Water Saving
Feasibility Study
City of Monash
Draft Summary Report
June 2019
Executive Summary

This report is a summary report of the full technical report for council, which has been adapted for community consultation. This study has identified five areas where water saving actions can take place: Aquatic Centres, Open Space Irrigation, Building Assets, Alternative Water Provision, and supporting Community Action.

The report delivers **Environmental Sustainability Strategy 2016-26 (ESS)** - Integrated Water Management priority and Action 5.2.2a.

*Complete a water saving feasibility study that identifies water saving and non-potable water recommendations for Council’s facilities and operations with a view to setting targets.*

The ESS, together with the Integrated Water Management Plan 2014, the Open Space Strategy 2018, the Monash Urban Landscape and Canopy Vegetation Strategy 2018, the Street Tree Strategy 2016, the newly adopted Urban Biodiversity Strategy as well as the Monash Council Plan and the Municipal Strategic Statement articulated the City of Monash’s desire to retain and enhance the “Garden city character”. The objectives in all these strategies are dependent on a reliable and constant source of water and yet water is not identified as the key ingredient in achieving these goals.

The City of Monash has practised sustainable water management since the early 2000’s. The 2011 Environmental Sustainability Roadmap set a water reduction target of 20% below the 416 million litres (ML) used in 2002/03. Analysis of the total water used by council over the last three years shows that City of Monash is using, on average, 281ML per year, which is 32% lower than the 2002/03 consumption.

When comparing water management policy and practices to other Melbourne Local Governments, interstate and international agencies, City of Monash compares favourably considering its current water management targets, current and historical water use, and achievements to date. However, it will take a constant proactive approach to maintain this good status.

The City of Monash is a growing municipality with 3,000 to 4,000 new residents moving in each year. This population growth has a direct impact on the water demand of council facilities. With an increasing population, the existing facilities will have higher usage thus creating additional water demands.

From the five areas identified, the aquatic centres and the irrigation of sports fields are the biggest users, consuming 48% and 30% of the water respectively.

All three aquatic centres are high water users with the Monash Aquatic and Recreation Centre (MARC) being by far the highest user. Improvements identified include auditing the backwash process, nightly use of pool covers and the provision of rainwater for toilet flushing.

Although sports fields are significant users of water, the water bill data analysis showed that water use was not excessive, rated medium to low against industry benchmarks for turf irrigation. The study identified several opportunities to improve irrigation and recommends increased collection and analysis of accurate water meter data for good water management; an increased focus of capital renewal; investment in warm season grass conversions; and increased maintenance activities and operator training.

The City of Monash manages hundreds of building assets to support community services and activities. While the water used in buildings is only 22% of the total water use, water use in these buildings was considered high compared to building water use benchmarks.
Given the growing population and a drying climate, open spaces and sports fields will require increased irrigation in summer. Therefore, a simple water reduction target is not considered beneficial. This study proposes a council water use target linked to population size. By converting the total water use to a water use per head of population, over the last five years the City of Monash used 1200 to 1500 litres (L) of potable water per person per year.

If a **1500 L per person per year target** was adopted, by 2030 council’s water budget would be 334,500kL (334ML) per year. Linking water use to population allows accommodating the increased usage of existing facilities and new facilities to meeting community needs. In 2002-03, usage was 2603L per person per year, and currently usage is 1400-1500L per person per year. While slightly higher than current use, it still meets the 20% reduction (of 2002-03 usage) target set.

This study has identified up to 12 new opportunities to harvest stormwater. If the City of Monash proceeds with 3-4 of these projects and continues to install rainwater tanks where feasible, an additional 30 million litres of alternative water can be available by 2030, allowing the council to save up to 150 million litres of drinking water per year.

To continue to successfully attract external funding it is recommended that the City of Monash prepare a business case to invest or seek grant funding in a dedicated Integrated Water Management officer whose role is to championing water initiatives internally and externally. This will allow timely development of project designs and business cases, implementation of actions, increase access to grants and tracking towards targets and improved water use. External funding and partnerships will be key to delivering sustainable water use and a ‘Garden City Character’ outcome.

This report concludes with a list of priority projects based on the implementation plan in the full technical report.

*Figure 1. Rainwater tank - Larpent Reserve*
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Introduction

The City of Monash has practised sustainable water management since the early 2000’s. The following four strategies: 2008 Water Use Management Strategy; 2011 Environmental Sustainability Road Map; 2014 Integrated Water Management Plan and; **Environmental Sustainability Strategy 2016-26 (ESS)**, all have actions for addressing sustainable water management.

The 2011 Environmental Sustainability Roadmap set a water reduction target of 20% below the 416 million litres (ML) per year used in 2002/03. Analysis of the total water used by council over the last three years shows that City of Monash is using, on average, 281ML per year, which is 32% lower than the 2002/03 consumption.

This report will investigate further potential water savings, through efficiency and use of non-potable water to address **Action 5.2.2a from the 2016-26 ESS report**. The ESS report states:

**Complete a water saving feasibility study that identifies water saving and non-potable water recommendations for Council’s facilities and operations with a view to setting targets.**

This water saving feasibility study will enable council to develop a new Sustainable Water Use Plan, the goal of which will be to produce further water savings in areas where water inefficiencies exist. It must be noted that the reason for saving water in one area (where inefficiencies exist) is to allow council to increase water use in other areas that are highly dependent on irrigation for survival such as parks, ovals and reserves, and areas that can mitigate the Heat Island Effect.

The five areas where water savings can be achieved are:

- Aquatic centres
- Open space irrigation
- Building assets
- Alternative water provision
- Supporting Community Action

These five areas will be discussed in detail in *Opportunities for Improved Water Management*.

Scope of study

As the primary focus of this Water Feasibility Study is on council’s water use, this study does not directly investigate water use in the community. However, the study will briefly discuss the role that Council can play in improving stormwater management on private land by enforcing the new Victorian Planning Provisions for stormwater management.

Methodology

This study was undertaken in two stages with a technical report produced for each stage. Stage 1: Review of policies, strategies and data highlighting Monash council’s current water use to identify high water use sites. Stage 2: Undertook a more detailed investigation of high water use sites, developed costed actions for increasing efficiencies.

Technical reports have been completed for stage 1 and 2. The stage 2 technical report includes a draft implementation plan. The full 69-page stage 2 technical report has been shortened to a 4-page summary document and a 17-page short report for community consultation.
Garden City Character - Policy Context and Community Values

Nine council policies and strategies were reviewed to better understand the relationship between council assets and water use and broader council and community values as they relate to open space and water use. All policies and strategies/plans articulated the City of Monash’s desire to retain and enhance the “Garden city character”. However, most of the documents reviewed do not identify water as a key player in achieving this ‘garden city’ goal. Water is the key resource needed to maintain healthy green open spaces, trees, grass and vegetation.

Without sufficient irrigation or passive watering (through the use of raingardens for example) soil moisture declines and so does vegetation health. In a drying climate with decreased rainfall, applying water through active or passive irrigation will become even more important than it has been in the past. The aim of this study is to find savings in council areas that use water inefficiently in order to relocate water resources for irrigation.

The Council Plan, ESS, OSS and MULCVS and their related community engagement feedback all point to important common community values:

1. Multi-use open space amenities
2. Healthy parklands and biodiversity,
3. Maintenance of street trees and bushland areas for wildlife,
4. Maintain and improve “garden city character”,
5. Mitigate urban heat island effect, and
6. Concerns around development and town planning that will impact neighbourhood amenity.

The existing suite of strategies, policies and plans make it clear that both council and its community want to see open space and vegetation maintained to a high level of quality. Therefore, in developing a new potable water saving target, council needs to consider the impact potable water conservation has on the quality of open space services it provides.

Meeting Community Needs

Another consideration is population growth. The City of Monash is a growing municipality with an additional 3,000 - 4,0001 new residents per year. The current population (2018) is approximately 200,000. By 2041 this is expected to grow to nearly 250,0002. Population growth has a direct impact on water demand as increased “usage” of facilities and sport grounds relates strongly to water use/demand (more toilets flushed, swimming pool use, higher level of sportsground wear and tear etc.). With an increased population the existing facilities will have higher usage and it is likely that new additional facilities will be built, thus creating additional water demands.

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1 https://profile.id.com.au/monash/population-estimate
Monash Council as it compares to other Local and International Governments

When comparing City of Monash’s current potable water saving target to other Melbourne Local Governments, interstate and international agencies, City of Monash compares favourably considering its current water management targets, current and historical water use, and achievements to date.

Some Local Governments have adopted a potable water reduction target of 50% and/or a target for the provision of alternative water. Monash may consider a more aspirational water reduction target, considering it’s exceeding the current 20% reduction target. However, this kind of target may compromise vegetation health and quality. For example, if setting a 50% target is achieved by reducing irrigation to parks and sports fields it maybe to the detriment of these community spaces.

Water use at Monash is similar to other metropolitan local governments with similar demographics and levels of service provisions including Darebin, Dandenong, Moonee Valley, Maroondah and Boroondara.

Current Water Use - Water data analysis

To get a good picture of how and where the City of Monash uses water a long-term data set needed to be analysed. The City of Monash have recently adopted the CarbonMetriX³ platform for collating and tracking utility bills. This platform has been accessed to obtain water bills data for the period 1 July 2013 to 30 June 2018.

The total annual water use across all water meters has been steady for the last three years, around 281ML, as displayed in Figure 3. This is 32% lower than the 2002/03 consumption of 416ML and therefore lower than the current target of 20% reduction in potable water use on the 2002/03 baseline.

When looking at facility types, sports field irrigation is by far the biggest water user at 48% of the total 2017/18 use. The next biggest users are the aquatic centres with a combined use of 30%. All other Council assets use the remaining 22%. This split is typical of Local Government water use.

A deeper look at individual sites, finds the Monash Aquatic and Recreation Centre (MARC) by far the biggest user of water. This is due to its size and high patronage, the number of pools, and the age and complex nature of its water management systems. The other aquatic centres of Clayton Community Centre and Oakleigh Pool come in at 2nd and 7th in highest water use. The golf courses are also high water uses ranking 3rd and 5th. The rest of the top 20 are sports fields with Central, Caloola, WA Scammell, Fregon and Brandon ranking 4th, 6th, 8th, 9th and 10th respectively.

This analysis has guided the investigation of opportunities for water efficiency. The biggest savings and efficiency gains are likely to be found by focusing on the high water use sites displayed in Figure 4.
5. In the following sections the individual sites will be discussed in greater detail, particularly the aquatic centres and open space irrigation.

Opportunities for improved water management

The City of Monash has undertaken water use reduction actions which have resulted in some great achievements to date. However, there are opportunities for further improvements. The following sections will discuss improved water management opportunities as they apply to: Aquatics Centres, Open Space Irrigation, Buildings, Alternative Water Provision and Community Action.

Aquatic Centres

Water use data was examined from Monash’s three aquatic centres, and the data analysed to create benchmarks. Benchmarks examine water use compared to other similar buildings across Australia to check if water use is high, medium or low, with low considered best practice.

The water use performance of the three aquatic centres has been benchmarked against other swimming pool facilities by using the Water Compare website (www.watercompare.com.au).

The Water Compare Website is produced by the collaborative efforts of Australian Water Utilities. The site collects data on water use by working with customers, enabling different business sectors and facilities to access consistent and reliable water use benchmarks4.

The Water Compare Website states that a water use of 0.127 kL/visitor represents a high level of water use per visitor. Medium is measured at 0.05 kL/visitor and best practice is represented by 0.016 kL/visitor. Compared to these water use numbers, the Oakleigh Recreation Centre (0.018 kL/visitor) and the Clayton Community Centre (0.023 kL/visitor) have a water use profile of low to medium but not quite at best practice. The Monash Aquatic and Recreation Centre (MARC) at 0.047 kL/visitor) close to Medium but there are lots of opportunities for significant improvement at this site.

Reduction activities that have been undertaken

A water audit of City of Monash buildings conducted in 2017 shows that toilet, tap and shower efficiency are in place in each location. However, pool cover use and rainwater harvesting at the MARC and Clayton Community Centre have not yet been implemented.

Opportunities for improvement

The biggest water usage in aquatic centres is usually the backwashing system. To keep swimming pools clean and safe for use the water is continually filtered and treated. As the filters accumulate pollutants they begin to clog up. To prevent failure the filters are “backwashed”, this means that potable water is forced backwards through the filters to wash off accumulated pollutants. This wastewater is disposed of to the sewer. Recycling of backwash is possible but requires Reverse Osmosis (RO) treatment which is energy intensive and therefore costly.

Recommendations and actions for improved aquatic centre water management

Recommendations and actions to reduce water used in the City of Monash’s aquatic centres include:

- Specialist Review and adjustment of the backwashing processes, particularly at MARC.
- Ensuring operational action such as the ball float valve levels in the balance tank are checked and adjusted weekly and pool covers applied every night to minimise evaporation overnight.
- Undertake water efficiency actions as listed in the buildings section of this report.

Open space irrigation

Open space assets need to be maintained so that they deliver the required services and benefits to the community in a sustainable manner. Active irrigation is critical to many of the open space sites, principally sports grounds.

Maintaining healthy vegetation during summer periods requires soil moisture to be within appropriate levels. The amount of water required for irrigation is significant and the efficient use of this water is paramount. Whilst each type of space has its own particular requirements, to be water efficient, the site irrigation must achieve high performance standards with both the application of water and the operation or management of the system.

This starts with following good design principles for new and renovated systems, maintaining sprinkler heads in good condition, and ensuring a capacity for high Application Efficiency and Uniformity. The ability to apply regular, light, even water applications is important for a number of reasons including even, constant grass growth, well established root systems, even and accurate application of fertilisers and chemicals, good grass establishment and to achieve microclimate cooling effects.

Evaluation of irrigation water management

In 2017-18, 125.25 ML of potable water was used to irrigate 72.76ha of open space, which equates to 1.72ML/ha. The total potable irrigation water use varies from year to year and site to site with variation in weather and modifications and changes to the various irrigated sites. As a general guide, the Water Application Rate (ML/ha) should be within the range of 2 to 4 ML per ha for warm season grasses. Overall the data indicates that the level of irrigation water use is not excessive. However, some sports ground surfaces are patchy and not delivering the required service standards. In a drying climate and with a higher level of use, water demand is expected to increase in the coming years.

Opportunities for increased efficiency and water savings

A number of actions for water savings and efficiency improvement have been identified in the Implementation plan under the categories of:

- Irrigation data quality – ensuring that the data collected and the reporting are accurate.
- High water use efficiency plants – including continued conversion of sports grounds to warm season grass and management of soil properties to optimise infiltration and root zone storage.
- Irrigation Infrastructure – adopt a program of replacement of greater than 20 year old systems, conduct regular audits and ensure water pressure is optimised at each site.
- Irrigation system management and maintenance – irrigation scheduling informed by daily rainfall, evapotranspiration and soil moisture, creating site monthly water budgets and associated water use key performance indicators. Expand implementation of the central control system and optimisation of its management functions.

Figure 6. Good stream breakup and good grass surface – Central Reserve North Oval
Water Use in Buildings
While irrigation is the largest water user, followed by water use at aquatic centres, buildings are also worth investigating as they may offer easy water efficiency gains. The City of Monash has a large building asset base, spread across many different building uses. Analysis of building water use combined with the building water use audit conducted in 2017 shows there is room for improvement. This study focused on the top 10 highest water users. When comparing these buildings, again through the Water Compare website (www.watercompare.com.au), their water use was significantly higher than best practise.

Recommendations for improved water management in buildings
This study recommends the following actions are undertaken for improving water management.

- A building water system leak test is completed at all sites as a once-off and repeated at least annually if leak detection submetering is not installed.
- Develop and promote a water efficient appliance and fixtures purchasing policy for building operators.
- Educational materials (e.g. stickers and posters) are displayed to encourage patron water efficiency.
- Cyclic flushing urinals are replaced with manually flushing urinals, automatic sensor units or ultra-low-flow or waterless urinals.
- Garden irrigation practices should be reviewed including efficiency of the existing irrigation system, irrigation schedules, use of mulch and replacement with low water demand plants.
- Adopt a Council Sustainability Policy for Capital Works (see below)

Council Sustainability Policy for Capital Works
This study recommends that Council develop and adopt a policy or guidelines which include the requirement of a minimum standard of water efficiency for new builds, renovations or replacements. These should include rainwater reuse to toilets and irrigation, and green infrastructure (and vegetation) in, on or around the buildings where feasible.

A recommended process for this is that the design and specification documents for Council capital works are reviewed by the Sustainability and Urban Design teams prior to tender to see if they meet water and sustainability requirements.

The Sustainable Design policy needs to reference best practice standards such as ‘Green Star Design’ and ‘Green Star As-Built’ standards from the Green Building Council of Australia$. A third-party certification should be sought for all major projects to ensure Council gets what is specified. Water efficiency is easy for a builder to promise, but harder to verify it has been delivered.

Appropriate integrated water management objectives are to;

- Harvest and re-use or infiltrate stormwater,
- Control peak stormwater discharge,
- Improve stormwater runoff water quality, and
- Increase drought resilience.

Council should comply with the new State Environment Protection Policy (Waters) or SEPP (Waters) regulations as a minimum and the Integrated Water Management Victorian planning provisions with the aim to reduce the volume of runoff from buildings by maximising capture and infiltration of stormwater, as well as including Water Sensitive Urban Design elements.

$ www.gbca.org.au
Alternative water provision

The term alternative water has been used by the water industry for a number of years as a way of describing a water source other than potable (drinking) water. Generally, in a local government context it refers to rainwater or stormwater.

Rainwater is water running of roofs before it hits the ground or the drainage system and is the property of the land owner/manager. Therefore, local governments can harvest rainwater from their buildings for reuse in toilets and irrigating garden beds.

Stormwater is rainwater that has hit the ground or in the drainage network. Stormwater is the property of the Crown, which is delegated to the catchment management authority, which in metropolitan Melbourne is Melbourne Water. Generally, LGAs are not required to pay for the volume of stormwater extracted but are required to get permission from the land or asset owner from which the stormwater is diverted. Since the City of Monash manages the roads and minor drainage network it can grant itself permission to divert and harvest stormwater flowing along or in its assets. Melbourne Water are the manager of the larger drains (major drainage network). They are amenable to harvesting from their assets, with conditions.

This study has focused on stormwater for open space irrigation as the likely biggest source of alternative water for council. Rainwater reuse and passive irrigation through WSUD were also considered.

Existing alternative water projects

Through delivering on actions and targets from previous strategies the City of Monash has implemented a number of alternative water projects that are already helping to keep its potable water consumption low. These include four stormwater harvesting systems at sports grounds, rainwater tanks at many pavilions and council buildings and WSUD features in reconstructed carparks and retrofitted to some streetscapes.

New alternative water projects

The opportunities for stormwater harvesting has focused on the highest water use irrigated open spaces with three priority sites being Central Reserve, Warrawee Park and WA Scammell Reserve.

Central Reserve and Warrawee Park are prominent, high water use sports grounds where stormwater harvesting would offset a significant proportion of potable water use and provide good showcase examples of water management to the public. Stormwater harvesting has already been undertaken at each location. This study supports the existing designs but recommends investigating the connection of further demand sites as higher demand generally correlate to a more cost-effective project.

Investigations are currently underway for a partnership stormwater harvesting opportunity near WA Scammell Reserve with Metropolitan Golf Club. Additional stormwater could be directed from Council drains to the golf club for treatment and storage. The Golf Club would then provide council with a portion of the reuse water for the irrigation of the sports ground at WA Scammell Reserve. This would be on top of the current ground water bore reuse.

It is also recommended that audits of the existing stormwater and rainwater harvesting systems are undertaken to assess their effectiveness. Additionally; continue to include Water Sensitive Urban Design (WSUD) features in car park and streetscape upgrades; continue to investigate passive irrigation interventions; and define a suite of WSUD streetscape interventions that suit the City of Monash aesthetic and operational criteria.
Influencing Community Action

The New Victorian Planning Provision

Greater water savings can be achieved by council if it extended the scope of water saving actions to areas that involve community participation and engagement. Stormwater runoff and improved stormwater quality can be achieved by ensuring that Statutory Planners are up to date with the new Victorian Planning Provision for stormwater management.

The recent changes in October 2018 to stormwater planning policy and legislation in Victoria give new powers to Council to ensure that new developments in the municipality incorporate Integrated Water Management principles. The changes are relevant to water conservation, as there is a strong connection between stormwater management and water saving. Integrated water management sees stormwater as a resource that can be harvested to reduce water bills. Capturing stormwater also reduces stormwater volumes.

Many drainage assets are overburdened by redevelopment and an increase in impervious areas. Reducing stormwater volumes helps to protect council assets such as existing drains, as well as improving water quality in our urban creeks and rivers. In particular, stormwater can be used for reducing reliance on potable water for irrigation. Opportunities for using stormwater for irrigation are discussed in the alternative water section of this report. It is important to note that Council will be required to address the new planning and environmental law changes.

The new provisions together with the existing Drainage Contribution Program (DCP) (for drainage contribution in flood prone catchments) will also assist council in meeting their flood mitigation objectives. The Planning Amendments VC154 for Integrated Water Management mean that Council does not need to do the strategic work of updating local planning policy provisions.

It is important to note that further savings in potable water use as well as stormwater contributions can also be achieved by advocating for per capita water use targets. The State Government and water retailers already advocate for residential water use targets of 155 litres per person per day.

To retain its garden city character, the City of Monash could activate a suite of actions in a drying climate and influencing the community through the planning scheme is one of them. Most local government align themselves with this target, providing support where they can, this study suggests that Monash do the same.

New Environmental Protection Act - State Environment Protection Policy (Waters)

New State Environment Protection Policy (Waters), referred to as SEPP (Waters), also come into force on 19 October 2018 and replaced the previous SEPP (Waters of Victoria). The primary regulatory mechanism for protecting these waters from pollution is the Environment Protection Act 1970 (the Act). State environment protection policies (SEPPs) are subordinate instruments to the Act and are an important component of the regulatory framework in Victoria. SEPP (Waters), provides a framework for the protection and management of water quality in Victoria, covering surface waters, estuarine and marine waters and groundwater across the State.

SEPP (Waters) includes the largest change in stormwater regulation related to Councils in over a decade. It empowers Councils, which now have direct legal recourse through the Environmental Protection Act to manage stormwater, and to ensure that the broader community does the same. SEPP (Waters) outlines environment values and calls these values beneficial uses. SEPPs also identifies the rules and obligations placed on industry in order to protect water environments. SEPP also empowers councils to enforce stormwater maintenance of non-council stormwater assets outside the planning system.

This study recommends that Council now develop and implement stormwater management or equivalent plans as required by this new legislation.
Overall Findings
The WSFS provides a draft implementation plan which details 67 possible opportunities (including water savings, responsibility, frequency and cost) that Monash may take to use water efficiently and decrease the use of drinking water.

The plan reflects highlights that the City of Monash is already doing a good job implementing integrated water management approaches and offers further suggestions on how the city can build on current efforts to ensure sufficient water for future needs.

The actions detailed in the implementation plan vary from simple things that council is considering or already doing, such as putting covers on all pools at night to avoid evaporation, through to options that require an investment, such as installing leak detection sub meters to ensure water leaks or unintended water use is attended to promptly.

Key recommendations
The key findings from the water feasibility study include:

- A recommendation to move away from a water reduction target to a new water target linked to population.
- Focus on sourcing external funding and building partnerships to achieve a “Garden city character” outcome.
- Implement water savings initiatives across aquatic centres and irrigation of sports fields which are the biggest water users.
- Reduce reliance on drinking water for irrigation by implementing passive irrigation through Water Sensitive Urban Design and expanding on current stormwater harvesting initiatives.

A new water target
The study found a standard water savings reduction target is a blunt instrument which should not be used to override important community values such as the desire to maintain healthy parklands, mitigate against urban heat and maintain the “Garden city character.”

The recommendation to move away from a water reduction target (discussed on page 7) and introduce a new water target linked to population size acknowledges that council is already using water efficiently but needs a target that allows for water use to expand with the population.

A new annual council water use target of 1500L per head of population was proposed to link community values and expectations with the impact a growing population will have on water demand. This target compares favourably to other local governments leading in integrated water management. It also recognises open spaces need a baseline reliable water resource to be maintained and avoids the unintended consequence of trying to do more with less (as can happen with a water reduction target) in the face of growing population and climate change. In 2002-03, usage was 2603L per person per year, and currently usage is 1400-1500L per person per year. While slightly higher than current use, it still meets the 20% reduction (of 2002-03 usage) target set.

Alternative water provision target
To assist with reducing demand for drinking water, an alternative water provision target is also recommended. The City of Monash already has several systems that harvest stormwater, groundwater and liquid from landfill for irrigation, as well as many rainwater tanks on buildings. These existing systems are expected to save up to 120 million litres of drinking water per year.
In addition to water efficiency measures, potable or drinking water demand can be reduced by accessing alternative non potable water provisions such as stormwater and rainwater. This study has identified 12 potential alternative water provision projects that can be implemented. These projects could provide 64ML of additional alternative water (16-20% of the total water use). This would a significant investment, so realistically council is unlikely to be able to deliver them all over the next 10 years and water authorities can provide funding to support these project for mutual benefit. Therefore, a **30ML per year of new Alternative Water Provision** by 2030 target is proposed. This would bring City of Monash’s **total Alternative Water Provision to 150ML per year**.

There will be grant funding opportunities with state authorities such as Melbourne Water and any business cases for internal funding will recognise the cost benefit and potential financial savings with reduced potable water charges.

**Key prioritised actions for greater water efficiency**

Based on the outcomes of this study, a list of the key priority actions has been proposed to help council deliver on the proposed water targets. Overall actions cut across all areas of water management to ensure consistent and effective sustainable water management. Priority actions have also been proposed for the five individual area, selected due the significant benefits they achieve towards meeting the targets. Twelve strategic actions have been identified to help council to meet these targets from a pool of 67 proposed opportunities in the full technical report.

<table>
<thead>
<tr>
<th>Area</th>
<th>Action</th>
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<tbody>
<tr>
<td>Overall</td>
<td>• Validation of water use data for all sites to ensure that the meter readings are an accurate representation of water use, particularly for sites with multiple assets such as open space and pavilions.</td>
</tr>
<tr>
<td>Aquatic centres</td>
<td>• Undertake a backwash process audit and optimisation study at all aquatic centres.</td>
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| Open Space               | • Continue conversion of sports fields to warm season grasses.  
                            | • Adopt a program to replace irrigation systems greater than 20 years old.  
                            | • Conduct regular audits of at least six irrigation systems a year.  
                            | • Upgrade water supply at sites where water pressure is not optimised.  
                            | • Achieve increased irrigation efficiency through monitoring of water use and responding to varying weather and site conditions.                                                                                     |
| Buildings                | • Adopt a Capital Works Sustainable Buildings Design policy to ensure future upgrades minimise use of drinking water.  
                            | • Conduct annual leak testing or install leak detection sub metering.                                                                                                                                 |
| Alternative water supply | • Investigate and develop business cases for stormwater harvesting opportunities from council stormwater drains for irrigation use at our active and passive reserves. Seek grant funding opportunities to invest in favourable projects through Water Authorities.  
                            | • Review and audit existing stormwater and ground water harvesting and rainwater tank systems to validate current reuse, document any issues and incorporating learnings into future designs                                                |
| Resourcing               | • Develop a business case to invest or seek grant funding for a dedicated Integrated Water Management officer whose role is to championing water initiatives internally and externally. This will allow timely development of project designs, business cases, implementation of actions, access to grants and tracking towards targets and improved water use. |
Monitoring and Evaluation

To support these actions the report also provides suggested approaches to monitor success. This will be the first step to help council meet its targets. Activities include:

-Install check meters and collect reading at least annually from stormwater harvesting projects and larger rainwater harvesting installations.
-Install check meters and monitoring 10-20 rainwater tank installation as an indicator for the water savings achieved by the complete rainwater tank asset base.
-Monitor the water use at the Aquatic Centres annually to ensure it is equal or on par to best practice industry benchmark as per Water Compare
-Track annual water usage through water bills and monitor trends every 1-2 years total for council, total council water use by head population, by facility type and top 20 users
-Develop a benchmark for each building (or indicator buildings for each building type) via Water Compare and monitor their performance every 12-24 months