

# BREATHING FRESH AIR INTO THE OFFICE

Melbourne City Council's new office building, Council House 2 (CH2), has raised the benchmark for high-rise buildings.

By Chris Watson, Registered Architect, Wellington

**C**H2 sets a new standard for building owners, architects and regulators to aspire to. It is innovative, creative, technologically advanced, environmentally sustainable and financially responsible. It was the first building to be awarded six green stars under Australia's environmental building rating system. This made it the 'greenest' office building in Australia and one of the least environmentally damaging large office buildings in the world.

## Healthy air please

Office workers in post-occupancy evaluations usually say that air quality is the worst aspect of mechanically ventilated buildings. Tiredness, stale air, spread of coughs and colds, respiratory problems, sore throats and irritated eyes are all problems associated with mechanical ventilation. There are many examples of air conditioning being uncontrollable and uncomfortable. In one building, staff were advised to go outside for fresh air hourly. In another, staff contemplated bringing in plastic bags of air!

CH2 has addressed this issue with its connection to the exterior. The feeling in the office is a little like being in a house with balconies. There are decks and winter gardens on each floor. Forced ventilation supplies 100% fresh air from the floor and extracts it at the ceiling. It is not the stale, recycled air that sends so many New Zealand workers into a drowsy state in the afternoons.

This healthier atmosphere is expected to boost productivity of Melbourne City employees. A leading British workplace specialist predicts that sick leave among CH2 occupants will drop by at least 4.9%.

The office accommodates 540 people and has 10 storeys, each around 1000 m<sup>2</sup> plus basements. Secure underground parking,

with shower facilities, is provided for 80 bikes. There are 21 carpark spaces, which have been designed to allow easy conversion to other uses.

In building evaluations people always talk about traffic and parking problems and the importance of being close to public transport. CH2 is located 50 m from a tram stop on Melbourne's light rail system.

Various techniques have been used to create a better workplace, with minimum damage to the environment yet incorporating many cost savings. These include:

- phase-change materials to store 'coolth' (opposite of warmth)
- automatic night-purge windows to use cool night air
- shower towers to cool air and water

- wavy concrete ceilings to stabilise temperature with their thermal mass
- wind generators, photovoltaic cells and solar hot water heating
- a water-mining plant in the basement.

## Each face different

CH2 is unusual in that each façade is designed to suit its orientation and some elements change to suit conditions. Timber louvres automatically adjust to shade the west façade. Most office buildings are the same on all sides; consequently they get hot on the sunny side and/or cold on the shady side.

The character of the building is enriched by plantings on two sides and over the roof garden. Plants assist with cooling and improve air quality and are an important feature in occupant satisfaction studies.



Swanston St façade with adjustable timber louvres to screen westerly sun.



CH2 has five shower towers visible from the street that shower water down a 3.5 storey enclosure to cool air and water. The air is then used for the retail spaces.



Vertical gardens run the full height of the northern façade assisting with shading, glare and air quality.

The Inter-Governmental Panel on Climate Change warns that the earth's climate will probably destabilise if carbon dioxide exceeds 450 parts per million. Scientists at the Tyndall Centre for Climate Change Research calculate that Britain will need to reduce its



Wavy concrete ceilings provide thermal mass to stabilise internal temperatures.

share of emissions by 90% by 2050 to avoid this. Melbourne City architects are close to that target.

In comparison with the City of Melbourne's existing Council House, CH2 is expected to reduce carbon emissions by 85%.

## Can NZ follow suit?

CH2 was achieved by a project structure that was largely eliminated in New Zealand 20 years ago. Government architects who once designed public buildings lost favour during the 1980s. The complexities of a building's long-term fitness for purpose are hard to convey to non-professionals within simplistic project management and tendering procedures.

However, workplace productivity, climate stabilisation and fossil fuel prices are forcing us to use smarter design to shift to efficient building infrastructure. This investment shift will generate better returns through lower running costs and healthier, more usable buildings with fresher air, both inside and outside.

*Chris Watson has analysed some 150 buildings' fitness for stakeholders' needs. He is a member of the International Building Performance Evaluation Consortium. Clients include Te Papa, OECD (Paris) and the Sydney Opera House. For further information visit [www.PostOccupancyEvaluation.com](http://www.PostOccupancyEvaluation.com).*