Water Efficiency Plan

Adopted 6 March 2012

STRATHFIELD COUNCIL

Table of Contents

Introduction

Organisational Water Use Profile

Strathfield Municipal Council is a medium sized Council located in Sydney's Inner West. Council is approximately 14.1 square kilometres in size and has an estimated population of 36,911 as at June 2010. Strathfield Council provides a broad range of services and owns a number of facilities including parks, sports ovals and club houses, a golf course, libraries, childcare centres, a works depot (including a native plant nursery), town hall, council chambers, administration offices, and a community centre.

Of all Council facilities, management of public open space (parks, ovals and the Hudson Park Golf Course) makes up around 87% of Council's total water consumption. This usage is attributed to the irrigation of playing surfaces and landscaped areas. The average rainfall for the area is 958mm per annum and in the past, Council has relied almost entirely on town water to meet the remaining demand for irrigation for these outdoor facilities.

Strathfield Council's total water usage for all facilities in the 2010/11 financial year was 49,776 kL. The cost effective projects identified in this plan are estimated to provide water savings of 19,560 kL per annum, representing a reduction of 39% of Council's total annual water usage. Strathfield Council's water usage target for the next four years is therefore to reduce annual water consumption by 39% from 2010/11 levels.

Commitment to Water Efficiency

Strathfield Council has a strong commitment to sustainability. A key strategic direction is for Council to position itself as a leader in sustainability initiatives. Strathfield Council has also partnered with Sydney Water through the Every Drop Counts Program and the Irrigation and Landscape Efficiency Project (ILEP) to identify and deliver a range of projects and programs targeting water efficiency within council and in the broader community.

In 2007, Strathfield Council prepared a Water Savings Action Plan that detailed steps for Council to reduce water consumption over the period 2007-2011. A number of actions identified in the 2007 Water Savings Action Plan have been implemented, as shown in Table 1 below.

In addition to the actions implemented from the 2007 Water Savings Action Plan, a number of additional water efficiency projects have been identified by Council staff within Council's organisational sustainability improvement programs. These projects are already in the process of being implemented and have been outlined in this plan. These additional initiatives will result in significant savings over the life of this plan and beyond. All projects have been assessed against quadruple bottom line (QBL) principals and have a particularly strong financial grounding. This process has been integral in ensuring organisational sustainability of water efficiency assets and initiatives.

Contents and Structure of the Plan

Strathfield Council Water Efficiency Plan 2012 aims to build upon these achievements by identifying and detailing further water conservation actions for Council's highest water consuming facilities. The plan outlines the processes undertaken to assess Council's current position including the details of audits undertaken at Council's top ten water consuming facilities. Both management actions and site specific actions are highlighted that Council may implement over the next four years to reduce and manage water usage in its top ten water using facilities.

Council has put in place, a set of principles that govern the selection of projects and recommendations for implementation. Projects and initiatives are assessed against social, economic, environmental, and civic leadership indicators. As such, the potential implementation of recommendations in this plan will be subject to this assessment which is affected by the availability of recourse, the potential for partnerships with external organisations, changes in community demand, environmental changes, the development of new technologies and the price of water.

The Plan has been prepared in accordance with the Local Council Guide for Water Efficiency Plans (DECCW 2010).

Previous Water Saving Initiatives at Strathfield Council

Strathfield Council has implemented a number of water efficiency actions over the past 5 years, as summarised in Table 1 below.

Most of the actions implemented over the past 5 years have been aimed at reducing water usage in Council buildings. As a result, water consumption from buildings has decreased and represents a smaller proportion of Council's total usage (~13%) compared with that reported in Strathfield Council's 2007 Water Savings Action Plan (~25%).

The majority of Council's water usage (~87%) is for the irrigation of parks and ovals. As such Council has begun work on upgrading irrigation systems to include greater control and monitoring features across all irrigated facilities. To compliment this, Council is also investing in draught resistant turf at the golf course which will be in place by the end of 2012.

Table 1 – Summary of Water Efficiency Actions Implemented Over the Past 5 Years

Action	Sites	Completion Date
By installing flow controls to hand basin taps and showers, Council has saved over 500 kL/yr.	Hudson Park Oval and Golf Course Strathfield Park Mason Park Airey Park Bark Huts Reserve Begnell Park Works Depot Council Administration Complex Kurralee Childcare Centre Community Centre Main Library	2009
The installation of dual flush toilet cisterns has saved Council over 800 kL/yr.	Hudson Park Oval and Golf Course Mason Park Works Depot Council Administration Complex Kurralee Childcare Centre Community Centre Main Library	2009
The installation of rain water tanks has significantly contributed to more than a halving of water use at the Works Depot and Administration Complex.	Hudson Park Oval and Golf Course Mason Park Airey Park Works Depot Council Administration Complex Main Library	2007-2009

Action	Sites	Completion Date
The stormwater harvesting system installed at Mason Park will collect and treat stormwater for the purposes of field irrigation. This project is significant as treats and utilises runoff from an industrial area which is adjacent to an internationally significant wetland.	Mason Park	2010
Leaking amenities and irrigation systems at a range of facilities have been repaired as part of Council's ongoing monitoring and maintenance activities.	Hudson Park Oval and Golf Course Airey Park Bark Huts Reserve Works Depot Strathfield Park Cooke Park	2007
A remote irrigation control system has already been installed at two facilities. This technology continues to be rolled out across Council's Parks.	Hudson Park Oval and Golf Course Strathfield Park	2011
Installed a water recycling system for the truck wash bay	Works Depot	2009
Installed water tanks to collect rainwater for the truck wash bay	Works Depot	2008
Improvements to the watering system in the plant nursery	Works Depot	2007-2011
Installed signage to encourage users to use water wisely and to report leaks	Hudson Park Oval and Golf Course Works Depot Council Administration Complex Kurralee Childcare Centre Community Centre Main Library	2009-2011

In addition to the works listed above, Council has commenced work on a range of irrigation efficiency projects identified by Sydney Water, independent consultants and Council staff. These projects are included in Table 5 and will result in a saving of over 19,000kL/yr. The success of these projects will depend heavily on the long term management of these assets to ensure the systems are utilised to their fullest.

Water Use Management

A water management review was conducted to assess the systems that Strathfield Council has in place for managing water consumption. The review utilised the recommended management actions outlined in the Local Council Guide for Water Efficiency Plans (DECCW 2010) as a basis for recommendations.

A number of management actions have already been implemented which provide Council with a strong foundation to work from in developing new practices. These actions include:

- Council maintains a central record of all water consumption, leakage and anomalies to allow both organisational and site specific monitoring.
- Signage/stickers are visible in all council amenities inviting users to reduce water wastage and report leaks.
- Leakages are quantified across major facilities and repaired. To improve this measure, Council could consider conducting regular audits of Councils top 20 water consuming facilities.

The following actions were identified as management practices that would help develop Council's management of water consumption.

- Develop water efficiency KPIs for all council sites and examine every 6 months. Council can tailor the service provided by Planet Footprint to automatically generate this action.
- Specify five star water efficient fixtures for every new council development or refurbishment.
- Efficiency of all water using fixtures to be recorded in council's Asset Register.
- Put in place a regular, proactive maintenance regime for water using fixtures at all council sites.
- Once water efficiency KPIs are put in place for facilities, these can then be integrated into facility managers KPIs.
- Include water use management as a regular agenda item at management meetings.

By implementing these actions, Council will be able to strengthen its continued commitment to water use management. These steps are important to ensure that Council's significant investment in water efficiency assets yields the best return for the community.

Council's Top Ten Water Using Sites

Strathfield Council's total water usage for all facilities in the 2010/11 financial year was 49,776 kL. The top eleven water using sites for 2010/11 are shown in Table 3 below, and account for approximately 94% of Council's total water usage. Note that the Flats at 1 Loftus Crescent Homebush are not included in the top ten ranking, even though they have the 6th highest water usage. This is because the flats are leased out to private residential tenants and Council does not exercise operational control over water use in this facility. Water costs are recovered through the rental payments from the property.

Table 3 – Strathfield Council's Top Ten Water Using Sites

Facility	2010/11 Water Usage (kL pa)	Rank	Current Water Usage KPIs	Sydney Water Benchmark KPI for Similar Facilities
1. Hudson Park Oval & Golf Course	19,928	1	1.66 kL/m^2 per annum*	0.5 kL/m^2 per annum
2. Strathfield Park	7,622	2	0.35 kL/m^2 per annum*	0.3 kL/m^2 per annum
3. Mason Park	5,551	3	0.25 kL/m^2 per annum*	0.3 kL/m^2 per annum
4. Airey Park	5,491	4	0.29 kL/m^2 per annum	0.3 kL/m^2 per annum
5. Bark Huts Reserve	3,798	5	0.196 kL/m^2 per annum	0.3 kL/m^2 per annum
6. Loftus Crescent Flats	1,286	Not Assessed	-	-
7. Begnell Park	983	6	0.09 kL/m^2 per annum	0.3 kL/m^2 per annum
8. Strathfield Works Depot	665	7	174 L/person/day*	40 L/person/day
9. Council Admin Complex	637	8	0.22 kL/m^2/year; 26 L/person/day	1.2 kL/m^2/year; 40 L/person/day
10. Kurralee Childcare Centre (Account name = Melville Reserve and / or Scout Hall)	552	9	37 L/person/day	40 L/person/day
11. Strathfield Community Centre	416	10	0.83 kL/m^2/year	1.2 kL/m^2/year

* = based on annual average water usage over past 6 years.

The water Key Performance Indicators (KPIs) for Bark Huts Reserve, Begnell Park, Council Admin Complex, Kurralee Childcare Centre and the Community Centre are already better than the Sydney Water benchmarks for similar Council facilities. This indicates that these facilities are performing well in water efficiency so there are unlikely to be many significant opportunities to improve water efficiency at these sites. The KPIs for Strathfield Park, Mason Park and Airey Park are around the Sydney Water benchmarks for similar Council facilities, which indicates that although their water efficiency is relatively good, there still may be room for improvement.

The KPIs for Hudson Park Oval & Golf Course and the Works Depot are significantly higher the Sydney Water benchmarks for similar Council facilities. This indicates that Council should focus its water efficiency efforts on these facilities. At Hudson Park Oval & Golf Course, some significant irrigation and landscaping upgrades are currently in the process of being implemented and are expected to significantly reduce the site's water usage. At the Works Depot, a number of significant water saving initiatives have previously been implemented. However, the site is still significantly above the Sydney Water benchmark for Council Depots. This may be due to the native plant nursery on the site, which may be increasing the site's water usage relative to other Council Depots. It is recommended that the nursery's water usage be separately sub-metered so that its water usage can be better monitored and managed.

Water Audits of Strathfield Council's Top Ten Sites

Water audits of Strathfield Council's top ten water using sites were conducted and individual site reports are provided in Appendix A.

Water costs in the site reports are based on the current Sydney Water usage price of $2.103/kL. However, it should be noted that Sydney Water are proposing price increases over the next four years, as detailed below. These proposed price rises are currently being reviewed by the Independent Pricing and Regulatory Tribunal (IPART).

Table 4 – Sydney Water's Proposed Water Usage Prices

	2011-12	2012-13	2013-14	2014-15	2015-16
Water Usage Price ($/kL)	2.103	2.200	2.250	2.300	2.350

Summary tables of cost effective and potentially cost effective water saving projects for Strathfield Council are provided in Tables 5 and 6 below.

The cost effective projects identified in Table 5 will result in water savings of 19,560 kL per annum, representing a reduction of 39% of Council's total annual water usage.

It is recommended that Council consider inclusion of these projects in the Operational Plan and Delivery program over the next four years.

The potentially cost effective projects identified in Table 6 would provide additional water savings of 4,090 kL per annum, representing a further 8% reduction of Council's total annual water usage. These are projects that Council will consider implementing over the next 4 years.

Summary of Cost Effective Projects at Strathfield Council

Project description	Site(s)	Cost to implement	Savings kL/yr	Water Savings $/yr	Payback (yrs)	Planned completion date
Hudson Park Oval & Golf Course Irrigation upgrades, including: a) basic repairs/ maintenance; b) installation of variable speed drives on the irrigation pumps to allow the operator to control water pressure; c) installation of "Cloudmaster" irrigation controls; d) installation of a new weather station to allow irrigation systems to be shut down in the event of rain; e) Soil moisture sensors to allow for automatic shut-down functions when moisture content is too high; f) Tree and Root Pruning; g) Re-turf course greens and tees with drought tolerant grass	Hudson Park	$170,000	10,560	$22,208 (+$3,412 pa maintenance savings and $20,000 pa savings on fertilizer & chemicals)	3.7	Dec 2012
Undertake leakage assessments to identify and repair any water leaks	Top Ten Sites	No Capital Cost – Labour costs only	TBC	TBC	-	On-going
Upgrade/expansion of Cloudmaster Irrigation controls and maintenance/ replacement of irrigation sprinkler heads/ nozzles as recommended in ILEP Irrigation Assessment.	Strathfield Park; Mason Park; Airey Park; Bark Huts Reserve	$74,810	9,000	$18,926 (+$3,000 pa labour saving and $970 pa electricity saving)	3.3	Dec 2012
Install water meters to monitor water use: • Plant nursery • Main Depot building rainwater tanks • Wash bay rainwater tanks • New SES building	Works Depot	$1600 ($400 / meter)	-	-	-	June 2013
Total		**$246,410**	**19,560**	**$41,134 (+$27,382 other savings)**	**3.6**	**-**

Summary of Potentially Cost Effective Projects at Strathfield Council

Project description	Site(s)	Cost to implement	Savings kL/yr	Savings $/yr	Payback (yrs)
Replace existing shower heads with 5 star WELS rated shower heads (or alternatively, install flow restrictors to reduce shower flow to <6l/min)	Hudson Park Rugby Club – 12 shower heads	$960 (~$80/ shower)	52.6	$111	8.7
	Strathfield Park – 8 shower heads	$640	35	$74	8.7
	Mason Park – 4 shower heads	$320	17.5	$37	8.7
	Airey Park – 10 shower heads	$800	43.8	$92	8.7
	Bark Huts Reserve – 8 shower heads	$640	30	$63	10.2
	Works Depot – 4 shower heads in male amenities	$320	12	$25	12.7
	Total	**$3,680**	**190.9**	**$402**	**9.2**
Install 4 star (or better) WELS rated dual flush toilet cisterns in place of existing single flush units	Strathfield Park – 4 cisterns	$1200 (~$300/ cistern)	95	$200	6.0
	Airey Park – 3 cisterns	$900	71.2	$150	6.0
	Bark Huts Reserve – 3 cisterns	$900	60.8	$128	7.0
	Begnell Park – 4 cisterns	$1200	62.4	$131	9.1
	Works Depot – 1 cistern	$300	16.25	$34	8.8
	Total	**$4,500**	**305.65**	**$643**	**7.0**
Install rain water tanks to harvest rainwater from roofs for toilet flushing and/or irrigation (include water meter). It should be noted that installation of new rainwater tanks and existing tanks require ongoing monitoring and maintenance, that will need to be accounted for.	Hudson Park – 2 tanks (Proshop and Rugby Club)	$8,000 (~$4,000/ tank)	360	$757	10.6
	Strathfield Park	$4,000	175	$368	10.9
	Bark Huts Reserve	$4,000	119	$249	16.0
	Begnell Park	$4,000	109.2	$230	17.4
	Kurralee Childcare Centre (tank already installed, just needs to be re-connected to toilets)	$1,000	87.5	$184	5.4
	Community Centre	$4,000	65.7	$138	29.0
	Total	**$28,000**	**916.4**	**$1,926**	**14.5**
Switch water off to existing urinals and employ eco-cube system	Strathfield Park	$600	28	$58	10.3
	Works Depot	$600	18	$38	15.8
	Total	**$1,200**	**36**	**$96**	**12.5**

Install rain, wind and soil moisture sensors to allow for automatic shut-down of the irrigation system when moisture content is too high.	Strathfield Park	$9,000	714	$1,501	6.0
	Mason Park	$9,000	529	$1,113	8.1
	Airey Park	$9,000	439	$923	9.8
	Bark Huts Reserve	$9,000	354	$744	12.1
	Total	**$36,000**	**2,036**	**$4,281**	**8.4**
Install water meters on existing rainwater tanks to monitor rainwater collection and usage, and to determine whether there would be any benefit in installing additional tanks.	Mason Park	$150	-	-	-
	Airey Park	$150	-	-	-
	Council Admin Complex	$150	-	-	-
	Total	**$450**	**-**	**-**	**-**
Turf and irrigation upgrades as recommended in ILEP Irrigation Assessment.	Begnell Park	$62,860	605	$1,272	49.4
Undertake investigation of the ability to harvest water from the plant nursery	Works Depot	-	-	-	-

Appendices – Water Audit Reports for the Top Ten Sites

Appendix A – Hudson Park Oval and Golf Course

Appendix B – Strathfield Park

Appendix C – Mason Park

Appendix D Airey Park

Appendix E – Bark Huts Reserve

Appendix F – Jim Begnell Park

Appendix G – Strathfield Works Depot

Appendix H – Strathfield Council Administration Complex

Appendix I – Kurralee Childcare Centre

Appendix J – Strathfield Community Centre

Appendix A - Hudson Park Oval and Golf Course

Hudson Park Oval and Golf Course is located on a 16 hectare property on Arthur Street Strathfield. Course facilities include an 18-hole golf course with two practice greens, driving range and pro shop with amenities. Hudson Park Oval and rugby clubhouse is also supplied by one of the golf course's meters. The course greens have a total area of 8,000 m2, and the tees have a total area of 7,000 m2. The course has no alternative water supply and is fully dependant on town water for irrigation.

Hudson Park Oval and Golf Course is Strathfield Council's largest user of water. A number of minor water efficiency initiatives have previously been implemented at Hudson Park Oval and Golf Course, including:

- Fixed leaking amenities
- Installed flow controls to the hand basin taps
- Installed dual flush toilet cisterns
- Installed a rain water tank at the greenskeeper's building
- Installed signage to encourage users to use water wisely and to report leaks.

A full irrigation assessment has recently been conducted for Hudson Park Oval and Golf Course under the ILEP Program, and were identified a number of cost effective opportunities to significantly improve the water efficiency of the irrigation systems. These are listed in Table A4 below. The irrigation upgrades which include the returfing of the greens with a draught resistant grass and a range of landscaping measures are currently in the process of being implemented and are expected to significantly reduce the site's water usage.

Table A1 – Baseline Water Use

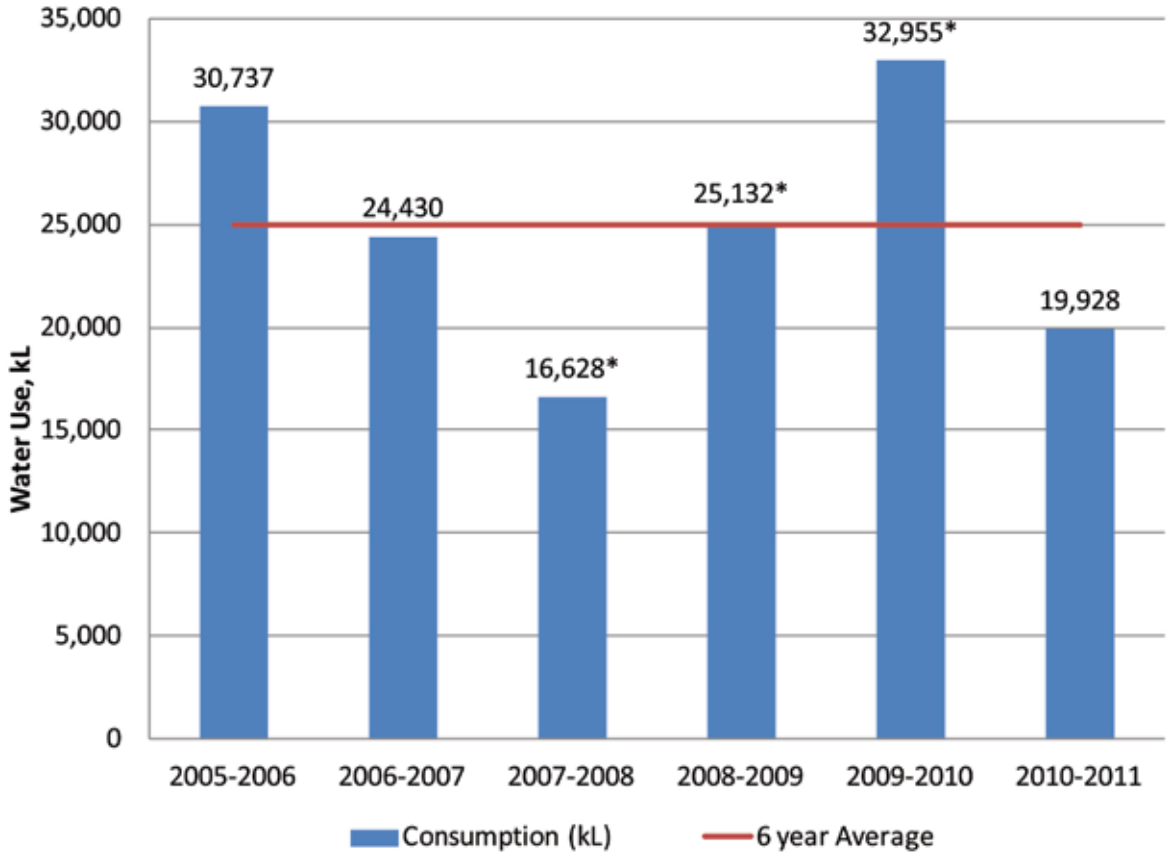
Site Name	Hudson Park Oval and Golf Course
Site Address	Arthur Street, Strathfield
Water account number	3924 239
Water Meter #1 – Proshop	EDOA0181
Water Meter #2 – Amenities/shed	BDXA1637
Water Meter #3 – Mitchell Rd Pumpstation (No longer in use, replaced by Water Meter #6)	EDYK0028
Water Meter #4 – Not in use	FDNB002
Water Meter #5 – Arthur Street Pumpstation	EDZH0077
Water Meter #6 – Mitchell Rd Pumpstation	GGAE0008
Baseline selection period	July 2005 – July 2011
Expected ongoing annual water consumption (kL)	24,968
Method used and justification for baseline calculation	Average Annual Usage over Past 6 Years
Business Activity Indicator (BAI) – Irrigated Area of Tees and Greens	15,000 m^2
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	1.66 kL/m^2 per annum

Note that the KPI for Hudson Park Golf Course of 1.66 kL/m^2 per annum is significantly higher than the benchmark for golf course tees and greens recommended by Sydney Water of 0.5 kL/m^2 per annum.

(see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

However, the implementation of irrigation and landscaping upgrades at the site (currently underway) is expected to reduce annual water usage by 10,560 kL per annum, which will improve the site's water KPI to closer to the Sydney Water benchmark for golf courses.

Figure A1 – Historical Water Consumption for Hudson Park Oval and Golf Course



* Water usage for 2007/08, 2008/09 and 2009/10 contains estimates due to a faulty meter at the Mitchell Rd Pumpstation.

Table A2 – Fixtures Inventory

Site name: Hudson Park Oval & Golf Course			
Fixture type	Number of fixtures	Flowrate	Conditions/notes
Golf Pro Shop			
Wall mounted cistern - Urinal	1		-
Hand basin- Hot & Cold	4	Gem Flow 4ltr	-
Tap	5	Gem Flow 4ltr	One tap leaking continuously – maintenance required.
Toilet- Dual Flush	4	4.5/ 3Ltr	
Shower	2		The shower heads are old but are rarely used
Hudson Park Greenkeepers Shed and Amenities			
Tap	2	Gem Flow 4ltr	-
Toilet- Dual Flush	1	4.5/ 3Ltr	-
Sink	1	Gem Flow 4ltr	-
Hand basin- Hot & Cold	1	Gem Flow 4ltr	-
Water Tank	1		-
Hudson Park Rugby – Club and Amenities*			
Urinal	2		-
Hand basin- Hot & Cold	7	unknown	-
Tap	8	unknown	-
Toilet- Dual Flush	6	unknown	-
Sink	1	unknown	-
Shower	12	unknown	-

* Note – Data for the Rugby Club is based on Facility Component Reports as there was no access available to the clubhouse.

Figure A3 – Hudson Park Oval & Golf Course Water Use Breakdown

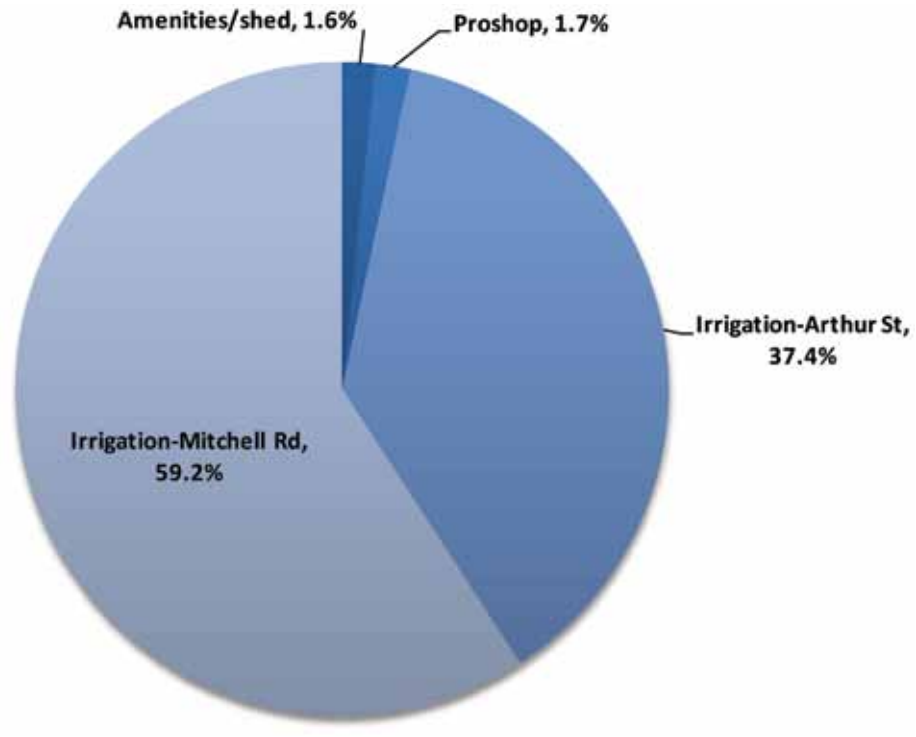


Table A3 – Water Use Breakdown

Water Use	Measurement Method	% Total Billed Usage	Annual Usage (kL/yr)	Annual Cost $/yr
Irrigation	Utility meter readings from 2010/11	96.6%	24,119	$ 50,722
Amenities – public toilets, showers, taps etc	Utility meter readings from 2010/11	3.4%	849	$ 1,785
Leakage	-	TBC	TBC	TBC
	Total accounted usage	-	24,968	$ 52,507
	Billed annual usage	-	24,968	$ 52,507
	Unaccounted usage	-	0	0

Assumptions:

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Table A4 – Hudson Park Oval and Golf Course Water Savings Opportunities

Project description	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Fixed leaking amenities					2007
Installed flow controls to the hand basin taps					2009
Installed dual flush toilet cisterns					2009
Cost effective opportunities					
Golf Course Irrigation upgrades, including: basic repairs/ maintenance; installation of variable speed drives on the irrigation pumps to allow the operator to control water pressure; installation of "Cloudmaster" irrigation controls; installation of a new weather station to allow irrigation systems to be shut down in the event of rain; Soil moisture sensors to allow for automatic shut-down functions when moisture content is too high; Tree and Root Pruning; Re-turf course greens and tees with drought tolerant grass.	$170,000	10,560	$22,208 (+$3,412 pa maintenance savings and $20,000 pa savings on fertilizer & chemicals)	3.7	December 2012
Undertake a leakage assessment to identify and repair any water leaks	$0	NA	NA	NA	On-going
Potentially cost-effective opportunities					
Determine flow rate of shower heads in the Hudson Park Rugby Club change rooms, and if necessary replace with 5 star WELS rated shower heads (12 showers)	$960 ($80/ shower)	52.6	$111	8.7	TBC
Install additional rain water tanks at the proshop and/or rugby club to harvest rainwater from the roofs for toilet flushing and/or irrigation (include water meter)	~ $8,000 ($4,000 /tank incl inst.)	360	$757	10.6	TBC

Assumptions:

The existing Hudson Park Rugby Club showers are assumed to be 2 Star WELS rated (>9L/min). Each shower is assumed to be used once per day for 4 minutes. Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix B – Strathfield Park

Strathfield Park is located between Homebush Road and Chalmers Road in Strathfield. The park has an area of 72,587 m2 and consists of sporting fields, passive play areas, basket ball and netball courts and amenities. The irrigated area of the park (i.e. sports fields) is approximately 25,000 m2.

It was noted that flooding occurs relatively frequently in this park.

A number of water efficiency initiatives have previously been implemented at Strathfield Park, including:

- Installed flow controls to taps and shower heads
- Installed "Cloudmaster" remote irrigation controls.

A full irrigation assessment has recently been conducted for Strathfield Park under the ILEP program, and identified a number of cost effective opportunities to improve the water efficiency of the irrigation system, such as maintenance and replacement of sprinkler heads.

Table B1 – Baseline Water Use

Site Name	**Strathfield Park**
Site Address	Chalmers Rd and Homebush Rd
Water account numbers	3922437, 3922438 and 3922439
Water Meter Identifier 1 (3922437) – Homebush Rd	EDUG0217
Water Meter Identifier 2 (3922438) – Chalmers Rd	DDYC0161
Water Meter Identifier 3 (3922439) – Waste Water Connection Fees only	EDUG0217
Baseline selection period	July 2005 – June 2011
Expected ongoing annual water consumption (kL per annum)	8,817
Method used and justification for baseline calculation	Average Annual Usage over Past 6 Years
Business Activity Indicator (BAI) – Irrigated Area	~25,000 m^2
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	0.35 kL/m^2 per annum

Water consumption for irrigation at Strathfield Park is estimated to account for 93.6% of the site's total water use, i.e. 8,253 kL/m^2 per annum. This corresponds to an irrigation KPI for Strathfield Park of 0.33 kL/m^2 per annum, which is close to the benchmark for sports fields in Central Sydney recommended by Sydney Water of 0.3 kL/m^2 per annum (see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

This indicates that the site's water efficiency is relatively good, but that there still may be room for improvement.

Figure B1 – Historical Water Consumption for Strathfield Park

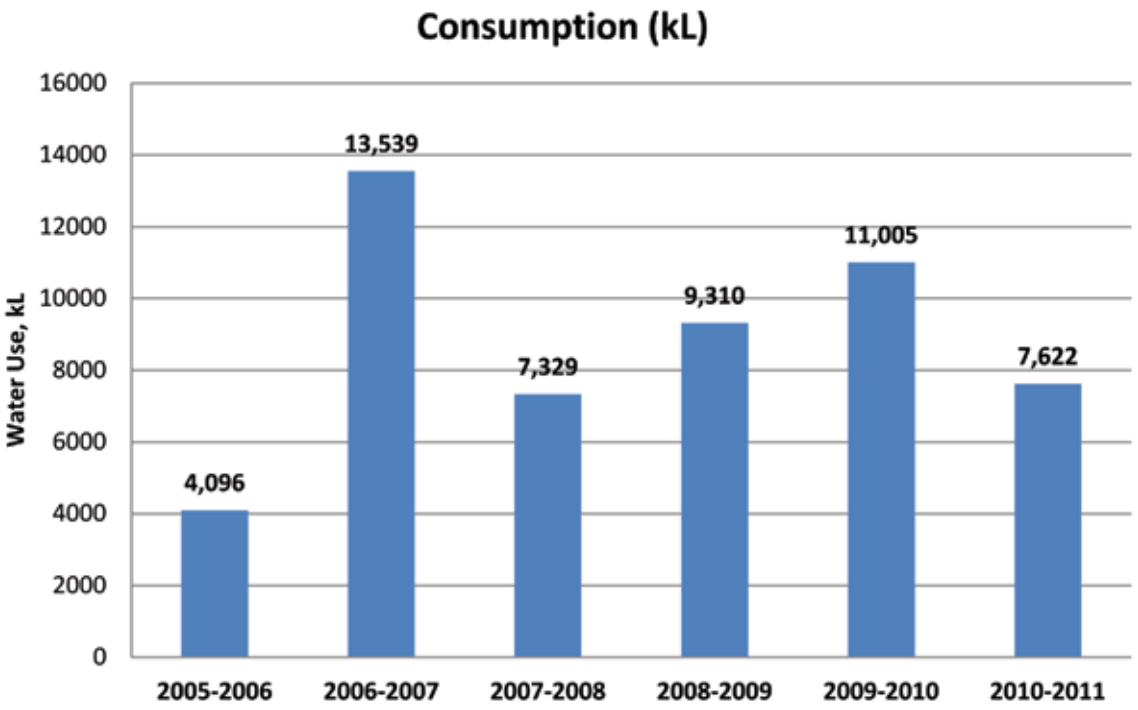


Table B2 – Fixtures Inventory

Site name: Strathfield Park (Clubhouse/Amenities)			
Fixture type	**Number of fixtures**	**Flowrate**	**Conditions/notes**
Urinal – 2 stall	2	2L/stall	
Handbasin – Cold	4	Gem Flow 4ltr	
Taps External (Spring Loaded)	9	Gem Flow 4ltr	
Toilet - Standard	4	>6.5 L/flush	Not dual flush
Sink - Hot & Cold	1	Gem Flow 4ltr	
Showers	8	9 L/min	
External drinking water tap	1		Installed in November 2011.

Figure B3 – Strathfield Park Water Use Breakdown

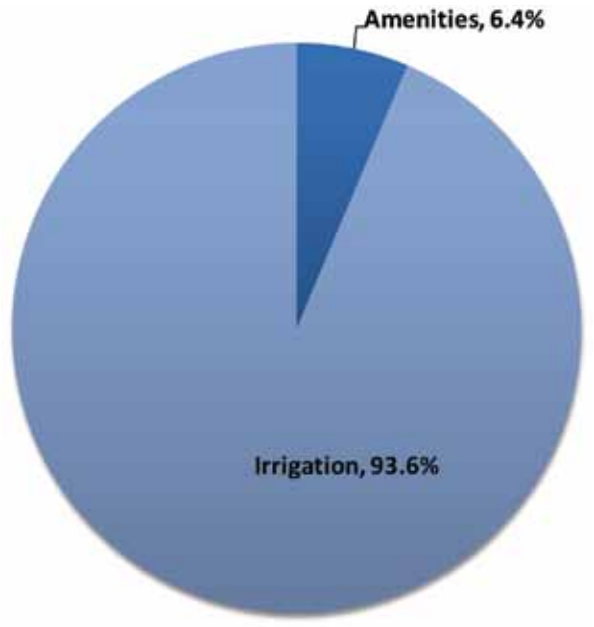


Table B3 – Water Use Breakdown

Water Use	Measurement Method	% Total Billed Usage	Extrapolated Annual Usage (kL/yr)	Annual Cost $/yr
Irrigation	Utility meter readings from 2010/11 minus estimated Amenities use	93.6%	8,253	$ 17,355
Amenities	Estimated by Calculation	6.4%	564	$ 1,187
Leakage	-	-	-	-
	Total accounted usage	-	8,817	$ 18,542
	Billed annual usage	-	8,817	$ 18,542
	Unaccounted usage	-	0	0

Assumptions:

Toilets and hand basins are used every day during the year approximately 10 times a day. Each shower is used once a day for 4 min.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Table B4 – Strathfield Park Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Install flow control to taps and shower heads	$430	12.2	$26	16.5	2009
Installed "Cloudmaster" remote irrigation controls	NA	TBC	TBC	-	2010/11
Cost effective opportunities					
Upgrade/expansion of Cloudmaster controls and maintenance/ replacement of irrigation sprinkler heads/nozzles as recommended in ILEP Irrigation Assessment.	$43,015	~2,000	$4,206 (+ $194 pa electricity savings and $600 pa labour savings)	8.6	June 2012
Undertake a leakage assessment to identify and repair any water leaks	$0	NA	NA	NA	June 2013
Potentially cost-effective opportunities					
Install rain, wind and soil moisture sensors to allow for automatic shut-down of the irrigation system when moisture content is too high.	$9,000	714	$1,501	6.0	TBC
Install 4 star (or better) WELS rated dual flush toilet cisterns in place of the 4 existing single flush units.	$1200 ($300/ cistern)	95	$200	6.0	TBC
Replace existing 8 shower heads with 5 star WELS rated shower heads in the changing rooms.	$640	35	$74	8.7	TBC
Switch water off to existing urinals and employ eco-cube system	$600	28	$58	10.3	TBC
Install rain water tank to harvest rainwater from the club house roof for toilet flushing (include water meter).	$4,000	175	$368	10.9	TBC

Assumptions:

Toilets and hand basins are used every day during the year approximately 10 times a day. Each shower is used once a day for 4 min.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix C – Mason Park

Mason Park is located on Underwood Road in Homebush. The reserve has an area of 67,716 square metres and consists of sporting fields, a bike path, amenities and an ecologically significant saltmarsh wetland. The irrigated area of the park (i.e. sports fields) is approximately 28,300 m2.

A number of water efficiency initiatives have previously been implemented at Mason Park, including:

- Installed flow controls to taps and shower heads;
- Installed dual flush toilet cisterns;
- Installed an underground storm water harvesting system and rain water tanks.

A full irrigation assessment has recently been conducted for Mason Park under the ILEP Program, and identified a number of cost effective opportunities to improve the water efficiency of the irrigation system.

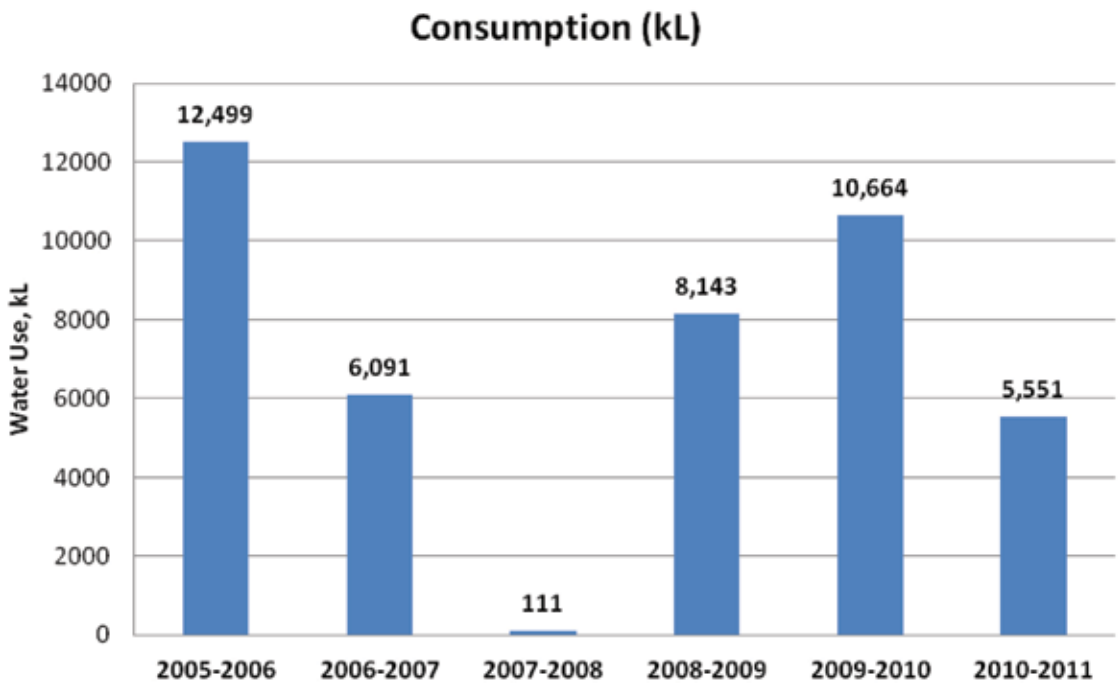
Table C1 – Baseline Water Use

Site Name	**Mason Park**
Site Address	Underwood Rd, Homebush
Water account number	3926856
Water Meter Identifier	EDOH1288
Baseline selection period	July 2005 – June 2011
Expected ongoing annual water consumption (kL)	7,177
Method used and justification for baseline calculation	Average Annual Usage over Past 6 Years
Business Activity Indicator (BAI) – Irrigated Area	~28,300 m^2
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	0.25 kL/m^2 per annum

Water consumption for irrigation at Mason Park is estimated to account for 95% of the site's total water use, i.e. 6,818 kL/m2 per annum. This corresponds to an irrigation KPI for Mason Park of 0.24 kL/m2 per annum, which is better than the benchmark for sports fields in Central Sydney recommended by Sydney Water of 0.3 kL/m2 per annum (see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

As the water KPI for Mason Park is already better than the Sydney Water benchmark, there are unlikely to be many significant opportunities to improve the site's water efficiency.

Figure C1 – Historical Water Consumption for Mason Park



Note that water usage in 2007/08 was unusually low. This was likely due to that fact that the irrigation system was out of service while being upgraded during this period.

Table C2 – Fixtures Inventory

Site name: Mason Park			
Fixture type	**Number of fixtures**	**Flowrate**	**Conditions/notes**
Urinal – 3 stand	1	2L/stall	-
Handbasin- Flow Control - Hot & Cold	4	Gem Flow 4ltr	-
Dual Flush Toilets	5	4.5/3 ltr	-
Sink - Hot & Cold	1	12 ltrs/ Min	-
Showers - Standard	4	9ltr/ Min	-
Rain water tanks	2	-	-

Figure C2 – Mason Park Water Use Breakdown

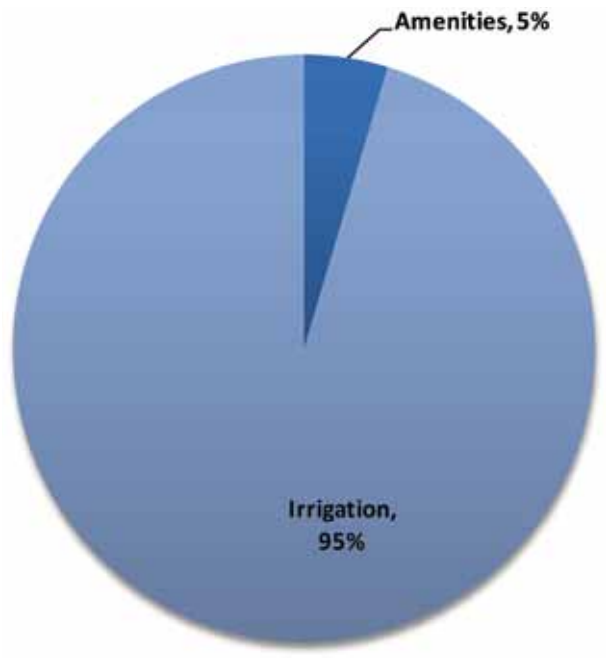


Table C3 – Water Use Breakdown

Water Use	Meas urement Method	% Total Billed Usage	Extrapolated Annual Usage (kL/yr)	Annual Cost $/yr
Irrigation	Utility meter readings from 2010/11 minus estimated Amenities use	95%	6,818	$ 14,339
Amenities – public toilet block	Estimated by Calculation	5%	359	$ 755
Leakage	NA	NA	NA	NA
	Total accounted usage	-	7,177	$ 15,094
	Billed annual usage	-	7,177	$ 15,094
	Unaccounted usage	-	0	0

Assumptions:

Toilets and hand basins are used every day during the year approximately 10 times a day. Each shower is used once a day for 4 min.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Table C4 – Mason Park Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Replaced single flush cisterns with dual flush cisterns	$750	21	$44	17.0	2009
Installed flow controls to taps and shower heads	$410	20.4	$43	9.5	2009
Installed underground storm water harvesting system and rain water tanks	NA	NA	NA	NA	2010
Cost effective opportunities					
Install Cloudmaster irrigation controls and maintenance/replacement of irrigation sprinkler heads/nozzles as recommended in ILEP Irrigation Assessment.	$12,340	~2,500	$5,257	2.3	June 2012
Undertake a leakage assessment to identify and repair any water leaks	$0	NA	NA	NA	June 2013
Potentially cost-effective opportunities					
Install rain, wind and soil moisture sensors to allow for automatic shut-down of the irrigation system when moisture content is too high.	$9,000	529	$1,113	8.1	TBC
Replace existing 4 shower heads with 5 star WELS rated shower heads in the changing rooms.	$320 ($80/ shower)	17.5	$37	8.7	TBC
Connect water meters to Cloudmaster Control System	TBC	-	-	-	TBC

Assumptions:

Each shower is used once a day for 4 min.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix D – Airey Park

Airey Park is located between Bates Street, The Crescent and Kessell Ave in Homebush. The park has an area of 70,630 m2 and consists of a cricket ground, club house, passive play areas, and amenities. The irrigated area of the park (i.e. the sports oval) is approximately 16,300 m2.

A number of minor water efficiency initiatives have previously been implemented at Airey Park, including installation of flow controls to taps and shower heads, and the installation of a small rain water tank for the club house amenities.

A full irrigation assessment has recently been conducted for Airey Park under the ILEP program, and identified a number of cost effective opportunities to improve the water efficiency of the irrigation system, such as maintenance/ replacement of sprinkler heads and the installation of remote irrigation controls.

Table D1 – Baseline Water Use

Site Name	**Airey Park**
Site Address	Bates St, Kessel Ave, The Crescent and Francis St
Water account numbers	3926620, 3926621, 3926622, 3926623 and 3926708
Water Meter Identifier (acc# 3926621) – Airey Park Bates St Homebush (Sports Field and Park Irrigation)	EDUG0300
Water Meter Identifier (acc# 3926708) – Airey Park Gdn Plot The Crescent Strathfield (Garden Plot Irrigation)	EDOH1295
Water Meter Identifier (acc# 3926622) – Arthur Caves Pav Kessell Ave Homebush West (Clubhouse and Amenities)	BGAE2888
Water Meter Identifier (acc# 3926620) – Gdns The Crescent Homebush (Waste Water Connection Fees Only)	CDYE0331
Water Meter Identifier (acc# 3926623) – Toilets Francis St Homebush (Waste Water Connection Fees Only)	NA
Baseline selection period	July 2005 – June 2011
Expected ongoing annual water consumption (kL)	4,652
Method used and justification for baseline calculation	Utility Meter Readings from most recent Financial Year (2010/11)
Business Activity Indicator (BAI) – Irrigated Area	16,300 m^2
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	0.29 kL/m^2 per annum

Water consumption for irrigation at Airey Park is estimated to account for 94.3% of the site's total water use, i.e. 4,389 kL/m2 per annum. This corresponds to an irrigation KPI for Airey Park of 0.27 kL/m2 per annum, which is slightly better than the benchmark for sports fields in Central Sydney recommended by Sydney Water of 0.3 kL/m2 per annum (see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

This indicates that the site's water efficiency is relatively good, but that there still may be room for improvement.

Figure D1 – Historical Water Consumption for Airey Park

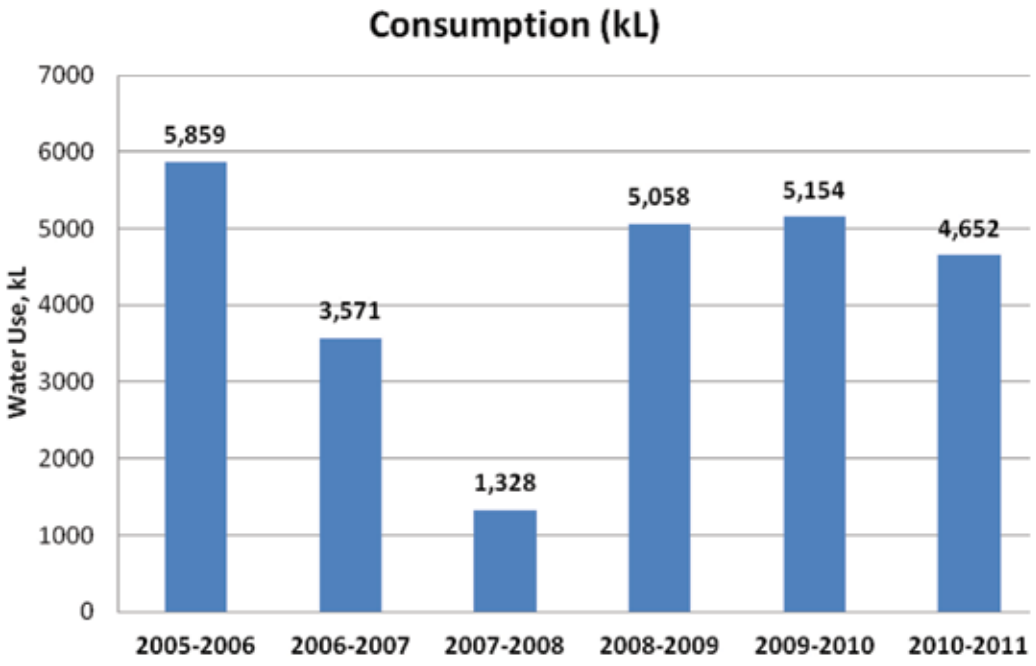


Figure D2 – Hydraulic Diagram

Table D2 – Fixtures Inventory: Airey Park (Clubhouse & Amenities)

Fixture type	Number of fixtures	Flowrate	Conditions/notes
Urinal - Stainless Steel	2	-	-
Handbasin- Hot & Cold	1	Gem Flow 4ltr	-
Handbasin- Cold	2	Gem Flow 4ltr	-
Toilets – Standard – Single flush	3	-	-
Sink - Hot & Cold	1	Gem Flow 4ltr	-
Showers - Hot & Cold	10	9ltr/ Min	-
Bar Sink	1	Gem Flow 4ltr	-
Glass Washer	1	-	-
Dishwasher	1	-	-
Rinser	1	-	-
Tap - Vandal Proof	2	Gem Flow 4ltr	-
Water Tank - Plastic	1	-	

Figure D3 – Airey Park Water Use Breakdown

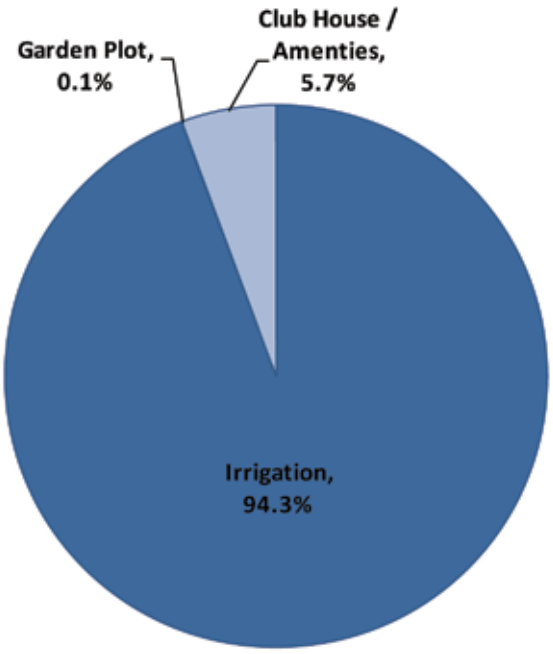


Table D3 – Water Use Breakdown

Water Use	Measurement Method	Extrapolated Annual Usage (kL/yr)	% Total Billed Usage	Annual Cost $/yr
Irrigation	Utility meter readings from 2010/11	4,386	94.3%	9,224
Club House/Amenities	Utility meter readings from 2010/11	263	5.7%	553
Garden Plot	Utility meter readings from 2010/11	3	0.1%	6
	Total accounted usage	4,652	-	9,783
	Billed annual usage	4,652	-	9,783
	Unaccounted usage	0	-	0

Assumptions:

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Table D4 – Airey Park Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Fixed leaking amenities	NA	82	$172	-	2009
Install flow control to taps and shower heads					
Installed rain water tank at the clubhouse					
Cost effective opportunities					
Install Cloudmaster irrigation controls and maintenance/ replacement of irrigation sprinkler heads/nozzles as recommended in ILEP Irrigation Assessment.	$7,155	~2,000	$4,206	1.7	June 2012
Undertake a leakage assessment to identify and repair any water leaks	$0	TBC	-	-	June 2013
Potentially cost-effective opportunities					
Install 4 star (or better) WELS rated dual flush toilet cisterns in place of the 3 existing single flush units.	$900 ($300/ cistern)	71.2	$150	6.0	TBC
Replace existing 10 shower heads with 5 star WELS rated shower heads in the changing rooms.	$800 ($80/ shower)	43.8	$92	8.7	TBC
Install rain, wind and soil moisture sensors to allow for automatic shut-down of the irrigation system when moisture content is too high.	$9,000	439	$923	9.8	TBC
Install separate water meter on the rainwater tank.	$150	-	-	-	TBC

Assumptions:

Toilets are used every day during the year approximately 10 times a day. Each shower is used once a day for 4 min.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix E – Bark Huts Reserve

Bark Huts Reserve is located at Elliott Street in Belfield. The reserve has an area of 34,745 m2 and consists of a sports ground, basket ball courts, play ground and amenities block. The irrigated area of the reserve (i.e. the sports fields) is approximately 19,400 m2.

Some minor water efficiency initiatives have previously been implemented at Bark Huts Reserve, such as the installation flow controls to taps and showers.

A full irrigation assessment has recently been conducted for Bark Huts Reserve under the ILEP Program, and identified a number of cost effective opportunities to improve the water efficiency of the irrigation system, such as maintenance and replacement of sprinkler heads.

Table E1 – Baseline Water Use

Site Name	**Bark Huts Reserve**
Site Address	Elliott Street, Belfield
Water account number	3920918
Water Meter Identifier	BGBF5210
Baseline selection period	July 2005 – June 2011
Expected ongoing annual water consumption (kL)	3,798
Method used and justification for baseline calculation	Utility Meter Readings from most recent Financial Year (2010/11)
Business Activity Indicator (BAI) – Irrigated Area	19,400 m^2
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	0.196 kL/m^2 per annum

Water consumption for irrigation at Bark Huts Reserve is estimated to account for 93% of the site's total water use, i.e. 3,540 kL/m2 per annum. This corresponds to an irrigation KPI of 0.18 kL/m2 per annum, which is better than the benchmark for sports fields in Central Sydney recommended by Sydney Water of 0.3 kL/m2 per annum (see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

As the water KPI for Bark Huts Reserve is already better than the Sydney Water benchmark, there are unlikely to be many significant opportunities to improve the site's water efficiency.

Figure E1 – Historical Water Consumption for Bark Huts Reserve

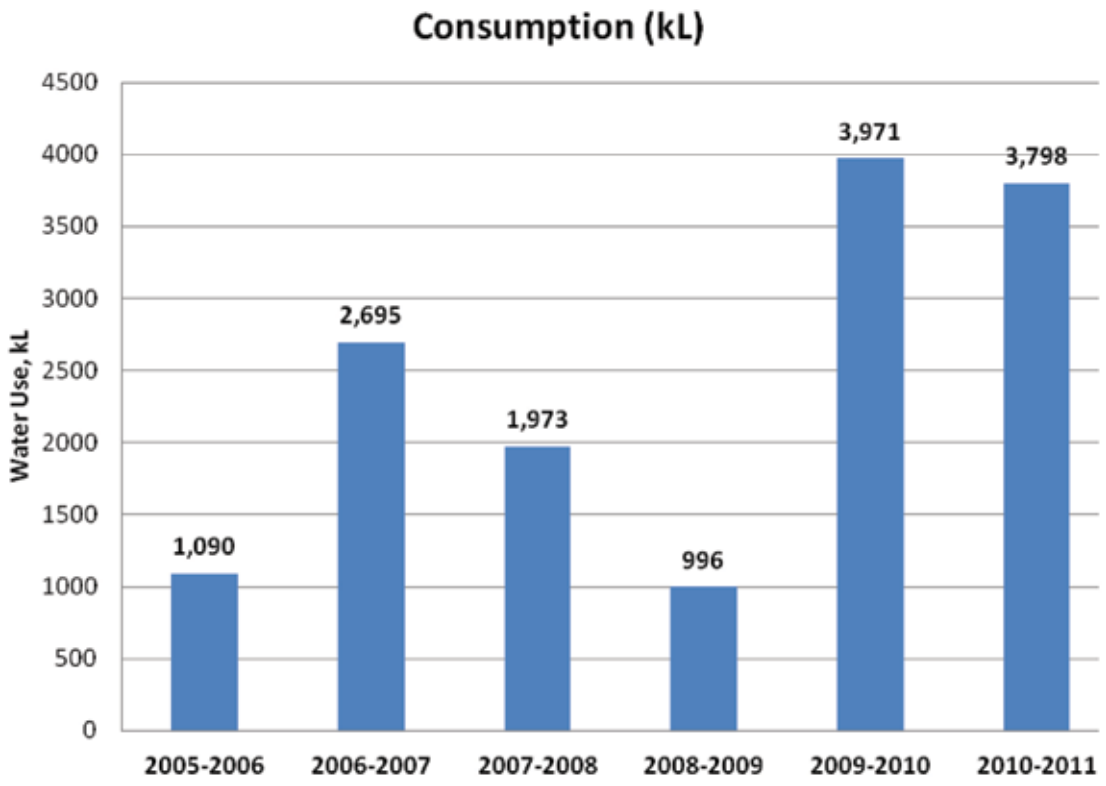


Table E2 – Fixtures Inventory

Site name: Bark Huts Reserve			
Fixture type	**Number of fixtures**	**Flowrate**	**Conditions/notes**
Urinal – 4 stand	1	2L/stall	
Handbasin- Cold	2	Gem Flow 4ltr	
Toilets – Standard – Single flush	3	10ltr	
Sink - Hot & Cold	2	Gem Flow 4ltr	
Showers - Hot & Cold	8	9ltr/ Min	
External Drinking Water Tap	1		

Figure E2 – Bark Huts Reserve Water Use Breakdown

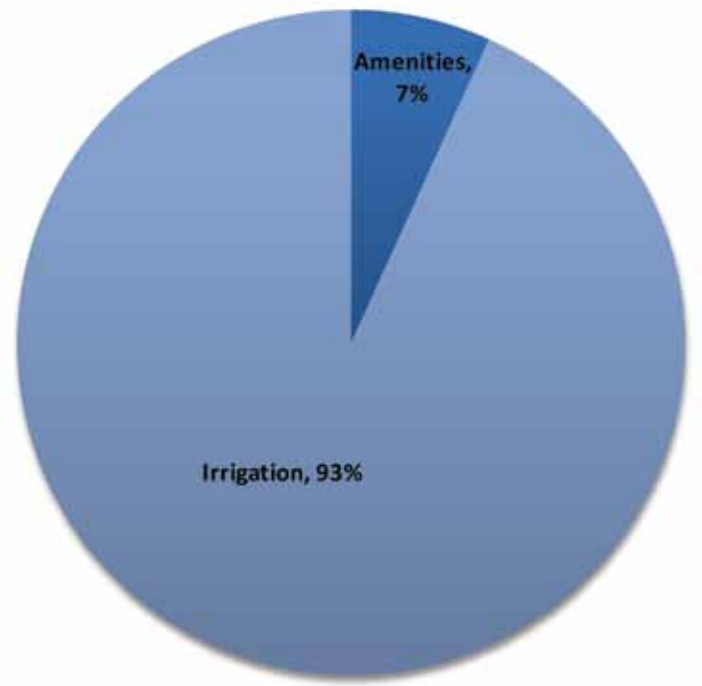


Table E3 – Water Use Breakdown

Water Use	Measurement Method	Extrapolated Annual Usage (kL/yr)	% Total Billed Usage	Annual Cost $/yr
Irrigation	Utility meter readings from 2010/11 minus estimated Amenities use	3,540	93%	$ 7,444
Amenities – public toilet block	Estimated by Calculation	258	7%	$ 543
Leakage	-	NA	NA	NA
	Total accounted usage	3,798	-	$ 7,987
	Billed annual usage	3,798	-	$ 7,987
	Unaccounted usage	0	-	0

Assumptions:

Toilets and hand basins are used every day during the year approximately 10 times a day. Each shower is used once a day for 4 min.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Table E4 – Bark Huts Reserve Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Fix leaking amenities	NA	NA	NA	NA	2007
Installed flow controls to taps and shower heads	$150	1.4	$3	50	2009
Cost effective opportunities					
Install Cloudmaster irrigation controls and maintenance/ replacement of irrigation sprinkler heads/nozzles as recommended in ILEP Irrigation Assessment.	$12,300	~2,500	$5,257 (+ $194 pa electricity savings and $600 pa labour savings)	2.0	June 2012
Undertake a leakage assessment to identify and repair any water leaks	$0	NA	NA	NA	June 2013
Potentially cost-effective opportunities					
Install 4 star (or better) WELS rated dual flush toilet cisterns in place of the 3 existing single flush units.	$900 ($300/ cistern)	60.8	$128	7.0	TBC
Replace existing 8 shower heads with 5 star WELS rated shower heads in the changing rooms.	$640 ($80/ shower)	30	$63	10.2	TBC
Install rain, wind and soil moisture sensors to allow for automatic shut-down of the irrigation system when moisture content is too high.	$9,000	354	$744	12.1	TBC
Install rain water tank to harvest rainwater from the club house roof for toilet flushing (include water meter).	$4,000	119	$249	16.0	TBC

Assumptions:

Toilets and hand basins are used every day during the year approximately 10 times a day. Each shower is used once a day for 4 min.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix F – Begnell Park

Begnell Park is located off Madeline Street, Belfield and consists of a soccer field and a kiosk/ amenities facility. There is currently no permanent irrigation system at Begnell Park, but the soccer field is watered periodically using removable sprinkler heads. The watered area of the park (i.e. the soccer field) is approximately 10,600 m2.

A full irrigation assessment has recently been conducted for Begnell Park under the ILEP Program, and identified a number of opportunities to improve water efficiency, such as turf improvements and the installation of a properly designed permanent irrigation system.

Table F1 – Baseline Water Use

Site Name	**Begnell Park**
Site Address	Public Reserve Sports Field Madeline St, Belfield
Water account number	3923687
Water Meter Identifier	DRYE0210
Baseline selection period	July 2005 – June 2011
Expected ongoing annual water consumption (kL)	983
Method used and justification for baseline calculation	Utility Meter Readings from most recent Financial Year (2010/11)
Business Activity Indicator (BAI) – Irrigated Area	10,600 m^2
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	0.09 kL/m^2 per annum

Water consumption for irrigation at Begnell Park is estimated to account for 83% of the site's total water use, i.e. 811 kL/ m2 per annum. This corresponds to an irrigation KPI for Begnell Park of 0.08 kL/m2 per annum, which is better than the benchmark for sports fields in Central Sydney recommended by Sydney Water of 0.3 kL/m2 per annum (see www. sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

As the water KPI for Begnell Park is already better than the Sydney Water benchmark, there are unlikely to be many significant opportunities to improve the site's water efficiency.

However, Figure F1 below indicates that water usage at Begnell Park has been increasing over the past few years, so there may still be some scope for improvements.

Figure F1 – Historical Water Consumption for Begnell Park

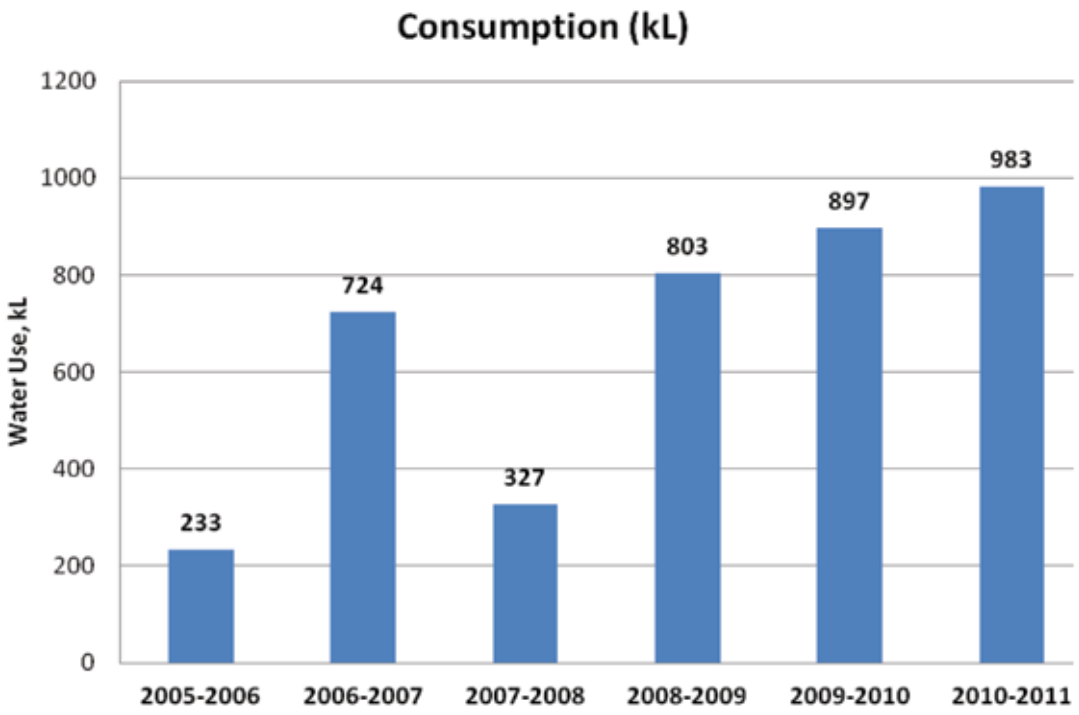


Table F2 – Fixtures Inventory

Site name: Begnell Park			
Fixture type	**Number of fixtures**	**Flowrate**	**Conditions/notes**
Urinal - Stainless Steel	1	2L/stall	
Handbasin/Tap - Hot & Cold	7	Gem Flow 4ltr	Old mixer
Toilets – Standard – Single flush	4	10ltr	

Figure F2 – Begnell Park Water Use Breakdown

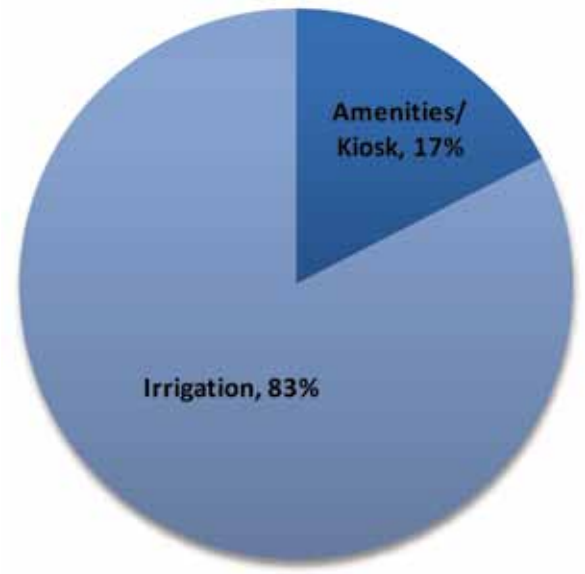


Table F3 – Water Use Breakdown

Water Use	Measurement Method	Extrapolated Annual Usage (kL/yr)	% Total Billed Usage	Annual Cost $/yr
Irrigation	Utility meter readings from 2010/11 minus estimated Amenities use	811	83%	$ 1,706
Amenities/Kiosk	Estimated by Calculation	172	17%	$ 361
Leakage	-	NA	NA	NA
	Total accounted usage	983	-	$ 2,067
	Billed annual usage	983	-	$ 2,067
	Unaccounted usage	0	-	0

Assumptions:

Toilets and hand basins are used every day during the year approximately 10 times a day.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Table F4 – Begnell Park Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date / planned completion date
Previously completed actions over last 5 years					
Installed flow controls to taps	NA	NA	NA	NA	2009
Cost effective opportunities					
Undertake a leakage assessment to identify and repair any water leaks	$0	NA	NA	NA	June 2013
Potentially cost-effective opportunities					
Install dual flush toilet cisterns in place of the existing single flush units.	$1200 ($300/cistern)	62.4	$131	9.1	TBC
Install rain water tank to harvest rainwater from the roof for toilet flushing (include water meter).	$4,000	109.2	$230	17.4	TBC
Turf and irrigation upgrades as recommended in ILEP Irrigation Assessment	Turf improvements (Aerate soil profile - Earthquake machine/ Vertidrain - hollow tyne) $1,060 Install irrigation system $61,800	605	$1,272	49.4	TBC

Assumptions:

Toilets and hand basins are used every day during the year approximately 10 times a day.

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix G – Strathfield Works Depot

The Strathfield Works Depot is located at Weeroona Rd Strathfield. The depot has a total area of 7,108 m2 and consists of a native plant nursery, mechanics workshop, carpenters workshop, wash bay, waste collection and recycling, bulk storage, vehicle and plant parking, store, offices and change rooms. The Works Depot has a staff of approximately 19 people (including the new SES Area).

A number of water efficiency initiatives have previously been implemented at the Works Depot, including:

- Installed a water recycling system for the truck wash bay;
- Installed 4 x 30kL water tanks at the Mechanics Shed to collect rainwater from the roof for the truck wash bay;
- Installed 2 x 20kL water tanks at the Depot Main Office building to collect rainwater from the roof for toilet flushing and the plant nursery;
- Installed flow controls to taps and shower heads;
- Installed dual flush toilet cisterns;
- Improvements to the watering system in the plant nursery.

These initiatives have resulted in a significant decrease in water usage at the site, as shown in Figure G1 below.

Although the installation of rainwater tanks has been an excellent water efficiency initiative at the site, it was noted that there are no meters on these tanks to indicate how much water is being collected/saved. It was also noted that the rainwater tanks on the main office building serving the plant nursery sometimes run dry, suggesting that additional/larger tanks may be required or that the drainage/collection system needs to be improved. Installing a water meter for these tanks would give a better indication of how much water is being collected and where it is being used.

Table G1 – Baseline Water Use

Site Name	Strathfield Works Depot
Site Address	1 Weeroona Rd, Strathfield
Water account number	3918616
Water Meter Identifier	EDMF0031
Baseline selection period	July 2005 – June 2011
Expected ongoing annual water consumption (kL)	1,269
Method used and justification for baseline calculation	Average Annual Usage over Past 6 Years
Business Activity Indicator (BAI)	20 people
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	174 L/person/day

The water KPI for the Works Depot of 174 L/person/day is significantly higher than the best practice benchmark recommended by Sydney Water for Council Depots of 40 L/person/day.

(see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

However, it should be noted that the Strathfield Works Depot has a plant nursery that may increase the site's water usage relative to other Council Depots.

Nevertheless, the water KPI benchmark indicates that there should be scope to improve the water efficiency of the site.

Figure G1 – Historical Water Consumption for the Works Depot

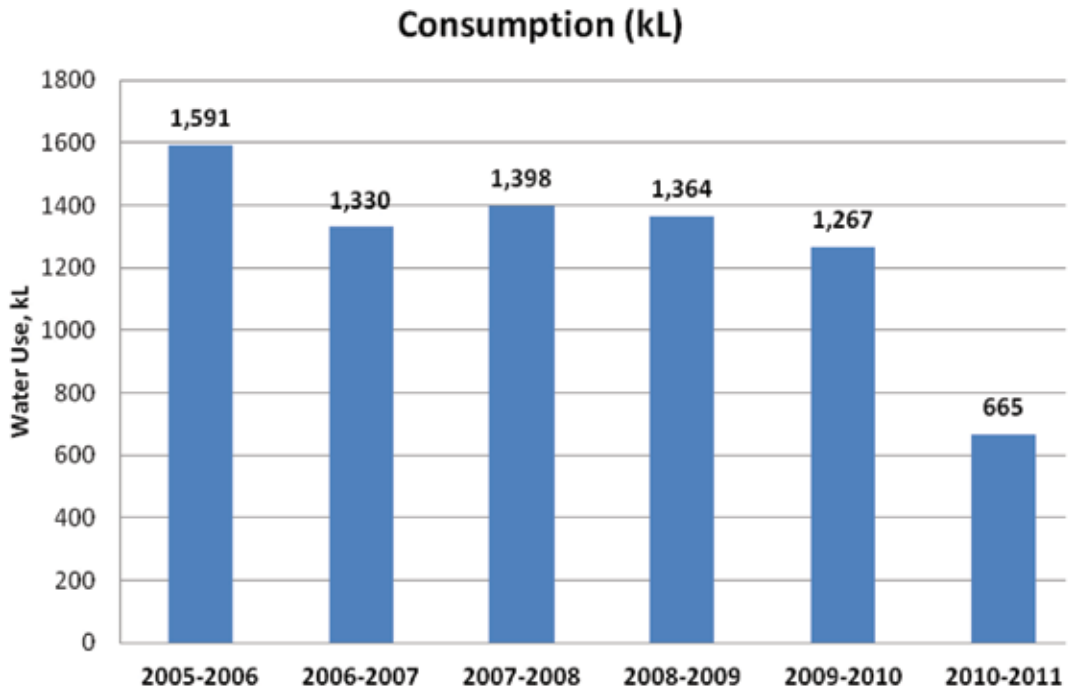


Table G2 – Fixtures Inventory

Site name: Strathfield Works Depot			
Fixture type	**Number of fixtures**	**Flowrate**	**Conditions/notes**
Urinal – 3 stand	2	2L/stall	-
Handbasin (Male Amenities) – Cold	3	Gem Flow 4ltr	-
Hand Basin (Upstairs Amenities) – Hot & Cold	1	7.5 ltr	-
Toilets (Male and Female Amenities) – Dual Flush	3	4.5/3 ltr	-
Toilets (Upstairs Amenities) – Single Flush	1	10 ltr	-
Showers	6	12ltr/m	-
Hand Washing Station (Male Amenities) – Shower Heads	4	12ltr/m	-
Sink - Hot & Cold	2	7.5 ltr	-
Bath - Hot & Cold	1		Rarely used
External Taps - Cold	8	7.5 ltr	-
Rain Water Tanks	5		-

Water Use Breakdown

It is not possible to do a water use breakdown for the Works Depot as there are multiple buildings, water usages, water tanks etc on the site and insufficient water metering to allocate water usage to all these activities/sources.

It is recommended that water sub-meters be installed to enable water usage in each area to be monitored.

Table G4 – Works Depot Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Installed a water recycling system for the truck wash bay	NA	NA	NA	NA	2005
Fixed leaking amenities	NA	346	$728	NA	2009
Installed 5 rainwater tanks to harvest rainwater from depot roof areas for the truck wash bay, plant nursery, and toilet flushing					
Replaced single flush cisterns with dual flush cisterns					
Installed flow controls to taps					
Cost effective opportunities					
Undertake a leakage assessment to identify and repair any water leaks	$0	NA	NA	NA	June 2013
Install water meters to monitor water use at: Plant nursery Main Depot building rainwater tanks Wash bay rainwater tanks New SES building	$600 ($150/meter)	NA	NA	NA	Dec 2012
Potentially cost-effective opportunities					
Install dual flush toilet cistern in place of the existing single flush unit in the upstairs amenities	$300/cistern	16.25	$34	8.8	TBC
Replace the 4 shower heads in the male amenities with 5 star WELS rated shower heads	$320 ($80/ shower)	12	$25	12.7	TBC
Switch water off to existing urinals and employ eco-cube system	$600	18.05	$38	15.8	TBC
Undertake investigation of the ability to harvest water from the plant nursery	NA	NA	NA	NA	TBC

Assumptions:

Each shower is assumed to be used once per day for 4 minutes. Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix H – Strathfield Council Administration Complex

The Strathfield Council Administration Complex is located at 65 Homebush Rd, Strathfield and consists of four buildings with separate water supplies:

- The Council Administration Building – a two storey commercial office building
- The Town Hall/Council Chambers – a two storey building containing the Town Hall, Council Chambers, and some general office areas
- The General Manager's Cottage – a single storey building with office spaces and meeting rooms
- The Council Garage.

The total floor area of the buildings in the complex is 2,894m^2 and approximately 97 staff are employed at the facility.

A number of water efficiency initiatives have previously been implemented at the Council Administration Complex, including:

- Installed water tank to collect rainwater from the roof for toilet flushing
- Installed flow controls to taps and shower heads
- Installed dual flush toilet cisterns
- Installed signage to encourage users to use water wisely and to report leaks.

These initiatives have resulted in a significant decrease in water usage at the site, as shown in Figure H1 below.

Table H1 – Baseline Water Use

Site Name	**Strathfield Council Administration Complex**
Site Address	65 Homebush Rd, Strathfield
Water account numbers	Admin Building and Town Hall – 3922485; Cottage – 3922486; Garage – 3924691.
Water Meter Identifiers	Admin Building and Town Hall – CDOE1099; Cottage – DDNC0149; Garage – CDOE1100.
Baseline selection period	July 2005 – June 2011
Expected ongoing annual water consumption (kL)	637
Method used and justification for baseline calculation	Utility Meter Readings from most recent Financial Year (2010/11)
Business Activity Indicator (BAI)	2,894m^2 (97 people)
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	0.22 kL/m^2/year (26 L/person/day)

The water KPIs for the Council Administration Complex of 0.22 kL/m^2/year and 26 L/person/day are well below the best practice benchmarks recommended by Sydney Water for Civic and Administration Buildings of 1.2 kL/m^2/year and 40 L/person/day.

(see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

As the water KPIs for the Council Administration Complex are already better than the best practice benchmarks, there are unlikely to be many significant opportunities to improve the site's water efficiency.

Figure H1 – Historical Water Consumption for the Council Admin Complex

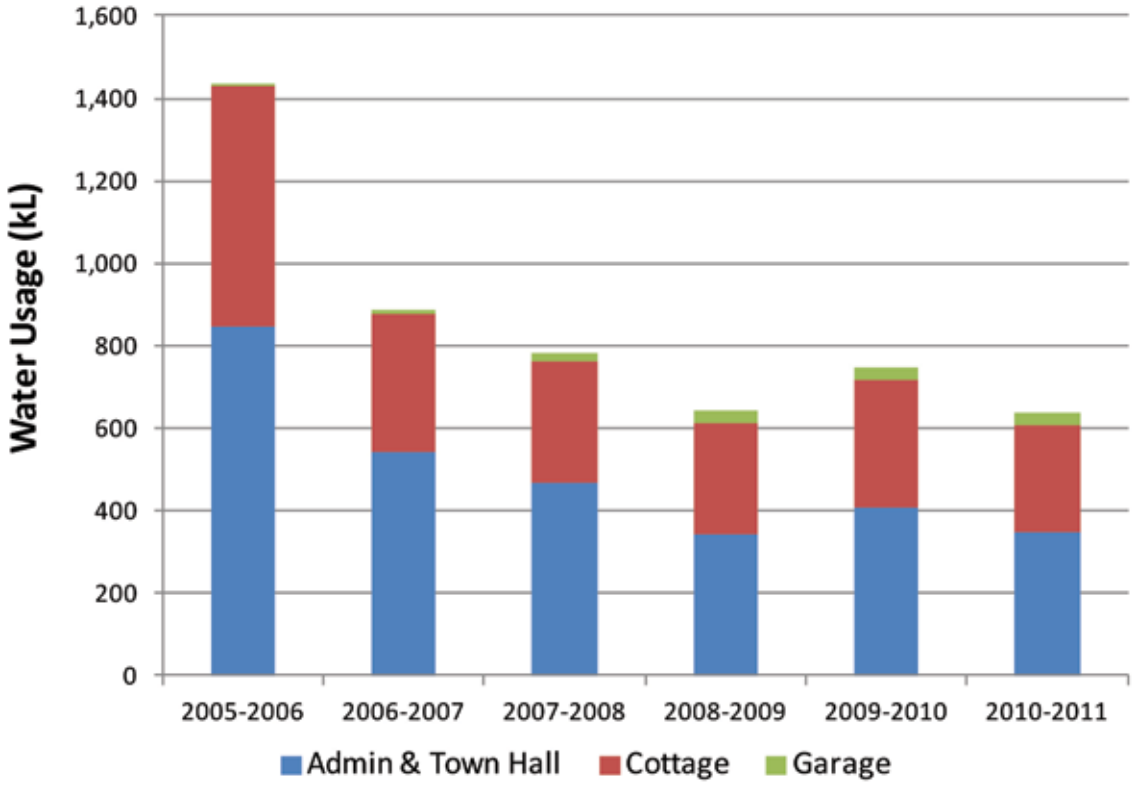


Table H2 – Water Use Breakdown

Water Use	Measurement Method	Extrapolated Annual Usage (kL/yr)	% Total Billed Usage	Annual Cost $/yr
Admin Building & Town Hall	Utility meter readings from 2010/11	346	54%	$ 728
Cottage	Utility meter readings from 2010/11	261	41%	$ 549
Garage	Utility meter readings from 2010/11	30	5%	$ 63
Leakage	-	NA	NA	NA
	Total accounted usage	**637**		**$ 1,340**
	Billed annual usage	**637**		**$ 1,340**
	Unaccounted usage	0	-	0

Table H3 – Fixtures Inventory

Administration Building			
Fixture type	**Number of fixtures**	**Flowrate**	**Conditions/notes**
Toilets	5	4.5/3 ltr	-
Urinal	1	2L/stall	-
Hand basins	5	Gem Flow 4ltr	-
Kitchenette sinks	2	Gem Flow 4ltr	-

Town Hall / Council Chambers Building			
Toilets	11	4.5/3 ltr	-
Urinal	2	2L/stall	-
Hand basins	13	Gem Flow 4ltr	-
Kitchenette sinks	3	Gem Flow 4ltr	-
Dishwasher	1		-

Cottage			
Toilet	1	4.5/3 ltr	-
Hand basins	2	Gem Flow 4ltr	-
Kitchenette sinks	2	Gem Flow 4ltr	-
Shower	1	9 L/min	-
Bath	1		Rarely used

Garage			
Toilets – single flush	3	9 L	-
Urinal	1	2L/stall	-
Hand basins/ sink	3	Gem Flow 4ltr	-
Showers	3	9 L/min	Rarely used

Table H4 – Council Admin Complex Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Installed rainwater tanks to harvest rainwater from roof areas for toilet flushing	NA	109	$229	NA	2009
Replaced single flush cisterns with dual flush cisterns					
Installed flow controls to taps					
Cost effective opportunities					
Undertake a leakage assessment to identify and repair any water leaks	$0	NA	NA	NA	June 2013
Potentially cost-effective opportunities					
Install water meter on the rainwater tank to monitor rainwater collection and usage, and to determine whether there would be any benefit in installing additional tanks.	$150	-	-	-	TBC

Assumptions:

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix I – Kurralee Childcare Centre, Melville Reserve and Community Hall

The Kurralee Childcare Centre is located on Hampstead Rd, Homebush West and caters to around 60 children per day. The water account for the site services the Childcare Centre, the Community Hall and Melville Reserve.

A number of water efficiency initiatives have previously been implemented at the Kurralee Childcare Centre, including:

- Installed flow controls to taps and shower heads
- Installed dual flush toilet cisterns
- Installed a rainwater tank to harvest rainwater from roof for toilet flushing
- Installed signage to encourage users to use water wisely and to report leaks.

These initiatives have resulted in a significant decrease in water usage at the site, as shown in Figure I1 below.

Table I1 – Baseline Water Use

Site Name	**Melville Reserve and Community Hall**
Site Address	Hampstead Rd, Homebush West
Water account number	3921657 (Account name = Melville Reserve and/or Scout Hall)
Water Meter Identifier	CDNL0101
Baseline selection period	July 2005 – July 2011
Expected ongoing annual water consumption (kL)	552
Method used and justification for baseline calculation	Utility Meter Readings from most recent Financial Year (2010/11)
Business Activity Indicator (BAI)	60 children/day
Key Performance Indicator (KPI)	37 L/person/day

The water KPI for the Kurralee Childcare Centre of 37 L/person/day is better than the best practice benchmark recommended by Sydney Water for Childcare Centres of 40 L/person/day.

(see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

As the water KPIs for the Kurralee Childcare Centre is already better than the best practice benchmark, there are unlikely to be many significant opportunities to improve the site's water efficiency.

Figure I1 – Historical Water Consumption for Kurralee Childcare Centre/Melville Reserve

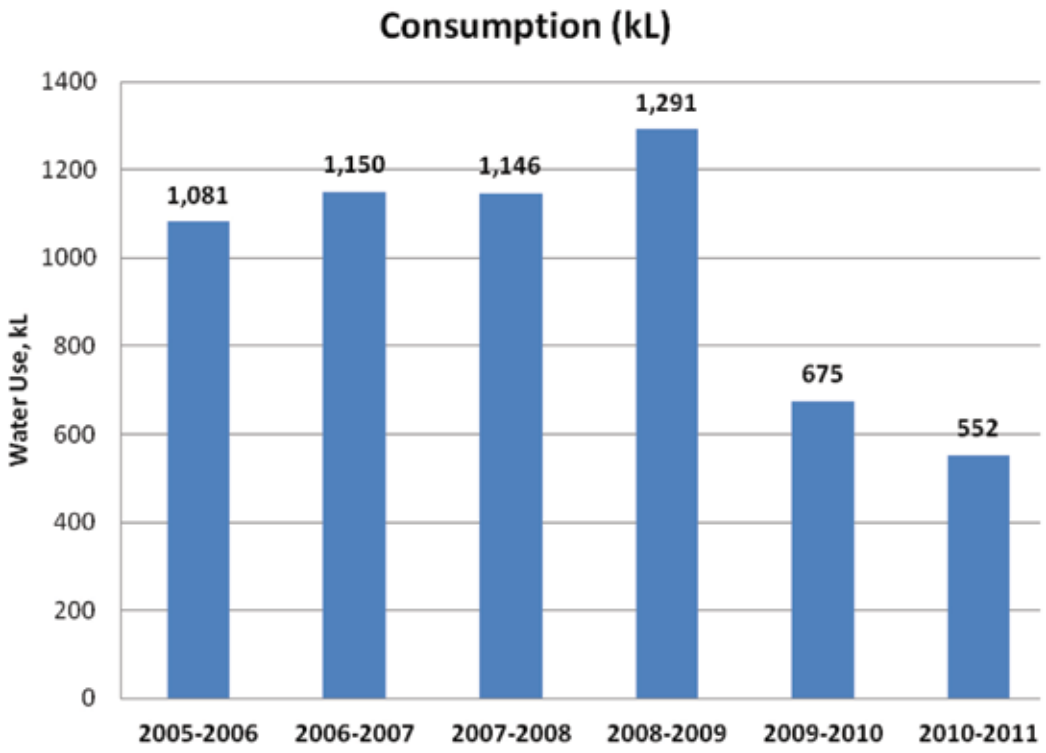


Table I2 – Fixtures Inventory

Site name: Kurralee Child Care Centre			
Fixture type	**Number of fixtures**	**Flowrate**	**Conditions/notes**
Toliets – Dual Flush	10	4.5/3 ltr	
Hand Basins	9	Gem Flow 4ltr	
Kitchen/Nursery/Laundry Sinks/Taps	7	>4L/min	
Dishwasher	1	-	
Washing Machine	1	AAA rated	
Water tank	1		The water tank near the childcare center is not in use.

Table 13 – Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Replaced single flush cisterns with dual flush cisterns	NA	NA	NA	NA	2009
Installed flow controls to taps					
Installed a rainwater tank to harvest rainwater from roof for toilet flushing					
Cost effective opportunities					
Undertake a leakage assessment to identify and repair any water leaks	$0	-	-	-	June 2013
Potentially cost-effective opportunities					
Reconnect rainwater tank to provide water for toilet flushing	$1,000	87.5	$184	5.4	TBC

Assumptions:

Water cost is $2.103 per kL based on recent bills from Sydney Water.

Appendix J – Strathfield Community Centre

The Strathfield Community Centre is a single storey building located at Bates St Homebush. It is a small building with a floor area of approximately 500 m^2 and includes meeting rooms, offices, and a kitchen. A number of minor water efficiency initiatives have previously been implemented at the Community Centre, including:

- Installed flow controls to taps and shower heads
- Installed dual flush toilet cisterns
- Installed signage to encourage users to use water wisely and to report leaks.

Table J1 – Baseline Water Use

Site Name	Strathfield Community Centre
Site Address	1a Bates St Homebush
Water account number	3918757
Water Meter Identifier	EDOH1278
Baseline selection period	July 2005 – June 2011
Expected ongoing annual water consumption (kL)	416
Method used and justification for baseline calculation	Utility Meter Readings from most recent Financial Year (2010/11)
Business Activity Indicator (BAI)	500 m^2
Key Performance Indicator (KPI) (= annual consumption kL / BAI)	0.83 kL/m^2/year

The water KPI for the Community Centre of 0.83 kL/m^2/year is better than the best practice benchmark recommended by Sydney Water for Civic Buildings of 1.2 kL/m^2/year.

(see www.sydneywater.com.au/water4life/inyourbusiness/howtosavewater/councils.cfm).

As the water KPI for the Community Centre is already better than the best practice benchmark, there are unlikely to be many significant opportunities to improve the site's water efficiency.

Figure J1 – Historical Water Consumption for Strathfield Community Centre

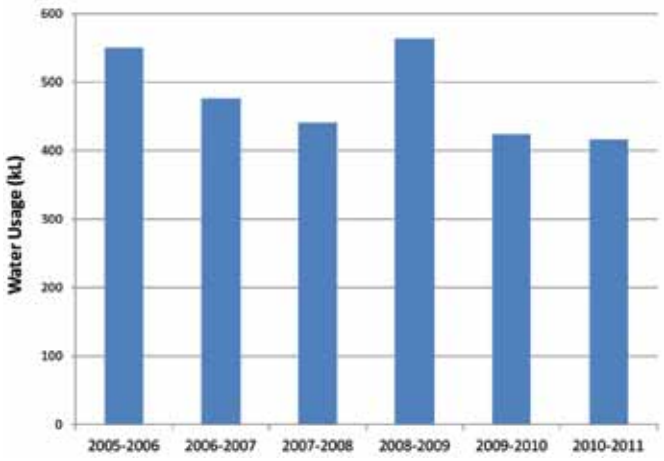


Table J2 – Fixtures Inventory

Strathfield Community Centre			
Fixture type	**Number of fixtures**	**Flowrate**	**Conditions/notes**
Toilets – Dual Flush	4	4.5/3 ltr	-
Urinal – 2 stand	2	2L/Stall	-
Hand Basins	4	Gem Flow 4ltr	-
Kitchen Sinks/Taps	2	Gem Flow 4ltr	-
Cleaners Sink	1	Gem Flow 4ltr	-
Commercial Dishwasher	1	2.5L/cycle	-

Table J3 – Water Savings Opportunities

Opportunity	Estimated Cost	Water Savings kL pa	Water Cost Savings $pa	Payback (years)	Completion date/ planned completion date
Previously completed actions over last 5 years					
Replaced single flush cisterns with dual flush cisterns	NA	NA	NA	NA	2009
Installed flow controls to taps					
Cost effective opportunities					
Undertake a leakage assessment to identify and repair any water leaks	$0	NA	NA	NA	June 2013
Potentially cost-effective opportunities					
Install a rainwater tank to harvest rainwater from roof areas for toilet flushing	$4,000	65.7	$138	29.0	TBC

Assumptions:

Water cost is $2.103 per kL based on recent bills from Sydney Water.