

Greening our Hospitals- Water



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Sustainability Unit
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Outline

- **Background**
- **Trials and Water Management Plan Template**
- **Greening our Hospital Initiative**
- **Survey/EOI**
- **Issues**
- **Other opportunities/tools**

Water management –hospitals

Water Management Plans

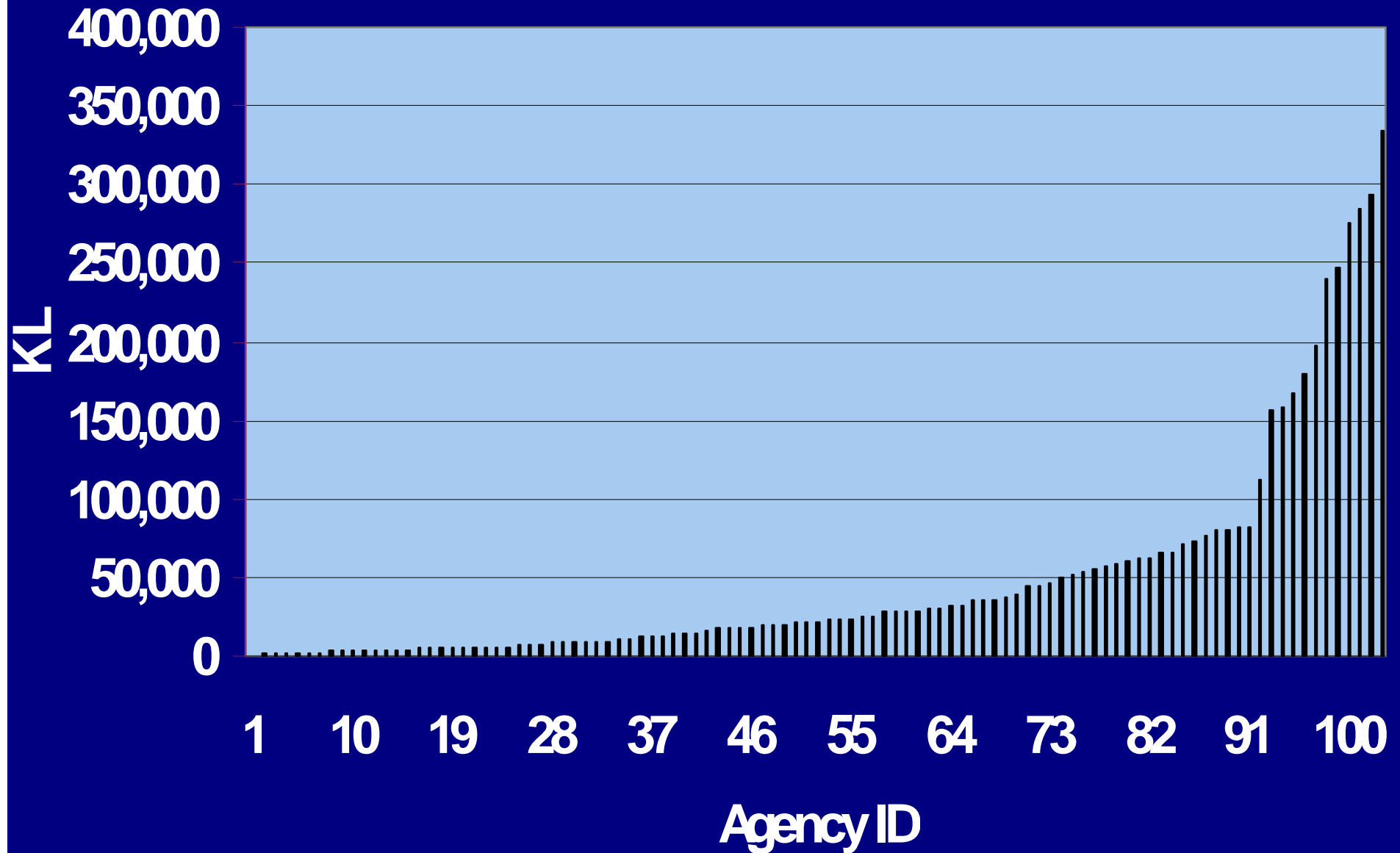
- Northern / Western/
Caulfield.
- Supported by water
retailers.
- Identify range of savings.
- Trials – regional




Top 200

- Policy to requiring retailers to reduce Water Consumption by 15% and develop Water Management Plans for Top 200 Group.
- Water Management Plans
 - Northern / Western/ Caulfield.
 - Supported by water retailers.
 - Identify range of savings.


Annual Water Consumption (KL)



Water Management Plan Template



Water Management Plan






<Insert Company Name>

Company Address:
 Telephone:
 Facsimile:
 Email:
 Internet:
 Date:

PREPARED BY: AUTHORISED BY:

Name: Name:
 Title: Title:
 Telephone: Telephone:
 Email: Email:
 Signature: Date: Signature: Date:


Worksheet 5 – Water conservation checklist (cont.)

Water conservation practices	We are doing this	We should do this	We need to evaluate this measure	Not applicable
Cooling systems and cooling towers				
• Meter and record water use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Never use once-through cooling, or reuse the water elsewhere in the building	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Use air cooling where feasible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Minimise cycles of concentration for cooling towers by providing efficient water treatment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Establish performance-based specifications when contracting with a cooling tower supplier / water treatment company	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Reuse cooling tower effluent where possible	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Investigate wet-dry cooling towers	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Reuse treated wastewater or other sources of water for cooling tower make-up	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Boilers and heating				
• Establish performance-based specifications when contracting with boiler supplier / maintenance contractor	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Check steamtraps regularly	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Reuse steam condensate water and boiler drain water where practical	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Avoid once-through operations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Meter and record water use	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
• Record water use and check for leaks	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

www.dhs.vic.gov.au/environment

Greening Our Hospitals- Water

- Environment Sustainable Action Statement (ESAS) Initiative 16.4b
- Funded by the Victorian Water Trust via Department of Sustainability and Environment
- \$3.9 Million over 4 years (2007-2010)

Greening Our Hospitals- Water

- \$3.9 M program comprised of the following initiatives
 - Undertake 40 audits
 - Undertake 40 retrofits (water efficiency measures, eg flow restrictors)
 - Under 29 steriliser retrofits
 - Conduct 3 ozone laundry trials
 - Conduct 4 dialysis water reuse pilots

Audits Undertaken

- GOH-W 40 audits and 40 retrofits
- 1-Audits
 - Audits were conducted at
 - Northern Health (Northern Hospital)
 - Bayside Health (Caulfield Hospital)
 - Western Health (Western Hospital)
 - Water consumption savings of 8.9-19% identified
- 2- Undertaking audit recommendations-water efficiency measures
- GOH-W Program estimated to save 75, 000 KL per annum.

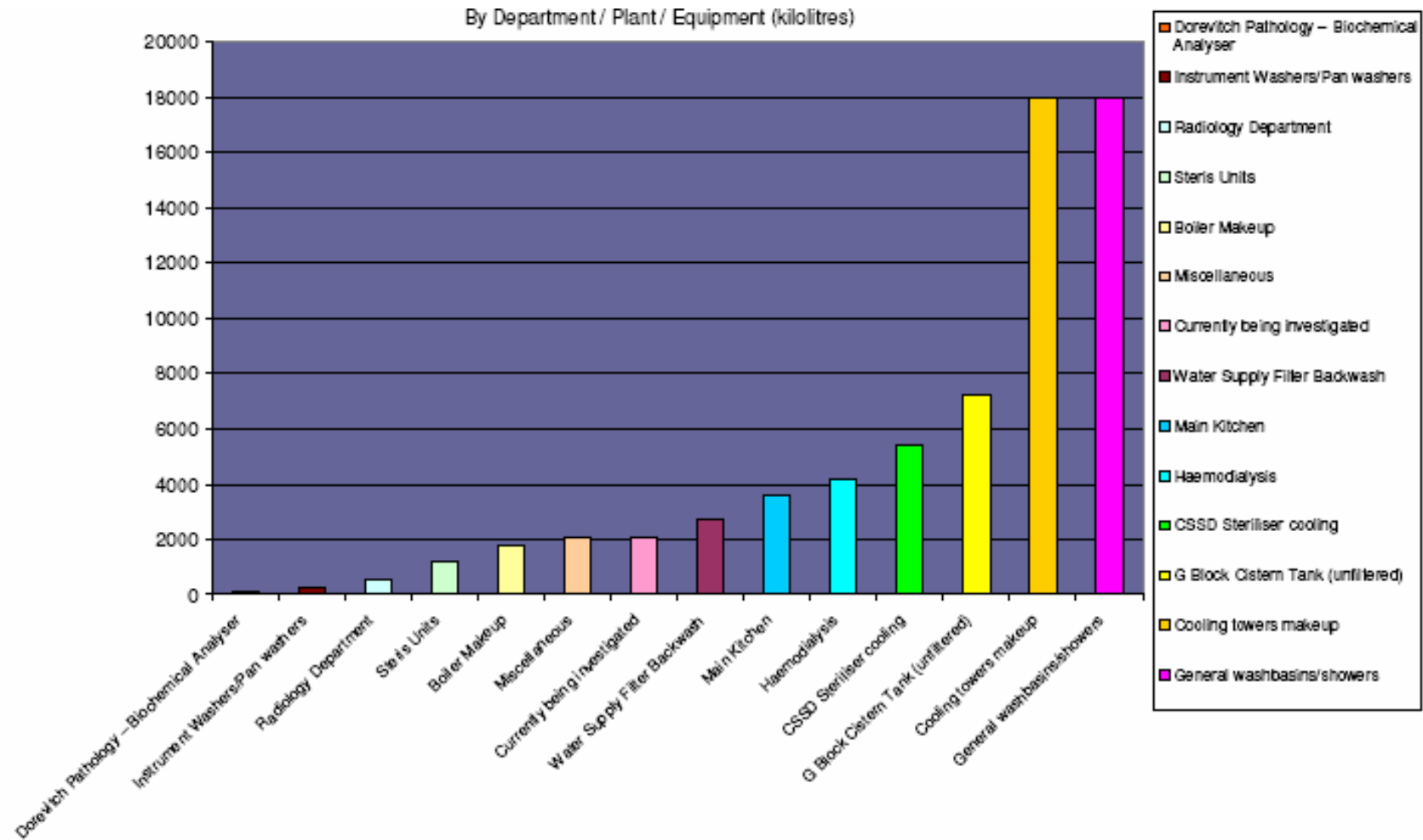
Steriliser Retrofits

- GOH-W Undertake 29 steriliser retrofits
- Western Health initiated the retrofit of sterilisers, by using chilled water.
- Reduced water usage from 350 litres per cycle to 50 litres.
- Greening Our Hospitals initiative estimated to save 6.7 ML per annum per unit, or 194 ML across the 29 units.

Dialysis Reuse

- GOH-W Undertake 4 dialysis trials
- Based on project estimates undertaken by several agencies including Bendigo Health.
- Barwon Health, Bendigo have completed works and currently collecting approximately 50, 000 litres per week.

Breakdown of uses (one sample site)



Criteria for Greening Our Hospital Water Program

- Criteria for inclusion in the program (across initiatives and timeframe) include:
- High Volume Water Users
- Agencies with water supply/quality issues
- Leaders
- Poor kl/m^2 , esp with circumstances particularly difficult to address.

Criteria for Greening Our Hospital Water Program

- All participating agencies will be required to:
 - Produce a Water Management Plan
 - Report on site level data (where possible)
 - Assist with evaluation and case studies

Victorian Hospital Information Services

Data Current at: 28/09/2006 4:20:34PM

Year-To-Date Report 2005/06

Energy Consumption

Agency:

	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	YTD Total	Gj*	KgC02**
Total Floor Area (m2):	10,285	10,285	10,285	10,285	10,285	10,285	10,285	10,285	10,285	10,285	10,285	10,285			
1 Electricity (Peak) in kWh	81,492	92,225	85,788	63,888	68,946	81,232	109,667	89,198	72,394	59,579	78,748	99,698	983,055	3,539	1,361
2 Electricity (Off Peak) in kWh	63,019	60,280	55,129	62,446	40,300	45,868	42,054	32,781	42,176	63,696	66,979	67,657	642,385	2,313	891
3 Electricity Cost	18,160	18,148	15,696	14,678	13,965	16,262	20,988	17,414	16,539	15,716	18,109	22,942	208,617		
4 Natural Gas in MJ	0	0	0	0	0	0	0	0	0	0	0	0	0		
5 Natural Gas Cost	0	0	0	0	0	0	0	0	0	0	0	0	0		
6 Other Fuel in Megajoules	0	0	0	0	0	0	0	0	0	0	0	0	0		
7 Other Fuel Cost	0	0	0	0	0	0	0	0	0	0	0	0	0		
8 Steam (Peak) in tonnes	0	0	0	0	0	0	0	0	0	0	0	0	0		
9 Steam (Off Peak) in tonnes	0	0	0	0	0	0	0	0	0	0	0	0	0		
10 Steam Cost	0	0	0	0	0	0	0	0	0	0	0	0	0		
11 LPG in Litres	32,174	32,894	32,894	22,012	15,968	13,356	12,801	9,338	15,442	27,480	31,258	31,002	276,639	7,110	47
12 LPG Cost	13,733	16,164	16,164	11,211	11,524	7,221	7,275	5,742	8,512	13,973	16,190	18,886	146,595		
13 Briquette in Tonnes	0	0	0	0	0	0	0	0	0	0	0	0	0		
14 Briquette Cost	0	0	0	0	0	0	0	0	0	0	0	0	0		
15 Diesel in Litres	0	0	0	0	0	0	0	0	0	0	0	0	0		
16 Diesel Cost	0	0	0	0	0	0	0	0	0	0	0	0	0		
17 Water in Mega Litres	1,341	1,341	1,341	1,964	1,694	1,694	2,347	2,347	2,347	1,808	1,808	1,808	21,840		
18 Water Cost	1,646	1,646	1,646	1,650	1,650	1,650	2,013	2,013	2,013	1,722	1,722	1,722	21,093		
19 Recycled Water in Mega Litres	0	0	0	0	0	0	0	0	0	0	0	0	0		
20 Greenpower (Peak) in kWh	0	0	0	0	0	0	0	0	0	0	0	0	0		
21 Greenpower (Off Peak) in kWh	0	0	0	0	0	0	0	0	0	0	0	0	0		
22 Greenpower Cost	0	0	0	0	0	0	0	0	0	0	0	0	0		

* Energy Consumption converted to GigaJoules (Gj)

** Energy Consumption converted to CO2 emissions.

*** M2 based upon the most recent Floor Area entered.

Total Gj: 12,961

Total KgC02: 2,736

Annual Total (Gj/m2)***: 1.26

Purpose of Survey/EOI

- Identify site level data where aggregated data is reported
- Identify suitability of matching initiatives to agencies
- To identify and prioritise agencies that have already undertaken audits, WMP
- To identify future opportunities (outside of the scope of the GOH-W).

Water Minimisation Initiatives Survey and Expression of Interest

For Further Information Contact:

Sarah Bending
Sustainability Unit, Capital Management Branch
Ph. 03 9096 2049
Email - sarah.bending@dhs.vic.gov.au

The ★ symbol indicates required information.

The (?) symbol indicates field level help is available.

Any data submitted using this electronic form via the Internet is secure and will be encrypted using SSL (Secure Sockets Layer)

DHS has obtained \$3.9 Million for the Greening Our Hospitals-Water initiative to support improved water efficiency in hospitals.

To assist us in identifying potential sites for the specific initiatives, and to enable us to seek funding for projects that were not included in the funding, please complete the following survey by January 17, 2007. If you are unable to complete the form by the due date, due to bushfire activities or holidays please contact Sarah Bending on 9096 2049 to make alternative arrangements.

★ Organisation

★ Contact Officer

★ Contact Position

★ Phone Number (Office) Mobile Phone Number

★ Are you the nominated energy officer?
 Yes No

★ If funding is available for your agency from the program, which year/s would suit your program?

2006/7 2007/8 2008/9 2009/10 None (?)

★ What staff capability do you have to support water initiatives?
 Engineering Maintenance Management/admin support Auspiced support None



Water Management Plan

★ Please select your water authority/retailer. ?

★ Do you have a Water Management Plan (WMP)? Yes No

If yes, what type of WMP do you have? DHS Water Management Template Other

If other, please specify type

Water Audits

★ Has a water audit been completed for your facility? Yes No

If yes, please specify who undertook the audit and level of audit undertaken. ?

When was the audit conducted?

Water Efficiency Measures

Please list any of the following measures undertaken at your agency.

★ Steriliser retrofits

Yes No

★ Rain Water Tanks

Yes No

★ Bed pan macerators

Yes No

★ Dialysis water reuse

Yes No

★ Waterless urinals

Yes No

★ Shower/tap flow restrictors

Yes No % completed ? of total appliances.

★ Cisterns (6l/3l)

Yes No

★ Waterless urinals

Yes No

★ Shower/tap flow restrictors

Yes No % completed  of total appliances.

★ Cisterns (6l/3l)

Yes No

★ Water recycling plant

Yes No

Other water efficient appliances (please list)

Other water initiative (please list).

Please list any other opportunities/ideas for water saving (this will help us in planning for future funding and initiatives).

Are there any water saving works currently proposed?


Sterilisers


★ Does your facility have sterilisers?

Yes No If yes, how many sterilisers do you have?

Which of the following sterilisers do you have in operation at your organisation?

Atherton Tangent Gorilla Atherton Tangent Tiger Atherton Tangent Cobra Atherton Horizon Atherton Centenary Other

If available, please provide information on numbers of each steriliser model and cycles per day on average. 

Do you have additional chiller capacity? Yes No 

Renal Dialysis

★ Does your hospital offer renal dialysis? Yes No

How many dialysis sessions do you undertake per year (on average).

Laundry

★ Do any of your sites have a large laundry?

Yes No

Tonnes of laundry per annum

Site Water Data

DHS collects data via the AIMS collection at an aggregate (agency level) but not at a site level. Please check that the data your agency has provided in the AIMS report is correct. See AIMS Year to Date for summary. If you have access to site level data please provide this information and please also include sites that the information in this form refers to. If you have a major laundry, please provide details for the laundry as an individual site (if available).

Site Name	Site Address	Water Consumption (KL)	Water Cost (Total including all charges)
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
		?	?
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
		?	?
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
		?	?
<input type="text"/>	<input type="text"/>	<input type="text"/>	<input type="text"/>
		?	?

Issues

- Program based on limited trials
- Issues were expected to arise
- PCG has been established
- Issues register has been developed
 - Not restricted to GOH-W program as not isolated from the rest of the sustainability program
 - Water reuse is rapidly evolving, working closely with public health to assist reuse and provide guidance where possible.

Issues

- **Steriliser Program**
 - Chilled water use
 - Trade offs
 - Alternatives
- **Ozone laundry trials**
- **Dialysis reuse**
- **Others?**


DHS Environmental Policy - Water - Tools - Microsoft Internet Explorer provided by CDE


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State Government of Victoria, Australia, Department of Human Services
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Water management plans and templates

Melbourne water retailers have been developing water management plans, to reduce the water use of their "top 200" water users as is required under Water for the Future. A number of metropolitan Hospitals are in this "top 200". The department and retailers - City West Water, South EastWater and Yarra Valley Water - have developed a Water Management Plan template specifically for hospitals, which was trialled at three hospitals in 2005.

 [Water Management Plan template \(577k, MS Word\)](#)

The water retailers have undertaken hospital-supported audits at three pilot sites and have installed meters to obtain information about the usage of water. Identification of water reduction measures will be formulated as a result of the audits and water management plans. Implementation of the measures to save water will depend on the viability and funding characteristics of the project.

Water consumption information is being reported at an agency level, alongside energy data via the DHS AIMS system and will enable benchmarking in the future.

For more information contact:

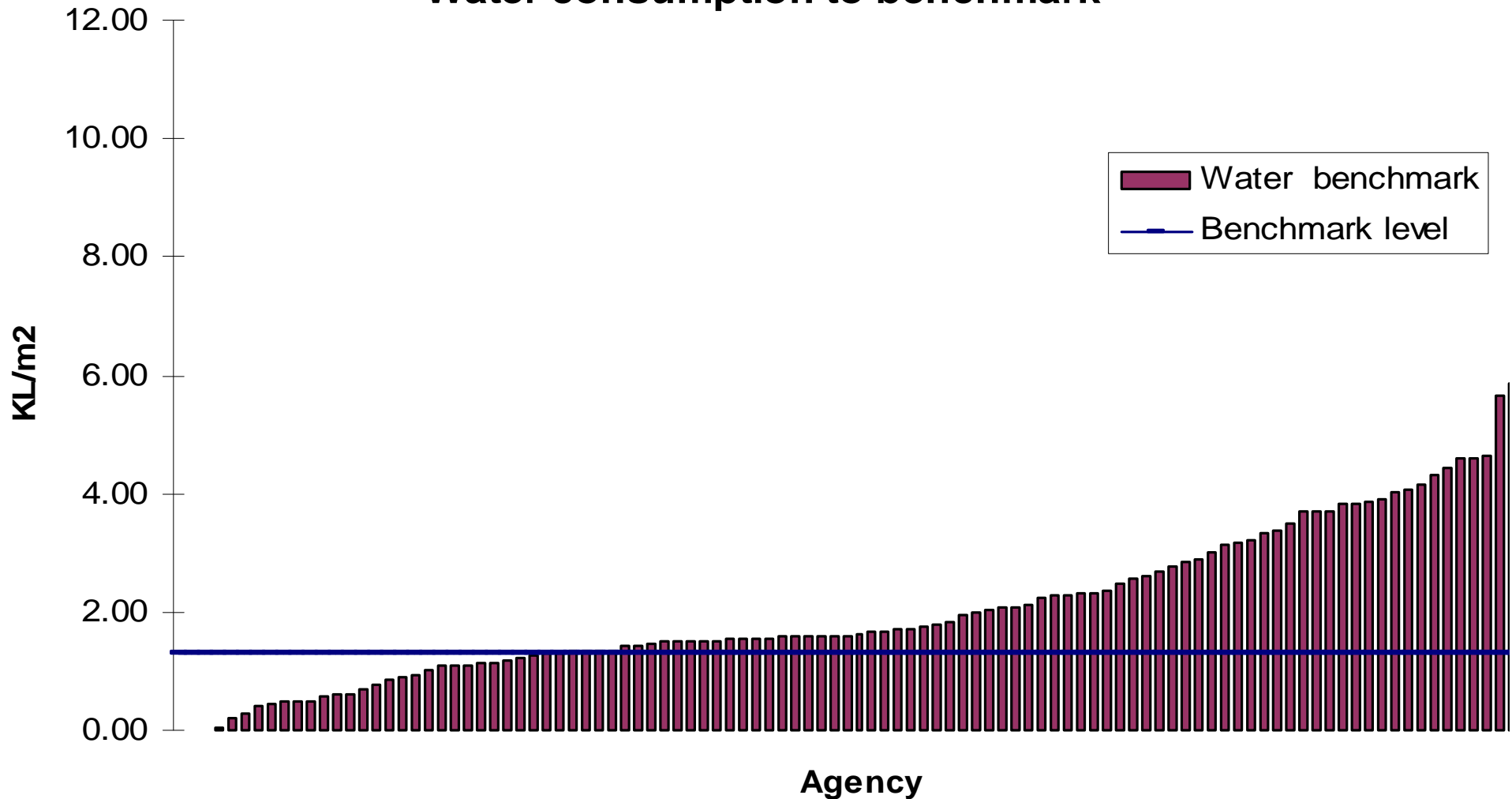
- [Sustainability and Risk Management Unit](#)
- Your [Water Retailer](#) (available from Environmental Gateway)

Additional funding options

- Community Water Grants (Commonwealth)
- Victorian Stormwater Fund Grants (DSE)
- EIF funding (DHS)
- Melbourne Sustainable Fund
- Partnerships (water retailers/ local gov/local businesses).

Water Consumption KL/m2

Water consumption to benchmark



Agency Information Management System

Energy and Environment Reporting Energy Consumption

Agency: 99999 A Sample Agency

Agency Floor Area: 17000

Period: 1 JULY

Year: 2006/07

 Completed

							Cost
Electricity Data	Peak in kWh	<input type="text" value="1,500,000"/>	Off Peak in kWh	<input type="text" value="1,100,000"/>	\$	<input type="text" value="300,000"/>	
Natural Gas Data	Megajoules	<input type="text" value="22,000,000"/>			\$	<input type="text" value="100,000"/>	
PG Data	Litres	<input type="text" value="0"/>			\$	<input type="text" value="0"/>	
Trickettes Data	Tonnes	<input type="text" value="0"/>			\$	<input type="text" value="0"/>	
Diesel Data	Litres	<input type="text" value="3,000"/>			\$	<input type="text" value="3,000"/>	
Other Fuel Data	Megajoules	<input type="text" value="0"/>			\$	<input type="text" value="0"/>	
Cogeneration Data	Steam (Peak) in Tonnes	<input type="text" value="0"/>	Steam (Off Peak) in Tonnes	<input type="text" value="0"/>	\$	<input type="text" value="0"/>	
Water Data	KiloLitres	<input type="text" value="30,000"/>			\$	<input type="text" value="30,000"/>	
Recycled Water	KiloLitres	<input type="text" value="0"/>					
Renewable	Peak in kWh	<input type="text" value="0"/>	Off Peak in kWh	<input type="text" value="0"/>	\$	<input type="text" value="0"/>	

Comments