SUSTAINABILITY CASE STUDY

December 2014

40 Mount Street, North Sydney, Australia

SUMMARY

40 Mount Street (aka "Coca-Coca Place") is a landmark 300,000 sf Grade A office building that demonstrates exceptional environmental performance. This awardwinning North Sydney property is the first completed high-rise building in New South Wales to achieve the 6 Star Green Star Office Design and As Built ratings by the Green Building Council of Australia, and was designed to a NABERS 5 Star rating.

KEY FACTS

Grade – A Use – Commercial Total NLA – 28,500m² Levels – 21 Average floor plate – 1,350m² Car spaces – 96 Major tenants – Coca-Cola Amatil, Vodafone Hutchison Australia, Regus

TIMEFRAME

Construction start: July 2008 Completion: May 2010

COST

Design / Construction cost – AU\$120 million

MAIN STAKEHOLDERS

Owner – Pramerica Real Estate Investors, Asia Real Estate Fund (50%) and Investa Commercial Property Fund (50%)

Developer - Investa Property Group

Builder – Thiess

Architect - Rice Daubney Architects

Services Engineer - Aurecon

ESD Consultant - Cundall



DESCRIPTION

Environmental performance is integral to the design of 40 Mount Street, and has been delivered though a number of passive initiatives including the strategic orientation of inhabited spaces; solar shading and daylight maximisation; in conjunction with active systems including energy efficient lighting, rainwater collection and grey water recycling. The building also utilises tri-generation power for the combined generation of electricity, cooling and heating.

STRATEGY

Vision

40 Mount Street is located in the prime CBD area of North Sydney, occupying the site of what was one of Sydney's earliest telephone exchanges. Changes to the North Sydney Council's planning controls in 2006 allowed for an increase in the floor-space ratio on the site, making in at attractive location for redevelopment. The removal of the existing telephone exchange building was approved in exchange for commitments to provide ample public space within the new development, along with a requirement for public art to be incorporated in to the building design. Several of the commissioned artworks re-use materials from the former exchange, helping to retain the site's historic significance. Sustainability was high on the development team's agenda from the inception of the project and has informed all aspects of the development. As a result, the building has won a number of awards including the Property Council of Australia Best Sustainable Development in Australia (2011). Another notable aspect to the development is that 40 Mount Street is recognised as the first building in Australia to be delivered using a fully integrated Building Information Model (BIM), an intelligent model-based platform that helps to design, construct and manage buildings.

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KEY FEATURES

Water Conservation – A water recycling system that captures rainwater from the roof (via syphonic outlets), storm water, fire sprinkler test water and condensate water from air conditioning. The rainwater and grey water is captured in a 10,000 litre water collection tank and treated for eventual reuse for the flushing of WCs, mechanical makeup water, hose taps and landscape irrigation points. Other water management features include waterless urinals, dual flush WCs, flow restrictors on all taps and water efficient shower heads.

Energy – A combined heat and power unit with a 650 kWr absorption chiller system generates all the building's electrical, heating and cooling needs year round, with any excess generation sent to the grid. Comfort cooling is delivered via low temperature, low flow variable-air-volume (VAV) system, along with high-efficiency chillers and variable speed drive (VSD) motors on pumps and fans.

Lighting – LED and T5 lighting is standard throughout the common areas. T5s are smaller than the usual fluorescent tube, reducing energy use and providing a natural day-like light. The lighting is designed to meet a 400 lux level. Floors are sub zoned and lighting is activated by a sophisticated DALI lighting control system ensuring unoccupied space remains unlit.

Windows – Floor to ceiling glazing on three building elevations and a side core allow maximum natural light penetration to the workspace.

Cars – The car park has charging bays for hybrid/electric cars, powered by the energy

generated by the tri-generation plant. This reduces petrol consumption for hybrid cars and reduces reliance on the grid for electric charging.

Bikes – Extensive facilities for bicycle commuting, including racks for 228 bikes, 196 half lockers and 20 showers in the change rooms, plus a shower on each office level.

BIM – 3D Building Information Model (BIM) combines all of the design and as built information about the architecture, services and fit outs in the building. This allows for the efficient construction, operation and management of the building.

Building management – Extensive submetering of electricity and water consumption facilitates monitoring of utilities via the Building Management System (BMS).

OUTCOME

The tri-generation plant makes use of a 750kva gas-fired generator system for the building power supply. When running at maximum capacity, it provides 770 kWe of power to the base building and 650 kWr of cooling to the air conditioning system. The tri-generation plant produces about 80 per cent of the building's electricity requirements, as well as producing domestic hot water for bathrooms and kitchenettes, and chilled water for space air conditioning throughout the building. Both the hot water and chilled water are produced cost free from the waste heat of the tri-generation plant, making the plant highly energy efficient and cost effective. This integrated system is designed to produce greenhouse gas (GHG) emissions of only 40kg/m², more than 80% less than the average air conditioned building.

The water reduction initiatives have resulted in a 55% reduction of potable water use for cisterns, a 30% reduction of flow to sewer, and 100% recycled water for non potable use.

The management team continues to optimise the building's operating performance. Consumption data as follows:

20%	reduction in greenhouse gas emission (kg CO ₂ -e /m ²)	In 2013 against 2011 base
3%	reduction in electricity consumption (kWh/m ²)	In 2013 against 2011 base
38%	reduction in gas consumption (MJ/m ²)	In 2013 against 2011 base
3%	reduction in greenhouse gas emission (L/m ²)	In 2013 against 2011 base

AWARDS & CERTIFICATIONS

Awards:

- Property Council of Australia Best Sustainable Development in Australia (2011), New Buildings, Baulderstone Award
- Property Council of Australia NSW Development of the Year (2011), Innovation and Excellence Award
- Urban Taskforce Development Excellence Awards (2010), Development of the Year
- Australian Property Institute NSW Excellence in Property Awards (2011), Environmental Development Award
- Master Builders Association NSW (2011), Excellence in Energy Efficiency
- Master Builders Association NSW (2011), Best Use of Glass

Certificates:

- 6 Star Green Star Office Design rating by the Green Building Council of Australia
- 6 Star Green Star Office Design As Built rating by the Green Building Council of Australia
- 5.5 Star NABERS Energy Base Building raing
- 4 Star NABERS Water rating



