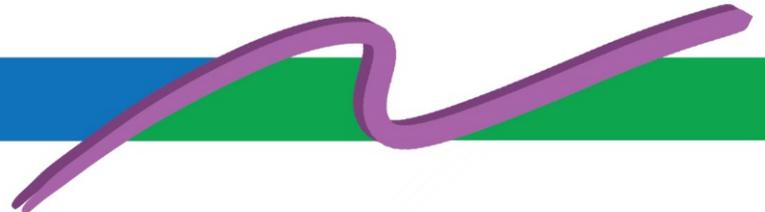


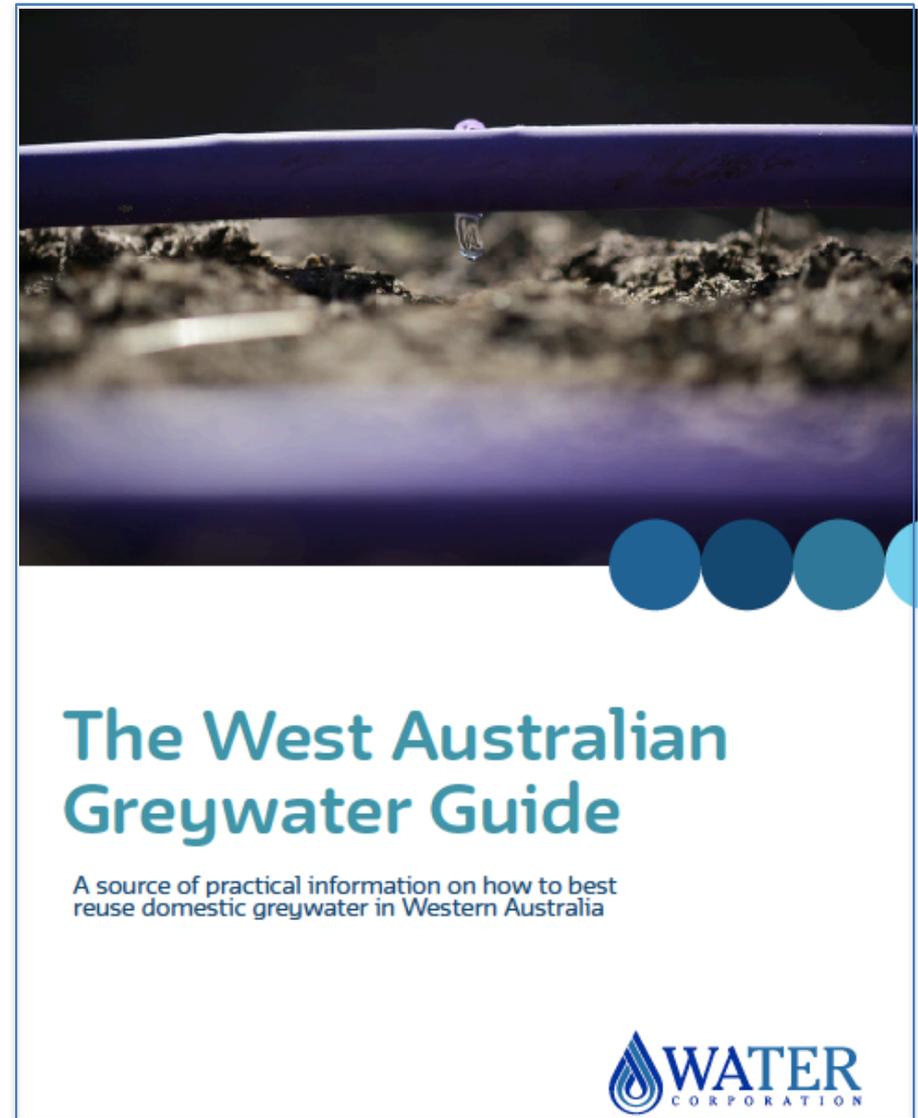
**Beyond residential water efficiency
– the case for greywater reuse and
*The West Australian Greywater
Guide***

Dr Stewart Dallas
& Ken Higgins



Available for download from Water Corporation website:

<https://www.watercorporation.com.au/home/business/saving-water/waterwise-programs/waterwise-council-program/program-benefits-and-resources>





*The Greywater & Wastewater Industry Group
will actively promote the safe and reliable
installation of wastewater reuse systems
through legislative change to achieve greater
water savings in our community.*

www.gwig.org

What is GWIG?

GWIG is a non-profit organisation which was formed in 2010 in order to provide a united voice for a WA industry that is largely unsupported and under-acknowledged for the important work that it does.

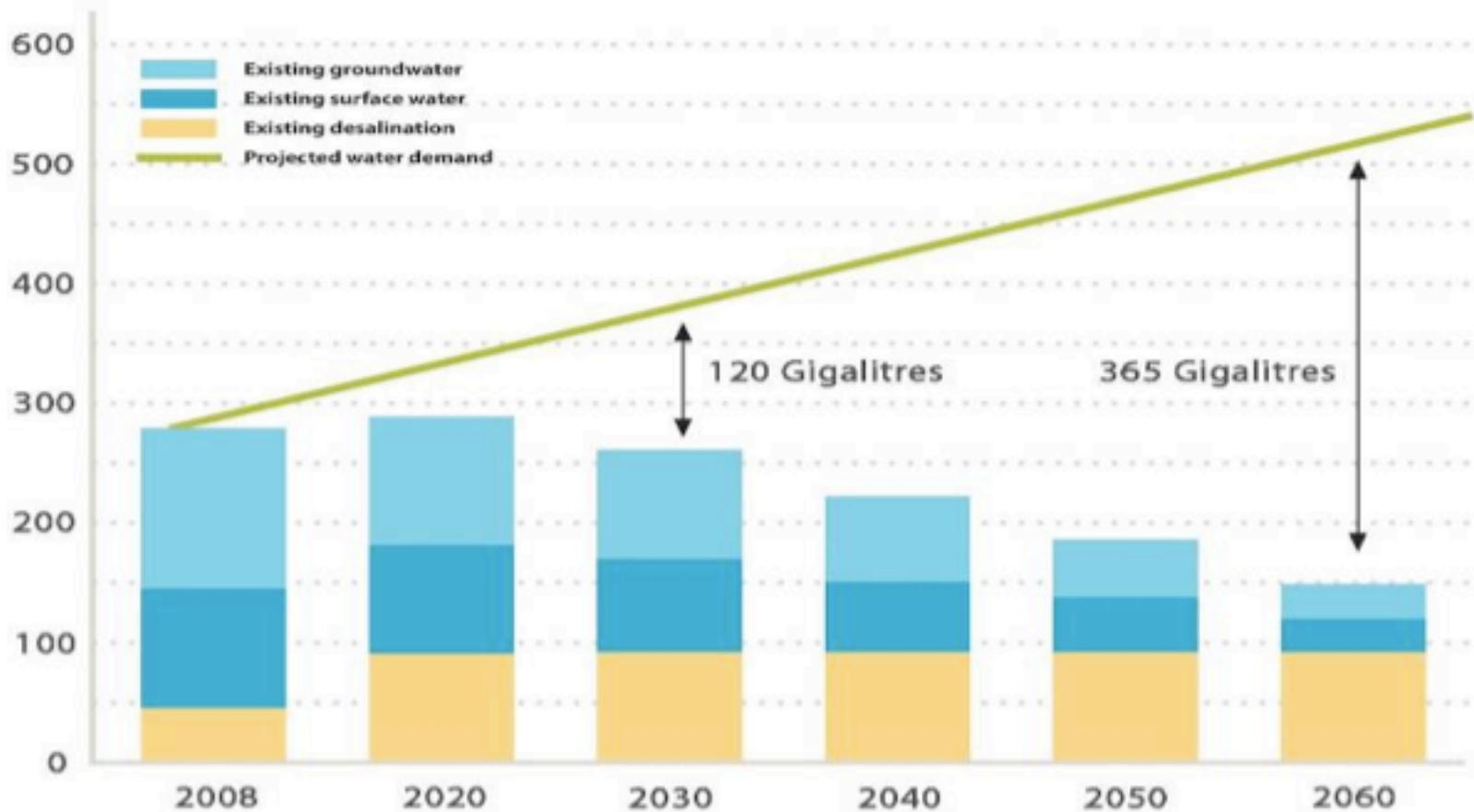
GWIG is a group of water industry professionals who are active in the design, research, manufacture, installation and servicing of greywater and wastewater treatment systems.

Why reuse greywater?

- Displace high quality drinking water
- Greener gardens as greywater is 'restriction free' unlike mains water
- Gardens are future-proofed
- Sustain real green landscapes in urban environments



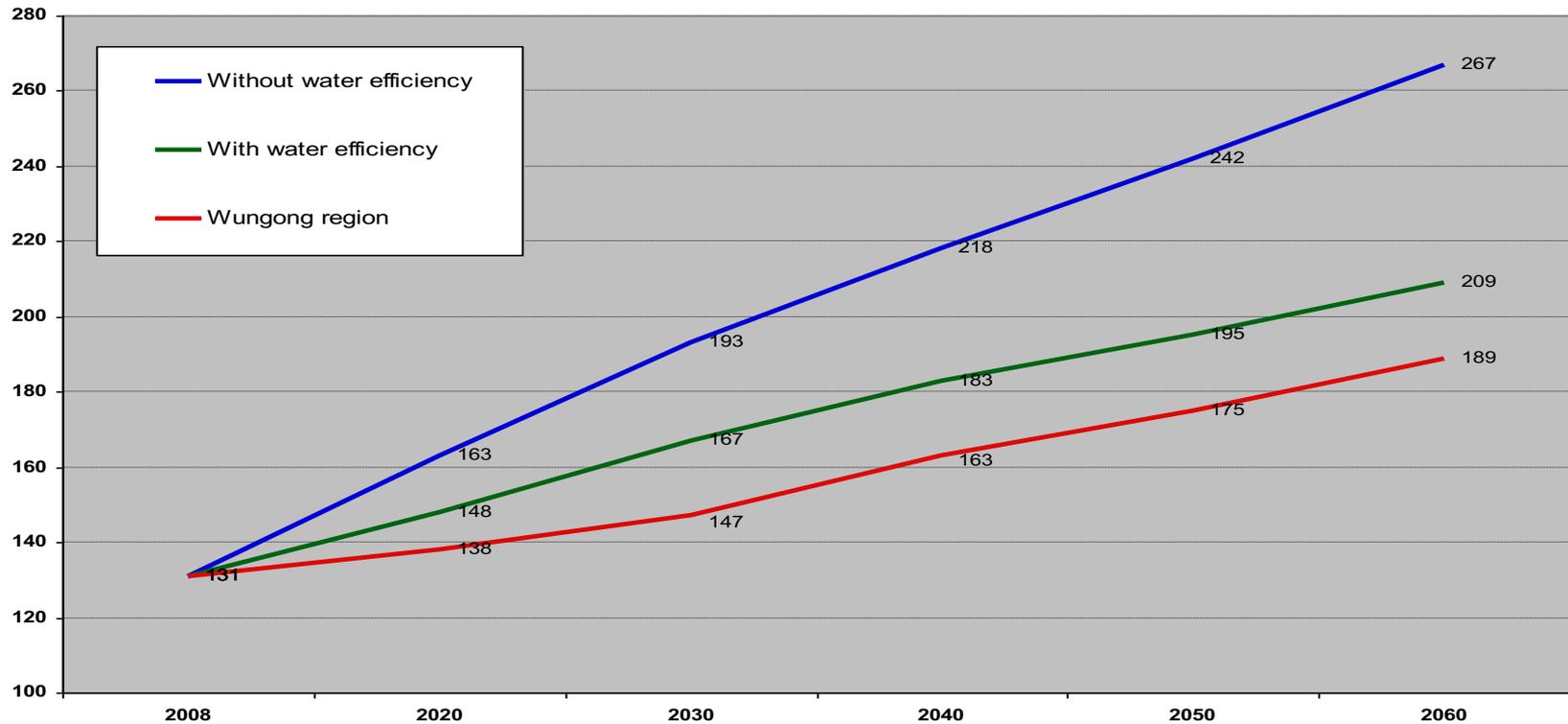
Projected Mains Water Supply Shortfall to 2060



Source: Water Corp Water Forever, 2009

Projected Wastewater Flows to 2060

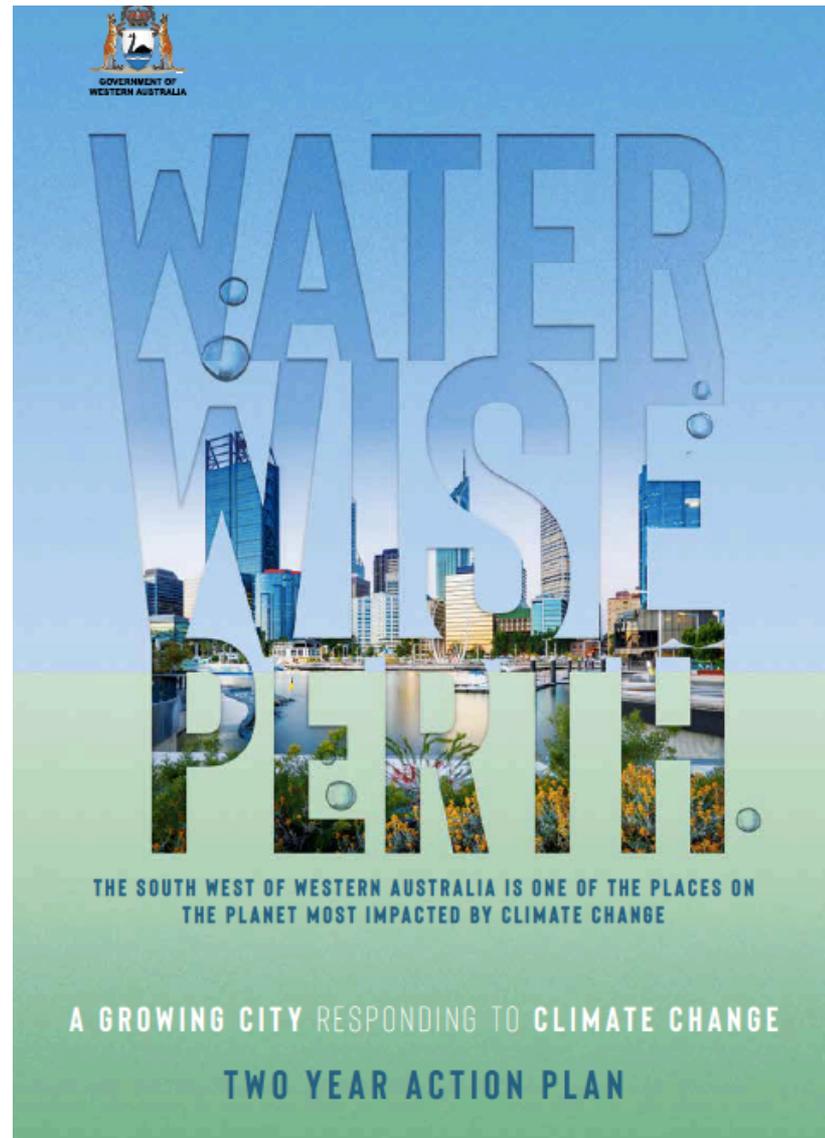
Projected Wastewater Flows (GLpa)



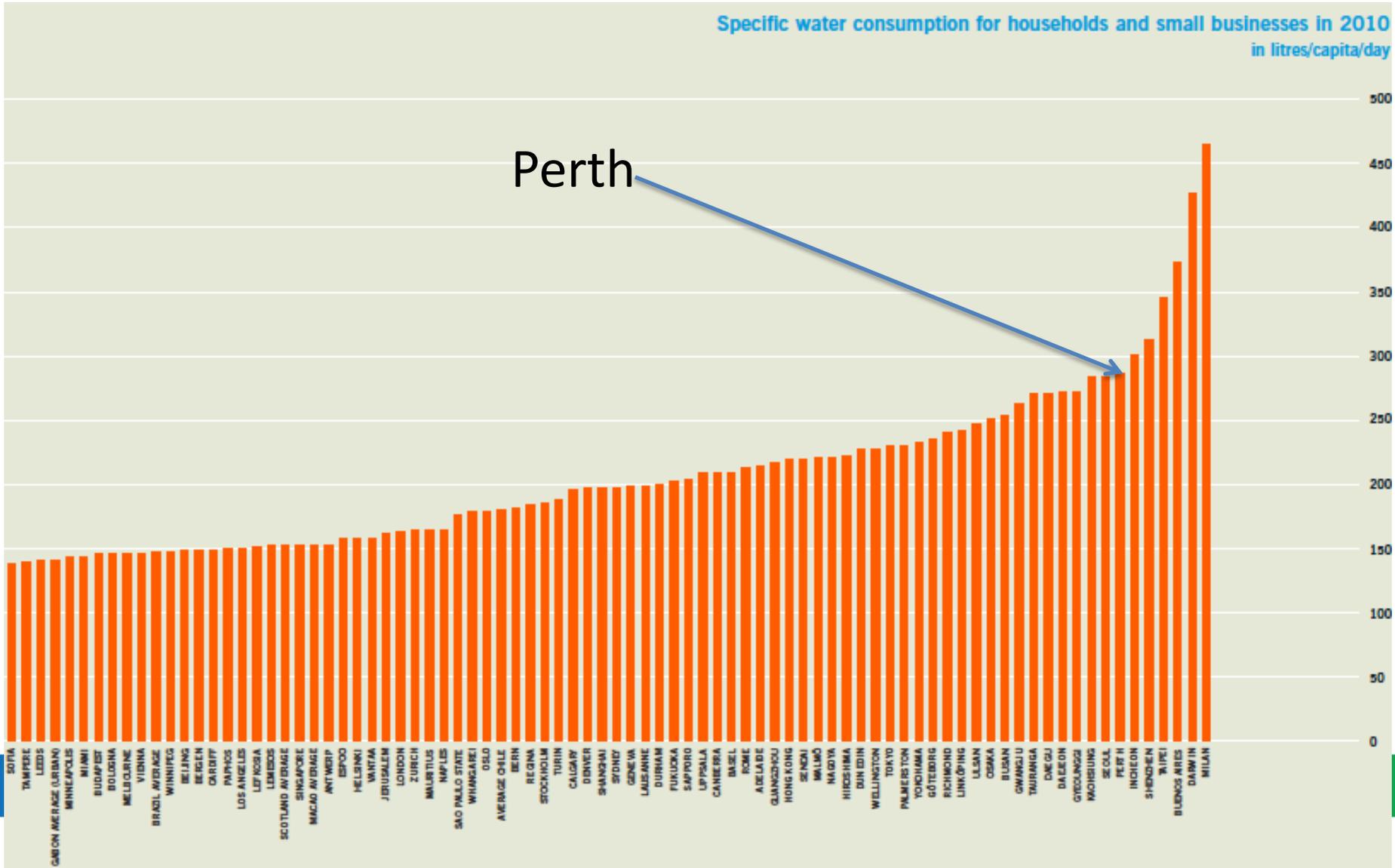
Source: Water Corp Water Forever, 2009

“More than eighty per cent of land identified for urban development by 2030 is in areas with no available groundwater of suitable quality”

Aiming to reduce average mains water supplied to 110 kL/person/year (=301 L/p/day)



Global Urban Water Use in 2010 (IWA, 2012)



Perth's Water Performance

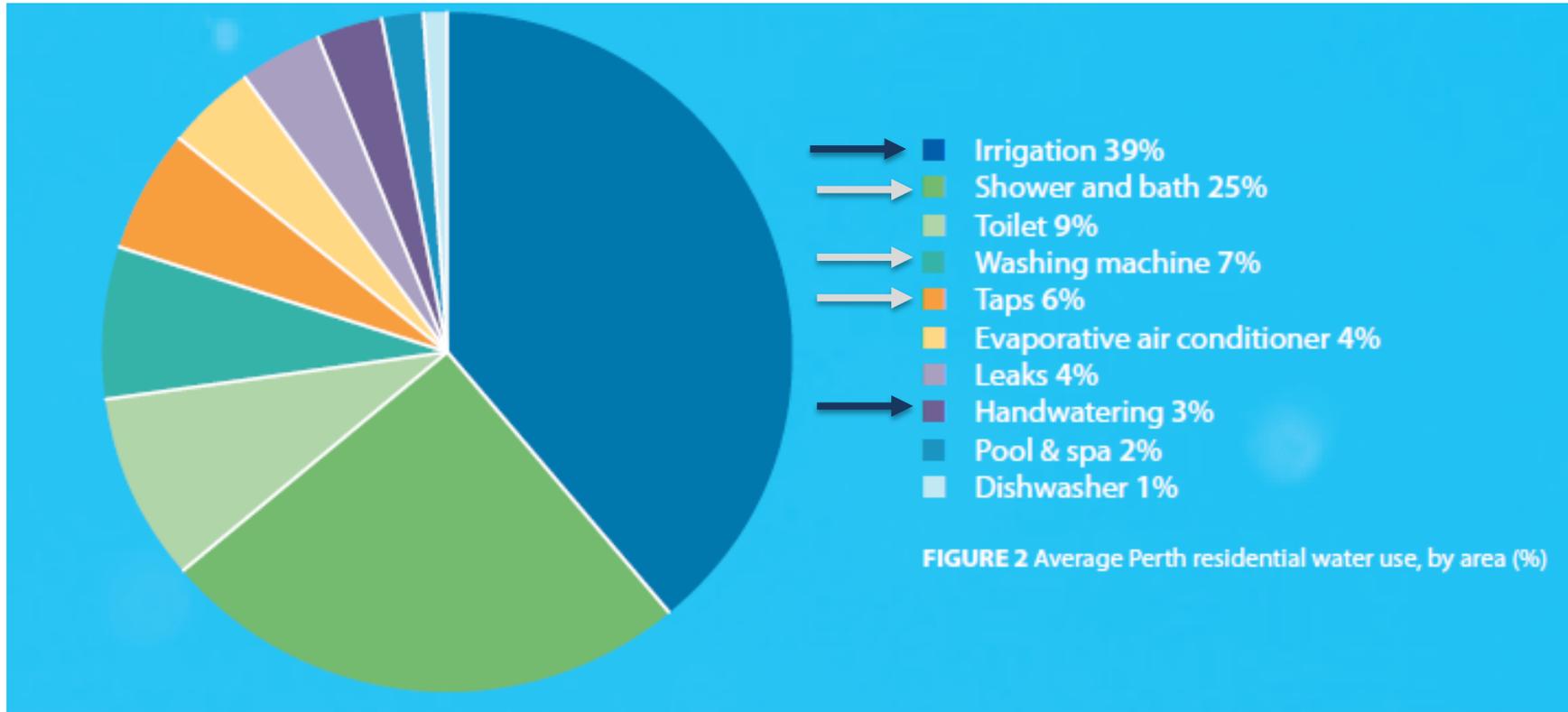
- 2nd highest per capita water consumption of any Australian capital city
- 2nd highest typical residential water and sewerage bill of any Australian capital city
- the most energy intensive water supply in Australia, nearly 2.5 times the next highest, and
- has the second lowest amount of water recycling of any major urban centre in mainland Australia.

Source: *National Performance Report 2017-18*. Urban Water Utilities. W12 and W26. Australian Government Bureau of Meteorology

Supply matches Demand

Irrigation = 42%

Greywater = 38%



Perth Water Use Study 2008-09

Water Corporation (2010) Perth Residential Water Use Study 2008-2009,

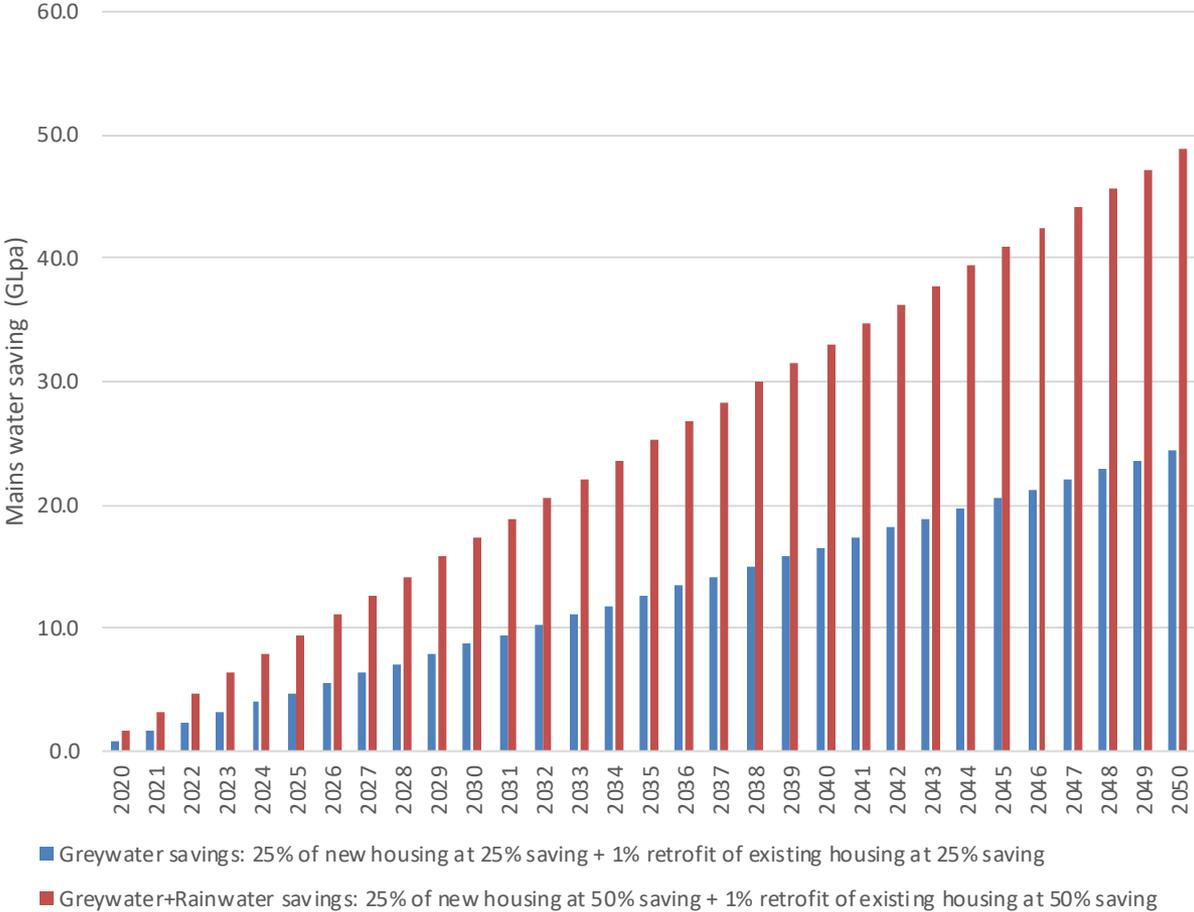
Savings of 30% on annual household mains water consumption in Perth are achievable with a properly installed greywater reuse unit^{#}. In conjunction with plumbed rainwater this can be greater than 50%*.*



* Joshs House Project, real time performance. <https://joshshouse.com.au/about-the-project/real-time-performance/>

Quantifying the benefits of residential greywater reuse – three case studies from Perth, Western Australia. J Byrne, S Dallas, A Nayak, M Anda. International Conference on Sustainable Water Management 2015, Murdoch University, Perth.

Mains water savings projections to 2050 for Greywater only and Greywater plus Rainwater systems for 25% pa of new homes and retrofitting of 1% pa of existing homes



Greywater Reuse – is it safe?

- *“In 493 published academic articles on greywater between 1977 and 2012 no negative epidemiological sanitary effects of greywater reuse have been reported.”*

Greywater Reuse. A Gross, A Maimon, Y Alfiya, E Friedler. 2015. CRC Press, New York

The West Australian Greywater Guide

For:

- Developers
- Planners
- Consultants
- Builders
- Plumbers
- Architects
- Landscape architects
- Homeowners



The West Australian Greywater Guide

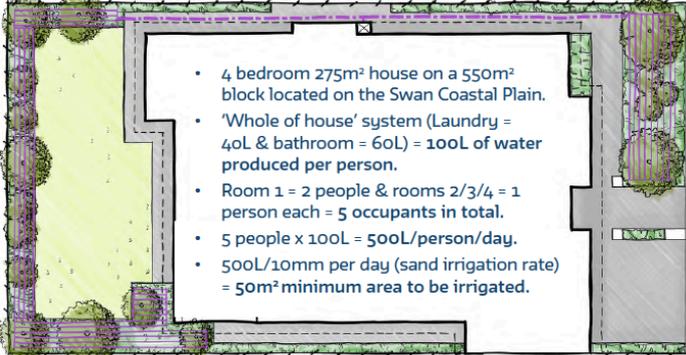
A source of practical information on how to best
reuse domestic greywater in Western Australia



Design sizing

$$\text{Application Area required (m}^2\text{)} = \frac{\text{Expected greywater volume (L/day) Design}}{\text{Irrigation Rate (mm/day)}}$$

Example of general application rate calculation for sandy soils



- 4 bedroom 275m² house on a 550m² block located on the Swan Coastal Plain.
- 'Whole of house' system (Laundry = 40L & bathroom = 60L) = 100L of water produced per person.
- Room 1 = 2 people & rooms 2/3/4 = 1 person each = 5 occupants in total.
- 5 people x 100L = 500L/person/day.
- 500L/10mm per day (sand irrigation rate) = 50m² minimum area to be irrigated.

Regulations



Technologies



Case Studies



Typical Costs

Type	GDD (pumped)	GTS
Purchase Price	\$750 ⁶ -2,500 ⁷	\$8,000-10,000
Installation (unit only) ⁸	\$250-1,000	\$1,500-4,000
Install dripline (40-50m)	\$750-1,000	N/A as used in-house or to sprinklers
Retrofit plumbing (1-2 fixtures) ⁹	\$400-1,000	\$400-2,000 ¹⁰
Greywater-ready plumbing (laundry, new house)	\$200-500	See below
Greywater-ready plumbing (whole house, new)	\$750-1,500	\$750-1,500
LGA fees ¹¹	\$240	\$240
Consultancy fees to assess sites and prepare application to council with plans	\$100-500	\$100-500

Maintenance



Suitable plants



Factsheets

Fact sheet 2



Is greywater suitable for my property?



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Greywater Irrigation

WATER
CORPORATION

Acknowledgements

Water Corporation

Department of
Communities

Department of Water
and Environmental
Regulation

Development WA



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QUESTIONS?



www.gwig.org

