on our stormwater drainage system, which may not have been designed to cope with such flows. This could lead to more frequent localised flooding events, damage to infrastructure and waterways and traffic disruptions.

An IWM approach is a climate change adaptation response. The focus on keeping stormwater in the local environment can help to support open space water demands, reduce the UHI and mitigate impacts on our stormwater system and waterways.

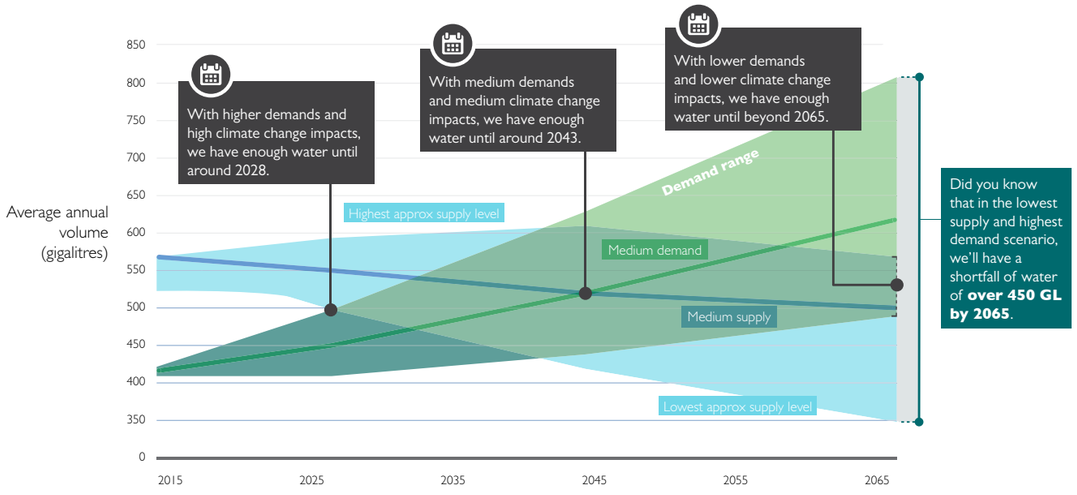
Kirkham Drive Wetland, Greenvale

Pressures on Melbourne's and Sunbury's Water Supply

Climate change and population growth will continue to place stress on Melbourne's water security. Inflows into Melbourne's main supply reservoirs have decreased compared to the long-term average. At the same time, demands on the existing water supplies have increased, mainly due to population growth but also environmental flow requirements (volume of water released from the water supply system into waterways to ensure they can support environmental values). Since the Victorian Desalination Plant is the only rainfall-independent source in the water grid, there will be significant pressure on this asset when Victoria experiences drought conditions. Hume's increasing population will place further pressure on our water supply. The climate is becoming warmer and drier, and this correlates directly with an increase in Council's water use.

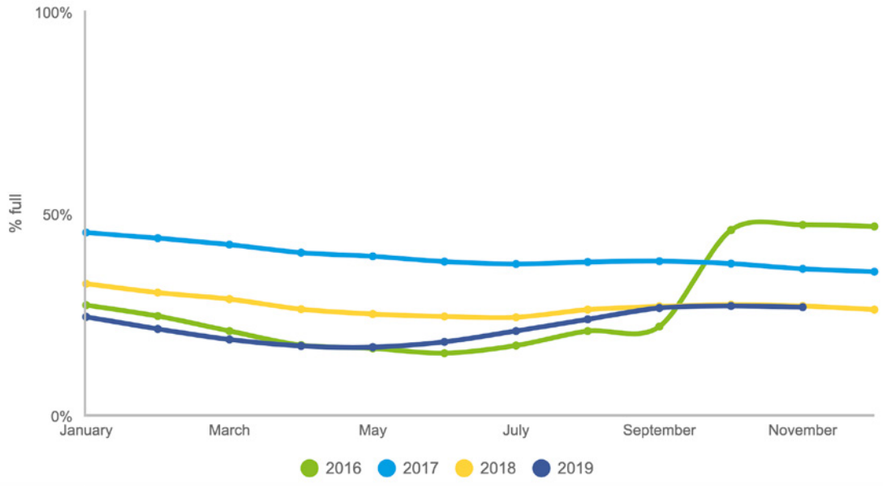
Providing additional supply of water for Melbourne's drinking water system could be required by as early as 2028, depending on climate change and population growth scenarios which are currently tracking on worst case lowest supply / high demand ranges (Figure 2). A major addition to the water supply, such as a second desalination plant, could result in a large price increase for Council and for the Hume community. Water costs have increased over time and with increased use of water from the desalination plant it is likely prices will increase further.

Figure 2: Water supply and demand (Melbourne Water Systems Strategy, 2017)



Sunbury and Bulla are supplied drinking water from Rosslynne Reservoir, which has also been impacted by the same population and rainfall availability pressures as the Melbourne System (Figure 3). Rosslynne Reservoir is connected to the Melbourne supply system to ensure availability of drinking water, and as such will also be impacted by any additions to the drinking water supply. An IWM approach to planning our water supply and use can lead to better community and environmental outcomes.

Figure 3: Rosslynne Reservoir levels as a percentage of full capacity, 2016 to 2019 (Western Water website, 2019).



By diversifying Hume's water supplies and making best use of recycled water, rainwater, and stormwater, we help to protect Hume residents, farmers and businesses from these rising costs, while increasing reliability of supply for irrigation and providing environmental and community benefits. These water supplies can be at a local scale, like a rainwater tank to flush toilets or harvesting stormwater to irrigate a sporting reserve, or at a regional scale where water is collected and treated at a centralised location, like the purple pipe recycled water network. By using water more efficiently, Council and the Hume community can further conserve our drinking water supply.

Waterway Health and Stormwater Management

On average about 264,600 ML of rain falls on the municipality each year. Since most of the municipality is undeveloped, most of this water is taken up by plants and soil, recharges the groundwater and waterways or evaporates. In urbanised areas of Hume, most of the rain flows into stormwater drains, which discharge into local waterways and ultimately to Port Phillip Bay. It is estimated that approximately 41,000ML/year of stormwater is discharged to the waterways (DesignFlow, 2012. In 2017/2018, Council used 22ML of stormwater for open space irrigation and Council and the community combined used over 500ML of rainwater for toilet flushing and irrigation. Hume's waterways are an important aspect of the landscape and provide natural habitats and values in an otherwise modified environment. However, they have been affected by drought, pollutants and excess nutrients in poor quality stormwater runoff from urban and agricultural land, modified flows due to urbanisation and land clearance and damming for agriculture, pest plants and animals and loss of in-stream habitat.

Urban development increases the volume of stormwater run-off, which if discharged directly into waterways can erode the banks and change the natural flow pattern, which leads to biodiversity loss. Some of Hume's waterways are highly modified or fully urbanised including the Merri, Moonee Ponds, Steele Creeks and parts of Jacksons Creek. Some waterways are in relatively good condition but may be impacted by future urban growth such as Deep Creek, Emu Creek, Jackson's Creek, Kalkallo Creek, and the upper reaches of Merri Creek. Further information about Hume's waterways and their biodiversity values is outlined in the *Land and Biodiversity Plan.*

The catchments which will be most impacted by development are those which have little current development, i.e. the currently rural and semi-rural catchments. These are the Emu and Jacksons Creeks in Sunbury and the Upper Merri and Kalkallo Creeks in the Hume growth corridor. If no mitigation action is taken, the increased stormwater flows from urban development and associated pollutants will have a significant impact on these waterways.

THE CHALLENGES

As the established areas of Hume are further developed with higher density housing, this generates higher stormwater run-off which the drainage system was not designed for and can lead to some localised flooding concerns. Upgrading drainage infrastructure by increasing pipe sizes is expensive and can have negative impacts on waterways through increased high flows of stormwater.

Stormwater pollution from industrial activity is a major contributor to poor waterway health, particularly in Hume, due to the large industrial estates particularly within the Merri Creek catchment. Pollution identified in the *Cleaner Creeks Everyone's Business* 2016-2018 program included heavy metals and hydrocarbons discharged directly to Merri Creek. Recent industrial fires have also had significant environmental impacts. Sediment pollution from urban development is also an issue for Hume's waterways given the large amount of urban development in the municipality. Pollution is a complex issue that requires a multi-agency approach. Council engages in ongoing education with industry and partnerships with the EPA to mitigate industrial pollution in our waterways.

The impacts of urban development on Hume's waterways can be mitigated using a range of innovative stormwater management approaches. This can include:

- 'Green-blue infrastructure', like wetlands, raingardens, and bioretention systems to remove pollutants from stormwater and slow flows into waterways. These can also potentially be used to contain large pollution events to prevent them from polluting waterways.
- Directing run-off from impervious surfaces into green spaces, providing passive irrigation.
- Stormwater harvesting and storage, which can provide Council with a ready source of non-drinking water to irrigate sporting reserves, active open spaces and passive open spaces.
- Rainwater harvested from roof areas, which can be used for garden irrigation, toilet-flushing and laundry use.

These IWM approaches benefit Hume's waterways by reducing flows in developed catchments that more closely resemble a more natural flow, reducing pollutant loads in stormwater, and contributing to flood mitigation through water retention and retardation.

Drinking and Recycled Water Use

In 2017/18, approximately 19,000ML of drinking water was used by Hume residents, businesses and Council. Approximately one-third of this was used by industry and businesses including Council. The remaining two-thirds was used by residents, who used approximately 161L/person/day which was equal to the Melbourne average. The Victorian Government has a target to reduce residential drinking water use to 155L/person/day by 2020. As Hume's population increases, the drinking water demand is expected to increase to over 28,000ML by 20411.

Recycled water is supplied to over 6,000 homes in new estates in the Craigieburn West, Greenvale, Mickleham and Kalkallo areas. In 2017/18, residents used approximately 240ML of recycled water for toilet flushing, clothes washing, car washing, garden watering and general outdoor use.

Council uses recycled water for irrigating parks, sporting reserves and garden beds and for toilet flushing. Total Council, residential and business use of recycled water was almost 500ML in 2017/18. Recycled water use will continue to increase as more houses and estates are connected to the system.

1 Calculation based on information in the Urban Water Strategies for Western Water, Yarra Valley Water and City West Water.

Merri Creek, Kalkallo – Photo by Digby Richardson

POLICY AND LEGISLATION

Hume's Policy Context

The aims of the IWM Plan 2020-2025 are consistent with Council's overarching environmental policy, *Pathways to Sustainability Framework 2015-2019 (Pathways)*.

Pathways includes four strategic goals which can be supported and achieved through integrated water management:

Pathways 1: Demonstrate Sustainability Leadership – guides the planning and decision making of the Integrated Water Management Plan, incorporating sustainability considerations in programs and demonstrating environmental best practice.
Pathway 2: Support the community to live and work sustainably
Pathway 3: Provide strong environmental stewardship, and
Pathway 4: Create sustainable places.

Water Cycle Stakeholder and Agency Responsibilities

The responsibilities for water management are spread across many different organisations as shown in Table 2.

Table 2: Water management responsibilities for various elements of the water cycle

Agency	Responsibilities	Element of Water Cycle
Hume City Council	■ Maintenance of WSUD and drainage infrastructure for Council owned assets in catchments less than 60ha. ■ Approval of planning permit applications. ■ Subdivisional drainage, WSUD and landscape design planning referrals and approvals. ■ Monitoring and inspections of WSUD assets during construction phase. ■ Construction site environmental management plan inspection and enforcement. ■ Waste minimisation, litter and recycling policy development.	Stormwater Waterways
Department of Environment, Land, Water and Planning (DELWP)	■ Manage Victoria's groundwater, catchments and waterways, infrastructure, water saving and re-use projects, flood management, governance and water legislation, in partnership with a network of government agencies and water authorities. ■ Manage IWM Forums. ■ Place water orders from the Victorian Desalination Plant. ■ Manage Victoria's water grid and markets. ■ Recognise and involve Traditional Owners in the management of and planning of water, waterways and catchments.	Drinking Water Sewage Recycled Water Stormwater Rainwater Waterways Groundwater Desalination
Melbourne Water	■ Manage water supply infrastructure in Melbourne. ■ Managers of waterways and drainage infrastructure for catchments greater than 60ha. ■ Waterway revegetation programs. ■ Regional drainage and WSUD schemes. ■ IWM Planning. ■ Recognise and involve Traditional Owners in the management of and planning of water, waterways and catchments.	Drinking Water Sewage Recycled Water Stormwater Waterways
Yarra Valley Water	■ Water retailer - supplies drinking water, recycled water and sewage services to all suburbs in Hume except Tullamarine, Sunbury, Bulla and Diggers Rest. ■ IWM Planning. ■ Recognise and involve Traditional Owners in the management of and planning of water, waterways and catchments.	Drinking Water Sewage Recycled Water
Western Water	■ Water retailer – within Hume, supplies drinking water, recycled water and sewage services to Sunbury, Bulla and Diggers Rest. ■ Operators of Sunbury water treatment plant. ■ IMW Planning. ■ Recognise and involve Traditional Owners in the management of and planning of water, waterways and catchments.	Drinking Water Sewage Recycled Water
City West Water	■ Water retailer – within Hume, supplies water and sewage services to Melbourne Airport and parts of Tullamarine. ■ IWM Planning. ■ Recognise and involve Traditional Owners in the management of and planning of water, waterways and catchments.	Drinking Water Sewage Recycled Water (outside Hume)
Southern Rural Water	■ Own and manage the Rosslynne Reservoir, which supplies Sunbury and Bulla with drinking water. ■ Manage and license surface water use and groundwater use. ■ Manage licencing for private dam construction and operation. ■ Recognise and involve Traditional Owners in the management of and planning of water, waterways and catchments.	Drinking Water Waterways Groundwater

Environment Protection Authority	■ Protection of the environment through the *Environment Protection Act 1970.* ■ Administer State Environment Protection Policy (SEPP) (Waters). ■ From 1 July 2020, will enforce the general environmental duty provision in the Environment Protection Amendment Act 2018. ■ Pollution monitoring, investigation and enforcement. ■ Provision of licensing and approvals for activities and premises.	Waterways Drinking water Recycled water
Port Phillip and Westernport Catchment Management Authority	■ Preparing a Regional Catchment Strategy and coordinating and monitoring its implementation. ■ Promoting cooperation in the management of land and water resources. ■ Advising on regional priorities and resource allocation. ■ Advising on matters relating to catchment and land protection. ■ Advising on the condition of land and water resources. ■ Promoting community awareness and understanding of the importance of land and water resources, their sustainable use, conservation and rehabilitation. ■ Recognise and involve Traditional Owners in the management of and planning of water, waterways and catchments.	Waterways Groundwater
Wurundjeri Woiwurrung Cultural Heritage Aboriginal Corporation	■ Aboriginal cultural heritage work. ■ Cultural & educational services. ■ Land management. ■ Language & Naming.	Waterways
Merri Creek Management Committee	Not for profit organisation that does restoration, revegetation and management of the Merri Creek. Activities include: ■ Waterway management planning. ■ Comment on relevant planning applications. ■ Water quality monitoring. ■ Community events and education.	Waterways
Chain of Ponds (Moonee Ponds Creek) Catchment Collaboration	■ Project prioritisation and implementation with partner organisations. ■ Advocacy for the protection and sustainable development of the Moonee Ponds Creek.	Waterways

Support for State Government Policy

Integrated Water Management

The Department of Environment, Land, Water and Planning (DELWP) has created an *Integrated Water Management Framework for Victoria*, which aims to develop a collaborative approach to urban water planning, better allocation of shared benefits and to overcome barriers to efficient IWM delivery. Hume participates in the Yarra and Maribyrnong IWM forums to develop the priorities for a work program for investigating and progressing IWM opportunities. The forums help to ensure that waterway managers, water retailers, Local Government and planning authorities all undertake their fair share of delivering IWM for Melbourne and that priorities are considered in an integrated manner. Council's IWM Plan is aligned with DELWP's *Integrated Water Management Framework for Victoria* and supports Hume's ongoing involvement in these collaborations

Waterway Health

Melbourne Water has refreshed the *Healthy Waterways Strategy*, which received Ministerial approval in October 2018. Hume has participated in the workshops for the Yarra and Maribyrnong *Healthy Waterways Strategy* to shape the direction of waterway management. The strategy maintains its focus on environmental values but places a greater emphasis on other values – recognising the social and economic importance of waterways. Melbourne Water has also engaged with Traditional Owner groups to better reflect the cultural values of waterways. The strategy has ambitious targets for stormwater harvesting and infiltration in the Northern and Sunbury Growth Areas as well as revegetation along waterways. Council's IWM Plan will help support the objectives of the Healthy Waterways Strategy.

In August 2018, the Ministers for Water and Planning established a Ministerial Advisory Committee (MAC) called Waterways of the West to look at broader issues such as landscape amenity, and land use planning and development controls and standards for the network of waterways within the Maribyrnong and Werribee Catchments. Council's IWM Plan supports the objectives of Waterways of the West and Hume will continue to contribute to the MAC.

Pollution and Litter

Waterway pollution from industrial and development activities is an ongoing issue in Hume that has significant impacts on waterway ecology. The new *Environment Protection Amendment Act 2018*, due to begin in July 2020, contains a general environmental duty which is defined as *"A person who is engaging in an activity that may give rise to risks of harm to human health or the environment from pollution or waste must minimise those risks, so far as reasonably practicable."* The general environmental duty will be criminally enforceable. Council is committed to working with the EPA to understand and apply the new laws.
Litter and illegal dumping decreases the amenity and health of our waterways and can impact negatively on wildlife. Most litter in our waterways comes from street litter being washed through the stormwater drainage system during rainfall. Council will support initiatives like the *Victorian Litter Plan* to reduce the volume of litter ending up in our waterways. Further details on the actions that Council will take to support State Government litter initiatives will be explored as part of the upcoming review of waste related strategies.

OUR RESPONSE TO THE CHALLENGES

To respond to our water challenges, the following goals will apply to Hume City Council's approach to IWM:

Goals for the IWM Plan 2020-2025:

The following goals for the IWM Plan 2020-2025 will enable Council to meet its statutory and policy principles outlined above:

- Support adaptation to climate change through increased use of alternative water sources
- Undertake water conservation and efficiency initiatives in the delivery of Council services
- Use Hume's fit-for-purpose water resources to support healthy vegetation, community recreational needs and provide urban greening and cooling while contributing to waterway health
- Work with the water industry and key stakeholders to advocate for and progress IWM initiatives that return environmental and community benefits
- Strengthen the links between IWM, Aboriginal water values and biodiversity values of waterways
- Ensure Hume's statutory obligations for the design, management and maintenance of water quality assets are achieved

This IWM Plan is focussed on Council's operational water use and management of its water resources, but not specifically on community water education. Hume will collaborate with and support water authorities to promote their water education programs to the Hume community. Community engagement on water issues will also continue to occur through Hume's Live Green Plan.

Support adaptation to climate change through increased use of alternative water sources

One way that Council can adapt to the challenges of climate change and reduce stress on the potable water supply is by ensuring that a range of alternative water sources like recycled water, rainwater and stormwater are used. Diversifying water sources will help to lessen the effects of future water restrictions and to maintain public open spaces during drought periods and the hotter, drier future. As part of this IWM Plan, Council has undertaken a Water Sensitive Urban Design and Stormwater Harvesting Masterplan to identify alternative water supply opportunities across the municipality.

TARGETS:

- At least 65% of water used to irrigate sporting reserves to be sourced from non-drinking water sources by 2030
- Implement at least 61ML/yr of new stormwater harvesting schemes by 2030, at least 25ML/yr of which will be implemented by 2025. By 2030, this will remove approximately 550kg/yr of nitrogen from our waterways.

Undertake water conservation and efficiency initiatives in the delivery of Council services

Council has further work to do to understand and manage its water consumption at key water-using sites, like leisure centres and sporting reserves. Opportunities exist for Council to influence and demonstrate leadership by providing good examples of sustainable water use in public places like municipal buildings and parks.

Water efficiency is a key way that Council can influence the water cycle, reduce wastewater generation, and defer or reduce the need for an augmentation of the drinking water supply system.

OUR RESPONSE TO THE CHALLENGES

TARGETS:

- Achieve benchmark of <10L/patron at Splash and 40L/patron at SALC and BALC by 2025
- Implement best practice water sensitive urban design into all Council led capital works projects.

Use Hume's fit-for-purpose water resources to support healthy vegetation, community recreational needs and provide urban greening and cooling while contributing to waterway health

Water can reduce the urban heat island effect by keeping it in the landscape and through supporting urban greening. Irrigated trees and urban parks and open water bodies can cool surrounding areas by 1 to 2 degrees, creating an attractive urban environment. By diverting stormwater flows to trees, we can improve tree health, which in turn supports biodiversity, promotes urban cooling through evapotranspiration and shading, and reduces damaging stormwater discharges to our waterways. Maintaining water in the landscape also helps produce high quality recreational areas for the community.

TARGET:

- Trial passive irrigation of street trees to determine the effectiveness on stormwater treatment, urban cooling and tree health and maintenance implications.

Work with the water industry and key stakeholders to advocate for and progress IWM initiatives that return environmental and community benefits

Conventional water management approaches may have institutional arrangements or regulatory requirements that prevent an IWM outcome. Where this happens, Council can advocate for changes to help bring about the best environmental and community outcomes.

Hume City Council is a member of the DEWLP IWM Forums for both the Yarra and Maribyrnong catchments. Council is also partnering with water authorities on regional IWM planning, to incorporate both street and neighbourhood scale IWM with regional scale IWM solutions.

Key areas of advocacy include:

- Institutional arrangements – Waterway corridor and drainage responsibilities including fair and reasonable cost allocation for maintaining WSUD and water quality treatment assets.
- Water for agriculture – Minimising the impact of agricultural dam and extractive water use on natural waterways by increasing alternative water supply for Hume's agricultural areas, including Keilor Market Gardens.
- Industrial pollution mitigation – Working within the new EPA laws to target industrial pollution under the general environmental duty provision to improve identification, compliance, enforcement and management of industrial pollution incidents.
- Advocate for the connection of those properties which are in residential areas of the municipality which rely on onsite wastewater treatment, to be connected to metropolitan sewer system.

Strengthen the links between IWM, Aboriginal water values and biodiversity values of waterways

Hume City Council recognises the intrinsic connection of Traditional Owners to Country and acknowledges their contribution to the management of land, water and resources. The State Government *Water for Victoria* policy contains a series of objectives to recognise and manage Aboriginal water values and these have been included in the *Water and Catchment Legislation Amendment Bill 2019*.

These objectives are consistent with Hume City Council's *Reconciliation Action Plan 2018-2022* themes of Respect/Inform, Relationships/Access and Participation, and Opportunities/Advocacy. Council is supportive of water industry partnerships with Traditional Owners to better understand Aboriginal water values and to incorporate these values into its own work when opportunities arise.

This IWM Plan, through stormwater management, will aim to protect the health and water quality of waterways and the values they support. For example, parts of Hume's urban growth area have been identified as Growling Grass Frog conservation areas (DELWP, 2017), with the most important populations on the Merri Creek, particularly the upper reaches near Kalkallo and Craigieburn North. This information can assist with identifying the most beneficial areas to target IWM initiatives for biodiversity benefits.

TARGET:

- Install water quality treatment assets (in addition to stormwater harvesting schemes) to remove 400kg nitrogen per year from our waterways by 2030

Ensure Hume's statutory obligations for the design, management and maintenance of water quality assets are achieved

Amendments to the Victoria Planning Provisions (VPP) were gazetted on 26 October 2018, expanding stormwater management requirements to most types of new development. This means that Council has new responsibilities to ensure relevant new developments treat stormwater to best practice targets as defined by the EPA.

The EPA gazetted a new State Environment Protection Policy (SEPP) (Waters) on 19 October 2018. The SEPP (Waters) identifies the rules and obligations on Council to protect our water environments, including:

- Ensuring all new developments, as required by the VPPs, meet best practice for environmental management of stormwater (discussed above);
- Ensuring that assets built for water quality treatment, such as raingardens and wetlands, are designed, managed and maintained properly;
- Developing and implementing a stormwater management (or equivalent) plan. The adoption and implementation of this IWM Plan will meet this requirement.

These changes have placed additional responsibilities on Council. Council is committed to ongoing improvement of its processes to achieve compliance with the VPP and SEPP (Waters) objectives.

TARGET:

- All relevant planning permit applications compliant with urban stormwater planning provisions at the permit stage

Frog Court Wetland, Craigieburn – Photo by Simon Best

ACTION PLAN

D.S. Aitken Reserve, Craigieburn

GOAL:

Support adaptation to climate change through increased use of alternative water sources

KEY PERFORMANCE INDICATORS (KPIs) AND TARGETS:

KPI 1: Increase non-drinking water use for irrigation of public open space

Target 1: At least 65% of water used to irrigate sporting reserves to be sourced from non-drinking water sources by 2030

Target 2: Implement at least 61ML/yr of new stormwater harvesting schemes by 2030, at least 25ML/yr of which will be implemented by 2025. By 2030, this will remove approximately 550kg/yr of nitrogen from our waterways.

Objective 1: Increase non-drinking water use in Council open space facilities

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
1	Continue rainwater tank installation on existing sites. Explore whether smart tanks can be installed where roof area is large &/or demands are small	Integrated Water Management Plan Actions capital budget (2019/20): $60k	**Lead:** Capital Works and Building Maintenance **Support:** Sustainable Environment	2020/21	Rainwater tank roll-out program implemented (output). Reduce drinking water use
2	Prepare business case proposals (design) for water treatment, harvesting and reuse projects. Priority stormwater harvesting and reuse projects committed to are: • John Ilhan Memorial Reserve (active) • Jack Roper Reserve (passive) • Buchan St Reserve (passive) • Jacana Reserve (active) • O'Brien St retarding basin (passive + cemetery)	Integrated Water Management Plan Actions capital budget: $130k (2020/21 to 2024/25)	**Lead**: Sustainable Environment **Support:** Capital Works, Leisure Centres & Sport, Parks, Assets	From 2020 to 2024	Reduced drinking water usage. Mitigates impacts of water restrictions on key public open spaces Reduced flow and nutrients to waterways Improved habitat
3	Seek funding support for and implement stormwater harvesting projects as per business cases. Note: securing co-funding will be essential to implement these projects	Integrated Water Management Plan Actions capital budget: Up to $1.7m (2021/22 to 2024/25)	**Lead**: Capital Works and Building Maintenance (implement project) **Support:** Sustainable Environment (seek funding), Leisure Centres & Sport, Parks, Assets	2022 to 2025	Reduced drinking water usage. Mitigates impacts of water restrictions on key public open spaces Reduced flow and nutrients to waterways Improved habitat
4	Work with Melbourne Water, water authorities and developers to implement stormwater harvesting in greenfield areas. Priorities are: in areas where the wetland is located close to the irrigation demand, and priority stormwater areas in Melbourne Water's Healthy Waterways Strategy	$200k (2023/24 to 2024/25)	**Lead:** Subdivisional Development **Support:** Sustainable Environment, Statutory Planning	Ongoing	Reduced drinking water usage. Mitigates impacts of water restrictions on public open spaces quality Reduced flow and nutrients to waterways
5	Develop business case for recycled water supply to DS Aitken Reserve	Business case: within current budget Delivery: $280k (pending Council approval 2021/22)	**Lead:** Sustainable Environment **Support:** Parks, Leisure Centres & Sport, Assets	2021/2022	Reduced drinking water usage Mitigated impacts of water restrictions on public open space quality Recycled water pipeline, tank, supply (output)
6	Continue to apply for relevant water grants to increase capacity of Council to deliver projects.	N/A	**Lead:** Sustainable Environment **Support**: Leisure Centres & Sport	Ongoing	Increased budget (output) Improves financial viability of projects
7	Investigate feasibility of connecting recycled water supply to currently irrigated Council managed reserves (e.g. the Nook Reserve, Sunbury)	Business case: within current budget	**Lead:** Parks **Support:** Sustainable Environment	2020/2021	Reduced drinking water usage Mitigated impacts of water restrictions on public open space quality

8	Provide water literacy education for sports clubs such as level of sports ground non-potable water, water costs, water outlook, etc.	Within current budgets	**Lead**: Leisure Centres & Sport **Support:** Sustainable Environment, Parks, Communications	From 2020	Newsletter articles (output) Better understanding between Councils and sports clubs on irrigation issues, costs, etc. Council is seen to be managing water efficiently and assisting the Hume community to do the same

GOAL:

Undertake water conservation and efficiency initiatives in the delivery of Council services

KEY PERFORMANCE INDICATORS (KPIs) AND TARGETS:

KPI 1: Reduce water use in Council operations
Target: Achieve benchmark of <10L/patron at Splash and 40L/patron at SALC and BALC by 2025

KPI 2: Improve stormwater quality from council developments
Target: Implement best practice water sensitive urban design into all Council led capital works projects.

Objective 1: Improve water efficiency of Council operations

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
9	Embed sustainable water cycle management considerations into Council's procurement processes/ policies.	Policy development within current budgets.	**Lead**: Sustainable Environment **Support:** Finance & Property Development	2020	Updated Procurement Policy (output)
10	Incorporate WSUD objectives, including passive irrigation of open space and streetscapes with stormwater, in the redevelopment of the Landscape Design Guidelines	Within existing budget (Urban & Open Space Planning)	**Lead:** Urban & Open Space Planning **Support:** Subdivisional Development	2020	Reduced drinking water use in open space and streetscapes Increased use of stormwater to irrigate sporting reserves
11	Ensure all Council led projects deliver best practice stormwater management (100% STORM rating), where practicable (even when they don't trigger planning permits). Specifically, requirements for: • WSUD and biodiverse landscapes in car parks • suitably sized rain tanks for all new buildings • water efficient fixtures and fittings for all new buildings and refurbishments • designing for climate related impacts for new Council facilities and major refurbishments, including building siting, landscapes and car parks. • designing for flood and storm resilience.	Incorporate into individual project budgets	**Lead:** Assets, Capital Works & Building Maintenance	Ongoing	WSUD Assets, such as raingardens, water tanks, permeable paving (output) Improved stormwater quality and reduced flow to waterways Reduced drinking water use in buildings Urban cooling in car parks
12	Improve water use monitoring at Leisure centres and high use sporting pavilions	Integrated Water Management Plan operating budget $10k (2020/21)	**Lead**: Leisure Centres & Sport **Support**: Capital Works & Building Maintenance, Sustainable Environment	2021	Sub-metering system Water balance List of projects to improve water efficiency and conservation
13	Install smart irrigation systems at irrigated sporting reserves and open space to monitor and reduce water use.	Within existing budget (Parks)	**Lead**: Parks	2023	Decrease irrigation water use by 10-15%
14	Commence a reconciliation process between Council facilities / assets, utility meters and utility invoicing, to identify cost and data anomalies and to improve the accuracy of Council's water reporting.	Subject to business case	**Lead**: Sustainable Environment **Support**: Finance & Property Development	Ongoing	Accurate water consumption database across all Council sites Utility billing inaccuracies and unusual consumption patterns that could indicate a leak are identified

15	Continue water management programs at existing Council buildings including rainwater tank installation, water efficient fixtures and fittings and building user engagement.	Incorporate into individual project budgets	**Lead:** Capital Works & Building Maintenance **Support:** Leisure & Sports	Ongoing	Reduced drinking water use in Council operations

GOAL:

Use Hume's fit-for-purpose water resources to support healthy vegetation, community recreational needs and provide urban greening and cooling while contributing to

KEY PERFORMANCE INDICATORS (KPIs) AND TARGETS:

KPI 1: Increase passive stormwater irrigation of street trees

Target: Trial passive irrigation of street trees in at least five streets in residential greenfields estates by 2025

Objective 1: Use best practice integrated water management to ensure that the urban forest can be passively irrigated

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
16	Investigate best practice in passive street tree irrigation systems (for residential streets) to determine preferred designs. Participate in the Melbourne University project *Re-designing Streetscapes for Managing Stormwater and Increasing Tree Canopy Cover* to trial and monitor effectives of passive irrigation designs on both tree health and stormwater treatment.	$40,000 (2020/21) $10,000 (2021/22) $10,000 (2022/23) $10,000 (2023/24)	**Lead:** Assets, Subdivisional Development **Support:** Parks, Urban Design and Open Space Planning	2024	Improved tree health and associated biodiversity improvement Increased urban cooling to mitigate the urban heat island effect Greater understanding of the suitability of passive street tree irrigation systems for Hume's soils and climatic conditions
17	Ensure that IWM requirements as specified within Precinct Structure Plans are implemented throughout the subdivision planning permit approval and implementation processes. This will involve collaboration with water authorities, developers and other agencies. For example, ensuring successful implementation of passive watering regime of River Red Gums within the Lindum Vale PSP.	Within current budgets (Subdivisional Development)	**Lead:** Subdivisional Development **Support**: Sustainable Environment, Statutory Planning	As required when development commences	IWM and WSUD assets are delivered by developers as required in PSPs Watering regime that ensures health of River Red Gums
18	Commence discussions with VPA, Growth Area Councils and the Growth Areas Infrastructure Design Manual Committee to establish the process by which best practice technical standards and requirements for greenfield streetscape IWM asset design can be developed and integrated into the VPA Engineering Standards for Subdivisions	Within current budgets (Subdivisional Development)	**Lead:** Subdivisional Development **Support:** Sustainable Environment, Assets, Statutory Planning	2025	VPA Engineering standards (output) Streetscape IWM in new subdivisions

Objective 2: Ensure new developments and Council assets incorporate Water Sensitive Urban Design

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
19	Develop WSUD infrastructure guidelines for developers that outline Council's preferred approach to WSUD assets.	Within Current Budgets (Assets & Subdivisional Development)	**Lead:** Assets and Subdivisional Development **Support**: Parks, Waste, Sustainable Environment, Statutory Planning	2023	Improved clarity around Council's WSUD requirements by refining processes and procedures for: • design inspections and approvals • asset inspection and construction supervision • enforcing noncompliance; providing adequate resourcing, developing consistent cross municipality monitoring and enforcement to ensure catchment wide benefits • handover inspection and approval of WSUD systems, including maintenance plans

20	Where appropriate ensure open space master plans incorporate integrated water management and WSUD elements and are designed for climate resilience.	N/A	**Lead:** Urban and Open Space Planning **Support:** Subdivisional Development, Strategic Planning	Ongoing	WSUD assets such as raingardens and wetlands (output) Improved waterway health Stormwater retained in the local environment to provide urban greening and cooling
21	Integrate climate change adaptation and water sensitive urban design principles in the Open Space Strategy development and implementation.	N/A	**Lead:** Urban and Open Space Planning **Support**: Sustainable Environment, Assets	Ongoing	Improved waterway health, stormwater retained in local environment, urban greening and cooling
22	Engage residents around our WSUD assets in high profile locations through signage, walking tours and events, such as in wetlands and parks.	Within current budget (Sustainable Environment)	**Lead**: Sustainable Environment	Ongoing	Signage and events (output) Educated community

Objective 3: Use Hume's Water Resources to Create Cooler and Greener Spaces

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
23	As part of the implementation of the Open Space Strategy, explore the use of a decision making framework for the irrigation of passive open space based on holistic criteria, such as social disadvantage or vulnerability, significant vegetation, proximity to other irrigated space, hierarchy of open space, level of demand and availability of surplus stormwater or recycled water.	Within current budget (Parks, Urban & Open Space Planning)	**Lead**: Parks and Urban & Open Space Planning, Sustainable Environment	2023	Framework for passive open space irrigation
24	In partnership with a university research body and other Councils, complete a study of benefits of Hume's irrigation of passive open spaces, including ecological and urban cooling benefits.	$10k (2023/24)	**Lead:** Parks **Support:** Urban & Open Space Planning, Organisational Performance and Engagement	2024	Improved understanding of how to achieve ecological and urban cooling benefits.
25	In partnership with Melbourne Water, explore the feasibility of Merlynston Creek naturalisation south of Barry Road. This includes technical feasibility, community and ecological benefits.	Within current budget (Sustainable Environment)	**Lead:** Sustainable Environment **Support:** Urban & Open Space Planning	2020	Designs for naturalisation that support Urban and Open space design, improve ecology of waterway, improve amenity

GOAL:

Work with the water industry and key stakeholders to advocate for and progress integrated water management initiatives within Hume that return environmental and community benefits

KEY PERFORMANCE INDICATORS (KPIs) AND TARGETS:

KPI 1: Participate in industry led projects and policy reviews

Target: Submissions made to key reviews and projects

KPI 2: Advocate IWM to and on behalf of the community.

Objective 1: Advocate for large scale IWM in Hume City

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
26	Continue to work with Melbourne Water and Western Water to achieve the aims of the Sunbury's Water Future project	Within current budget (Sustainable Environment)	**Lead**: Sustainable Environment **Support (internal):** Subdivisional Development, Statutory Planning **Support (external):** Western Water, Yarra Valley Water	Ongoing until 2023	Sunbury IWM Plan Protection of waterways to pre-development condition Sustainable water supply
27	Continue to work with Yarra Valley Water, Melbourne Water, Whittlesea City Council, Mitchell Shire Council, Victorian Planning Authority and the Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation to achieve the aims of the Upper Merri Creek IWM project	Within current budget (Sustainable Environment)	**Lead**: Sustainable Environment **Support (internal):** Subdivisional Development, Comms, Statutory Planning **Support (external)**: Melbourne Water, Yarra Valley Water, Victorian Planning Authority, Mitchell Shire Council, City of Whittlesea, Wurundjeri Woi Wurrung Cultural Heritage Aboriginal Corporation	2020	IWM Plan Protection of waterways to pre-development condition Sustainable water supply
28	Continue to work on the Sustainable Design Assessment in the Planning Process (SDAPP) in subdivision project (Collaborative Councils project)	Within current budget (Statutory Planning)	**Lead**: Statutory Planning **Support:** Strategic Planning, Sustainable Environment, Subdivisional Development	2021	Voluntary assessment framework for sustainability in subdivisions. Improve the urban design outcomes for human health and wellbeing and reduce the environmental impact of subdivisional development.
29	Continue to advocate to ensure that any new precinct structure plans under development deliver an IWM approach to urban development. Engage early in the process with water authorities on IWM solutions and requirements	N/A	**Lead:** Strategic Planning **Support:** Subdivisional Development, Sustainable Environment, Statutory Planning	As required	IWM Plan Protection of waterways to pre-development condition
30	Continue to participate in DELWP's Integrated Water Management Forums and relevant Forum projects.	N/A	**Lead:** Sustainable Environment	As required	Collaboration with other relevant Local Government and Agencies to overcome barriers to IWM

Objective 2: Contribute to water related State and industry policy development to ensure it reflects Hume's priorities and community expectations

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
31	Contribute to the Melbourne Urban Stormwater Institutional Arrangements Review (MUSIA)	Policy development within current budgets.	**Lead:** Subdivisional Development **Support:** Assets, Parks, Sustainable Environment	2021	Agreement with industry partners on governance arrangements and implementation steps (output)

32	Participate in Waterways of the West Action Plan Ministerial Advisory Committee and subsequent processes	N/A	**Lead**: Sustainable Environment **Support**: Strategic Planning, Statutory Planning	2020	Development and application of strengthened and consistent planning controls along the waterways of the west - Maribyrnong and Werribee catchments.
33	Submit a response to water authority pricing submissions. The response is to include a request to add properties to the water authority's sewer backlog program.	N/A	**Lead**: Sustainable Environment **Support:** Governance	(Melbourne Water 2021, metropolitan water retailers and Western Water 2023)	Council views are reflected in pricing determinations
34	Continue to advocate to the State Government around priority integrated water management and climate resilience matters through forums such as Integrated Water Management Planning and other forums and avenues. Priorities for our Council include: • Improving identification, compliance, enforcement and management of industrial pollution incidents • Encourage DELWP and Melbourne Water to develop policy requirements to ensure that Development Services Schemes integrate IWM outcomes • Ensure future climate conditions are integrated into drainage design standards • The need for climate risk modelling, analyses and interpretation at a regional scale to inform strategic planning, adaptation planning and related decision-making. • Investigating amendments to legislation to make waterway corridors the responsibility of a single agency (i.e. for full width between private property boundaries) • Minimising the impact of agricultural dam and extractive water use on natural waterways by increasing alternative water supply for Hume's agricultural areas, including Keilor Market Gardens • Increased funding for rural waterway management in Hume's Green Wedge areas • Incentives for private landowners to install stormwater management measures on residential lots, e.g. rainwater tank rebates	N/A	**Leads:** Sustainable Environment **Support:** Statutory Planning, Strategic Planning, Urban and Open Space Planning	Ongoing	Council and community views are communicated
35	Promote water authority engagement activities on IWM planning and projects e.g. Sunbury's Water Future	N/A	**Lead**: Communications	Ongoing	Greater opportunities for community to become more water efficient Water education opportunities are maximised through effective promotion
36	Promote external water efficiency business programs and engagement activities through the Business Efficiency Network	N/A	**Lead:** Economic Development	Ongoing	Newsletter articles (output) Improved uptake of water efficiency programs by businesses

GOAL:

Strengthen the links between IWM, Aboriginal water values and biodiversity values of waterways

KEY PERFORMANCE INDICATORS (KPIs) AND TARGETS:

KPI 1: Protect Waterways from urban stormwater pollution.

Target: Install water quality treatment assets (in addition to stormwater harvesting schemes) to remove 400kg nitrogen per year from our waterways by 2030

Objective 1: Recognise and Support Aboriginal Water Values

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
37	Actively seek and integrate Aboriginal knowledge and practice of water and land management into projects and master plans, particularly those along waterways.	N/A	**Lead**: Sustainable Environment **Support:** Multiple Departments	Ongoing	Improved waterway health Improved understanding of Aboriginal values within waterways
38	Continue to implement the Natural Heritage Interpretation Plan including cultural heritage. For projects near waterways, work with Aboriginal groups to incorporate cultural learning through designing signage and art, re-establishing and managing indigenous vegetation and participating in the landscape design, place naming.	Within current budget (Sustainable Environment)	**Lead**: Sustainable Environment **Support:** Multiple Departments	Ongoing	Recognition of Aboriginal values within waterways
39	Ensure that culturally sensitive areas are protected in accordance with the *Aboriginal Heritage Act 2006* and Regulations 2018.	Within current budgets	**Support:** Multiple Departments	Ongoing	Cultural artefacts within waterways are protected

Objective 2: Improve water quality or discharges to waterways by minimising pollution to waterways from Council, industry and development activities

ID	Action / Activity	Budget	Responsibility	Complete Action By	Outputs and Outcomes
40	Develop and implement (subject to Council approval) the Bulla IWM plan to address impacts of septic systems and stormwater on Deep Creek	Integrated Water Management Plan operating budget $10k (2019/20) Additional $10k external contribution	**Lead**: Sustainable Environment **Support**: Governance, Assets	2021	Improved waterway health Options for wastewater management
41	Deliver education and compliance programs (e.g. Building Cleaner Communities program) to minimise sedimentation impacts from subdivisional and housing development	Within Current budgets (Sustainable Environment)	**Lead**: Sustainable Environment **Support**: Statutory Planning and Building Control Services	2022	Reduced sediment from construction activities discharged to waterways
42	*Work with Environment Protection Amendment Act 2018*, coming into effect from 1 July 2020, particularly the general environmental duty, to target industrial stormwater pollution	N/A	**Lead**: Sustainable Environment, Waste, Statutory Planning **Support**: Governance	Ongoing from 2020	Reduced industrial pollution discharged to waterways
43	Re-assess the options for Spavin Lake water quality improvements. Subject to the outcome and Council approval, implement wetland treatment if it remains the preferred option.	$25k business case $600k (both pending Council consideration and approval)	**Lead:** Sustainable Environment **Support:** Assets, Urban and Open Space Planning	2023	Improved waterway health Reduced incidence of blue green algae blooms
44	Carry out a study to determine site-specific approaches to reduce litter discharged from the Council drainage system to waterways in litter hotspot areas. Approaches could include a combination of infrastructure such as new gross pollutant traps (GPTs), grated side entry pits, litter bins and education	$45k (2023/24)	**Lead:** Sustainable Environment **Support:** Assets, Waste, Urban and Open Space Planning	2024	Improved waterway health Increased amenity Reduce litter discharged to waterways
45	Manage leachate on-site at active and legacy landfills as required by licence conditions and Post Closure Pollution Abatement Notices	Within current budgets (Waste)	**Lead:** Waste	Ongoing	Protect groundwater from leachate pollution
46	Review the domestic wastewater management plan as per new SEPP (Waters) requirements. Incorporate IWM approach where stormwater management issues have also been identified.	Within current budget (Public Health)	**Lead:** Governance	2021	Improved waterway health Options for better wastewater management

Objective 3: Improve biodiversity in an around waterways					
ID	**Action / Activity**	**Budget**	**Responsibility**	**Complete Action By**	**Outputs and Outcomes**
47	Work towards creating an interconnected network of biodiverse green spaces along waterway corridors including by: • Working with partners to enhance linear parkland along waterways • Improving connectivity for walking, cycling and wildlife habitat • Implementation of relevant management plans • Protecting and enhancing conservation areas, including linking existing patches of remnant vegetation.	N/A	**Lead:** Sustainable Environment **Support:** Strategic Planning, Urban & Open Space Planning	Ongoing	Improved biodiversity along waterways or within waterway corridors Improved connection of community to waterways
48	**Moonee Ponds Creek Catchment** • Enhance ecological and amenity values along the Moonee Ponds Creek and associated tributaries through additional plantings, vegetation management and improvement works • Work with key partners, such as State Government and Melbourne Water, on rehabilitating Moonee Ponds Creek and supporting relevant key actions from Council's Jacana Valley and Broadmeadows Valley Park Masterplans • Participate in the Chain of Ponds Collaboration Group to enhance opportunities for improvements to waterway planning and management.	Within existing budget (Sustainable Environment)	**Lead:** Sustainable Environment **Support:** Parks, Urban and Open Space Planning	Ongoing	Improved biodiversity Improved waterway quality
49	**Yarra Catchment** • Enhance ecological and amenity values along the Merri, Aitken and Malcolm Creeks (and associated tributaries) through additional plantings, vegetation management and improvement works • Participate in the Merri Creek Management Committee to collaborate on planning and management of this waterway and assist in the implementation of the Merri Creek Environs Strategy. • In accordance with relevant masterplans investigate opportunities for Water Sensitive Urban Design, habitat connectivity, Aboriginal heritage, walking and cycling connectivity.	Within existing budget (Sustainable Environment)	**Lead:** Sustainable Environment **Support:** Parks, Subdivisional Development, Urban and Open Space Planning	Ongoing	Improved biodiversity Improved waterway quality
50	**Maribyrnong Catchment** • Support rural landowners to enhance ecological values along the Deep, Emu and Jacksons Creeks (and associated tributaries) through restoration works and stock management. • Encourage rural landowners to apply for Melbourne Water's Stream Frontage Management Program. • Enhance ecological and amenity values within the Jacksons Creek Regional Park through additional plantings, vegetation management and improvement works.	Within existing budget (Sustainable Environment)	**Lead:** Sustainable Environment **Support:** Strategic Planning, Subdivisional Development, Parks, Urban and Open Space Planning	Ongoing	Improved biodiversity Improved waterway quality

GOAL:

Goal: Ensure Hume's statutory obligations for the design, management and maintenance of water quality assets are achieved

KEY PERFORMANCE INDICATORS (KPIs) AND TARGETS:

KPI 1: Compliance with Urban Stormwater VPPs

Target: All relevant planning permit applications compliant with urban stormwater planning provisions at the permit stage

Objective 1: Improve Management of Council's Water Quality Treatment Assets					
ID:	**Action / Activity**	**Budget**	**Responsibility**	**Complete Action By**	**Outputs and Outcomes**
51	Document and systematise WSUD maintenance issues, governance, responsibilities and resourcing, including maintenance schedule and budget	Within current budget (Sustainable Environment)	**Lead**: Sustainable Environment **Support:** Parks, Waste, Capital Works & Building Maintenance, Subdivisional Development, Assets	2021	Improved asset performance (water quality treatment) Improved water quality discharged to waterways
52	Develop proactive management plan of Council owned WSUD assets including GPT, wetland and raingarden maintenance and cleanout procedures	Plan development Within current budget. Outcomes may require additional funding, subject to Council approval	**Lead**: Waste, Parks **Support:** Sustainable Environment, Assets	2022	Reduced volume of litter and sediment in waterways Reduced sediment and litter in downstream WSUD assets
Objective 2: Improve Collaboration and Staff capacity					
ID:	**Action / Activity**	**Budget**	**Responsibility**	**Complete Action By**	**Outputs and Outcomes**
53	Convene Council's internal Integrated Water Management Working Group at least 3 times per year.	N/A	**Lead:** Sustainable Environment	Ongoing	Improved collaboration
54	Build capacity of staff to understand, design, implement, manage and maintain green infrastructure projects that are climate resilient and perform across multiple objectives, by providing targeted professional development for staff.	Within current budget	Multiple Departments	Ongoing	Staff have the sufficient knowledge and skills to meet Council's IWM objectives
Objective 3: Improve implementation of WSUD in the planning scheme					
ID:	**Action / Activity**	**Budget**	**Responsibility**	**Complete Action By**	**Outputs and Outcomes**
55	Continue the implementation of new VPP urban stormwater clauses to ensure new developments: • understand and comply with the requirements to achieve best practice stormwater management on-site • manage potential stormwater impacts during construction (e.g. sediment control) • legal point of discharge is consistent with achieving best practice stormwater management on-site	Subject to resource requirements as implementation process is developed	**Lead:** Statutory Planning **Support:** Assets, Sustainable Environment	Ongoing	Compliance with Victorian Planning Provisions Stormwater volume and quality controls on private developments Improved waterway health
56	Ensure that 100% of domestic wastewater generated is treated and contained within property boundaries or properties are serviced by sewer infrastructure.	Within current budget (Public Health)	**Lead:** Governance	Ongoing	Improved waterway health
57	Where urban stormwater Victorian Planning Provisions are not mandatory, encourage best practice WSUD via the implementation of the SDAPP process.	N/A	**Lead**: Statutory Planning **Support:** Sustainable Environment	Ongoing	WSUD assets on private property, particularly commercial developments in urban growth areas.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