



BARANGAROO SUSTAINABILITY IN PRACTICE



Barangaroo is one of the most exciting urban renewal projects in the world today.

Barangaroo aims to be sustainable today and for future generations. Its commitment is to be carbon neutral and water positive, to create zero waste emissions and contribute to community well-being.

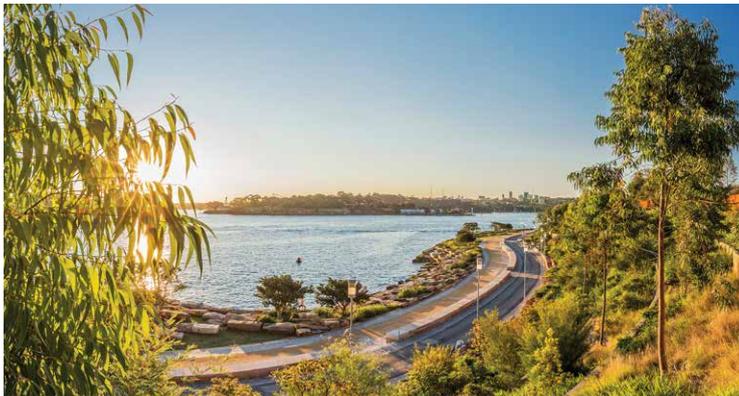


WHY IS SUSTAINABILITY IMPORTANT AT BARANGAROO?

The NSW Government has returned the area to the people for the first time in more than 100 years while creating a financial, retail and entertainment hub and stunning new public spaces.

When completed, Barangaroo aims to be the first precinct globally to be carbon neutral.

Every decision made by the Barangaroo Delivery Authority, on behalf of the NSW Government, has sustainability top of mind. The Authority and its development partners work with sustainability leaders from around the world to help Barangaroo achieve its sustainability goals.



Being Climate positive has four key requirements.

- Reducing and then offsetting all the energy used on the site.
- Recycling and exporting more water than the drinking water that is imported.
- Responsible waste management, diversion from landfill and zero waste emissions.
- Delivering community wellbeing.

To become Australia's first large-scale carbon neutral precinct, Barangaroo includes centralised infrastructure such as Sydney Harbour water cooling, embedded electricity networks, recycled water treatment plants and on-site renewable energy generation treatment plants and on-site renewable energy generation.

THE C40 CITIES CLIMATE POSITIVE DEVELOPMENT PROGRAM

In 2009, before construction of the precinct had begun, the NSW Government committed Barangaroo to the Climate Positive Development Program. Established under the Clinton Climate Initiative, the program later became part of C40 Cities.

Barangaroo is one of only 19 projects around the world participating in the C40 Cities Climate Positive Development Program.

- The Climate Positive Development Program sits within the C40 Cities network, which is a network of the world's megacities committed to addressing climate change.

- Acting both locally and collaboratively, C40 Cities are having a meaningful global impact in reducing greenhouse gas emissions and climate risks. It is a forum where cities can collaborate, share knowledge and drive meaningful, measurable and sustainable action on climate change.
- The Climate Positive Development Program will demonstrate large-scale models for development that reduce greenhouse gas emissions below zero in an economically viable way.
- Reducing and offsetting all of the carbon emissions from a site creates a climate positive outcome.
- Some of the cities involved are Sao Paulo, London, Jaipur and Toronto.

WHAT MAKES BARANGAROO DIFFERENT?

Development agreements ensure the entire precinct remains in public ownership, with the buildings and infrastructure on 99-year leaseholds.

An Estate Levy in every lease and other governance arrangements ensures long-term sustainability, with cascading obligations in place from the NSW Government through to development partners, building owners, tenants and sub-tenants.

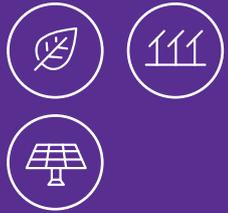
To maximize on-site efficiencies large-scale centralised infrastructure is being delivered. The Authority has partnered with developers such as Lendlease in the southern precinct to establish harbour water cooling, embedded electricity networks, recycled water treatment plants and on-site renewable energy generation.

External agencies, contractors and organisations at Barangaroo are required to

manage their activities with a view to achieving these sustainability goals. This will include:

- Reducing construction waste going into landfill by 97%, by sorting and separating waste and recycling or reusing
- Planting 100% native plants in Barangaroo Reserve
- Using recycled water for flushing toilets through to irrigation and fire sprinklers
- Encouraging retailers and suppliers to avoid packaging, reduce waste and offer healthy food choices from locally and sustainably produced food
- Providing and promoting access to and facilities for walking, cycling and passive and active recreation through design for active living and healthy lifestyles.

Barangaroo's sustainability commitment

<p>Be carbon neutral</p> 	<p>Be water positive</p> 	<p>Create zero waste emissions</p> 	<p>Incorporate community wellbeing</p> 
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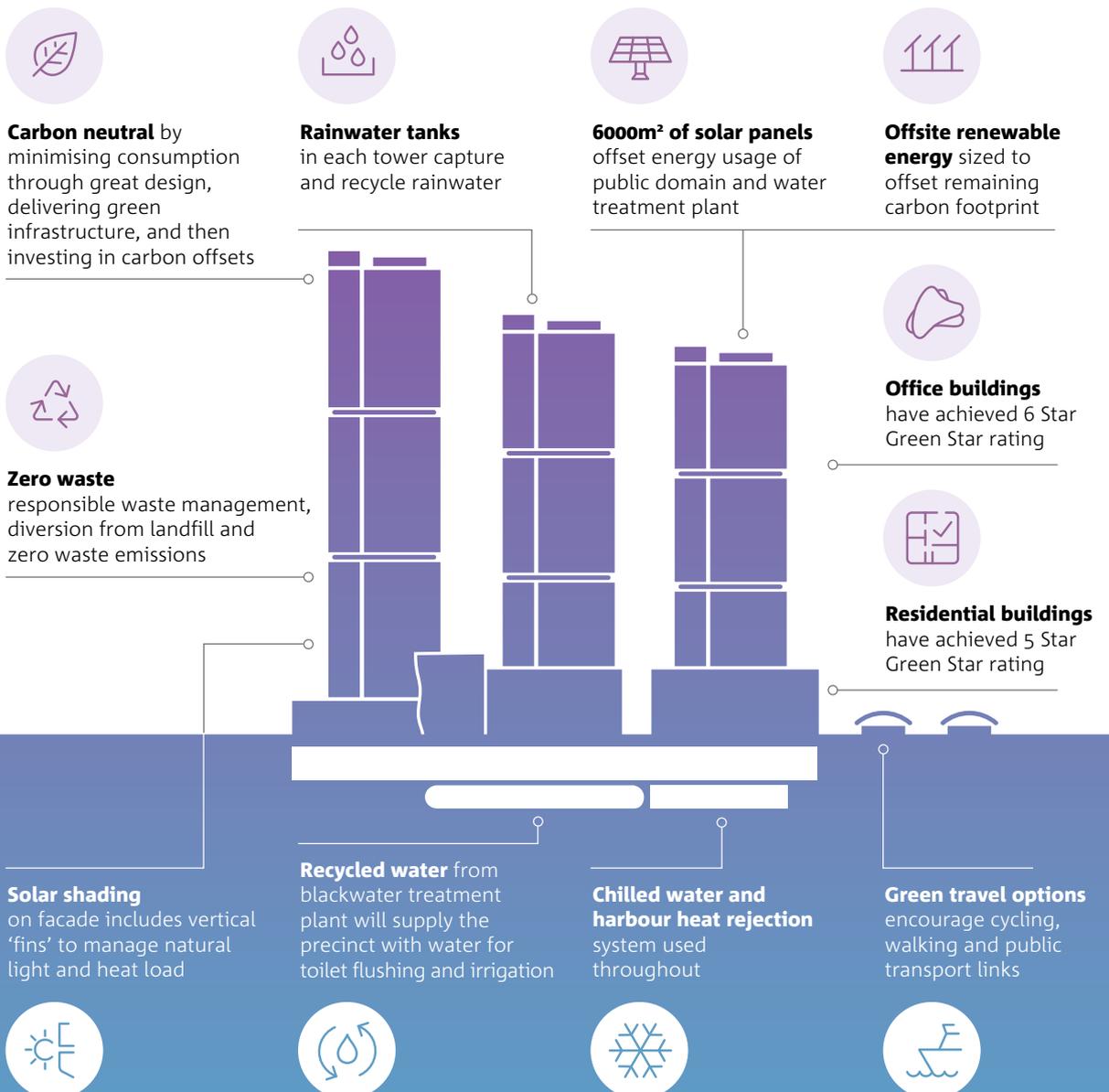
Carbon neutral

All buildings at Barangaroo, regardless of how large or small, contribute to carbon neutrality through annual greenhouse gas reporting and financial contribution towards off-site renewable energy and carbon offsets.

Barangaroo's southern precinct features a District Cooling Plant for air conditioning of the buildings, using water drawn from Sydney Harbour, for heat rejection.

- Savings on energy consumption and water use achieved by operating one centralised cooling system rather than separate systems for each building.
- Avoids the use of drinking water drawn from Sydney's dams for heat rejection.
- The sea water passes through a series of screens, filters and strainers to protect and filter out marine life. The cool, clean harbour water is used to remove heat from the cooling system.
- The number of chillers in action depends on the demand for cooling which can vary on a daily, weekly or seasonal basis.
- Once the seawater has passed through the cooling system it is returned to Sydney Harbour through a system of pipes located below the waterline along the western waterfront.

Barangaroo's southern precinct



Water positive

Barangaroo is a 'water wise' precinct. When completed, the whole 22 hectare precinct will be capable of exporting more recycled water than the amount of drinking water it uses.

Barangaroo Reserve



Heritage building
preserved including relocation and restoration of the pumphouse



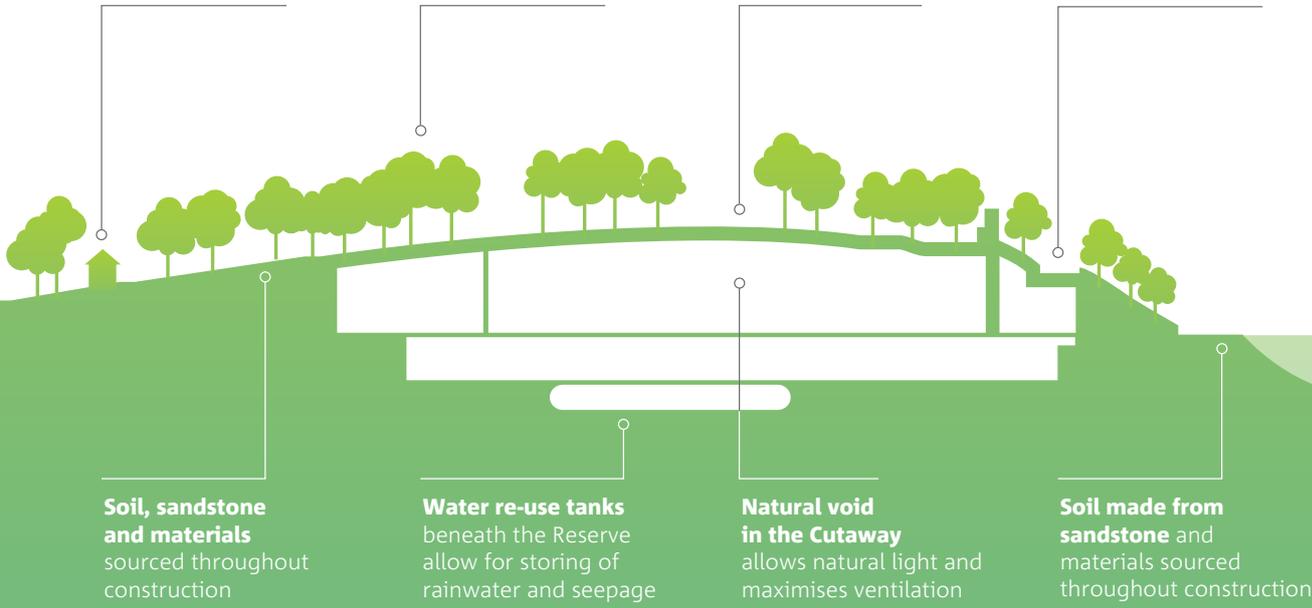
75,000 native trees, shrubs and plants
re-create the headland's natural form



Irrigation water recycled
from capture, to treatment, storage and reuse



50% public space
includes the 6ha headland park of Barangaroo Reserve



Soil, sandstone and materials
sourced throughout construction

Water re-use tanks
beneath the Reserve allow for storing of rainwater and seepage

Natural void in the Cutaway
allows natural light and maximises ventilation

Soil made from sandstone
and materials sourced throughout construction



Water management

- The use of water efficient appliances, using captured rainwater and treated water for toilet flushing, irrigation, wash down and fire suppression are major features of the entire Barangaroo development.
- In the southern commercial and retail district wastewater is treated and recycled water produced from a central plant. The wastewater recycling system is capable of processing one million litres of wastewater each day.
- Beneath Barangaroo Reserve is the Cutaway cultural space and two levels of car park. And beneath all of this is a leading-edge integrated water re-use system. It provides for the capture, treatment, storage and reuse of seepage and storm water for the irrigation of the Reserve.
- The two tanks beneath the re-created headland - an enormous 1200m³ rainwater tank and 180m³ seepage tank - are up to 17 metres below sea level.



Zero waste emissions Community wellbeing

Barangaroo is working towards a net zero-waste outcome for the precinct. By using innovative waste minimisation, collection and recycling processes, Barangaroo aims to divert more than 80% of operational waste is diverted from landfill.

All emissions from processing and transporting waste from the precinct will be offset to zero.

Barangaroo is a place for people to work, live, socialise or connect with Sydney's Indigenous and maritime history as well as contemporary Aboriginal culture.

This 'city within a city' is opening in stages and by mid-2017 there were 16,000 people working in Barangaroo's office towers. When complete, the precinct will accommodate 30,000 workers and some 4500 residents as well as shoppers, diners and visitors. More than 50% of Barangaroo will be dedicated public space.

A key feature of the precinct is its connectedness to the rest of Sydney's central business district via the new Barangaroo Ferry Hub, Wynyard Walk tunnel and two new pedestrian bridges over Hickson Road. Barangaroo will also feature on the new Chatswood to Bankstown Metro line, with the station at Nawi Cove opening in 2024. It is expected that most people coming to Barangaroo will use public transport, walk or cycle.

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