INNOVATION THROUGH DEMONSTRATION

ONE PLANET LIVING SUMMARY REPORT

JUNE 2015

WHITE GUM VALLEY

Artist impression for illustrative purposes only.
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Figure 1: Site Context
THE VISION

“To create a high-quality infill development that is site responsive and is built upon the context of the locality, seeking to leverage the site’s strong attributes to enable the development to benefit future residents as well as the existing community that surrounds it.”

As a LandCorp Innovation through Demonstration project, WGV has received special attention to ensure that the resulting precinct shows genuine leadership in sustainable development and can meet the expectations of residents who are looking for a great lifestyle with a reduced environmental footprint.

One Planet Living was selected as the framework to be used to guide the WGV design process and to independently assess the results.

ONE PLANET LIVING IN WHITE GUM VALLEY

WGV has achieved National Recognition by BioRegional Australia for its application of the One Planet Living framework, an international initiative based around 10 Principles which guide sustainable development. It means that the project has responded to the framework’s broad range of principles, from energy and water to health and happiness, and shows leadership in sustainable development. The recognition is based on an independent review by BioRegional, the not-for-profit body that administers One Planet Living internationally.

This recognition underscores the holistic approach taken to planning, design, and sustainability at WGV and indicates that the foundation is in place for residents of WGV to choose a lifestyle that is healthy, fulfilling, and can be supported within their fair share of renewable resources.

WGV is a highly innovative residential project that LandCorp is developing on the former Kim Beazley School site in White Gum Valley. WGV is a LandCorp Innovation through Demonstration project which will provide a diverse range of sustainable housing types and living options including apartments, townhouses, maisonettes, and single dwellings in an existing suburban context.

Sited on Stevens Street, opposite Royal Fremantle Golf Course and Booyeembara Park, the two hectare site will be transformed into a residential precinct which is sympathetic to the community and environmental aspirations of the surrounding suburb.
The overarching objective of the One Planet Living framework is to guide human settlements towards a future where everyone can enjoy a healthy and fulfilling lifestyle that can be supported by the Earth’s renewable resources. This objective has been distilled into three overarching targets, shown in the table below.

**Table 1: OPL Overarching Targets**

<table>
<thead>
<tr>
<th>PRINCIPLE</th>
<th>OVERARCHING TARGETS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenhouse Gases (GHG)</td>
<td>Contract and converge rapidly, aiming for 0.8 tonnes per person by 2050. One Planet Communities will strive to show consistency with the most up-to-date climate science and the Green House Gas reductions necessary to avoid dangerous climate change.</td>
</tr>
<tr>
<td>Ecological Footprint</td>
<td>One Planet Communities will enable residents to achieve Ecological Footprints of 1.7 global-hectare/person as soon as possible and 1.25 global-hectare/person by 2050. One Planet Communities will strive to show consistency with the concept of living within our fair share of the Earth’s renewable and replenishable resources.</td>
</tr>
<tr>
<td>Clean Activities</td>
<td>One Planet Communities will avoid any damaging pollution to air, land, or water as a result of their activities at construction or occupation stage. Suppliers of goods and services with strong environmental track records and low pollution impacts will be favoured over more polluting alternatives.</td>
</tr>
</tbody>
</table>

These overarching targets should be met through a One Planet Living Assessment Plan based on 10 sustainability categories, referred to as the Principles. This report is a summary of that Assessment Plan.
RESPONDING TO THE PRINCIPLES

The following table highlights how the project has responded to the objectives of One Planet Living with the intent to become WA’s first One Planet Community. The table shows the 10 One Planet Living Principles, the targets that all One Planet projects must aspire to, and how WGV responds to those targets.

Table 2: WGV One Planet Design Response

<table>
<thead>
<tr>
<th>OPL PRINCIPLES</th>
<th>COMMON INTERNATIONAL TARGET</th>
<th>WGV DESIGN RESPONSE</th>
</tr>
</thead>
<tbody>
<tr>
<td>ENERGY AND CARBON</td>
<td>All buildings to be ‘net zero carbon’ in use through exemplary energy efficiency and a combination of on and off site renewable energy generation.</td>
<td>• <strong>Diverse Dwelling Types</strong>: More likely that people will select an appropriate sized dwelling, rather than over-sizing.</td>
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<tr>
<td></td>
<td></td>
<td>• <strong>Climate Responsive Layout</strong>: Orientation of lots will support passive solar design of buildings.</td>
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<tr>
<td></td>
<td></td>
<td>• <strong>Climate Responsive Landscaping</strong>: Use of deciduous trees to achieve seasonal shading in appropriate locations. Low embodied energy materials in landscape features.</td>
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<tr>
<td></td>
<td></td>
<td>• <strong>Energy Efficient Design</strong>: A suite of measures to improve typical performance for a precinct of this size.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>WGV Design Guidelines</strong>: A suite of requirements and guidance to ensure that buildings are high performance for energy and emissions.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>WGV Sustainability Package Rebate</strong>: PV system size upgrade to meet zero-energy potential, plus supply of a developed deciduous tree for seasonal shading.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Resident Engagement Program</strong>: To assist with low energy/ carbon behaviour.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Low Energy Water Sources</strong>: Alternate water sources for non-potable uses (toilet flushing, clothes washing, and garden irrigation) produced at lower energy value than mains water.</td>
</tr>
<tr>
<td>WASTE MANAGEMENT</td>
<td>Reduction in all waste generation including recyclables, and approaching zero waste (2 per cent) to landfill by 2020.</td>
<td>• <strong>Diverse Dwelling Types</strong>: More likely that people will select an appropriate sized dwelling, rather than over-sizing.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>WGV Design Guidelines</strong>: Asks that builders recycle construction materials as well as consider prefabrication to reduce waste.</td>
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<td></td>
<td></td>
<td>• <strong>Diversion from Landfill</strong>: The waste from WGV residents will be taken to the nearby South Metro Regional Council (SMRC) resource facility in Canning Vale. This facility currently achieves 70 per cent diversion from landfill and is targeting 100 per cent.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>Community Based Activities</strong>: WGV residents will have the opportunity for onsite composting in their own gardens or in community gardens.</td>
</tr>
</tbody>
</table>
### SUSTAINABLE TRANSPORT

Contract and converge rapidly to personal transport emissions that are consistent with the overarching GHG target through reducing the need to travel and by facilitating low and zero carbon transport solutions.

- **Sustainable Transport:** Cycle and pedestrian friendly design, connections to Fremantle path network and “Green Plan”, nearby bus route, potential for a car share point onsite.
- **Bicycle Storage:** Weather-proof bike storage recommended in Design Guidelines and will be addressed by developers of the multi-dwelling sites.
- **Transperth Bus Route:** WGV residents will have easy access to an adjacent bus route which will enable them to travel to the City of Fremantle and other locations.

### SUSTAINABLE MATERIALS

One Planet Communities strive to reduce the impacts of all goods and materials used in the construction, maintenance, and occupation of the community, to a degree that is consistent with the overarching GHG and Ecological Footprint target.

- **Reused Site Materials and Sense of Place:** Onsite reuse of materials includes excavated limestone and milled timber from trees removed. Local artists engaged in design of elements in public spaces.
- **Climate Responsive Landscaping:** Use of deciduous trees to achieve seasonal shading (rather than built elements).
- **WGV Design Guidelines:** Contains advice on selection of materials with low embedded carbon and low toxicity.

### LOCAL & SUSTAINABLE FOOD

Contract and converge on personal food Footprints that are consistent with the overarching targets through encouraging local, fresh unprocessed produce, organic produce, reduced waste, and lower animal protein diets.

- **Community Gardens:** WGV will connect with the City of Fremantle’s community gardens program. An onsite community garden is being considered and will be developed if residents are behind it.
- **Food In The Landscape:** Target of 30 per cent edible trees in public domain. Many of these will be citrus due to their hardy nature and popularity of their fruit.
- **WGV Design Guidelines:** Supports the creation of sunny garden spaces conducive to productive plants and contains a species list that includes suitable edible varieties.
## OPL Principles

<table>
<thead>
<tr>
<th>Common International Target</th>
<th>WGV Design Response</th>
</tr>
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<tbody>
<tr>
<td><strong>SUSTAINABLE WATER</strong></td>
<td></td>
</tr>
</tbody>
</table>
| One Planet Communities adopt locally specific best practice in water conservation, water efficiency and recycling, and surface water management, making a net positive contribution to the local natural water system. | • **Community Bore:** Providing fit-for-use water to private and public gardens to reduce mains water use.  
• **Dual Metering:** Both mains water and bore water to each lot monitored for demand management and leak detection. Water from the tank, if installed, will also be metered and monitored separately.  
• **Onsite Infiltration:** A simple and effective sustainable urban drainage approach.  
• **Tree Pit Infiltration Trial:** Implemented on three street trees within the development, with the intention of a broader roll out once proven.  
• **Low Water Plant Selection:** Waterwise tree, shrub, and lawn species.
A list of suitable Waterwise plants within Design Guidelines.  
• **Efficient Irrigation:** Best practice automation, sub-surface, hydro-zoned to public domain, and equivalent guidance for residents.  
• **Use of Soil Amendment and Mulch:** To improve the soil’s water holding capacity.  
• **In-house Water Efficiency Design Measures:** Efficiency well above building code requirements stipulated.  
• **Alternative Water Source Plumbing:** Each detached dwelling will have dual plumbing for non-drinking purposes (e.g. toilet flushing, washing machine, and garden taps) installed as part of the mandatory Design Guidelines, further enabling the displacement of mains water if a rainwater tank is installed.  
• **WGV Sustainability Package Rebate:** Rainwater tank and associated pump and plumbing. |
| **LAND USE & WILDLIFE**     |                     |
| One Planet Communities make a net positive contribution to local native biodiversity. They work to a resourced biodiversity action plan for the area of the community and they showcase at least one project to regenerate degraded local natural resource stocks (soils, trees, fisheries, etc.). One Planet Communities look for ways to facilitate the establishment or enhancement of valuable wild space consistent with the global need for 20-30 per cent of biologically productive land. | • **Biodiversity Measures:** A comprehensive program well beyond regulatory requirements, including survey and re-location of fauna prior to earthworks.  
• **Tree Retention:** Existing trees retained through re-design, including some of the most healthy, mature specimens.  
• **Tree Canopy target:** No reduction of canopy cover after the development compared to prior.  
• **Stormwater Sump Rehabilitation:** Conversion of an existing fenced drainage sump into a biodiverse open landscape feature with local native species and habitat structures.  
• **Community Bore:** Providing fit for use water to private and public gardens to serve a rich and diverse landscape design.  
• **WGV Design Guidelines:** Contains advice on creating a biodiverse garden, retaining trees, installing a frog pond, and impacts of pets.  
• **Residents Introduction Pack:** Will advise on local ecology and how to care for it. |
<table>
<thead>
<tr>
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<th>WGV DESIGN RESPONSE</th>
</tr>
</thead>
</table>
| CULTURE & HERITAGE | Create a thriving sense of place and a sense of community through enhancing and reviving valuable aspects of local culture and heritage. A resourced action plan is developed with community involvement and two locally specific showcase projects deepen the local sense of culture and heritage. | - **Sense of Place**: Onsite reuse of materials included excavated limestone and milled timber from any trees that are removed. Local artists engaged in design of elements of public spaces.  
- **Diverse Dwelling Types**: Attract a diverse demographic, leading to a more vibrant community.  
- **Community engagement**: Providing access to local knowledge and values.  
- **WGV Design Guidelines**: Retention of Sullivan Hall a culturally significant community building originally funded historically by local residents. |
| EQUITY & LOCAL ECONOMY | Helping towards a thriving, equitable future for all through inclusiveness, participation, fair employment, and affordability. One Planet Communities will improve the welfare of locally relevant disadvantaged populations. Two priority groups are identified and through discussion with them or their representatives, actions are taken to improve their welfare. | - **Diverse Dwelling Types 1**: The more diverse demographic leads to more opportunities for mixing and intergenerational engagement.  
- **Diverse Dwelling Types 2**: Artist/Creatives and the younger generation are two groups that have been responded to through Sustainable Housing for Artists and Creatives (SHAC) and the Gen-Y Demonstration Housing projects, respectively.  
- **NBN Access**: All homes have the option for connection to the NBN; this will increase opportunities for microbusiness and working from home options.  
- **Engagement with Research**: Development of local skills and knowledge. Opportunities for commercialization of local ideas and skills; this will include linking with business development organisations in Fremantle.  
- **Fair Trade**: Residents will be informed of the City of Fremantle’s Fair Trade program.  
- **WGV Design Guidelines**: Contains structure, purpose, and neighbourhood sections encouraging inclusion. |
| HEALTH & HAPPINESS | One Planet Communities strive for best practice in promoting the health and happiness of their residents and workers, through neighbourhood design, construction phase, community governance and lifestyles. Two locally relevant showcase initiatives aim to support people in improving their well-being. | - **Fostering Community**: Public spaces that encourage interaction and passive surveillance. A number of options have been tabled for a portion of the public open space reserve on the western end of the site including community garden, a multipurpose building or a flexible covered trading area.  
- **Stormwater Sump Rehabilitation**: A large, old drainage sump will be revitalized to provide additional open green space and nature play experience.  
- **WGV Design Guidelines**: Advice on design and materials toxicity and creating a healthy and fulfilling home. |
THE ONE PLANET LIVING OBJECTIVE

One Planet Living is a framework based on an objective: that the human population can have a high quality of life within their fair share of the Earth’s resources. The objective is both about fairness (that all life on Earth should be valued and have a fair go), and intergenerational equity (that we shouldn’t borrow from future generations).

THE AUSTRALIAN FOOTPRINT

Ecological Footprint analysis combines the impact of how we live, what we eat, and how we transport ourselves into one measurement—the global hectare (a global hectare = the total amount of land on the Earth that has resources which humans access / divided by the number of people on the Earth). This enables us to broadly assess the full impact of an individual’s lifestyle and also understand which aspects are having the largest impact or consuming the most resources.

The average Australian requires about 7.7 global hectares to support their lifestyle, which means that if everyone on the planet lived like the average Australian we would need over four planets to support us.

Figure 2: The Ecological Footprint of the ‘average’ Australia

While the ecological impact of housing is significant; our diet, what we consume, and how we move around all contribute to our Ecological Footprint. Creating communities where people lead genuinely sustainable, one-planet lifestyles is more than simply designing green, energy efficient buildings.

FOOTPRINTING AND SUSTAINABILITY STRATEGIES

Meeting the 10 Common International Targets uses a combination of footprinting software applications and developing strategies that bring about change.

The footprinting applications calculate the carbon/water-use, of urban developments and the people living in them. The objective is to reduce these footprints across the whole of the development. This gives greater design flexibility in comparison with compliance based rating tools and certifications, although these standards may still be part of the development process. Footprinting is still a developing science and currently is best applied to buildings, water use, materials, and transport.

IT’S ABOUT PEOPLE

Ultimately, the achievements of the project team at WGV are only the first steps to this becoming a One Planet Living community. Residents have been empowered to lead whatever lifestyle they choose at WGV, knowing they will do so with a reduced environmental footprint.

The City of Fremantle, WGV’s local authority, is a One Planet Council, meaning that they have been through a similar process, adapted to local government. This commitment by Fremantle to One Planet Living principles will underscore the work done at WGV and reinforce the benefits to residents.

The real strength of the One Planet Living process will emerge as people gain a deeper understanding of the Principles, and how they can achieve a high quality of life within the Earth’s renewable resources and enable future generations to do so too.

Further information on One Planet Living is available from:
www.oneplanetliving.org

Further Information about One Planet Fremantle is available from:
ACKNOWLEDGEMENTS

The LandCorp project team, in collaboration with Ferart and BioRegional produced the One Planet Assessment Report with input from the following:

- Access Housing – Affordable housing
- All Earth Group – Civil contractors
- Bamford Consulting Ecologists
- City of Fremantle – Local government authority
- CODA – Project architects
- Josh Byrne & Associates – Landscape architecture, sustainability and communications consultants
- Paperbark Technologies – Aboricultural consultants
- SHAC (Sustainable Housing for Artists and Creatives) – Affordable housing representative group
- Tabec – Consulting engineers
- Tree Surgeons of WA – Arborists
- Urbis – Town planning urban design consultants
- Kinesis – Precinx Sustainability Analysis

SOURCE DOCUMENTS

This One Planet Living Summary Report has been prepared by Josh Byrne & Associates based on the following documents.

<table>
<thead>
<tr>
<th>REFERENCE</th>
<th>TITLE</th>
<th>REVISION</th>
<th>DATE</th>
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<tbody>
<tr>
<td>Internal</td>
<td>WGV One Planet Assessment Report</td>
<td>V4</td>
<td>June 2015</td>
</tr>
<tr>
<td>Internal</td>
<td>Kinesis Precinx Report</td>
<td>V3</td>
<td>June 2015</td>
</tr>
<tr>
<td>Internal</td>
<td>WGV Design Guidelines</td>
<td>V3</td>
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</table>
OTHER SOURCES OF INFORMATION

The ‘Your Home Design Guide’ is Australia’s guide to environmentally sustainable house design and construction. The ‘Your Home Technical Manual’ gives you the information you need to design and build a more comfortable home that is less expensive to run while more environmentally friendly. It is the definitive tool for creating a home that is enjoyable to live in, cost effective, and environmentally sensitive.

Further information about ‘Your Home Design Guide’ and the ‘Technical Manual’ is available at:

www.yourhome.gov.au

The Liveable Homes initiative was developed to increase the number of private and public homes in Western Australia that are built with universal access. This resource was developed for people designing new homes or renovating existing homes.

Further information is available at:

http://www.liveablehomes.net.au

The Josh’s House project provides information including plans, factsheets and videos on a wide range of residential sustainability initiatives.

Further information is available at:

www.joshhouse.com.au

An excellent resource for water wise gardening tips and species lists suitable for your garden is available at:

www.watercorporation.com.au