



Josh's House – Star Performers Innovation House

Living Key: enhancing prosperity and quality of living



property certificate

project Innovation House
client Star Performers Project
address Townsville, Queensland
date 16 November 2014



About this Report:

This report has been provided at the request of and is solely for the client Josh Byrne & Associates as supporting information for the Josh's House Star Performers Project.

It is an independent assessment based entirely on published information, including site and house plans, brochures and fact-sheets as well as information provided by the client. Living Key did not visit the property as part of undertaking this assessment.

The Living Key categories assessed are relevant to property and building performance only. It does not include an assessment of the broader locational categories of Community, Transport and Nature.



summary result



67%

This property is a very good example of and model for sustainable living in the suburban semi-regional context. Best practice in climate responsive and environmental sustainable design ensure the property achieves a good 7 star result across the property and buildings assessment categories.

The 9 star rating for Energy is achieved by the optimal 10 star thermal performance rating and the linked excellence in climate responsive design, as well as large photovoltaic renewable energy generation system and an efficiency water heating system.

Liveability achieves an optimal 10 star rating through excellence in climate responsive design, indoor – outdoor connectivity, accessibly and adaptable open plan living, quality indoor air environment, and productive vegetable and fruit gardens with composing and chooks.

Water efficiency is achieved through large volume rainwater harvesting, greywater reuse, efficient fixtures and appliances, and controlled garden irrigation.

The 5 star rating for Resources is achieved through the inherent flexible and adaptable design features, lightweight materials used in the walls construction, and use of recycled/reuse materials for landscaping result in a property with a lower than average embodied energy and a potential for a longer design-life.

detailed results by category



87%

This property achieves a very good 9 star result: Overall the property has very low energy use due to a combination of excellent thermal performance and climate responsive design, renewable energy system, efficient water heating and efficient fixtures and appliances. The key features which contribute to this rating include:

- 10 Star NatHERS thermal performance rating, meaning the home should be able to maintain stable internal temperatures year-round without the need for mechanical cooling or heating.
- Very good climate responsive design features, including: orientation of indoor and outdoor living areas optimize natural light and ventilation, wide 900mm eave shading to all walls, high R-value insulation throughout, excellent air-movement and ventilation via natural breeze-ways and opening, ceiling fans, roof and eave vents for heat purging, room zoning, appropriate use of lightweight materials for wall and roof.
- Large 5kW renewable energy generation which should be exceeding household energy needs and feeding energy back into the network, plus 10kW battery storage bank.

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- Efficient heat pump water heating system.
 - Ceiling fans installed throughout the home, including all living areas and bedrooms.
 - Efficient fixtures and fixed appliances.
 - LED lighting throughout, and ultra-sonic motion sensors to outdoor lighting and walk-in-robe.

The dwelling is fitted with number of air-conditioning units, which is the main reason a higher 10 star rating was not achieved. We note however that the occupants have stated that they have not used these. This implies the thermal design properties of the dwelling and the cooling benefits of the ceiling fans are sufficient to maintain comfortable internal temperatures, as a 10 star NatHERS rated dwelling should, and therefore installation of mechanical air-conditioning units is not required.

This property exhibits many water saving and water efficiency features which combined contribute to a lower than average water rating. Key features which contribute to this rating include:

- 25,000 litre rainwater storage
- Greywater reuse system (laundry only)
- Efficient showers and tapware and dishwasher, and very efficient toilet with integrated hand washing.
- Cold water diverter installed to the bathroom shower.
- A diverse waterwise local native, drought tolerant and productive fruit and vegetable garden.

There are a number of features about the property that impact on the overall rating, and inclusions, which if included would reduce potable water consumption and improve the overall water efficiency and therefore the overall rating. These are:

- The large 1086m² size, with extensive gardens and lawn, albeit much of it waterwise will have a substantial water demand. Replacing some of the lawn area with local native plants that require zero water (once established) will greatly reduce ex-house water use¹.
- Although there is substantial rainwater harvesting, the water is used only for external uses. If plumbed for internal reuse, such as flushing toilets, laundry washing and water heating, and with filtration for shower and drinking, significant internal potable water efficiencies will be achieved.
- The greywater reuse system could be plumbed to also collect shower water which would provide larger volumes for garden irrigation.

On average, about 70% of the total household water usage in Townsville is used to maintain lawns and gardens.

<http://www.townsville.qld.gov.au/resident/water/Pages/consumption.aspx>)



41%



92%

For Liveability (and healthy living) this property excels across all key areas including excellence in climate responsive design and indoor environment quality providing occupants with a naturally thermally comfortable and healthy home year-round, some universal access thus providing easy access for those with disability and limited mobility, and food producing vegetable gardens and fruit trees. The key features which contribute to this rating include:

- Very good climate responsive design features: the home is generally very comfortable for most of the year with lots of natural light; ventilation and ceiling fans provide air movement.
- Excellent main entry access and good movement and access around the dwelling.
- Ground level bathroom with hobless shower and semi-recessed basins.
- Excellent access to door handles, light switches and power points.
- Healthy indoor environment quality: low dust collecting surfaces.
- Naturally ventilated bathroom(s) and laundry.
- Productive gardens with dedicated raised vegetable bed(s) and fruit growing areas.
- Dedicated composting and chicken run.
- Substantial outdoor shade providing vegetation.



48%

The 5 star rating is a reasonable result for a new dwelling constructed as a detached single residential property in a new green-field development area. The dwelling has a number of features which support an increased design-life and reduce the overall embodied energy and carbon intensity of materials and construction:

- The framed construction and use of lightweight materials, specifically timber framed walls, fibre-cement external cladding and gyprock for internal wall lining achieve a greatly reduce embodied energy beyond that of the more common masonry-based materials.
- Reused/recycled materials for the landscaping
- Gravel paths
- The open internal layout with open-plan living and stud framed walls which enables adaptability of internal room layout means the home is reasonably adaptable to changing uses and occupant needs and therefor achieves a longer than average design life potential.

Living Key Star Ratings and Percentage Scores:

1 Star = 0-10%; 2 Stars = 10.01-20%; 3 Stars = 20.01-30%; 4 Stars = 30.01-40%; 5 Stars = 40.01-50%;

6 Stars = 50.01-60%; 7 Stars = 60.01-70%; 8 Stars = 70.01-80%; 9 Stars = 80.01-90%; 10 Stars = 90.01-100%

About Living Key

Living Key is a suite of rating tools, services and resources for industry and consumers to assess and certify the liveability and sustainability of properties. Its core objective is to address the market need for an easy to understand 'rating assessment' of the key liveability and sustainability features and attributes of new or existing properties.

Living Key Categories and Descriptions



ENERGY

Design features and fixtures of the property that optimise good design and conserve and produce energy



WATER

Design features of the garden, and fixtures and appliances that conserve and re-use water



MATERIALS

Well located and long life buildings with low energy content and are from sustainable sources



LIVEABILITY

Design features, materials and finishes, and location, which enhance human and environmental health



NATURE

Type, amount and diversity of vegetation on the lot, on street verges and in open space, and proximity to bushland



MOVEMENT

Proximity of the property to public transport, walking and cycling paths, and bicycle storage



COMMUNITY

Proximity of the property to local amenities and services such as shops, schools, day care, community centers and parks



Summary average of ALL assessment categories to indicate the average benefits and potential of the property

The Disclaimers:

This report is valid for 12 months from the date of issue. Whilst this report has been formulated from sources we deem to be reliable and is tendered in good faith, no warranty, expressed or implied is made by Living Key as to the accuracy or completeness and it does not accept any responsibility for matters arising there from.

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Note: This report was originally issued under the name of ARCAActive, which has since been superseded by Living Key.