

City of South Perth Water Management Plan 2017-2022



Prepared by the City of South Perth
and Eastern Metropolitan Regional Council

March 2017



Acknowledgements

The City of South Perth recognises the effects of the drying climate induced by climate change and has committed to improving the City's and the community's water management through participating in the Waterwise Council program.

The City in partnership with Eastern Metropolitan Regional Council (EMRC) has developed the Water Management Plan (2017-2022) to continue to improve water management practices within both corporate and community sectors. The preparation of this report required considerable effort, resources and coordination between the City's relevant officers and the EMRC.

The City of South Perth would like to thank its staff members for their contribution and support in the development of the Water Management Plan (2017-2022). The City would especially like to thank the members of the Water Team who gave up their valuable time to review and guide the development of the Water Management Plan (2017-2022).

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Document Control

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Front Cover: Lake Douglas, South Perth, 2016



Executive Summary

The City recognises the need to conserve water in Perth's drying climate and has shown its commitment to water quality and conservation through participation in the International Council for Local Environmental Initiatives (ICLEI) Water Campaign™ from 2004 to 2014, and Water Corporation's Waterwise Council program.

Under Water Campaign™, the City developed a Water Action Plan in 2009, and reduced its corporate scheme water use by nearly 50% from 2002 (119,110kl) to 2012 (63,165kl). Residential per capita scheme water use decreased by 4.2% over the same period. Since the adoption of the Water Action Plan (2009), the City has progressed its water conservation and water quality objectives through the implementation of a variety of policies, plans and actions.

Whilst the Water Action Plan (2009) has been a very good guiding document in the area of sustainable water management, it no longer reflects the City's current and future water management needs. This Water Management Plan (2017-2022) is the outcome of the review of the Water Action Plan (2009) and other source documents, together with consultation with the City's cross-functional water team. The Water Management Plan (2017-2022) has been developed to address the City's current corporate and community water management issues related to water conservation and water quality improvement to guide the City's water management into the future.

This Plan incorporates the Water Efficiency Action Plan (2016-2021), which was developed to help the City meet the revised requirements of the Waterwise Council program, as well as the outcomes of a water quality risk assessment process. Through consultation, the City identified water quality priority areas and set goals for water consumption and water quality. Implementation of the water efficiency and water quality actions set out in this Plan will assist the City achieve these goals.

The City's corporate water quality priority areas are:

- Erosion Control;
- Herbicide and Pesticide Management; and
- Nutrient Management.

The City's community water quality priority areas are:

- Nutrient Management;
- Herbicide and Pesticide Management; and
- Gross Litter and Pollution Management.

The goals for water consumption and water quality are:

- **Corporate scheme water consumption goal:** to maintain corporate potable water consumption at or below 2014/2015 base year levels (67,596kl) by 2021/2022;
- **Community water consumption goal:** to maintain total community water consumption at or below 2014/2015 base year levels (109kl per capita) by 2021/2022, and maintain residential water consumption at or below 2014/2015 levels (96kl per capita) by 2021/2022;
- **Corporate water quality goal:** to implement at least 80% of the corporate water quality actions (in Section 5 below) by 2021/2022; and
- **Community water quality goal:** to implement 100% of the community water quality actions (in Section 5 below) by 2021/2022.



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McDougall Lake, 2016

1 Introduction

The City of South Perth understands and recognises that the availability of valuable water resources has been gradually declining and recognises that sustainable water management proves to have environmental, economic and social benefits while also meeting the City's obligations to its residents and ratepayers to lead by example.

In June 2009, the City developed and adopted its Water Action Plan (2009). This strategic plan has been a very good guiding document in the area of the sustainable water management. However, this plan no longer reflects the City's current and future water management needs.

The Water Management Plan (2017-2022) has been developed to address the City's current corporate and community water management issues related to water conservation and water quality improvement to guide the City's water management into the future.

The objectives of the Water Management Plan (2017-2022) include:

- Review the Water Action Plan (2009) and summarise the outcomes and recommendations in support of future water management strategies;
- Establish current corporate groundwater and scheme water use to provide a baseline for measuring progress towards water conservation goals;
- Establish current community scheme water use for both residential and non-residential sectors to provide a baseline for measuring progress towards water conservation goals;
- Set corporate water conservation goals for both scheme and ground water;
- Set community water conservation goals for scheme water;
- Set corporate and community water quality priority areas and goals;
- Establish a new water action table that included prioritised water management actions that address the City's current and future water management needs; and
- Support and outline the City's commitment to climate change adaptation in the area of water management within both corporate and community sectors.



1.1 Relationship to Strategic Documents

The Water Management Plan (2017-2022) aligns with the City of South Perth's *Corporate Business Plan 2015-2019* and *Strategic Community Plan 2015 – 2025* through the strategic direction

“Enhance and develop public open spaces and manage impacts on the City’s built and natural environment”

and the strategic objectives and initiatives:

- 2.2 Foster and promote sustainable water, waste management and energy management practices:
 - 2.2.1 Implement, review and monitor the Water Action Plan (2009)
 - 2.2.3 Upgrade the City’s parks, reserves and streetscapes irrigation network to enable more sustainable water use
 - 2.2.4 Implement Water Sensitive Urban Design principles in conjunction with new parks, streetscapes and drainage designs where feasible
- 2.4 Improve the amenity of our streetscapes (residential and commercial) and public open spaces while maximising their environmental benefits;
- 3.3 Review and establish contemporary sustainable buildings, land use and best practice environmental design standards.

The Water Management Plan (2017-2022) also aligns with and supports many of the City’s other policies, strategies and plans, such as:

- Policy P203 Ground Water Management;
- Policy P302 General Design Guidelines for Residential Development;
- Policy P354 Stormwater Drainage Requirements for Proposed Buildings;
- Policy P208 Ecologically Sustainable Building Design;
- Policy P211 Water Sensitive Urban Design (WSUD);
- Green Plan 2002;
- Integrated Catchment Management Plan 2004;
- Public Open Space Strategy 2012;
- Climate Change Strategy 2010-2015; and
- Various Foreshore Management and Reserve Management Plans.

1.2 Greater Perth Area Context

Perth’s climate is typically classified by hot dry summers with mild, wet winters. Perth’s average annual rainfall is in decline; the average annual rainfall at Perth Airport from 1961-1990 was 777.0mm and from 1994-2015 this was 728.1mm¹.

Water supply for Perth is heavily reliant on groundwater, though is increasingly being sourced from desalination. In 2016, water supply was comprised of 47% desalination, 46% groundwater and 7% surface water² (see Figure 1 below). Perth has an evapotranspiration rate of nearly 800mm per year. Reduced rainfall and changes in rainfall timing have greatly reduced run-off into dams around Perth (see Figure 2 below). The trending decline in rainfall across the South-West of Western Australia is also a concern for groundwater recharge.

¹ Source: www.bom.gov.au/climate/data (accessed 23/11/2016)

² Source: www.watercorporation.com.au/water-supply-and-services/rainfall-and-dams/sources (accessed 23/11/2016)

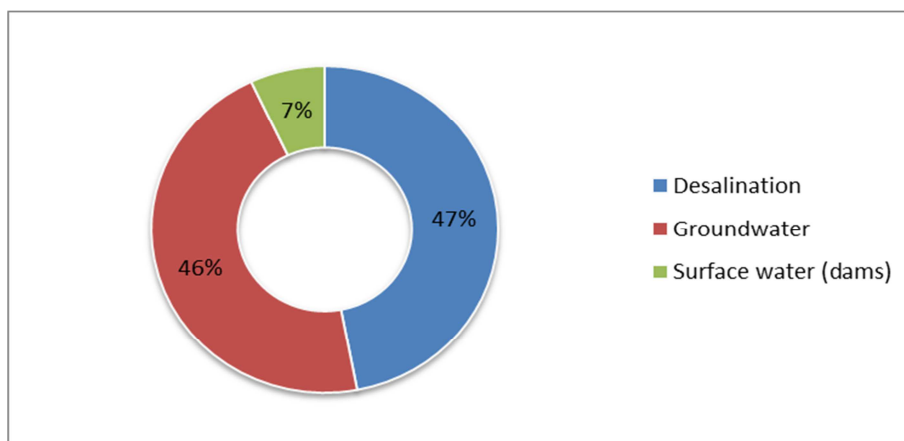


Figure 1: Perth Water Sources 2016

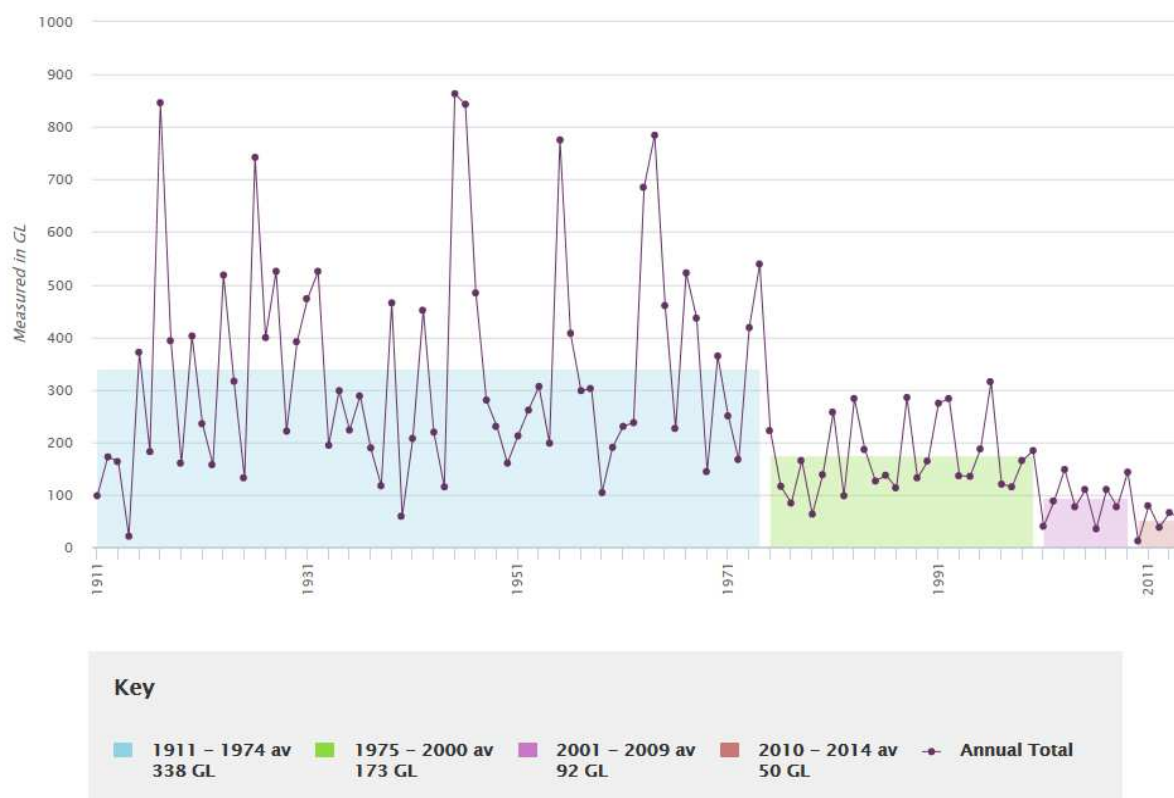


Figure 2: Historical Annual Streamflows into Perth Dams³

³ Source: www.watercorporation.com.au/water-supply-and-services/rainfall-and-dams/streamflow/streamflowhistorical (accessed 30/11/2016)



1.3 Our City

The City of South Perth is an inner-city metropolitan local government authority located about four kilometres south of the Perth CBD. It covers 1,983 hectares and encompasses the suburbs of Como, Karawara, Kensington, Manning, Salter Point, South Perth and Waterford (see Figure 3 below). The City of South Perth is known for its gracious street trees, extensive parks and gardens, attractive river foreshore areas and leafy environment, all of which complement the unique urban village atmosphere cherished by its community.

Major features include the Swan and Canning Rivers, the South Perth Foreshore including Sir James Mitchell Park, Perth Zoo, Royal Perth Golf Club, Collier Park Golf Course, as well as the Mends Street, Angelo Street and Preston Street precincts and the Waterford Plaza Shopping complex. Bounded by the Swan River to the north and west, and Canning River to the south, the City has a substantial river foreshore of approximately 660 hectares.

The population of the City of South Perth was an estimated 46,244 residents in 2015⁴, with 52 percent living in high or medium density housing. The majority of residents work in professional, scientific and technical services. On a daily basis, the City accommodates around 10,000 employees from small to medium sized businesses, specialised service providers and educational institutions. The City is preparing for significant and sustained growth during the next 20 years. The Western Australian Department of Planning estimates the City will accommodate an additional 6,000 dwellings by 2031, representing a 30 percent increase.

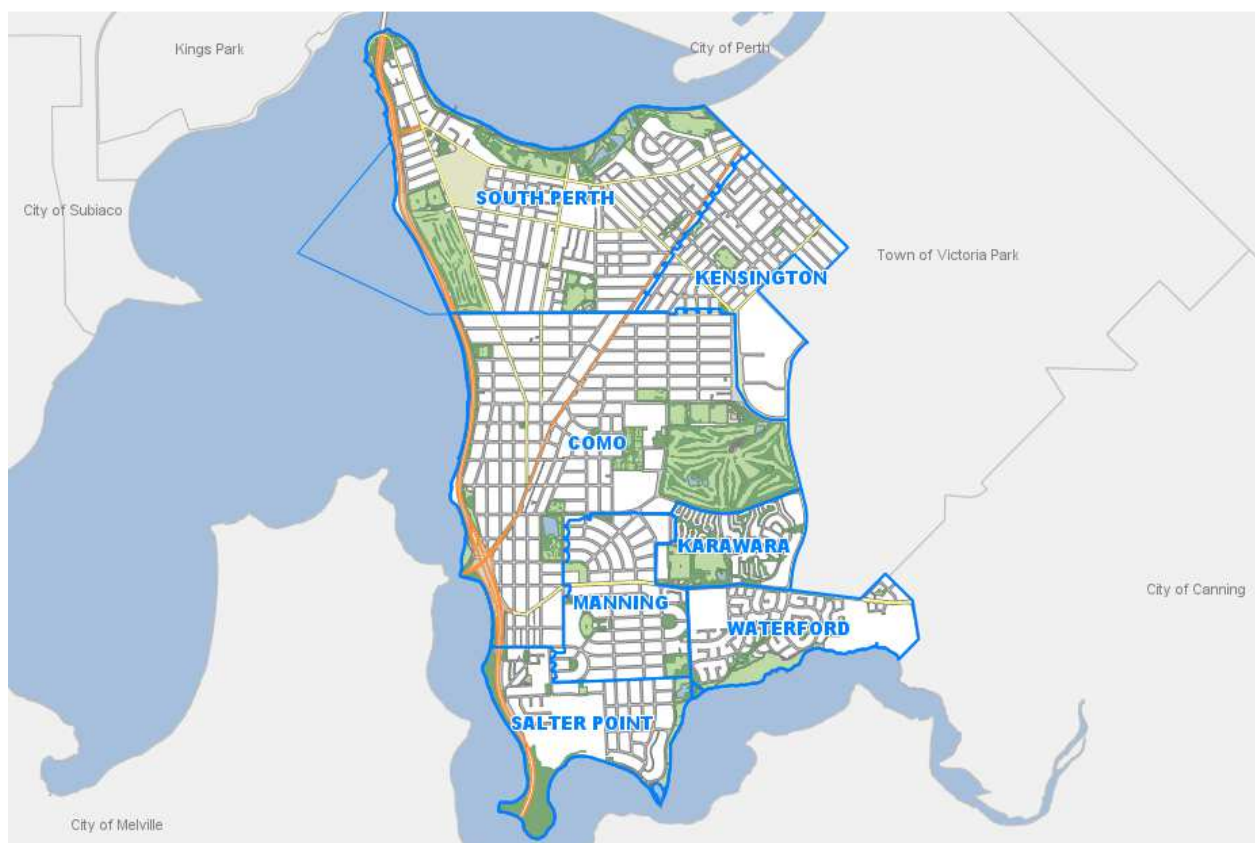


Figure 3: City of South Perth Suburb Boundaries⁵

⁴ Source: <http://profile.id.com.au/south-perth/population-estimate> (accessed 30/08/2016).

⁵ Source: City of South Perth Intramaps, <https://southperth.wa.gov.au/residents/home-and-neighbourhood/view-online-maps> (accessed 30/11/2016)



1.3.1 Groundwater

The City lies on the Cloverdale Mound, an area of 17,100 hectares bounded by the Darling Scarp to the east and by the Helena, Swan and Canning Rivers. The aquifer is underlain by Guildford Clay to the east and Bassendean Sand to the west. Groundwater generally moves in a westerly direction through the City of South Perth and interacts with the saline waters of the estuary that borders South Perth on three sides. This has important implications for irrigation water supply and the management of fertilisers and nutrients that can pollute the estuary through drainage and groundwater flows.

The City extracts groundwater for irrigation purposes from various local bores under licence from the Department of Water. These bores extract water from both deep (Leederville) and shallow (Superficial) aquifers. The City is currently licensed to extract a total of 1,459,587kl of groundwater per annum. Drinking water is supplied by the Water Corporation.

1.3.2 Wetlands and Lakes

With the infilling of many of the original freshwater and brackish wetlands for development across South Perth, the preservation of remaining wetlands has become more important. The existing wetlands have suffered from the clearing of vegetation and, in some cases, landfill practices.



Cygnia Cove Wetlands, 2016



Hurlingham Lake, 2016

The natural and man-made wetlands in the City consist of:

- Sir James Mitchell Park lakes - Lake Tondut, Douglas Lake and Hurlingham Lake;
- Millers Pool;
- Neil McDougall Park Lake;
- Goss Avenue Bushland adjacent to George Burnett Park;
- Gillon Lake, George Burnett Park;
- Collier Park Golf Course lakes;



- Canning River foreshore wetlands (Salter Point lagoon, Sandon Park, Andrew Thomson Conservation Reserve wetland and Cygnia Cove Foreshore Reserve wetland); and
- Doneraile stormwater treatment constructed wetland, Bodkin Park lakes and Collier drain.

Figure 4 below shows the location of these wetlands. Lake Tondut, Douglas Lake and Hurlingham Lake are all man-made lakes, constructed in 1985/1986 for stormwater management. These lakes all receive urban stormwater from the surrounding suburbs. An artesian bore located in Clydesdale Park is used to maintain water levels in the lakes and provides the bulk of irrigation for Sir James Mitchell Park.

The City has ongoing water quality monitoring programs for both surface water and groundwater.

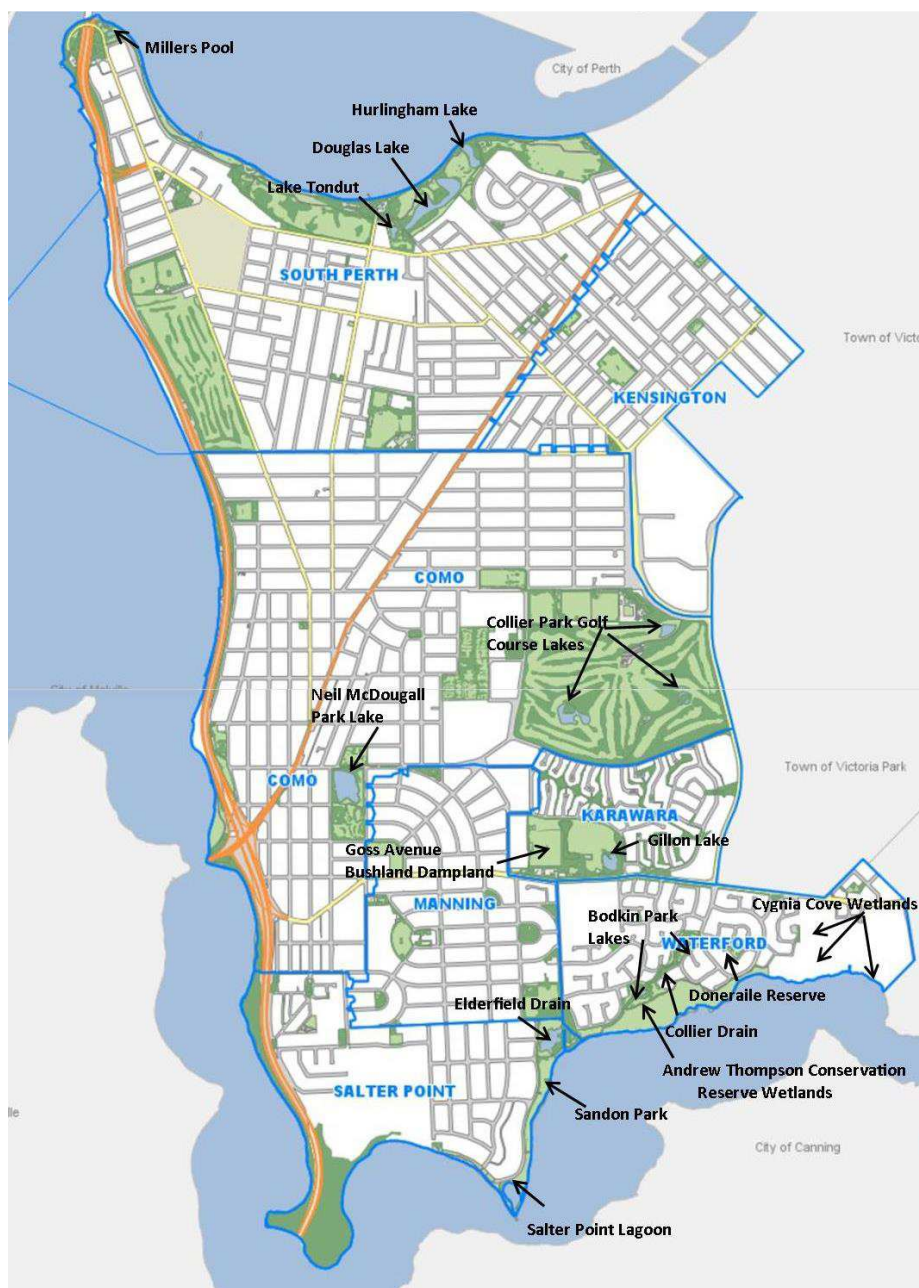


Figure 4: City of South Perth Map Showing the Location of Wetlands



1.4 Previous Water Efficiency and Quality Programs

The City commenced participation in the International Council for Local Environmental Initiatives (ICLEI) Water Campaign™ in 2004. The City's Water Action Plan was produced in June 2009 as part of Milestone 3 of the ICLEI Water Campaign™ five milestone framework to outline strategic water management within the City's corporate and community sectors. The Water Action Plan (2009) set out the approach that the City could take to reduce scheme and ground water consumption, improve water quality and contribute to significant cost savings.

The City completed Milestone 5 of Water Campaign™ in 2013. Under Water Campaign™, the City reduced its corporate scheme water use by 50% below 2002/2003 levels by 2012, a year earlier than expected. Community scheme water use increased by 5.1% from 2002/2003 levels, due to an increase in population size of 12.5%. Residential per capita scheme water use decreased by 4.2%, while non-residential community water use decreased by 12.2%. Since 2013, the City has progressed its water conservation and water quality objectives through the implementation of a variety of policies, plans, strategies and actions (see 3.2 and 3.3 below).

The ICLEI Water Campaign™ was linked to criteria for Waterwise Council endorsement under the Water Corporation's Waterwise Council program and, in 2012, the City was endorsed as a Waterwise Council due to its commitment to sound water management practices and successful completion of the Water Campaign™ milestone framework. The City has maintained its Waterwise Council status and reports water conservation achievements on annual basis. The ICLEI Water Campaign™ was defunded by Department of Water in July 2015, and subsequently Waterwise Council program criteria were modified. From 2016, participating councils are required to develop and submit an endorsed Water Efficiency Action Plan (2016-2021). This change to the Waterwise Council program provided an opportunity for the City to review and update its Water Action Plan (2009), which no longer reflected the City's current and future water management needs.

The City plans to continue participating in the Waterwise Council program and maintain and build on its Waterwise Council status to gain Gold Waterwise Council recognition. This level of recognition requires councils to demonstrate significant progress towards best practice water efficiency that is above and beyond the minimum endorsement requirements. The Water Efficiency Action Plan (2016-2021) has been developed for endorsement and incorporated into the Water Management Plan (2017-2022).

The City acknowledged water quality issues and the impact of discharge of stormwater drainage into the Swan and Canning Rivers by developing and implementing the Integrated Catchment Management Plan (ICMP) in 2004.

The City continues to implement an annual catchment water quality monitoring program, in partnership with the South East Regional Centre for Urban Landcare (SERCUL), as a vital part of managing and minimising the impact of urbanisation on rivers and wetlands. The objective of this program is to gather meaningful and applicable data to assess the condition of the catchment and the water quality entering the Swan and Canning River Systems. This is used to identify patterns and 'hotspots' within the catchment and provides management recommendations for improving water quality.



2 Commitment to Climate Change Adaptation

The City details its commitment to climate change adaptation in its *Climate Change Strategy 2010-2015* and *Climate Change Risk Assessment Adaptation Report 2010*.

The City's *Climate Change Strategy* describes three goals:

- 1. ADAPTATION: To ensure the City of South Perth is prepared for and resilient to climate change;
- 2. LEADERSHIP: To provide leadership and build capacity within the City and community, and through partnering with other Local Governments, to manage climate change risk and opportunity; and
- 3. MITIGATION: To reduce the City's greenhouse gas emissions and carbon footprint.

Implementation of actions in the Water Management Plan 2017-2022 will help the City achieve the Adaptation and Leadership goals in the area of water management. Implementation of these actions will also help address the risk that increased average temperature, increased number of hot days, reduced average rainfall and increased rain intensity may result in increased water usage, a diminished capacity for the City to service active reserves, increased incidence of algal blooms, and increased foreshore erosion. For example, implementation of Action 2.1: Upgrade median strips and garden areas to reduce or eliminate the requirement for irrigation will help the City reduce or maintain its water consumption as water needs increase due to increased average temperature and reduced average rainfall.

In 2010, the City undertook a review and assessment of the City's risks in terms of the effects of actual or potential climate change impacts. The recommendations in the *Climate Change Risk Assessment Adaptation Report* included:

- Inclusion of climate change risk management and adaptation plans into strategic and other management planning processes; and
- Inclusion of climate change risk management results into the City's continuous improvement processes.

By incorporating a risk assessment approach to the development of actions in the Water Management Plan 2017-2022, the City is ensuring that it continues to manage the City's risk and vulnerability to the actual and potential impacts of climate change.



Collier Park Golf Course, 2016



3 Water Action Plan (2009) Review

The review of the Water Action Plan (2009) and development of the new Water Management Plan (2017-2022) have resulted from a collaborative approach involving the City's cross functional water team. Specific steps in the evolution of the Water Management Plan (2017-2022) have included:

- Preliminary desktop assessment of the Water Action Plan (2009) and the status and relevance of actions;
- A review of other source documents, including:
 - Policy P203 Ground Water Management
 - Policy P302 General Design Guidelines for Residential Development
 - Policy P354 Stormwater Drainage Requirements for Proposed Buildings
 - Policy P350.1 Sustainable Design
 - Policy P208 Ecologically Sustainable Building Design
 - Policy P351.14 Cygnia Cove Residential Design Guidelines
 - Policy P211 Water Sensitive Urban Design (WSUD)
 - Salter Point and Waterford Foreshore Management Plan 2000
 - Green Plan 2002
 - Integrated Catchment Management Plan 2004
 - Mount Henry Peninsula Foreshore Management Plan 2004
 - Public Open Space Strategy 2012
 - Water Sensitive Urban Design Guidelines 2012
 - Kwinana-Freeway Foreshore Management Plan 2014
 - South Perth Foreshore Strategy and Management Plan 2015
 - Climate Change Strategy 2010-2015
 - Climate Change Risk Assessment Adaptation Report 2010
- Individual consultation with members of the water team to determine status of previous water management actions and priorities;
- Development of new water efficiency and water quality actions that address the water team's priorities incorporating previous actions that were outstanding and still relevant, and new actions identified; and
- Water team meetings on 7 September 2016 and 8 November 2016 to review actions, determine goals and water quality priorities, undertake a risk assessment process for water quality and accept new actions.

The outcomes of the Water Action Plan (2009) review have been incorporated into the tables of water efficiency and water quality actions of the Water Management Plan (2017-2022). Implementation of these actions will help the City to meet the current and future needs and achieve the goals set.

3.1 Actions, Projects and Policies Implemented Since 2009

The City has implemented a range of actions from the Water Action Plan (2009) and other plans that have helped the City to reduce its water consumption and its impact on water quality.

Corporate water efficiency actions implemented:

- Water Audits conducted at Operations Centre, Civic Centre, Manning Library, Garden/Olives Streets Reserve and Collier Park Retirement Village, including implementation of the most viable recommendations;
- Rainwater harvesting systems installed at Civic Centre Library, Neil McDougall Park, and the City's Animal Care Facility;



- A number of waterless urinals have been installed at various City's facilities such as Collier Park Golf Course, Operations Centre administration building and Manning Community Hub;
- Removal of 19,572m² of turf from median islands along Manning Road and replacement with mulch in 2012/13;
- Reticulation controllers upgraded to a central computer controlled system;
- A review of the City's public open space to determine use by the community and possible water conservation opportunities was conducted as part of the Public Open Space Strategy (2012);
- Policy P208 Ecologically Sustainable Building Design adopted by Council in 2008, requiring Council facilities to include waterless and waterwise devices when upgraded; and
- Terracottem used when installing new turf or gardens, increasing the water holding capacity of the soil and reducing the need for watering in the establishment period.

Community Water Efficiency actions implemented:

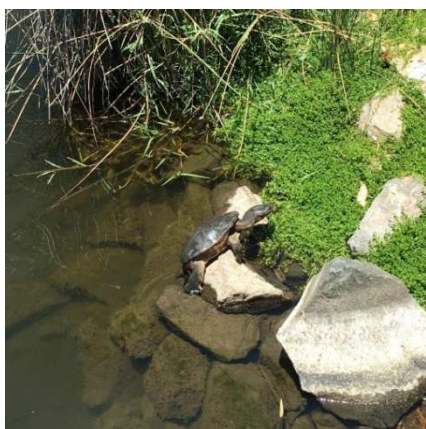
- The City's Verge Policy was updated in 2011 with an increased waterwise and sustainability focus;
- Beyond Gardens workshops and Great Gardens workshops, were hosted by the City on an ongoing basis; and
- A plants to residents program and verge makeover program were implemented in 2009 to 2011 (these programs were determined to be unviable and were discontinued).

Corporate Water Quality actions implemented:

- In 2012/2013 all drainage outfall systems to the Swan River requiring pollutant traps were determined and implementation strategy was developed. In 2013-2014, the first of a series of gross pollutant traps were installed at the Amherst Street and Melville Parade outfall drain;
- Water Sensitive Urban Design Guidelines were adopted in 2011;
- Water Sensitive Urban Design concepts were developed for Neil McDougall and Doneraile man-made waterbodies; and
- Constructed wetland at the Doneraile Reserve compensation basin was completed in September 2015 to improve water quality of the stormwater drain.

Community Water Quality actions implemented:

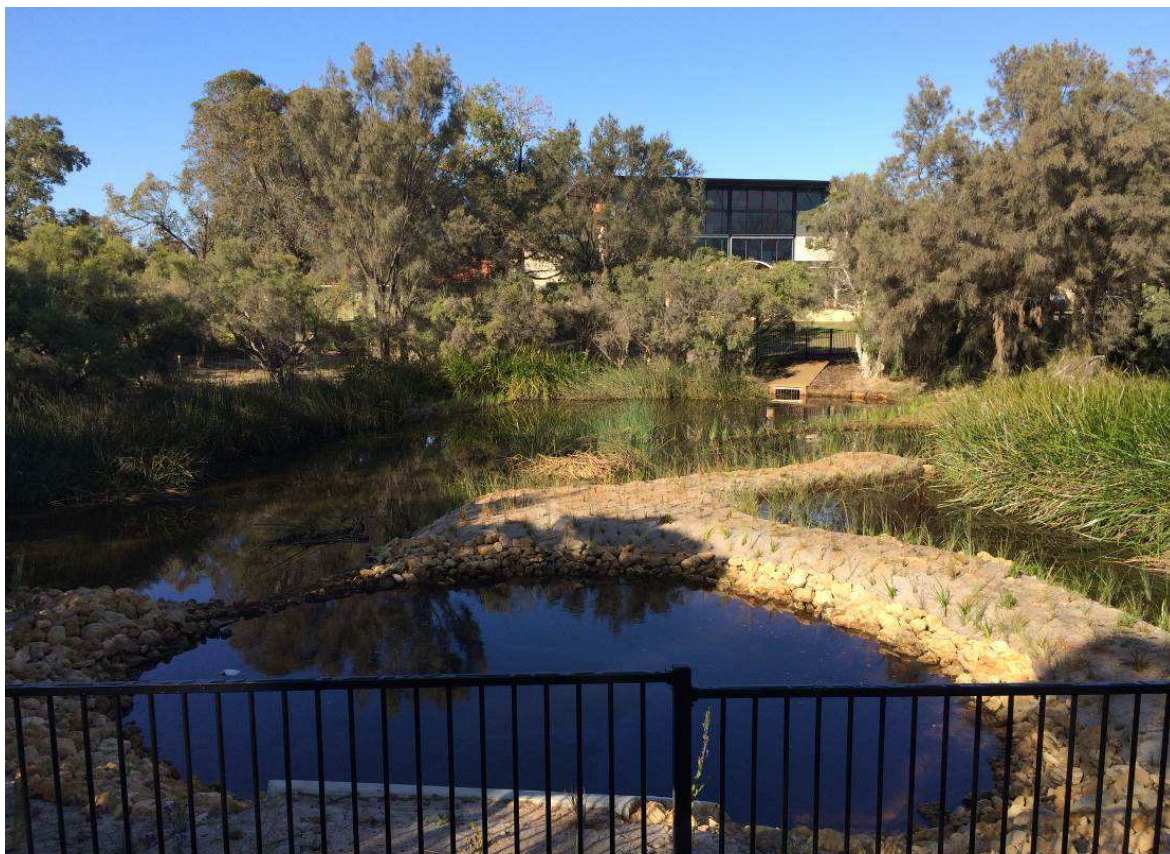
- Beyond Gardens workshops, Great Gardens workshops and youth education sessions via a partnership with Millennium Kids were hosted by the City on an ongoing basis.



Western Swamp Tortoise, Lake Douglas, 2016



McDougall Lake, 2016



Doneraile Reserve, 2015



Salter Point Lagoon, 2016



4 Water Use Profile

4.1 Corporate Potable Water Use Profile

4.1.1 Historical Corporate Potable Water Use

The City of South Perth's corporate potable water use has been on a slightly decreasing trend since 2007/2008, with peaks in 2012/2013 and 2014/2015 (see Appendix 12.2 Corporate Water Consumption Raw Data for more detail). The decrease in water use from 2007/2008 may be attributed to the efforts made by the City to reduce water use since developing its Water Action Plan in 2009. Water audits have been conducted at the Civic Centre (2011), Manning Library (2012), Garden/Olives Streets Reserve (2013) and Operations Centre (2014), resulting in some water savings at these facilities.

The water use spike in 2014/2015 can be mainly attributed to a 9,000kl increase in water use at Collier Park Retirement Village and the construction of the new Manning Community Hub facility.

The cost of water has increased dramatically relative to water use.

Table 1: Historical Corporate Potable Water Use and Cost from 2005/2006 to 2014/2015

	2007/2008	2008/2009	2009/2010	2010/2011	2011/2012	2012/2013	2013/2014	2014/2015
Annual water use (kL)	82,729	74,773	64,161	57,591	54,989	63,165	49,073	67,596
Daily Water use (kL/day)	227	205	176	158	151	173	134	185
Cost	\$67,134	\$68,549	\$69,877	\$76,827	\$89,832	\$118,093	\$99,694	\$140,486

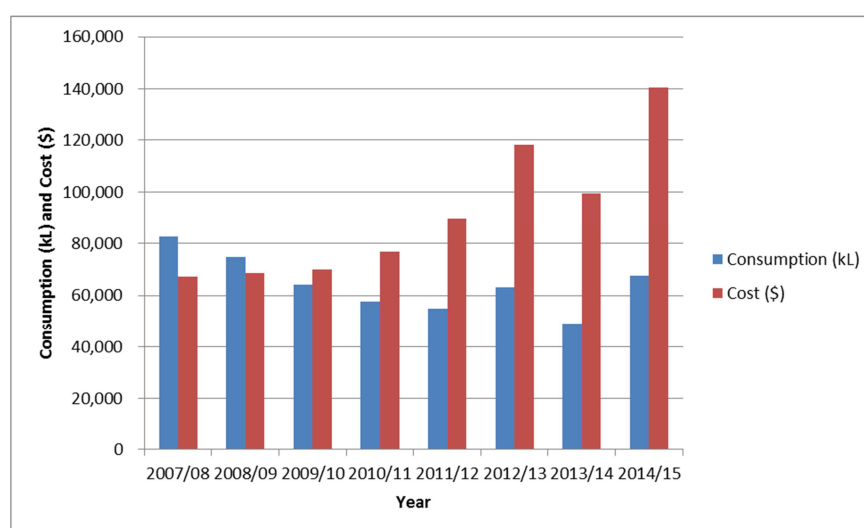


Figure 5: Historical Corporate Potable Water Use and Cost from 2005/2006 to 2014/2015



4.1.2 Corporate Potable Water Use by Facility Type in 2014/2015

Figure 6 below shows the City's Water Consumption by Facility Type in 2014/2015. "Gardens and Planter Boxes" including Traffic Management Measures (TMMs), road verges and roundabouts, was the highest using facility type, consuming 26% of the City's total potable water consumption (see Appendix 12.3 Corporate Water Consumption Data by Facility Type for more detail).

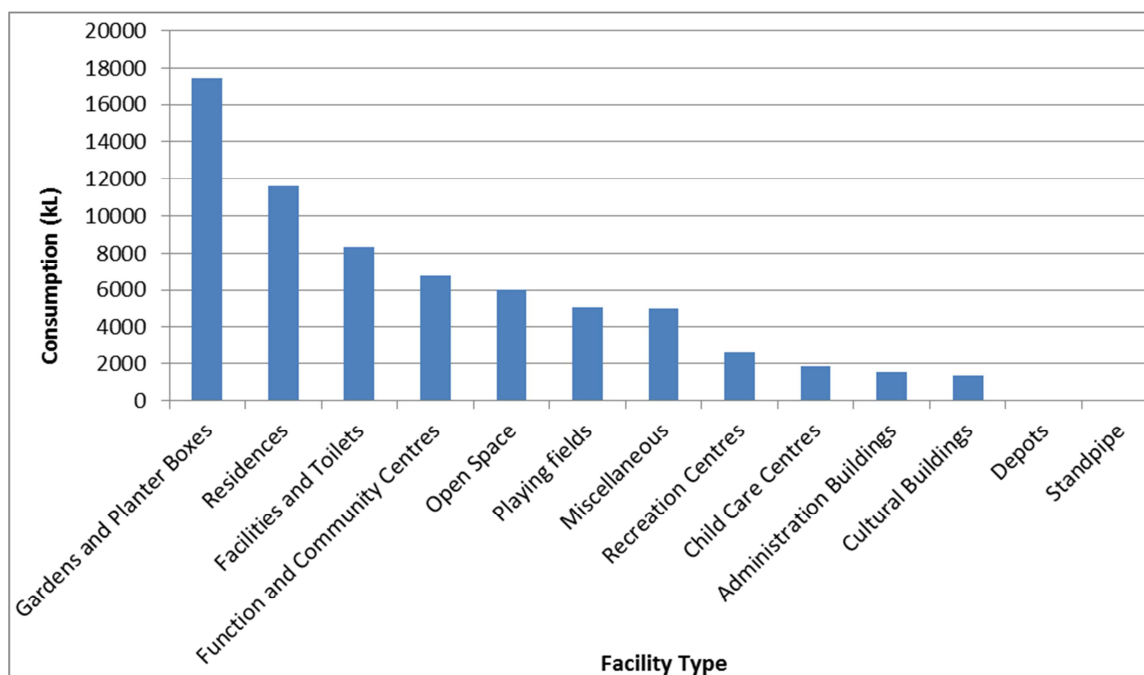


Figure 6: Water Consumption by Facility Type in 2014/2015

4.1.3 Top Potable Water Using Sites in 2014/2015

City of South Perth's single highest water using facility in 2014/2015 was Collier Park Retirement Village, using 11,599kl or 17% of the City's total water consumption.

Other top water using facilities were the Boatshed Café/Toilets/Sir James Mitchell Park, Judd Street Road Verge, Collier Park Golf Course, Civic Administration Offices, Operations Centre, Lady Gowrie Child Care, South Perth Bridge Club and Manning Library. Combined, the top 20 sites used 56% of the City's total water consumption in 2014/2015.

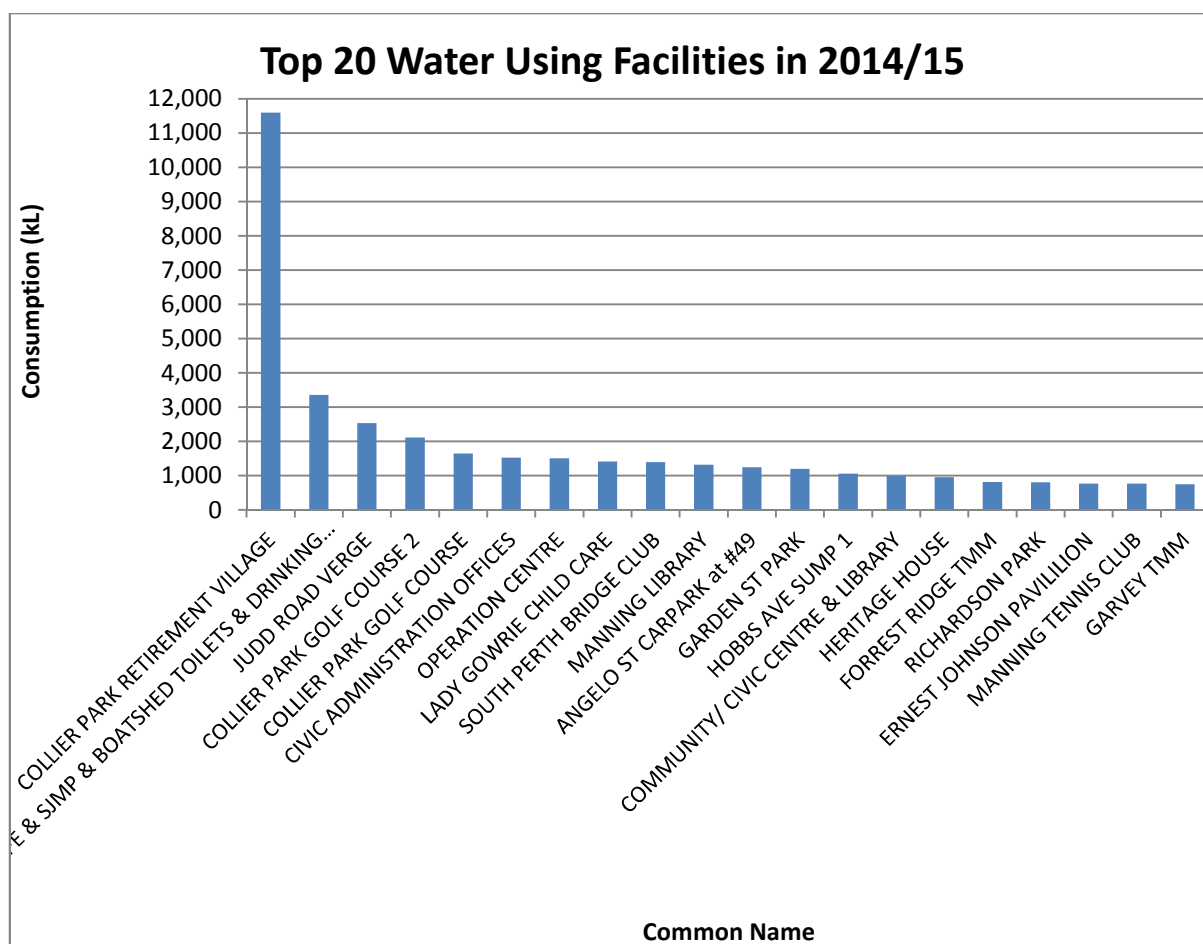


Figure 7: Top 20 Potable Water Using Sites in 2014/2015

4.1.4 Historical Potable Water Use for Top 5 Water Using Sites

Table 2: Historical Potable Water Use for Top 5 Water Using Sites

Site Name	2010/2011 (kL)	2011/2012 (kL)	2012/2013 (kL)	2013/2014 (kL)	2014/2015 (kL)
Collier Park Retirement Village	3,599	3,453	4,385	2,413	11,559
Boat Shed Café, SJMP, Boatshed Toilets and Drinking Tap	3,234	3,106	1,980	1,686	3,353
Judd Street Road Verge	0	0	990	1,615	2,535
Collier Park Golf Course 2 (maintenance shed, wash down bay, 2 x toilet blocks)	528	1,869	3,029	1,516	2,108
Collier Park Golf Course – (clubhouse, kiosk, clubroom toilets)	2,708	2,079	3,455	4 *suspected data error	1,645
Civic Administration Offices	1,803	1,879	1,140	1,107	1,521



Changes in Water use

Collier Park Retirement Village

Water use in 2014/2015 is much higher than typical. The increase in water use at Collier Park Retirement Village was investigated in 2016 with a water audit and water conservation actions were implemented to reduce excessive water use (eg. installation of FlowLess and other water efficient devices in all village shared community areas, replacement of turfed areas with mulched waterwise gardens and installation of a garden irrigation timers in newly refurbished residences).



Collier Park Retirement Village, 2017

Boat Shed Café

In 2012/2013 and 2013/2014, the toilet block was controlled by the Café, and only open during Café Hours, which may explain reduced usage in that time period. The toilet block is now controlled by the City and is open for increased hours.



Judd Street Road Verge

In 2012/2013 an entry statement was established at this site. Nearly 8,000 square meters of garden area is under reticulation and maintained by the contractor. There was a high scheme water consumption recorded on this site over 2013/2014 and 2014/2015 due to ongoing damage to this site caused by vehicle intrusions into landscaped areas resulting in multiple replacements of plants and attempts to re-establish new plantings that contributed to high water demand. High water demand trend will continue because in winter 2017 there will be further two garden beds replanted because of recent site damages caused by vehicle.



Judd Street Road Verge, 2017

Collier Park Golf Course Maintenance Shed

A leak was detected and repaired in 2014/2015.



Collier Park Golf Course, 2017

Civic Administration Building

Water use was low in 2012/2013 and 2013/2014 as renovations were being undertaken and the Community Hall was not operational.



4.2 Historical Corporate Non-Potable Water Use Profile

The City uses groundwater for irrigation of active reserves, and topping up of lakes (including at Sir James Mitchell Park and Collier Park Golf Course). The City is licensed to extract a total of 1,459,587kl of groundwater per annum on 3 separate licenses.

Table 3: City of South Perth's Historical Corporate Non-Potable Water Use

Licence	Allocation (kL)	2012/2013 (kL)	2014/2014 (kL)	2014/2015 (kL)	2015/2016 (kL)
#50708 All sites except Collier Park Golf Course, Bill Grayden Reserve and SJMP	802,587	761,205	752,066	761,878	774,046
#86636 Bill Grayden Reserve	N/A	39,964	42,462	37,523	44,852
#86636 Collier Park Golf Course	432,000	512,821 *additional allocation for new turf	474,961	434,996	475,171
#50709 Sir James Mitchell Park	225,000	184,035	210,378	145,843	202,686
Total annual groundwater use (kL)	1,459,587	1,498,025	1,479,867	1,380,240	1,496,755
Total daily groundwater use (kl/day)	3,999	4,104	4,054	3,781	4,101

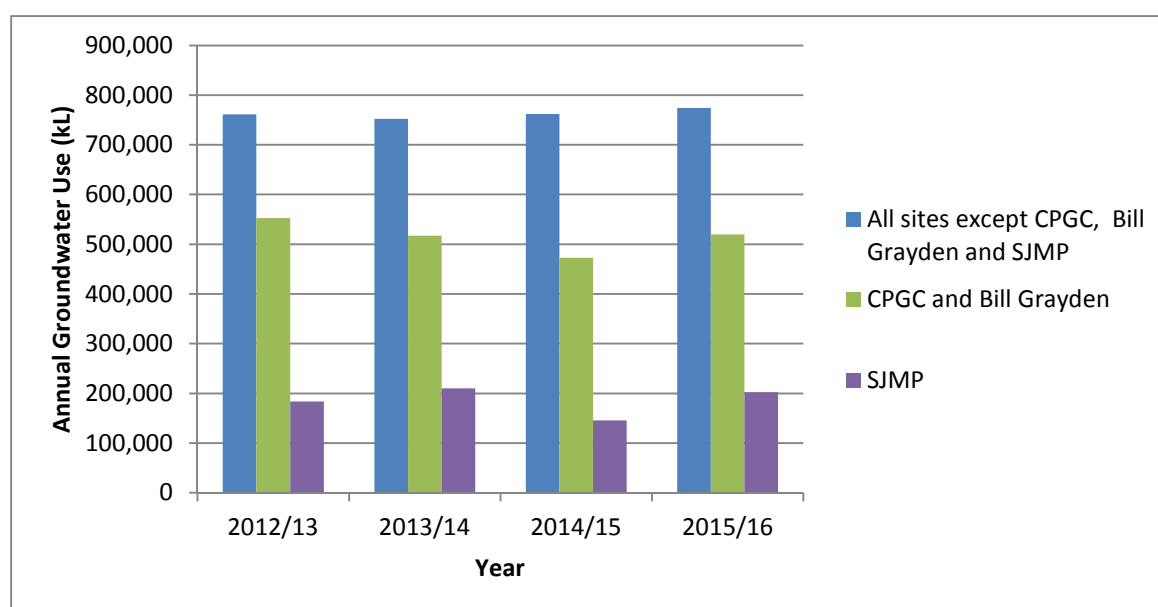


Figure 8: Historical Corporate Non-Potable Water Use



During 2015/2016 the City in collaboration with the Department of Water reviewed current groundwater use allocation for its three licences. In September 2016 this resulted in increased annual allocation for licence #50708 from 802,587kl to 812,790kl and incorporation of Bill Grayden Reserve under this licence. This amended allocation will be due for review in September 2026. Since these changes took place Bill Grayden Reserve has been irrigated under licence #50708 and Collier Park Golf Course remains to be under licence # 86636 with unchanged allocation, however City's total annual groundwater use allocation went up to 1,469,790kl per year.

The City was over allocation in 2012/2013, 2013/2014, and 2015/2016, mainly due to the irrigation requirements of Collier Park Golf Course and the establishment of Carnaby's Cockatoo Sanctuary areas.

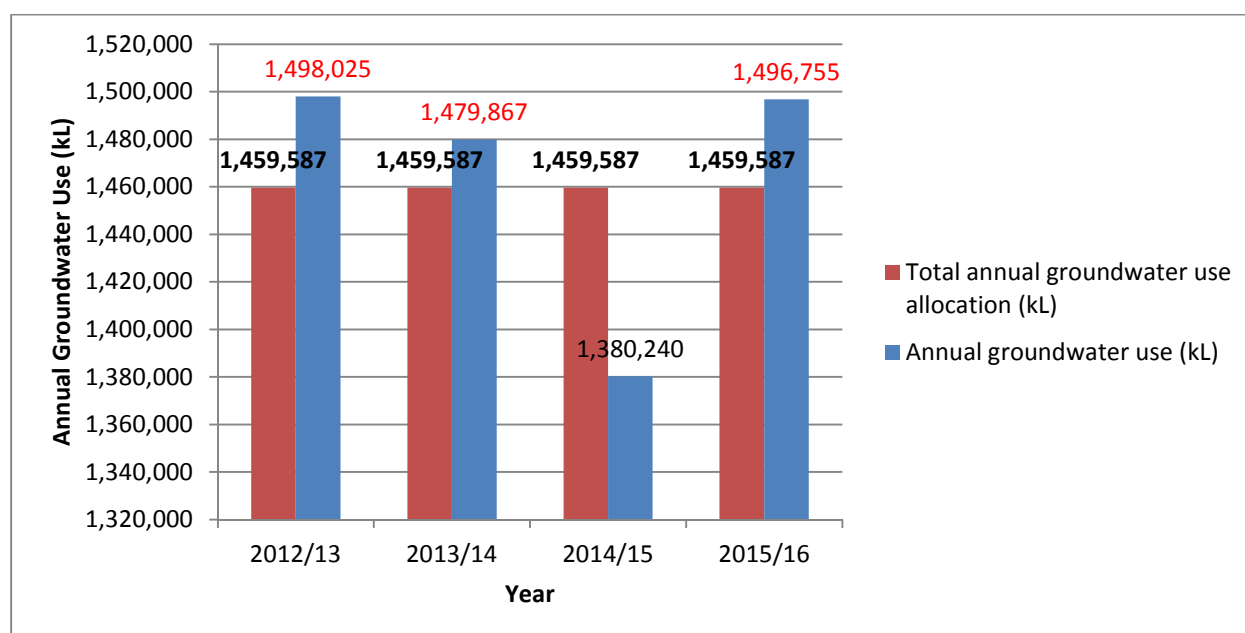


Figure 9: Historical Corporate Non-Potable Water Use for the Top 5 Water Using Sites

The City is undertaking measures to reduce groundwater irrigation requirements in particular at Collier Park Golf Course, including upgrades of the irrigation system to improve uniformity and give greater control of individual sprinklers, and turf maintenance practices incorporating the use of more soil wetting agents. When parks are upgraded, turf areas are being replaced with water efficient gardens to reduce irrigation requirements.

Changes in Water use

Collier Park Golf Course

Groundwater use in 2012/2013 at Collier Park Golf Course was high as the Course underwent a large construction phase. The City was granted an extra allocation for the new turf. Groundwater use in 2014/2015 was low due to summer rainfall allowing the irrigation to be turned off for nearly 4 weeks. 2015/2016 was again higher due to no rainfall and high temperatures over summer resulting in turf areas requiring additional irrigation to keep them playable despite additional wetting agents being applied, as well as new Carnaby's Cockatoo Sanctuary areas also needing to be watered. Issues with meters recording excess flow were also detected in 2015/2016.



The City is continuing using more wetting agents to improve the water holding capacity in the root zone to reduce irrigation run times. The City is also investigating issues with water meters.

4.3 Community Potable Water Use Profile

Community Potable Water use has remained relatively steady since 2007/2008 (see Figure 10 below), despite a population increase of 11.9%. Expressed per capita, total community water use has decreased 11.4% from 123kl per capita in 2007/2008 to 109kl per capita in 2014/2015 and residential water use has decreased 11.1% from 108kl per capita in 2007/2008 to 96kl per capita in 2014/2015 (see Figure 11 below). See Appendix 12.6 Community Water Consumption Summary for more detail.

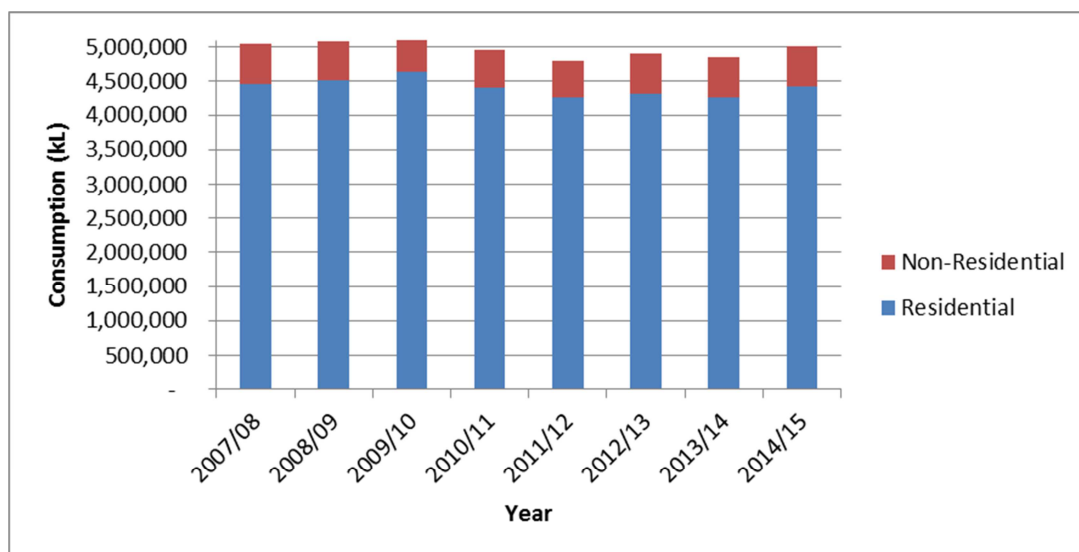


Figure 10: Historical Community Potable Water Use

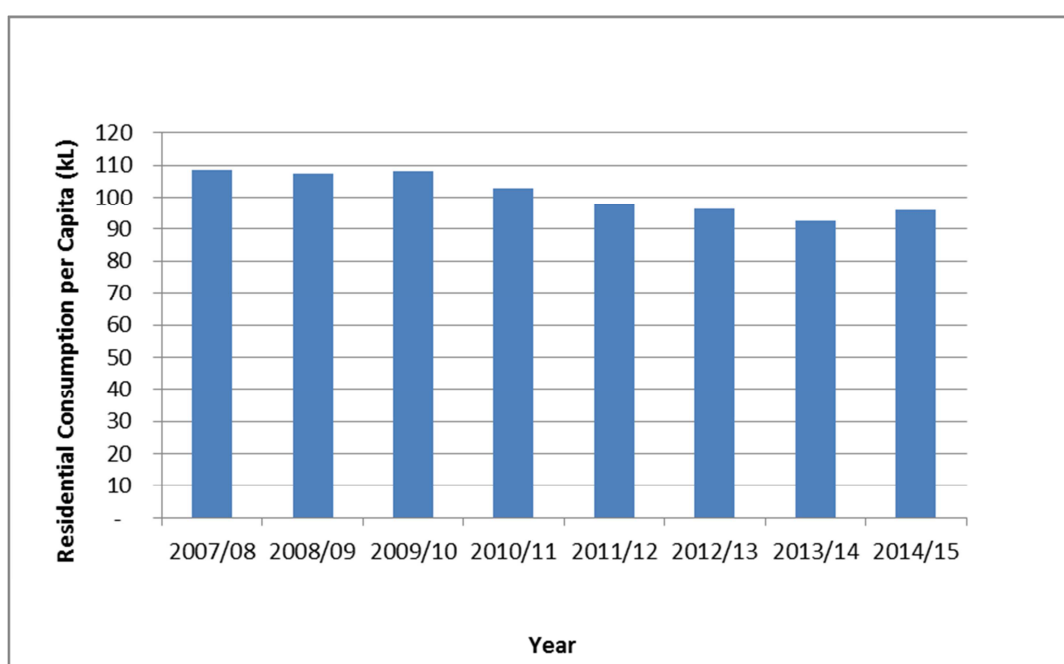


Figure 11: Historical Residential Community Potable Water Use Expressed per Capita



In 2015/2016 the City of South Perth's community potable water use comprised of 68% of low density residential, 20% of high density residential and 12% of non-residential (see Figure 12 below). As community water use is predominately residential, a household education campaign may have the most influence on community water use within low and high residential sector. Despite having limited direct influence over community potable water use the City continues assisting the Water Corporation targeting residential sector through delivery of strong water conservation messages via specially tailored media releases, educational workshops and other events.

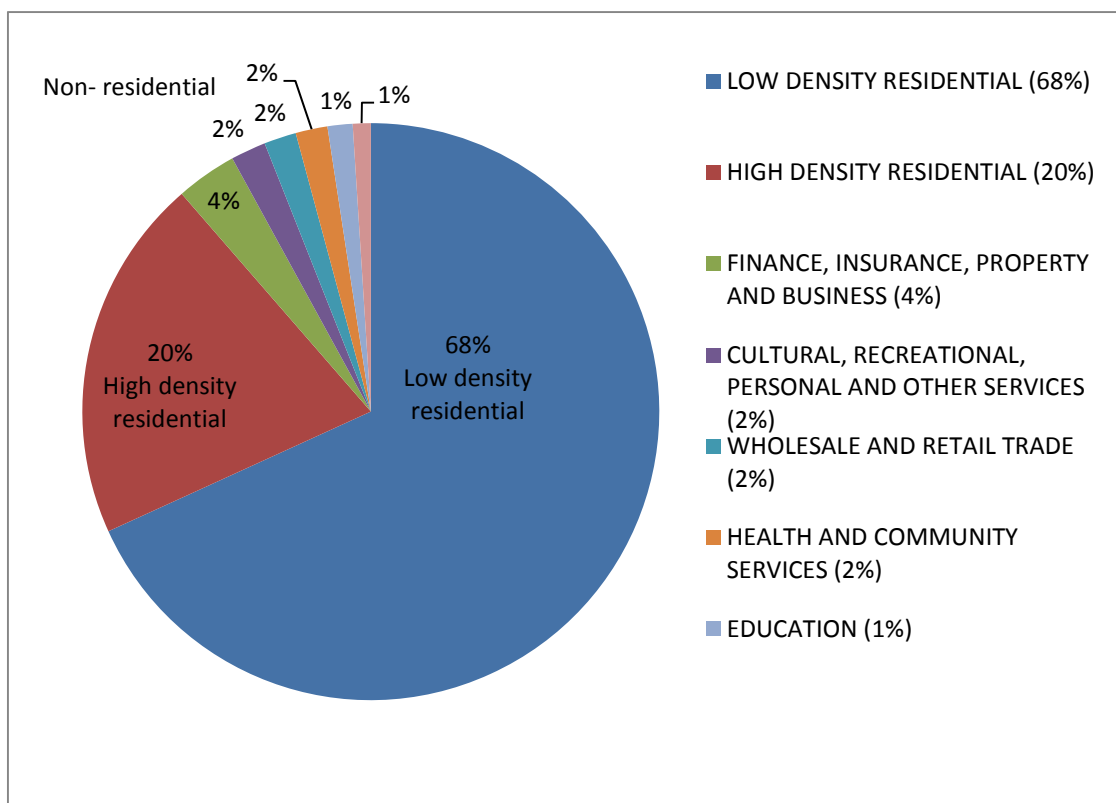


Figure 12: Community Potable Water Use by Sector in 2014/2015



Living Smart Course – Household Water Use Session, 2017



5 Water Quality Priority Areas

The City's water team conducted a risk assessment for each of the following water quality categories:

- Erosion Control;
- Sediment Control;
- Gross Litter and Pollution Management;
- Herbicide and Pesticide Management;
- Nutrient Management;
- Wastewater Management; and
- Groundwater Management.

These categories were based on the ICLEI Water CampaignTM Water Quality checklists.

Each water quality area was discussed, identifying the risk and consequences, and considering the treatments that the City already has in place. The residual risk was evaluated considering the impact and likelihood of the consequences was used to determine the top 3 water quality priority areas.

The top three corporate water quality priority areas identified by the Water Team were:

- Erosion Control;
- Herbicide and Pesticide Management; and
- Nutrient Management.

Erosion Control was determined to be one of the top priority areas due to the City's relatively large foreshore area, impact of climate change and the high risk of significant damage or impact on environmental systems and local community. Herbicide and Pesticide Management and Nutrient Management were determined to be high priorities due to the need to continue to implement the strategies in place to minimise the risk.

The top three community water quality priority areas identified by the Water Team were:

- Nutrient Management;
- Herbicide and Pesticide Management; and
- Gross Litter and Pollution Management.

Herbicide and Pesticide Management and Nutrient Management were determined to be high community priorities due to lack of controls on household use on these chemicals. Gross Litter and Pollution Management was determined to be a high priority area because the limited hazardous waste collection services currently provided by the City and the impact of incorrect hazardous waste disposal on water quality.

Identified gaps and water quality priority areas will be addressed by the implementation of the proposed water management actions in Section 7.



Collier Drain 2016



Bodkin Park Living Stream, 2007



6 Water Management Goals

These goals were set by the City's water team. Implementation of the water conservation and water quality actions in Section 7 will assist the City achieve these goals.

6.1 Corporate Water Consumption Goal

The City's corporate scheme water consumption goal is to maintain corporate potable water consumption at or below 2014/2015 base year levels (67,596kl) by 2021/2022.

This goal takes into consideration the expected population growth in the City, increased facility usage, and the opening of new facilities including the Manning Community Hub.

The City's corporate groundwater consumption goal is to ensure that groundwater extraction does not exceed the Department of Water annual groundwater use allocation.

6.2 Community Water Consumption Goal

The City's community total community water consumption goal is to maintain water consumption at or below 2014/2015 base year levels (109kl per capita) by 2021/2022.

The City's community residential water consumption goal is to maintain water consumption at or below 2014/2015 levels (96kl per capita) by 2021/2022.

These goals align with and exceed the Water Corporation's goal to reduce community water consumption by 15% from 2007/2008 to 125kl per capita by 2030.

6.3 Corporate Water Quality Goal

The City's corporate water quality goal is to implement at least 80% of the corporate water quality actions (in Section 7 below) by 2021/2022.

Achieving this goal requires the continuation or expansion of the City's current water quality initiatives and addressing an additional three water quality actions by 2021/2022.

6.4 Community Water Quality Goal

The City's community water quality goal is to implement 100% of the community water quality actions (in Section 7 below) by 2021/2022.

Achieving this goal requires the continuation or expansion of the City's current water quality initiatives.



7 Tables of Actions

7.1 Corporate Water Efficiency Action Table

Please note that Waterwise Council Program compulsory actions are indicated by “✓”. An additional 5 actions per annum are required to be completed to be considered for Gold Waterwise Council status.

Water Category	Ref #	Compulsory WWC action	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.	Evidence What evidence is required (to be supplied to Water Corporation for Waterwise Council endorsement)
Facilities	1.1	✓	Conduct a water audit on each of the council's top water using sites.		Building and Asset Coordinator	City Environment Coordinator	High	Ongoing	Annually	Water audits have been conducted at the Civic Centre (2011), Garden/Olives Streets Reserve (2014), Manning Library (2013) and Operations Centre (2014). Collier Park Retirement Village has been identified as a priority site for an audit in 2016. Sites are prioritised based on water inventories and Planet Footprint data.	Water Audit reports.
Facilities	1.2	✓	Commit to implementing the most viable recommendations for water audits undertaken.	Consideration of installation of rainwater tanks, greywater systems, composting toilets, Waterwise appliances and fixtures, recycling water from vehicle wash down bay at Operations Centre, undertake sustainable water management campaign to educate community and staff .	Building and Asset Coordinator; Reticulation Supervisor; Parks Maintenance Supervisor; Collier Park Golf Course (CPGC) Superintendent	Collier Park Retirement Village Management	High	Ongoing	One year after water audit	Majority of recommendations from the Manning Library audit have not been implemented as this facility will be moving to the Manning Hub, however a major outdoor tap leak has been rectified. Upgrades at this site may be implemented when there is a new tenant in the building. Installation of a new meter (compatible with data logger) at the Operations Centre workshop has been recommended. Reticulation schedules were reprogrammed at Garden/Olives Streets Reserve to establish water efficiencies. Operations 50% of Operations Centre audit recommendations were implemented (eg. installation of waterless urinals, water efficient shower heads and tap aerators).	Photographs, invoices or specifications for installed devices.
Facilities	1.3		Continue to install water efficient fixtures during Renovation works/building upgrades.	Minimum 3 star Water Efficiency Labelling and Standards (WELS) rated appliances and fixtures; waterless urinals.	Building and Asset Coordinator		High	Ongoing	Annually	4 star WELS rated appliances are selected as standard practice. Waterless urinals have been installed at various locations: 2010/11 installation of 3 waterless urinals at the Collier Golf Course (CPGC); 3 waterless urinals were installed in the Operations Centre in 2016; Up to 6 waterless urinals will be installed at WCG Thomas Pavilion in November 2016.	Photographs, invoices or specifications on installed devices.
Facilities	1.4	✓	Procurement processes incorporate consideration 3 star or greater WELS rated fixtures.		Building and Asset Coordinator	Tenders and Contracts Officer	High	Standard Practice	Ongoing	The City has a Sustainable Procurement Policy. 4 star WELS rated appliances are selected as standard practice.	Sustainable Procurement Policy.



Water Category	Ref #	Compulsory WWC action	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.	Evidence What evidence is required (to be supplied to Water Corporation for Waterwise Council endorsement)
Monitoring	1.5		Investigate corporate facilities and sites where water use is unusually high.	Monitoring water use with a data logger or smart metering device to determine water use patterns. Purchase of a data logger. Installing sub meters. Conducting an annual water inventory. Monitoring data through Planet Footprint and investigating changes.	Building and Asset Coordinator; Reticulation Supervisor; Parks Maintenance Supervisor; CPGC Superintendent	Natural Resource Management Officer	High	Ongoing	Annually or as required	The City has 3 or 4 smart metering devices that are used on sites where water use requires investigation. An annual water inventory is conducted based on data from Planet Footprint and Water Corporation and anomalies are investigated.	Water inventory, data logging reports.
Facilities	1.6		Undertake an inventory of the water using fixtures at all facilities including the number of fixtures, type and flow rate.		Building and Asset Coordinator		Med-High	Ongoing	Update annually		Copy of inventory report.
Landscape and Irrigation Design	2.1	✓	Upgrade median strips and garden areas to reduce or eliminate the requirement for irrigation. Landscaping plans to include low water use plants (local natives), hydrozoning and soil amendments/wetting agents.		Streetscapes Supervisor; CPGC Superintendent; Parks Maintenance Officer		High	Ongoing	Annually	In 2012/13 19,572 m2 of turf from median islands along Manning Road was removed and replaced with mulch. 6-7 other sites are upgraded every year based on identified priority. Landscaping using Waterwise/native species is designed by the City's Landscape Design Officer. Carparks, etc., are moving to non-irrigated gardens. Sir James Mitchell Park is complete. Carnaby's cockatoo sanctuary areas are being established at CPGC, irrigation will be switched off in future. Additionally the CPGC entry statement has been identified as a site where turf area could be reduced.	
Public Open Space (POS)	2.2		Continue the use of turf maintenance practices that lead to water conservation outcomes such as the application of wetting agents including Terracottem Gel, use of soil amendments, turf renovations (vertimowing and aeration), and rye seeding to stabilise turf.		CPGC Superintendent; Parks Maintenance Officer		High	Ongoing	Annually	Rye seeding is done annually to stabilise turf and reduce need for new turf. Terracottem has been found to dramatically reduce water consumption in establishment of new turf. Active reserves vertimowed as required, aeration twice per year. Soil wetting agents applied by boom spray. CPGC conducts coring twice per year and vertimowing as required. Terracottem and granular wetting agents are used in establishment of new plants.	
Alternative Water Sources	2.11		Consider the feasibility of utilising alternative water sources such as stormwater, greywater, rainwater and recycled wastewater.	Stormwater harvesting for irrigation	Reticulation Supervisor	Works and Services Coordinator; Infrastructure Projects Coordinator, Engineering Infrastructure; Building and Asset Coordinator	Low	Not started	2021		



Water Category	Ref #	Compulsory WWC action	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.	Evidence What evidence is required (to be supplied to Water Corporation for Waterwise Council endorsement)
Irrigation	3.1	✓	Meter all bores - install a water meter to the standards detailed in the Department of Water Guidelines for water meter installation 2009 on all non-scheme water sources to measure both water flow rate and cumulative volume.		Reticulation Supervisor		High	Complete	N/A	Completed	Groundwater licence report spreadsheet.
Irrigation	3.2	✓	Meters (and any sub-meters) are read on a regular basis and recorded.		Reticulation Supervisor; CPGC Superintendent		High	Ongoing	Ongoing	The City uses a Rainman System for irrigation of Parks and most Public Open Space (POS). Meter readings are recorded every 3 weeks. Meters at CPGC are read weekly.	Groundwater licence report spreadsheet.
Irrigation	3.3	✓	Continue to implement system maintenance and audit schedule. Keep replacement and repair parts consistent and available to maintain irrigation system performance.		Reticulation Supervisor		High	Ongoing	Ongoing	Irrigation systems for Active reserves are tested weekly. Irrigation systems for Passive reserves are tested fortnightly. Irrigation systems for small garden areas are tested every 3 weeks.	Maintenance schedule.
Irrigation	3.4	✓	Leak detection is included in inspections and reported on or repaired if a leak is observed.		Reticulation Supervisor	CPGC Superintendent; Parks Maintenance Supervisor; Street Scapes Supervisor	High	Ongoing	Ongoing	Leaks are repaired if detected during irrigation testing.	
Irrigation	3.5	✓	Create/maintain a water budget for council open spaces. Each irrigated area of irrigated parkland to have base annual water budget. Scheduling should be adjusted on a monthly basis and tracked against the water budget.		Reticulation Supervisor	CPGC Superintendent; Parks Maintenance Supervisor; Street Scapes Supervisor	High	Ongoing	Ongoing	Scheme water irrigated sites (some gardens and streetscapes) are operated on a Uni Controlled (not central Rainman system). They run Tuesday and Thursday nights October-April. Maintenance crews record and adjust scheduling manually. John keeps these records. Richard keeps spreadsheet for meter readings and use of water for groundwater irrigated sites, adjusted accordingly. 3 days per week in summer, 1 day per week in winter. Central System shuts off irrigation when 6mm of rainfall has been detected by weather station. CPGC: Fairways/greens are prioritised; catch cups and hand-held soil moisture probe are used to help determine irrigation requirements.	
Irrigation	3.6	✓	Audit of irrigation system to identify poorly performing irrigation hardware, and progressively upgrade any substandard systems.		Reticulation Supervisor; CPGC Superintendent	Parks Maintenance Supervisor; Street Scapes Supervisor	High	Ongoing	Annually	The City has a replacement program for Irrigation Systems. Landscaping is upgraded at the same time. Irrigation at CPGC is currently being upgraded to allow more uniformity and more control of individual sprinklers	
Irrigation	3.7		Develop and implement a groundwater monitoring program as part of the City's Water Resource Operating Strategy.		Reticulation Supervisor	CPGC Superintendent; Parks Maintenance Supervisor; Street Scapes Supervisor	Medium	Ongoing	Annually	In March 2016 the City produced and commenced implementation of the Water Resource Operating Strategy as part of the Department of Water requirement. This strategy was put in place to support City's Policy 203 Groundwater Management and to minimise ground water extraction and maximise recharge to ensure a continued supply of water for the irrigation of the City's parks and reserves,	



Water Category	Ref #	Compulsory WWC action	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.	Evidence What evidence is required (to be supplied to Water Corporation for Waterwise Council endorsement)
										including Collier Park Golf Course and Collier Park Retirement Village. The City's groundwater monitoring program is in place and annual monitoring reports are submitted to the DoW.	
Irrigation	3.8		Monitor soil moisture to help determine irrigation requirements of turf areas.		Reticulation Supervisor; CPGC Superintendent	CPGC Superintendent; Parks Maintenance Supervisor; Streetscapes Supervisor	High	Ongoing	Ongoing	7 probes in use at Active reserves. Handheld probe also used at CPGC to inform hand-watering requirements.	
Staff Engagement	4.1	✓	Adequate processes in place to achieve Waterwise behavioural change within council.	Leak reporting process established Water conservation signage in staff facilities to engage and inform staff, visitors and contractors, combined with information provided on Intranet and eNEWS Participate in Switch Your Thinking program including Switched On Staff sessions. Water management team meetings held on a regular basis.	City Environment Coordinator		High	Ongoing	Annually	Staff can report leaks/maintenance issues through the LAGAN system. Signage (stickers) to be reinstalled in staff facilities at Civic Centre and Operations Centre. Participation in Switch Your Thinking program to be investigated.	Photographs
Staff Training	4.2	✓	Appropriate staff have completed Water Corporation Waterwise training and are provided with opportunities to maintain professional development in sustainable water management.	Water Corporation's Water Auditing for Non-Residential Buildings and Water Efficient Landscape and Irrigation online training courses. Basic WSUD training.	Building and Asset Coordinator; Parks Operations Coordinator; CPGC Superintendent		High	Ongoing	As required	All relevant staff are provided with the opportunity to undertake online Water Corporation training. Water Corporation water auditing training has been undertaken by Maurice Symmans, Gil Masters, and Yulia Volobueva. To do training: Deanne Smith (Building Maintenance), Adele Scarfone and the new Building and Asset Coordinator (Shirley King Ching). Peter Beach, Paul Cook and John Hackett (CPGC) have undertaken Water Efficient Landscaping and Irrigation Course. Additional training requirements/professional development opportunities are determined during the Performance Review process.	List of staff who have completed online training.
Planning	6.2		Develop and implement planning controls that support the use of water efficient landscaping techniques, garden designs and fixtures by developers.		Senior Strategic Project Planner		High	Development of controls complete. Implementation is ongoing	Ongoing	Policy P350.01 requires a Green Star Rating for large buildings.	Copy of Policy
Planning	6.3		Develop and implement Sustainable Groundwater Management Policy	This policy will to establish the City's position on groundwater extraction for new developments to ensure sustainable groundwater management and prevent depletion and salt intrusion of the City's groundwater resources and to guide the City's planners and other relevant staff during decision making regarding planning application assessment and approvals.	Senior Strategic Project Planner	City Environment Coordinator	High	Not started	2017-2018	Policy P350.01 requires a Green Star Rating for large buildings.	Copy of Policy



7.2 Community Water Efficiency Action Table

Water Category	Ref #	Compulsory WWC action	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.	Evidence What evidence is required and where is it held/who manages it
Community Engagement	5.1	✓	Engage with household and business ratepayers and promote water efficiency.	Encourage the use of mulch, waterwise plants and other water efficient landscaping techniques and waterwise appliances through demonstration gardens, educational workshops, etc. Provide info on available rebates.	City Environment Coordinator	Streetscapes Supervisor	High	Ongoing	Annually	The City has an ongoing 'Mulch to Residents' program. 2-3 Living Smart and Great Gardens Workshops are hosted per year. In 2010/2011 the City established demonstration Waterwise native gardens in various locations throughout the City. Could also promote water efficiency practices in Peninsula Newsletter.	
Community Engagement	5.2		Support Waterwise verges and provide information to ratepayers on how to design and maintain a Waterwise verge.		Parks Operations Coordinator; Streetscapes Supervisor		Low	Ongoing	Annually	The City updated its verge policy in 2011 with an increased Waterwise and sustainability focus. The City has a Greening Our Streets: Street Verge Landscape Guidelines booklet, including a plant species list for local native verge gardens. The City offered verge makeover program in 2011-2012 to the local residents to retrofit their verges with Waterwise landscaping, but this was not considered viable in that format.	Verge Landscaping Guidelines.
Community Engagement	5.3	✓	Engage with local schools on water efficiency and sustainability programs.	Consider encouraging schools to participate in the Waterwise Schools program. Engage directly with schools the City is already involved with including Manning PS, Curtin PS and Kensington PS.	City Environment Coordinator	Natural Resource Management Officer	High	Ongoing	Annually	The City participates in the Millennium Kids "Schools Nurturing Nature" annual education program.	
Community Engagement	5.4	✓	Provide information on the installation and local regulation of greywater systems and rainwater tanks where appropriate.	Develop or adopt an information sheet on greywater systems and rainwater tanks.	Coordinator Environmental Health Services	City Environment Coordinator	High	Ongoing	Annually	Approvals information provided on website.	Website link.



7.3 Corporate Water Quality Action Table

Water Category	Ref #	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.
Landscape and Irrigation Design	2.3	Establish native vegetation buffers to lakes and waterways, including a mix of local native sedges, rushes, small aquatic plants and specifically Melaleuca species.		City Environment Coordinator; Natural Resources Management Officer		High	Ongoing	Annually	
Erosion Control	2.4	Continue to monitor foreshore erosion and undertake works to minimise erosion	Establishing designated dog access beaches Implement a 360 review of the planning approvals process for removal of vegetation in sensitive areas.	City Environment Coordinator; Natural Resources Management Officer	Senior Strategic Project Planner				
Education - Staff	4.3	Continue to provide opportunities for professional development in sustainable water management.	Water Sensitive Urban Design, erosion and sediment, fertiliser and herbicide use, basic training in Acid Sulphate Soils Management for relevant staff.	Streetscapes Maintenance Supervisor; CPGC Superintendent; Parks Maintenance Supervisor	City Environment Coordinator; Parks Operations Coordinator	Medium	Ongoing	Annually	
Education - Staff	4.4	Develop and implement a staff training package to improve understanding of rubbish generation, rubbish bin selection and placement.	Adopt the WALGA training package. Participate in Switch Your Thinking program (including Switched On Staff sessions).	Waste Coordinator		High	Ongoing	Annually	
Water Sensitive Urban Design (WSUD)	7.1	Develop a Local Planning Policy to implement water sensitive urban design in new land developments.		Senior Strategic Project Planner		High	Complete	Complete	Non-enforceable guidelines (See action 7.2 below)
Water Sensitive Urban Design (WSUD)	7.2	Conduct a review of the City's Water Sensitive Urban Design Guidelines and provide training for new and existing staff to assist with implementation of these guidelines.	Consider involvement in the Cooperative Research Centre (CRC) for Water Sensitive Cities Index Run an information session for relevant staff to inform them about the City's WSUD guidelines and their role in implementing the guidelines.	City Environment Coordinator		High	Not started	2021	
Water Sensitive Urban Design (WSUD)	7.3	Conduct a feasibility study to determine and prioritise which land and drainage features are able to incorporate WSUD features.		Works & Services Coordinator; Infrastructure Projects Coordinator, Engineering Infrastructure		High	Not started	2021	This action is reflected in the City's Integrated Catchment Management Plan (ICMP), and assists with determining the appropriate WSUD features that can be utilised to achieve best catchment management outcomes.
Water Sensitive Urban Design (WSUD)	7.4	Incorporate water sensitive urban design techniques into management practices when upgrading the catchment (e.g. permeable paving, bio-retention swales, pipe-less streets and rain gardens).	WSUD techniques including: Onsite detention Stormwater infiltration systems Grass or reed swale drains Broken or flush kerbing Pervious paving materials Nutrient intervention installation	Infrastructure Projects Coordinator; Engineering Infrastructure; City Environment Coordinator; Natural Resources Management Officer		High	Ongoing	Annually	



Water Category	Ref #	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.
Water Sensitive Urban Design (WSUD)	7.5	Restore drainage channels and the City's waterways to a living stream where practical.	Increasing vegetation around lakes – Sir James Mitchell Park Lake Douglas or Bodkin Park lakes	City Environment Coordinator; Natural Resources Management Officer		Medium	Ongoing	Annually	
Water Quality Monitoring	8.1	Continue undertaking annual water quality monitoring program.		City Environment Coordinator; Natural Resources Management Officer		High	Ongoing	Annually	The City is partnering with South East Regional Centre for Urban Landcare (SERCUL) and Department of Water to conduct an annual surface water quality monitoring program.
Water Quality Monitoring	8.2	Implement water quality monitoring program recommendations.	Bank stabilisation, buffer strips, revegetation, bioretetion lining, etc	City Environment Coordinator; Natural Resources Management Officer	CPGC Superintendent; Infrastructure Projects Coordinator; Works & Services Coordinator	High	Ongoing	Annually	The City is partnering with SERCUL and Department of Water to conduct an annual surface water quality monitoring program.
Water Quality Monitoring	8.3	Continue undertaking ongoing groundwater quality monitoring program.		Reticulation Supervisor		High	Ongoing	Annually	The City has an Operating Strategy 2016-2020 developed by Sports Turf Technology. 13 sites are tested.
Gross Litter and Pollution Management	9.1	Consider installation of new Gross Pollutant Traps (GPTs) as required.		Works & Services Coordinator		High	Ongoing	Annually	The City has approximately 11 GPTs along the Kwinana Freeway (Swan River) and 8 GPTs in other areas. The City requires an additional 15 GPTs. Approximately 1GPT is installed every year.
Gross Litter and Pollution Management	9.2	Continue to maintain street drainage and existing GPTs and assess the amount of litter removed.		Works & Services Coordinator		High	Ongoing	Annually	GPTs and drainage sumps/basins are cleaned annually in the summer months. On annual basis the City undertakes eduction and cleaning of all street drainage systems. The amount of waste collected and disposed is recorded. Inspections are also conducted after winter. Record keeping could be improved.
Gross Litter and Pollution Management	9.3	Formalise and implement the City's Chemical Spill Management Plan.		Infrastructure Planning Officer		Medium	Not started	2021	The City responds to incidents on Council land/operations and in foreshore areas (in conjunction with Department of Parks and Wildlife).
Waste Management	10.1	Continue to conduct street sweeping program. Record the amount of waste collected and review the program as required.		Works & Services Coordinator		High	Ongoing	Ongoing	The City undertakes eduction and cleaning of residential streets 4 times per year. Shopping precincts (Mends Street., Preston Street and Angelo Street) are swept daily, and commercial precincts are swept twice per week. Streets are swept after major public events such as the Skyshow. The amount of waste collected is recorded. The City also sweeps footpaths with a small footpath sweeper.
Waste Management	10.2	Conduct a community litter audit to monitor the quality and type of litter trapped.		Waste Coordinator	Works & Services Coordinator	High	Ongoing	Annually	



Water Category	Ref #	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.
Fertiliser and Herbicide Management	11.1	Maintain best management practice in turf fertiliser application.	Regularly conduct soil test and leaf tissue analysis on turf areas before applying fertilisers.	CPGC Superintendent; Parks Maintenance Supervisor		High	Ongoing	Ongoing	Soil and tissue testing is conducted. CPGC turf receives mainly foliar nutrition (Fe, Mn). Liquid feed twice per week.
Fertiliser and Herbicide Management	11.2	Identify and implement alternatives or best practice to spraying chemical herbicide along footpath, concrete kerb and drainage areas to minimise environmental impacts.		Streetscapes Maintenance Supervisor; CPGC Superintendent; Parks Maintenance Supervisor; Natural Resources Management Officer	City Environment Coordinator; Parks Operations Coordinator	High	Ongoing	Annually	The City has been investing in various alternative weed control practices (e.g. hot water steam application to control weeds in POS and natural areas, use of organic weed control products).
Fertiliser and Herbicide Management	11.3	Continue to implement environmental herbicide, pesticide and fertiliser application policy/guidelines for staff and contractors.		Streetscapes Maintenance Supervisor; CPGC Superintendent; Parks Maintenance Supervisor; Natural Resources Management Officer	City Environment Coordinator; Parks Operations Coordinator	High	Ongoing	Ongoing	

7.4 Community Water Quality Action Table

Water Category	Ref #	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.
Community Engagement	5.5	Engage with household and business ratepayers on sustainable water management.	Provide information on herbicide and pesticide use, fertilisers, detergents, correct disposal of hazardous waste through workshops, brochures, information with Rates notices, etc. Conduct a community survey/audit on the use of herbicides and pesticides. Drain stencilling (Waterford and Salter Point identified as priorities). Discourage grass clippings on roads, targeting private lawn mowing contractors and residents. Target high risk landholders (such as private schools) on the use of fertilisers.	City Environment Coordinator; Natural Resources Management Officer Parks Operations Coordinator		High	Ongoing	Annually	Great Gardens and Living Smart workshops.



Water Category	Ref #	Action	What may this action include (not limited to)	Officer(s) Responsible	Secondary Officer(s) Responsible	Priority	Status of Action (Complete - In progress - Not started - Ongoing - Standard Practice)	Proposed Completion Date	What has been done? Detailed update on where this action is up to.
Education - Community	5.6	Conduct a litter awareness raising campaign based on the results of the litter audit (Action 10.2 above).	Continue further installation of signage and bags (collection of dog faeces) on public land where required. Discourage grass clippings on roads, targeting private lawn mowing contractors and residents.	Coordinator Ranger Services; Waste Coordinator		Medium	Ongoing	Annually	
Community Engagement	5.7	Implement an awareness raising campaign to promote proper use the City's waste services, including green waste (bulk), recycling, hazardous waste/backyard chemicals, and oil collection.	City's recycling guide. Promote appropriate separation of waste materials via delivery of Living Smart Courses to the community. Reinstate household hazardous waste collection days.	Waste Coordinator	City Environment Coordinator	High	Ongoing	Annually	Recycling Guide produced annually, and information on website. Annual provision of sustainability community education workshops.
Community Engagement	5.8	Continue to educate local schools on sustainable water management via delivery of Millennium Kids "Schools Nurturing Nature" annual education program.	Drain stencilling, water quality sampling and testing.	City Environment Coordinator; Natural Resources Management Officer		High	Ongoing	Annually	This program involves educating the children about water quality from an early age ensuring they grow up with adequate knowledge and a sense of ownership and responsibility.



8 Monitoring and Review

The Water Management Plan (2017-2022) should be reviewed and updated on an annual basis so the plan remains current to the City's needs and does not become an unused or out of date document. This will allow the City to incorporate new technologies and initiatives, to ensure that actions remain appropriate, and priority actions are implemented to ensure that the Water Management Plan (2017-2022) will reflect the City's current and future water management needs.

A major review will be undertaken in 2022.

9 Endorsement of Water Management Plan (2017-2022)

The adoption of this Water Management Plan (2017-2022) establishes the City's commitment to best practice water management through addressing actions identified in the Water Action Tables. The Council will be presented with the Water Management Plan (2017-2022) for adoption in 2017.

Name	Geoff Glass		
Position	Chief Executive Officer		
Signature		Date	



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11 Acronyms

CPGC	Collier Park Golf Course
EMRC	Eastern Metropolitan Regional Council
ICLEI	International Council for Local Environmental Initiatives
POS	Public Open Space
SJMP	Sir James Mitchell Park
TMM	Traffic Management Measure
WSUD	Water Sensitive Urban Design



12 Appendices



12.1 Corporate Water Consumption Raw Data

Account number	Common Name	Location	Current Meter Number	ICLEI facility type	Consumption (kl)							
					2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
9005063220	ERNEST JOHNSON TOILETS	L 2 HENSMAN ST SOUTH PERTH LOT PT2 SOUTH PERTH OVAL	CK1400578	Facilities and Toilets	172	198	378	238	120	123	8	158
9005063247	ERNEST JOHNSON PAVILILION	101 HENSMAN ST SOUTH PERTH LOT PT 2 ADD. SERVICE	BK0124407	Facilities and Toilets	232	199	237	177	175	301	175	768
9005063562	HENSMAN ROAD CLOSURE	R R HENSMAN ST SOUTH PERTH LOT ROAD VERGE OPP L7570	BC0621772	Gardens and Planter Boxes	584	341	245	200	59	123	151	545
9005063968	HENSMAN ST TMM OPP #140	R R HENSMAN ST SOUTH PERTH LOT ROAD VERGE OPP #140	BK0622020	Gardens and Planter Boxes	84	0	31	193	95	90	84	87
9005064020	HENSMAN VERGE GARDENS	R R HENSMAN ST SOUTH PERTH LOT ROAD VERGER OPP LOT3	BC0621871	Gardens and Planter Boxes	0	0	9	32	15	312	48	608
9005064135	HENSMAN/HIGH ST TMM	R R HENSMAN ST SOUTH PERTH LOT ROAD VERGE OPP #122	BK0027798	Gardens and Planter Boxes	538	283	135	107	48	97	130	161
9005064215	HENSMAN TMM OPP L 4	R R HENSMAN ST SOUTH PERTH LOT ROAD VERGE OPP L 4	BK0109324	Gardens and Planter Boxes	373	203	113	17	119	79	89	101
9005064565	HENSMAN CHILD CARE CENTRE	46 HENSMAN ST SOUTH PERTH LOT 738 RES 22099	WED0040432	Child Care Centres	410	49	32	33	37	122	148	129
9005068160	ANGELO ST CARPARK at #49	49 ANGELO ST SOUTH PERTH LOT 1	BC0735536	Miscellaneous	0	0	691	519	514	371	599	1,244
9005068179	ANGELO ST CARPARK at #51	51 ANGELO ST SOUTH PERTH LOT 2	BK0803050	Miscellaneous	1,886	916	754	587	114	413	509	632
9005068574	ANGELO ROUNDABOUT	R R ANGELO ST SOUTH PERTH LOT ANTHONY/ADDISON	BK0629601	Gardens and Planter Boxes	204	288	132	106	41	78	80	89
9005069577	NARROWS TOILETS & KIOSK	L 920 SOUTH PERTH ESP SOUTH PERTH LOT 920 RES 33804	BK0111805	Facilities and Toilets	239	131	152	489	159	339	335	223
9005070607	JUDD ROAD VERGE	R21483 JUDD ST SOUTH PERTH LOT ROAD VGE OPP L 11	BC1430816	Gardens and Planter Boxes	0	0	0	0	0	990	1,615	2,535
9005070818	HENSMAN TMM OPP L 200	R R HENSMAN ST SOUTH PERTH LOT ROAD VERGE OPP L 200	BK0359962	Gardens and Planter Boxes	40	0	35	62	47	62	62	127
9005070842	RICHARDSON PARK	RICHARDSON ST SOUTH PERTH LOT 3000 RES 5574	FK0600583	Recreation Centres	749	578	1,954	964	1,230	896	957	806
9005071298	LABOUCHERE KINDERGARTEN/GARDENS	16 LABOUCHERE RD SOUTH PERTH LOT PT 402	BC1456678	Child Care Centres	986	1,472	1,823	1,962	1,187	1,847	500	0
9005073701	ONSLOW ENTRY STATEMENT	R ONSLOW ST SOUTH PERTH LOT ROAD RESERVE	BK0629039	Gardens and Planter Boxes	376	697	293	159	134	208	232	234
9005074747	FORREST RIDGE TMM	R FORREST ST SOUTH PERTH LOT RESERVE	CK0900405	Gardens and Planter Boxes	1,277	1,044	828	545	353	799	793	814
9005079521	ANSTEY CARPARK GARDEN	2 ANSTEY ST SOUTH PERTH LOT PT 101	BK0629609	Gardens and Planter Boxes	388	296	77	320	188	11	140	0
9005080442	SOUTH PERTH SENIOR CITIZENS	53 COODE ST SOUTH PERTH LOT PT 101	BC1024871	Function and Community Centres	623	913	984	739	709	690	634	622
9005085657	OLD MILL	L 922 MILL POINT RD SOUTH PERTH LOT 922 RES 37593	EK0600617	Cultural Buildings	15	15	31	28	60	91	59	50
9005086203	SOUTH PERTH ESPLANADE STANDPIPE	R R SOUTH PERTH ESP SOUTH PERTH LOT STANDPIPE	CK1100174	Standpipe	0	0	0	0	0	0	0	0
9005087396	QUEEN ST DRINKING FOUNTAIN	R28779 SOUTH PERTH ESP SOUTH PERTH LOT RES 28779	BC0629308	Miscellaneous	3	4	7	7	6	62	7	7
9005087898	SCENTED GARDEN TOILETS	R R SOUTH PERTH ESP SOUTH PERTH LOT 844 RES 28779	CK1200381	Facilities and Toilets	686	533	533	883	1,215	1,649	530	669
9005090421	GARDEN ST PARK	R R GARDEN ST SOUTH PERTH LOT RD VERGE CNR SWAN	BC1451823	Gardens and Planter Boxes	1,104	2,115	1,872	1,312	1,119	955	890	1,195
9005091336	DRINKING TAP OPP 1 MILL PT CL	R33804 MILL POINT CL SOUTH PERTH LOT RESERVE 33804	BK0627307	Miscellaneous	438	423	271	46	113	40	48	26



Account number	Common Name	Location	Current Meter Number	ICLEI facility type	Consumption (kl)							
					2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
9005091694	MENDS ST WATER SUPPLY	R MENDS ST SOUTH PERTH LOT 843 RES 28779	BK0145376	Miscellaneous	1	3	1	0	2	0	0	0
9005096807	RENWICK SLOW POINT	R R RENWICK ST SOUTH PERTH LOT OPP LOT 5	BK0627490	Gardens and Planter Boxes	261	207	115	49	76	57	57	48
9005099557	MABEL ST TMM	R R MABEL ST KENSINGTON LOT MED STRIP OPP210	BK0625727	Gardens and Planter Boxes	64	20	0	0	0	0	0	29
9005099805	ARUNDEL ST ROAD VERGE	R 1 ARUNDEL ST KENSINGTON LOT ROAD RESERVE OPP L 9	BK0614974	Gardens and Planter Boxes	1,039	2,256	778	535	212	259	294	381
9005101442	CIVIC ADMINISTRATION OFFICES	L 3 SANDGATE ST SOUTH PERTH LOT 3	EK0700327	Administration Buildings	1,737	1,557	1,643	1,803	1,879	1,140	1,107	1,521
9005101450	COMMUNITY/ CIVIC CENTRE & LIBRARY	SANDGATE ST SOUTH PERTH LOT 3 CIVIC CENTRE	CK0701042	Function and Community Centres	789	297	310	525	1,434	1,459	1,317	991
9005101469	ROTARY COMMUNITY HALL	39 SANDGATE ST SOUTH PERTH LOT 384 RES 3618	BK0415351	Function and Community Centres	57	52	55	210	355	421	162	152
9005101741	SANDGATE TMM OPP # 10	R R SANDGATE ST SOUTH PERTH LOT VERGE OPP NO.10	BK0622021	Gardens and Planter Boxes	587	0	29	154	18	18	263	484
9005101901	SANDGATE TMM OPP # 26	R R SANDGATE ST SOUTH PERTH LOT VERGE OPP HSE 26	BC0621873	Gardens and Planter Boxes	20	1	0	27	52	51	94	98
9005102330	HIGH ST TMM	R R HIGH ST SOUTH PERTH LOT RD VERGE CNR HENSMAN	BK0622019	Gardens and Planter Boxes	230	213	103	44	25	29	31	33
9005105216	CLIFF ST ROAD CLOSURE	R V CANNING HWY SOUTH PERTH LOT ROAD RSV CNR HENSMAN	BC0746042	Gardens and Planter Boxes	18	36	130	102	65	66	67	187
9005106366	BANKSIA UNDERPASS	70 CANNING HWY SOUTH PERTH LOT UNDERPASS	BK0626095	Gardens and Planter Boxes	892	184	386	233	200	219	325	296
9005108644	DAVID STREET TMM	R R DAVID ST KENSINGTON LOT MEDIAN CNR HENSMAN	BK0139882	Gardens and Planter Boxes	348	315	422	124	306	149	151	429
9005108695	DAVID STREET SUMP	41 DAVID ST KENSINGTON LOT 138	BC1024336	Open Space	277	0	133	205	165	194	207	177
9005108716	WARREGO NATURE RESERVE	L 133 DAVID ST KENSINGTON LOT RES 24893	CK1000087	Gardens and Planter Boxes	1,135	2,189	1,822	1,400	1,708	2,704	352	0
9005108791	MURRAY ST ROUNDABOUT	R 1 DAVID ST KENSINGTON LOT ROUNDABOUT	BK0627368	Gardens and Planter Boxes	313	321	112	36	49	55	71	103
9005108863	WARREGO SUMP	5 WARREGO ST KENSINGTON LOT 174	BK0627369	Open Space	54	0	23	88	103	82	430	49
9005109241	MORESBY HALL	1 MORESBY ST KENSINGTON LOT 5597 RES 24213	BK0629992	Function and Community Centres	66	55	51	503	70	60	81	276
9005110461	CLYDESDALE SHED & DOUGLAS TMM	L 13 DOUGLAS AV SOUTH PERTH LOT 13-16	BC0703993	Facilities and Toilets	887	420	428	385	510	778	498	319
9005111712	GEORGE STREET VERGE	60 GEORGE ST KENSINGTON LOT 4	BK0625946	Open Space	885	110	59	112	56	72	66	149
9005112264	PITT STREET SUMP	11 PITT ST KENSINGTON LOT 38	BC1323387	Open Space	173	200	64	50	810	68	93	75
9005112774	MORRIS MUNDY RESERVE	24 OXFORD ST KENSINGTON LOT PT SWAN LOC 39	CK0500073	Open Space	1,051	258	250	84	104	39	148	151
9005113574	KING ST SUMP	1 KING ST KENSINGTON LOT 49	BC0780105	Open Space	169	5	11	12	0	0	1	0
9005114286	KENSINGTON PRE-SCHOOL	26-30 VISTA ST KENSINGTON LOT 227-229	BC1026742	Child Care Centres	131	83	81	44	102	97	303	122
9005114817	BILL McGRATH DRINKING FOUNTAIN	13 SEVENTH AV KENSINGTON LOT 5469 RES 23800	BC1433285	Miscellaneous								0
9005117145	SHAFTESBURY RESERVE	4 SHAFTESBURY ST SOUTH PERTH LOT 24	BC1431082	Miscellaneous	2	1	0	1	8	23	0	0
9005120336	RANELAGH TOILETS & DRINKING FOUNTAIN	R34565 RANELAGH CR SOUTH PERTH LOT RESERVE 34565	EK0600014	Open Space	772	768	883	796	1,363	1,673	711	710
9005123887	COLLINS ST SUMP	95 COLLINS ST KENSINGTON LOT 69	BK0261844	Open Space	0	3	3	0	0	0	0	0
9005124345	COLLINS STREET CENTRE	2 COLLINS ST SOUTH PERTH LOT 11-14	BC0621922	Function and Community Centres	752	636	325	333	378	360	295	373
9005125807	JAMESON TMM	R R ROSEBERRY AV SOUTH PERTH LOT VERGE OPP LOT 15	BK0629953	Gardens and Planter Boxes	104	88	76	25	282	274	56	55



Account number	Common Name	Location	Current Meter Number	ICLEI facility type	Consumption (kl)							
					2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
9005126359	SALISBURY/BROOME TMM	R R SALISBURY AV SOUTH PERTH LOT VERGE OPP 46 BROOME	BK0030669	Gardens and Planter Boxes	240	252	104	196	67	90	99	66
9005126674	DYSON TMM	R R DYSON ST SOUTH PERTH LOT RD VERGE OUTSIDE #3A	BK0629148	Gardens and Planter Boxes	82	69	54	1	9	2	0	0
9005126690	SALISBURY TMM OPP # 10	R R SALISBURY AV SOUTH PERTH LOT ROAD RESERVE OPP #10	BC0628235	Gardens and Planter Boxes	0	0	51	36	23	47	50	41
9005127001	DYSON/BRIGHT TMM	R R DYSON ST KENSINGTON LOT ROAD VERGE OPP HSE91	BC0700065	Gardens and Planter Boxes	124	0	88	940	64	76	82	591
9005127319	DYSON SLOW POINT	R R DYSON ST SOUTH PERTH LOT RD VERGE OPP H30	BC0628250	Gardens and Planter Boxes	136	245	109	107	71	117	328	108
9005127378	SALISBURY TMM OPP # 45	R R SALISBURY AV SOUTH PERTH LOT RD VERGE OPP HSE 45	BK0629950	Gardens and Planter Boxes	154	177	78	25	17	39	21	0
9005127458	DYSON TMM	R R DYSON ST SOUTH PERTH LOT VERGE OPP L 12 & 13	BK0629203	Gardens and Planter Boxes	273	0	0	14	51	18	0	0
9005127925	RENWICK SLOW POINT	R R DYSON ST KENSINGTON LOT ROAD VERGE OPP LOT24	BK0627373	Gardens and Planter Boxes	50	6	30	3	32	47	44	43
9005128127	DYSON ROUNDABOUT	R R DYSON ST KENSINGTON LOT RNDABOUT OPP L9	BK0625950	Gardens and Planter Boxes	445	465	639	32	2,408	133	39	47
9005129103	BRANDON STREET RESERVE & TMM	18A BRANDON ST SOUTH PERTH LOT 6766 RES 25250	BC1020266	Gardens and Planter Boxes	977	1,224	850	423	523	783	914	664
9005129189	BRANDON/CANNING WEST TMM	R R BRANDON ST SOUTH PERTH LOT ROAD VERGE	BC0781975	Gardens and Planter Boxes	360	0	153	227	87	66	102	92
9005129277	DYSON ST TMM OPP 9	R R DYSON ST KENSINGTON LOT ROAD VERGE OPP LOT 9	BK0622195	Gardens and Planter Boxes	329	2	26	14	45	199	52	29
9005129541	BRANDON/BRIGHT ROUNDABOUT	R R BRANDON ST SOUTH PERTH LOT ROUNDABOUT CNR BRIGHT	BK0622379	Gardens and Planter Boxes	85	39	42	26	34	20	27	28
9005129912	BANKSIA & SIXTH TMM	R R BANKSIA TCE SOUTH PERTH LOT ROAD VERGE	BC0606808	Gardens and Planter Boxes	457	86	78	101	83	120	133	160
9005130032	BANKSIA DRAINAGE TMM	72 BANKSIA TCE KENSINGTON LOT 195	BC0810236	Open Space	811	525	331	247	196	229	507	175
9005130091	BANKSIA THIRD AVE SUMP	R BANKSIA TCE KENSINGTON LOT RES 38152	BC0700063	Gardens and Planter Boxes	398	389	241	74	304	132	50	121
9005130606	BANKSIA VERGE GARDEN	R R BANKSIA TCE SOUTH PERTH LOT RD VGE OPP L30	BK0629202	Gardens and Planter Boxes	169	339	219	134	42	61	109	39
9005130809	BANKSIA SUMP & TMM	49 BANKSIA TCE KENSINGTON LOT 57-58	BC1119448	Open Space	412	143	106	77	23	320	145	152
9005131270	HOVIA TMM	R R HOVIA TCE SOUTH PERTH LOT RD VERGE OUTSIDE #2	BK0113240	Gardens and Planter Boxes	209	149	104	73	98	41	64	66
9005131377	HOVIA TCE TMM	R R HOVIA TCE SOUTH PERTH LOT RD VERGE OPP H22	BK0614745	Gardens and Planter Boxes	299	0	77	219	44	66	95	73
9005131692	ANKETELL ST SUMP	14 ANKETELL ST KENSINGTON LOT 77	BK0109277	Gardens and Planter Boxes	562	562	170	88	420	99	120	148
9005132281	KEMNARD ST SUMP	10 KENNARD ST KENSINGTON LOT 105	BC1527445	Open Space	530	358	80	119	158	182	246	258
9005133479	LANDSDOWNE/FOURTH ROUNDABOUT	R R LANDSDOWNE RD KENSINGTON LOT FOURTH	BC0700236	Gardens and Planter Boxes	272	293	123	0	87	52	94	16
9005133612	LANDSDOWNE ROUNDABOUT	R R LANDSDOWNE RD KENSINGTON LOT SIXTH	BK0622204	Gardens and Planter Boxes	47	714	137	31	33	46	71	99
9005133962	LANDSDOWNE RD SUMP	154 LANDSDOWNE RD KENSINGTON LOT 73	BC0823497	Playing fields	1,035	920	683	239	288	217	113	250
9005136266	MACKIE ST DRINKING FOUNTAIN	66 MACKIE ST KENSINGTON LOT 264-265	BK0431995	Miscellaneous	2	1	0	1	638	9	19	7
9005136581	GWENYFRED SUMP & TMM	150 GWENYFRED RD KENSINGTON LOT 220	BK0631017	Open Space	1,724	848	378	262	242	351	294	320
9005139109	SWANVIEW DRINKING TAP	L 300 SWANVIEW TCE SOUTH PERTH LOT 300	BK0109480	Miscellaneous	0	0	1	0	0	3	197	1
9005144100	ROSEBERRY ROUNABOUT	UNIT OPP 2 / R R ROSEBERRY AV SOUTH PERTH LOT RNDABOUT CNR M	BK0629765	Gardens and Planter Boxes	0	39	71	27	6	8	35	26



Account number	Common Name	Location	Current Meter Number	ICLEI facility type	Consumption (kl)							
					2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
9005147168	CAFÉ & SJMP & BOATSHED TOILETS & DRINKING TAP	COODE ST SOUTH PERTH LOT 11835 RES 34565	BC0629312	Facilities and Toilets	3,454	4,249	2,997	3,234	3,106	1,980	1,686	3,353
9005147184	SJMP DRINKING TAP	R R MILL POINT RD SOUTH PERTH LOT R34565	BK0026060	Miscellaneous	156	69	71	85	55	42	40	31
9005153541	MANNING RUGBY CLUB	L 2 MANNING RD MANNING LOT PT 2	EK1400157	Function and Community Centres	365	428	705	525	357	732	553	595
9005153568	GEORGE BURNETT LEISURE CENTRE	MANNING RD MANNING LOT 4690 RES 46565	WED9940584	Function and Community Centres	214	215	255	360	362	503	480	387
9005153584	MANNING LIBRARY	144 MANNING RD - CORNER GOSS AV MANNING LOT RESERVE 33639	CK0100507	Cultural Buildings	476	1,317	3,328	3,065	812	2,240	604	1,321
9005153832	WOOLTANA/MANNING ROAD CLOSURE	R MANNING RD COMO LOT 2113 RES 29338	BC0762032	Open Space	294	405	400	575	267	1,031	118	107
9005156224	GODWIN RESERVE	R GODWIN AV MANNING LOT STREET CORNER	CK0400228	Miscellaneous	2,837	1,588	3,951	757	334	1,040	998	741
9005156400	GODWIN AVE SUMP	20 GODWIN AV MANNING LOT PT 83	BK0626714	Open Space	617	397	309	417	360	279	187	384
9005156451	MELVILLE PDE TOILETS & GARDENS	R33804 MELVILLE PDE COMO LOT R33804	EK050264	Facilities and Toilets	1,067	2,680	1,595	818	447	766	488	609
9005159548	COMO SEA SCOUTS	CALE ST COMO LOT 501-502, 505-508	WED9750570	Function and Community Centres	0	0	0	55	74	0	0	0
9005162501	COODE/ CANNING HWAY ROAD CLOSURE	R CANNING HWY COMO LOT STREET VERGE	BC0802863	Gardens and Planter Boxes	0	0	633	269	234	141	208	158
9005163037	CANNING HWY ROAD RESERVE OFF THELMA ST	R CANNING HWY COMO LOT RESERVE	BC0309669	Open Space	536	399	341	190	15	1	6	2
9005165956	ALSTON ROAD CLOSURE	L ALSTON AV COMO LOT ROAD VERGE OPP #24B	BK0627669	Gardens and Planter Boxes	388	28	45	223	121	80	118	109
9005167580	ROBERT ST & CANNING HWY TMM	R R ROBERT ST COMO LOT CNR CANNING HWY	BK0401831	Gardens and Planter Boxes	889	641	125	150	115	154	203	347
9005167759	ROBERT ST TMM	R R ROBERT ST COMO LOT RD VGE OPP 93	BK0434238	Gardens and Planter Boxes	342	429	325	163	167	176	97	268
9005167898	ROBERT ST VERGE GARDEN	R R ROBERT ST COMO LOT RD VGE OPP 79	BK0628650	Gardens and Planter Boxes	305	310	47	71	55	82	73	113
9005168428	ROBERT ROAD VERGE	L 5 ROBERT ST COMO LOT ROAD VERGE	BC0733991	Gardens and Planter Boxes	602	1,210	690	361	392	290	320	301
9005169121	ROBERT ST GARDEN	R R ROBERT ST COMO LOT ROAD VRGE(OPP HSE 5)	BK0622100	Gardens and Planter Boxes	0	94	98	17	19	24	26	32
9005174473	EDGECEMBE ROAD CLOSURE	R R MANNING RD COMO LOT CNR EDGECEMBE	BC0624867	Gardens and Planter Boxes	597	101	107	239	92	119	127	110
9005176700	CLYDESDALE ST TOILETS	18 CLYDESDALE ST COMO LOT PT 100	BK0614753	Facilities and Toilets	1	3	2	8	9	37	372	648
9005176719	McDOUGALL HOUSE	20 CLYDESDALE ST COMO LOT 100	BC0624162	Function and Community Centres	85	88	71	60	57	52	76	148
9005176946	LAY ST DRINKING FOUNTAIN	29 LEY ST COMO LOT 525/6	BK0626671	Miscellaneous	0	0	0	0	0	0	349	105
9005177148	DAVILAK RESERVE - FOUNTAIN	L 331 LEY ST COMO LOT RES 24328	BC0624853	Miscellaneous	0	0	0	0	2	2	2	5
9005177949	TALBOT SUMP	26 TALBOT AV COMO LOT 374	BC0626150	Open Space	195	205	260	375	262	303	272	543
9005179477	McDOUGALL PARK TOILETS	R BICKLEY CR MANNING LOT MC DOUGALL PARK	CK0702005	Facilities and Toilets	614	188	296	231	148	217	307	387
9005180590	CANAVAN ROUNDABOUT	R R CANAVAN CR MANNING LOT RNDABOUT CNR GODWIN	BC0636722	Gardens and Planter Boxes	0	0	0	0	0	0	0	3
9005181112	CANAVAN TMM	R R CANAVAN CR MANNING LOT ROAD VERGE BURNETT	BK0414443	Gardens and Planter Boxes	173	187	96	137	166	151	184	184
9005182158	PARK & HENLEY TMM	R R PARK ST COMO LOT CORNER HENLEY ST	BC0624818	Gardens and Planter Boxes	520	844	130	65	38	63	0	63
9005183943	GREENOCK TMM	R R GREENOCK AV COMO LOT ROAD VERGE	BK0626788	Gardens and Planter Boxes	272	324	163	81	49	57	78	89



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					2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
9005184794	ALSTON SUMP	34 ALSTON AV COMO LOT 409	BC0624785	Open Space	186	756	405	149	322	175	121	238
9005185682	COLLIER PARK GOLF COURSE	R36435 THELMA ST COMO LOT RESERVE 36435	EK1400280	Playing fields	2,005	2,017	1,550	2,708	2,079	3,455	4	1,645
9005185711	COLLIER PAVILLION	THELMA ST COMO LOT 3815 RES 26820	BK0261867	Function and Community Centres	183	102	77	34	26	83	90	96
9005185746	OPERATION CENTRE	199 THELMA ST COMO LOT 3816 RES 26917	CK1000120	Miscellaneous			0	1,180	1,859	1,609	1,767	1,502
9005185754	TRANSFER STATION	R36435 THELMA ST COMO LOT R36435	WED9750052	Depots	26	25	27	32	46	333	134	42
9005186263	100 THELMA ST SUMP	100 THELMA ST COMO LOT 776	BC0802901	Open Space	0	0	153	221	213	242	180	276
9005191214	LAWRENCE ST SUMP	7 LAWRENCE ST COMO LOT 4609	BC1116693	Gardens and Planter Boxes	827	1,430	522	396	889	334	321	428
9005191820	ELEANOR SUMP	13 ELEANOR ST COMO LOT 403	BK02100548	Open Space	680	771	844	378	390	322	307	0
9005191951	AXFORD/BARKER RESERVE DRINK TAP	L 361 ELEANOR ST COMO LOT 361	BC1513331	Miscellaneous	0	1	0	1	1	0	1	0
9005192356	SOUTH PERTH BRIDGE CLUB	6-8 BARKER AV COMO LOT 100	CK0600373	Function and Community Centres	1,613	1,644	1,387	1,418	1,267	1,108	1,005	1,395
9005192719	BRITTAI ST SUMP	36 BRITTAI ST COMO LOT 278	BC1429499	Open Space	108	277	61	160	40	98	125	63
9005193498	RYRIE AVE DRINKING FOUNTAIN	L 695 RYRIE AV COMO LOT 695/6	FK0550400	Miscellaneous	7	13	383	23	34	37	47	10
9005194992	TODD AVE DRINKING TAP & SUMP	49 TODD AV COMO LOT 4582	BK0398307	Miscellaneous	995	236	272	169	209	139	62	347
9005200993	LABOUCHERE SUMP	241 LABOUCHERE RD COMO LOT 155	BK0414836	Open Space	422	1,002	77	68	73	54	70	107
9005206068	THELMA/COODE ROAD CLOSURE	R R COODE ST COMO LOT CNR THELMA	BC0633017	Gardens and Planter Boxes	249	239	126	134	118	201	210	315
9005206359	McDONALD VERGE GARDEN	UNIT OPP 40 / R R MCDONALD ST COMO LOT RD VERGE CNR THELMA	BK0622096	Gardens and Planter Boxes	144	137	104	51	16	39	12	3
9005207730	McDONALD/PRESTON ROUNDABOUT	R R PRESTON ST COMO LOT RNDABT CNR MCDONALD	BC0624844	Gardens and Planter Boxes	119	265	176	18	18	16	34	58
9005209875	CALE ST PARK TMM	R R CALE ST COMO LOT RNDABOUT CNR PARK	BC0747093	Gardens and Planter Boxes	0	338	122	53	56	28	14	1
9005213129	AXFORD SUMP	36 AXFORD ST COMO LOT 422	BK0398311	Open Space	420	242	397	206	165	397	201	605
9005213647	CHILD HEALTH CENTRE	L L BRUCE ST COMO LOT KINDERGARTEN	BC0636676	Child Care Centres	107	89	86	126	203	144	250	70
9005213743	BRUCE STREET SUMP	35 BRUCE ST COMO LOT PT 449	BC0828856	Open Space	966	707	791	316	373	472	436	277
9005214201	BRUCE ST ROAD VERGE	L 466 BRUCE ST COMO LOT 466	BK0359602	Open Space	903	636	442	355	429	345	384	559
9005214850	COLLIER PARK RETIREMENT VILLAGE	16 MORRISON ST COMO LOT 3296 RES 38665	KK1400129	Residences	2,729	1,955	3,148	3,599	3,453	4,385	2,413	11,599
9005214949	SOUTH PERTH LAWN TENNIS CLUB	L 3297 MURRAY ST COMO LOT LOC 3297	CK1100464	Recreation Centres	28	201	83	63	38	424	305	520
9005218122	COMER ROUNDABOUT	R R MCDONALD ST COMO LOT RNDABOUT CNR COMER	BK0633239	Gardens and Planter Boxes	166	298	84	16	22	18	35	48
9005221364	GARDNER STREET SUMP	55 GARDNER ST COMO LOT E PT 145	BC0430854	Open Space	347	577	183	116	200	210	119	199
9005225680	SOUTH TERRACE ROAD VERGE	UNIT OPP139 / R R SOUTH TCE COMO LOT RD VRGE CNR MCDONALD	BK0628648	Gardens and Planter Boxes	189	54	103	114	33	58	78	80
9005227301	BESSELL SUMP	106 BESSELL AV COMO LOT 353	BK0140523	Gardens and Planter Boxes	188	0	42	117	97	66	115	112
9005228371	MONASH SUMP	39 MONASH AV COMO LOT 313	BK0398308	Open Space	270	303	258	70	108	125	138	142
9005229454	MONASH TMM	R R MONASH AV COMO LOT CNR THROSSELL	BK0626902	Gardens and Planter Boxes	426	295	374	471	217	264	94	169
9005230017	HOBBS AVE SUMP 1	75 HOBBS AV COMO LOT 223	BK0626753	Playing fields	903	1,146	553	412	434	661	835	1,059
9005230746	HOBBS AVE SUMP 2	36 HOBBS AV COMO LOT 164	BC1114409	Open Space	409	67	264	134	172	95	122	146
9005230850	HOBBS/THROSSEL ROAD ISLAND	R R HOBBS AV COMO LOT ISLAND CNR THROSSELL	BC1524751	Gardens and Planter Boxes	471	479	198	24	0	0	0	0



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9005233277	GILLON ST DRINKING FOUNTAIN	R GILLON ST KARAWARA LOT COMPENSATION BASIN	BK0440402	Miscellaneous	25	25	24	18	25	15	56	25
9005235221	MELINGA CT DRINKING TAP	MELINGA CT KARAWARA LOT 2836 RES 34241	BK0030703	Miscellaneous	1	0	1	0	0	0	1	0
9005235248	LADY GOWRIE CHILD CARE	L 462 WALANNA DR KARAWARA LOT 462	CK0300059	Child Care Centres	792	1,015	860	860	812	1,895	1,675	1,413
9005235985	JACKSON ROAD ISLAND	R 1 JACKSON RD KARAWARA LOT TRAFFIC ISLAND	BK0626722	Gardens and Planter Boxes	301	112	51	159	34	91	87	105
9005236152	COLLIER PARK GOLF COURSE 2	R36435 JACKSON RD KARAWARA LOT RES 36435	BC0725508	Playing fields	429	499	533	528	1,869	3,029	1,516	2,108
9005237673	LENNA COURT VERGE GARDEN	R R JACKSON RD KARAWARA LOT ROAD VERGE OPP L 244	BK0626687	Gardens and Planter Boxes	308	171	60	10	11	11	5	4
9005238238	GARVEY TMM	R R GARVEY ST WATERFORD LOT ROAD RESERVE	BK9576396	Gardens and Planter Boxes	606	439	170	143	157	283	213	744
9005238350	Garvey Street Park Drinking Tap - Disconnected 2015	7 GARVEY ST WATERFORD LOT RES30009	BK9981720	Open Space	0	2	0	0	0	49	2	6
9005239724	SALTER POINT PDE DRINKING TAP	R SALTER POINT PDE SALTER POINT LOT DRINKING TAP	BC0601785	Miscellaneous	3	3	2	3	3	4	7	19
9005239951	REDMOND RESERVE DRINKING FOUNTAIN	L 108 REDMOND ST SALTER POINT LOT RES28747	CD0300697	Miscellaneous	0	1	5	0	0	0	0	0
9005241947	HOPE AVE DRINKING TAP	27 HOPE AV SALTER POINT LOT 1896 RES 26622	BC1023715	Miscellaneous	34	0	0	0	4	1	3	86
9005247134	LETCHWORTH CENTRE GARDENS	20-22 LETCHWORTH CENTRE AV SALTER POINT LOT 80	BK0618510	Gardens and Planter Boxes	114	311	114	194	143	143	131	97
9005247601	KLEM AVE SUMP	18 KLEM AV SALTER POINT LOT 190	BK0127196	Open Space	707	314	428	232	264	185	24	148
9005248911	CRAIGIE/ISABELLA RESERVE	18 ISABELLA CR MANNING LOT PT 799	BC1323392	Miscellaneous	2	2	0	0	0	1	0	0
9005249172	MANNING PRE SCHOOL	17 CRAIGIE CR MANNING LOT 1333 RES 24333	BC1101466	Child Care Centres	48	98	160	288	121	161	309	93
9005252742	MANNING TENNIS CLUB	R24329 GRIFFIN CR MANNING LOT RESERVE 24329	EK0500257	Recreation Centres	766	772	738	951	905	1,257	981	763
9005254035	Vacant Block (previously MANNING HALL)	1 BRADSHAW CR MANNING LOT 1297 RES 24331	WCD9925533	Function and Community Centres	447	984	337	727	399	234	134	664
9005254780	MANNING SENIOR CITIZENS	L 2934 DOWNEY DR MANNING LOT 2934	CD9700483	Recreation Centres	286	313	432	513	767	781	535	499
9005255046	MARSH RESERVE DRINKING FOUNTAIN	L 475 DOWNEY DR MANNING LOT RES24327	CD9482979	Miscellaneous	0	0	0	0	0	0	0	0
9005255409	Downey Dr Public Access Walkway TMM	R DOWNEY DR MANNING LOT PAW	BK0610021	Miscellaneous	0	0	0	0	0	0	0	0
9005255978	LOCKHART TMM	R R LOCKHART ST COMO LOT VERGE OPP HSE 190	BK0608104	Gardens and Planter Boxes	33	0	33	10	57	56	0	0
9005257623	CLYDESDALE/MANNING TMM	L 1R CLYDESDALE ST COMO LOT L IN VERGE OPP L 1	BC1325300	Gardens and Planter Boxes	251	116	80	39	16	75	29	37
9005259346	LEY ST ROAD VERGE	R R LEY ST COMO LOT ROAD VERGE OPP L 10	BK0618627	Gardens and Planter Boxes	140	428	149	82	28	236	241	125
9005259370	LEY ST TMM	LEY ST COMO LOT ROAD VERGE	BK9513797	Gardens and Planter Boxes	739	610	104	108	83	300	121	0
9005259514	CORNISH CRES TMM	R CLOISTER AV MANNING LOT MEDIAN STRIP	BK0358449	Gardens and Planter Boxes	2,852	124	78	38	444	154	1,138	582
9005260750	JAMES MILLER PAVILION	R JARMAN AV MANNING LOT RESERVE 24330	BC0604300	Facilities and Toilets	126	459	386	698	139	134	228	487
9005262115	CHALLENGER PAVILION	R24329 CHALLENGER AV MANNING LOT 1300 RES 24329	FK0900038	Facilities and Toilets	145	246	41	39	37	39	61	312
9005262123	SALTER POINT SEA SCOUTS	R23967 ELDERFIELD RD MANNING LOT RES NO 23967	BK02103734	Function and Community Centres	241	288	304	233	431	142	85	118



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					2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
9005262131	CURTIN ROWING CLUB & DRINKING FOUNTAIN	439 ELDERFIELD RD WATERFORD LOT 301 RES23967	CK1100278	Miscellaneous	159	123	106	102	110	162	173	161
9008811028	BIRDWOOD VERGE GARDEN	R R BIRDWOOD AV COMO LOT OPP LOT 86	BK0628724	Gardens and Planter Boxes	265	0	384	131	82	151	145	158
9008899875	COMER TOILETS	34 MELVILLE PDE COMO LOT 34-38, 46-50	CK0700478	Facilities and Toilets	136	373	325	254	169	150	137	388
9008899883	COMO CROQUET CLUB	34-38 MELVILLE PDE COMO LOT CROQUET/TENNIS CLUB	WCD0125418	Playing fields	1,310	199	71	73	32	26	22	6
9009473921	ANGELO/WAVERLY TMM	ANGELO ST SOUTH PERTH LOT OPP LOT 32/38	BC0908259	Gardens and Planter Boxes	1,207	675	469	1,470	333	361	472	471
9009658854	COLLINS/OXFORD ROUNDABOUT	COLLINS ST KENSINGTON LOT VERGE	BC0733043	Gardens and Planter Boxes	0	0	29	33	9	39	48	52
9010078857	JANDOO PARK FOUNTAIN	P.O.S EDGE CUMBE ST COMO LOT P.O.S	BK1300684	Miscellaneous	24	7	120	94	3	2	2	0
9010205633	HAMPDEN/LAWLER TMM	OPP HSE 49 HAMPDEN ST SOUTH PERTH LOT VERGE	BC0773116	Gardens and Planter Boxes	0	448	151	173	93	133	155	155
9010805006	THELMA/LABOUCHERE ROUNDABOUT	THELMA ST COMO LOT VERGE	BK0034616	Gardens and Planter Boxes	449	257	185	123	85	76	143	0
9010805073	LANDSDOWNE/FIRST AVE TMM	LANDSDOWNE RD KENSINGTON LOT VERGE	BK0034684	Gardens and Planter Boxes	22	1	0	22	14	19	5	52
9010805129	LANDSDOWNE/CANNING TMM	LANDSDOWNE RD KENSINGTON LOT VERGE	BK0034619	Gardens and Planter Boxes	35	84	77	17	32	32	17	14
9010952516	PARK/SAUNDERS ROUNDABOUT	PARK ST COMO LOT ROUNDABOUT	BK0024497	Gardens and Planter Boxes	141	92	14	60	55	59	95	76
9010980111	GEORGE ST SHOPS TMM	GEORGE ST KENSINGTON LOT VERGE	BK0103635	Gardens and Planter Boxes	615	417	181	142	142	187	118	123
9011206988	PRESTON TMM	180 LABOUCHERE RD COMO LOT 432	BK0535570	Gardens and Planter Boxes	964	1,109	445	240	139	157	456	337
9011659848	COODE ST ISLAND	COODE ST SOUTH PERTH LOT VERGE	BK0153904	Gardens and Planter Boxes	34	238	112	41	61	45	74	61
9012934143	MILL POINT ENTRY STATEMENT	MILL POINT RD SOUTH PERTH LOT ROAD VERGE	BC0303933	Gardens and Planter Boxes	438	292	249	302	49	119	160	204
9014795845	HERITAGE HOUSE	105 MILL POINT RD SOUTH PERTH LOT 993 RES 1022	EK1300172	Function and Community Centres	1,783	1,332	519	438	460	414	756	950
9021091002	Vacant Block - Manning Hub Development (previously tennis courts)	BRADSHAW CR MANNING LOT 801, OPP HSE 10.	BC1113912	Miscellaneous	243	264	338	785	359	576	407	40
9021091029	Vacant Block - Manning Hub Development (previously playground)	BRADSHAW CR MANNING LOT 803. OPP HSE #8	BK0501581	Miscellaneous	20	8	31	14	16	14	52	1
TOTAL					82,729	74,773	64,161	57,591	54,989	63,165	49,073	67,596



12.2 Corporate Water Consumption Data by Facility Type

Facility Type	Consumption (kl)							
	2007/08	2008/09	2009/10	2010/11	2011/12	2012/13	2013/14	2014/15
Gardens and Planter Boxes	32028	29774	18632	15280	14740	15035	14804	17484
Residences	2729	1955	3148	3599	3453	4385	2413	11599
Facilities and Toilets	7759	9679	7370	7454	6234	6513	4825	8321
Function and Community Centres	7218	7034	5380	6160	6379	6258	5668	6767
Open Space	13918	10278	7934	6014	6873	7593	5660	6018
Playing fields	5682	4781	3390	3960	4702	7388	2490	5068
Miscellaneous	6838	3688	7029	4392	4409	4565	5346	4990
Recreation Centres	1829	1864	3207	2491	2940	3358	2778	2588
Child Care Centres	2474	2806	3042	3313	2462	4266	3185	1827
Administration Buildings	1737	1557	1643	1803	1879	1140	1107	1521
Cultural Buildings	491	1332	3359	3093	872	2331	663	1371
Depots	26	25	27	32	46	333	134	42
Standpipe	0	0	0	0	0	0	0	0
Total	82729	74773	64161	57591	54989	63165	49073	67596



12.3 Facility Type Description

Facility type	Description
Gardens and Planter Boxes	Includes landscaped verges, median strips, entry statements, garden beds and traffic management measures
Residences	Private leased residences including houses and aged care facilities (i.e. Collier Park Retirement Village)
Facilities and Toilets	Public access toilets and facilities
Open Space	Includes sumps and drainage management
Function and Community Centres	Buildings used for community facilities including scout halls, community centres/halls, and senior citizen centres,
Recreation Centres	Indoor recreation centres and associated active reserves
Miscellaneous	Includes drinking fountains and construction sites
Playing fields	Golf courses and other sporting fields
Child Care Centres	Child care centres and early education centres
Administration Buildings	Council administration buildings
Cultural Buildings	Cultural buildings and libraries
Depots	Depot

NB: Selection of Facility Type was based on Water Corporation Land Use and previous Water CampaignTM inventory.



12.4 Community Water Consumption Summary

Year	Residential consumption (kl)	Non-Residential consumption (kl)	Total consumption (kl)	Population *profile ID	Residential use (kl) per Capita	Total Use (kl) per Capita
2007/08	4,472,132	581,009	5,053,141	41233	108	123
2008/09	4,517,276	560,198	5,077,474	42135	107	121
2009/10	4,635,926	566,629	5,202,555	42925	108	121
2010/11	4,418,391	541,994	4,960,385	42,987	103	115
2011/12	4,268,723	536,978	4,805,701	43,618	98	110
2012/13	4,320,878	582,055	4,902,933	44,911	96	109
2013/14	4,273,198	575,360	4,848,558	46,056	93	105
2014/15	4,432,564	587,394	5,019,958	46,146	96	109



12.5 Community Water Consumption by Category

Community Water Consumption Category	2007/08 Use (kl)	2008/09 Use (kl)	2009/10 Use (kl)	2010/11 Use (kl)	2011/12 Use (kl)	2012/13 Use (kl)	2013/14 Use (kl)	2014/15 Use (kl)
Low density residential	3,450,902	3,486,761	3,592,439	3,418,166	3,286,907	3,321,892	3,309,852	3,411,270
High density residential	1,021,230	1,030,515	1,043,487	1,000,225	981,816	998,986	963,346	1,021,294
Finance, insurance, property and business	163,795	166,134	158,562	153,118	155,913	151,152	163,363	171,225
Cultural, recreational, personal and other services	136,854	134,247	132,509	120,297	113,990	117,984	106,237	98,428
Wholesale and retail trade	67,147	67,387	69,850	70,270	70,150	86,711	83,099	90,344
Health and community services	82,057	68,408	79,260	77,935	76,101	78,120	79,283	89,541
Education	49,750	45,772	47,404	50,654	55,599	72,531	73,630	70,007
Hospitality	62,059	61,372	65,292	58,277	52,071	55,882	54,142	49,911
Manufacturing and construction	5,318	8,262	6,472	5,153	4,734	7,199	7,314	7,656
Transport and storage	5,006	2,723	3,077	2,971	4,364	6,540	4,933	6,117
Gas, electricity and water utilities	8,439	5,506	3,931	3,104	3,696	3,339	2,958	3,534
Other	87	92	76	52	50	71	57	74
Total	5,053,141	5,077,474	5,202,555	4,960,385	4,805,701	4,902,933	4,848,558	5,019,958



Hurlingham Lake, South Perth, 2016