



Critical Horizons Futures Conference -  
'Housing the South West in the 21st Century'

# INNOVATION THROUGH DEMONSTRATION

**Presented by**  
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**#innovationWGV**

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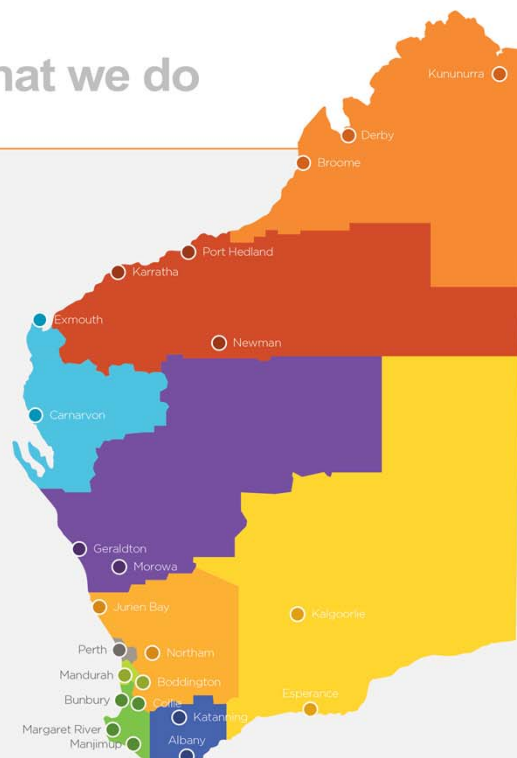
## PLAY 5 MINUTE ON WGV BEFORE STUART WALKS TO STAGE

- Formalities: including thanks for intro / recognising key stakeholders present  
**(MATTHEW TO POPULATE PLEASE)**
- Theme of this conference is Housing the South West in the 21st Century and the video you just saw is a taster of a study into innovation in housing that I will be presenting today.
- Although I will be referring to LandCorp during this presentation, it is **important to understand that what is being achieved in White Gum Valley is the result of intensive collaboration with a range of partners** – from local government and government departments to the private sector including developers, architects, science and sustainability experts – as well as universities.



## LANDCORP Who we are, what we do

**Kimberley**  
**Pilbara**  
**Gascoyne**  
**Mid West**  
**Goldfields-Esperance**  
**Great Southern**  
**South West**  
**Wheatbelt**  
**Peel**  
**Metropolitan**



### LandCorp – Who we are and what we do

- We are the WA State Government land development agency
- With more than 150 diverse projects on the go we support our city's growth by delivering land for living and land for jobs
- A key role for LandCorp is to help encourage and influence innovation
- Perth metro areas creates many opportunities for this through our infill and redevelopment projects, that maximise the use of existing infrastructure
- By creating innovation through demonstration projects in Perth, it provides a fantastic opportunity for us to apply our learnings to our work with regional communities
- Just as important, it enables private industry in regional centres to study our achievements, and apply these emerging forms of best practice to their activities

# South West Snapshot



Population growth over 10 years .....	↑ 30% to 174,000+ (ABS to Jun'14)
Population forecast (2026) .....	↑ 220,286 (+46,000 people)
Median house price (Dec 2015) .....	→ \$390,000 (Perth: \$535,000)
Median residential lot price (Dec 2015).....	→ \$187,500 (Perth: \$249,000)
Median residential lot size (Dec 2015).....	↓ 10% to 574sqm (Perth: 390sqm)
Residential building activity (2014-15).....	↑ 1,915 building approvals issued
Industrial lot sales (2014-15).....	↑ 57* industrial lots sold (40% in Busselton / Vasse)

*\*Preliminary data*

First a quick recap of population and housing trends of the South West

## Population Growth

- In the 10 years to 30 June 2014, the population of the South West region increased by 30% to just over 174,000 residents. In comparison, WA's population also grew by 30% over that period
- Population growth has differed considerably between local authorities in the South West.

## Population Forecast

By 2026 analysts predict a SW population of more than 220,000. That's 46,000 plus more residents who will need housing, amenity, jobs

## Median Established House Price

House sales in the SW peaked in 2012-13 and have since eased off. This is reflected in the median house price in the South West in December 2015 (first half) decreasing by 2.5% to \$390,000 – but this is a comparatively small decrease compared to other markets and there are indications that we may be seeing a slight strengthening again. With the Perth metro median house price being \$535,000, there is opportunity to capture new residents looking for alternatives to Perth living

## Median Residential Lot Price

The median lot price in the SW by Dec 2015 was \$187,500, compared to \$249,000 in Perth metro.

**Median Residential Lot Size**

In the same period, the median lot size in the SW was 574sqm compared to 390sqm in Perth metro. It is interesting to note that there appears to have been a shift in perception about large lots – here in the SW in just 12 months the average lot size decreased from 615sqm.

**Residential Building Activity**

Residential building approvals have followed lot sales trends in the SW – falling in 2011-12, but since increasing

In 2014-15, there were just under 1,850 building approvals issued for houses and 65 for other residential buildings

**Industrial lot sales**

The SW industrial property market saw a surge in 2014-15

Preliminary data indicates that in 2014-15 there were 57 industrial lots sold, with 40% of these in the Busselton/Vasse area

# Housing Analysis Greater Bunbury

Beds	Price Point	Supply	Demand	Gap
1-2 Bed	Low	1,168	2,446	-1,279
1-2 Bed	Medium	903	795	107
1-2 Bed	High	233	51	181
3 Bed	Low	4,226	5,925	-1,700
3 Bed	Medium	3,480	4,645	-1,165
3 Bed	High	504	327	177
4+ Bed	Low	3,108	2,919	189
4+ Bed	Medium	7,637	4,981	2,656
4+ Bed	High	1,793	1,531	262
<b>Subtotal</b>		<b>23,051</b>	<b>23,622</b>	<b>-571</b>
<b>Unoccupied</b>		<b>2,830</b>	<b>-</b>	<b>2,830</b>
<b>Other</b>		<b>382</b>	<b>-</b>	<b>382</b>
<b>Total</b>		<b>26,263</b>	<b>23,622</b>	<b>2,641</b>

- Lets now drill down into the housing market in the greater Bunbury area
- Greater Bunbury is home to over 60,000 people, making it the third largest city in the state after Perth and Mandurah
- Growth in the Greater Bunbury area is to be facilitated by increased density and infill development, though there also will be a diffusion of the population to surrounding areas
- The city is currently attracting significant investment through the development of the Waterfront and expansion of the port
- The transformation of the waterfront will include commercial and retail areas, housing in the form of townhouses and apartments, an improved public waterfront area, as well as better family beaches, making the city one of the most sought-after coastal destinations
- This, together with expansion of the port, is likely to bring about significant employment and economic growth in the region – and together we must prepare for the inevitable demands for future accommodation
- The Bunbury market is in shortage by 571 dwellings, not including unoccupied dwellings and other types of abode (unoccupied being the result of holiday homes and currently unachievable house sale prices)
- This shortage appears to be driven by demand for low and medium price points, particularly for smaller dwellings. This means that the shortage could be manifested in overcrowding or homelessness
- The largest barriers to developers being able to fulfill these gaps is a lack of vacant land, zoning restrictions and a high cost of construction

- So those are the current challenges ... looking into the future, just seven years from now to 2023 ... analysts are predicting an additional 10,000 people to the Greater Bunbury area
- We have to start thinking smart. We have to adapt and evolve to the changing conditions, trends and requirements.
- We now have access to the technology that can make a huge difference for affordable living
- All in all, together we have to raise the bar in how we go about planning and developing housing of the future
- Which brings me to the White Gum Valley project

# White Gum Valley Innovation Through Demonstration



White Gum Valley Innovation by Demonstration community launched 17 June 2015

It has been one of our most anticipated **Innovation through Demonstration** projects because it has the potential to deliver so many positive advances for the building and development industry in WA

The new WGV residential estate at Perth's White Gum Valley showcases how innovative infill developments can cater for population growth in a sustainable way. As you see from this graph, Perth is predicting 1.5million new residents by 2050, which will put housing supply under pressure if we don't adapt now to changing trends and plan for the next generation

Demonstrates affordable living opportunities through compact, climate-responsive design with a high level of energy and water efficiency

Featuring a range of ground breaking water, energy, environmental and design innovations. It truly represents 'smart' living



# Project Vision



## Project Vision

- LandCorp is working to create vibrant and liveable communities while reducing the impact development has on the natural environment
- We are doing this by developing connected communities that best utilise social and physical infrastructure
- WGV is one of LandCorp's urban renewal projects where we regenerate under-utilised land in an established prime urban area
- Here under-used land is being redeveloped to provide homes for up to 150 people in a residential estate that is connected to established infrastructure
- Public transport links connect to Fremantle's amenities and attractions
- Educational facilities are close by
- Parks and playgrounds, sporting clubs and recreational grounds are in close proximity
- And as in all our urban renewal projects, a diverse range of housing types is being delivered in WGV – including apartments, townhouses, maisonettes and 23 single home sites
- WGV is a unique development that makes smart use of the earth's resources
- It demonstrates the very best in modern and sustainable design and will create a community where it is easy and affordable for people to live in a sustainable manner



- Future residents are expected to save up to \$1,200 on their annual utility bills

# Project Partners



## Project Partners

- This project has seen LandCorp create important partnerships with Government including the City of Fremantle and Water Corporation as well as with key stakeholders and the private sector - Josh Byrne & Associates, the Cooperative Research Centre for Low Carbon Living, David Barr Architect, Curtin University and One Planet Living
- Here at WGV our project partners are helping us to bring this visionary sustainable community to life. Without the expertise and capabilities of all those involved, WGV would not be the exciting and ground-breaking development progressing technological and sustainable advancements unseen in residential estates until now
- WGV has the potential to deliver many positive advances for the building and development industry in WA
- Thanks to the sustainability work and studies currently way, the industry will benefit from the learnings garnered at WGV – being able to apply new technologies and sustainability methods to future state-wide projects
- WGV is a unique development leading the way in the smart use of the earth's resources
- Embracing compact, climate-responsive design with a high level of energy and water efficiency WGV is setting new benchmarks in sustainable residential development

# One Planet Living Recognition



## One Planet Living Recognition

- WGV is WA's first estate to be recognised as a One Planet Living development
- Working in partnership with the City of Fremantle and guided by that Local Government Authority's approach we adopted the One Planning Living international framework consisting of 10 principles
  - Zero Carbon
  - Zero Waste
  - Sustainable Transport
  - Sustainable Materials
  - Local and Sustainable Food
  - Sustainable Water
  - Land Use and Wildlife
  - Cultural and Heritage
  - Equity and Local Economy
  - Health and Happiness
- Aims to provide a simple way for organisations to plan and deliver sustainable design
- WGV joins a network of exemplary and sustainable communities around the world
- The goal of One Planet Living is to create neighbourhoods where it is easy, attractive and affordable for people to live well using a fair share of the earth's resources
- At WGV, the 10 principles are being translated into a real world, highly innovative, urban

development that demonstrates the vision of One Planet Living

- Have used tools to calculate the energy, carbon and water-use impacts of the WGV community to reduce the resource “footprint” of the whole development



# Gen Y Demonstration Housing Project



## Flexible housing model showcasing

- Environmental sustainability
- Infill housing
- Affordable living



## Gen Y Demonstration Housing Project

- WGV will host the Gen Y Demonstration Housing Project
- In 2013 we invited young architects to enter our design competition where we sought design concepts for a sustainable residential dwelling which encapsulated the Gen Y lifestyle
- Fremantle-based architect David Barr won the competition with his focus on tackling the challenge of affordable living
- Affordability is a big challenge facing Gen Y as they enter the housing market – and the project provides a solution
- It pushes the boundaries of the Residential Design codes to maximise outcomes for residents with the result being an innovative design of housing diversity which creates affordable and desirable modern homes for a new generation
- Not only that but the Gen Y Demonstration Housing Project embraces energy efficient design and other key eco-living features



# Gen Y Demonstration Housing Project



## Design will achieve

- High levels of energy and water **efficiency**
- Reduced carbon **emissions**
- Reduced ongoing **running costs**



## Gen Y Demonstration Housing Project

- Through innovative design, three compact solar passive units will be built on a 250sqm block
- Each has a double bedroom, combined kitchen/living/dining, bathroom and laundry and an outdoor living space
- Each unit is strata titled for private ownership of interior and exterior spaces as well as shared common property
- It will showcase three compact solar passive apartments with opportunities for affordable living through reduced running costs
- Key features include:
  - Climate responsive layout with solar passive design principles and thermal mass to naturally heat and cool the dwellings
  - Lightweight building materials and flexible building design - residents can alter their living environment to suit changing lifestyles
  - Water and energy performance monitoring to highlight efficiency opportunities
  - Installation of a shared underground rainwater tank and connection to WGV's community bore for non-drinking water - reducing mains water consumption
  - Use of sustainable building materials - timber frames, lightweight insulated cladding and 'green' concrete using low carbon furnace slag
  - Accessibility features into the structural design - wider doors, reduced thresholds and allowances for the installation of accessibility aids

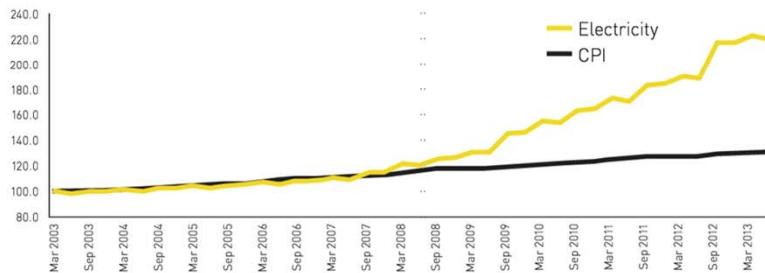
- The whole project is the subject of a four-year research task by the Cooperative Research Centre for Low Carbon Living to assess the energy efficient design, technology performance and occupant behaviour

# Solar PV and Battery Trial



- New framework for solar power
- Shared solar capture and battery storage technology
- Maximise solar power in strata setting

CONSUMER PRICE INDEX AND RETAIL ELECTRICITY PRICES  
(MARCH 2003 = 100)



## Solar PV and Battery Trial

- Featured on ABC's Catalyst
- 1.4 million households in Australia have rooftop solar panels
- Very few strata housing or apartment complexes feature solar panels with the few that do having them wired to individual dwellings
- This limits the potential for sharing and maximising the electricity between households in group dwellings
- A Curtin University Research Fellow recognised this gap, and developed a governance framework to adopt solar power in strata housing
- This framework, in an Australian first, is being trialled at the Gen Y Demonstration Housing Project
- The trial will show how renewable energy can be adopted in a strata setting and will produce a framework transferable for the rest of the property industry
- This has the potential to revolutionise the use of solar panels in a strata setting – an important advancement as our urban populations increasingly adopt a higher density lifestyle in such a setting

# Solar PV and Battery Trial



- **Reduce** grid energy consumption by 60 per cent
- **Carbon-free** electricity at discounted rate
- **Reduced** power bills

## Solar PV and Battery Trial

- WGV aims to reduce grid energy consumption by 60 per cent and become a model for smarter energy use
- The adoption of solar panels and the use of batteries to store generated energy for distribution to multiple households is an industry first
- This new framework creates a mini power grid for the strata building with shared solar panels and batteries to store and source energy from - it can generate and store its own power
- Occupiers get carbon-free electricity and receive electricity at a discounted rate to buying it from an energy retailer
- In rented dwellings, a strata company manages the monitoring of the system including billing tenants for electricity use – with any profit returned to the property owner which helps offset any costs in implementing the system
- Ultimately this trial will show how renewable energy can be adopted in a strata setting
- It will produce a framework transferable for the rest of the property industry - and hopefully result in greater adoption of renewable sources
- The success of the trial will be also be assessed over the four-year Cooperative Research Centre for Low Carbon Living research



# Water Initiatives



- **Water-sensitive** urban design
- **70% reduction** in mains water consumption
- **Reduced** water bills

**Recently endorsed by Water Corporation and set to be the most WaterWise development in Perth**



## Water Initiatives

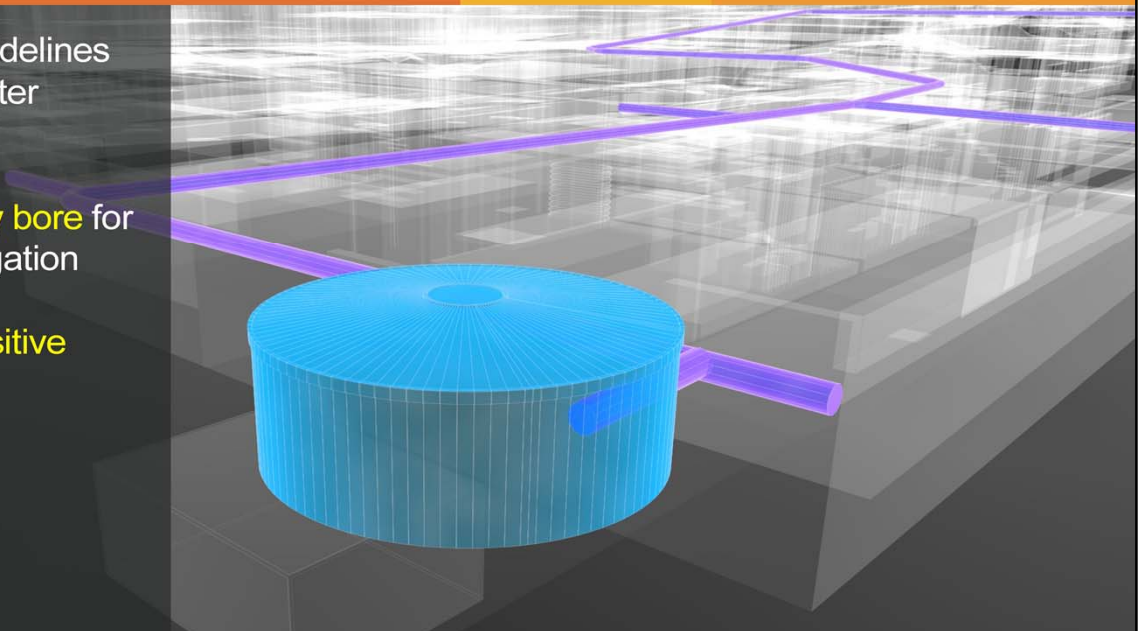
- Integrated urban water management is central to LandCorp's WGV Innovation through Demonstration project at White Gum Valley
- We have undertaken a comprehensive approach to implement water sensitive urban design and apply efficiency measures
- This approach will see a 70 per cent reduction in water use for single residential dwellings, compared with average Perth consumption
- Once savings have been realised, WGV will be the most water efficient Waterwise Development in WA
- These measures will lead to reduced water bills



# Water Initiatives



- Design Guidelines support water efficiency
- Community bore for garden irrigation
- Water-sensitive landscape



## Water Initiatives

- Design Guidelines across the development will ensure all dwellings deliver in the area of efficient water use
- All single residential homes will have dual-plumbing
- Installed plumbed rainwater tanks will provide non-drinkable water for toilets and laundries
- Water supplies to each lot will be individually metred and logged in real time to demonstrate mains water savings and provide notification of any leaks or water supply issues
- Our initiatives include the use of water efficient fixtures and fittings, real time metering, Waterwise landscaping and irrigation, and a community bore
- The community bore will be installed in landscaped public open space to provide each lot in the development with a source of non-potable water for garden irrigation - an innovative approach to water supply at precinct scale in WA
- The bore and community-wide stormwater retention system will support water sensitive landscape design

## **Landscaping**

- WGV landscaping will deliver an attractive environment which supports local biodiversity, provides shading and encourages community interaction
- Will include public open spaces and facilities such as BBQ areas, nature play areas, informal seating and a network of walkways and cycle paths to encourage active, outdoor lifestyles
- Landscaping and street trees have been selected to include a mixture of native species for all round shade and deciduous trees for areas where summer shade and winter sun is required
- Thirty per cent of the street trees will be edible fruiting species to support local food production and foster sharing
- Trees, shrubs and lawn species have been carefully selected for the public domain to ensure they are Waterwise and suited to Perth's climate
- Material from site works, including excavated limestone and recycled timber, will be incorporated into landscape elements



## Community

- WGV will create a new community focused on sustainable living
- Outdoor community amenities will foster community cohesion
- Existing community facilities, including Sullivan Hall and the Men's Shed, are on site
- Development includes alternatives to car-based travel including:
  - Walking and bike paths
  - Access to local bus routes
  - Electric car recharging stations
  - Potential inclusion in the City of Fremantle's car share scheme
- LandCorp, Access Housing and the Sustainable Housing for Artists and Creatives (SHAC) are working together to deliver a cooperative housing development for local artists and their families in support of the local artistic community

# Development Update



## Development Update

- Siteworks at WGV began in December 2014 and by mid 2015 we received strong interest in land sales
- The developer lots are already sold as is the innovative cooperative housing development lot for SHAC
- The first residential were released to market towards the end of 2015. **Only 7 single residential and 4 split level lots remain**
- Comprehensive Design Guidelines are in place to ensure the high sustainability outcomes behind WGV are achieved
- Strong indicator to the private developers in the SW that there is demand for housing estates with 'smart' housing



# THANK YOU

Stuart Nahajski  
General Manager Regional

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***DAVID TO ADD 2 FINAL KEY POINTS AT END ABOUT APPROACHES OF OTHERS TO INNOVATION –  
IDEALLY 1 AGENCY/1 PRIVATE SECTOR??***

- The WGV project at White Gum Valley will achieve a number of **firsts** for WA
- It will be the first residential development to achieve an international sustainability endorsement from One Planet Living
- It will be the first development to equip residents with the ability to reduce their water and power bills by more than \$1,200 every year
- It will feature cutting-edge energy, water and climate-responsive design and the lessons we learn about resource efficient building will be shared with all Western Australians online
- The development will also be the focus of a four year Cooperative Research Centre for Low Carbon Living research program undertaken by Curtin University
- The builders, developers and residents at WGV will take part in a “living laboratory” and the findings from this important research will help change the way we live.
- Importantly, LandCorp has committed to sharing the progress of the development online to ensure all Western Australians can benefit from the latest resource efficient building tips and lessons learned

***2 FINAL KEY POINTS ABOUT APPROACHES OF OTHERS TO INNOVATION***



**Thank you**