

Sustainable Water Management Plan **2018-2023**

November 2021





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Introduction

BACKGROUND

Water is an essential resource for human and other life, yet our water resources and systems are under increasing pressure from population growth and climate change. These dual pressures are reducing water availability, increasing flood risk and degrading wetland, also known as blue-green, environments.

Local governments exist to serve the local community, and have a responsibility to manage water systems to meet these challenges in an environmentally responsible way while at the same time, enhancing the liveability and resilience of their area. This approach has been encapsulated in the term “Water Sensitive Cities” (CRC for Water Sensitive Cities, 2018). This concept encompasses water management in all parts of the water cycle as they are closely related and interconnected. A Water Sensitive City considers the following:

- Stormwater quality treatment;
- Reducing scheme and groundwater use;
- Reuse of alternative water sources such as wastewater;
- Protection of waterway health;
- Reducing urban heat; and
- Mitigating flood risk.

PURPOSE

The City of Kwinana (the City) recognises its responsibility to lead and support our community to manage water in a way that considers the future. The City will continue to demonstrate and further improve our good corporate water practice. The City will also provide education and tools to our residents, community groups and businesses to assist them to better understand their relationship with water and improve their own water efficiency. This will help to build our community’s resilience to future impacts on water availability and other water-related issues. This Sustainable Water Management Plan 2018-2023 (the Plan) describes how the City will achieve this.



STRATEGIC CONTEXT

The City of Kwinana Strategic Community Plan 2021-2031 was developed in consultation with the community and this is the overarching document that guides the City of Kwinana’s priorities. Outcomes and objectives directly relevant to the Sustainable Water Management Plan are as follows:

Our Outcomes	Our Strategic Objectives
1. A naturally beautiful environment that is enhanced and protected	1.2 Maintain and enhance our beautiful, natural environment through sustainable protection and conservation
3. Infrastructure and services that are affordable and contribute to health and wellbeing	3.1 Develop quality, affordable infrastructure and service designed to improve the health and wellbeing of our community
	3.3 Maintain infrastructure, playgrounds, parks and reserves to a high standard through sustainable asset maintenance and renewal

Other City strategic documents that relate to this Plan:

- Climate Change Plan 2021-2026
- Irrigation Development Guidelines 2019
- Landscape Development Guidelines 2020
- Policy – Street Trees and Verge Treatments
- Local Planning Policy No. 1 – Landscape Feature and Tree Retention
- Local Planning Policy No. 2 – Streetscapes
- Policy – Green Building – New and Renovated Council Buildings 2018
- Groundwater Operating Strategy 2019
- Environmental Education Strategy 2019-2024
- Policy – Public Open Space
- Integrated Mosquito and Midge Management Plan
- Waste Plan 2021-2025
- Waste Education Plan 2021-2025

Waterwise Councils Program

The City participates in the Waterwise Council Program administered by the Water Corporation and the Department of Water and Environmental Regulation. This program is aligned with the Water Sensitive Cities approach and Councils must report on each of the seven goals.

The City has participated in this program for the past 10 years, and has been endorsed as a Gold Waterwise Council for the past four years. Re-endorsement in the program requires councils to develop and maintain infrastructure and practices that ensure water is utilised efficiently, and that water existing throughout the landscape is considered holistically and sustainably. The City submitted a new Waterwise Council Action Plan in 2021 that set a series of actions that will be reported against annually for the next five years. The criteria for the Waterwise Council program have been incorporated into this plan, either explicitly or within other actions.

Waterwise Perth Action Plan

The Government of Western Australia released its Waterwise Perth Action Plan in 2019. This Plan set out a vision to work towards Perth becoming a Waterwise City by 2030. Targets set by the Waterwise Perth Action Plan that are relevant to the City of Kwinana's operations and community are:

- An average residential water use of 110kL/capita. For comparison, Perth's current average is 126kL/capita, while the City of Kwinana residents used 76.61kL/capita in 2020-2021
- 10% less groundwater is to be used across the region by 2030 than 2019 levels.
- 100% of irrigated POS is audited and adopting waterwise management practices.

Through the City's continuing involvement in the Waterwise Councils Program, the above targets will be addressed.

Water issues in the City of Kwinana

When considering the best course of action, it is important to assess what the major water issues and priorities for the City are. These are described below.

WATER AVAILABILITY

Australia's climate is on average 1.4+/- 0.24°C warmer now than when national temperature records first began in 1910. In the southwest of Australia, annual rainfall has declined by approximately 16% since 1970, with the largest reduction in rainfall of 20% occurring between May and July (Bureau of Meteorology, 2020). Under all projected climate change scenarios, these trends will continue, and will worsen over time (CSIRO, 2020).

Major adaptations to climate change have already had to be made in the Perth metropolitan area by the scheme water supplier, Water Corporation. Water Corporation has had to diversify its water sources due to changes in rainfall over time. During the 1980s, 65% of Perth's water came from storage dams linked to surface

water catchments. Due to the reduction in annual rainfall, alongside an increase in average temperatures over time that increased evaporation rates, dams now only supply 15% of Perth's scheme water, with the largest source now being from rainfall independent desalination using sea water (Water Corporation, 2020). Unfortunately, desalination is a very energy-intensive and costly method for sourcing water. These high energy requirements contribute to greenhouse emissions unless they come from renewable sources, further impacting climate change and subsequent water availability challenges.

The availability of groundwater is declining due to a combination of lower recharge rates from decreasing rainfall plus an increasing demand to utilise this resource, driven by rapid population growth. Many aquifers have now reached their licensed abstraction limits in certain areas and many new subdivisions are refused a new groundwater allocation by the Department of Water and Environmental Regulation (Department of Water, 2009).

This reduction in both scheme and groundwater availability means we will no longer be able to enjoy the easy access to cheap water for our pools, parks and gardens that had been taken for granted in the past. We must adapt and innovate if we are to maintain our community facilities to a level the community expects.

This is particularly relevant to the irrigation of the City's parks and gardens which rely on groundwater for irrigation. The City also owns a large number of buildings and facilities that use scheme water including the Recquatic and Kwinana Adventure Park. There are continued opportunities to reduce water use in these facilities through retrofits and improvements to leak detection.

WATER ACROSS THE LANDSCAPE

The City of Kwinana is situated within the Peel-Harvey Catchment, through which the Peel Main Drain passes and eventually terminates at the Peel-Harvey estuary, an important natural environment that experiences many water quality issues. Particular care should be taken with development in this area to minimise nutrient export in accordance with State Planning Policy 2.1 Peel Harvey Coastal Plain Catchment (WAPC, 2003).

A number of wetlands exist throughout the City of Kwinana, some of which are City-managed, however there are also wetlands situated on Crown land and private properties. Wetlands are important ecological assets that require conservation and protection; they also function as biological filters, treating stormwater and attenuating floods. Due to their high importance, wetlands are protected under the Environmental Protection Act 1986 (WA), which prohibits the clearing or damage of vegetation in and around them. The City actively manages and rehabilitates wetlands on its own land to enhance their ecological health and function.

Wetlands, waterways and other natural areas can be negatively impacted by weeds, litter, illegally dumped materials, unauthorised access, feral or domestic animals, pollutants or nutrients carried by stormwater or groundwater, and sediment.

The above impacts can cause a range of problems, for example;

- Sediment, litter and other dumped materials can smother vegetation, introduce toxic pollutants and block stormwater infrastructure.
- Excess nutrients can build up in water bodies causing algal blooms (Department of Water 2004).

URBAN STORMWATER MANAGEMENT

The City has an opportunity to prevent the transport of pollutants, nutrients and sediment by installing treatment measures in our existing stormwater infrastructure and by implementing Water Sensitive Urban Design in our new developments. This approach uses urban planning and design to attenuate stormwater high in the landscape, stopping it from picking up pollutants and reaching our waterways (Melbourne Water, 2018).

This can be achieved by reducing the amount of piped stormwater infrastructure and infiltrating and treating rain higher in the catchment with swales, raingardens, rainwater tanks, gross pollutant traps, street trees and sediment ponds. It also involves restoring wetland habitats to improve their ability to filter stormwater.

Water Sensitive Urban Design in new developments is informed by Better Urban Water Management (WAPC and Department of Planning and Infrastructure 2008). This document provides guidance on the implementation of State Planning Policy 2.9 Water Resources (Government of WA, 2006). It is also supported by Liveable Neighbourhoods under Objective 6 – Ensure that water is protected and managed to maximise efficiency by incorporation of urban water management techniques into the urban design (Department of Planning, 2015).

LITTER

In the development of this Plan, litter was identified as a priority water issue. Illegal dumping, litter from building sites and general public place litter can all make their way into reserves and wetlands and eventually into local waterways and the ocean. Plastic litter in particular never biodegrades, and when washed into waterways animals commonly mistake it for food or become entangled (Australian Marine Conservation Society, 2018). The City has the opportunity to address illegal dumping and building site management through local laws and compliance as well as adapting stormwater infrastructure to collect litter.



Corporate water use

The City's corporate water use data is presented below. This data allows the City to track its water usage performance and help identify priority areas for action.

SCHEME WATER

Figure A: Scheme water use

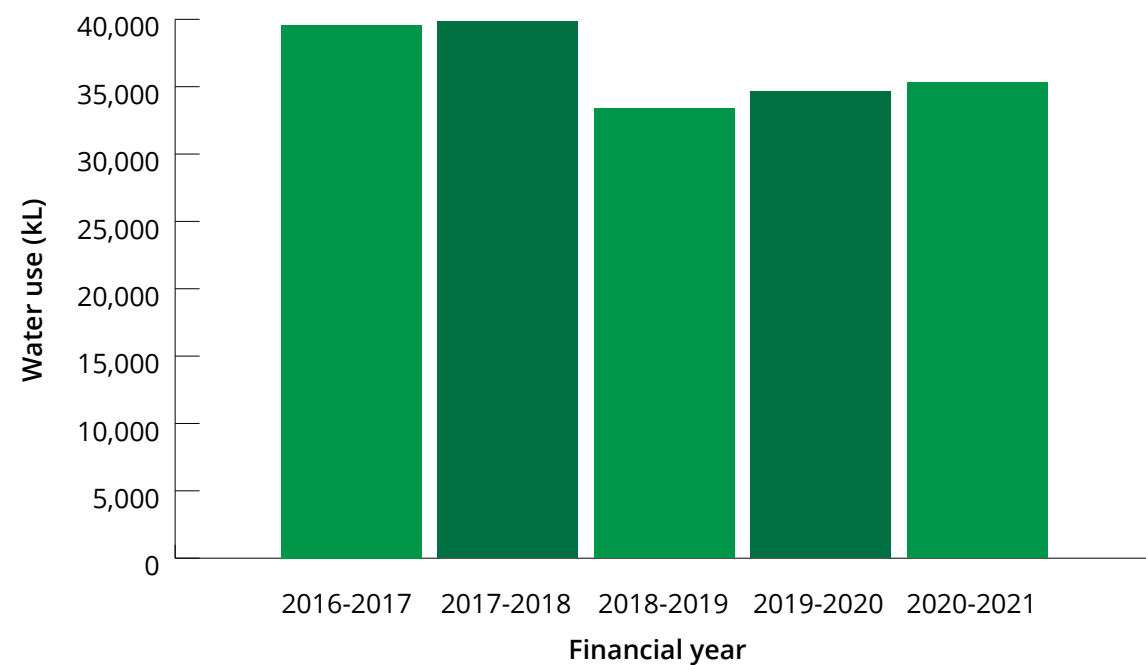


Figure A indicates the City's total scheme water consumption over the past five years. During this time consumption has varied from around 33,000kL to 40,000kL per annum. Water use varies naturally due to weather conditions, user behaviour and leaks.

In 2016-2017 the Kwinana Recquatic re-opened following a refurbishment and the Kwinana Adventure Park opened for the first time, which includes a Splash Pad. An anticipated increase in consumption occurred the following year as the Adventure Park only opened part way through the 2016-2017 financial year. Water efficiency measures were implemented with the majority taking effect in 2015-2016 and 2016-2017. The cost of water has also increased over this time, from \$1.33 to \$2.65 per kilolitre, with the City currently spending approximately \$90,000 on scheme water each year.



Figure B: Top 10 scheme water consuming sites

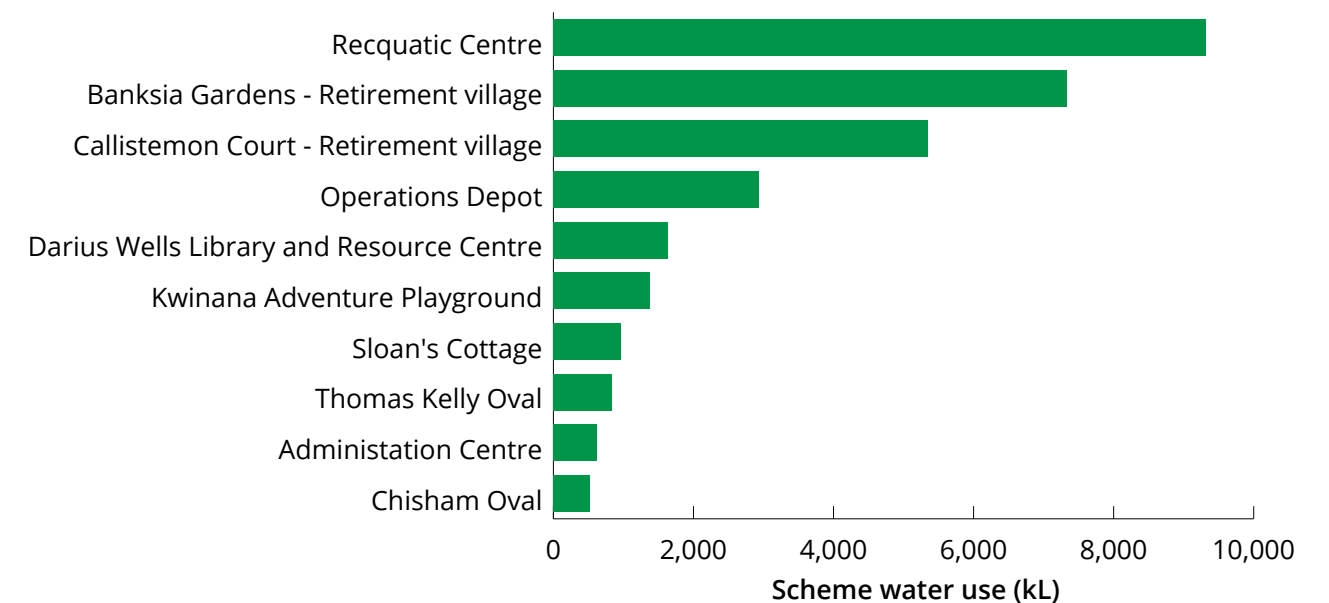


Figure B above shows the top 10 consuming sites during 2020-2021. These sites represent 87% of the City's total scheme water use for that year. Water use will be monitored closely for these accounts, and they will be prioritised for any water efficiency upgrade works.

GROUNDWATER

Figure C: Groundwater usage compared to licence allocation

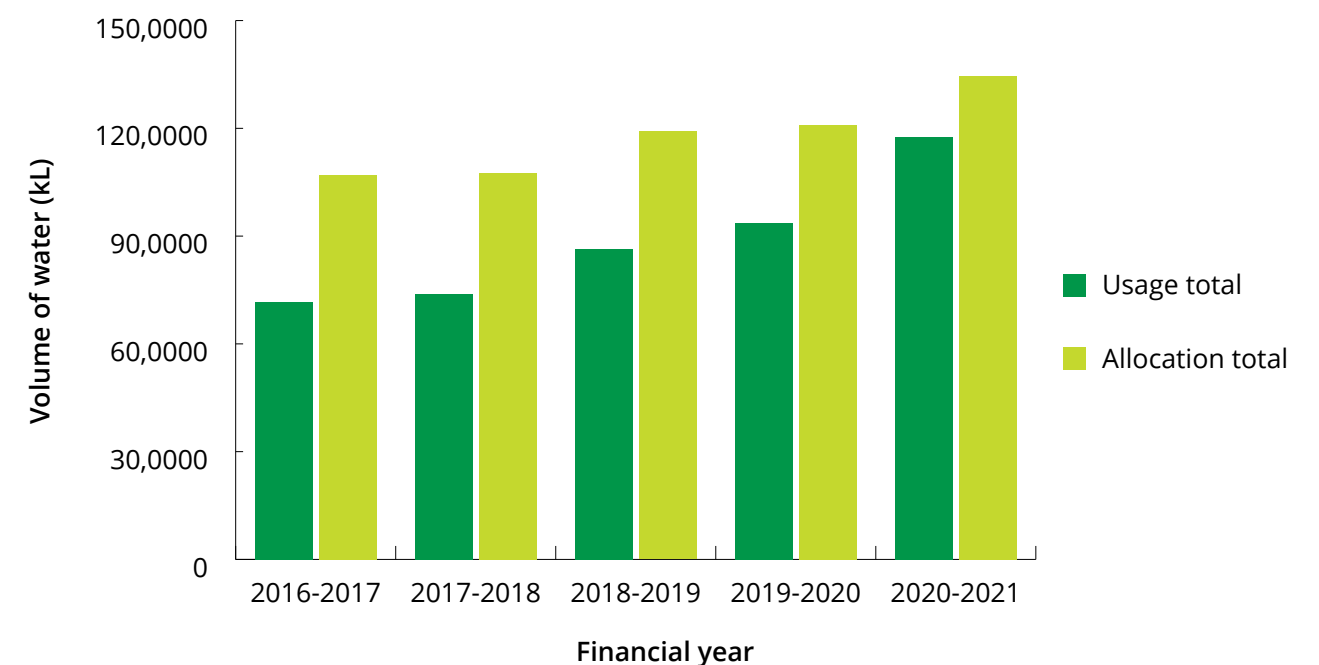


Figure C displays the City's actual groundwater usage compared to the City's licensed allocation amount for the past 5 years. There is an increasing trend in total usage during this time, however, the City has remained well within its licensed allocation. Over time, as the City's residential population grows and more houses are built, the City acquires more public open space to manage and irrigate. This is reflected in the increases over time to the licensed allocation amount. In addition, over the past few years, the City has also taken on the management of more sports playing fields. These turf surfaces require significantly more water to maintain at the high levels of amenity required, compared to turf areas utilised for passive recreation.

Extensive groundwater efficiency works had been undertaken as part of the City's Groundwater Strategy (previous version 2014-2019, updated version released in 2019). The majority of this work had been completed by the commencement of this Plan revision in 2021, and as predicted at the time, the rate of improvement in water efficiency has slowed down since then. Any further improvement in groundwater and irrigation-related water efficiency is largely reliant on further advances in technology and best practice.



The groundwater efficiency measures that have been implemented to-date include:

- Centralised irrigation control, which allows for detailed water budgeting based on the quality of turf or garden required and seasonal conditions, enables centralised deactivation of systems in response to heavy rains, and also reduces water use during infield testing and repairs due to mobile activation and de-activation capability. 88% of the City's bores are now centrally controlled.
- Updated the City of Kwinana Irrigation Development Guidelines in 2019 to guide new developments to ensure irrigation systems that are handed over to the City are water efficient and compatible with the City's systems.
- Replacement of poorly performing irrigation systems at Calista Oval, the Administration Centre, Rhodes Park and Apex Park. The efficiency performance of the remainder of the City's in-field irrigation infrastructure is considered appropriate and, therefore, no notable water efficiency improvements are anticipated to be achieved through further system replacements in the foreseeable future.

Community education and engagement

The City can also play a role in educating the community about water conservation and quality issues by delivering education and engagement programs. Existing initiatives include:

- Living Green Program - This program includes environmental, sustainability and waste initiatives and is held between May and July each year. Living Green provides our community with opportunities to get involved in local planting days to help revegetate natural area reserves and encourages residents to plant their own local native waterwise gardens by offering subsidised local native seedlings through the City's popular Seedling Subsidy Scheme. Planting endemic species in home gardens drastically reduces the need for irrigation, as these plants don't usually require ongoing watering once they are established. In 2021, Living Green was launched with a screening of the '2040' film, showcasing inspiring, currently available solutions to mitigate against climate change and its associated impacts on water availability. Local environmental community groups also attended to talk to attendees about the great work they do, and encourage community participation.
- Living Smart Sustainable Living Courses – a seven-week sustainable living course for residents has been delivered annually for the past 6 years. This course includes sessions on home water efficiency and water efficient gardening.
- Switch Your Thinking – The City subscribes to the Switch Your Thinking Program, a regional organisation of Councils that delivers sustainability programs to the public. As part of this the City receives public education workshops, access to the Rewards for Residents and Rewards for Businesses program featuring discounts on sustainability-related products and services that assist the community to improve their energy and water efficiency, recognition programs like Switched on Schools and

Switched on Businesses, Competitions such as the Young Reinventor of the Year program as well as other grant funded projects.

- Participation in Clean Up Australia Day and various other litter clean up days each year, which aim, in part, to reduce the amount of litter that ends up in wetlands, waterways and the ocean.

The City's Environmental Education Strategy 2019-2024 was developed by the City in 2018 and incorporates broad sustainability, environmental and water education aspects. It is currently under its mid-cycle review.

Progress to date

In 2018 the City of Kwinana adopted its second Sustainable Water Management Plan (City of Kwinana, 2018) to outline how the City would move towards becoming a Water Sensitive City. The Plan underwent a mid-cycle review in 2021, resulting in this document. Details on the review methodology are outlined in the Monitoring and Review section.

The 2021 mid-cycle review found that actions achieved to date from the original Sustainable Water Management Plan 2018-2023 include:

- Gold Waterwise Council endorsement retained
- Awarded Gold Waterwise Aquatic Centre endorsement
- Updated the City's Irrigation Development Guidelines (2019)
- Continued to update old bore controller systems to an SDS compatible centralised control system
- Gross pollutant trapping drainage nets (litter socks) were successfully trialled to collect and prevent litter and organic debris from entering sensitive natural environments. The City now has a total of five drainage nets installed and operational.
- Continued to participate in Clean Up Australia Day and other litter clean up events at City natural area reserves and beaches

- Continued to run an annual seven-week sustainable behaviour change course for residents
- Continued to participate in the Switch Your Thinking environmental education program, running workshops on sustainable living for our community
- Continued to install, maintain and monitor water meter data loggers on top water using sites
- Maintenance procedures for water sensitive design features are well developed and scheduled maintenance undertaken at a regular frequency to ensure their continued function and amenity
- The establishment and continued use of the Verge Permit system. These enforceable permits are issued to builders for worksites. They require the containment of construction waste and sediment on site, preventing impacts on roadways and stormwater systems.



Water management goals

The City set an intention to work towards becoming a Water Sensitive City in its original Sustainable Water Management Plan 2013-2018. Since then, the City has made significant progress in this area, and will continue to work towards its water management vision:

Water everywhere is appreciated as an essential and finite resource that brings value to us all, and is utilised in ways that ensure its continued availability and quality in the future.

A Water Sensitive City considers the many objectives a local government has for public open space and infrastructure. In particular, providing beautiful and useable public areas and supporting local biodiversity. The City of Kwinana also acknowledges its role as a source of reliable information and education for our community. The journey toward becoming a water sensitive city can be framed through the following seven goals:

- Ensure good water sensitive governance,
- Increase community capital,
- Improve productivity and resource efficiency,
- Improve ecological health,
- Ensure quality urban space,
- Achieve equity of essential services, and
- Promote adaptive infrastructure. (CRC for Water Sensitive Cities, 2018).

Of the above goals, only 'improve productivity and resource efficiency' can have quantitative targets applied. Although their performance is not quantifiable in the same way, the other goals are addressed through actions set within the Implementation Plan section.

The following corporate water use targets were set by representatives from the City's Engineering, Environment, Assets, Recreational and Parks Teams. These targets are believed to be achievable, based on the actions set by the Plan. It should be noted that these targets are intended to be aspirational and there will be no penalties if the City fails to achieve them.

SCHEME WATER

Target: To maintain scheme water use within 5% of 2016-2017 levels until 2023

The City used 10.8% less scheme water in 2020-2021 compared with the 2016-2017 baseline year. However, a new community sporting pavilion is due to open in the next two years and will therefore increase scheme water use and require further improvements to water efficiencies to achieve the goal.

In addition, the City will further improve our water use data collection, tracking and analysis. This will enable more accurate monitoring, target setting, streamline response actions and better inform planning decisions.

GROUNDWATER

Target: Maintain groundwater use efficiency at 2016-2017 levels until 2023

The City has improved its water budgeting over several years as well as transferring irrigation systems to a centralised control system. This work will be completed over the coming years, and the rate of improvement in the efficiency of the City's groundwater use is therefore likely to plateau. The City will continue to take over management of a large number of irrigated parks in residential subdivisions. Combined with continued climate change impacts, the City will face challenges in not increasing irrigation over the ever-drier and hotter summer months in order to retain amenity and avoid vegetation loss.

COMMUNITY WATER MANAGEMENT GOALS

- Improve our community's awareness and understanding of water, encouraging them to value it both at home and across the landscape
- Encourage and support our community to improve home and local business water efficiency
- Maintain residential water use below the Waterwise Perth Action Plan's target of 110kL/capita until 2023

Implementation plan

The implementation of actions and priorities may vary as circumstances and technologies change, and in response to availability of funding opportunities. This 2021 update to the implementation plan includes actions required to maintain the City's Waterwise Council endorsement, with each action identified as new, existing or updated relative to the original 2018 Plan. In order to ensure a concise, focused and clear implementation plan, the action list has been shortened compared to the original Plan for the following reasons:

- Actions that have been completed have been removed
- Actions that are duplicates from other City strategic and operational plans have been removed and, instead, listed in the water management actions within other plans section
- One action was removed as it was no longer applicable

Action Number	Water Sensitive City goal area	Action (Actions marked with an asterisk* are Waterwise Council Program mandatory set actions)	Responsible position/ team	New/ Existing/ Updated Action	Timeframe for completion	Budget	Measure of success
1	Improve Productivity & Resource Efficiency	Develop and maintain a database and scheduled process to track water use patterns for City water meters utilising installed data logger network plus ongoing water billing data for meters without data loggers. This system will establish water use patterns and identify water use anomalies.	Sustainability Officer	New	2021-2022	Staff time	Database developed and in use.
2	Improve Productivity & Resource Efficiency	Develop a standard response procedure to action necessary repairs or maintenance triggered by anomalies in the water use database (above action).	Sustainability Officer	New	2021-2022	Staff time	Standard water use anomaly response procedure developed and in use.
3	Improve Productivity & Resource Efficiency	Develop and implement a system to make it easier for the community to report a fault (such as leaking taps) to the City. This may utilise QR codes to provide an easy to access reporting channel with an input form to submit maintenance requests. This will improve response times for maintenance work.	Sustainability Officer, Information Technology, Marketing & Communications, Facilities Maintenance	New	Annually	Staff time, service provider costs (if applicable)	System developed and successfully in use.
4	Improve ecological health	Development of a surface water quality monitoring regime at sites where health may be affected by disease vector-capable mosquitoes.	Sustainability Officer, Coordinator Environment & Waste	New	2021-2022	Operating budget	Improved identification of water quality issues and hotspots.
5	Improve productivity & resource efficiency	Continue to install and maintain data loggers on priority high water using Council water meters for leak detection purposes. Develop data logger asset maintenance plan.	Sustainability Officer	Updated	Ongoing	\$9,000/year (in budget)	Reduction in water use. This will be dependent on the number and magnitude of leaks.
6	Improve productivity & resource efficiency	Promote and support waterwise verges and gardens, encouraging people to remove lawn and plant a waterwise and low nutrient requirement garden instead. This includes: <ul style="list-style-type: none"> • Providing subsidised local native plant seedlings through the annual Seedling Subsidy Scheme. • Redeveloping and promoting the City's waterwise and local native gardening brochure(s). • Running events providing advice explaining how to plant a Waterwise verge while meeting the City's verge requirements. 	Sustainability Officer, Bush Care Officer	Updated	Ongoing	\$4000/year (seedling subsidy scheme in budget)	Number of residents engaging in these initiatives.
7	Increase community capital	Develop and implement an annual communications plan that promotes the City's work and achievements in water management with our community and stakeholders.	Sustainability Officer, Marketing & Communications	Updated	Annual	Staff time	Water management work and achievements communicated to our community at least twice a year.
8	Improve productivity & resource efficiency	Continue to add remaining groundwater bores to the centralised irrigation controller and, where deemed beneficial, install Variable Frequency Drive at time of asset replacement.	Parks	Existing	Annually	In annual Parks Budget	All bores are attached to centralised controller.
9	Improve ecological health	Continue to encourage developers to implement Water Sensitive Urban Design in new developments including pipeless design in areas with multiple water issues in the Peel Harvey Catchment area.	Engineering Services / Planning Services	Existing	Ongoing	Staff time	All new developments include Water Sensitive Urban Design
10	Good water sensitive governance	Continue to use a cross-functional water management team to consider Council initiatives related to the progression towards a water sensitive city. *	Water Management team (team listed in Waterwise Council Action Plan 2021)	Existing	Ongoing	Staff time	Participation and input from staff in team.
11	Improve productivity & resource efficiency	Encourage local developers to participate in the Waterwise Development Program. *	Planning Services	Existing	Annually	Staff time	All new developments are Waterwise developments

Water management actions within other plans

There are numerous actions related to water management that have been set in other City of Kwinana strategic and operational plans. To avoid duplication of planning and reporting, these actions have not been included in the Implementation Plan section of the Sustainable Water Management Plan.

While the below actions sit within other plans, they all contribute toward responsible and integrated water management by the City and these actions will be implemented and reported against within each Plan's reporting and review cycle.

City Plan/Strategy	Action	Responsible position/ team	Timeframe for completion	Budget	Measure of success
Climate Change Plan 2021-2026	Retain Gold Waterwise Council endorsement to promote corporate water efficiency. Aim to achieve Platinum Waterwise Council status	Sustainability Officer	Gold - annually, Platinum 2025-2026	Staff time	Gold Waterwise Council endorsement maintained. Platinum endorsement achieved.
	Attain and retain Gold Waterwise Aquatic Centre re-endorsement. Aim to achieve Platinum endorsement	Recquatic Centre Operations Supervisor	Gold - annually, Platinum 2025-2026	Staff time plus any proposed capital works	Recquatic Gold Waterwise Aquatic Centre endorsement maintained and Platinum endorsement achieved.
	Continue to utilise the Switch Your Thinking program: run three community workshops per annum and promote the Rewards for Residents scheme	Sustainability Officer	Ongoing	\$5,000/year (in budget)	Community workshops delivered annually, promotion of Rewards for Residents undertaken
	Continue to deliver an annual seven-week sustainable living course	Sustainability Officer	Annually	\$7,500/year (in budget)	Course delivered annually
	Identify and collate environmental, sustainability and waste education resources, tools and services into an integrated package that the City can offer to schools, local businesses, community groups and sporting groups. This will form a component of the review and update of the Environmental Education Strategy	Sustainability Officer, Bush Care Officer, Waste Education Officer, Coastal and Marine Program Manager, Marketing and Communications	Ongoing	Staff time	Environment, sustainability and waste education package developed. Relevant groups have been offered these resources
	Investigate further opportunities to hydrozone parks and/or replace traditional plants with waterwise/endemic species	Coordinator Parks, Technical Officer Parks Operations, Technical Officer Public Open Space Infrastructure Assets, Landscape Architects	Ongoing, 2025-2026	Staff time plus any proposed retrofit works	All parks are hydrozoned where possible and plants are Waterwise and/or appropriate for their location
	Investigate opportunities for expanding Water Sensitive Urban Design (WSUD) components throughout the City's stormwater drainage infrastructure at time of asset renewal	Coordinator Engineering Design, Manager Asset Management, Coordinator Infrastructure Operations	2024-2025	Asset renewal budget	WSUD is considered at the time of asset renewal/ replacement for drainage assets
	Update the Green Building Policy to be able to accommodate regular improvements in available technologies and efficiency levels. This may involve the development of a related set of guidelines referring to technologies and efficiency standards available at the time of planning new building projects or renovations	Sustainability Officer, Technical Officer Building Infrastructure Assets, Manager Asset Management Services	2023-2024	Staff time	Green Building Policy updated to accommodate regular improvements in available technologies and efficiency levels
	Investigate opportunities to encourage applicants to include sustainability related initiatives in their developments via the planning approvals process	Sustainability Officer, Planning Services	2022-2023	Staff time	Sustainability related development provisions identified and considered for inclusion in Structure Planning, subdivision design, Local Development Plans and/or Development Applications

City Plan/Strategy	Action	Responsible position/ team	Timeframe for completion	Budget	Measure of success
Climate Change Plan 2021-2026	Develop a Sea Level Rise Policy incorporating the projections completed as part of the Cockburn Sound Coastal Alliance project	Senior Environmental Planner, Coastal and Marine Program Manager	2022-2023	Staff time	Sea Level Rise Policy adopted by Council
Natural Areas Management Plan 2021-2024	Continue to protect and restore City managed wetland habitats through weed control and planting with appropriate endemic species	Natural Areas team	Ongoing	Staff time and Natural Areas budget	City managed wetland habitats maintained and restoration works have been undertaken annually
Environmental Education Strategy 2019-2024	Continue to participate in Clean Up Australia Day and other litter reduction initiatives	Bush Care Officer, Coastal and Marine Program Manager	Annually	Staff time	Natural areas and beach clean ups held annually
Waste Plan 2021-2025	Develop a Litter and Illegal Dumping Strategy	Waste Management Officer	2022-2023	Staff time	Litter and Illegal Dumping Strategy adopted by Council
	Support the State-wide phase out of plastics	Waste Education Officer	2022-2023	Staff time	Education and support provided to local residents and businesses to enable them to adapt to the single-use plastic bans
	Deliver education events aimed at reducing plastic waste which is a large proportion of the City's litter	Waste Education Officer	Ongoing	Staff time	Waste education events delivered annually



Monitoring and review

There are a variety of actions specified within the implementation plan, each assigned to specific positions or teams. The progress of each action will be reviewed annually against its relevant measure of success and considered in the context of priorities of the organisation and community at the time.

Ongoing reviews will ensure the plan stays up to date with changes in policy and new technology. This process will help to review priority areas, monitor progress towards goals and assess the effectiveness of implemented actions. It will also assist in the preparation of annual reports, budgets and the City's Corporate Business Plan.

As intended, this Plan has undergone a planned mid-cycle review, in 2021. The purpose of the review was to ensure that the Plan remains relevant and aligned with the City's priorities. The review process included the following:

- Reviewing the City's recent water data
- Reviewing and updating water management goals and targets

- Benchmarking other local government approaches
- Reviewing the original Plan's actions to determine status and relevance, and amending original actions to better fit the City's current situation and operational needs as required
- Developing new actions to continue to improve our strategic and operational approach to water management
- Various updates to the Plan document to ensure currency and consistency with other Plans

A full review and update of the Plan will be undertaken leading into its planned replacement in 2023.

The City will continue to monitor for any changes in government regulations or standards that apply to the management of water and respond accordingly.



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City of Kwinana Mosquito and Midge Management Plan



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