Burralga Yumba
JCU student accommodation
Green Building Education

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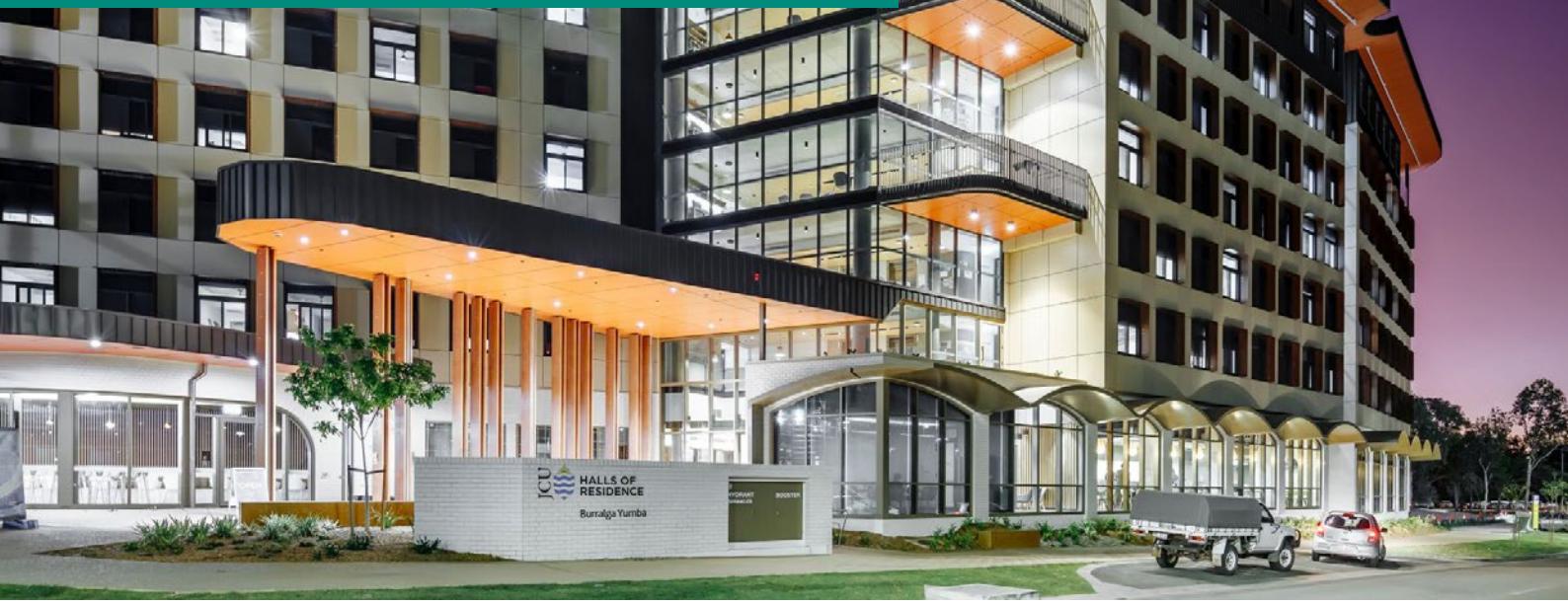

JCU's newest student accommodation is Burralga Yumba located at JCU Townsville, Bebegu Yumba campus, Douglas. Derived from the Birrigubba language of the Bindal People, Burralga Yumba means Brolga Place, in recognition of the dancing burralga, or brolga.

Using principles outlined by the **Leadership in Energy and Environmental Design (LEED)** sustainable building certification program, the building provides contemporary, environmentally sustainable student accommodation.

Site selection and building design

The site for Burralga Yumba was selected with consideration to the lands' ecological value. The development is situated on a site which has been assessed to not meet any criteria for sensitive lands.

The initial building design was adapted to reduce environmental impacts following a cradle-to-grave life-cycle assessment. Through this process, Burralga Yumba has been designed to have 27 per cent less carbon emissions compared to a standard practice building.

In addition, it has significantly reduced the environmental impacts in other areas, such as stratospheric ozone depletion, land and water acidification, eutrophication, tropospheric ozone formation, and depletion of non-renewable energy resources^.

^Benchmark is the **LEED v4 baseline** under the Building Life-Cycle Impact Reduction credit.

Additionally, the building was designed to reduce embodied carbon, support a life-cycle approach to improve performance and promote resource efficiency, and to mitigate the urban heat island effect through high-reflectance roofs (except where this might cause glare to residents), rooftop garden, solar panels, light coloured pavement, planted areas and shaded areas.

Construction and material selection

Examples of measures introduced to reduce environmental impacts of Burralga Yumba include:

- Greener concrete through use of additional supplementary cementitious material additives such as fly ash or slag by-products
- Responsibly sourced timber and steel
- Structural design elements to reduce concrete volume such as through pre-tensioned slabs.

Additionally, materials used within the indoor spaces of Burralga Yumba were selected to optimise indoor air quality. This is accomplished by reducing or eliminating the presence of materials, adhesives and sealants (among others) which emit gasses or volatile organic compounds which have adverse effects on human health. Air quality testing after construction was undertaken to ensure that spaces are performing to a high standard.

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Water efficiency and landscape design

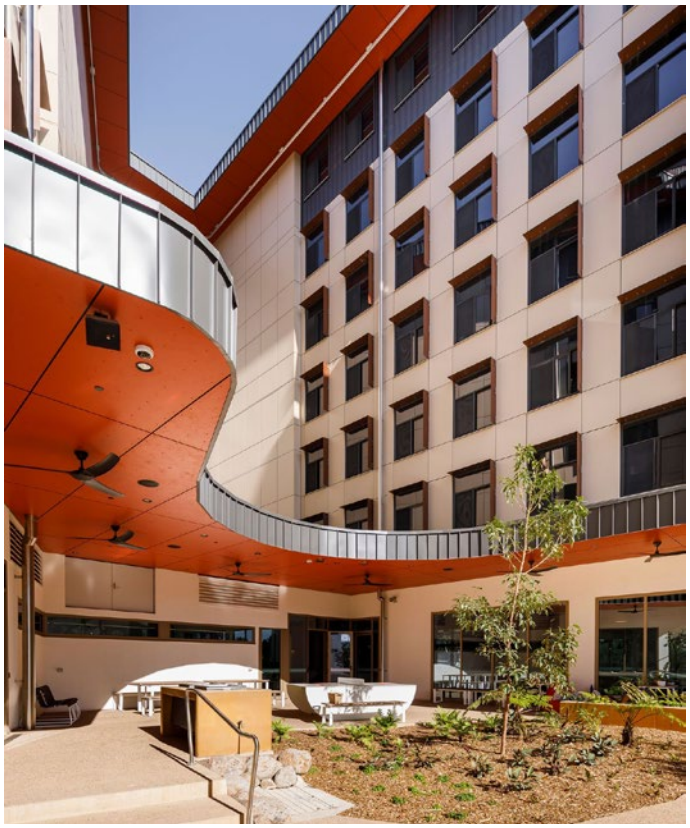
Achieving high levels of indoor and outdoor water efficiency was an important focus for the development. Landscape plant selections have focused on the use of native, adapted, and drought-tolerant plants which significantly reduces the need for irrigation while better integrating the building site into its natural surroundings and attracting native wildlife.

Burralga Yumba will further reduce potable water consumption by suppling landscaping irrigation requirements 100% with recycled water once this connection is available.

Energy efficiency

Burralga Yumba is energy efficient, and includes the following design features:

- Renewable energy: provided by an 87 kW rooftop solar panel system
- Passive design: maintaining comfortable indoor temperatures through high performance glass, insulation and shading
- Air conditioning using the JCU Townsville, Douglas 12.5 megalitre energy-efficient chilled water air conditioning system
- Efficient LED lighting
- A domestic water system with highly efficient propane-fired instant hot water heaters.



Key terms

Sensitive lands: Environmentally sensitive lands include prime farmland, floodplains, habitats for species listed as threatened or endangered, water bodies and wetlands.

The urban heat island effect: The urban heat island effect is caused by dark, non-reflective hardscape surfaces, and results in areas being hotter. Over large areas this can make entire city centres substantially hotter than the surrounding area, up to 3°C warmer during daytime and even 12°C warmer at night.

The life-cycle approach: A life cycle approach means we recognize how our choices influence what happens at each of these points so we can balance trade-offs and positively impact the economy, the environment, and society. A life cycle approach is a way of thinking which helps us recognize how our selections – such as buying electricity or a new t-shirt – are one part of a whole system of events.^^

^^**Why Take A Life Cycle Approach**? United Nations Department of Economic and Social Affairs

Embodied carbon: The carbon emissions associated with the production and construction of its raw materials.

A cradle-to-grave life-cycle assessment. A cradle-to-grave life-cycle assessment considers the cumulative energy use and other environmental consequences resulting from all phases of a building's life, including material selections and volumes.

The environmental impacts of the construction process. The construction process is often associated with high embodied energy and other negative environmental impacts.

Over their lifetimes, buildings have local, regional, and global environmental effects. This includes the carbon emissions from material production and construction, as well as impacts on the ozone layer, and other chemical impacts. Some of these occur during the harvest, extraction, manufacture, and transportation of materials; others involve construction and operations; still others take place at demolition and disposal.

About water usage. Landscape irrigation practices consume large quantities of potable water, sometimes accounting for 30 to 70 per cent of the water consumed in non-agricultural use.

The benefits of native plants. As well as being adapted to thrive in their natural environments, native plants generally require less fertiliser and fewer chemical pesticides; the use of these chemicals can degrade water quality when carried away in storm water runoff.