



LIVING SUSTAINABLY AT 200 VICTORIA STREET

EPA Victoria's purpose is to protect, care for and improve our environment, which includes our own impact as an organisation.

For many years we have focused on how we can reduce our ecological footprint and lead by example.

These considerations led our decision to move our head office from multiple tenancies in Southbank into one of Melbourne's most sustainable commercial office buildings at 200 Victoria Street in Carlton.

The building

200 Victoria Street is the redevelopment of a derelict former Carlton United Brewery laboratory. Developer and owner Drapac had the vision to save the building and transform it into a sustainable and future-proof asset, and EPA committed to becoming the lead tenant in the building. EPA and Drapac worked closely to make it a sustainable building.

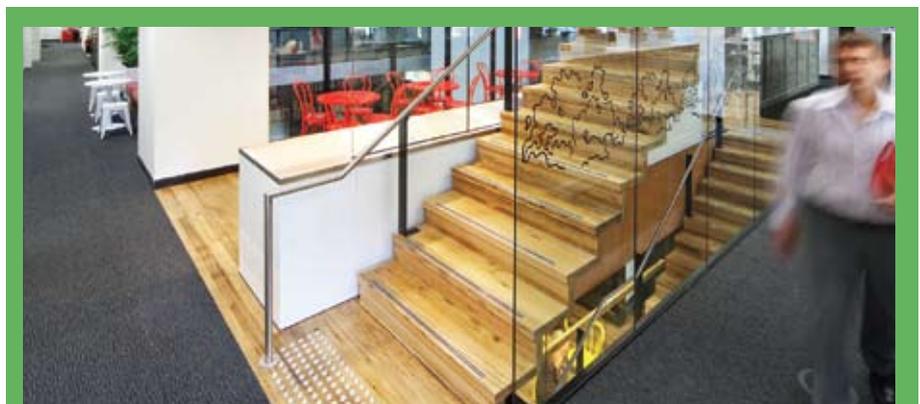
Features of the redevelopment included:

- integrating a tri-generation plant
- hollowing out a light-filled atrium
- orienting the fitout around natural sunlight
- rainwater harvesting to service the amenities
- selecting materials for improved indoor environmental quality and thermal capacity.

Our fitout

EPA engaged leading ecologically sustainable design (ESD) consultants and architects to ensure the fitout of its four-floor tenancy was aligned with the rest of the building's sustainable features. As importantly, it delivered on our vision of 'the Victorian community living sustainably' by:

- inserting an interconnecting staircase between each floor
- including video-conferencing facilities
- using energy-efficient motion sensor lighting
- using under-floor air distribution
- employing environmentally sustainable materials.



*Staircase connecting four floors of EPA tenancy made from stringybark reclaimed from chicken coops; exposed ceiling avoids waste to landfill and celebrates the building's history.
Image © James Lauritz*

Key features

Electricity generated onsite using a gas-fired tri-generation plant.

Under-floor air distribution, and demand-based air-conditioning in meeting rooms.

Natural light-filled central atrium.

5–6 star-rated energy and water-efficient appliances.

Timers on hot-water units in kitchens.

Fridges without freezers, to consume less energy.

'Kill switches' built into all workstations to turn off standby power from computers.

High-performance double-glazing on all windows.

Sensor-controlled, energy-efficient lighting.

Recycled, locally manufactured and eco-accredited materials.

Rainwater harvesting for use in cooling towers and amenities.

Award-winning video-conferencing facilities in five meeting rooms.

Non-electronic whiteboards.



A meeting room with video-conferencing; furniture from reclaimed naturally fallen timber. Image © James Lauritz.

Our staff

A key part of designing the fitout to be sustainable and help shape EPA's preferred culture was staff-wide consultation by our architect. A sustainable building will not be so without the contribution of the people within it.

We worked closely with building managers, developed a guide to the building and trained staff to run tours highlighting its green features. Over 670 clients, stakeholders and community members toured the building between May 2010 and April 2011. Giving staff the knowledge to talk about and interact with visitors confidently about the building and fitout has been crucial in 200 Victoria Street's success.

In a recent polling of EPA staff, their favourite features were the recycled stringybark floorboards reclaimed from a 100-year-old chicken coop and the natural light from the large windows and atrium.

'Community members often ask if they are in the right place because they expect it be more like a typical government building. If they are concerned before entering the building, they are quickly disarmed by the welcoming feeling they get once they reach EPA's reception.'

Christine Youseff, Client and Customer Service Unit

Key features in more detail

Tri-generation plant

One of the key features of the building is the gas-fired tri-generation plant. The plant provides power to the building and uses waste heat from the generation of power for heating and cooling. This onsite process avoids generation of a significant amount of greenhouse gas emissions that usually result from centralised, coal-fired power generation and transmission inefficiencies.

Due to the infancy of tri-generation in Australian buildings, there were some initial challenges, which included the following:



- The plant was designed to operate in parallel to the grid but only set up to import from, rather than also export to, the grid.
- The plant's minimum base load was never being reached.
- The plant exceeded noise policy limits for nearby residences.

To the credit of the operator, all of these issues were overcome. However, these remain important lessons for other building managers and developers when considering a tri-generation plant.

Use of daylight

A feature of the retrofit is a central atrium, which allows daylight into the building's interior. Coupled with extensive exterior glazing, the building is well lit with daylight. Each floor has been mapped around naturally occurring 'light paths' and the installed lighting uses energy-efficient T5 fittings. There are also motion sensors that automatically turn lights off when not in use and daylight sensors have been



Kill switch at each workstation allows staff to turn off standby power from computers.

fitted, though not commissioned, due to their placement not being close enough to windows. This is currently being examined.

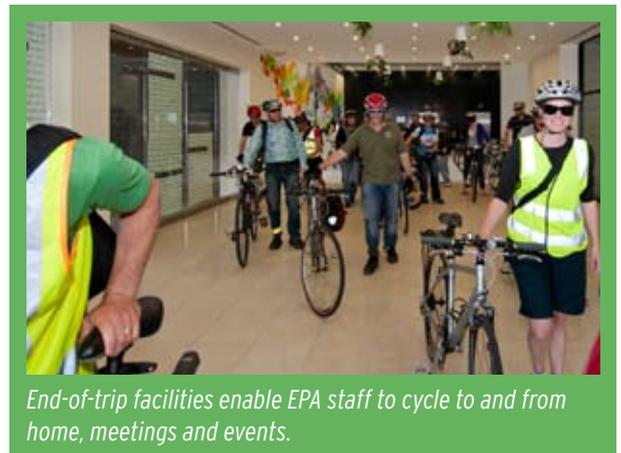
Kill switches

Each workstation is fitted with a kill switch so that staff can prevent standby power being consumed by their computer overnight and on weekends. Such a small feature can achieve a lot. We identified that office-wide use of the 'kill switch' could save more than 19,000 kWh of electricity – the equivalent of three average Australian households' energy consumption – each year. However, benefiting from this feature required staff to change their behaviour. To encourage take-up, we have carried out audits and provided small incentives such as green, heart-shaped chocolates. This campaign saw the number of

people using their kill switch rise from 43 to 67 per cent, highlighting the importance of engaging staff in behaviour change to ensure features of the building are used to their full potential.

End of trip facilities for cyclists

We have a strong cycling culture at EPA and it was important that the building provided excellent end-of-trip facilities for staff. There are 56 bike racks in lockable bike cages in the basement, in front of the building, and even for visitors in the foyer. There are showers and lockers on each floor of our tenancy and our Bicycle Users Group provides support to all of EPA's cyclists.



End-of-trip facilities enable EPA staff to cycle to and from home, meetings and events.

Rainwater harvesting

Rainwater harvested from the roof is stored in a 57,000 L tank and used for cooling towers and toilet flushing. We only discovered the latter application when we had a problem with toilet flushing. This illustrates the importance of receiving a detailed building user guide, including information from all contractors, from the first day of occupancy.

'I am struck by the generosity of our facilities for cyclists – 2 showers on each floor, lockers, an ironing board, bike cages and bike parking out the front and in the foyer.'

Vivien Nadalin, Risk and Governance Unit

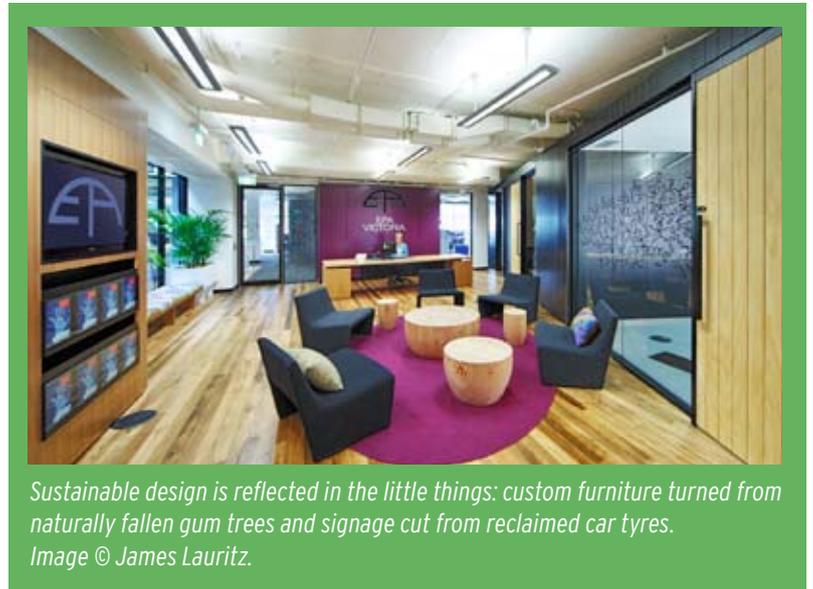


Materials and layout

Timber floors and the stairs connecting the four floors of EPA's tenancy are made from reclaimed stringybark sourced entirely from 100-year-old chicken coops in New South Wales. We used finishes that contain little or no formaldehyde and low levels of volatile organic compounds (VOCs), as well as locally manufactured furniture. For other materials, the Good Environmental Choice Australia (GECA) and Forest Stewardship Council certifications helped with material and furniture selection.

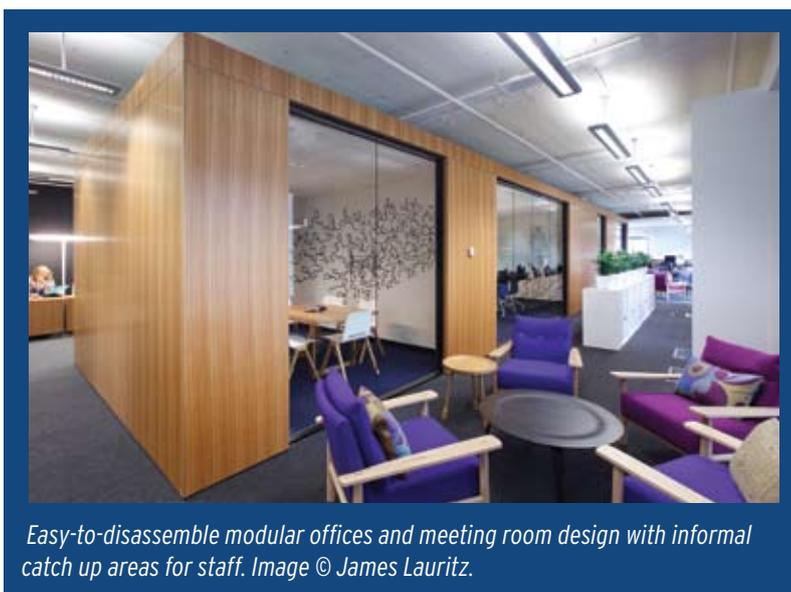
Our fitout is open plan in design, with low partitions, open kitchens and few contained offices, all of which allows excellent airflow. To complement this there are numerous formal meeting rooms, plus informal meeting spaces that are very popular with staff, as they can collaborate with others away from their workstations

The modular design of offices and meetings rooms is intended to make them easy to disassemble and be reused to ensure a long useful life for the contained materials.



*Sustainable design is reflected in the little things: custom furniture turned from naturally fallen gum trees and signage cut from reclaimed car tyres.
Image © James Lauritz.*

However, as with many open-plan offices, the post-occupancy survey highlighted that many staff were dissatisfied with the lack of acoustic privacy, levels of noise distraction (such as from kitchens) and lighting/daylighting controls.



Easy-to-disassemble modular offices and meeting room design with informal catch up areas for staff. Image © James Lauritz.

'The open plan layout is great for improving interaction with colleagues and there are a number of more private areas if needed. However, my desk is near a kitchen and walkway for staff, so I've had to adapt to working with increased noise around the office.'
*Nathan Steinhardt,
Service Growth Unit*

Why would an organisation move into a sustainable building?

EPA saw the value in moving into a sustainable building that would use fewer resources and allow for continual improvement. However, we also saw it as a business opportunity to satisfy our core objectives, improve workplace conditions for staff and reduce our costs so we can deliver more for the Victorian environment.

Increased regulation and mandatory initiatives are also acting as drivers for some organisations, such as the Council of Australian Governments' Mandatory Energy Efficiency Disclosure for commercial buildings, the Green Building Council's Green Star ratings and NABERS ratings.

Because there is often only anecdotal evidence that sustainable buildings improve staff productivity, we asked our architects to run a post-occupancy survey to measure workplace effectiveness.

The results showed that indoor air quality is vastly improved because of the low-VOC and formaldehyde materials used, as well as more access to fresh air and having over 900 plants across the tenancy. The main areas of improved satisfaction for staff are access to daylight, air freshness and lack of artificial lighting.

Energy use (tenant light and power only) at 200 Victoria St from Nov 2009 to Nov 2010 compared with our previous head office tenancies from November 2008 to November 2009.

	Former head office tenancies	200 Victoria St	Saving
Energy (kWh)	538,166	391,246	27%

** Not all features of 200 Victoria St were fully commissioned during this year so this saving is expected to rise.*

What has EPA learned?

Get help from other organisations that have already transitioned to a sustainable building. Learn from their mistakes and get advice on features that have proved to be successful.

Use programs and resources designed to help you reduce your ecological footprint, and seek recognition. EPA joined CitySwitch - a program to help office tenancies reduce their energy use - and was awarded the City Switch Victorian Signatory of the Year in 2010 for achieving a 20 per cent reduction in electricity compared with our former tenancy.

When working with consultants, ask for building user guides to be ready for the first day of occupancy. Green building features take time to commission and people need to know from day one how to make the features work according to the design.

Invest in your staff by dedicating staff resources and time after moving in. Who will know how to set the timer on the chiller/boiler

unit in the kitchens so you're not wasting energy overnight and on the weekend? Who will help staff understand the features of the building (for example, the kill switch at each workstation requires staff to change their behaviour at the end of each day).

Be prepared for a long process of applying for building accreditations. There is no doubt that building accreditations are valuable tools to benchmark and promote your building. However, it can take a long time to achieve them. Also consider applying for ongoing performance ratings so that, once you achieve the initial rating, you can keep measuring and promoting its lasting effect.

Consider what your organisation values most. There are always trade-offs. As an example, plants help improve indoor air quality but may increase your use of potable water.



Snapshot of the building

Base Building

Green Star ratings:

6 Star Office Design certified and aiming for
6 star Office Design As Built

Building size:

7458 square metres; 6 floors of office space
plus ground floor retail and café

Building owner: Drapac

Project Managers: Montlaur

Architects: Peddle Thorp

Builders: Hansen Yuncken

Building engineers: Umow Lai

Services consultant: Murchie Consulting

Structural engineers: Cardno Grogan Richards

Tri-generation plant owner/operator: Cogent

EPA tenancy

Green Star ratings:

Aiming for 6 Star Office Interiors

NABERS rating:

Aiming for 5 Star Office Energy for Tenancy

EPA tenancy size: 5250 square metres
(4 floors of office space)

Project Managers: Montlaur

Architects: Woods Bagot

Builders: Hansen Yuncken

ESD consultants: Aurecon

For further information about EPA's new head office at
200 Victoria St, please visit EPA's website at
www.epa.vic.gov.au/about_us/head-office.asp