



FUTURE  
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Case Study



# CENTRAL PARK PRECINCT

## Project Overview

Central Park Precinct is the largest urban regeneration project of its kind in Sydney – breathing new life into the former 5.8 hectare Carlton United Brewery site in Chippendale to create a people-centric destination. With an abundance of public parkland, the area is comprised of mixed-use residential (including student accommodation), commercial, hospitality and retail facilities, and a unique public recreational activity area. WSP has been involved since conception, providing precinct master planning, sustainability, mechanical, hydraulics, fire safety and protection, ASP level 3, electrical, vertical transportation, Green Star and lighting services for the 255,000m2 site. While the initial engagement was to help our client develop a site-wide infrastructure solution that supported low-carbon energy and recycled water, the project evolved

into a decade-long collaboration; as the site evolved, our engagement evolved over separate buildings across the precinct.

The engineering heart of Central Park is the Central Thermal Plant (CTP) - a fully integrated thermal energy, electricity and water utility system. Financed by one of the first low-carbon environmental upgrade agreements in New South Wales and enabled by a ground-breaking precinct governance framework, it pioneered the delivery of district infrastructure in an urban regeneration context.

## What Future Trends Did We Consider?









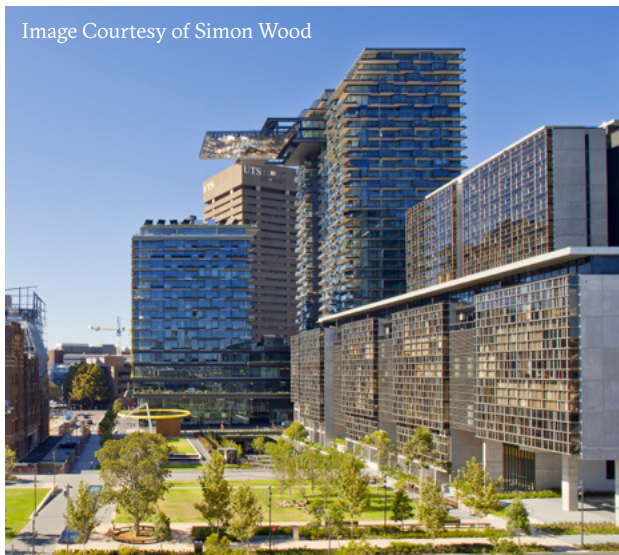
 Climate	 Society	 Resources
 More Extreme Weather	 Health & Wellbeing	 Circular Economy
 Hotter & Drier	 Densification	 Water Scarcity
		 Declining Biodiversity

Image Courtesy of Simon Wood





## How Did We Consider These Trends?

### Climate



In responding to predicted hotter and drier conditions as well as more extreme weather events in the future, we provided an integrated service that embeds environmental sustainability in all aspects of the precinct development. Buildings achieved higher resilience to temperature extremes through improved fabric and architectural design and the precinct infrastructure reduces reliance on the grid for electrical and thermal demands. We coordinated the Green Star strategy across the precinct and acted as liaison with the Green Building Council of Australia. Our role included rationalising precinct infrastructure within the building based sustainability assessment tools and coordinating precinct and building specific project teams to deliver the precinct's Green Star ambitions.

### Society



- **Health & Wellbeing** – This is addressed through improved internal environments in the buildings such as access to daylight and natural ventilation, improved thermal comfort and materials selection focusing on indoor air quality and amenity. The precinct also provides for active living such as bicycle parking, walkable neighbourhoods and exercise amenities.
- **Densification** – The project provides a blueprint for addressing future trends for urban Australia, servicing increased density with low impact energy and water systems while improving public amenity and liveability. Making the precinct liveable and connected is a central element of the master plan.

### Resources



- **Circular Economy** – Like the energy strategy, the on-site water cycle focused on the concept of a circular economy with water. Wastewater from the buildings is collected in the treatment plant, treated to Grade-A quality and reticulated back to the buildings for non-potable demands.
- **Energy Generation & Water Scarcity** – The precinct utility provides affordable, low-carbon energy and a reliable and sustainable source of non-potable water through a 24 MW central thermal plant, 2.2 MW tri-generation and 500 kL/day district water recycling and re-use system. The CTP provides the benefits of reduced carbon emissions (60% compared with BAU on buildings) and peak demand whilst also providing future flexibility for space requirements, ongoing maintenance and redundancy.

- The precinct was the first in Australia to reuse recycled water on such a large scale and to such an extent. The precinct achieved potable water demand reduction in excess of 60% and almost 100% non-potable water demands were met with recycled water – identifying it as an exemplar for recycled water use for future developments. This was assisted by driving the initiative to connect residential washing machines to recycled water – a design strategy not previously undertaken for an urban precinct development in Australia.
- **Declining Biodiversity** – The iconic and internationally recognised green walls create a mini micro climate and reduces heat from the building. The 300 species included in the plantings increase biodiversity and provide habitat for birds, bees, butterflies and insects, plus supporting frogs and falcons.

Image courtesy of Frasers Property Australia and Sekisui House Australia



### How Was Our Approach Better?

Throughout the process we helped guide our client and the wider project team on site-wide initiatives that considered climate change, robustness and resilience. This was undertaken alongside with influencing the design of eight buildings across the precinct that meet today's requirements to optimise efficiency and performance and tomorrow's expectations for a climate resilient and carbon-smart development. The Central Park utilities infrastructure is a complex engineering feat of electrical, gas, and thermal energy and potable, recycled and stormwater management. The integration of these systems with a complex, multi-user community is a first, and it has required collaborative innovation by the design, construction, and commercial teams. The implementation of shared thermal services tested the governance structures of energy market regulation and broke new ground in the reticulation and commercialisation of thermal energy networks in Australia.

### The Outcomes

Having won a plethora of international and national awards Central Park is now one of the greenest and most self-sufficient precincts in Australia featuring world-class social and environmental sustainability initiatives. This development is at the forefront of environmental sustainability initiatives across the country as demonstrated by the 5 Star Energy and Water Rating as well as recycling 90% of material from demolition work. It is one of the largest urban developments in the country to introduce on site tri-generation for the power, heating and cooling of the multiple buildings within the precinct and to include sustainability principles such as Water Sensitive Urban Design (WSUD). Most remarkably, the excess water and electricity may be exported to nearby neighbourhoods and enable self-sufficiency for the community. Tri-generation is twice as energy efficient as a coal fired power plant. It is anticipated that Central Park's plant could reduce Greenhouse Gas (GHG) emissions by as much as 190,000 tonnes over the 25-year design life of the plant. This has the same effect on GHG emissions as removing

2,500 cars off the roads every year for 25 years. Establishing a long, mutually beneficial relationship with the client has delivered success; by working closely together, our two teams were aligned in understanding objectives and ensuring the facilitation of hard and soft sustainable initiatives to help shape a green future for the inner-city community of Sydney.

This innovative precinct has received industry recognition worldwide:

- 5 Star - Green Star rating certification in both Design and As-Built for all eligible buildings on site.
- Overall category award for Urban Habitat - District / Master Plan Scale, 2019 CTBUH Awards for Excellence in Shenzhen, China.
- 2019 Gold Award - Excellence for Sustainability in Design for the urban utility strategy and site-wide 5 Star Green Star certification.
- 2020 UDIA WINGATE National Award - Environmental Excellence.



### For More Information

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