

Water Efficiency Action Plan



2017 - 2022

Name:	Shire of Denmark
Address:	953 South Coast Highway Denmark WA 6333
Date:	December 2017
Council Adoption Date:	19 December 2017



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1. Introduction

The Water Corporation and the Department of Water and Environmental Regulation launched the Waterwise Council Program in 2009 to build a cooperative working relationship with local governments to improve water use efficiency in local government and their communities.

Criteria to become a Waterwise Council

The Waterwise Council Program is free to join and is open to all councils within Western Australia. To be endorsed as a Waterwise Council, a council must fulfil the following steps:

- Criteria 1:** Sign a MOU to participate in the Waterwise Council Program.
- Criteria 2:** Review council water consumption and create a water efficiency action plan for potable and non-potable water sources for all council operations and the community.
- Criteria 3:** Ensure appropriate staff complete Waterwise training.
- Criteria 4:** No breaches of groundwater licence terms or conditions set by the Department of Water and Environmental Regulation (Water), and no breaches of scheme water usage issued by Water Corporation in the past 12 months. This includes permanent water efficiency measures.
- Criteria 5:** Report annually to retain endorsement.

Objectives

The objectives of the Water Efficiency Action Plan are to:

- Assess current water use (scheme and non-scheme) across council operations and the community
- Identify inefficiencies and potential water savings
- Set goals and benchmarks to improve water use
- Prepare an action plan and implement water efficiency actions to progress towards the target
- Provide a process for annual reporting on implementation of water efficiency actions.

This plan will be valid for a period of 5 years and will form the basis of annual reporting requirements.

Methodology

The Water Efficiency Action Plan is broken into the following steps:

- Background
- Collection of background information and water use data
- Development of water use goals and benchmarks
- Setting water efficiency targets
- Table of actions
- Management endorsement.

2. Contact details

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	Shire of Denmark Water Management Team 2017
WATER MANAGEMENT TEAM	Position
The Water Management Team will help ensure success of the Water Efficiency Action Plan. Team members are key staff who may influence or have an understanding of how water is used within the Shire.	Director of Planning & Sustainability
	Manager of Recreation and Youth Services
	Building Maintenance Officer
	Asset Management Officer
	Sustainability Officer
Staff on the Water Management Team will complete online Waterwise Training.	Works Supervisor

3. Background

3.1 Shire overview

The Shire of Denmark is located approximately 420 km south of Perth, within the Great Southern region of Western Australia and encompasses an area of 185,990 ha¹. Mean annual rainfall is 1088 mm².

The population in 2016 was 5,845 and is forecast to be approximately 6,400 by 2021³. The population increases significantly in holiday periods, with 274,000 visitors in 2015 (equates to an additional 750 people per day averaged across the year, although the majority of visitations occur December to April).^{4 5}

The town of Denmark is the primary population centre within the Shire, with smaller rural settlement nodes at Nornalup, Peaceful Bay and Bow Bridge. In 2016, there were 3,352 private dwellings in the Shire¹. There is a light industrial area and commercial centre located within the town of Denmark. The *Shire of Denmark Local Planning Strategy* (2011) identifies future expansion of the Denmark town centre commercial and mixed use areas and a new service park/industrial park. It also identifies expansion of the Peaceful Bay, Nornalup and Bow Bridge settlements.

The main industries in the Shire (by number of persons employed in 2011) are 1. Education and training, 2. Construction, and 3. Retail trade. Other important industries include health care and social assistance, and agriculture, forestry and fishing. 58% of land within the Shire is national park, nature reserve or some other protected area¹.

Only the town of Denmark has access to scheme water, which is primarily supplied through the Quickup River dam and reservoir (capacity of 1,089 million litres). The Denmark River dam and reservoir is considered a backup source to the Quickup (capacity of 451 million litres)⁶. The Shire of Denmark supplies water to the Parry Beach caravan park (non-potable supply), the Peaceful Bay caravan park (potable supply) and Peaceful Bay leasehold lots (non-potable supply). This supply primarily occurs via groundwater bores. All other lots throughout the Shire are reliant on self-supply.

The Water Corporation implemented its most recent Stage 5 water restrictions in Denmark from 3 December 2014 to 29 May 2015, and then 1 September to 29 November 2015 due to below average inflow to dams.

Future projects (within the next 1 – 5 years) which may significantly affect the Shire's corporate and community water use are:

- Redevelopment of McLean Park (concept plan currently being developed);
- New light industrial area (construction commencing); and,
- Public swimming pool (proposed).

¹ <http://stat.abs.gov.au/itt/r.jsp?databyregion&ref=CTA2> (accessed 17 May 2017) and <http://www.censusdata.abs.gov.au/> (accessed 18 July 2017)

² <http://www.bom.gov.au/climate/current/> (accessed 17 May 17)

³ <https://www.planning.wa.gov.au/publications/6194.aspx> (accessed 17 May 2017)

⁴ <https://www.tra.gov.au/Research/Regional-tourism/local-government-area-profiles> (accessed 19 May 2017)

⁵ <http://www.tourism.wa.gov.au/Publications%20Library/Research%20and%20reports/LGA%20factsheets%202016/Denmark%202016.pdf> (accessed 4 September 2017)

⁶ <https://www.watercorporation.com.au/water-supply/ongoing-works/denmark-water-supply-upgrade> (accessed 17 May 2017)

3.2 Existing water efficiency programs

The Shire of Denmark participated in the International Council for Local Environmental Initiatives (ICLEI) Water Campaign between 2013 and 2015. The Campaign was an international freshwater management program which aimed to build the capacity of local government to reduce water consumption and improve local water quality. During this time, the Shire completed Milestone 1 (inventory) and was progressing with Milestones 2 (goals) and 3 (local action plan), when the Campaign was ceased in June 2015.

The Shire has subscribed to Planet Footprint's services since 2011. The service collects and analyses scheme water cost and consumption across the Shire's assets.

Other Shire initiatives include:

- Assistance from the Water Corporation as part of the Waterwise Towns Program (implemented during the Stage 5 water restrictions in 2014 to 2015):
 - Creation of a waterwise demonstration garden at the Morgan Richards Community Centre in 2016.
 - Supported two community waterwise garden workshops in 2015 and 2016.
 - Water audits of the Denmark Visitors Centre, Surf Life Saving Club and Recreation Centre in 2015.
 - Water meter interval data loggers located at Berridge Park and McLean Park in 2015 to 2016.
 - Watersaving plumbing retrofits at the Recreation Centre, Visitors Centre, Ocean Beach public toilets and Surf Life Saving Club in 2015.
 - Waterwise training of parks and gardens staff from the Shire, local schools and health campus in 2015.
- Monitoring of water consumption anomalies by water meter interval data loggers. Two loggers were purchased in 2016. The loggers assist in confirming water leaks.
- Installation of a waterwise garden at the Denmark Visitors Centre in 2010/11.

3.3 Relationship to strategic documents

The Shire of Denmark's Water Efficiency Action Plan forms a strategic relationship with the following Shire documents:

- *Strategic Community Plan 2031*
 - Environment Objective: Climate Change Goal – that the Shire of Denmark monitor the effects of climate change and implements and advocates for policies that will not only mitigate any adverse effects, but also take advantage of any opportunities created.
- *Corporate Business Plan 2016 – 2020*
 - 2.2.5 Develop partnerships with State Government agencies to identify initiatives to reduce the use of reticulated potable water.
 - 2.2.6 Implement strategies to conserve water, while still retaining amenity, sport and recreation, and biodiversity outcomes.
- *Town Planning Scheme No. 3 Policy No. 40: Rainwater Tanks and Greywater Re-Use Systems*. The policy encourages landowners, developers and builders to incorporate residential rainwater tanks and greywater re-use systems in order to become more sustainable in their use of water and energy.

Other relevant Shire documents include:

- *Activities on Thoroughfares and Trading in Public Places Local Law*. Part 2, Division 3 relates to verge treatments.

- *Town Planning Scheme Policy No. 39 Public Open Space*. One of the objectives of the policy is to “Accommodate water-sensitive urban design in public parkland areas where usability for recreation purposes are not compromised or where conservation values are enhanced.”
- *Guidelines for the Development and Subdivision of Land (2008)*. Includes landscaping guidelines, verge treatment guidelines and water sensitive urban design for new subdivisions and developments.

4. Corporate Water Use Inventory

4.1 Corporate water use – Scheme water

4.1.1 Annual scheme water use

The overall trend in potable water use over the last five years (2012 to 2016) is for a decrease in consumption. The highest consumption occurred in 2012 and 2014.

Table 1: Historical water use – scheme water

	2012	2013	2014	2015	2016
Annual water use (kL)	20,942	14,957	19,814	15,488	12,674
Daily Water use (kL/day)	57	41	54	42	35

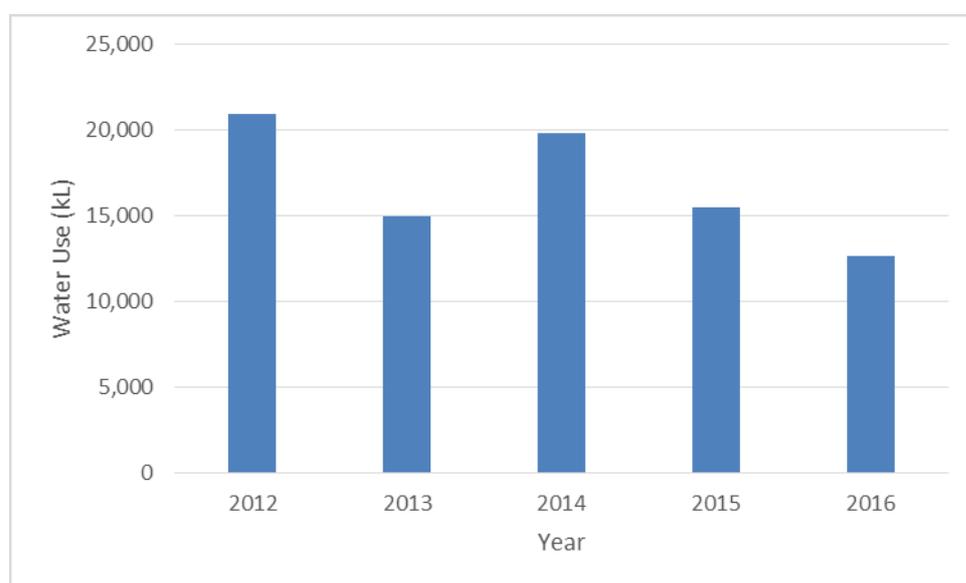


Figure 1: Historical scheme water use

4.1.2 Annual scheme water use by service area

Parks and gardens was the highest user of scheme water over the last five years (2012 – 2016). This was followed by community centres and facilities, and standpipes.

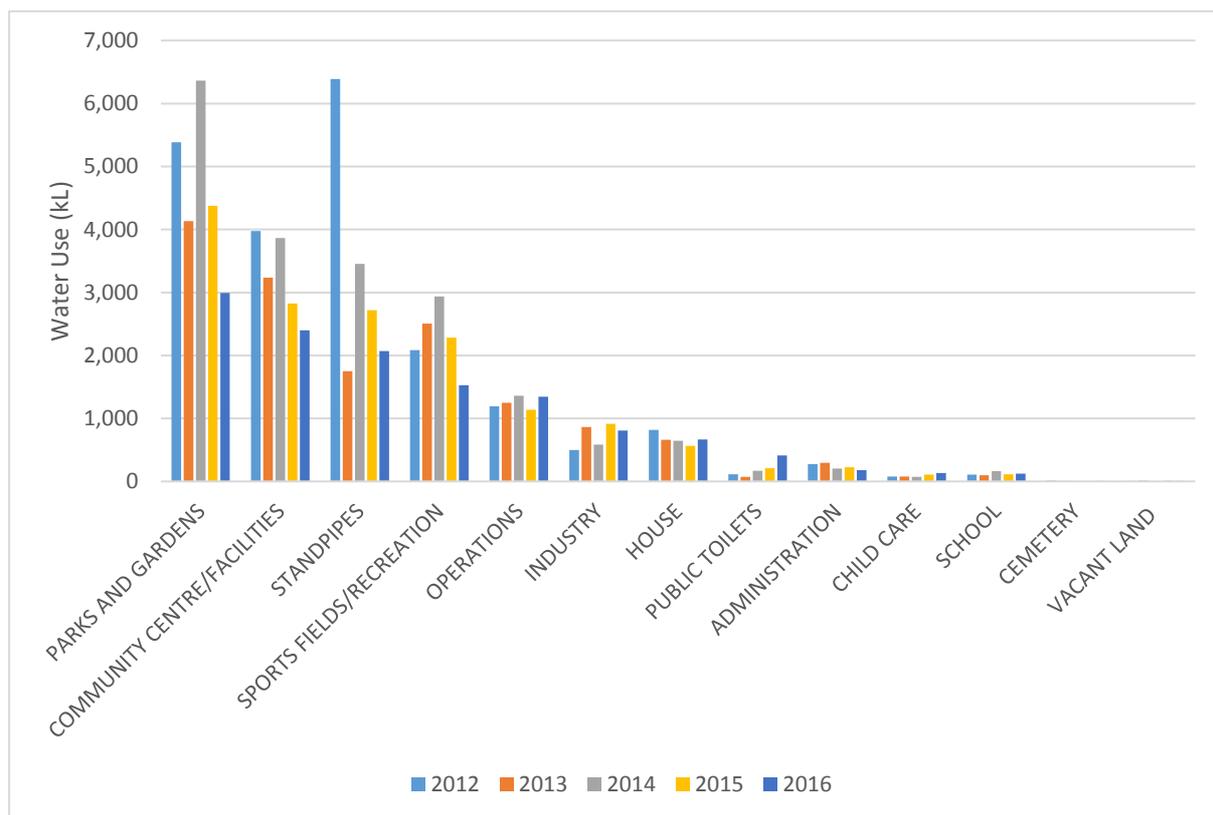


Figure 2: Historical scheme water use by service area

4.1.3 Annual scheme water use for the top 5 facilities

Ranking of the top 5 scheme water using facilities was based on total use (kL) in 2016. The top 4 sites recorded highest use in 2014, with a decreasing trend in use to 2016. The Service Park is the only site to increase use between 2012 and 2016, but this may be due to increased use of the site associated with leasing to commercial businesses in 2014. Significant leaks were also detected at McLean Park and the Service Park in 2015. 2014 and 2015 were two of the driest years on record in Denmark, with annual rainfall of 767 and 762 mm respectively (compared to an average annual rainfall of 1088 mm)⁶. The Water Corporation implemented Stage 5 water restrictions across the Shire in 2014 to 2015.

Table 2: Historical scheme water use (kL) for the top 5 water using sites

Site name	2012	2013	2014	2015	2016
Berridge Park	3,887	2,845	5,006	2,798	1,843
Zimmerman Street Standpipe	1,506	1,364	3,394	2,528	1,754
Shire Depot	1,194	1,249	1,359	1,136	1,346
McLean Park	1,516	2,024	2,408	1,768	1,061
Service Park	499	863	583	913	807

⁶ <http://www.bom.gov.au> (accessed 8 Jun 17)

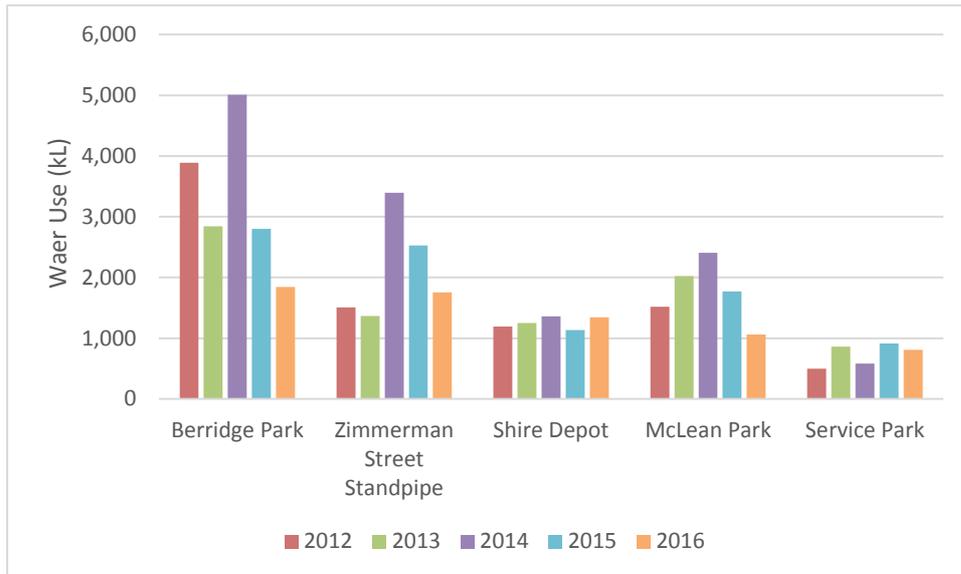


Figure 3: Historical scheme water use for the top 5 water using sites

4.1.4 Recent water efficiency projects – scheme water

The Water Corporation provided assistance to the Shire to implement a number of water efficiency measures as part of the Waterwise Towns Program, during the Stage 5 water restrictions in 2014 and 2015:

- The Shire provided support to two Waterwise garden community workshops in December 2015 and April 2016.
- Water audits of the Denmark Visitors Centre, Surf Life Saving Club and Recreation Centre in February 2015. Following the audits, the Water Corporation funded plumbing retrofits to these facilities in accordance with audit recommendations. Retrofits included fixing leaks and adjusting float valves on toilets, installing flow-restrictors or aerators on taps and replacing shower heads with water efficient models.
- Water meter interval data loggers located at Berridge Park and McLean Park in 2015 to 2016 by the Water Corporation. The loggers record water consumption every 15 minutes, so allow identification of leaks and patterns of water use. Following the success of the loggers, the Shire purchased two of its own in 2016, which are moved between meters to confirm suspected leaks or inappropriate water use (as indicated by an invoice for water use or on-site evidence). The meters have already identified faults with irrigation timers and a number of significant leaks caused by damaged pipes, leaking toilets and faulty taps at Berridge Park, the CEO's house, McLean Park, Shire Depot and Ricketts Reserve.
- Waterwise training workshop for parks and gardens staff from the Shire, local schools and the Denmark Health Campus in December 2015.

When plumbing fixtures reach the end of their life or are damaged, they are replaced with water-efficient devices as standard practice. New taps are timed flow and new toilet cisterns are dual-flush. Composting toilets have recently been installed at the Cemetery with basin taps supplied by rainwater tank (despite scheme water being available). Waterless urinals are located at the Shire Administration Office, McLean Park and Kwoorabup Park.

Annual plants in garden beds have also been increasingly replaced with more water efficient native species.

4.2 Corporate water use – Non-scheme

4.2.1 Annual non-scheme water use

The Shire's water use includes groundwater bores at the following sites:

- Parry Beach campground (part of Reserve 20928)
- Denmark High School oval bore
 - The Shire utilises this bore to irrigate the Denmark High School oval, Cemetery, equestrian grounds and the Administration office grounds. Consumption is shared with the Denmark High School, who also utilise the bore to irrigate the school grounds.

These bores are not licensed by the Department of Water and Environmental Regulation (and are not required to be) and are unmetered.

Irrigation of the McLean Park oval occurs via a dam which is naturally groundwater-fed.

The Shire is licensed by the Economic Regulatory Authority to supply non-potable water to the Peaceful Bay leasehold lots and caravan park. This water is sourced from a dam (supplied by surface water and groundwater infiltration) which is topped-up by a groundwater bore when required. Use of non-potable water is metered. Water from this source is also treated to become potable for supply to the Peaceful Bay Caravan Park and Peaceful Bay public toilets. Use of potable water is also metered. The quantity and quality of water use data varies for both meters, due to meter malfunctions and variability in manual readings.

Rainwater tanks storing roof water runoff is the main source of water where mains water is not available via the Water Corporation supply. This generally applies to Shire assets outside of the gazetted Denmark townsite. Small water tanks have also been installed at some assets within the townsite to supplement mains water eg. Administration office, Strickland Street gardens. Water use from rainwater tanks is unmetered.

Table 3: Historical Water Use – non-scheme for metered sites ie. Peaceful Bay potable and non-potable water use. Note: data is incomplete across all years.

	2012	2013	2014	2015	2016
Annual water use (kL)	No data	No data	15,785	17,714	20,941
Daily Water use (kL/day)	No data	No data	43	49	57

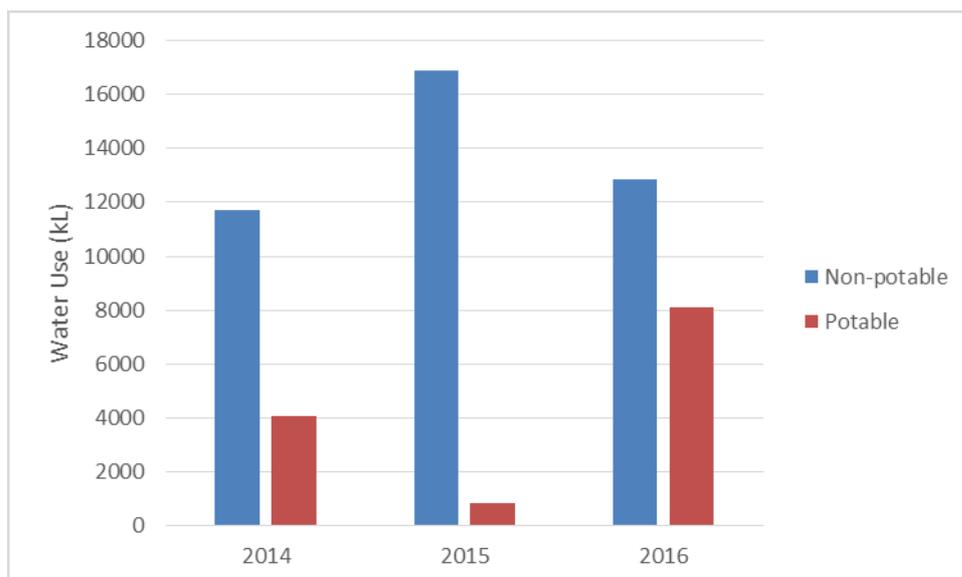


Figure 4: Historical water use – non-scheme metered sites ie. Peaceful Bay potable and non-potable water use. Note: data is incomplete.

4.2.2 Recent water efficiency projects - non-scheme water use

There have been no recent water efficiency projects that have significantly impacted on non-scheme water use.

5. Community Water Use Inventory

Community water use relates only to scheme water, since data regarding water use from other sources eg. groundwater and rainwater tanks, is not available. This section includes residential and non-residential water use.

5.1 Community water use – scheme water

The overall trend in total community scheme water use (residential + non-residential) over the last five years (2012 to 2016) is a fairly uniform consumption in 2012 and 2013. Water use increased in 2014 and then declined until it approximated pre-2014 consumption again by 2016.

Residential water use increased from 2012 until it dramatically escalated in 2014, then significantly decreased in 2015 and declined further in 2016. There was less variability in non-residential water use, with a slight decrease in consumption from 2012 to 2013, a small increase in 2014 and further decline between 2015 and 2016.

The increase in consumption in 2014 reflects low annual rainfall that year. The Water Corporation enacted Stage 5 water restrictions in 2015 (for approximately 8 months), which may have accounted for lower water use despite the even lower average annual rainfall in 2015 than 2014 (see Section 4.1.3).

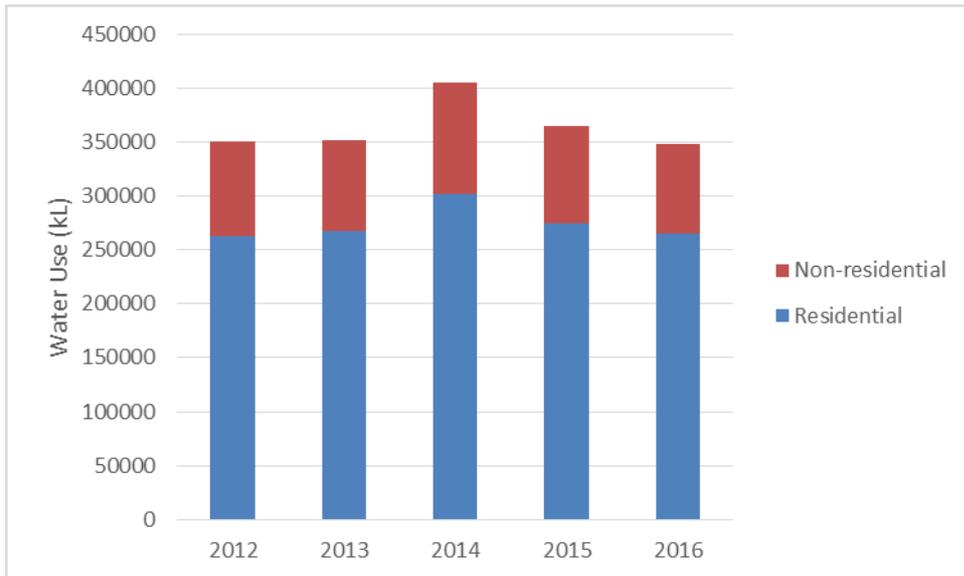


Figure 5: Historical scheme water use by the Denmark community.

Community total annual water use was calculated for residential households. The annual residential water use per household ranges between 141 k/L in 2012 (minimum) and 161 k/L in 2014 (maximum). Water use per household is significantly less than the average residential use in Perth and WA regional towns (240 and 284 k/L per household respectively in 2015-16)⁷.

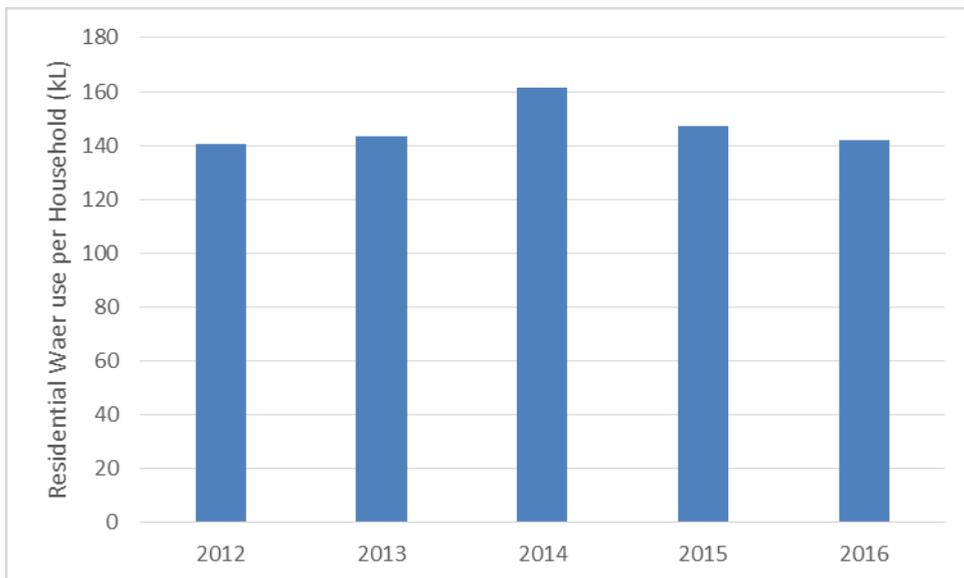


Figure 5: Historical total residential scheme water use by the Denmark community per household.

⁷ Economic Regulation Authority, 2017. 2016 Water, Sewerage and Irrigation Performance Report.

Table 4: Historical scheme water use (kL) by the Denmark community.

Water use		2012	2013	2014	2015	2016
Residential		262,740	268,056	301,506	274,633	264,821
Non-residential		87,391	83,414	103,803	90,042	83,824
Total		350,131	351,470	405,309	364,675	348,645
Total per household	Residential	141	144	161	147	142

5.2 Community water use by sector

The Water Corporation provides community water use data grouped into select categories (referred to as 'sectors') defined by the Australian and New Zealand Standard Industrial Classification and chosen by ICLEI. This section refers only to scheme water use by the community (residential and non-residential) in 2016.

The residential sectors (low-density + high density) were the highest water users, making up a total of 76% of total consumption in 2016. Of the non-residential sectors, the highest water use was in Hospitality, representing 9 % of consumption, followed by Education which made up 5 % of total water use in 2016. This is reflected in the number of water accounts, with the residential sector comprising 89% of scheme water accounts in the Shire. However, Hospitality represents only 0.5% of the scheme water accounts and Education 0.3%. Cultural, Recreational, Personal and Other Services comprised the highest proportion of scheme water accounts for non-residential sectors (6.2 %), but represented only 3 % of water use.

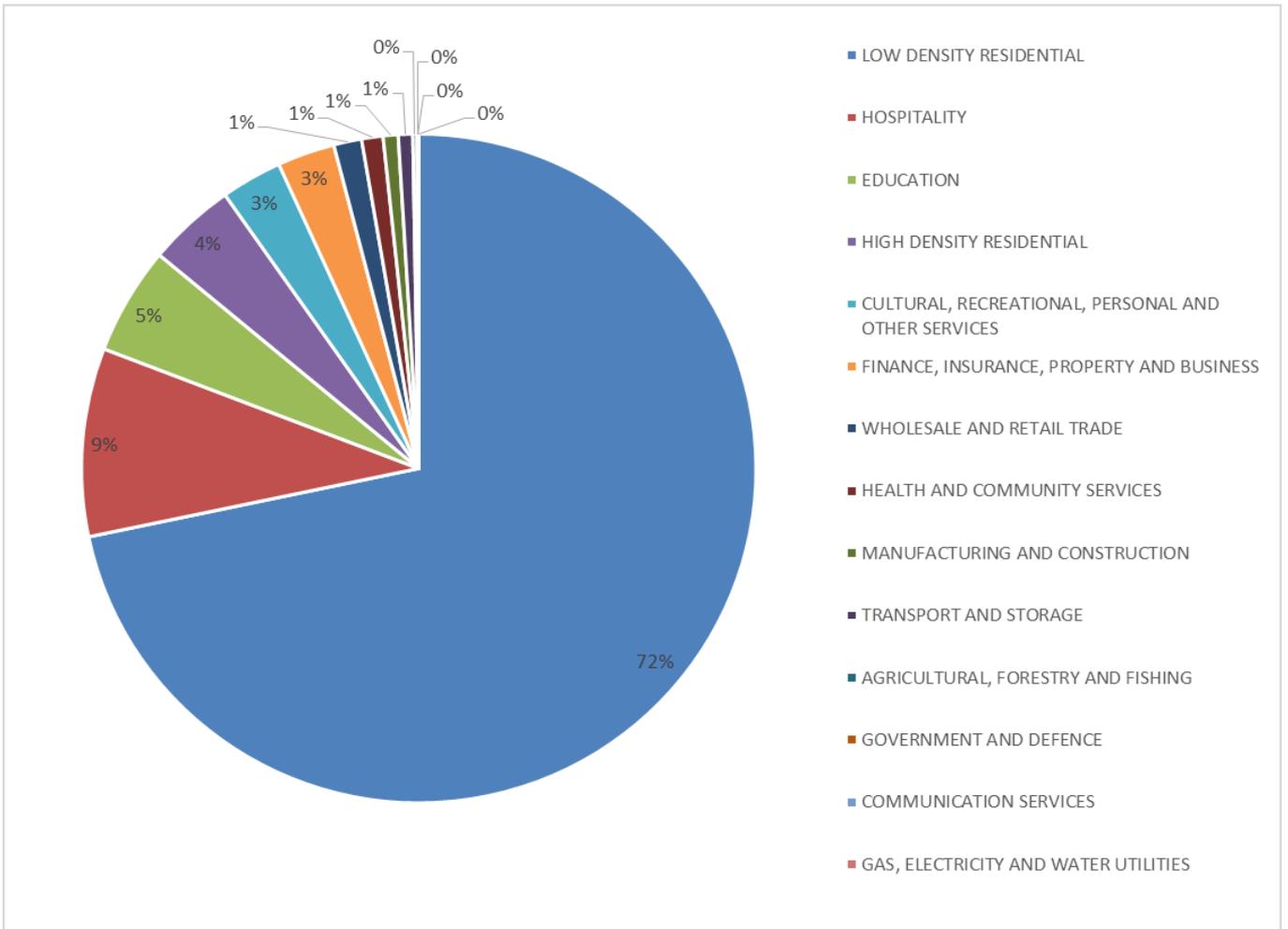


Figure 6: Scheme water use in 2016 by the community according to sector.

6. Water goals and benchmarks

6.1 Water efficiency goals

6.1.1 Corporate water efficiency goal

To reduce total corporate scheme water use at 2016 levels by 10 % by 2022.

The total corporate scheme water use at 2016 was 12,674 kL. A 10 % reduction would give a total water use of 11,407 kL in 2022.

This target is in line with the Water Corporation's target of a 15 % reduction in scheme water use by 2030⁸. Given the high number of relatively low cost opportunities to improve water efficiency across the Shire, this target is considered achievable despite projected increases in population (projected to be 6,400 in 2021⁹) and the facilities required to support it. Redevelopments are also scheduled for McLean Park and the Plane Tree Precinct, as well as relocation of the Depot, but with recommendations in this Plan to implement best practice,

⁸ Water Corporation, 2009. *Water Forever: Towards Climate Resilience*.

⁹ <http://stat.abs.gov.au/itt/r.jsp?databyregion&ref=CTA2> (accessed 17 May 2017)

some reduction in water use is still anticipated at these sites. The goal may need to be revised if a public pool, as identified in the draft *Shire Community Strategic Plan 2027*, is constructed within the life of this Water Efficiency Action Plan.

6.1.2 Community water efficiency goal

To work with the community and stakeholders to retain community residential scheme water use at or below 161 kL per household annually to 2022.

161 kL per household represents the highest annual water use over the last five years. However, it is still significantly below the Perth and regional water use per household in 2015-16 of 240 and 284 kL per household.

6.2 Performance Benchmarks

Performance indicators have been developed for the top 5 corporate scheme water using sites and all the corporate non-scheme water using sites. Benchmarks have been set against water use in 2016. These indicators will allow water use comparisons to be made annually to measure performance against the corporate water efficiency goal.

Table 5: Performance benchmarks – scheme water

Asset	Period (year)	Water used (kL)	Performance Indicator	Benchmark
Berridge Park	2016	1,843	kL/Ha (1.37 ha)	1,345 kL/Ha/year
Zimmerman Street Standpipe	2016	1,754	kL/year	1,754 kL/year
Shire Depot	2016	1,346	kL/full-time employee/year (21 full-time employees)	64 kL/full-time employee/year
McLean Park	2016	1,061	kL/Ha (5.76 ha)	184 kL/Ha/year
Service Park	2016	807	kL/number of commercial tenants (3 commercial tenants)	268 kL/commercial tenant/year

The Zimmerman Street Standpipe is used for Shire works and by external contractors for private works. As such, the nature of water use varies ie. type of user, purpose of use, amount abstracted, and so the performance indicator is considered most informative as total water use per year.

Non-scheme water use has not been monitored at the Parry Beach campground, McLean Park Oval or Denmark high school oval bore. Similarly, total non-potable water use in 2016 at Peaceful Bay is incomplete due to bore meter faults at the end of 2016. Hence, benchmarks have only been specified for the Peaceful Bay potable water supply. The remainder of the benchmarks for non-scheme water use will be developed once annual water use data is obtained.

Shire use of the High School Oval bore will need to be separated from the School's use of the bore.

Table 6: Performance benchmarks – non-scheme water

Asset	Period (year)	Water used (kL)	Performance Indicator	Benchmark
Peaceful Bay caravan park and public toilets (potable)	2016	8,086	kL/caravan nights/year	
Peaceful Bay leasehold lots and caravan park (non-potable)	2016	12,855 (note data is incomplete)	kL/number of leasehold lots/year (203 leasehold lots)	
Parry Beach campground bore	2016	No data	kL/camp site nights/year	
Denmark high school bore	2016	No data	kL/Ha (13.1 ha)	
McLean Park Oval	2016	No data	kL/Ha (2.1 ha)	

7. Water actions

The following table represents a list of actions to improve water efficiency at both the corporate and community levels. Actions will be reviewed every five years, but annual reporting of progress towards each action is a requirement of Waterwise Council endorsement. Some actions are mandatory as the minimum requirement for Waterwise Council endorsement and have been marked in the table below. All actions require the submission of evidence before they will be recognised as completed by the Water Corporation and Department of Water and Environmental Regulation.

Table 7: Corporate and community water efficiency – scheme and non-scheme water

Water saving area	Ref	Waterwise Council minimum requirement (√)	Action / Initiative	Status (Complete, Ongoing, To be completed or N/A)	Proposed Completion Date	Department Responsible	Commentary (including estimated savings if known)
Facilities	1.1	√	Conduct a water audit on each of the council's top water using sites.	Ongoing	Annually – 1 audit per year	Sustainability Services Asset Management	Water audits were completed for the Surf Life Saving Club/Ocean Beach toilets, Visitors Centre and the Recreation Centre in 2015. Water audits should prioritise the top five scheme water using sites (as at 2016).
Facilities	1.2	√	Commit to implementing the most viable recommendations from water audits undertaken.	Ongoing	Annually after the water audit (Ref 1.1)	Asset Management	The following recommendations have been completed in accordance with the water audit reports for the Surf Life Saving Club/Ocean Beach toilets, Visitors Centre and the Recreation Centre: <ul style="list-style-type: none"> • Plumbing retrofits • Annual reporting of water use. <p>The remainder of the recommendations, which includes procedural changes and changes requiring higher investment, are still to be completed.</p>
Facilities / Irrigation and Landscape Design	1.3	√	Procurement processes incorporate consideration of better than 3 star WELS rated fixtures, for new, refurbishment and maintenance works. Procurement processes to also include preference for Waterwise Approved or Smart Approved Watermark products (where applicable).	Ongoing	2019 for development of policy. Ongoing implementation.	Sustainability Services	While procurement by asset management staff generally considers 3 star WELS rated fixtures already, a new policy or revision of an existing policy (eg. <i>P040226 Asset Management Policy</i> or <i>P040220 Purchasing Policy</i>) is required, and then disseminated to relevant staff.
Education	1.4	√	Appropriate staff have completed Water Corporation water efficiency training.	Ongoing	December 2017 for initial training. Ongoing for refreshers or new staff as required.	Infrastructure Services Finance and Administration Planning and Sustainability	Staff on the Water Management Team completed the relevant Water Corporation's online training course by 30 November 2017. Other relevant staff, eg. head gardener, to complete Water Corporation's training course as required.

						Asset management	Other relevant training opportunities eg. workshops, conferences, may be attended by staff.
Education	1.5	√	Processes in place to achieve behavioural change within council e.g. leak reporting process established and water conservation signage in staff facilities, water management team meetings held on a regular basis.	Ongoing	Ongoing	<p>Planning and Sustainability</p> <p>Finance and Administration</p> <p>Asset management</p> <p>Infrastructure Services</p>	<p>Leaks are currently reported to Infrastructure Services or Asset Management. Reporting process needs to be defined, documented in the Shire's Organisation Procedure Manual and disseminated to all staff. Procedure is to include reporting back to asset management staff at completion of leak repair work.</p> <p>Water conservation signage eg. 'Take shorter showers' to be installed in public and recreation centre showers by Sustainability Services. Signage also to be given to Denmark Surf Life Saving Club.</p> <p>Frequency of water management team meetings to be determined at first meeting as part of the group's terms of reference.</p>
Monitoring	1.6	√	Meters (and any sub-meters) are read on a regular basis and recorded.	Ongoing	Ongoing	Asset management with assistance from Sustainability Services	<p>Reading of scheme water meters occurs by the Water Corporation.</p> <p>Two interval water loggers are owned by the Shire in order to assist in leak detection or investigate abnormal usage. The loggers are able to be moved between meters as required. The loggers are read remotely and the results accessed via an on-line platform (Outpost Central). Alerts (email or SMS) can be set up via the on-line platform when water usage exceeds a predefined amount.</p> <p>Since 2011, the Shire has subscribed to Planet Footprint's Environmental Scorekeeping Service. The service collects and analyses water consumption and cost data for all Shire assets. The service includes all scheme water use, which is obtained by Planet Footprint directly from the Water Corporation. All other (non-scheme) water use is provided by</p>

							<p>the Shire to Planet Footprint, noting that only the Peaceful Bay potable and non-potable water supply is included at the moment (since these are the only non-scheme water meters currently monitored).</p> <p>Subscription to a water performance reporting software provider is to continue over the next five years. All water use data to be included in the subscription as it becomes available.</p> <p>The Peaceful Bay potable and non-potable water supply meters are read manually once per week (usually). The meter on the non-potable water supply is not working and is to be repaired. Remotely-read meters to be installed (see 1.13).</p> <p><i>Budget implications:</i> Annual subscription costs to Planet Footprint in 2017 is \$3,190 (excl. GST). Monthly software costs for Outpost Central is \$20 per interval water meter (excl. GST).</p>
Monitoring	1.7	√	Leak detection is included in inspections and reported on or repaired if a leak is observed.	Ongoing	Ongoing	Asset management Parks and Gardens	<p>Leak detection and reporting process needs to be defined, documented in the Shire's Organisation Procedure Manual and disseminated to relevant staff. (also see 1.5)</p>
Monitoring	1.8		Install sub-meters at sites where there are multiple tenants or assets attributed to a single meter.	To be completed	Ongoing	Asset management	<p>Water use is estimated where there are multiple tenants (leased sites), which has implications for tenants when the Shire recoups the cost of water use.</p> <p>The installation of sub-meters will enable accurate billing by the Shire, which will benefit tenants, and the targeting of efficiency actions to individual buildings.</p> <p><i>Budget implications:</i> approximately \$400 per sub-meter (including installation). Add an additional \$1,514 (excl. GST) per meter for remote reading capabilities</p>

							(including 2 years software subscription).
Irrigation practices	1.9	√	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.	To be completed	2019 to create the water budget. Ongoing updates.	Parks and Gardens	Consider the use of catch cups and soil moisture probes to help set budget for each irrigated parkland. Use irrigation timers (with battery backup) to assist in maintaining budget. Timers to be checked at least weekly to ensure operation and results of check to be recorded. Irrigation to be switched off or reduced in accordance with winter sprinkler bans, summer rainfall or imposed water restrictions. Irrigation to ensure only twice weekly watering per parkland (in accordance with Water Corporation requirements). Irrigation using non-scheme water sources to apply the same restrictions imposed on scheme water use. <i>Budget implications:</i> \$1,050 (excl. GST) for a soil moisture sensor, Add \$25 (excl. GST) per month for software subscription. \$385 (excl. GST) for an irrigation controller with WiFi remote capabilities.
Education	1.10		Regularly inform internal departments and tenants of relevant water use.	Ongoing	Ongoing	Sustainability Services (internal staff) Asset management (tenants)	Water use is reported to relevant staff every quarter. Annual water use is reported in the Shire's Annual Report. Tenants are informed of water use relevant to their building when considered an anomaly. Expand to quarterly reporting to all tenants once sub-metering is installed.
Irrigation practices	1.11	√	Audit of irrigation system to identify poorly performing irrigation hardware	To be completed	2019, then annually.	Parks and Gardens	Regular bore maintenance to occur in accordance with an audit schedule – to be developed. Regular audit schedule of irrigation to be developed.
Irrigation practices	1.12	√	Develop a system maintenance and audit schedule. Keep replacement and repair parts consistent and available to maintain irrigation system performance.	Ongoing	Ongoing	Parks and Gardens	Sprinkler and bore maintenance schedule to be developed (also see 1.11). Audits to occur at the end of winter (ie. prior to commencement of irrigation).
Monitoring	1.13	√	Meter all bores - install a water meter to the standards detailed in the Department of Water <i>Guidelines for water meter installation 2009</i> , on all	Ongoing	2018/19 to install meters,	Asset Management	Also see 1.6.

			non-scheme water sources to measure both water flow rate and cumulative volume. Water quality (standard suite) to also be regularly analysed.		then ongoing.	Environmental Health	Remotely read loggers to be installed on all groundwater bores. Data to be included in water performance monitoring subscription (see 1.6). Manual meter reading may be required in some locations due to lack of mobile phone tower coverage. Shire use of the High School Oval Bore to be quantified against the School's use of the same bore. <i>Budget implications:</i> \$1,514 (excl. GST) per logger with remote reading capabilities (including 2 years software subscription). 5 loggers will be required to meter the existing bores.
Facilities	1.14		Review existing lease provisions relating to water use for tenanted Shire assets and ensure water use is appropriately considered in new leases.	Ongoing	2019 and ongoing	Asset Management Finance and Administration	Existing leases have been reviewed to ensure tenants are paying for water use in accordance with lease conditions. Lease review and new leases to consider payment of all water use by the tenant and best practice opportunities.
Irrigation and landscape Design	1.15	√	Landscaping plans to include low water use plants, hydrozoning and soil amendments	To be completed	2018/19	Parks and Gardens, with support from Sustainability Services	Landscaping to be incorporated into the Shire's Asset Management Plan (to be developed), providing the strategic principles for landscape management on all Shire parks and gardens. The plan is to include contingencies for reducing irrigated areas and during periods of enforced water restrictions, consideration of technologies to assist in reducing water use eg. soil moisture probes, centralised irrigation control systems, and best practice techniques
Irrigation and landscape design	1.16	√	Develop a Local Planning Policy to implement water sensitive urban design (WSUD) in new land developments	Ongoing	2019	Infrastructure Services Planning and Sustainability	WSUD for new developments is addressed in the Shire's <i>Guidelines for Development and Subdivision of Land and Planning Policy No. 39: Public Open Space</i> . Given that the <i>Guidelines</i> were compiled in 2008, information relating to WSUD is to be updated in light of more recent research and innovations, or instead

							consider adoption of the Institute of Public Works Engineering Australia's <i>Guidelines for Subdivisional Development</i> , with regional variations, to replace the Shire's <i>Guidelines</i> .
Irrigation and landscape design / Facilities	1.17		Ensure water efficiency initiatives are included in any new or major refurbishment projects within the Shire eg. <i>McLean Park Precinct Plan, Sport and Recreation Strategic Plan, Plane Tree Precinct Plan</i> , new industrial area. This should include investigation of non-scheme water sources for irrigation, water efficient irrigation and landscape design, rain water tanks and greywater reuse.	Ongoing	Ongoing	Finance and Administration Infrastructure Services Planning and Sustainability	To include development of a standard terms of reference for new and major refurbishment projects. Consider incentives and/or support for the installation of rainwater tanks at businesses within the new industrial area.
Landscape design	1.18		At least 10 % of existing Shire gardens within the central business district which feature only non-native species to be converted to waterwise gardens that use only native species.	To be completed	2018/19	Parks and Gardens	In accordance with recommendations from the Shire's <i>2014/15 Community Needs and Customer Satisfaction Survey Report</i> .
Irrigation and landscape design	1.19		Investigate non-scheme sources of water for irrigating parks and gardens eg. bore, rainwater tanks.	To be completed	Ongoing	Asset management Sustainability Services Infrastructure Services	Include any opportunities in the Shire's Annual Budget considerations.
Monitoring	1.20		Install automated swipe card access to the Zimmerman Street Standpipe.	To be completed	2018/19	Infrastructure Services	Access to the standpipe is via a "H" (fire) keyed lock and largely relies on an honesty system to account for water use by external parties. In 2016/17, only 47% of water use could be attributed to external parties. Install a remotely-read automated card access system (standpipe controller) to the standpipe in order to recoup water use costs from external parties and analyse use. Note this recommendation may be reviewed depending on the outcomes of the Water Corporation's Fixed Standpipe Review (in progress). <i>Budget implications:</i> A standpipe controller costs approximately \$15,000 (excl. GST) (including installation). Ongoing software costs are \$700 (excl. GST)

							annually.
Facilities/ Monitoring	1.21		Review use (by the Shire and external users) of fixed standpipes.	Ongoing	2018 and ongoing	Asset management Infrastructure Services	Ensure use is in accordance with the type of standpipe. Note this recommendation may be reviewed depending on the outcomes of the Water Corporation's Fixed Standpipe Review (in progress).
Community engagement	2.1		Develop an information sheet to support the Shire's verge policy.	Ongoing	2018	Sustainability Services Infrastructure Services	Verge treatments within residential areas are addressed in the Shire's <i>Activities on Thoroughfares and Trading in Public Places Local Law</i> and <i>Guidelines for Development and Subdivision of Land</i> , and include waterwise components. Develop an information sheet to support the local law and guidelines (draft commenced).
Community engagement	2.2	√	Engage with households and businesses and promote water efficiency.	Ongoing	Ongoing	Sustainability Services	Water efficiency information is included as relevant in the Shire's newsletter in the Denmark Bulletin newspaper and available on the Shire's website eg. available rebates, imposed water restrictions, resources for further information. The Shire supported waterwise gardening workshops in 2015 and 2016, and training for gardening staff from local institutions in 2015. A waterwise demonstration garden was constructed at the Morgan Richards Community Centre in 2016. Future activities may include: workshops, training opportunities for businesses, incentives, information packs for new businesses, engagement with the Chamber of Commerce, library resources, promotion of the Waterwise program (eg. Waterwise businesses), waterwise garden competitions, provision of educational information through normal Council channels. Specific information can include: water saving in holiday homes, leak identification and dust management measures (construction).

							<i>Budget implications:</i> the Shire's annual budget currently provides \$2,500 (excl. GST) for sustainability and environmental education (Account no. 1060162).
Community engagement	2.3	√	Engage with local schools on water efficiency and sustainability programs.	Ongoing	Annually	Sustainability Services	<p>In 2015, the Shire supported waterwise garden training for landscaping staff, and invitations were extended to the local schools.</p> <p>Future activities may include: promotion of the Waterwise Schools program, assistance with funding applications for water efficiency works, local water awards, competitions (eg. colouring), training opportunities for staff and incentives. There may also be opportunities to target youth activities through sporting clubs (eg. Surf Life Saving Club), youth groups and at school events.</p> <p><i>Budget implications:</i> the Shire's annual budget currently provides \$2,500 (excl. GST) for sustainability and environmental education (Account no. 1060162).</p>
Community engagement	2.4	√	Provide information on the installation and local regulation of greywater systems and rainwater tanks where appropriate	Ongoing	2019 and ongoing	Planning and Sustainability Environmental Health	<p><i>Planning Policy No. 40 Rainwater Tanks and Greywater Re-use Systems</i> encourages landowners, developers and builders to incorporate residential rainwater tanks and greywater re-use systems. The Policy is available on the Shire's website and will be reviewed as part of the new Local Planning Scheme No. 4 process.</p> <p>An information sheet will be developed to support the Policy.</p> <p>All new rainwater tanks over 5,000 L require a building permit. Consider a reduced building permit fee for new rainwater tanks. This may only apply to tanks where scheme water is already available or for any new tank.</p>
Community engagement	2.5		Identify waterwise champions of various ages from the community to show peer leadership and help educate the community about waterwise behaviour.	To be completed	Ongoing	Sustainability Services	For example, Surf Life Saving Club youth member.

8. Management endorsement and Water Corporation and Department of Water and Environmental Regulation acceptance

Endorsement of Water Efficiency Action Plan

Shire of Denmark:

a)	Will implement the water saving measures stated in Section 5 of the Water Efficiency Action Plan and ensure employees and contractors assist in implementing actions.		
c)	Acknowledges that the Water Corporation and/or Department of Water and Environmental Regulation may comment on the WEAP and/or request additional information relating to the WEAP.		
d)	Acknowledges that the Water Corporation and Department of Water and Environmental Regulation will monitor the WEAP and failure to meet requirements of the program may result in the withdrawal of Waterwise endorsement.		
e)	Will submit an annual report, in accordance with Section 5 (Action Plan), detailing progress made on the WEAP in order to maintain endorsement as a Waterwise Council		
Name	Bill Parker		
Position	Chief Executive Officer		
Signature		Date	

Water Corporation and Department of Water and Environmental Regulation Acceptance of WEAP

Water Corporation and Department of Water and Environmental Regulation has reviewed and accepted the WEAP. With acceptance of this WEAP Shire of Denmark will be eligible for endorsement as a Waterwise Council

Water Corporation:

Name			
Position			
Signature		Date	

Department of Water:

Name			
Position			
Signature		Date	
Document Number			

