City of Melton

Integrated Water Management Plan (draft)

May 2018

Document history

Revision:

Revision no.	01
Author/s	Harry Virahsawmy Jonathon Ho
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Revision no.	02
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Distribution:

Revision no.	01
Issue date	12 December 2017
Issued to	Holly Dillabough (City of Melton)
Description:	Draft for comment
Revision no.	02
Issue date	February 2018
Issued to	Holly Dillabough (City of Melton) Final
Description:	February 2018
Revision no.	03
Issue date	May 2018
Issued to	Holly Dillabough (City of Melton) Final
Description:	May 2018

Citation:

Please cite this document as:
Alluvium (2018). City of Melton Integrated Water Management Plan. Report P117080 by Alluvium Consulting Australia for Melton City Council 232 High St Melton 3337

Acknowledgements:

We would like to acknowledge and thank all those who attended consultation and workshop activities that were critical in developing this plan.

Executive summary

Water is critical for the liveability of our City, the health of our ecosystems and the prosperity of our communities.

Integrated water management (IWM) brings together all elements of the water cycle to achieve the greatest social, economic and environmental benefits to the community. An IWM approach ensures that the water cycle is more resilient to the impacts of climate change and a growing population while continuing to make the City of Melton a great place to live, work and recreate.

Aim: This plan sets out targets and actions for the period 2018-2028 to meet the objectives of the plan that have been developed through internal and external consultation. Three objectives have been identified that are based on short and longer-term outcomes that together will assist Council transition to a water sensitive City and deliver on the vision:

Melton City Council uses and manages water sustainably to enhance urban and natural environments and support community health and wellbeing.

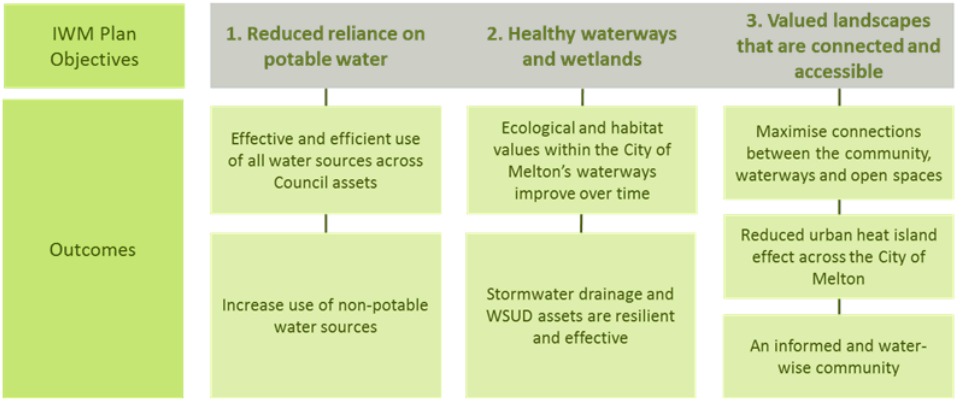

Figure A. *Objectives and outcomes*

Council interacts with the water cycle both directly through the management of public assets, as well as indirectly through working with community and other stakeholders including government and non-government organisations. Achieving the objectives in the plan will require direct action as well as advocacy approaches and collaboration with stakeholders such as other tiers of government, water corporations, neighbouring councils, and the community. This plan is designed to bring together departments within Council to improve collaboration on water related projects as well as supporting stronger links between Council, community and external stakeholders.

Water cycle changes in the City of Melton: Population growth, urbanisation and climate change within the City of Melton will significantly alter the water cycle so that by 2040:

- The urbanised area will grow from 13% to 38% of the local government area (LGA)
- An additional 33 GL of stormwater will be generated within the LGA each year
- Potable water consumed by community and businesses will triple, from 10 GL/year to 30 GL/year
- Council's potable water consumption will grow from 200 ML/year to 600 ML/year

- Wastewater generated will grow from about 8.3 GL/year to 24.6 GL/year for treatment and disposal, or potentially reuse.
- Under a medium climate change scenario, the majority of Victoria will experience higher average temperatures (estimated to be +2.3°C by 2065), a decline in rainfall (-4.7% by 2065) and an increase in evapotranspiration (+7.4% by 2065). These conditions will combine to reduce runoff in the Werribee River basin by 18% by 2065 (DEWLP, 2016).

Targets: The IWM Plan identifies the following targets for Council to meet by 2028:

- A reduction in potable water use of **90 ML/year** through water use efficiency
- **25 ML/year** of irrigation demand met from non-potable water sources (including stormwater and recycled water)
- **214 kg/year** nitrogen reduction from existing urban stormwater via implementation of water sensitive urban design (WSUD)
- An additional **10 tonnes/year** of litter through the application of WSUD and gross pollutant traps.

The plan will be monitored annually to ensure that the priorities remain correct and emerging opportunities for delivery and management are integrated as appropriate. Progress towards the vision and delivery of the targets will be reported on annually.

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Definitions and abbreviations

DELWP	Department of Environment, Land, Water and Planning
Fit for purpose water	A quality of water that is appropriate for the purpose for which it is intended to be used.
Gigalitre (GL)	One thousand, million (1,000,000,000) litres
Gross pollutant trap (GPT)	Gross pollutant traps are structures that use physical processes to trap solid waste such as litter and coarse sediment.
Integrated water management (IWM)	An approach to water management that considers all elements of the water cycle together rather than their individual parts in isolation
LGA	Local Government Area
Megalitre (ML)	One million (1,000,000) litres
MERI	Monitoring, evaluation, reporting and improvement
MUSIC model	Model for Urban Stormwater Improvement Conceptualisation
Precinct Structure Plan (PSP)	A long-term plan for urban development prepared by the Victorian Planning Authority that describes how the land is expected to be developed, and how and where services are planned to support development.
Water sensitive urban design (WSUD)	A design approach which integrates the urban water cycle, including stormwater, groundwater and wastewater management and water supply, into urban design to minimise environmental degradation and improve aesthetic and recreational appeal.

1 Introduction

The protection and efficient management of our water resources is critical to the liveability and prosperity of our community. Achieving the right balance of water to meet our needs and the environment's needs will ensure the City of Melton's landscapes are resilient to population growth, urbanisation and climate change.

Integrated water management (IWM) is a planning approach that brings together all elements of the water cycle and land use planning to achieve optimal social, economic and environmental outcomes. It considers land use planning and water together to ensure that the challenges of population growth and an uncertain climate can be addressed while continuing to make the City of Melton a great place to live, work and recreate.

1.1 What is a Water Sensitive City?

To provide the context for the IWM Plan, it is useful to understand the term 'Water Sensitive City'. This term is described by the Co-operative Research Centre for Water Sensitive Cities as a city that:

- Is a potential water supply catchment, providing a range of water sources at different scales for different uses,
- Provides ecosystem services and a healthy natural environment with social, ecological, and economic benefits, and
- Has a community whose citizens have knowledge and a desire to make wise choices about water and become actively engaged in decision-making.

The development of this IWM Plan and the concept of the Water Sensitive City are intrinsically linked. The journey toward becoming a Water Sensitive City is defined by the six states of 'transition' (Figure 1). The early phases reflect the historical and engineering driven development of cities from water supply and wastewater management through to traditional drainage infrastructure. As understanding of the environment has grown, cities like Melbourne have legislated to protect waterways and installed water sensitive urban design (WSUD), becoming Waterways Cities.

This continuum places Melton City Council's approach to IWM within a broader context, and by developing an IWM Plan with clear goals and targets, the City of Melton can continue its evolution toward becoming a Water Sensitive City.

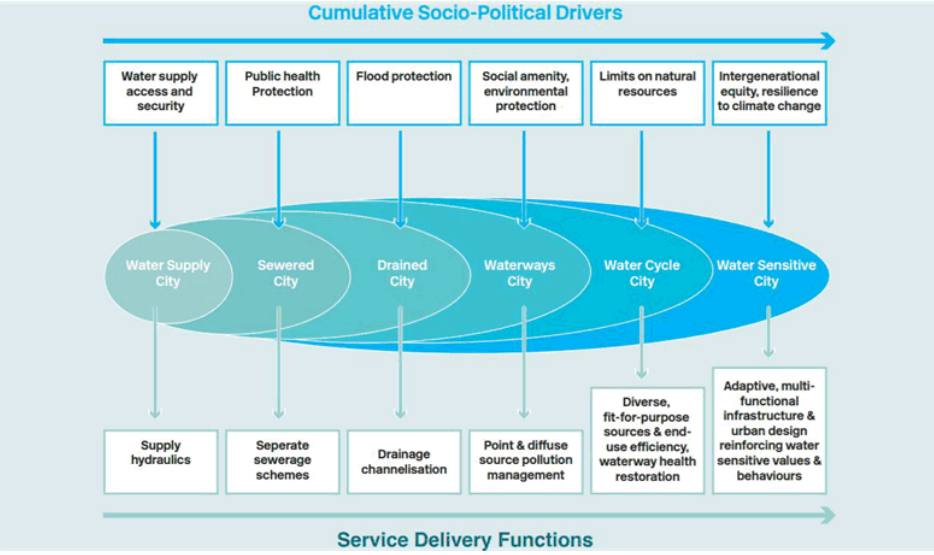


Figure 1. *Urban Water Transitions Framework (Brown, 2009)*

1.2 City of Melton as a Water Sensitive City

Water-wise community: A shared understanding of the need for considered use of potable water, and appreciation and protection of our waterways

Resilience to climate change: Mitigation of urban heat island effect through healthier, greener urban spaces and increased tree canopy; improved flood management; reduced demand on potable water in low rainfall due to access to alternate supplies

Increased biodiversity and ecological values: Increased habitat through healthy natural and constructed waterways and wetlands, and increased streetscape and urban vegetation

High quality public spaces: Constructed wetlands, raingardens, passive irrigation systems, increased tree canopy and efficient irrigation systems for improved public amenity

Reduced waterway pollution: Water sensitive urban design (WSUD) measures for reduced stormwater pollution flowing into our waterways

Financial savings and avoided costs: Savings on water utility costs and drinking water infrastructure upgrades through reduced potable water consumption and the use of 'fit-for-purpose' water

Water sensitive built environment: Buildings that include water efficient fittings, fixtures and whitegoods, raingardens, rainwater tanks, permeable surfaces and stormwater infiltration

Improved community health and wellbeing: Cool, green streets, parks, and open spaces encourage community participation and interaction with our natural spaces for improved mental and physical health

1.3 Context

The aim of this plan is to guide the City of Melton towards becoming a Water Sensitive City in the context of significant population growth, urbanisation and climate change. A schematic summary of the modelled changes in flows between the baseline year (2016) and 2040 is provided in Figure 4 and Figure 5 below. In summary, by 2040:

- As City of Melton's population grows, the urbanised area will increase from 13% to 38% of the local government area (LGA).
- This change in land use will generate an additional 33 GL of stormwater each year.
- Potable water consumed by the community and businesses within the City of Melton will triple, from 10 GL/year to 30 GL/year.
- Council's potable water consumption will grow from 200 ML/year to 600 ML/year, most of which is on sports fields and open spaces (73%), and within buildings (13%).
- Wastewater generated will increase from about 8.3 GL/year to 24.6 GL/year for treatment and disposal, or potentially reuse.
- Under a medium climate change scenario, the majority of Victoria will experience higher average temperatures (estimated to be +2.3°C by 2065), a decline in rainfall (-4.7% by 2065) and an increase in evapotranspiration (+7.4% by 2065). These conditions will combine to reduce runoff in the Werribee River basin by 18% by 2065 (DEWLP, 2016).

To manage these changes, the IWM Plan focusses on Council's primary areas of responsibility while recognising the scope for influence and advocacy with stakeholders. Figure 2 summarises Council's primary responsibilities and their links to IWM. Important areas of advocacy include working with the State Government and water corporations on the provision of recycled water and with Melbourne Water on the health of waterways within the City of Melton.

Category	Role and tasks	Potential link to integrated water management
Planning	Land use planning Conservation and land management	• Drainage • Waterways and water sensitive urban design (WSUD) in new developments • Existing waterway, wetland and WSUD maintenance and rehabilitation
Recreation and culture	Sport and recreation facilities Parks, gardens and reserves	• Greening and irrigation of open spaces • Alternative water supply • Connectivity and shared pathways
Environmental education	Supporting community groups in protecting and enhancing the environment. Engaging and educating the community around environmental issues	• Waterway rehabilitation and revitalisation (through planting days, clean-up days) • Creating a water-wise community
Waste management	Collecting, reusing, recycling and disposing of waste Regulation of litter	• Waterway amenity (i.e. keeping litter from reaching waterways)
Building	Environmental specifications for new assets and renewals	• Water use efficiency • Alternative water sources • WSUD
Roads	Construction and maintenance of local roads	• Incorporation of WSUD and street trees (as part of traditional capital works)

Figure 2. *Council's role in integrated water management*

Stakeholder	Area of responsibility	Potential area of advocacy and collaboration
Melbourne Water	Flood management (including waterways and retarding basins) Waterway health Stormwater quality Drainage schemes and larger drainage infrastructure	• Waterway health, restoration and rehabilitation • Design and implementation of surface water management assets (including wetlands) • Community education and engagement • Funding (e.g. Living Rivers fund)
Water corporations (City West Water / Western Water)	Potable water provision Sewage collection, conveyance and treatment Recycled water	• Recycled water and other alternative water source provision • Approving integrated water management plans for new developments • Innovation and R&D in servicing of growth areas • Sewage resource management and recovery
DELWP	Regulation and policy Facilitation of the Werribee IWM Forums and Working Group	• Provision of recycled water to the west • Expanded implementation of Clause 56 • Implementing Greening the West
Southern Rural Water	Groundwater management Surface water extractions	• Groundwater use
Land development industry	Environmental specifications for new assets and renewals	• Alternative water sources • Water sensitive urban design • Open space provision
Victorian Planning Authority	Land use planning Preparation and approval of precinct structure plans	• Consideration of IWM elements in planning • Timing of consultation and inclusion of water sensitive assets in precinct structure plans
Neighbouring Councils and Community	Stormwater quality entering the municipality Open space management Land use planning	• Peer to peer learning (re: water sensitive assets and design)
Traditional Owner groups	Communicating aboriginal water values Cultural and heritage approvals Interpreting landscapes for developers	• Advice on water planning and management • Communicating aboriginal water values • Access to water for economic development and capacity

Figure 3. *Key stakeholder advocacy and collaboration map*

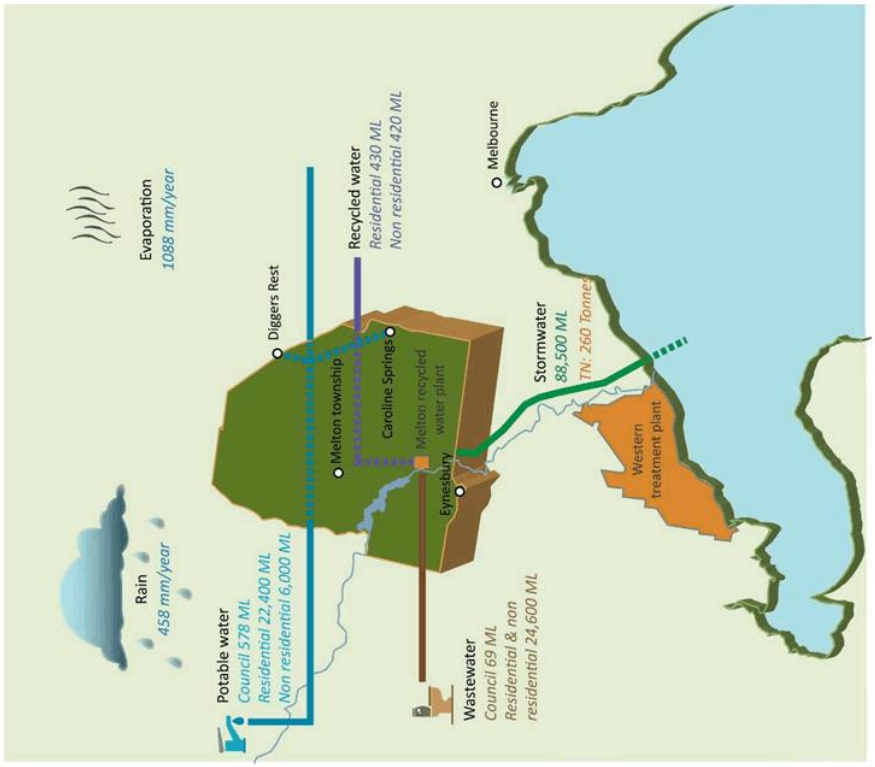


Figure 5. *2040 Water balance summary*

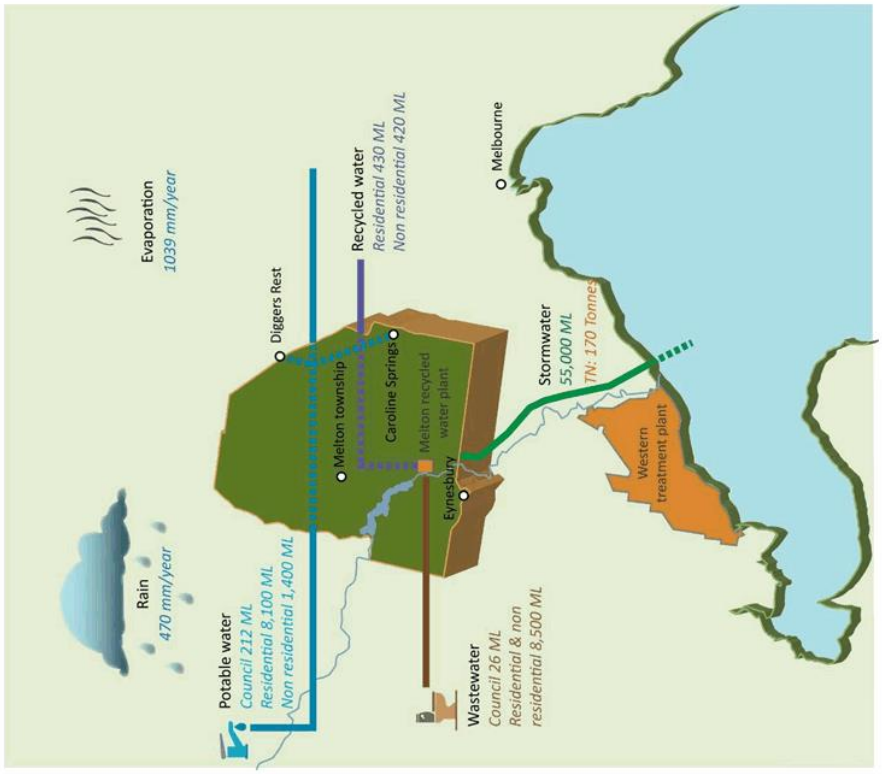


Figure 4. *2016 Water balance summary*

Policy: There are three policy drivers that support the implementation of the IWM Plan. First, the Victorian Government's *Water for Victoria* (2016), and particularly Chapter 5: *Water's role in resilient and liveable cities and towns,* highlights five outcomes that this IWM Plan is aligned to (see Figure 6).

Figure 6. *Summary table from* Water for Victoria *Chapter 5 (DELWP, 2016)*

Secondly, the Council and Wellbeing Plan 2017 – 2021 highlights Council's commitment to 'promoting, improving and protecting public health and wellbeing'. This plan also identifies specific themes. Themes 2 and 3 and their respective outcomes and objectives are well-aligned with the objectives of the IWM Plan (Figure 7).

Theme	Outcome	Objectives
2. A thriving and resilient natural environment	A City that preserves and enhances its natural environment for future generations	• A resource efficient City • A City with healthy waterways, biodiversity and ecosystems • An environmentally aware community
3. A well planned and built City	A City with a clear vision to manage growth in sustainable and accessible way	• A City that strategically plans for growth and development • Public spaces that are vibrant and engaging places for all

Figure 7. *Council and Wellbeing Plan 2017-2021: Summary of links to IWM*

Finally, the City of Melton's first Environment Plan 2017 – 2027 sets out Council's responsibilities across three themes, the Built Environment, Natural Environment, and Resource Use. There are a number of actions within the Environment Plan that align with the targets and actions in the IWM Plan and these are set out in the summary below.

Figure 8. *City of Melton Environment Plan 2017-2017: Summary of links to IWM*

What have we done to date: Over recent years Melton City Council has invested in projects that directly or indirectly support improved integrated water management outcomes. The table below summarises a selection of these initiatives:

Initiatives	Outcomes
Strategy	• Council and Wellbeing Plan 2017-2021 • Environment Plan 2017-2027 • Open Space Strategy 2016-2026 • Western Plains North Green Wedge Management Plan 2014 • Waste Management Strategy 2011-2015
Physical assets	• 600+ WSUD assets constructed and/or maintained • 24 rainwater tanks installed across 20 Council sites • 2 stormwater harvesting schemes • Sports ovals connected to the Class A/B recycled water network
Programs and projects	• Water audits undertaken in 13 high water use buildings • Planet Footprint Data Management system used to monitor water usage • Melton Botanic Garden Trail completed • Ryans Creek Rehabilitation project completed • Lake Caroline and Toolern Vale Stormwater Harvesting projects
Stakeholder engagement	• Community groups supported in rehabilitation works near waterways through providing grants and advice • Community engagement with our waterways supported through Environmental Grants Program • Involvement in DELWP's IWM Forums and Working Group
Investigations and studies	• WSUD Options Assessment – Toolern Creek and Tributaries 2014 • Werribee River Whole of Water Cycle Management Report 2014 (Southern Rural Water) • Melton and Wyndham North Integrated Water Management Analysis Report 2015 (Western Water)
Guidelines and standards	• City of Melton WSUD Guidelines

2 Vision and objectives

The vision and objectives for this plan have been developed through a consultation process with the aim of articulating Council's aspirations for water and how it will shape the City into the future.

Vision: *Melton City Council uses and manages water sustainably to enhance urban and natural assets and support community health and wellbeing.*

Objectives: This plan has three objectives. The table below summarises where we are now in relation to those objectives, and where we want to be.

Where we are now	Where we want to be
Objective 1: Reduced reliance on potable water	
Council requires a certain amount of water to provide services to the community and maintain healthy public spaces. Access to water is however finite and Council needs to make the best use of all sources of water including potable, rainwater, stormwater and recycled waste water. In 2015, Council's water usage was 212/ML, with 13% used in buildings and 73% used to irrigate parks and open spaces. This water demand will continue to increase as more buildings and open spaces come online to service the City of Melton's growing community. Council will need to diversify its water supply to future-proof its assets and service delivery.	Melton City Council aims to reduce demand on potable water and increase use of non-potable water sources to enable the City to cope with future stressors such as climate change and urbanisation while providing high quality spaces for the community. Water efficiency will be achieved through infrastructure improvements in buildings and irrigation systems, as well as through improved management of service levels and consumption. In addition, Council will diversify its water supply by exploring non-potable water options such as recycled water and stormwater harvesting to provide a secure, flexible water supply for a growing population in a changing climate.
Objective 2: Healthy waterways and wetlands	
Multiple waterways flow through the City of Melton including two of the major waterways in western Melbourne, the Werribee River and Kororoit Creek. The condition of the waterways in the City range from good condition, to highly degraded waterways that have been significantly modified. Melbourne Water is the responsible authority for waterways in the City, however Melton City Council has influence over their condition through the construction and maintenance of WSUD assets, litter management and waterway rehabilitation works.	Melton City Council aims to improve ecological and habitat values within the City's waterways over time and ensure stormwater drainage and WSUD assets are resilient and effective. Council will address threats to local waterways by continuing to install WSUD assets where required and ensuring existing assets are functioning effectively. Council will continue to rehabilitate waterways to provide channel stabilisation and habitat for improved biodiversity outcomes. Council will also continue to advocate for local water issues.
Objective 3: Valued landscapes that are connected and accessible	
The City of Melton's parks, open spaces and waterways provide spaces for enjoyment, connection and recreation for its residents. Although Council has invested in improving shared paths that connect waterways and open spaces, as well as rehabilitating sections of its waterways to enhance these values, Melbourne Water currently ranks amenity, community connection and recreation from low to moderate for the Werribee Catchment, of which City of Melton is a part.	Melton City Council aims to maximise connections between the community, waterways and open spaces, reduce urban heat island effect, and support an informed and water-wise community. As climate change causes rising temperatures, access to high quality open spaces will become increasingly important as refuges for residents. Council will endeavour to retain water in its landscapes to provide cool spaces for the community and to increase urban tree canopy where possible. Council will support residents in engaging with local waterways and wetlands through providing education and opportunities to participate in waterway improvement.

The outcomes that sit underneath each objective are set out in 9 below.

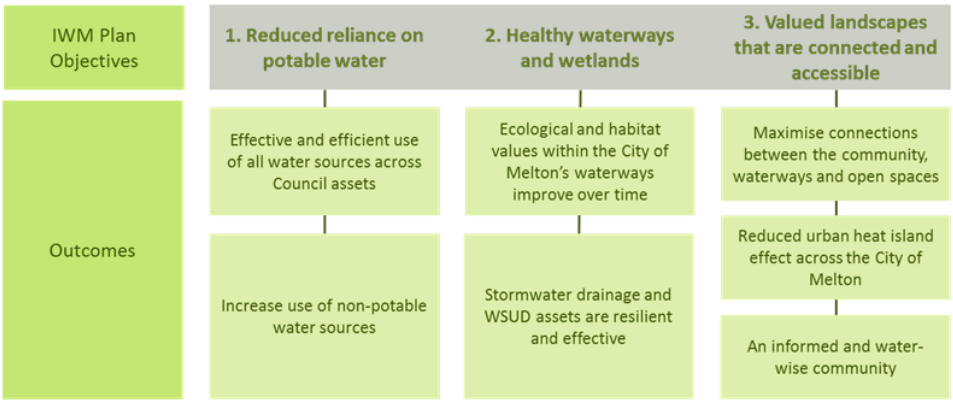


Figure 9. *Objectives and outcomes*

The objectives and their related outcomes are the distillation of feedback received throughout the consultation process with internal and external stakeholders. The outcomes were separated into intermediate and longer-term, with the latter providing context for the plan's objectives. Actions were then defined to achieve both intermediate and longer-term outcomes.

3 Targets

Targets allow Council to measure progress towards its objectives and vision.

The following targets have been developed based on a range of inputs including the water and pollutant load analysis, analysis of what is economically feasible, an understanding of best practice requirements and the Plan's objectives and outcomes.

Objective 1 – Reduced reliance on potable water

		Timing	Description
Target 1.1	Reduce irrigation rates on all open spaces and sportsgrounds by **10%**	2024	Reduction in irrigation rate from an average of 5.0 ML/ha/year to 4.5 ML/ha/year
Target 1.2	All sportsgrounds have a defined turf quality standard. Irrigation is managed on a ground by ground basis to meet this standard	2020	Irrigation management to reduce irrigation rate from 4.5 ML/ha/year to between 4.5 and 3.5 ML/ha/year
Target 1.3	**23 ML/year (or 8%)** of projected irrigation demand (passive and active open spaces) met with non-potable water sources. This includes 5 ML/year for passive open spaces	2028	Approximately 8% of total projected demand for open space as at 2028 (287 ML/year) met from any non-potable water source
Target 1.4	15 priority Council buildings reduce their potable water use to **0.53 kL/m²/year**. Melton Waves reduces water use by **5%** compared to 2016	2024	Being equivalent to a 4-star NABERS rating (based on a comparison of current water use and industry benchmark)
Target 1.5	All new Council buildings consume **0.35 kL/m²** or less (not including aquatic centres)	2020	Being equivalent to a 5-star NABERS rating

Objective 2 – Healthy waterways and wetlands

		Timing	Description
Target 2.1	**214 kg/year** additional reduction in Total Nitrogen via new WSUD assets. Ensure best practice reductions are achieved in greenfield developments	2028	Reduction measured based on MUSIC modelling
Target 2.2	Remove an additional **10 tonnes per year** of litter from established area catchments	2028	Through the addition of GPTs, water sensitive urban design and community education
Target 2.3	All priority WSUD assets are functioning according to design	2022	Number of priority assets determined by WSUD audit
Target 2.4	All new WSUD assets are designed and constructed according to Melton City Council's WSUD guidelines and specification	2020	Determined by asset design audit

Objective 3 – Valued landscapes that are connected and accessible

		Timing	Description
Target 3.1	Undertake a street tree passive irrigation trial to build internal capacity, understand budget and to guide the land development industry	2019	To support the targets of the (currently in development) Street Tree Strategy and to improve the irrigation of Council and developer planted street trees.
Target 3.2	Naturalise Arnolds Creek East	2024	Converting an artificial channel into a natural waterway with ecological value.
Target 3.3	Rehabilitate **2km** of urban waterway every two years	2018 - 2028	Improve the condition of degraded waterway through revegetation and rehabilitation works.
Target 3.4	Implement **1 project per year** in established urban areas that educates the community by linking stormwater quality to waterway health	2018 – 2028	Examples include installing signage on stormwater pits, images on street cleaning vehicles, information regarding WSUD asset function.
Target 3.5	Implement **4 projects per year** for community participation on waterways and health	2018 - 2028	Examples include planting days, clean-up days, engaging school groups in planting and education.

Figure 10. *Utsav Malayalee Samaj undertaking waterway planting at 'The Ridge'*

4 Monitoring, evaluation, reporting and improvement (MERI) framework

The Monitoring, Evaluation, Reporting and Improvement (MERI) framework is a conceptual model designed to support Melton City Council in monitoring the progress of the IWM Plan, providing a basis for learning, improvement and accountability. The MERI framework supports the development of metrics to monitor and assess progress over time to understand the effectiveness, efficiency and appropriateness of actions and how these actions impact outcomes, objectives or targets.

A program logic approach was adopted that links intermediate and longer-term outcomes to this plan's targets. Targets for the IWM Plan are set at varying scales and timeframes with some relating to a particular action while others link to intermediate and longer-term outcomes. The program logic (see Appendix A) maps out how the targets for the IWM Plan have been set and the various scales and timeframes that apply.

Actions can lead to biophysical, institutional and economic outcomes. The MERI framework supports and informs the action plan, setting out that level at which targets are set and how they should be monitored and reported on.

Monitoring and reporting on the IWM Plan will comprise of:

1. Annual reporting on the actions and targets to an Implementation Working Group to monitor progress towards the objectives.
2. Review of the action plan every two years, with changes made as appropriate, to allow Council to revisit emerging trends and changing priorities, and to enable adaptation to new policy positions at the state or national level.
3. Review and update (if required) of the plan at 5 years.
4. Fully reviewed at nine years. New plan to be developed by ten years (2028).
5. Public reporting on progress towards targets through an annual State of the Environment report by 2020.

5 Action Plan

The action plan provides the detail to work towards achieving the objectives and vision.

Once the long term and intermediate outcomes were understood, further analysis and consultation led to the development of specific targets and actions to achieve them. The relationships between each stage of this process is shown in a 'program logic' format (see Appendix A), that illustrates the link between objectives and actions.

5.1 Action Plan

Objective 1: Reduced reliance on potable water

No	Action	Description	Resourcing (E = existing budget S = subject to annual budget process)	Notes	Timing	Priority	Responsibility	Related target(s)
1A	Improve open space irrigation efficiency	▪ Audit irrigation approaches, infrastructure and control systems across Melton City Council, prioritising high water consuming open spaces	S	Prioritise open spaces based on audit results that include water consumption, age and performance of irrigation and community use. Water efficiency actions include review of irrigation infrastructure, and controls. It may also include capacity building internally to operate new systems. Council needs to determine preferred approach to irrigation and inform contractors as part of works specifications.	2018	High	Operations	1.1
		▪ Identify gaps in irrigation data (particularly for high water using spaces). Install additional monitoring and metering to ensure consumption can be tracked	S					
		▪ Prioritise open spaces and efficiency actions across all active and irrigated passive open spaces. For high priority spaces: ○ Undertake a cost / water saving comparison for efficiency options ○ Implement options according to return on investment ○ Inform Western Water of priorities and identify opportunities for recycled water supply to those spaces.	S					
		▪ Undertake audit of sportsgrounds to identify opportunities for the conversion of sportsfields to warm season grasses. ○ Implement conversions according to estimates of water saved ○ All new sportsgrounds to be planted with warm season grasses. This requirement should be reflected in IWM Plans for new developments, PSP specifications and public realm guidelines.	S E,S E					
		▪ Identify and specify preferred irrigation infrastructure for new and upgraded open spaces. This requirement should be reflected in IWM Plans for new developments, PSP specifications and public realm guidelines.	S				Capital Projects; City Design, Strategy and Environment	
1B	Undertake water efficiency audits in Council buildings	▪ Undertake a water efficiency audit for Council's 15 highest water using buildings (including Melton Waves)	S	Priorities have been estimated based on water consumption and building age. Recent upgrades to Melton Waves have realised water savings described as 'low hanging fruit'. This audit will focus on accounting for losses (e.g. leaks).	2018	High	Operations	1.1
1C	Implement water efficiency measures for existing and new buildings	▪ Implement water efficiency and fixture upgrades based on the relative return on investment and volume of water saved as identified during audits under Action 1B	S	The aim is for the audit to identify water savings to meet the target of 0.53 kL/m². New building specifications should include a requirement for 5-star NABERS water consumption rates (equivalent to 0.35 kL/m²).	2028	Medium	Operations	1.3
		▪ Define water efficiency requirements for new buildings and incorporate that into Council policy and building specifications	E				City Design, Strategy and Environment; Capital Projects	1.4
		▪ Establish or adopt water use efficiency requirements for any new water-based recreation centres based on industry best practice	E					
1D	Advocate for the extension of recycled water network across Melton City Council	▪ Use the IWM Forum process facilitated by DELWP to advocate for the extension of both the Class A and Class B/C network to high priority locations. Advocacy will be directed at DELWP, the State Government, Western Water, City West Water and the land development industry	E	Engage with external stakeholders to gauge their interest in advocacy for recycled water including the land development industry, the Victorian Farmers Federation, surrounding Councils and rural land owners. There may be potential for another entity (e.g. City West Water), to implement a scheme beyond their business boundary.	2018	High	City Design, Strategy and Environment	1.3
1E	Investigate use of non-potable water for irrigation	▪ High level feasibility assessment for non-potable water sources for district active open space and regional passive space	S	The target is not tied to one or other non-potable water source. This will depend upon the comparison of cost between recycled water, harvesting stormwater and perhaps larger scale rainwater harvesting. It will also depend upon the availability of recycled water.	2028	High	Engineering Services	1.3
		▪ Prioritise alternative water supply opportunities for further design and construction	E					
		▪ Design and construct alternative water supply projects	S					

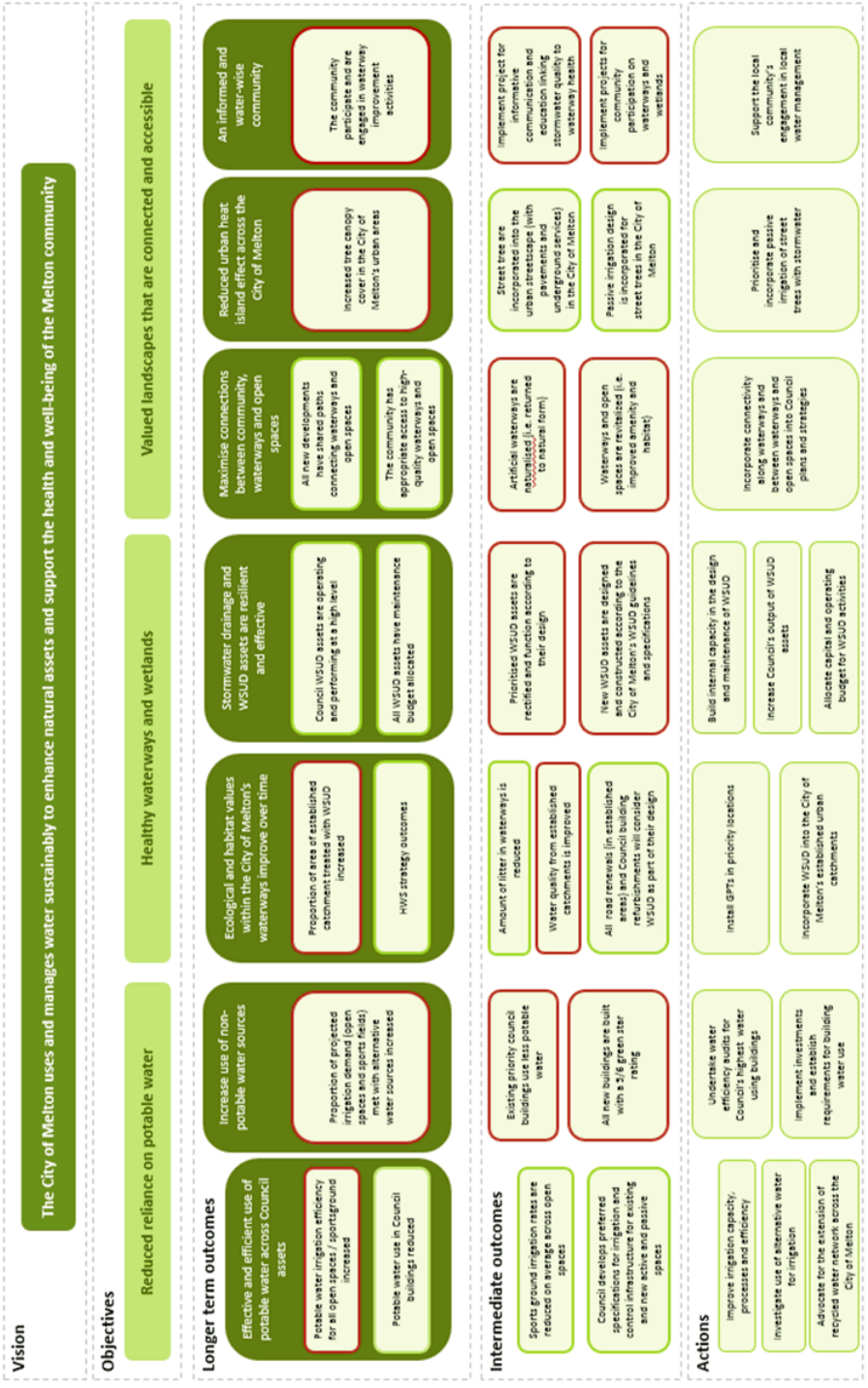
Objective 2: Healthy waterways and wetlands

No	Action	Description	Resourcing (E = existing budget S = subject to annual budget process)	Notes	Timing	Priority	Responsibility	Related target(s)
2A	Ensure compliance with Clause 56 in new development areas	▪ Council to enforce compliance with Clause 56 of the Victorian Planning Provisions through the review of design plans and auditing of WSUD construction		An important assumption in the water and pollutant balance is that new developments meet Best Practice Environmental Management (BPEM) stormwater pollution reduction targets and therefore Council's infrastructure focus will be within existing, urbanised catchments.	2018 onward	High	Engineering Services	2.1, 2.2, 2.3, 2.4
2B	Incorporate WSUD into established urban areas	▪ Continue to install WSUD assets in established urban areas	S	The Total Nitrogen reduction target is derived from estimating biofilter installation (@ 200m² per year). TN removal could be met or increased by including WSUD in road renewals, particularly in busy pedestrian streets. Prioritise GPT locations based on litter hotspots, proximity to waterways and visibility of waterways (i.e. do people walk and cycle along those lengths).	2018 to 2028	High	Engineering Services	2.1, 2.2
		▪ All road renewals will consider WSUD as part of their design	E					
		▪ All Council building refurbishments to consider WSUD. This requirement should be reflected in Council's Ecologically Sustainable Design policy due to be completed by 2020/2021	E				Operations	
		▪ Install GPTs in priority locations: o Prioritise potential locations for GPTs o Install two GPTs per year at the highest priority locations	 E S					
2C	Build Council's capacity in water cycle management and WSUD	▪ Engage an Integrated Water Cycle Officer to champion this plan and drive its implementation	S	Seek out and attend other training courses like Australian Ecosystems wetland training on wetland vegetation and share that information with other Council staff at internal lunchtime sessions or similar.	2020	Medium	Engineering Services; City Design, Strategy and Environment; Operations	2.1
		▪ Undertake internal training to understand how to audit assets	S					
		▪ Engage with neighbouring councils in the spirit of peer to peer learning to understand other councils' experiences with WSUD implementation and maintenance in similar climatic conditions	E					
		▪ Attend appropriate Clearwater sessions around WSUD	E					
		▪ Continue to submit funding applications to support capacity building, WSUD implementation, realising non-potable water sources and implementing waterway works	E					
		▪ Advocate for the extension of Clause 56 to industrial, commercial and other non-residential areas	E					
2D	Improve WSUD performance	▪ Prioritise WSUD assets with a view to conducting performance audits	E	Prioritised assets may include those that are older, larger, associated with sensitive receiving environments.	2028	Medium	Engineering Services	2.3 2.4
		▪ Ensure prioritised WSUD assets are functioning according to their design	S					
		▪ Develop and implement a management and maintenance program to ensure assets are functioning according to their design	S					
		▪ New WSUD assets are designed and constructed according to Melton City Council's WSUD guidelines and specification	E					
2D	Monitor WSUD performance	▪ For specific sites, undertake water quality monitoring to assess the actual performance of WSUD assets over time	S	The targets are based on theoretical improvements drawn from modelling results. The sites could be chosen considering factors like age and location to inform and refine WSUD asset choices and design specifications. This activity could also be undertaken with neighbouring councils including Brimbank and Wyndham, and in collaboration with university students.	2020 to 2028	Medium	Engineering Services	2.1
2F	Allocate budget for WSUD activities	▪ Register and treat WSUD assets as capital assets	E	Melton City Council has a large and growing number of WSUD assets. This action is to ensure that they continue to function as designed into the future.	2020	Medium	Engineering Services	2.3
		▪ Determine and allocate annual budget for maintenance accordingly	E					
		▪ Determine annual budget for rectification and renewal taking into account likely asset life	E					

Objective 3: Valued landscapes that are connected and accessible

No	Action	Description	Resourcing (E = existing budget S = subject to annual budget process)	Notes	Timing	Priority	Responsibility	Related target(s)
3A	Incorporate passive (or stormwater) irrigation into all street tree design	▪ Consider passive irrigation in road reconstruction and improvement projects where possible	E	Melton City Council plants 20% of 'new' trees with the remainder planted by developers. This strategy aims to support the health and growth of these trees by ensuring they are sufficiently watered from non-potable sources. This action includes engagement with developers to agree acceptable designs and approaches, includes peer to peer learning (with neighbouring councils), as well as suggesting that passive irrigation become a valid inclusion into IWM Plans that developers submit to Council.	2020	High	Engineering Services	3.1
		▪ Engage in peer to peer learning with councils that have investigated and implemented passive tree irrigation (including City of Melbourne, Moreland City Council, Monash City Council and Brimbank City Council)	E				City Design, Strategy and Environment; Engineering Services	
		▪ Undertake a technical trial that involves installing and assessing the performance of passive street tree irrigation options. The aim will be to learn from Council peers and build internal capacity with a view to specifying preferred designs to Council engineers and the land development industry.	S				City Design, Strategy and Environment; Engineering Services; Capital Projects	
		▪ Include the passive irrigation of street trees as an option under IWM Plans for new developments	E				Engineering Services	
3B	Improve connectivity of, and accessibility to, waterways within public open spaces	▪ Ensure shared pathways along waterways balance waterway health, amenity and connectivity of people to natural assets	E/S	This action focusses on access, and continuity of access, to waterways and natural assets like wetlands that are adjacent to and within public open spaces. The action recognises that there are challenges to accessing rural waterways under private landholdings. These actions need to be aligned with the timing of the Integrated Transport Strategy. The aim is to ensure that the community has access to waterways, so they can value them. This will drive engagement and community involvement in their improvement, as well as improving community health and wellbeing through a greater connection with nature.	2020	Medium	Engineering Services	NA
		▪ Identify and prioritise critical gaps in connectivity of shared paths along urban waterway corridors	E					
		▪ Identify critical gaps in the shared pathway network between centres of population and urban waterway corridors	E					
		▪ Fund additional shared pathways to fill critical gaps to and along urban waterways	S					
		▪ Seek to explore options for shared trails along rural waterways through sale, negotiation with landowners or conditions of subdivision	E					
		▪ Consider encumbered space as an opportunity for open space development that delivers net community benefit to the satisfaction of Council	E				Planning Services	
3C	Improve the quality of waterways within the City of Melton	▪ Collaborate with MW on the waterway naturalisation project at Arnolds Creek East	S	There are two types of waterway improvement discussed here. Naturalisation refers to the conversion of a concrete waterway into a more natural form. This is high cost and will need to be undertaken with support from Melbourne Water. Rehabilitation refers to revegetation that can be completed with community groups. Council and Melbourne Water will need to identify priorities based on existing condition and values, proximity to population including schools and where existing rehabilitation works have been undertaken.	2028	Medium	Engineering Services	3.2 3.3
		▪ Identify and prioritise lengths of waterway for rehabilitation (i.e. revegetation and erosion management) and develop a program for those works	E					
		▪ Fund and support community groups including school groups to rehabilitate those lengths of waterway, focussing on revegetation of the riparian corridor	S				City Design, Strategy and Environment	
3D	Support the local community's engagement in local water management	▪ Collaborate with MW to install educational signage along well visited lengths of waterway	S	This action is designed to engage the community with waterways either through education or via physical interaction through planting days. The emphasis here is on supporting and building capacity with the existing community and environment groups and to engage new people. The main method of doing this is through educational institutions. Rehabilitation of urban waterways is a long-term goal that will begin with engaging young and enthusiastic community members, who can in turn educate their own families.	2018 to 2028	High	Operations	3.4 3.5
		▪ Undertake one significant community education project per year e.g. Paint or install educational information on stormwater related infrastructure. For example, fish at drainage inlets, waterway on the side of street cleaning trucks	S					
		▪ Give talks at schools about the link between litter, stormwater and waterways	S				City Design, Strategy and Environment	
		▪ Support local environmental group/s to gather data, information and images on the health and condition of waterways within the City of Melton. ▪ Support tree planting and revegetation days along waterways for school and community groups	S					

Attachment A
Program Logic Map


Vision
The City of Melton uses and manages water sustainably to enhance natural assets and support the health and well-being of the Melton community
Objectives
Reduced reliance on potable water
Healthy waterways and wetlands
Valued landscapes that are connected and accessible
Longer term outcomes
Effective and efficient use of potable water across Council assets
Potable water irrigation efficiency for all open spaces / sportsground increased
Potable water use in Council buildings reduced
Increase use of non-potable water sources
Proportion of projected irrigation demand (open spaces and sports fields) met with alternative water sources increased
Ecological and habitat values within the City of Melton's waterways improve over time
Proportion of area of established catchment treated with WSUD increased
HWS strategy outcomes
Stormwater drainage and WSUD assets are resilient and effective
Council WSUD assets are operating and performing at a high level
All WSUD assets have maintenance budget allocated
Maximise connections between community, waterways and open spaces
All new developments have shared paths connecting waterways and open spaces
The community has appropriate access to high-quality waterways and open spaces
Reduced urban heat island effect across the City of Melton
Increased tree canopy cover in the City of Melton's urban areas
An informed and water-wise community
The community participate and are engaged in waterway improvement activities
Intermediate outcomes
Sports ground irrigation rates are reduced on average across open spaces
Council develops preferred specifications for irrigation and control infrastructure for existing and new active and passive spaces
Existing priority council buildings use less potable water
All new buildings are built with a 5/6 green star rating
Amount of litter in waterways is reduced
Water quality from established catchments is improved
All road renewals (in established areas) and Council building refurbishments will consider WSUD as part of their design
Prioritised WSUD assets are rectified and function according to their design
New WSUD assets are designed and constructed according to the City of Melton's WSUD guidelines and specifications
Artificial waterways are naturalised (i.e. returned to natural form)
Waterways and open spaces are revitalised (i.e. improved amenity and habitat)
Street tree are incorporated into the urban streetscape (with pavements and underground services) in the City of Melton
Passive irrigation design is incorporated for street trees in the City of Melton
Implement project for informative communication and education linking stormwater quality to waterway health
Implement projects for community participation on waterways and wetlands
Actions
Improve irrigation capacity, processes and efficiency
Investigate use of alternative water for irrigation
Advocate for the extension of recycled water network across the City of Melton
Undertake water efficiency audits for Council's highest water using buildings
Implement investments and establish requirements for building water use
Install GPTs in priority locations
Incorporate WSUD into the City of Melton's established urban catchments
Build internal capacity in the design and maintenance of WSUD
Increase Council's output of WSUD assets
Allocate capital and operating budget for WSUD activities
Incorporate connectivity along waterways and between waterways and open spaces into Council plans and strategies
Prioritise and incorporate passive irrigation of street trees with stormwater
Support the local community's engagement in local water management