

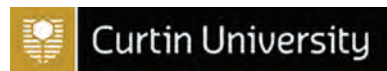
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WGV Waterwise Development Exemplar 2016/17 Partner Update



Cover image: WGV landscaped infiltration basin

Project Partners



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Image: SHAC'S artistic totems

WGV at White Gum Valley - A Waterwise Exemplar

WGV is a 2.2ha infill development in the Fremantle suburb of White Gum Valley. The LandCorp 'Innovation through Demonstration' project showcases precinct-scale design excellence on a number of levels by incorporating a range of diverse building types, climate sensitive considerations, creative urban greening and leading-edge water management strategies. The innovations at WGV are being captured via a series of research programs in cooperation with a variety of partners including Curtin University, the CRC for Low Carbon Living, the CRC for Water Sensitive Cities and ARENA.

The WGV Waterwise Development Exemplar (WDE) is an initiative conceived by Josh Byrne & Associates (JBA) for the purpose of showcasing the industry leading approaches to urban water management and scheme water optimisation that have been adopted throughout the precinct.

This report provides an update on the activities of the second year (2016/2017) of a three-year program. The WGV WDE has been made possible through the continued support of LandCorp, Water Corporation, Department of Water and Environmental Regulation, City of Fremantle, CRC for Water Sensitive Cities, Curtin University, CRC for Low Carbon Living and the Urban Development Institute of Australia (UDIA). A [WGV Waterwise Development Exemplar - 2015/2016 Partner Update](#) was provided in July 2016.

WGV at White Gum Valley is Western Australia's first residential development to achieve international endorsement through the sustainability initiative One Planet Living.

For more information visit:
www.landcorp.com.au/innovation/wgv



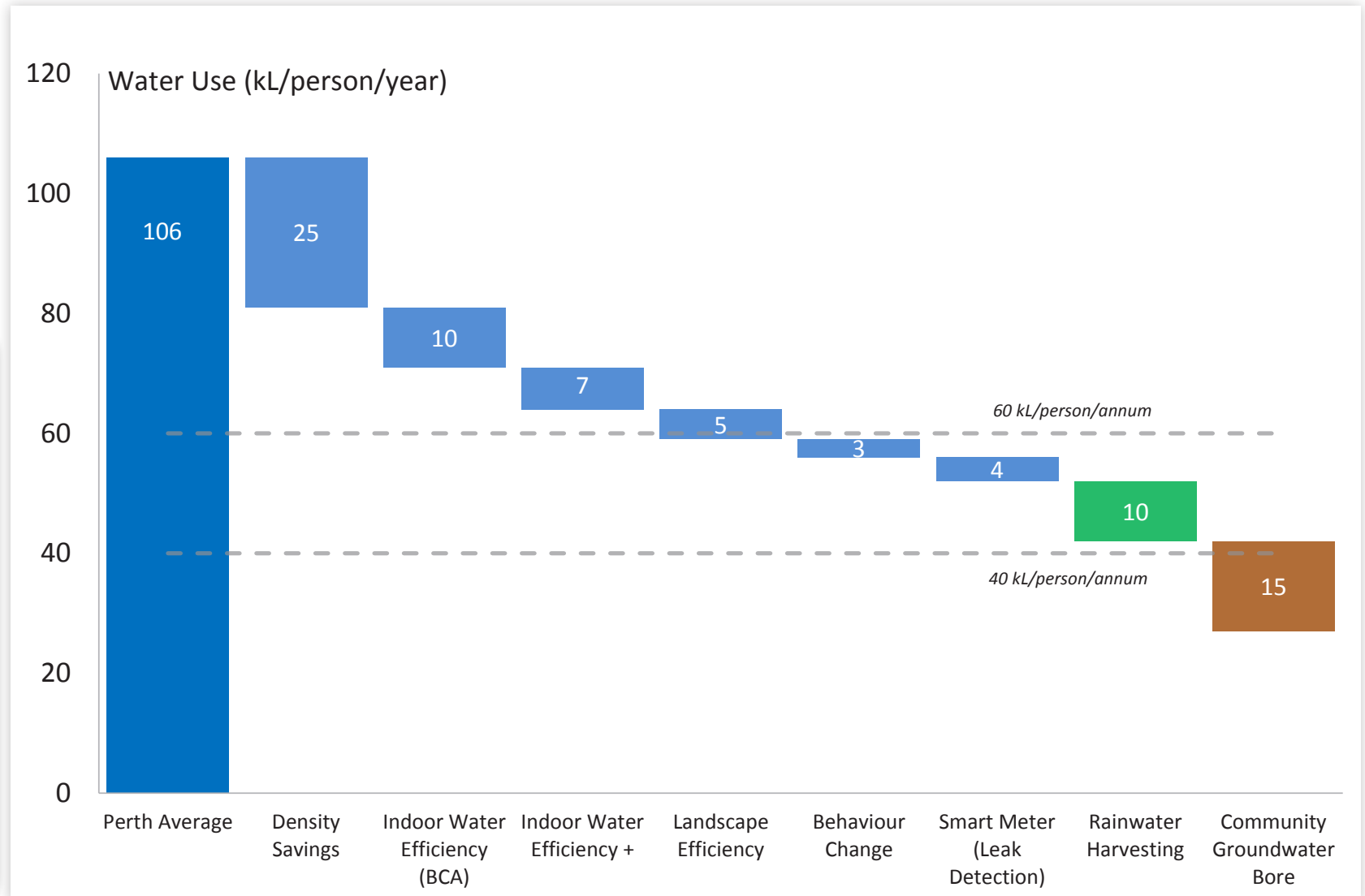
Water Saving Potential

WGV is targeting a 60% - 70% reduction in mains water consumption across the various typologies. This equates to 30kl - 40kl per person per year, in contrast to the Perth average of 106kl per person per year.

Key water saving initiatives include a community bore irrigation supply for use in both public and private gardens, as well as lot-scale rainwater harvesting systems for toilets and washing machines. There will be advanced water efficiency measures in the homes and a range of water sensitive landscaping features integrated across the development site.

Projected Mains Water Consumption for Single Residential Dwellings

This graph demonstrates how integrating a suite of individual water efficiency initiatives can achieve a 70% reduction in mains water use compared to the Perth average.



Development Site Update

There is great interest in WA's first Baugruppen (translates to 'building group') project to be built on Lot 2. Baugruppen is an owner-occupier led development process with the potential to deliver multi-unit housing that, compared with what is available in the marketplace, is more affordable, more diverse in its housing types, more sustainable and supports the establishment of community.

www.baugruppen.com.au

The first single residential dwelling (Lot 10) has been completed, others are nearing completion or under construction. All single lots at WGV have been sold.

LandCorp's Gen Y Home is complete and has been launched. Gen Y is a three 1x1 apartment meeting liveability, sustainability and affordability criteria.

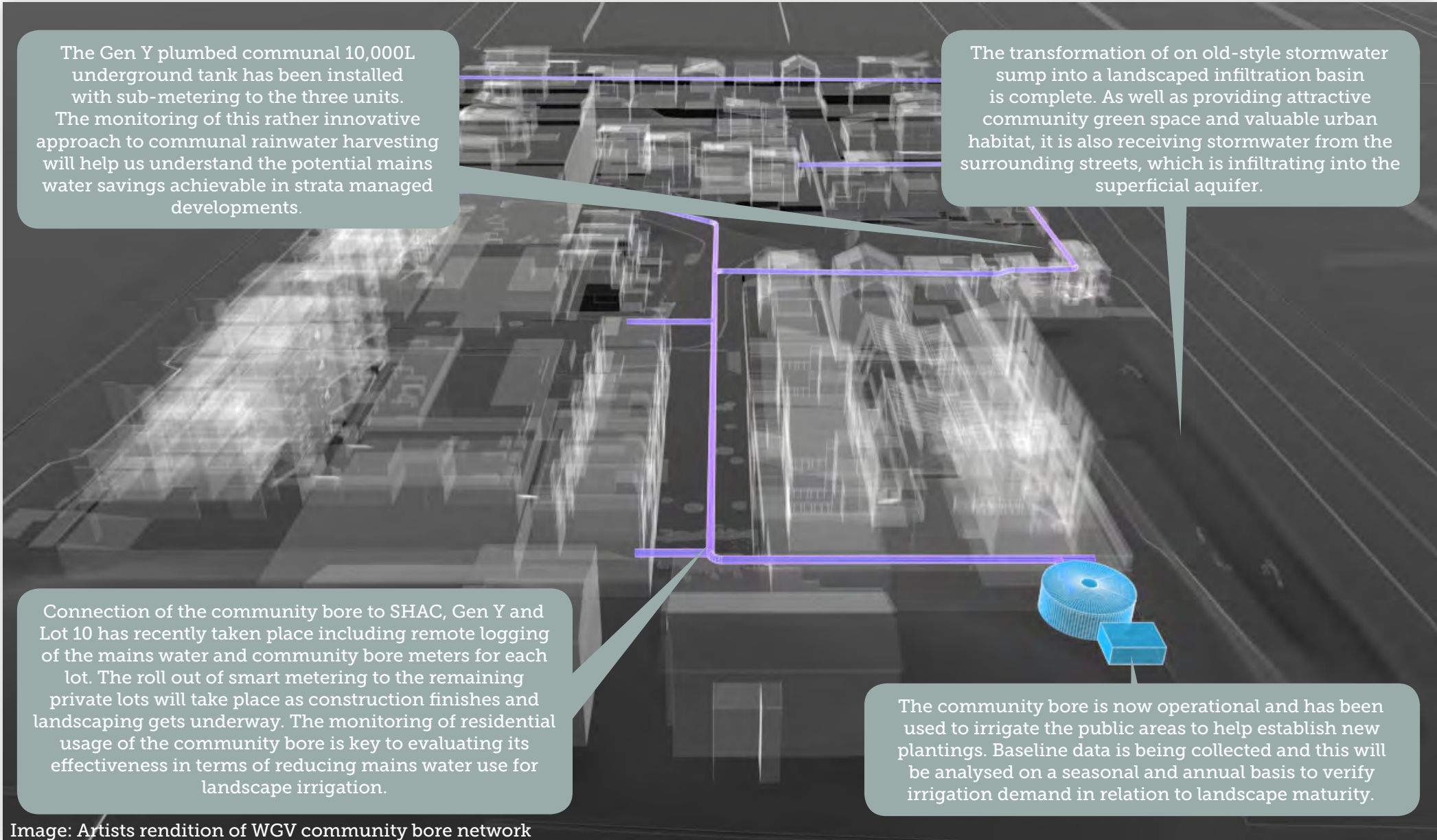
Stage 1 landscaping is now well established particularly in the key areas of Sullivan Hall, Mouquet Vista and the Hope Street stormwater infiltration basin.

The Men's Shed has now been relocated to its purpose-built premises in Hilton.

The SHAC (Sustainable Housing for Artists and Creatives) apartments by Access Housing have been completed, providing affordable housing for artists who work in Fremantle but have been progressively priced out of the area's housing market.

Image: Artists rendition of WGV

Water Infrastructure Update



The Gen Y plumbed communal 10,000L underground tank has been installed with sub-metering to the three units. The monitoring of this rather innovative approach to communal rainwater harvesting will help us understand the potential mains water savings achievable in strata managed developments.

The transformation of an old-style stormwater sump into a landscaped infiltration basin is complete. As well as providing attractive community green space and valuable urban habitat, it is also receiving stormwater from the surrounding streets, which is infiltrating into the superficial aquifer.

Connection of the community bore to SHAC, Gen Y and Lot 10 has recently taken place including remote logging of the mains water and community bore meters for each lot. The roll out of smart metering to the remaining private lots will take place as construction finishes and landscaping gets underway. The monitoring of residential usage of the community bore is key to evaluating its effectiveness in terms of reducing mains water use for landscape irrigation.

The community bore is now operational and has been used to irrigate the public areas to help establish new plantings. Baseline data is being collected and this will be analysed on a seasonal and annual basis to verify irrigation demand in relation to landscape maturity.

Image: Artists rendition of WGV community bore network

Research Activities

Commencing Mid-2015, the three-year WDE project will see key learnings relating to the water initiatives communicated to industry, local government and the broader community. Performance data is being used to verify if water use targets are being achieved, and design, governance and operational experiences are being shared via case studies and events delivered in association with project partners.

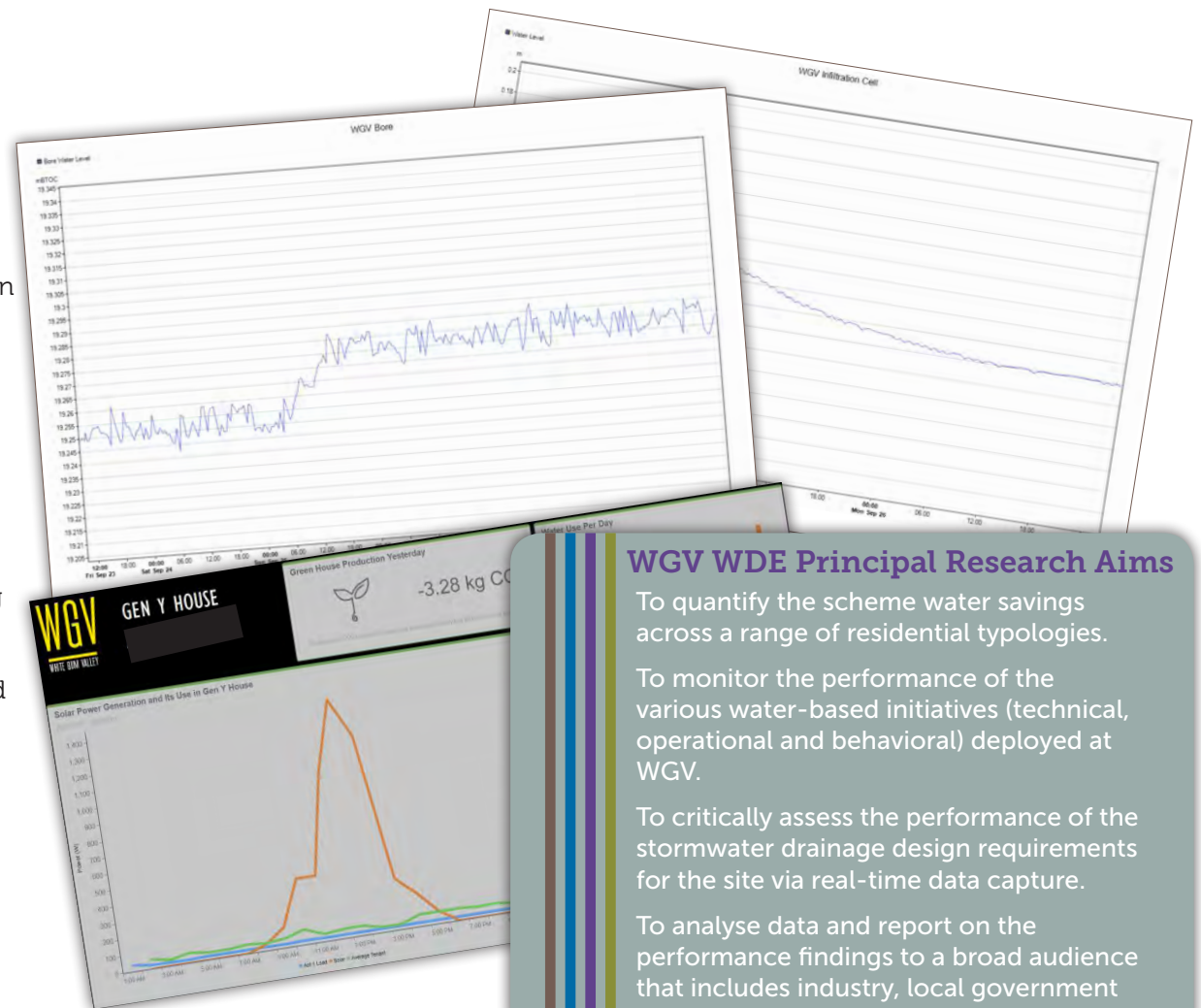
Water level sensors have been installed in the community bore and retrofitted sump, both of which are now displaying real-time data through Outpost Central software. This data, in conjunction with a good understanding of the contributing catchment will enable the performance of the infiltration cells to be monitored. It is hoped that ultimately this information will help inform stormwater drainage design criteria for local governments.

The community bore metering and irrigation sub-metering is also now online, hosted by SD Systems, and the irrigation scheduling has been bedded down.

Following the installation of the first data loggers on the mains water and community bore meters at SHAC, Gen Y and Lot 10, the data is now being hosted by Outpost Central on a server with web-based interface in real time. This information will be made accessible to those residents and authorized personnel for research and management purposes.

Another exciting development has been support from the Water Corporation to allow the development of a Community Bore Resource Kit. This will provide a valuable resource covering the design, planning, installation and ongoing operation and management of community bores for local governments who may be considering this option.

The CRC for Water Sensitive Cities undertook a case study on the WGV WDE because of the developments unique data and its contribution to research. The CRCWSC case studies are helping to build a body of evidence that can help capture and communicate the lessons learned from innovative real life projects, as well as highlighting the challenges that were faced along the way. The key innovations captured in the WGV case study include the community bore, landscaped infiltration basin and that WGV represents an exemplar waterwise development.



Images: Examples of data visualisation

WGV WDE Principal Research Aims

To quantify the scheme water savings across a range of residential typologies.

To monitor the performance of the various water-based initiatives (technical, operational and behavioral) deployed at WGV.

To critically assess the performance of the stormwater drainage design requirements for the site via real-time data capture.

To analyse data and report on the performance findings to a broad audience that includes industry, local government and the community.

What's Ahead?

The coming year promises to be an informative one as the data loggers are rolled out across the development and a substantial amount of water-related data comes online. The visualisation of this data will soon be bedded down and made available to the various stakeholders.

Specific activities will include:

- Ongoing installation of community bore meters for private lots, which in conjunction with the mains water and rainwater meters will be logged by smart metering equipment.
- Water data from the Gen Y Demonstration House, SHAC and Lot 10 will be used to ground truth and refine the smart metering arrangement and dashboard display ahead of its broader roll out at WGV.
- The water consumption data (mains, community bore and rainwater) will be used to ascertain the performance of the development in terms of scheme water savings and the effectiveness of the various initiatives adopted as part of the integrated approach to water efficiency.
- JBA will continue to liaise with the City of Fremantle regarding management and operation of the community bore scheme to ensure a smooth handover is achieved in mid 2018.
- Josh Byrne and VAM Media will produce a series of WGV focused videos supported by funding from the CRC for Low Carbon Living. Shared via www.densitybydesign.com.au the series will cover WGV's water saving initiatives in detail, along with other aspects of the project.



Image: Gen Y House, courtesy David Barr Architect and Rob Frith, Acorn Photography

Communications Activities

WGV continues to receive strong media interest, which has been achieved through a combination of stakeholder activities and communicate, resulting in numerous site tours, presentations, radio and television interviews, as well as print and online articles.

Stand out communication opportunities over the past 12 months include:

- September 2016 – A Water Sensitive Perth - Sir Walter Murdoch Lecture
- September 2016 - UDIA Award for Excellence – Judges Award
- November 2016 – Perth Water Catch it if you Can – Workshop - Australian Water Association
- February 2017 – New WaterWAYS Tour
- March 2017 – UDIA National Conference Study Tour
- May 2017 – National Forum: Regenerative Cities - CRC LCL Node Event
- June 2017 – WALGA Sustainability Officers Network Group Tour
- June 2017 – CRC WSC Case Study Launched
- June 2017 – CRC WSC Cities 3rd Annual Water Sensitive Cities Conference Tour

Additional communications for the WGV WDE can be found over page.

For further information on WGV at White Gum Valley and the Waterwise Development Exemplar initiatives go to:

- www.landcorp.com.au/innovation/wgv
- www.watersensitivecities.org.au/solutions/case-studies/white-gum-valley
- www.densitybydesign.com.au/wgv



"These projects and designs will enhance our cities' built environments for the people they must serve, and leave a lasting legacy for future generations."

Prime Minister Malcolm Turnbull

Policies, Programs and Concepts – Small Scale
2016 Australian Urban Design Awards (AUDA)

- **June 2016** - Innovation Presentation and Community BBQ event at WGV's Sullivan Hall held by LandCorp, the City of Fremantle and JBA
- **August 2016** - 'Take the Pressure Down - Water Sensitive Urban Developments' - Current magazine, Australian Water Association (AWA).
- **July 2016** - Being Waterwise in White Gum Valley - Waterwise e-bulletin July edition - Water Corporation
- **August 2016** – Policy Barriers to Better Open Space Outcomes Presentation (Showcasing WGV Case Study) - Local Government Supervisors Association
- **August 2016** – Cities of the Future – Grey or Green? Turf Growers Australia Conference
- **August 2016** – Energy and Water Metrics – Insights from Josh's House and WGV Precinct - Curtin Seminar
- **August 2016** – Density by Design lecture – Research and Innovation Week - Curtin University
- **August 2016** – Decarbonising Cities and Regions lecture – Curtin University
- **September 2016** – A Water Sensitive Perth - Sir Walter Murdoch Lecture
- **September 2016** - UDIA Award for Excellence – Judges Award
- **November 2016** – Engaging the Community - Living Low Carbon: White Gum Valley and Josh's House – CRC LCL National Forum
- **November 2016** – Sir Walter Murdoch Lecture reboot – Water Corporation
- **November 2016** – Perth Water Catch it if you Can – Workshop - Australian Water Association
- **November 2016** – Finalist - Banksia Smart Award
- **November 2016** – Gen Y Launch
- **December 2016** – Baugruppen Information Night
- **February 2017** – Small Communal Housing- Sunday Times
- **February 2017** – World Renewable Energy Conference Tour
- **February 2017** – New WaterWAYS Tour
- **March 2017** – Creating Great Public Spaces – Institute of Public Works Engineering Australasia Conference
- **March 2017** – Water in Sustainability – Curtin University
- **March 2017** – Temasek Singapore Polytechnic Tour
- **March 2017** – UDIA National Conference Study Tour
- **May 2017** – Density by Design – Sky News
- **May 2017** – Planning Sustainable Living – Insights from Josh's House and WGV Precinct – University of New South Wales
- **May 2017** – Working with Weeds Workshop – East Metropolitan Regional Council
- **May 2017** – Growing the Urban Forest Movement – International Plant Propagators Society Australia
- **May 2017** – Sustainable Cities – Case Studies - Insights from Josh's House and WGV Precinct
- **May 2017** – National Forum: Regenerative Cities - CRC LCL Node Event
- **May 2017** – What Water Where? Water options for Perth's drying climate - WA Turf Seminar
- **May 2017** - Western Australia - Determined To Keep Our Planet Green Evermore - theurbandevolver
- **June 2017** – WALGA Sustainability Officers Network Group Tour
- **June 2017** – Perth's Water Situation – ABC Radio Mornings (in Studio)
- **June 2017** – Future Housing Taskforce – Brisbane
- **June 2017** – Density by Design Presentation – Bendigo Sustainability Awards
- **July 2017** – [CRC WSC Case Study](#)
- **July 2017** – CRC WSC Cities 3rd Annual Water Sensitive Cities Conference Tour



Project Timeline - Key Milestones and Activities



Dec 14
Site construction commences

Sep 2015
Sump earthworks commence



Oct 2015
Sump drainage cells installed



Jan 2016
Community bore drilled



Apr 2016

- Sump landscaping complete
- Logging equipment procured
- Community bore distribution main installed

July 2015
WGV launched



Nov 2015

- WGV announced as WA's 1st internationally recognised One Planet Community
- WGV wins at PIA WA awards

Oct 2015

- WGV WDE launched
- WGV receives Waterwise Development accreditation



March 2016
WGV Residential Lot Purchasers – Sustainability and Design Workshop





May 2016

Community bore system operational

Tank and pump house for community bore installed



Sep 2016

Water level sensors installed

Oct 2016

Gen Y complete

Nov 2016

SHAC complete



Feb 2017

Sump successfully handles 2nd wettest Perth day ever



Jul 2017

First smart metering data received

Nov 2016

Australian Water Association Workshop

Sep 2016

A Water Sensitive City Sir Walter Murdoch Lecture

WGv wins at UDIA Award for Excellence



May 2017

National Forum: Regenerative Cities - CRC LCL Node Event

Mar 2017

UDIA National Conference Study Tour

Feb 2017

New WaterWAYS Tour



Jun/Jul 2017

- WALGA Sustainability Officers Network Group Tour
- CRC WSC Cities 3rd Annual Water Sensitive Cities Conference Tour
- CRC WSC Case Study released



May 2016

WGv wins at PIA National awards



