



Hungry maggots green Barangaroo

Exclusive

Ingrid Fuary-Wagner

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They join the 23,000 workers and hundreds of apartment dwellers as part of a raft of sustainability measures introduced by developer Lendlease.

A shipping container "farm" with trays of larvae in the 77,000sq m basement below the three 42-storey International Towers arrived last month as part of a six-month experiment to manage the 60 tonnes of food waste generated from the precinct each month and to cut down on carbon emissions, at half the cost of current methods of food processing.

The project is a world first, overseen

by Canberra company Goterra, using artificial intelligence, robotics and insect larvae on-site to process food scraps and compostable packaging from the retailers and office buildings nearby.

"It's highly controlled in that box and it's a lovely blending of technology and natural biological systems to solve a huge problem for us. Food waste and landfill is a massive generator of green-

house gasses," said Lucy Sharman, sustainability manager, property, for Lendlease, which developed the office and retail precinct at Barangaroo South, on the western side of the city's business district. ▶ **Property p33**



Above: A rooftop garden includes solar panels, beehives and "insect hotels".
Left: Maggots convert food waste into compost in the basement.

PHOTOS: NICK MOIR



Maggots lead Barangaroo's green charge

Exclusive Fly larvae ensure little's wasted in the country's first carbon neutral suburb.

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The black soldier fly, in its larval



stage, eats through the waste, which is transformed into fertiliser that can be used by farms or gardens. The shipping container is emptied every 12 days, well before the maggots turn into flies, and the well-fed, high protein larvae are then used as chicken and fish food.

If the experiment is a success Lendlease will implement it across its other developments around the world.

The “farm” is part of a cutting-edge

system of waste management, water recycling and solar rooftops that has turned Barangaroo South – its office and retail component – into the country’s first carbon neutral suburb.

Retailers and office tenants in the precinct must separate rubbish into five major waste streams with soft plastics then turned into fuel, paper into cardboard and cooking oil into diesel.

Residents in the smaller apartment buildings on the foreshore are not required to undertake quite the same level of recycling.

Water from the nearby Crown Sydney tower, which will be the city’s tallest residential building at 275 metres, as well as the high-rise apartments being built by Lendlease will be recycled in the water treatment plant but both complexes will manage their own hard rubbish.

The precinct’s cleaners check the bins when they are emptied but once the rubbish reaches the basement there is also a weighing mechanism and a camera that detects contaminants, with the information then fed into a software system.

“We can then say X tenant, at Tower 1 East is doing really badly and we can go back and tell them to stop putting plastic bags in the recycling,” Ms Sharman says. “It is always done from the perspective of, we are here to help, not beat you up about it, because everyone does it.”

Also in the basement is a water treatment plant that recycles water sewage to high-quality potable water (although it is barred from use as potable water under Australian regulations and is only used to flush toilets and water green spaces) as well as a water cooling system that takes water from the harbour and uses it to chill the buildings, in lieu of regular air-conditioning.

Andrew Cole, general manager of sustainability at Lendlease, said the precinct had been designed to be functional in the year 2100 and to withstand rising sea levels, drought and more fre-

quent and intense weather events.

The ground plane at Barangaroo has been raised to account for rising sea levels of about 90 centimetres.

Engineers have also over-sized the

stormwater infrastructure to prepare for frequent deluge storms and the deep rainwater harvesting plants, with 90,000 litres of water capacity in each of the towers, which were installed to account for drought conditions.

During the construction of the light rail down George Street, the City of Sydney also installed pipes that would allow for Barangaroo’s recycled water to be exported and used in the CBD.

At the nearby Daramu House, Australia’s first commercial multi-storey timber office building, another lot of critters have been invited to move in.

Lendlease has built an “insect hotel” among the 17,000 plants and flowers growing on the rooftop, to encourage

bees to the area, improve air quality and support biodiversity.

“The insect hotels are designed for native bees that tend to be solitary and don’t hive. We’ve seen a lot of bees around, but they haven’t established themselves yet,” Ms Sharman said.

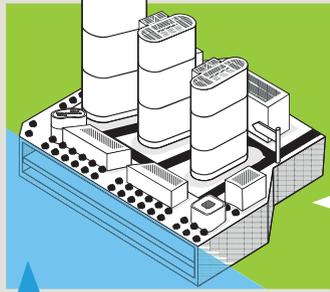
“We are trying to give support to pollinators [like birds and insects] because they are extremely important. They will be pollinating in the botanic gardens and parks around here, and we are trying to integrate plants into what is a pretty harsh environment.”

The plants also function to keep the ambient temperature of the rooftop closer to 25 degrees on hot days, which maximises the efficiency of the installed solar panels.



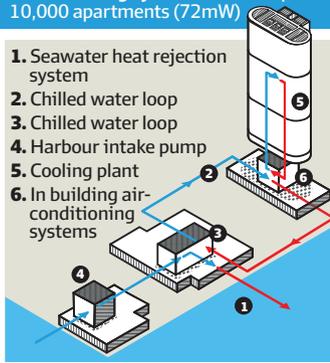
Going green

Features of large-scale carbon neutral precinct at Barangaroo South



Water cooling system Can cool up to 10,000 apartments (72mW)

1. Seawater heat rejection system
2. Chilled water loop
3. Chilled water loop
4. Harbour intake pump
5. Cooling plant
6. In building air-conditioning systems



Green waste One box can process up to 20 tonnes of food waste each week



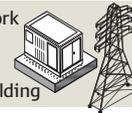
Bee and solar farms
On the roof

6000 sq m of solar power offsets



First private 33kV triplex network in Australia 13 substations onsite

- ▼ Transmission network
- ▼ Local distribution
- ▼ Private network
- Energy-efficient building



SOURCE: LENDLEASE



These pipes channel cold water from the harbour through the buildings to keep them cool as an alternative to standard air-conditioning. PHOTO: NICK MOIR