



WATER CONSERVATION AND EFFICIENCY PLAN

2020–25

Water Conservation and Efficiency Plan 2020 - 2025

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Introduction

The City of Fremantle (City) has a strong focus on providing environmental leadership for the benefit of current and future generations. This is reflected in the City's Strategic Community Plan and commitment to One Planet Living which promote sustainability and environmental responsibility as core values. It is also reflected in the series of detailed strategies and action plans which sit under the Strategic Community Plan and outline the steps Council wishes to take in pursuit of its goals.

The City acknowledges sustainable management of our water resources as vital to the ongoing health and wellbeing of our community. As a local government, one of our key roles in this is to manage scheme and ground water use for our facilities, parks and landscapes. Responsible water management extends well beyond reducing consumption, however, and includes management of stormwater, groundwater recharge, waterway pollution and health. Councils can also play a role in promoting responsible water use and practice in the community.

Fremantle Council's approach to water management was previously documented in the Water Conservation Strategy it adopted in 2014 under the ICLEI Local Governments for Sustainability Water Campaign. Since development of that documents, the City has achieved Waterwise Aquatic Centre and Waterwise Gold Council status in recognition of its efforts and achievements.

This Water Conservation and Efficiency Plan (Plan) represents an update and replacement of the 2014 Water Conservation Strategy, guiding the City's ongoing efforts to improve water conservation and management, and help our community to do so also, where possible.

Purpose

The purpose of this Plan is to set out the approach and actions the City wishes to take over the next five years to conserve scheme and ground water and use water sources in the most efficient way possible. The Plan also consolidates the various monitoring and reporting requirements associated with the City's Bioregional One Planet and Water Wise Gold accreditation.

Policy Context

The City works within the context of state government regulation of water extraction and use, as outlined in the Department of Water (now Department of Water and Environmental Regulation - DWER) Strategic Plan 2015-2020 and Water Corporation's Waterwise Perth Action Plan. These documents aim to support Western Australia's community, economy and environment by providing high level advice for managing water sustainably.

The City has several strategic documents that support this plan, the most important being the Strategic Community Plan 2015-2025 (SCP). Providing the overarching direction for the City's work, the SCP includes the key focus area for *Environmental Responsibility*, which includes responsible management and use of water. management and lists management of "*water usage through minimization and reuse strategies*" as a specific objective.

In addition to the high-level direction provided by the SCP, the City has been a One Planet Council since 2014, using the framework to shape an integrated approach to sustainability. This includes 'Sustainable Water' as one of 10 principle areas, reinforcing the direction provided in the SCP. Pursuit of a 10% (or greater) reduction to corporate and community use of scheme and ground water has been a consistent target.

Reduction of water use and better water management can, however, be challenging, particularly given the high capital costs of water infrastructure. Competing priorities to maintain green spaces and increase satisfaction with public recreation spaces can also create a tension.

Increases in population are also expected to contribute pressures on water reserves. The City of Fremantle currently has a population of approximately 34,000, which could grow up to 42,500 by 2036. Additional residents will impact on corporate and community scheme and groundwater use. Increased visitation to the City for recreation, work and entertainment (another strategic objective of Council's) may further impact water use, and affect how the City manages both scheme and ground water in these key activity areas.

Water security is a key focus area of the Greening Fremantle Strategy 2020, which also identifies the importance of managing green spaces for optimum function and amenity. The document plans for future water security by identifying fit for purpose water resources, water efficiency measures and opportunities for the most appropriate water sources for existing and new open space. Details for maintaining and planning for individual reserves are covered in various operational asset management and parks and landscape management plans. A review of recreational needs currently occurring may also influence future demand.

Background

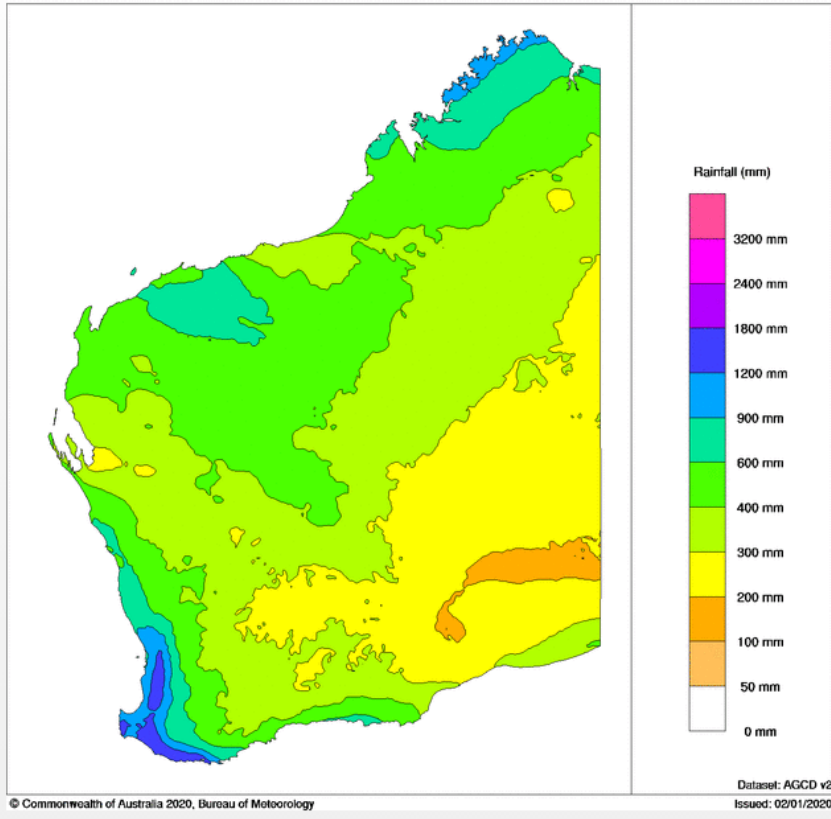
The actions in this Plan have been developed based on the review of the 2014 Water Conservation Strategy, strategic priorities, relevant literature and in discussion with Water Corporation and DWER. Key findings are summarised below.

Research/Evidence

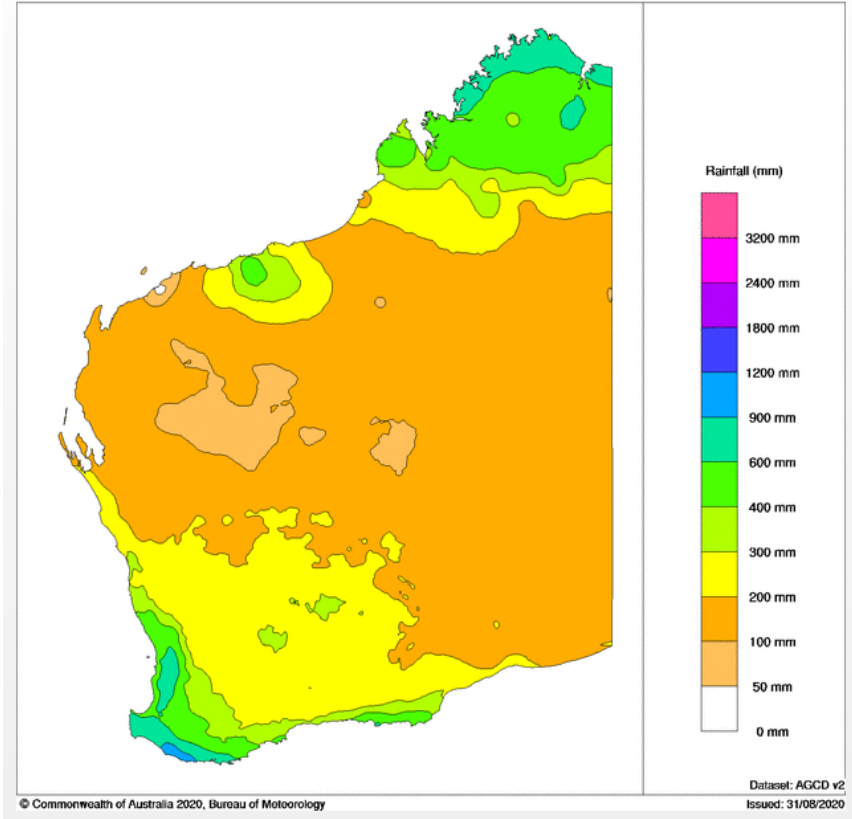
Australia and Western Australia is experiencing a drier climate with hotter temperatures, less annual rainfall and increasing severe storm events. This directly impacts the availability of scheme and ground water, the amount required to maintain the quality of the City's parks and reserves, and the proper functioning of drainage, and ecosystems.

The CSIRO and Bureau of Meteorology 2018 'State of the Climate Report' states that:

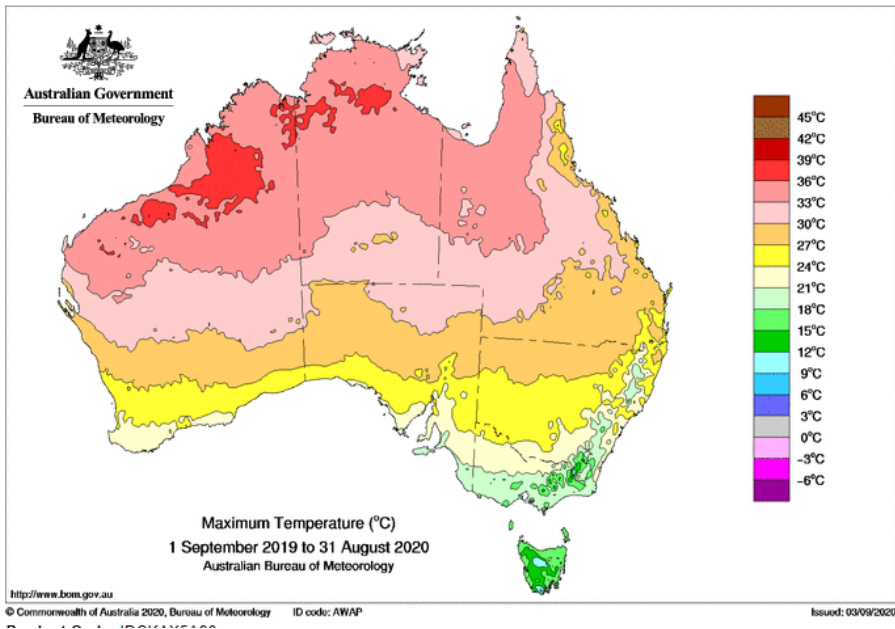
- Australia's climate has warmed 1 degree, since 1910, leading to an increase of extreme heat events.
- There has been a shift towards drier conditions across southwestern and southeastern Australia during April to October.
- For short-duration, hourly, extreme rainfall events, observations in Australia generally show a larger than 7 per cent increase. Short-duration extreme rainfall events are often associated with flash flooding.



1900 annual rainfall (Source: Bureau of Meteorology)



2019 annual rainfall (Source: Bureau of Meteorology)



Max. Temperatures Australia 2019-2020 (Source: Bureau of Meteorology)

The Water Corporation reports:

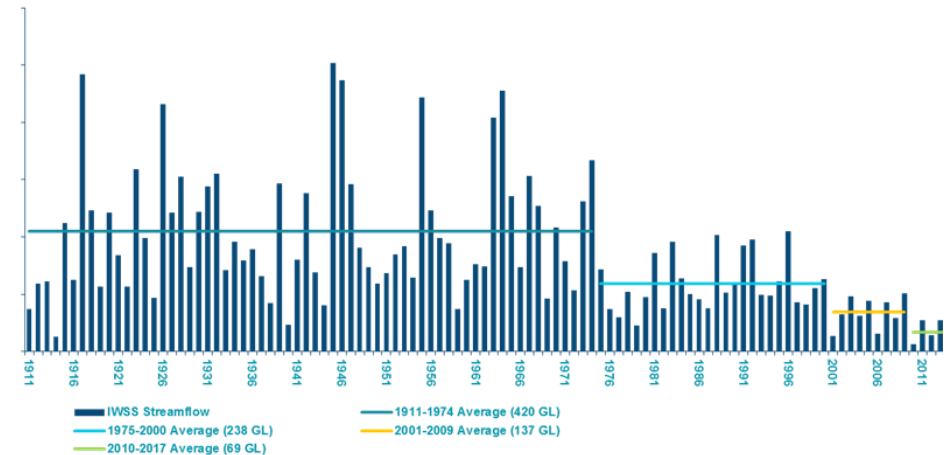
- Rainfall has dramatically decreased in many areas of our state.
- The amount of streamflow to dams generated from each millimetre of rainfall continues to decline.

The Water Corporation's response to this declining rainfall trend is to:

- Invest in climate resilient water sources such as desalination, groundwater replenishment and water recycling.
- Focus on innovation, to reduce environmental footprint by reducing energy consumption and embracing renewable sources.
- Seek to inspire positive action in our community to adopt waterwise practices and drive water efficiency improvements.

Water sources for the largest scheme, the Integrated Water Supply Scheme (IWSS) have changed dramatically. Water for the IWSS is now comprise of a combination of sources, including desalinated seawater, groundwater, groundwater replenishment and streamflow into dams.

Water Corporation research indicates that overall, household water use has decreased, although the greatest residential scheme water use remains for the garden.



Changes in IWSS streamflow 1975-2017 (Source: Water Corporation)

City of Fremantle Context

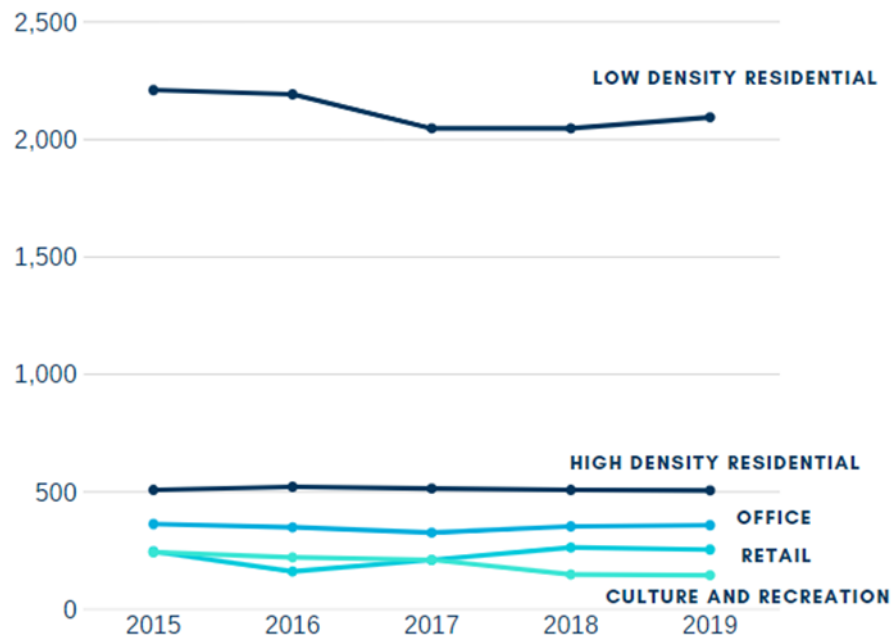
The City's population is currently at 34,129 and could increase up to 24% to 42,440 by 2036 (Profile id). The primary land use by area in the City is residential, however the City also includes areas of significant industrial, hospitality and commercial land use.

Low density residential consumes the most scheme water (54%) followed by high density residential (13%) office/business (9%) retail/wholesale (7%) and health/community (5%). The remaining land

use activities include recreation, education, manufacturing, utilities and government.

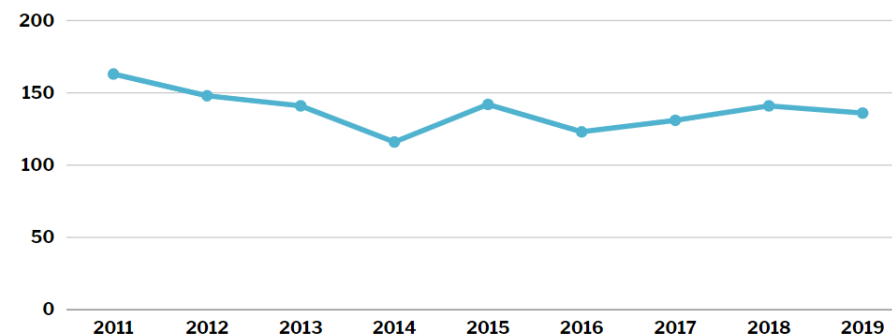


City has 58 parks and landscape features (with associated water using amenities) 14 facilities and 48 leased buildings which require scheme or groundwater.



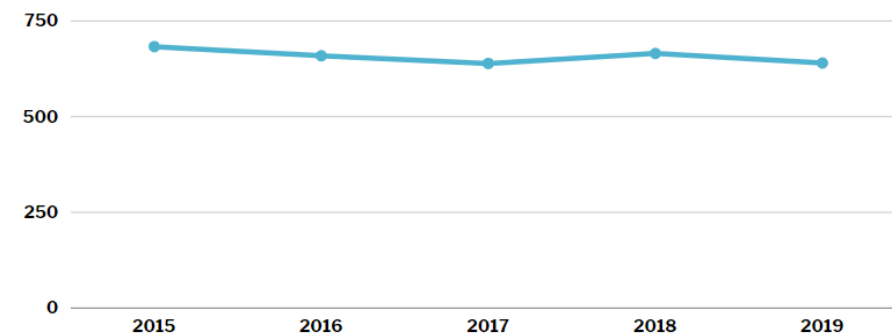
In accordance with the 2014 Water Conservation Strategy, One Planet water use reduction targets and Waterwise action plan, the City has

been reducing scheme use over time from 173,000kL in 2009 to 136,000kL 2019.



Corporate Scheme Water Consumption (kL per year)

The City has a groundwater allocation of 708,000kL, which it must not exceed unless approval is given by DWER. The City has consistently remained under the allocation.

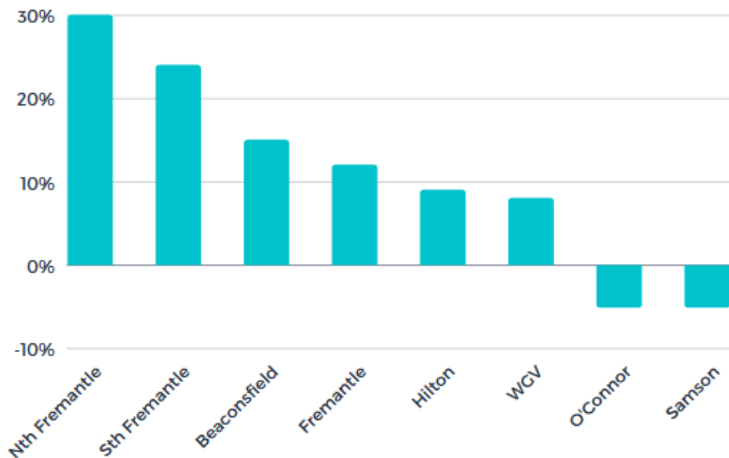


Corporate Ground Water Consumption (kL per year)

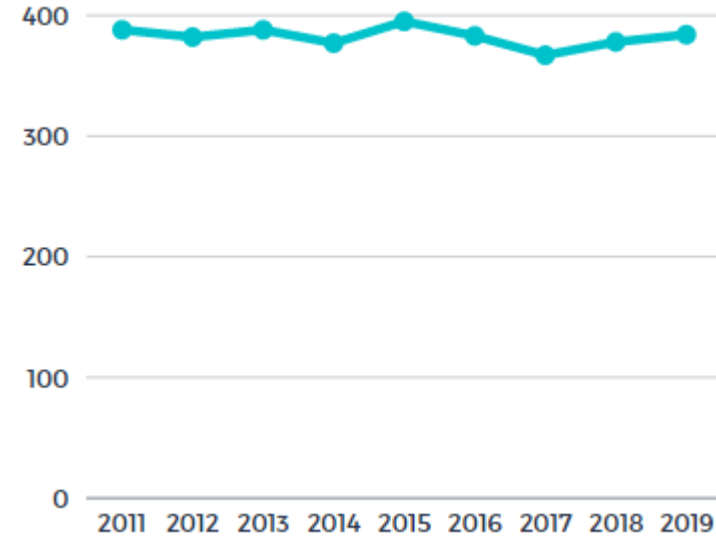
The community has been reducing scheme water use over time also, from an overall water use of 3.9 million kL in 2009 to 3.8 million kL in 2019. Overall, City residents use less scheme water when compared to

the Perth 2019 metropolitan average of 219kL per household per year, with the suburb of Fremantle using the least at 142kL per household per year.

Some suburbs use more scheme water than others, mainly those with bigger lot, house and garden sizes, with an increase in commercial/industrial use likely to attribute to the overall increase in scheme water in O'Connor.



Suburb water saving percentage since 2001



Community Scheme Water Use (million kL per year)

There are fluctuations over time, however the overall trend is a reduction in community scheme water use.

Recommendations

The implementation of the actions from the Water Conservation Strategy, One Planet Strategy and Waterwise program have resulted in a reduction in scheme and groundwater use across the City as an organisation and in the community. Ongoing pursuit many actions from these documents is consequently recommended under this Plan.

Water Efficiency and Reduction Targets

It is recommended that the corporate and community target scheme water reduction of 10% be continued for a further ten years from 2020,

using updated 2019 baselines. This is in line with statewide scheme water reduction targets (Water Forever, Whatever the Weather – Water recycling and efficiency).

Corporate Scheme Water Use



136,000kL



122,000kL

Community Scheme Water Use



3.8 million kL



3.7 million kL

Suburb	2019 pop	2019 total consumption (1000kL per year)	2019 consumption per person (1000kL per year)	10% total reduction target	2030 pop	2030 consumption target (1000kL per person per year)
North Fremantle	4545	169	37.1	152	4509	33.7
South Fremantle	3393	177	52.1	159	3950	40.3
Beaconsfield	5546	207	37.3	186	6857	27.1
Fremantle	10,358	142	13.7	127	15,895	8
Hilton	4832	386	79.8	347	4934	70.4
White Gum Valley	3349	201	60	180	3286	55
O'Connor	570	36	63	32	641	49
Samson	2107	269	127.6	242	2109	114.7

O'Connor residential water use has only been accounted for due to the very small number of residences and the majority of land-use being industrial/commercial (to gain a more comparable per person target). Low and High density residential 2019 water use has been used. The City will liaise with Water Corporation with its Water Wise Business program and monitor industrial/commercial water use as per the annual Water Wise Council action plan reporting (refer action 3.1.1). Assumes a small increase in population due to subdivision. Population projections otherwise from Profile id.

Groundwater allocations are set by the DWER and penalties apply for overuse of the allocation. The previous strategy and One Planet Strategy set a target to reduce groundwater use by 10% by 2020. In 2019 the City used only 660,000kL, which was significantly under the 708,000kL allocation. Due to the social, environmental and health and well-being associated with healthy green spaces together with uncertainty over potential changes in demand, a specific reduction target is not recommended. Rather, the City remains committed to use below its

groundwater allocation, using groundwater as efficiently as possible and investigating alternative water supplies (see actions) to reduce demand on the aquifer.

Water Conservation and Efficiency Plan 2020 - 2025

Five priority areas have been identified for improving efficiency of water use and resilience to the changing climate and extreme weather events.

Topic 1 – Corporate Scheme Water Use and Efficiency

Plan for future water saving/efficient facilities, amenities and parks and landscapes. Implement best practice water efficiency measures. Improve overall water use monitoring to effectively manage water use and efficiency.

Topic 2 – Corporate Ground Water Use and Efficiency

Implement best practice park and landscape design and upgrades. Implement water efficient irrigation. Improve overall water use monitoring to effectively manage water use and efficiency.

Topic 3 – Community Scheme Water Use and Efficiency

Work and partner with Water Corporation to identify and implement Waterwise community programs and education/promotion of the benefits of water conservation and efficient use. The City also supports community programs such as “Living Smart” which includes water efficiency and conservation education.

Topic 4 – Water Recycling and Re-use

Investigate fit for purpose alternative water sources for corporate facilities, amenities and parks and landscapes and

ways to recycle and re-use waste water. To plan continuing water supplies in a drying climate and for potential groundwater restrictions. Apply best practice stormwater management. Stormwater management and re-use is also identified in the Climate Adaptation Plan.

Topic 5 – Drought Contingency

The City will ensure that it is prepared for droughts, particularly as climate change is expected to exacerbate the frequency and intensity of droughts.

Monitoring, Reporting and Review

The Water Conservation and Efficiency Plan will be monitored and reported annually via the Gold Council Waterwise and One Planet Strategy reporting frameworks.

The targets set in this Plan are for ten years, but the Plan will be reviewed in 5 years (2025).

Action Plan

Action	Recommendation Type (Policy or Management Approach, One off Action or Advocacy)	Responsibility	Priority	Sequencing & stages	Resourcing
Topic 1 – Corporate Scheme Water Use and Efficiency					
<i>Recommendation 1 – Improve understanding and monitoring of Corporate scheme water use for facilities and amenities. Improving water use data collection and dissemination will improve water and facility management e.g. early leak detection.</i>					
1.1.1 Roll out of water meter data – loggers at key city facilities (higher water users)	Management Approach	Facilities and Environmental Management	H	Implement in stages 2020 – 2025 or when a facility is upgraded (including plumbing)	\$1500 per logger unit (approx. \$15k) \$240 per year monitoring
1.1.2 Conduct water fixture audit of key City leased facilities (higher water users)	One off Action	Facilities and Environmental Management	M		Operational
1.1.3 Roll out of water meter data loggers at key City leased facilities	Management Approach	Facilities and Environmental Management Economic Development (Lease)	L	Following Action 1.1.2	\$1500 per logger unit (approx. \$15k)
1.1.4 Identify water saving/efficient measures in key leased facilities to inform future improvements	One off Action	Facilities and Environmental Management	M	Following Action 1.1.3	Operational

Recommendation 2 – Implement water saving measures in City facilities. Including continuous improvement of water saving fixtures and operations

1.2.1 Apply Sustainability Checklist for maintenance audits and upgrades	Management Approach	Facilities and Environmental Management	M	Ongoing	Operational
1.2.2 Install water efficient fixtures in all City facilities	Management Approach	Facilities and Environmental Management	H	Ongoing – as per maintenance/upgrade schedules and new facility builds	Cost TBC and will depend on the scale and complexity of the project

Recommendation 3 – Ensure organisational communication and collaboration for water conservation and efficiency for programs and projects

1.3.1 Continue cross directorate Sustainability collaboration meetings & activities	Management Approach	Facilities and Environmental Management Parks and Landscapes Strategic Planning	H	Ongoing	Operational
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Recommendation 4 – Corporate partnerships, programs and support.

1.4.1 Continue to be accredited with Water Corporation’s Water Wise Aquatic Centre and Council program	Policy	Fremantle Leisure Centre Strategic Planning	H	Annual	Operational
1.4.2 Continue to seek opportunities to support/partner with development	Advocacy	Strategic Planning	M	As per development/projects arise	Operational

stakeholders for water efficient/conservation development and projects					
Topic 2 – Corporate Ground Water Use and Efficiency					
<i>Recommendation 1 – Implement hydrozoning and irrigation efficiency/best practice in all public open space across the City</i>					
2.1.1 Progressively implement irrigation upgrades for City parks and landscapes	One off action	Parks and Landscapes	H	Annually	Variable. Cost estimates obtained via the PID, design and quote/tender process
2.1.2 Progressively implement hydrozoning for City irrigated parks and landscapes.	One off action	Parks and Landscapes	H	Annually	Variable. Cost estimates obtained via the PID, design and quote/tender process
2.1.3 Apply best practice WSUD to new and existing parks and landscape maintenance and upgrades (including endemic/waterwise planting)	One off action	Parks and Landscapes Strategic Planning	H	Per project	Operational. Cost implications as a component of design variable: defined via PID, design & quote / tender process.
Topic 3 – Community Scheme Water Use and Efficiency					
<i>Recommendation 1 – Partner and collaborate with Water Corporation and other stakeholders to communicate the benefits of water conservation and efficiency.</i>					
3.1.1 Partner with Water Corporation’s Water wise community and business program/s	Advocacy	Parks and Landscapes Strategic Planning Communications and Events	H	Annually	Operational (grants apply for programs under Waterwise Gold Council’s)
3.1.2 In communication with Water Corp, develop	Advocacy	Strategic Planning	H	Following action 3.1.1	Operational

an annual communication plan on water efficiency news and programs		Communications and Events			
3.1.3 Identify and communicate other water efficiency and conservation programs and projects	Advocacy	Strategic Planning Communications and Events	M	Following action 3.1.1	Operational
3.1.4 Continue to provide free mulch to residents	Management approach	Parks and Landscapes	H	Annually	Annual budget
3.1.5 Continue to participate in the residential Verge Gardens program.	Management approach	Parks and Landscapes	H	Annually	Annual budget
3.1.6 Continue to provide subsidized water wise endemic plant species for residents	Management approach	Parks and Landscapes	H	Annually	Annual budget

Topic 4 - Water Recycling and Re-use

Recommendation 1 – Continue to investigate alternative fit for purpose water supply options for facilities and parks and landscapes in light of a drying climate, scheme water costs and water security. In line with actions from the Greening Fremantle Strategy 2020, One Planet Sustainable Water and Climate Adaptation Plan.

4.1.1 Investigate storm water outflow locations, volumes and water quality	One off action	Asset Management Facilities and Environmental Management	M		Approx. \$20,000
4.1.2 Identify opportunities for stormwater re-use and cost estimates	One off action	Facilities and Environmental Management	M	Following Action 4.1.1	Operational

		Strategic Planning			
4.1.3 Undertake a Stormwater Management Plan to inform future upgrades and projects to manage and re-use stormwater	One off action	Asset Management Parks and Landscapes	M	As per Corporate Business Plan and project identification process	Approx. \$80,000
4.1.4 Continue to investigate opportunities for water recycling and re-use for City facilities and parks and landscapes	Management approach	Asset Management Parks and Landscapes Facilities and Environmental Management Strategic Planning	M	Ongoing	Operational
<i>Recommendation 2 – Strategic Planning and assessment direction and improvements</i>					
4.2.1 Apply Water Sensitive Urban Design assessment for City and other structure plans	Policy position	Strategic Planning	H	Ongoing	Operational
4.2.2 Apply Water Corporation “Waterwise Garden Design Guidelines” in landscaped assessment.	Policy position	Strategic Planning	H	Ongoing	Operational
4.2.3 Update LPP1.10 Construction Sites for best practice stormwater management and user friendliness	One off action	Strategic Planning Statutory Planning and Building	L	As part of general policy review	Operational

4.2.4 Update SG40 Greywater Re-use Systems policy for greater user friendliness	One off action	Strategic Planning Environmental Health	L	As part of general policy review	Operational
Topic 5 – Drought Contingency					
<i>Recommendation 1 – Develop a Drought Contingency Plan in line with stages of urgency defined by the Department of Water, that will identify priority areas for preservation and water reduction in a drought situation.</i>					
5.1.1 Develop Drought Contingency Plan	One off action	Strategic Planning	H		Operational
5.1.2 Develop communications strategy for drought situation	One off action	Strategic Planning	H	Developed in combination with 5.1.1	Operational

NOTE: Actions listed here will be assessed against other strategic priorities of the City through the corporate budgeting process. Inclusion of an action on this list does not commit the City to delivering it: however it identifies it as desirable and allows it to be scoped and fed into the corporate prioritization process.

Responsibility and review information	
Responsible officer:	Manager Strategic Planning
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