

'The business case for greener buildings is clear. While a sustainable building can cost more to refurbish or construct, it offers long-term operational savings...'



It's all around you: sustainable buildings and workspaces

Whether you work in an office, factory, café, news agency, pharmacy, florist or hairdresser, your workplace can be more sustainable and more productive.

The business case for greener buildings is clear. While a sustainable building can cost more to refurbish or construct, it offers long-term operational savings and evidence shows people who work in sustainable workplaces get sick less and are more productive.

The refurbishment of 500 Collins Street in Melbourne is a good example. The 30-year-old office tower was the first CBD commercial building to receive a Green Star rating for its refurbishment.¹⁰⁵ A study found that:

- greenhouse gas emissions were reduced by more than 1700 tonnes a year
- waste recycling rates increased from 13% to 42%
- average sick-leave days per employee fell by 39%

¹⁰⁵ See www.greenerbuildings.com.au

- task productivity improved, with employees reporting better concentration and general well-being
- employees reported fewer cases of headaches, eye strain, colds and fatigue.

Green Star ratings system

Green Star is the Green Building Council of Australia's national, voluntary environmental rating system.

11 per cent of Australia's CBD commercial office buildings are now Green Star certified. This voluntary rating system evaluates and rates the environmental design and construction of commercial office buildings.

Its website provides a lot of useful tools, technical guides and calculators. Go to www.gbca.org.au/green-star to register your building project for Green Star certification.

Improving the environmental performance of your building or workspace therefore has multiple business benefits:

- it can significantly reduce the environmental impact of your business while also saving you money
- it can improve employee well-being and productivity, and can potentially reduce your occupational health and safety liabilities
- it can help to attract and retain talented employees
- it promotes your environmental credentials to customers and other stakeholders.

What makes a sustainable building?

It's a combination of factors. Rating schemes like the Green Building Council's Green Star system assess the following factors to determine a building's overall performance:

- management
- energy efficiency
- water efficiency
- indoor environment quality
- transport
- material selection
- land use and ecology
- innovation
- emissions.

As a SME, many of these factors can be considered when you're moving premises or looking at a refurbishment of your existing premises. But an effective environmental management plan can also improve the performance of your existing building.

From November 2010, owners of large commercial office buildings have been required to provide energy efficiency ratings when selling or leasing office space. According to the Department of Climate Change and Energy Efficiency, 'the aim of the scheme is to ensure that credible and meaningful energy efficiency information is given to prospective purchasers and lessees of large commercial office space.' The result is a scheme that makes it easier for companies to search out energy-efficient office space.¹⁰⁶

106 See www.environment.gov.au/buildings

Building management for SMEs

You can conduct an environmental audit to better understand the performance of your workspace or building in the key areas of:

- lighting
- indoor air quality
- heating and air-conditioning
- water use
- waste generation.

NABERS

The National Australian Built Environment Rating System (NABERS) is the Federal Government's environmental rating system for existing buildings.

This scheme doesn't just help companies to save money by reducing their energy use and greenhouse gas emissions. It also enables them to see how well they're doing in managing the environmental performance of their building.

It does this by assessing a building's impact on a scale of one to five, with five being the best and one being the worst. This allows the building's environmental performance to be compared with others.

The NABERS website has an online calculator that helps SMEs to assess and compare their energy, water, waste and indoor environment performance. Go to www.nabers.com.au for further information.

If your business doesn't own its premises, then speaking with the facility manager, agent or owner is a good way to share the task. You could also look to negotiate a 'green lease'. Within such a lease the tenant and the building owner look at the ways in which they can reduce the environmental impact of the building. These initiatives are then included within the lease agreement. In some cases, the financial savings from efficiencies and reduced energy use can be shared between the tenant and the building owner.

The Green Lease Guide

The Investa Property Group has 17 buildings in the Sydney CBD that utilise green lease provisions. Together with a number of other organisations, it has drawn up a Green Lease Guide that sets out the ways in which a green lease can benefit businesses. It can be downloaded from the 'for business' sections of either www.resourcesmart.vic.gov.au or www.environment.nsw.gov.au



Ventilation and indoor air quality

We spend 90 per cent of our time indoors so air quality inside buildings is a major issue. However, many people are unaware that the quality of air inside buildings is often worse than the outside air. Indoor air doesn't just contain pollutants from outside, it also contains pollutants that are generated inside the building. These include emissions from photocopiers and printers, as well as the slow release of gas from carpets, paints and plastics.

There are a number of easy steps you can take to improve air quality in your building:

- ensure that all heating, ventilation and air-conditioning (HVAC) equipment is regularly cleaned and tested for contamination
- use low volatile organic compound (VOC) paints, sealants and adhesives
- have your indoor air quality tested and regularly monitor the level of carbon dioxide in areas where air is re-circulated
- open windows wherever possible and look for ventilation systems designed to maximise access to fresh air and that operate independently of your heating and air-conditioning systems.

Locating a green building professional

If you want to make your building more sustainable and you need help, the Green Star Accredited Professionals Directory at www.gbca.org.au is the best place to start. It contains a list of designers, architects, engineers, builders, project managers and other industry professionals who have shown a full understanding of the Green Star environmental rating system and the Green Star Office Design rating tool.

Material use

Studies show a clear link between health and the use of materials that contain synthetic chemicals. Wherever possible choose eco-friendly furniture, floor coverings and finishes made from natural, non-toxic materials. While such products may have a higher initial price, the overall cost can be lower as employees are healthier, have fewer sick days and can be more productive. Things to be aware of include:

1. Floor coverings, as these have the single greatest environmental impact of any fixed item, due to wear and tear. Look for durable flooring made from natural materials that can be reconditioned or recycled. Options include modular carpet, recycled tiling and timber and sustainably grown materials like bamboo.
2. Standard oil-based paints, adhesives and sealants that give off volatile organic compounds (VOCs). Choose natural or low-VOC paints and finishings.
3. Consult Good Environmental Choice's green procurement database at www.geca.org.au for the most environmentally preferable products.

www.yourbuilding.org

This Australian website contains useful advice and information on greener buildings. Run by the Property Council, the site also has a wide range of tips that are useful for SMEs wishing to make their building more sustainable.

Connection to nature

Proximity to nature aids health and wellbeing. Research by the University of Technology in Sydney indicate that plants improve indoor air quality and can remove volatile organic compounds (VOCs), that can cause sickness and lethargy. Its study found a mixture of plant species such as Peace Lily, Kentia Palm, Marginata and Devil's Ivy could achieve a complete removal of VOCs in 24 hours in a closed chamber with no ventilation, and a 10 to 20 per cent reduction in flow-through conditions.

Giving your employees a view of the outside world also makes a difference. Studies indicate that people who work near a window have lower levels of health complaints.

Green Building Fund

The Federal Government's Green Building Fund has been set up to reduce the energy used in the operation of existing commercial office buildings.

With \$90 million of funding over five years, one of the two streams of funding targets owners of existing commercial office buildings. The fund will assist them to reduce energy consumption through the retro-fitting and retro-commissioning of these buildings. Grants of between \$50,000 and \$500,000 are available to cover up to 50 per cent of project costs.¹⁰⁷

107 For further information contact the AusIndustry hotline on 13 28 46 or email hotline@ausindustry.gov.au

Case study: Australian Ethical Investment – green building renovations on Trevor Pearcey House

For many SMEs, creating a green building will take place when you come to renovate your existing building. This is the case with the new head office of Australian Ethical Investment in Canberra.

The original two-storey building was over 20 years old when it was renovated into a 'green building'. Instead of a hi-tech renovation, a focus was placed on low-technology design principles that utilised passive systems and the reuse of materials.

From an energy-saving standpoint, the renovation used double-glazing windows, passive cooling and external insulation. Water-efficiency measures included the installation of rainwater tanks for use in toilet flushing and moisture sensors for use in garden irrigation.

According to the Greener Buildings website,¹⁰⁸ the renovation has achieved the following savings:

- a 75% decrease in greenhouse gas emissions
- a 75% reduction in water use
- 80% reduction in waste materials
- savings of \$17,000 each year – or 52% – on energy costs.

After 12 months of operation, the building operates at 47 per cent less than the standard amount for a 5 Star NABERS Energy rated building. Greenhouse gas emissions have also fallen by around two-thirds.

The building was awarded a 6 Star Green Star rating, in the process showing that a modest renovation budget can achieve significant environmental and financial savings.

Many buildings that were built in the 1970s are now coming up for renovation. Go to <http://tinyurl.com/yjhsbss> for more information and advice specific to retrofitting old buildings.

108 See www.greenerbuildings.com.au

Self-sufficiency and overall efficiency

In addition to maximising energy and water conservation and minimising waste, a green building should also introduce measures that bring about a degree of self-sufficiency:

1. In the case of energy, this can be achieved through the installation of solar panels or wind turbines.
2. In the case of water, this can be achieved by collecting rainwater off the roof. After use in kitchen and bathroom basins, this water can then be recycled for toilet flushing or for use in cooling towers. It could even be used to water plants.
3. Establishing a green roof (that is, putting in soil and plants on your roof) can help to insulate the roof of your property.

CitySwitch – helping SMEs to green their offices

Many SMEs are unaware of their climate impact or the cost saving benefits of energy efficiency. To change this, Australia's local governments have partnered with businesses to create the CitySwitch Green Office program.

CitySwitch works with tenants to improve the energy efficiency of their offices. In addition to saving energy, the initiative also helps companies to save money and reduce the greenhouse emissions that are generated by their operations.

The program was initiated by local government following estimates that tenants can influence up to 50 per cent of the energy use in office buildings. At the time of publication, hundreds of tenancies utilising more than 1,100,000 sqm of office space have joined the CitySwitch program.¹⁰⁹

109 See www.cityswitch.net.au

Emissions

Emissions related to a workspace and building can include air, light, noise and water pollution. Environmental management plans (see chapter 12) should include processes to identify and manage any such emissions so your space is as sustainable as possible.

Further information

Operating buildings on a more sustainable basis is vital if we are to realise the cost savings and environmental potential of greener buildings. To facilitate this, the Federal Government has released a guide to help building owners, managers and tenants operate Australia's buildings in a more sustainable manner.

The ESD Operations Guide for Owners, Managers and Tenants is available as a free download from: www.environment.gov.au/sustainability/government/publications/esd-operations-guide.html

The 'Waste Reduction in Office Buildings' guides for tenants and building managers are also available for free download from www.environment.nsw.gov.au/sustainbus/wastereductioninofficebuildings.htm

Insulation

Many SMEs do not have insulation in their factories or offices. With 60 per cent of Australian homes now insulated, the savings from insulation are well-documented:

- ceiling/roof insulation – up to 45%
- floor insulation – up to 5%
- wall insulation – up to 20%.

The Victorian Government has an insulation brochure that gives excellent advice on the different types of insulation available. It also contains advice on how to install it.¹¹⁰

110 See www.sustainability.vic.gov.au

Case study: The Green Building Council of Australia – greener refurbishment¹¹¹

The Green Building Council of Australia (GBCA) is the key organisation behind the uptake of green building practices in Australia's property industry. Supported by both industry and government, the organisation has been highly effective in promoting sustainable buildings.

In addition to encouraging others to 'green up' their buildings, this small not-for-profit undertook a GreenHouse refurbishment of an 800m² space in Sydney's central CBD. The location was chosen as it had maximum daylight access and was situated close to public transport.

The GBCA took into account the waste hierarchy when planning its refurbishment. It went with an open-plan office and exposed ceilings in order to reduce the use of plasterboard and ceiling tiles. It reused some items from its previous office and the previous tenant. Café chairs and other furniture were also recycled and reupholstered to give them a fresh new look.

In July 2009, the GBCA GreenHouse achieved a 5 Star Green Star – Office Interiors v1.1 certified rating. The \$1.3 million fit-out took less than five months to complete and came in on budget, showing such fit-outs are within the capabilities of other SMEs.



111 This overview has been sourced and adapted with permission from the Green Building Council of Australia case study at www.gbca.org.au/about/the-greenhouse

While most SMEs won't have a spare \$1.3 million lying around to invest in a Green Star office fit-out, the GBCA environmental innovations can be treated like a green office 'wish list', so to speak. You may not be able to do everything but there are a number of great, cost-effective things you can introduce in your workplace to reduce your environmental footprint and save money for your business.

The refurbishment was a showcase for sustainable SME building initiatives and included the following environmental innovations:

Water saving

1. Dual-flush water-efficient cisterns were installed in the bathroom.
2. The GBCA also used 6 star water-efficient urinals that were controlled by motion detectors and used only 0.8 litres per flush. Other fit-outs of this size have also used waterless urinals.
3. To maximise efficiencies further, the bathroom taps are water-saving, spring loaded taps.
4. To minimise the use of potable water, toilets are connected to a grey water system.
5. All water and other material that goes into the dishwasher or down the sink (such as soap and food scraps), is pumped along a grey waste pipe and into a grey water collection tank. After all solid material is filtered out, the water is then used for flushing the toilets and urinals. The grey water is only released into the system when the tank level is high enough. At other times regular tap water is used.

Lighting

1. Energy-efficient lighting was used in the fit-out. To minimise lighting costs, the meeting room and boardroom lighting runs on a sensor system and the workstation lighting provides both task and ambient lighting within one system. Eventually all lights will be linked to a Dali automated system, providing maximum energy efficiency.
2. Light shelves are located along the east façade in window bays. The translucent materials are multipurpose, projecting diffused natural daylight into the space and reducing radiant heat.
3. Blinds were installed on all the perimeter windows to control light penetration, glare and heat. All window blinds are fully automated and controlled by a touch screen panel. Eventually, these blinds will be set on a timer, with manual override.

Air quality

1. CO₂ monitors are located in the GBCA meeting rooms and general office areas. These devices monitor the amount of CO₂, while sensors deliver higher levels of fresh air for occupant comfort.
2. A highly energy-efficient mechanical air-conditioning system was installed, delivering air through vents at floor level in workstation areas, window bays and through plenum wall boxes along the perimeter of the west and south areas of the office. This air is then vented out through return air ducts above the light shelves. Floor vents can be rotated to direct the flow of air to maximise worker comfort.
3. Living plants are supplied and maintained by a supplier. These act as bio-filters to convert CO₂ into oxygen. A functional and decorative living plant wall is also featured behind the reception area. As the plants grow they will also provide visual privacy.
4. All printers, photocopiers and computer racks are located in the utilities room. As such, all pollutants are contained and the area can be properly ventilated.



Waste minimisation and recycling

1. Waste bins have been provided for recycled paper and card, recycled plastic and appropriate food scraps which go to a worm farm. Small bins are used in the kitchen areas and large paper and plastic, glass, steel and aluminium recycling bins are in the utilities room.
2. Two worm farms are fed using food scraps generated by the GBCA employees. A worm can eat its own weight in food every day and the worm castings can be used on office plants.
3. Where possible, the GBCA chose to limit the installation of ceilings throughout the tenancy in order to avoid unnecessary use of materials (this leaves building services and cables exposed). An articulated plasterboard ceiling has been installed above workstations on the east façade to conceal the insulation and to optimise acoustics.

Furniture

1. Around 40% of the desk chairs are reused from the old GBCA office with the remainder being bought new to match the old chairs. The new chairs are all certified by Good Environmental Choice Australia (GECA).
2. Additional chairs were leased to the GBCA for use in the boardroom. In the future, these chairs can be returned and reused by other companies.
3. The boardroom tables have lockable castors, allowing them to be reconfigured according to the GBCA's meeting needs. This flexibility maximises their potential use and longevity.
4. The café/lounge area furniture includes a classic pre-loved 1950s designer lounge and table. Café chairs have been reused, with some being reupholstered to match the vibrant colour scheme of the office. The Australian designed and manufactured plywood stools are made of FSC-certified plywood and can be 'flat packed' for easy transportation. The dining table was reused from the GBCA's old office.
5. The workstation pin boards are made from recycled PET bottles and workstation storage units are all GECA certified.

Low toxicity

1. Where possible, all upholstery and curtain fabric is natural and low toxic.
2. The carpet has low VOC content and can be recycled. To avoid the use of carpet glue, the carpet tiles are held in place with adhesive stickers on the corners of each tile. The concrete floor has also been polished and sealed with water-based sealant.
3. All joinery, workstations and meeting tables are made from low formaldehyde (E0) board.

Go to www.gbca.org.au for more information about the GreenHouse refurbishment and the Green Building Council of Australia.

Greener Buildings

This comprehensive website provides a rundown of the benefits of green buildings. It has a range of case studies, tips on how to rate and improve building performance, questions to ask building owners and managers, and advice on green leasing.

The site is a collaboration between Victoria's Building Industry Consultative Council, state and federal environment departments and the Green Building Council of Australia.

Green building case studies can be found on this site at www.greenerbuildings.com.au/case-studies

Case study: Szencorp Building – Australia’s first retrofitted building to achieve a 6 star Green Star rating

The Szencorp building in Melbourne was Australia’s first retrofitted building to achieve a 6 Star Green Star rating.¹¹² The changes implemented in the building show the money saving and environmental potential of green buildings:

1. The building achieved 88% water savings compared to the industry average (as measured by the NABERS water rating of 2.5 Stars). Rainwater is combined with the grey water from showers and hand basins to flush the toilets. The toilets are dual flush and waterless urinals are used. Water-efficient taps and showerheads are also used throughout the building.
2. There was a 65% energy saving compared to the amount of energy used before the retrofit.
3. Waste was reduced by 54% when compared to the amount of waste generated by the average office worker.
4. Resource use is highly regulated and monitored. There are 59 individual meters to monitor energy use and the building is broken down into 21 occupancy zones. These zones are designed so the lights and air-conditioning only come on when needed.
5. The innovative waste minimisation and recycling infrastructure led to 76% of their waste being recycled.
6. 120% of emissions were offset by purchasing carbon credits from Climate Friendly.
7. The building utilises a solar hot water system and three solar PV arrays that generate approximately 20% of the building’s electricity requirements.
8. There is insulation in the walls and roof as well as a double-glazed façade.
9. When the weather conditions allow, natural air ventilation supplements the air-conditioning system.
10. Bicycle parking, showers and lockers are available for occupants and visitors. A hybrid Prius is also available for employees’ travel use.

112 See www.theszencorpbldg.com