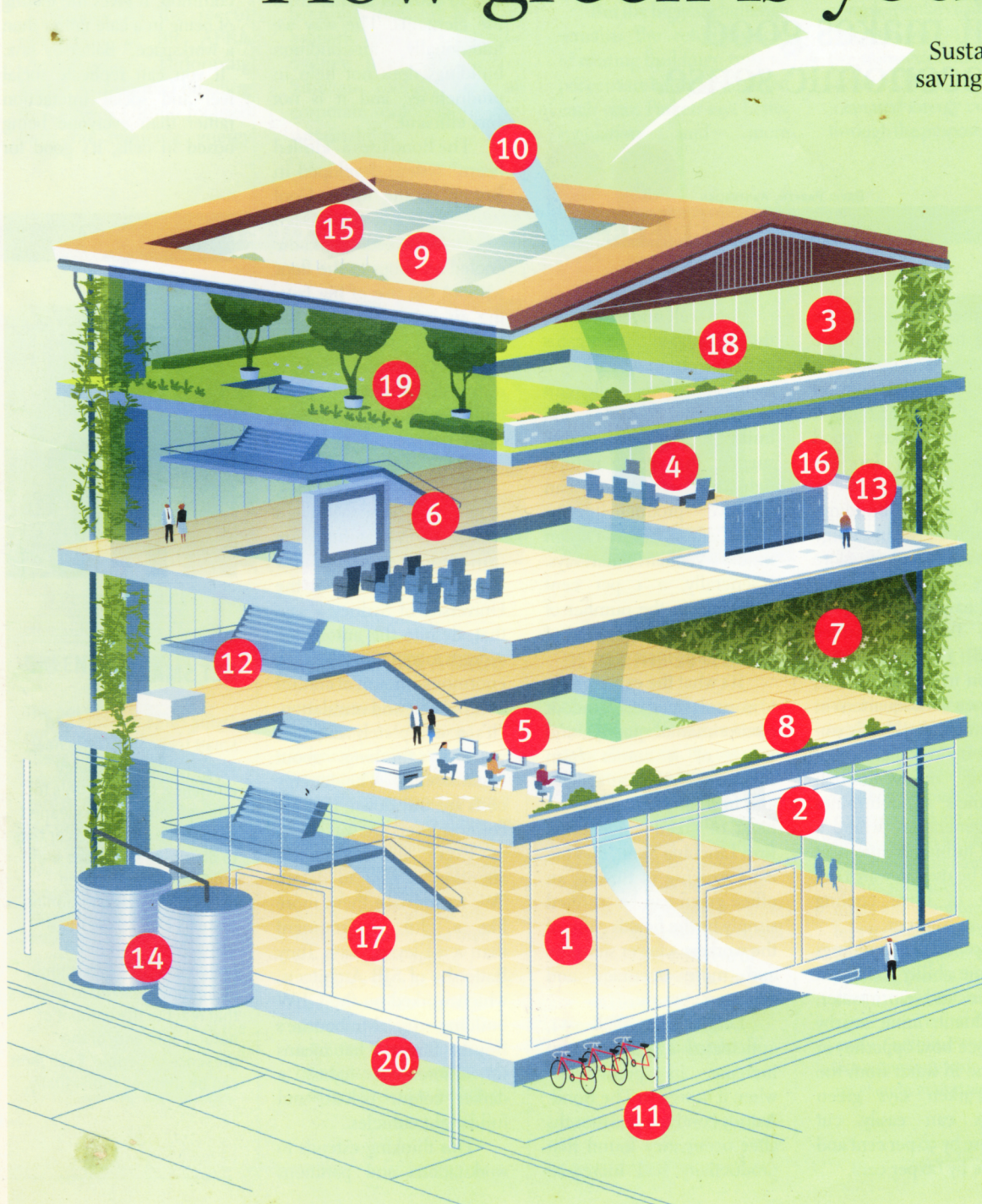


# extra 35

## How green is your office?

Sustainable design is not just about saving the planet. It also helps to cut costs and raise productivity, writes *Giles Parkinson*.



1. Recycled carpet tiles
2. Recycled ceiling tiles
3. Recycled timbers for flooring and walls
4. Recycled or recyclable materials for office furniture and decorations
5. Flat screen computers
6. Sensors switch lights off at certain hours or when people leave meeting rooms
7. Living walls made entirely from plants
8. Indoor plants or hedgerows
9. Natural daylight and effective shading, LED lighting in atriums, passageways
10. Natural ventilation
11. Cycling facilities
12. Broad staircases to encourage walking between floors
13. Water-efficient bathrooms (taps, showers)
14. Rainwater collection for use in cooling towers and toilets
15. Rooftop solar and wind turbines
16. No hot water
17. Window technology – glazing and solar
18. Rooftop decks
19. Inner atriums
20. Low energy concrete

Imagine, not so far in the future, the edible office. Perhaps not a place where you could turn around and take a bite out of a colleague's workstation, but rather one where partitions and fittings are made with materials that are biodegradable or could be turned into animal feedstock.

In a world increasingly aware that its resources are finite, this is not such an outlandish idea. Kirsty Máté, head of the University of NSW's interior architecture program, says a new way of thinking about office space and design may be required to achieve a sustainable future. "Maybe our office interiors should also become sources for food, at least for animals if not for humans. Perhaps they should be 100 per cent biodegradable ... their ability to be flexible and adaptable will be of increasing importance."

The question of sustainability in commercial buildings, and particularly in offices, is becoming a crucial one for developers and owners. The holy grail may not be an edible office, but it will, one day, be a carbon-neutral one.

There are two benefits from a green office that should be easily understood in today's economic environment: lower energy and water use equals lower costs; and an improved office environment translates into increased productivity.

"There is a green office movement happening," says David Parken, CEO of the Australian Institute of Architects. "People say it's under threat from the global financial crisis but, because of the efficiency dividend,

**You don't do it because you want to hug a tree; you do it because it makes good economic sense.**

DAVID PARKEN, AUSTRALIAN  
INSTITUTE OF ARCHITECTS



management should be focusing not less but more on these outcomes. You don't do it because you want to hug a tree; you do it because it makes good economic sense for the owner and tenant."

That green buildings can significantly cut energy and water use, and therefore costs, is well established. Lend Lease's building at 30 The Bond in Sydney achieved a 48 per cent reduction in emissions. And ANZ's new headquarters in Melbourne's Docklands can generate up to 90 per cent of its energy needs through solar panels, wind turbines and tri-generation, where a gas-fired turbine creates heat that can be used to warm the building or drive cooling facilities in summer.

Almost all new buildings have some ability to harvest rainwater and stormwater, treat effluent, mine nearby sewers (see box, opposite) or even pipe in water from the Yarra. Parken says green buildings can easily cut energy use by 50 per cent and water use by 60 per cent.

Less well understood are the dramatic efficiency gains available from creating a healthier and more pleasant environment inside the building. "Some studies suggest that good natural light and ventilation can improve productivity by 15 per cent," Smart Design Studio's William Smart says. "Generally, a 1 per cent reduction in the number of sick days is the equivalent of energy costs for a year."

It's what the experts refer to as an elevated IEQ (indoor environmental quality), and much of it comes from smarter use of natural light and fresh air. Ché Wall, the head of green engineering firm Lincoln Scott, says the extra expense of turning an office green can be justified simply by the health gains of the workers – fewer sick days and more accuracy and attention at work.

Lend Lease, Wall says, anticipated a 4.8 per cent increase in productivity when it moved to The Bond. A study conducted 18 months after occupancy found that productivity had increased

by 10.8 per cent. A lot of the efficiency gains are credited to improved air quality. "We needed to go back to basics and ask ourselves why we build offices," he says. "We build offices to be productive and to provide shelter from the elements. The way we traditionally air-condition buildings does not help in productivity, and it is not very efficient."

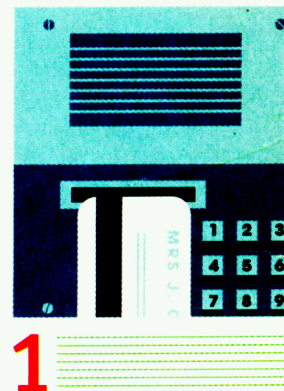
The Bond uses a "chilled beam" system developed in Britain in the 1960s. Cool water is pumped through beams in the ceiling and the cooled air drops to the floor without the use of big fans; the air is purged from the building at night. In other buildings, warm air is distributed through the floor and rises through the office; others use natural ventilation instead of constant recycling.

Richard Francis-Jones, of Francis-Jones Morehen Thorp – the architecture firm that designed the new law faculty building at the University of Sydney – says that, despite the automated systems, occupants retain an enormous amount of control over lighting and ventilation. "It's a completely different way of thinking about sustainability. The energy costs are way down, and the comfort levels are way up."

Even in bathrooms, attention is paid to detail. "We try to make them more like a club environment than a 7-Eleven," says Tony Battersby of SJB Architects, which worked on the CBW building in Melbourne's Bourke Street. That means no fluorescent lights, a darker colour palette and full-height cubicles.

This thinking extends to workstations and partitions

that have a more modular design and adapt to suit changing use and staffing levels. "We are designing more common areas to create indoor/outdoor room feels; chill-out zones are quite common. It gives the feeling of being in a cafe rather than a workspace," Battersby says. "If you can replicate social feel and social interaction rather than everyone being boxed in cells, it's good for



## 1 GET SMART

Swipe cards, sensors and smart technology offer new opportunities for energy efficiency. Logic controls for lifts use information gleaned from swipe cards and car tags to distribute lifts in the most efficient manner. Zoned lighting and air-conditioning systems can deliver huge gains. At the new APRA building in Sydney's Ultimo, all lighting is linked to sensors that react to the amount of natural light and/or the presence of people. Each light can be dimmed individually.

mental health.” Different floors in a large office building might be encouraged to consider themselves “vertical villages, each with an identity, such as a plant name and subtle differences in flooring, colour and lighting”.

Smart says the recent renovation of the APRA (Australasian Performing Rights Association) building in Sydney’s Ultimo focused both on reducing energy

consumption and promoting a healthy workplace. Wide staircases encourage workers to walk between floors; shower and bike facilities prompt staff to ride to work. For similar reasons, the number of photocopiers has been cut from 140 to 40 at property group Stockland’s Sydney head office, says Siobhan Toohill, head of corporate responsibility and sustainability.

Chris Carolan, head of innovation at Bovis Lend Lease, says that what people expect to see inside a building may change. “We will probably challenge the aesthetic... things like ceilings that maybe aren’t needed.”

But the biggest challenge remains the refurbishment of existing buildings: only 1-2 per cent are being refurbished each year. Parken says better regulation and more

incentives are needed to encourage building owners to update poor stock.

Wall and another Green Business Council of Australia co-founder, Maria Atkinson, have lobbied the Federal Government to introduce a complementary cap-and-trade emission permit scheme for the non-residential building sector. They argue that increased energy costs passed through the proposed national

trading scheme will not be sufficient to drive change.

“Voluntary schemes do not provide enough incentive for change,” Wall says. “Essentially, they reward business as usual. We want a stand-alone scheme that is stapled to the carbon pollution reduction scheme and that encourages refurbishment of existing buildings. Without that, the change is not going to happen.”

## SIX WAYS TO MAKE YOUR WORKPLACE GREENER



2

### GREEN AND AIR IT

The pot plant is back, but not as you remember it. The ultimate green office experience is the vertical garden or “living wall”, but not every office can afford such indulgence. At its new headquarters in Sydney, property group Stockland provides two plants per employee workstation in order to lift oxygen levels. The offices of NH Architecture have a “mini-hedge” – a row of plants down the centre of the building. “We put that in as a simple way of purifying air,” principal Peter Dredge says.



3

### DON'T WASTE A DROP

The capture and reuse of grey water in toilets and cooling towers has become commonplace. This is possible even for tenants occupying a single storey in a building, as the Green Building Council demonstrates in its Sydney offices. Rainwater capture and waterless urinals are other measures. And then there’s “sewer mining”: buildings such as Melbourne’s Council House 2 tap into sewers running below adjoining streets to draw off excess liquid, treat it and use it in their own building.



4

### DETOX THE SYSTEM

That much-loved “new car” smell probably comes from toxic chemicals. It’s the same in a new office building or office renovation. In building industry parlance it is known as “off-gassing”, a reference to the smells and emissions that come from the volatile organic compounds in carpets and paints. Green offices will use products with zero or extremely low VOCs. For the same reason they will avoid the adhesives used in furniture and carpentry.



5

### RECYCLE OF LIFE

We are entering a world in which all interior fit-outs are recycled or recyclable. Floors are made from recycled timber or low-emission concrete. Making simple furniture such as cafe stools with Australian hardwood means the furniture is locally made and therefore involves less transport. Workstations are demountable, so if anything breaks, including chairs, they can be fixed with spare parts rather than thrown away. Computer companies are using less toxic and more recyclable materials.



6

### KEEP COOL, NATURALLY

Architects are developing ingenious methods to circulate fresh and naturally cooled air through buildings, whether it be water-cooled “chilled beams” that allow cool air to fall, underfloor ventilation that encourages warm air to rise or systems that allow the purging of hot air at night. In Melbourne’s Council House 2, cool air is captured overnight and stored using phase-change materials that freeze at high temperatures and are then melted at about 11-16°C to distribute cool air at little cost.

BY GILES PARKINSON