green building council australia

EVOLUTION

A YEAR IN SUSTAINABLE BUILDING

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A YEAR IN SUSTAINABLE BUILDING

“

While we can lay claim to many victories, many more lie ahead. Together, we can continue to reshape and redefine our built environment, and create a future that is more sustainable, prosperous and liveable for all Australians.

”

Daniel Grollo
Chair
Green Building Council of Australia

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RESHAPING & REDEFINING

OUR BUILT ENVIRONMENT

18%

of Australia's CBD office market is Green Star – certified.

Mahatma Gandhi once said that "dreams at first seem impossible, then seem improbable, and finally, when we commit ourselves, become inevitable."

It's true that what once seemed a dream has become a reality as the green building movement evolves into one that is respected throughout Australia, and indeed the world.

Internationally, Australia continues to strengthen its position as a global green leader. Dozens of reports demonstrate that we punch well above our weight. The latest *Global Real Estate Sustainability Benchmark* (GRESB), published in September 2012, surveyed companies representing US $1,300 billion in global assets under management. Despite Australian companies accounting for just nine per cent of survey respondents, 35 per cent are considered to be global leaders in sustainability.

Nationally, Green Star continues to shine. In the office sector, Green Star-rated buildings account for 18 per cent of the CBD market. This rises to 20 per cent in Queensland, 22 per cent in Victoria and a whopping 25 per cent in South Australia.

Of course, Green Star is not restricted to offices. We now have more than 120 education facilities either certified or registered to achieve Green Star certification. In the last twelve months, we have expanded our offerings to new building types, including fire stations, retirement villages, community centres, supermarkets and McDonald's restaurants.

At an individual company level, we are seeing many emerging leaders take a strong stance on sustainability through portfolio- or precinct-wide commitments to Green Star. All three tiers of government continue to rise to the challenge set by our advocacy agenda – to lead by example – and embed Green Star into all new projects. Many of these are for twenty year projects which will ensure Green Star influences the built environment for many decades to come.

When the founding board members gathered at our first board meeting in October 2002, we had a grand vision and a fierce determination to transform Australia's property and construction industry.

Today, I'm proud to see that the growth in the Green Building Council of Australia's reach and reputation, and the market penetration of Green Star, has exceeded our most optimistic expectations.

While we can lay claim to many victories, many more lie ahead. Together, we can continue to reshape and redefine our built environment, and create a future that is more sustainable, prosperous and liveable for all Australians.

Daniel Grollo
Chair
Green Building Council of Australia

SIGNPOSTS ON THE ROAD TO SUSTAINABILITY

It's true that change is the only constant. The challenges of new governments and regulation, access to finance, shifting public attitudes to climate change and skills shortages have all altered the structure of Australia's green building industry — and will continue to do so for many years to come.

Despite these challenges, sustainability is here to stay. The *Harvard Business Review* has identified sustainability as one of the world's unstoppable 'megatrends', comparable to mass production, globalisation and the IT revolution.

The latest *Davis Langdon Construction Sentiment Survey* reveals that sustainability is ranked the number one opportunity for the property and construction industry over the next five years. One of the major risks for the industry is failing to adapt to a carbon-constrained economy.

So, what lies ahead for Australia's built environment? Where do the opportunities and risks lie?

Retrofitting

Increasing asset value remains a key driver for green building activity in Australia, and upgrading older buildings is no longer simply an option, but a commercial imperative. The *Johnson Controls Energy Efficiency Indicator Survey*, published in July 2012, found that the green building market is favouring existing buildings over new construction. Forty one per cent of respondents said they planned to pursue green certification for existing buildings, compared with 27 per cent for new buildings. The US Green Building Council's Leadership in Energy and Environment Design for Existing Buildings: Operations and Maintenance (LEED-EBOM) has certified more than 2,000 projects, with a further 6,400 registered for certification. We expect the Green Star — Performance rating tool to have a similar impact in Australia.

Scalability

Australia is yet to capitalise on the eco-district trend which is shaping other parts of the world. From Freiburg in Germany to Greensburg in Kansas, and from Sweden's Malmö to China's Tianjin, sustainability is being embraced at the neighbourhood, precinct or even city level. Australia's built environment industry needs to take the lessons learnt from green buildings and scale them to communities, districts and cities. Green Star — Communities provides the framework to help us to do this.

Workspaces

The old nine-to-five routine is dead, as technology makes anytime, anywhere working possible. People are increasingly viewing the office as a meeting hub — a place to formulate ideas and collaborate, rather than to 'do work'. This is already changing the way we design and construct offices. Activity-based working structures are increasingly being integrated into high-performance Green Star buildings. In this new world of work, buildings that are not flexible and adaptable to shifting work patterns will become obsolete. Read more in our feature article in *Evolution*, page 12.

Quality

Increasingly, green is synonymous with quality, and Green Star is the method of measurement. The Property Council of Australia's revised *Guide to Office Building Quality* has identified 5 Star Green Star and 5 star NABERS Energy ratings as the benchmarks for new Premium Grade buildings. Peter Verwer, Chief Executive of the Property Council of Australia, has said that the new expanded environmental performance metrics in the Guide "demonstrate what industry already knows — sustainable design and management of office buildings has become part of core business."

Financing

The economists may have consigned the Global Financial Crisis to history, but securing finance remains a challenge. Davis Langdon's latest *Construction Sentiment Survey* has found that access to finance is one of the industry's top five challenges. In the current business climate, financiers are increasingly viewing Green Star as an invaluable tool for risk mitigation and 'future proofing'.

Energy

Energy security is a long-term global challenge, particularly in growing economies such as China and India. These countries recognise that energy security also requires unprecedented investment in energy efficiency. Despite living in a country with more sunny days than anywhere else on the planet, we are still lagging behind Asia, Europe and North America in the installation of solar panels. This will change as solar, wind and photovoltaic systems are integrated into buildings and used as building materials, rather than simply being installed 'on top'.

Technology

Technology is transforming the way we design and construct our buildings. Expect a more sophisticated approach to building monitoring as building information modelling (BIM) systems become more comprehensive. BIM will enable cross-disciplinary teams to share knowledge and track the data of complex building projects. The result will be greener, healthier buildings.

Affordability

Many people associate green with higher costs – but that's changing. New business models, technologies and high performance materials are bringing green within reach. At the same time, as utility costs skyrocket, people are beginning to understand that affordability means more than the cost of a building the day the auctioneer's hammer falls. With Green Star ratings being awarded to social housing projects and low-cost university accommodation, we now have positive proof that green building delivers both environmental and financial sustainability.

Regulation

Regulation is already reshaping the built environment, with mandatory disclosure driving higher levels of energy efficiency in commercial buildings, and the carbon price encouraging more informed decision-making across the economy. At the same time, governments are increasingly recognising that Green Star is an assurance of quality and a demonstration of fiscal responsibility. State and local governments are increasingly requiring developers to meet Green Star benchmarks for all new projects and choosing Green Star to 'future proof' their investments.

CSR

The rise and rise of corporate social responsibility is demanding more transparency and accountability from companies in all industries. More than 5,500 companies around the world issued sustainability reports last year, up from about 800 a decade ago. Much of this is being driven from inside the corporate machine. PricewaterhouseCoopers has found that 88 per cent of young workers choose employers based on strong CSR values, and 86 per cent would consider leaving if a company's CSR values no longer met their expectations. Appealing to the next generation of workers makes operating from a Green Star-rated building a business imperative.

Despite the many challenges we face, the signposts are all pointing in one direction. With more than seven billion people in the world, the need to stretch resources even further will secure sustainability as a central design principle – and the Green Building Council of Australia will continue to work with our members to realise our collective vision for sustainable buildings, communities and cities.

Romilly Madew
Chief Executive
Green Building Council
of Australia

THE EVOLUTION OF THE OFFICE

ANZ Centre 833 Collins
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2
6 Star Green Star – Office Interiors v1.1

Photography by Earl Carter

UTION

The traditional office space is undergoing its most dramatic shift since the creation of the cubicle.

ANZ Centre 833 Collins
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2
6 Star Green Star – Office Interiors v1.1

Photography by Earl Carter

See case study on page 60

Driven by advances in communication technologies, demands for more flexible working arrangements, a dawning environmental awareness and an increased emphasis on cost reduction and productivity, we're witnessing a remarkable change in the way people work – and where they work.

While concepts of office-based work extend back as far as ancient Egypt, for much of human history it wasn't limited to a physical location. In the elaborate Roman bureaucracy, for instance, the office was a mobile 'bureau' of scribes and administrators who would work wherever it suited them. Later, offices from the Uffizi Palace in Florence to the Bank of England were created as administrative adjuncts to the centralised power of the state.

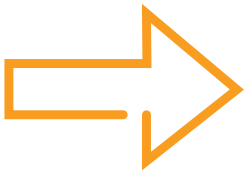
It took the telegraph and telephone to transform offices from places of work to places of power – with decision-making happening in the office, rather than on the factory floor. With the dawning of the Industrial Revolution in the mid-18th century, bankers, insurers, mercantilists and merchants needed large numbers of clerks and specialised office space was required.

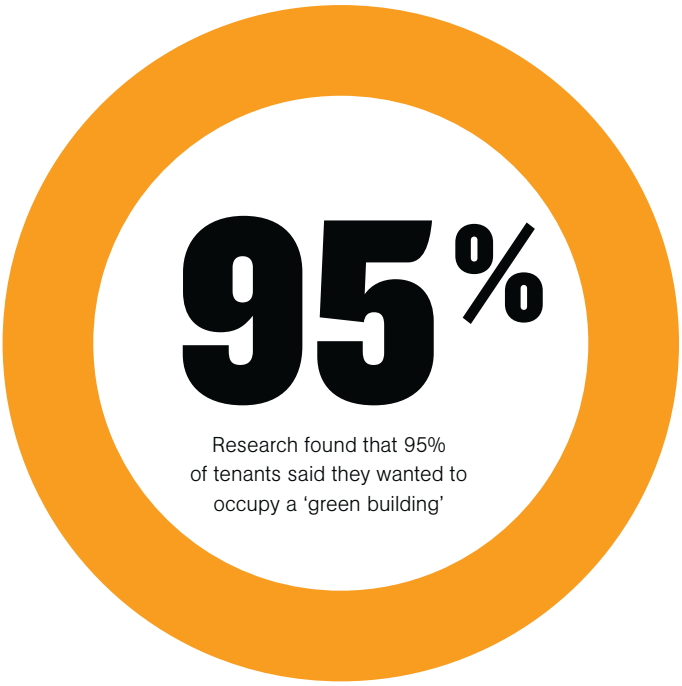
Other innovations revolutionised the very shape of the office. The first Otis passenger lift, installed at 488 Broadway in New York City in 1857, sent buildings skyward. The Home Insurance Building in Chicago, built in 1884, was the first to use structural steel in its frame. And the first modern air conditioner, invented by Carrier in 1902, led to buildings with large floor plates. By 1906, Sears, Roebuck and Co opened its mail order and headquarters operation in a 280,000 square metre building in Chicago, at the time, the largest building in the world.

American engineer Frederick Taylor is credited as one of the first to design an efficient, purpose-built office space. In the early twentieth century, Taylor's designs crowded workers together in factory-style open environments while bosses monitored their work from private offices.

By the 1960s, socialist values encouraged more egalitarian office spaces, with arrangements dependent on functions - side-by-side workstations for clerks, or pinwheel desk patterns for designers.

In 1968, Herman Miller was inspired to create a product based on this new workplace philosophy, known as 'The Action Office'. Enter the office cubicle – the first modular furniture system, with low dividers and flexible work surfaces. By the 1980s, as the ranks of middle ▶





managers swelled, the cubicle concept was taken to the extreme, with high modular walls dividing desks, restricting natural light and blunting collaboration.

The last decade or so has seen a significant reduction in the average office space per employee. In 1995, it was around 30 square metres; today it is 20 square metres or less. This shrinking workspace can be attributed, in part, to companies leveraging hot desking or activity-based working, as well as teleworking.

Today, designers are attempting to part the sea of cubicles and style more sociable spaces, recognising that workspaces must reflect the range of tasks the office worker conducts during a day. At the same time, Green Star is driving an increased focus on good indoor environment quality, and pushing designers to create more sustainable, suitable, resource-conscious working environments which place people 'front and centre'.

The Green Star – Office Interiors v1.1 rating tool, which was released in May 2006, has encouraged higher levels of environmental sustainability in office fitouts by providing best practice benchmarks for everything from natural light and fresh air, to waste management and low-emissions materials. More than 100 offices around Australia have achieved Green Star certification under the rating tool, with another 100 plus projects registered for certification. In late 2012, the Green Building Council of Australia released the next generation Green Star – Interiors tool, which takes sustainability beyond the office and enables other building types to reap the benefits of green interiors.

Sustainable spaces

At the intersection of sustainability, technology and cost-saving sits the office of the future – one which promotes flexibility, adaptability and mobility. Increasingly, we are seeing high-performance green buildings designed around activity-based working or 'free range' principles. Large organisations, particularly the big financial institutions, are recognising that they no longer need to accommodate their entire workforce in a structured, cubicle-filled workplace, and so small, stuffy offices are making way for hot desks and collaborative hubs flooded with natural light and with views of the outdoors.

When calculating the amount of space needed for the entire workforce, it is well documented that up to 40 per cent of the assigned desks in a traditional-style office space are empty at any given time, with people absent, at meetings or elsewhere in the building.

"Clearly organisations are keen on controlling costs, but in parallel, most are driving a higher strategic agenda such as fostering creativity, improving customer service, people performance or speed to market," says Natalie Slessor, Head of Workplace, within Lend Lease's Business Solutions Team.

"The new agile or activity-based workplaces allow people to concentrate, create and collaborate in spaces designed to truly support those tasks. So today, it's not about personalising a desk, or rather expecting just one desk or meeting room type to support a wide variety of tasks throughout the day, it's about personalising your day – selecting the right places to do your best work," Natalie adds.

To be successful, this model requires a diverse hierarchy of spaces, with plenty of options, including quiet space for focused work, meetings, café-style working and relaxation spaces. It also requires a commitment by organisations to ensure that the shift is an empowering one for staff, by looking for ways other than the personal desk to provide a sense of security, identity and engagement.

"These new diverse and choice-filled spaces and places are healthy and sustainable by their very nature. People move more as they work in different ergonomic settings regularly, but these spaces use less square meterage per person as a general rule, less energy as every desk is cleared and unplugged everyday, less paper and there is more staff empowerment. This, in turn, delivers sustainable outcomes that reach beyond the workplace and back into people's homes and communities," Natalie concludes.

Attracting and retaining the top talent

A sustainable workplace is increasingly becoming a powerful recruitment and retention tool. The *Colliers International 2012 Office Tenant Survey* found that sustainable design, activity-based working and the attraction and retention of staff are the top priorities for most businesses. The report found that a whopping 95 per cent of tenants said they wanted to occupy a 'green' building, up from 75 per cent in 2010.

"Building choice is incredibly important to staff in this day and age – they not only want to be well located, with good access to

The complete refit of GPT's office space has pushed the envelope of sustainable fitouts by delivering an energy, water and resource efficient workspace within a building that is more than 30 years old.

public transport and facilities such as child care, bike racks and change rooms, but they also want to work in a flexible, modern environment that is sustainably designed," says Simon Hunt, Colliers International Managing Director of Office Leasing.

"Where sustainable building design used to be an issue for those at the top of a business, it is now being driven from the bottom up. Workers don't feel the need to familiarise themselves with every detail of things like legislation and ratings systems, but they do want to be able to say they work in a 'green building'.

"Green is now the norm – where it used to be a bonus in a building, it is now expected," Simon adds.

ANZ's headquarters in Melbourne's Docklands is an impressive example of a 'world leadership' sustainable building on a massive scale. Designed by HASSELL in collaboration with Lend Lease Developments, the 83,000 square metre office achieved 6 Star Green Star – Office Interiors v1.1 certification in July 2012, making it the largest single-tenanted 6 Star Green Star-rated office fitout in the country, and only the second building in Australia to have achieved the 6 Star Green Star certification 'trifecta' of Design, As Built and Interiors ratings.

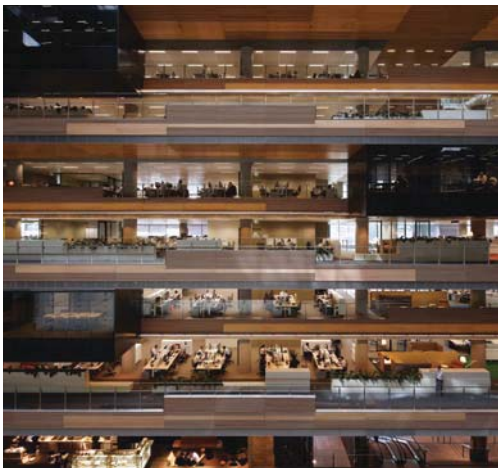
The design of ANZ's office emphasises and facilitates teamwork, offering a range of interconnected spaces to support individual and group working styles. ANZ General Manager Property, Kate Langan, says that "staff resoundingly told us that their physical work environment is important for their individual productivity and the recognition we have received from the GBCA through our Green Star ratings clearly shows that the ANZ Centre has gone a long way to meeting our staff's expectations of their work environment."

The new GPT headquarters in Sydney's iconic, Harry Siedler-designed MLC Centre, achieved 6 Star Green Star – Office Interiors v1.1 certification in July 2012. The complete refit of GPT's office space has pushed the envelope of sustainable fitouts by delivering an energy, water and resource efficient workspace within a building that is more than 30 years old.

Acknowledging that its workforce was more mobile than ever before, GPT created an office environment in which staff no longer have individual work spaces, but instead shift between a mix of open plan work areas, group meeting spaces and soundproof 'pods', all connected to a wireless network. As a result, the number of desks has decreased from 328 to 272 and GPT still has a 20 per cent daily vacancy rate – an indication of the highly mobile workforce.

"GPT already has fewer desks than people," says GPT's Head of Change & Sustainability, Rosemary Kirkby. "People are free to choose where they will work on a daily basis, including at places outside the MLC Centre. The cost of churn has been eliminated. This workplace acknowledges that we are all different and provides choices to satisfy individual preferences."

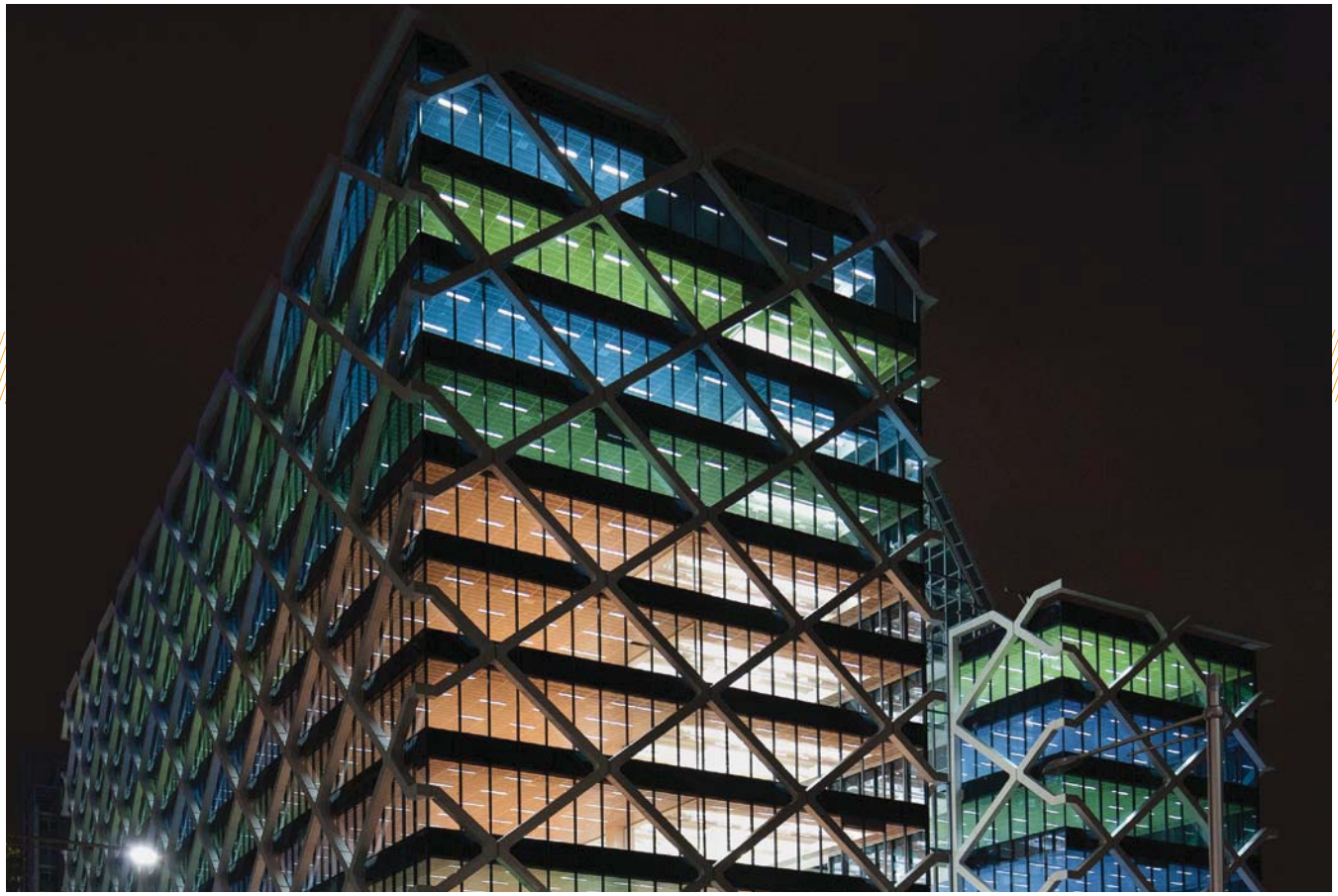
The new GPT office has reduced paper storage by 90 per cent, paper use by 75 per cent, with expected energy costs to halve and lighting energy consumption to fall by 70 per cent. The company is also paying lower rental costs due to the reduction in ▶



Left: **ANZ Centre 833 Collins**
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2
6 Star Green Star – Office Interiors v1.1

Photography by Earl Carter

Right: **One Shelly Street**
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2



floor space. The GPT office is an indicator of a future in which office buildings are meeting places for people to connect and collaborate, rather than places where people 'go to work'.

Rosemary says that the design of the next generation work environment for GPT's Melbourne staff is underway.

"The design of the Melbourne office is being used as a laboratory to test ideas about the future of work and its associated technologies. It will be analogous with a theatre set, easily reconfigured and supportive of human interaction. In this, it will support an increasing amount of project work. It will be managed actively so that spare space does not stand idle but is available for use by others, including our customers. Our intention is to construct a place which will not need further significant investment over the life of the lease – and that's a good sustainability story!"

Productivity plus

Macquarie Group was one of the first companies to seize the opportunities presented by an activity-based working model and a sustainable workplace, after moving to One Shelley Street in Sydney, which has 6 Star Green Star – Office Design v2 and As Built v2 ratings.

Research by the University of Technology Sydney, which tracked 2,500 Macquarie Bank employees over 15 months as they moved into their new high-performance office, has found that the combination of activity-based working and world-class environmental attributes are escalating productivity to new heights.

"A group of participants in the study showed an average of 15 per cent net increase in perceived productivity," says UTS' Senior Lecturer in the Faculty of Design, Architecture and Building, Leena Thomas.

As real estate represents around seven to eight per cent of general business costs, compared to wages which represent up to eighty per cent, a modest increase in productivity can make a large impact on a company's bottom line.

The old 'carrot and stick' model of incentivising based on speed and competition is detrimental to creativity, and our most inspired solutions emerge when we are relaxed, playful and engaged. Work is becoming less defined by hours seen to be at a desk, and is based more on an agreed successful outcome, with a flexible pathway to get there.

Future visions

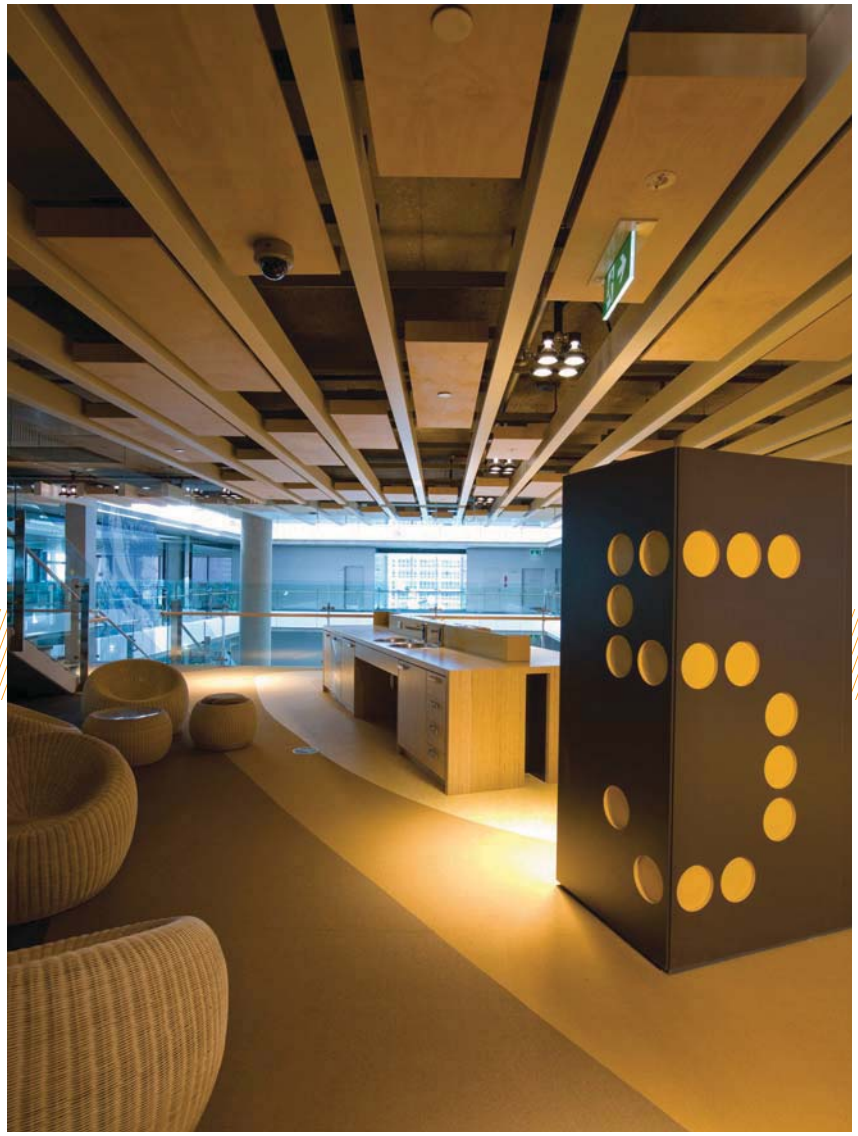
Just as the decanters of booze are no longer on display and the smoke-filled meeting rooms that Don Draper and his colleagues occupied are a thing of the past, the office environment of today will be replaced as society's values continue to evolve.

"Offices will definitely need to change, because the way people use offices to do their work will change," says HASSELL's Head of Knowledge and Sustainability, Steve Coster.

"The idea that the office building is the only space in which to do work is already diminishing, as people are mobile and the office is just one of many destinations. Similarly, while the desk was once the only place we sat to do our work, today we are moving between a range of different types of spaces and activities within the office."

Two credits within the new Green Star – Interiors rating tool address ergonomics and quality of amenities – how the space works as a whole. The 'Quality of Amenities' credit, in particular, recognises the importance of facilitating more than just 'water cooler conversations' by designing spaces that encourage people to interact.

"The office of the future will be less about design trends and more focused on the true needs of the organisation," says ISIS Group's sustainability specialist, Josh Bruce. "Companies will place a greater emphasis on understanding their people, function, stakeholders, clients and commercial objectives to create an office that enriches and empowers staff and stakeholders." ▶



SA Water HQ Tenancy
6 Star Green Star
– Office Interiors v1.1

For Josh, flexibility is paramount. The future office will be flexible, adaptable and "respond to changes in staff needs, economic conditions and strategy". This will require "a more rigorous consideration of social, environmental and economic factors in the design, construction and operational phases of an office."

Of course, technology's role in evolving the office cannot be understated. Wireless internet connections, tablets and smart phones, Skype and social media are enabling people to embrace 'anytime, anywhere' working. We can still have a 'face-to-face' conversation but be in different cities – or even different countries. Smart integration of technology into buildings and digital infrastructure into communities will ensure a more seamless transition to 'work' as a practice, rather than a place.

More attention will also be given to the materials we use and, as more evidence comes to light about their detrimental effects, we will avoid introducing harmful volatile organic compounds, particularly formaldehyde, into our indoor environments through our choice of furnishings and finishes.

While the focus of introducing new workplace models has often been around cost savings, there are far richer benefits of the new workplace, and sustainability is just one of them, says Steve Coster.

"The most immediate way to reduce the carbon footprint of your building is to have a smaller one – this makes a much larger impact than a marginal reduction in energy use. Workplaces are generally under-utilised spaces, so designing a space that is used more intensively has an inherent sustainability benefit. In addition, spaces that are flexible and adaptable will become more valuable, as organisations can change team structures and locations more quickly and easily.

"In the future, and in this context of more mobile, dynamic, sustainable ways of working, the office will play an even more critical role than it does today. It will be the physical place where people gain critical exposure to their colleagues, connect with their managers and work through challenges together. This is a fundamentally different emphasis to its previous role as the place where 'work gets done'. Instead, the office's function will be to facilitate coaching, sharing and monitoring – those important parts of work that are best done face-to-face." ●

Beyond offices

The new Green Star – Interiors PILOT rating tool, released in late 2012, assesses the interior fitout of any building type – whether that's a hospital, a school, a shop or an office.

Green Star – Interiors contains fewer credits than its predecessor, as well as improved flexibility, reduced documentation requirements and clearer compliance requirements which make this rating tool easier and cheaper to use.

For more information:
gbca.org.au/interiors

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» Project incorporates a 1,000kW capacity co-generation plant
» 6 Star Green Star - Office Design v2

QUT Science & Technology Precinct

» Project incorporates a 834kW capacity tri-generation plant
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RISING STARS OF GREEN STAR

How do you achieve Green Star certification for a project in just one round of assessment? Our 'Rising Stars' know, with each having prepared a successful submission that resulted in a Green Star rating in Round One.

We asked our Rising Stars for their hot tips for achieving Green Star certification, and for their insights into emerging trends, technologies or approaches that are shaping up to be 'future winners' for Australia's sustainable built environment.

RISING STARS OF GREEN STAR

GRAHAM AGAR
Associate Director, AECOM
Worked on Parkland Road Office Building, Perth
4 Star Green Star – Office Design v2

Hot tip: "Read the technical manual! If you get stuck, then read the manual. If you really can't get the documentation required, then read the manual. If all else fails then read the manual."

Future winner: "ESD consultants will be appointed at the feasibility and planning stage and will be retained by the building owner as independent advisors throughout the design, construction and tuning stages. This will help to ensure that buildings are designed, perform and are maintained to their ultimate potential."

ROCKY SLATER
Design Manager, Built Environs Pty Ltd
Worked on Worldpark Adelaide Building, Adelaide
5 Star Green Star – Office As Built v2

Hot tips: "A robust and comprehensive in-house Green Star management system that breaks each credit down into individual components is a must. Each component or task must be assigned to a person responsible. Maintain a dialogue with your case manager, as they are eager to assist you to achieve the best certification results possible. Keep abreast of GBCA updates and improvements, both online and through the e-newsletter. Go to relevant conferences and maintain involvement in the CPD program. And remain flexible!"

Future winner: "Expect to see fully lifecycled building materials, where the project team can select a product and understand the complete history of where the raw materials were sourced – both recycled and raw products."

REBECCA BREUER
ESD and Mechanical Engineer, Aurecon
Worked on the EPA Victoria office fitout, Melbourne
6 Star Green Star – Office Interiors v1.1

Hot tip: "Be clear, succinct and to the point in demonstrating compliance – that is, only submit what is asked for in the technical manual, nothing more."

Future winner: "The pressure on organisations to demonstrate that they are operating their businesses responsibly has increased and will continue to increase. This leads to greater attention on the sustainable operations of facilities and is driving efficiencies that have not previously been tapped across a wide range of build types and locations."

LYNDON CHRISTIAN
ESD/Services Team Leader, Hutchinson Builders
Worked on 53 Albert Street, Brisbane
4 Star Green Star – Office Design v2

Hot tip: "Ensuring that you have all parties engaged within the agreed design and delivery process from Day One is critical. Providing the teams with clear and concise direction to ensure they meet criteria guidelines is also important. A peer review from an external Green Star Accredited Professional allows a fresh set of eyes to review the package in its complete form prior to submission. This can sometimes identify the simplest of mistakes made by the team across related target credits."

Future winner: "Designs that include high performance façades, onsite generation such as solar and gas fired systems, rainwater harvesting and water treatment, high-efficiency HVAC systems and electrical equipment, best practice control systems and commissioning are the basis for achieving ongoing reductions in building operational costs." ▶

RISING STARS OF GREEN STAR

RAY CHUNG
Senior ESD/Mechanical Engineer,
Floth Pty Ltd
Worked on CSR Triniti Project, Sydney
5 Star Green Star – Office Interiors v1.1

Hot tip: "Make the documentation as clear and relevant as possible. Having a team that understands Green Star is also paramount – especially the client and the builder."

Future winner: "My idea of winning – both now and in the future – is having the right philosophy and setting the right, realistically-achievable goals, then communicating those goals with stakeholders and seeing it through."

THORSTEN PADEFFKE
Discipline Leader ESD, Irwinconsult Pty Ltd
Worked on DEEWR fitout, Darwin
4 Star Green Star – Office Interiors v1.1

Hot tip: "Concentrate on the three C's of communication, coordination and control. Communication is imperative; the information flow between the Green Star Accredited Professional and consultant team should be precise, to the point and responsive. Any uncertainties within the submission should be clarified with the GBCA through TCs or CIRs – do not second-guess. Coordination of responsibilities for Green Star evidence should occur early in the process, followed by regular submission workshops. Quality control of Green Star evidence is also important – assessors have very little time for each credit so the relevant information needs to be easy to find and correctly worded."

Future winner: "Building biology, the scientific study of the holistic interrelationships between humans and the built environment, is an emerging trend. While it is well established in Europe it is still regarded as a fringe division of ESD in Australia. Essentially an extension of the Indoor Environment Quality (IEQ) category, it examines material toxicity, electromagnetic radiation, indoor air pollutants and comfort."

MATT PONTIN
Director, EMF Griffiths
Worked on The Rocket, South East Queensland
4 Star Green Star – Office Design v2

Hot tip: "Green Star certification is all about team work and attention to detail. Our role is to make sure everyone is aware of the significance of the details and to make the process as painless as possible for those involved. If the requirements are clearly communicated and understood, the team stands a good chance of Round One success."

Future winner: "Thinking outside the air-conditioned box! So much energy is expended on delivering conditions that satisfy leasing terms, rather than scientifically delivering comfort conditions. If we can challenge the accepted norms, we can then start to look at mainstream application of natural and mixed-mode ventilation."

ANITA PURSER
Project Engineer, Irwinconsult Pty Ltd
Worked on Surf Coast Shire Civic Building,
Regional Victoria
5 Star Green Star – Office Design v3

Hot tip: "Locking in design principles and sufficient detail at the end of design development is paramount. This way, the whole team is clear as to what they should be including in their documentation. If this doesn't happen then it is almost impossible to get a good result in Round One."

Future winner: "Environmental building upgrades are already a hot topic among building design professionals, and are now being recognised by building owners. More work needs to be done, though, to convince building owners that environmental building upgrades also make financial sense."

DHVANIT SHAH
Sustainability Team Leader, JBA Consulting Engineers Pty Ltd
Worked on DEEWR fitout, Darwin
4 Star Green Star – Office Interiors v1.1

Hot tips: "I see Green Star as a strict auditing process. I make sure that all the essential information is provided in Round One by consulting all discipline consultants. I provide consultants who are new to the submission process with templates of contracts and sample consultant briefs. This makes my part easy. PDF bookmarks and highlighting make for easy-to-read submissions. I have received several good comments from different assessors for this technique."

Future winner: "Super-efficient lighting layout, installation of co-generation plants and energy-efficient air conditioning systems such as under floor air distribution and chilled beams are the future winners in my opinion."

MARK TICKLE
Project Manager, Grocon
Worked on Monash University's 370 Docklands Drive, Melbourne
5 Green Star – Office Design v2

Hot tip: "The secret is being thorough, clear and concise in the compilation of the submission documentation and addressing each deliverable individually – and providing only the documentation required."

Future winner: "Green Star and other building rating systems have driven a considerable improvement in sustainable design, regardless of whether buildings are rated or not. This trend will continue, as awareness of sustainability grows, both within the construction industry and with building occupants."

HANNAH BLOSSOM
Associate Director, Irwinconsult Pty Ltd
Worked on Surf Coast Shire Civic Building, Regional Victoria
5 Star Green Star – Office Design v3

Hot tip: "It's all in the detail. We focus on ensuring coordination across all disciplines. Once the team has completed the submission to its satisfaction, we undertake an internal review before submitting to the GBCA. Consistency across credits is a big focus in this process."

Future winner: "The time will have to come, eventually, when we start to consider energy more holistically – including embodied energy of construction materials. This is some time away, but it's coming."

LE HAN TAN
Principal Mechanical Engineer, AECOM
Worked on 8 Australia Avenue, Sydney Olympic Park, Sydney
4 Star Green Star – Office Design v2

Hot tip: "Try to make things as easy as possible for the Green Star assessor by directing them to the appropriate information. Where necessary, include additional descriptive diagrams to simplify understanding of complex drawings and systems. Only include the necessary documentation requested in the technical manual and TCs."

Future winner: "I think smart and adaptive building facade systems are a future winner."


46B
48B

MAKING THE CASE FOR GREEN STAR CERTIFICATION

With more than 500 Green Star building projects now a reality, it is no longer enough for organisations to claim leadership status with just one or two Green Star-rated buildings.

Metcash Distribution Centre
4 Star Green Star – Industrial Design v1

4 Star Green Star – Industrial As Built v1

See case study on page 74

In 2013, the emerging green leaders are those companies making portfolio or precinct-wide commitments to Green Star.

Organisations such as Places Victoria and Lend Lease, which are working together on Victoria Harbour in Melbourne, have committed to achieve Green Star ratings for all new buildings. Lend Lease, again, is embedding Green Star into the Barangaroo South development in Sydney, while all new Cbus Property acquisitions must have a Green Star rating. In the education sector, Monash and Melbourne universities are applying Green Star to all new construction projects. These developments alone will ensure Green Star influences the built environment for many decades to come.

"The development and use of green building rating tools, such as Green Star in Australia, have assisted in the evolution of the green building concept and provide a common language and metric for establishing what is 'green' and what may be 'green wash'," says Lend Lease's Head of Sustainability, Cate Harris.

"Green Star ratings have become a trusted industry hallmark of quality design, effective delivery and efficient operation. The market now talks in 'stars'. It has become a trusted currency of the property sector and its customers who recognise these benefits and the future value that they represent," she adds.

Meanwhile, South Australia's Urban Redevelopment Authority has mandated Green Star for all the buildings within its Bowden Urban Village development. The Tasmanian Government has committed to Green Star benchmarks for all new public buildings, including schools and hospitals. Perth's Metropolitan Redevelopment Authority is mandating Green Star for two major projects: the Perth City Link and Elizabeth Quay. And, after achieving the first Green Star rating for a healthcare project, SA Health is looking to achieve Green Star ratings for other projects including the New Royal Adelaide Hospital. These state and local government agencies have risen to the challenge set by the Green Building Council of Australia's advocacy agenda – to lead by example.

For all of these demonstrations of leadership, though, there are many other organisations that want all the benefits of a Green Star-rated building – such as lower operating costs, improved productivity and health, and a future-proofed asset – without wanting to commit to certification.

So, why are the leading companies choosing to pursue the Green Star plaque?

Independent verification

There are some within the industry who claim that going down the 'certifiable' route, rather than seeking certification, is less onerous and costly. However, the vast majority of the cost of Green Star certification is for the modelling and documentation – all of which is necessary to verify that sustainability goals are being met regardless of whether or not a Green Star rating is achieved. Once the performance modelling has been carried out, the additional cost for certification is minimal – but it does provide the third party validation that is priceless.

Monash University has achieved a number of Green Star ratings, including the first As Built rating for a multi unit residential development. According to Brett Walters, the university's Environmental Sustainability Manager, this "broad and deep commitment to sustainability" began with the 2005 Monash University Guide to Sustainable Development, known as the 'EcoAccord'.

"The EcoAccord informed project teams on best practice but in itself did not guarantee an holistic sustainable outcome. We chose Green Star As Built in 2009 as a mechanism to drive the delivery of sustainable new buildings, with an aspiration set that developments undergoing certification would deliver a 5 Star As Built outcome," Brett says.

Monash University has four major building projects registered for Green Star ratings, and Walters argues that the As Built aspect and the 'Management' category are critical, "as they provide some certainty that design aspirations will be met."

Seeking Green Star outcomes without Green Star certification is much the same as keeping your own financial accounts and auditing them yourself too. There are numerous stories of project teams that are asked to pursue Green Star 'benchmarks' as a condition of a tender only to discover that the green features aren't up to scratch or have been scaled back during the construction process. In Monash University's case, Green Star As Built ratings provide an 'insurance policy' of sorts.

"As an independently assessed, national, industry-accepted process, Green Star As Built has allowed Monash University to be confident that its sustainability aspirations can be delivered and verified. All construction industry participants understand Green Star and this aids the delivery of sustainable outcomes. Monash remains confident that the continued use of the Green Star suite of tools will improve the performance and reduce the environmental impacts of its buildings," Brett adds. ▶

Monash University, Briggs Hall and Jackomos Hall
5 Star Green Star – Multi Unit Residential Design v1

5 Star Green Star – Multi Unit Residential As Built v1

Photography by John Gollings

See case study on page 78

Building 215 Engineering Pavilion
5 Star Green Star – Education Design v1

A competitive edge

Tenants and buyers are increasingly demanding Green Star-rated buildings to 'future proof' their businesses against rising energy and water prices, to attract and retain staff, and to demonstrate that corporate social responsibility starts at home.

While the industrial market is still grey, rather than green, some organisations are starting to recognise that a Green Star rating represents a 'future-proofed' investment. Australand, for example, achieved a 5 Star Green Star – Industrial Design v1 rating for The Key Spec 1 building in Melbourne at the end of 2012. This achievement is all the more significant as it was a speculative development.

"For Australand, the main driver for certifying – even when we're undertaking a speculative development – is the advantage it can provide in securing tenants. A Green Star rating gives us an extra edge in our marketing, as it provides credible, third party assurance," says Australand's Sustainability Manager, Paolo Bevilacqua.

"In the past, when we've sold assets, a Green Star rating has provided another justification for the purchaser. In the case of The Key Spec 1, which Australand owns, Green Star certification gives us assurance that we're 'future proofing' our investment. When combined with the fact that it will reduce occupancy costs for our customers, we believe the Green Star rating gives both Australand and our customers a competitive edge in the market as utility costs continue to rise."

Paolo says the $750,000 for the green features amounted to a green premium of around six or seven per cent. "Since building The Key Spec 1, we've revised our design approach, costs have come down, and we think a 4 Star Green Star rating requires an additional investment of two to three per cent on base design which will comfortably provide a return on investment within a few years."

Green leadership

A Green Star rating can provide a clear expression of a company's commitment to minimising its environmental footprint. Increasingly, people around the world perceive green buildings as modern and ethical – and corporations, governments and community organisations with Green Star-rated buildings benefit from these perceptions through brand equity, community satisfaction and staff wellbeing.

In 2007, NAB embarked on an extensive refurbishment program to transform its property portfolio and reduce its carbon emissions. Recognising a significant part of a building's potential to operate efficiently is determined at the design phase, NAB incorporated environmental design requirements into its property design and performance standards, for both new builds and major refurbishments.

"We were seeking an holistic rating system that we could direct our project team to, so that

> “We were seeking an holistic rating system that we could direct our project team to, so that there was no ambiguity around what we would be working together to achieve.”

Nicola Murphy
Senior Manager – Environment & Sustainability
NAB

there was no ambiguity around what we would be working together to achieve – leadership in environmental design. Green Star provided this for us,” says NAB’s Senior Manager Environment & Sustainability, Nicola Murphy.

“Five years later, having completed a number of Green Star – Office Interiors v1.1 refurbishments across Australia, and with several more in progress, Green Star certification is providing NAB and our stakeholders with the confidence that we are achieving our environmental design aspirations,” Nicola adds.

More than a plaque

So, how do you convince an organisation that a Green Star rating is about more than paying for a plaque?

“We tell our clients that third party certification is the difference between having proof that your building is green and green washing,” says Jane Toner, Senior Associate at Sustainable Built Environments.

“We find many councils around Australia, in particular, are mandating that new developments must be equivalent to 4 Star Green Star benchmarks – but what does that actually mean? Without Green Star certification it means nothing.”

Jane says that many developers, when pressed to meet 4 Green Star benchmarks, will go for the absolute minimum of 45 points. “We explain that any project team seeking a 4 Star rating would include some buffer points to guarantee a 4 Star rating, but if they are not getting the development certified it’s all academic anyway.”

Some Green Star credits lend themselves to being ‘Green Star-equivalent’ – for example there is rainwater harvesting or there is not. However, a large number of credits cannot be claimed as ‘certifiable’ without actually undertaking the documentation. Is the level of daylight high enough? How much better is the stormwater management than business-as-usual? Is all the paint really low-VOC?

“We tell our clients that if they want the certainty that their requirements are being met, they can’t do that without certification,” Jane says.

The City of Gosnells, just south east of Perth, sees its new Civic Centre as a ‘future-proofed’ investment able to withstand tighter environmental legislation, the rising cost of utilities and the introduction of a price on carbon. Paul McAllister, who project-managed the 5 Star Green Star – Office Design v2 project, says the council expects a five year payback period on the extra outlay of $750,000, demonstrating that building green is a smart financial decision. As McAllister points out: “We have a commitment to fiscal responsibility for our rate payers. That’s why we decided to build green.” ▶

City of Gosnells Civic Centre Redevelopment
5 Star Green Star – Office Design v2

Karen Billington, Sustainability Manager at Northrop Consulting, says client commitment to Green Star certification is best achieved through a detailed cost analysis.

"We assess each Green Star credit against the design brief and identify potential areas of additional cost – either capital costs for new or improved equipment, consultancy costs for modelling and reporting, or contractor costs for additional site management," Karen says.

This breakdown can often be a useful tool to help the client understand the design provisions of the project.

"We find that, initially, when compared to the original design brief, the additional costs for Green Star can be considerable. We then meet with the client to work through our analysis, and most of the time we find the client will say 'I expected that this would be provided as part of best practice building design. Haven't we included this in our design brief?'," Karen explains.

"Following our discussions with the client, we will revise our cost analysis to show a reduction in 'additional Green Star costs'. Many of the Green Star initiatives essentially then become part of the standard building brief. We find that, inevitably, the client will choose to pursue a certified Green Star rating because the additional costs are far less than they anticipated and they can prove a strong business case to do so."

Kay Crowley, Director of Murchie Consulting, says that her approach is to be "consultative and find out what is important to the client. We work with our client to determine their priorities. If it's about community leadership or education, then we push them to achieve Green Star certification, as there is no better way to demonstrate that commitment."

Realising higher returns

The latest research into the value of Green Star-rated buildings provides positive proof that Green Star-rated projects deliver higher returns on investment than their non-green counterparts.

The *Australian Green Property Investment Index*, published by IPD in September 2012, found that Green Star-certified buildings in the Sydney and Melbourne CBDs outperformed the broader office market. Green Star returns were strongest in the Sydney CBD with rated buildings (12%) outperforming the rest of the market (9.2%) by 280 basis points. In the Melbourne CBD, Green Star-rated buildings (11.9%) outperformed the market (10.9%) by 100 basis points.

The *Building Better Returns* report, published in 2011 by the Australian Property Institute and Property Funds Association, yields even more spectacular results, reporting that Green Star-rated buildings delivered a 12 per cent 'green premium' in value and a five per cent premium in rent.

For ISPT Super Property, Green Star ratings act as 'quality assurance'. When ISPT first sought Green Star certification, the business case for green building was only just beginning to take shape. For many at this time, sustainability spelled risk, and only the true leaders were certifying at all, much less taking a portfolio approach to Green Star. Green building investment has proved a winning formula for IPST, as evidenced by the 14 Green Star certifications achieved to date across the commercial office and retail sectors, with more in the pipeline for the year ahead.

"Australia's property industry is recognised internationally as one of the most sophisticated and transparent markets," says ISPT's Chief Executive Officer, Daryl Browning. "Inherent in that status is the integrity of information, benchmarks and our legal system. Those investing in or occupying properties need benchmarks they can rely on. We think Green Star certification is one of the quality assurance measures everyone can rely on with confidence."

With Green Star rating tools now available for every building type, and for every stage of the building lifecycle, the industry is moving away from a building-by-building approach to sustainability. It's clear that the leaders of the industry are no longer choosing Green Star for 'lighthouse' projects. They are insisting on Green Star for every project.

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GREEN STAR REVOLUTION

THE REVOLUTION IS BUILDING

In 2011, the Green Building Council of Australia introduced Green Star Revolution: a commitment to make Green Star simpler, faster, more consistent and more cost-effective.

Since then, we've been working hard to deliver a revolutionary rating system that is:

1. **EASY-TO-USE**
2. **EFFICIENT**
3. **COST-EFFECTIVE**
4. **CONSISTENT**
5. **TRANSPARENT**
6. **RIGOROUS**
7. **INNOVATIVE**

Here are some of the projects on which we've been working and some of the outcomes that they are delivering.

1. EASY TO USE

Online technical manuals

Members of the Green Building Council of Australia now have anytime, anywhere, free access to online technical manuals. In the past, it was possible for project teams to use the wrong technical manual for projects, and subsequently prepare incorrect submissions. The new online technical manuals, which are now free, ensure that there are no barriers to project teams accessing the right information. At the same time, sub-contractors who need information on a single credit can access it online for free.

The Green Star Rating Tool Technical Manual Viewer makes it easy to search for keywords and find the information you need. "As lecturer in building, construction and sustainability at the University of Canberra, I recommend the Green Building Council of Australia's website as a great resource for teaching, learning and research. In my lectures on Green Star rating tools, I can weblink to the individual rating tools for buildings or communities, and we can review and discuss credit intent and technical criteria against case studies. This helps my students to apply Green Star best practice to their own projects at work," says Assistant Professor, Building and Construction Management Faculty of Business, Government & Law at the University of Canberra, Gesa Ruge.

2. EFFICIENT

Free Area Definition Rulings

The Area Definition Ruling service was introduced in 2012 to assist teams requiring a higher degree of certainty about how Green Star should be applied to their particular project. An Area Definition Ruling can highlight where alternative approaches are needed, and whether extra information will be required in Green Star submissions. In complex projects, this free service can save time and money.

One Green Star project, the Gold Coast Rapid Transit Project: Depot Building recently required the service to clarify some hard-to-define areas. "We found being able to clarify the areas upfront was very helpful, and the extra assistance from the Green Building Council of Australia made it a positive experience. Gaining that additional clarification has made it easier for us to achieve our desired outcome," says the project's coordinator and Green Star Accredited Professional, Built Environs' Sonya Blackburn.

3. COST-EFFECTIVE

Credit-by-credit assessment

The new credit-by-credit assessment service is helping project teams to achieve more certainty about the likely outcome of credit claims prior to the regular rounds of assessment and reduce the need for 'buffer' credit claims.

Deborah Davidson, Director of ESD consultancy dsquared, found the new assessment service beneficial when working with the Bowden Urban Village development in Adelaide.

"Every new building on this urban infill site is required by Renewal SA to achieve at least a 5 Star Green Star Design rating. By working with the GBCA and Renewal SA, we were able to pre-assess common credits across the site. These can readily be used by each developer, giving them a head start on the journey to 5 Star," Deborah says.

"As these are the first residential Green Star projects in SA, the credit-by-credit assessment service has shown the industry that working with the GBCA in this way can help reduce time and costs on a project. This allows the developers to concentrate on the delivery of a sustainable community, and raises the profile of Green Star in residential developments," Deborah adds.

4. CONSISTENT

Deemed-to-satisfy provisions

According to ESD Consultant at Norman Disney & Young, Mark Taylor, the deemed-to-satisfy provisions introduced into the 'Commuting Mass Transport' credits has been another useful improvement to Green Star and the consistency of assessments.

"A large proportion of projects fall into the covered post codes, which means that we can make a quick and easy assessment of the likely points available. Early certainty about points makes the entire process more cost-effective and transparent, and reduces the perceived risk for clients at an earlier stage," Mark says. ▶

5. TRANSPARENT

Green Star Day

In 2012, the GBCA introduced the 'Green Star Day' educational format to help the industry engage with the Green Star team, sharpen its skills and earn CPD points into the bargain. Participants were able to get 'up close and personal' with the Green Star team, and ask the tough questions.

Cundall's sustainability specialist, David Collins, said that he "learnt a lot about the future directions of Green Star and how that will apply to the building industry across many sectors," while Interface's Sofie Kogos said it was "concise and very engaging."

TCs and CIRs online

Transparency is also behind publishing a new round of Technical Clarifications (TCs) and Credit Interpretation Requests (CIRs), which will ensure the entire industry has access to previous rulings at no charge.

6. RIGOROUS

Restrictions on Green Star Design ratings

Green Star – Design ratings for projects registered after 1 January 2013 will be valid for 24 months from a building's practical completion. By limiting the length of time that building projects can market a Green Star – Design rating, we are strengthening the robustness of Green Star, and ensuring that project teams that achieve As Built and future Green Star – Performance ratings are recognised and rewarded.

"Once a building is constructed, our focus should be on what was actually built, not the design. The GBCA's new measure will support the uptake of more Green Star – As Built ratings, and ensure that green design translates into green buildings," says Grocon's Chief Executive Officer, Daniel Grollo.

Refining the Green Star 'Materials' category

As the industry's understanding of sustainability expands, and as Green Star evolves, we continue to challenge the industry to meet increasingly higher benchmarks. Our work to refine the Green Star 'Materials' category has been integrated into the new Green Star – Interiors rating tool, and we are exploring rigorous new approaches with the release of discussion papers on lifecycle assessment and construction and demolition waste management.

President and Chief Executive Officer of Interface Asia Pacific, Rob Coombs, believes that Green Star has had a far-reaching impact across Australia's supply chain and we are now reaping the benefits. "Manufacturing has been driven to comply with new benchmarks for emissions, recycled content and product stewardship. In fact, Green Star has introduced a new competitive dynamic that, these days, is often the difference between winning and losing business," Rob says.

7. INNOVATIVE

Innovative new rating tools

We continue to work on developing and delivering the next generation of Green Star rating tools, including:

Green Star – Custom

In 2012, new customised rating tools were released or under development for fire and railway stations, and for student accommodation. We also certified the first ever Green Star restaurant – McDonald's Kilsyth South in Melbourne.
"Restaurants previously fell outside the scope of the Green Star rating system, so the collaboration with the GBCA now means that McDonald's can join the league of Green Star leaders," said McDonald's Kilsyth South licensee Howard Armitage.

Green Star – Performance

A number of high-profile projects are keen to test the Green Star – Performance rating tool when it is released in 2013. "Green Star – Performance will enable us to verify our claims regarding sustainability, and give tenants and prospective tenants more confidence that their buildings are environmentally efficient and cost-effective," says Paolo Bevilacqua, Sustainability Manager with principal sponsor, Australand.

Green Star – Communities

Dozens of project teams are lining up to register their projects for Green Star – Communities PILOT ratings. Minister for Infrastructure and Transport, the Hon Anthony Albanese MP, says that Green Star – Communities "goes to the heart of what we are seeking to achieve with our National Urban Policy – and that is to make our cities more productive, sustainable and liveable. The Green Building Council of Australia is to be commended for developing this tool, which will be of vast help to governments, developers and the public who want the best information to guide their decisions about sustainability." ●

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> “Green Star has introduced a new competitive dynamic that, these days, is often the difference between winning and losing business.”

Rob Coombs
President and Chief Executive Officer
Interface Asia Pacific

Just five years ago, a trip to the local hardware store was a challenge for any environmentally-conscious renovator. Shower heads used 22 litres of water a minute, light bulbs were incandescent and most paints contained chemicals that left you with a headache.

Today, green products that were once expensive and hard to source are now affordable and accessible – and these products are now stocked on the shelves of every hardware store in the land. Water-efficient fittings, LED lights and compact fluorescents, paints low in volatile organic compounds – the list is endless.

With an increasing number of building professionals guided by Green Star in the design and construction of their projects, as well as in the procurement process, the demand for green products is greater than ever before. In fact, a 2012 report by Accenture found that a third of firms selling environmentally-friendly products are struggling to keep up with demand.

The vast majority of businesses surveyed by Accenture said that sustainability was vital to their future growth, and that regulation and corporate reputation were becoming less important as sustainability continued to rise in a virtuous circle of commercial opportunity and investment growth.

President and Chief Executive Officer of Interface Asia Pacific, Rob Coombs, believes that Green Star has had a far-reaching impact across Australia’s supply chain and we are now reaping the benefits.

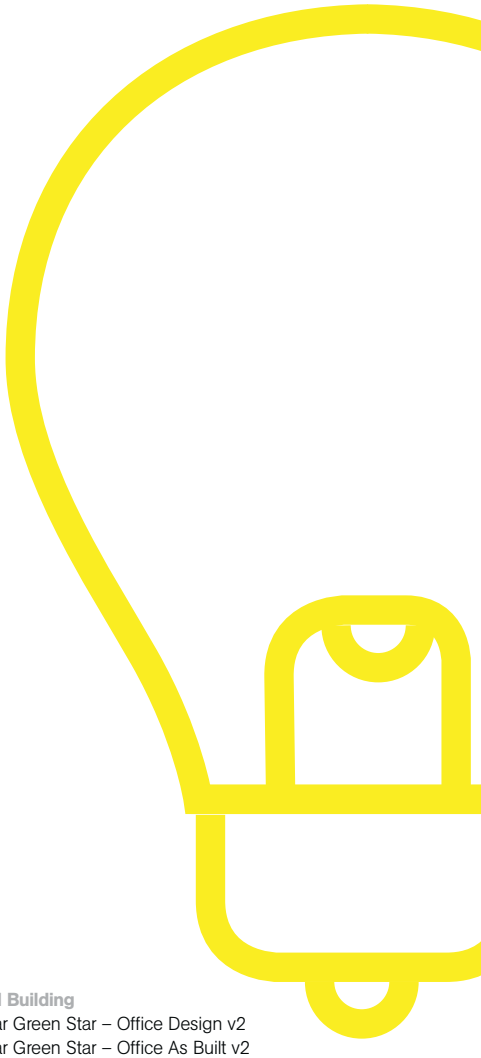
“Manufacturing has been driven to comply with new benchmarks for emissions, recycled content and product stewardship. In fact, Green Star has introduced a new competitive dynamic that, these days, is often the difference between winning and losing business,” Rob says.

Interface has established a goal to be entirely sustainable, which it calls ‘Mission Zero’, by 2020. As a result, Interface views all its product development and work processes through a lens of sustainability.

Rob says manufacturers today must ask themselves “to what degree do products and the processes adopted demonstrate a commitment to a lower environmental footprint and compliance with Green Star standards?

“Once you influence upstream supply, the effect on the environment is multiplied. Interface read this change very early and our ability to support Green Star compliance has been one of the key drivers behind our growth in recent years,” Rob explains.

Dulux sustainability specialist, Rod Vockler, agrees, saying that Green Star was the primary driver for the development and release of Dulux Professional EnvirO2. ▶



AHM Building
4 Star Green Star – Office Design v2
4 Star Green Star – Office As Built v2

One of the first low-VOC product offerings on the market, EnvirO2 paved the way for future low-VOC paint innovations such as the reduction of VOC levels in the mainstay Dulux Wash & Wear range.

"Certainly, the Green Building Council of Australia is influencing product choice," Rod says. "We felt it was important to provide the industry with sustainable products. Early adoption has made it easier for Dulux to provide innovative products that meet painters' needs and environmental requirements, while maintaining a leading position in the market."

"Rating systems have supported the growth of our business for many years. As our research and development is undertaken in the US, product innovation has been, in part, driven by the USGBC's Leadership in Energy and Environmental Design (LEED) rating tools," says Frank Harrington, Commercial Manager of Solatube Australia, which produces high-performance daylighting systems.

"We are starting to see the design community take on our daylighting systems for Green Star projects, and, as we found in the US, we expect that Green Star will also help drive our sales in the commercial space in Australia"

Furniture manufacturer Schiavello Group has established a reputation for environmental sustainability. According to Mark Thomson, Schiavello's Corporate Sustainability Principal, Green Star has "complemented our natural approach to ESD and has assisted us to fine-tune various processes and market offerings. Green Star gives us an industry-leading benchmark as not only a baseline for measuring our efforts, but a respected medium to highlight our capabilities," Mark says.

One of Schiavello's most recent innovations is a workplace platform which can adapt to new workplace developments and technologies. This means workspace managers can redeploy existing infrastructure rather than replacing entire systems to accommodate ever-evolving workspace needs. "It's a significant shift away from heavy workstations that become quickly dated and end up in landfills," Mark says.

From green dreams to everyday reality

Countless case studies of Green Star-rated projects are positive proof of how Green Star has accelerated the innovation cycle to a lightning speed. Many green building design features and technologies that were once leading-edge are now integrated into new projects as a matter of course.

"Green Star gives us an industry-leading benchmark as not only a baseline for measuring our efforts, but a respected medium to highlight our capabilities."

Mark Thomson
Corporate Sustainability Principal
Schiavello

Schiavello
Climate workplace platform

Lend Lease's 30 The Bond in Sydney, which achieved Australia's first Green Star – Office As Built rating, featured the first large-scale application of chilled beam technology in Australia. Paul Edwards, the then General Manager Environment at Bovis Lend Lease, said at the time that "everyone was sceptical about chilled beam technology working in Australia."

It took only a few 40 degree days, during which 30 The Bond maintained a comfortable 23 degrees, for the technology to become accepted. In fact, by 2007 – just three years later – chilled beam systems were used more widely in Australia than in the United States.

The highest ever scoring Green Star building, Pixel, showcases so many leading-edge ideas that the team submitted 30 separate innovation claims and were awarded the maximum of five Green Star Innovation points. The Pixel team's commitment to green thinking even drove changes to government regulations.

The project was restricted from using innovative vacuum toilets due to local council policies. Determined to get a positive outcome, the Pixel team successfully lobbied the local council and Grocon is now distributing the technology throughout Australia and integrating the vacuum toilets into other projects, including Melbourne Water's new headquarters.

Innovation and investment

Green Star requirements have been a key consideration in product development, says Laminex Group's General Manager – Marketing, George Bej. "How products will perform in line with Green Star helps drive innovations and directs investment. Sustainable design is socially responsible but it is also smart design. It requires a willingness to take the next step in product research and development, and invest in the solution."

The Laminex Group has adopted a serious approach to sustainability. All four Australian manufacturing plants are Chain of Custody (CoC) certified, which requires tracking at all stages of manufacturing and distribution to ensure the final product is produced from legally-sourced wood fibres. In addition, The Laminex Group took the pioneering step to transition all E1 raw and decorated MDF products to an even lower formaldehyde classification E0 MDF as standard – which emits half the formaldehyde of E1 – at no extra cost to customers.

And the move has been good for business. "We find customers are increasingly turning to us to share our sustainability expertise. Our leadership in this area has helped to shift attitudes internally – we find our manufacturing staff are more environmentally-conscious than ever before, and are always looking for ways to improve our company's environmental performance," George says.

Kingspan's Karim Muri says his company's sustainability initiatives also gained a push from Green Star. Kingspan manufactures high-performance insulation and Karim says "Green Star has accelerated our initiatives. We were noticing a lot more demand from architects about our applicability to Green Star and our relevant credentials."

Green Star's presence in the market has driven manufacturers to find more sustainable processes and reduce environmental impact on the factory floor. "As well as helping to reduce the carbon footprints of buildings, we also wanted to show that we could reduce the carbon footprint of our products before they even get to the site," Karim says.

One of Kingspan's innovations was the redesign of the Air-Cell cross-linked foam range so that it no longer needs to be packaged with cardboard cores. Kingspan estimates this saves almost 22,000 kilograms of cardboard waste material on construction sites annually. "If all those cores were rolled flat, they'd cover close to 30,000 square metres, or about 5 soccer fields. While cardboard is a recyclable waste, it's clearly far better not to produce the waste in the first place."

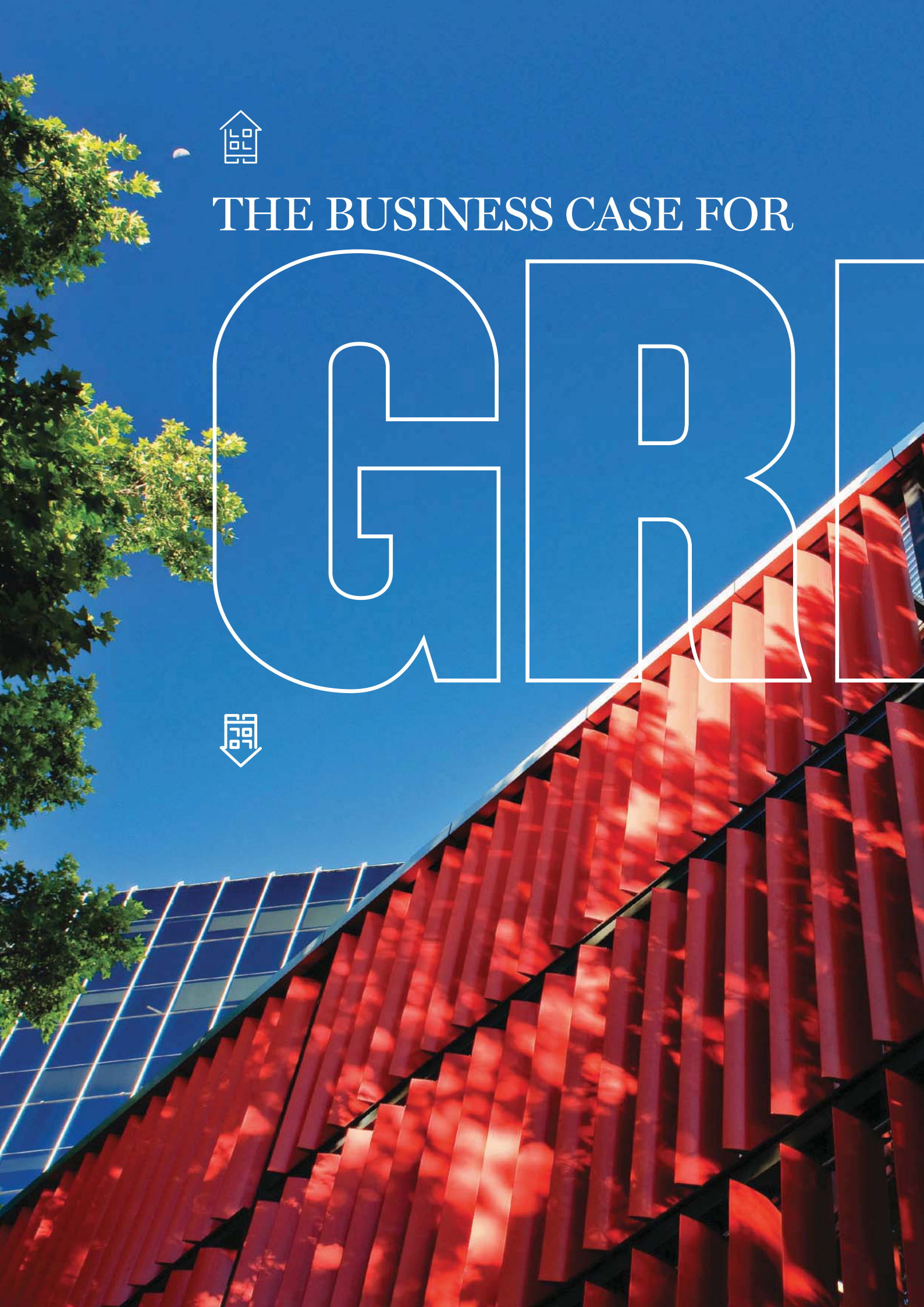
Another innovation reduced manufacturing waste by eliminating the need to trim the edges of the Air-Cell bubble range before being packaged. This has saved almost 15,000 square metres, or 5,500 kilograms, of waste going to landfill each year.

Equally impressive is Godfrey Hirst's $3.5 million water recycling facility that opened in 2010 and is now saving 250 million litres of water a year. By reprocessing 175 million litres of effluent production water along with 75 million litres of captured storm water and returning it to Class A water for reuse, the facility saves 250 million litres of water each year – the equivalent of 100 Olympic-sized swimming pools.

Robert Lunardelli, an environmental engineer at Godfrey Hirst says that both external and internal forces have driven the company's environmental initiatives – and Green Star is one of them. "Increased cost of resources and services and increasing consumer demand for products with positive environmental credentials manufactured by companies with sustainable practices" have converged, Robert says.

In this environment, manufacturers and suppliers are beginning to understand the importance of maintaining responsibility for their products throughout their lifecycle. This, in turn, helps purchasers to make buying decisions based on what's right not just today and tomorrow, but well into the future. Now THAT'S true sustainability.

Pixel Building
6 Star Green Star – Office Design v3
6 Star Green Star – Office As Built v3


THE BUSINESS CASE FOR
GR

GREEN BUILDING

The business case for green building continues to stack up. We now have evidence that green buildings deliver a range of quantitative and qualitative benefits: from lower operating costs and increased office productivity, through to faster patient recovery times and improved student results on tests.

2 Victoria Avenue
6 Star Green Star – Office Design v1

5 Star Green Star – Office As Built v2

5 Star Green Star – Office Interiors v1.1

See case study on page 56

Green buildings provide a bricks-and-mortar demonstration of an organisation's commitment to fiscal responsibility – something that is increasingly important in both the public and private sectors.

Better environment

Buildings are the single largest contributor to the world's greenhouse gas emissions, using 40 per cent of global energy and generating up to 40 per cent of carbon emissions.

In Australia, commercial and residential buildings alone contribute 23 per cent of Australia's total greenhouse gas emissions. Minimising a building's carbon footprint can make a significant positive impact on the global environment.

Innova21, the University of Adelaide's Faculty of Engineering, Computer and Mathematical Sciences building, was the first project in Australia to achieve a 6 Star Green Star – Education Design v1 rating. The use of geothermal energy storage is expected to reduce the building's cooling-related CO_2 emissions by 58 per cent, while the natural gas-fired tri-generation plant will deliver a 60.3 per cent reduction in peak electrical demand as well as significant savings in carbon emissions.

The Lilyfield Housing Redevelopment in Sydney achieved a 5 Star Green Star – Multi Unit Residential PILOT rating in 2009. Housing NSW invested in environmentally sustainable initiatives such as gas-boosted solar hot water systems, 267 square metres of solar panels and a 4 kilowatt photovoltaic system to power common area lighting. These initiatives deliver annual savings of $19,000 – or $213 per unit – meaning the annual electricity bill for households is down by 25 per cent.

Lower operating costs

Green buildings are built for high levels of energy and water efficiency, so they are cheaper to operate. The US General Service Administration's *Assessing Green Building Performance* (2008), found that green buildings:

- consume 26 per cent less energy than the average building
- generate 33 per cent fewer greenhouse gas emissions.

In fact, a minimal two per cent upfront cost to support green design can result, on average, in lifecycle savings of 20 per cent of total construction costs – more than 10 times the initial investment.

Global infrastructure services consultancy, Cardno, operates from the 6 Star Green Star – Office As Built v2 Green Square North Tower in Brisbane, developed by Leighton Properties. Support Services Manager at Cardno, Rebecca Ernst, was impressed by the financial reward of a Green Star-rated building. "Since moving from our old 4,500 square metre office space to our new 7,800 square metre space in Green Square North Tower, our monthly energy bills have dropped from an average of $12,000 to approximately $8,000 per month. For us, this is positive proof that moving to a green building was a smart financial decision," she says.

Melbourne University's The Spot, which achieved a 5 Star Green Star – Education PILOT rating, used 46 per cent less energy

Lilyfield Housing Redevelopment
5 Star Green Star – Multi Unit Residential PILOT

in its first year than comparable buildings across the rest of the University. According to its annual financial report, "the whole building's energy use is considered to be exceptional".

This translates into savings of more than $180,000 a year compared to the average of equivalent buildings on campus, a saving which will more than repay the sustainability premium of five per cent.

With the largest Green Star fitout in the country, ANZ is reaping the rewards of its multi-million dollar investment in the sustainability initiatives at its global headquarters. The ANZ Centre has achieved a 6 Star Green Star – Office Interiors v1.1 rating, and as ANZ Group General Manager for Property, Kate Langan, says "The implementation of ongoing operational efficiencies, made possible by ANZ Centre's environmental design, has reduced our annual electricity demand by 12 per cent since the buildings opening. This has translated into energy cost savings of around $200,000 per annum"

Fiscal responsibility

Green buildings provide a bricks-and-mortar demonstration of an organisation's commitment to fiscal responsibility – something that is increasingly important in both the public and private sectors.

The City of Gosnells achieved a 5 Star Green Star – Office Design v2 rating for the retrofit of its Civic Centre, near Perth. The sustainable transformation means the Civic Centre is now 'future-proofed' to withstand tighter environmental legislation and the introduction of a price on carbon. The Council expects a five year payback period on the extra outlay of $750,000, demonstrating that building green is a smart financial decision.

According to Peter Slattery, of law firm, Johnson Winter & Slattery, operating from a Green Star-rated building has strengthened his firm's green credentials and demonstrated its commitment to fiscal responsibility. "The energy efficiency of the building is obviously very important," Slattery says of his firm's headquarters at 20 Bond Street in Sydney, which has a 4 Star Green Star – Office Design v3 rating. "Our clients do expect us to operate an efficient business from a cost perspective," he explains. ▶

46%

Melbourne University's The Spot used 46 per cent less energy in its first year than comparable buildings across the University.

Innova21
6 Star Green Star – Education Design v1

Photography by Dianna Snape

Convesso 8 Waterside Place
4 Star Green Star
– Multi Unit Residential PILOT

See case study on page 68

65%

Convesso 8 Waterside Place in Melbourne is designed to deliver a 65 per cent reduction in business-as-usual heating and cooling energy

Higher returns

Green Star-rated buildings deliver consistently higher returns on investment than their non-green counterparts. *The Building Better Returns report* (2011), published by the Australian Property Institute and Property Funds Association, found that Green Star-rated buildings are delivering a 12 per cent 'green premium' in value and a five per cent premium in rent, when compared to non-rated buildings.

Similarly, the *Australian Green Property Investment Index*, published by IPD in September 2012, found that Green Star-certified buildings in the Sydney and Melbourne CBDs outperformed the broader office market. Green Star returns were strongest in the Sydney CBD with rated buildings (12%) outperforming the rest of the market (9.2%) by 280 basis points. In the Melbourne CBD, Green Star-rated buildings (11.9%) outperformed the market (10.9%) by 100 basis points.

Recent international research suggests these higher returns are not restricted to the commercial market. Researchers Nils Kok and Matthew Kahn conducted a pricing analysis of all 1.6 million single-family home sales in California from 2007-2012, controlling for all other variables that typically influence selling price, such as location, size, age and amenities. They found that homes with a green certification achieve a nine per cent 'green premium'. The average sale price of a non-certified California home is $400,000, with green certification raising the price by more than $34,800.

Here in Australia, the refurbished Szencorp Building was the second to achieve a 6 Star Green Star – Office Design v1 rating. In its first three years of operation following the refurbishment, the building realised energy savings of 65 per cent, as well as an 88 per cent saving in water consumption compared to industry average standards. According to the company's former Group Manager for Sustainable Buildings, Rina Madden, "The project has proven that sustainable buildings are a good business model – retrofitting reduces day-to-day running costs and increases a building's value."

With its 4 Star Green Star – Multi Unit Residential PILOT rating, Convesso 8 Waterside Place in Melbourne is designed to deliver a 65 per cent reduction in business-as-usual heating and cooling energy through a high-performance double glazing system and insulation to all walls and ceilings. It's also delivering dividends for the developer. Lend Lease's Executive Director, Hugh Martin, says: "It is clear that sustainable buildings like Convesso make business sense. They represent smart financial investments today and environmentally responsible investments in our future."

Attractive to tenants and buyers

Greener buildings both attract prospective tenants and help retain existing tenants – reducing risk and increasing building value into the bargain. The GBCA's *Valuing Green* (2008) report found that green buildings attract better quality tenants, such as government and 'top tier' corporates with stable businesses and strong commitments to corporate social responsibility.

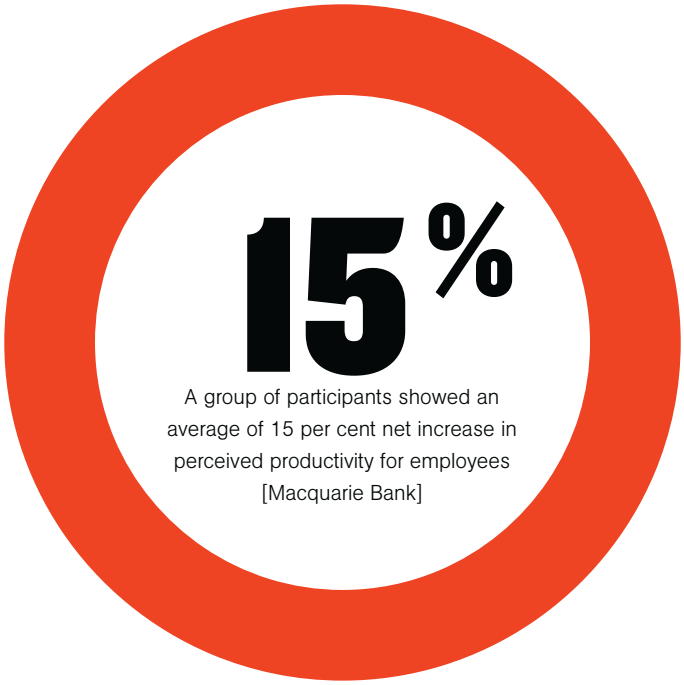
Four years later, Colliers International's *2012 Tenant Sentiment Survey* has found that 95 per cent of tenants want to be in a green building, up from 75 per cent two years earlier. "Leasing only Green Star-rated properties was once the domain of government departments but that trend is now enveloping mainstream businesses," reported the *Sydney Morning Herald's* commercial property editor in 2011. "Buildings that are considered prime and A-grade are being dismissed by potential tenants as they are not up to standard. As a result, some tenants that may wish to relocate are now waiting until a suitably highly rated Green Star office becomes available."

This report is backed up by Jones Lang LaSalle's *Global Corporate Occupier Sustainability Report* (2011), which found that, of the 143 top-level corporate real estate leaders surveyed internationally, 92 per cent consider sustainability criteria when making their location decisions. And interestingly, just under half of the respondents said they would pay up to a 10 per cent premium for sustainable office space.

In 2012, Australand achieved a 5 Star Green Star – Industrial Design v1 rating for The Key Spec 1 building in Melbourne. This achievement is all the more significant, as it was a speculative development. "For Australand, the main driver for certifying – even when we're undertaking a speculative development – is the advantage it can provide in securing tenants. A Green Star rating gives us an extra edge in our marketing, as it provides credible, third party assurance," says Australand's Sustainability Manager, Paolo Bevilacqua.

Productivity benefits

Green buildings consistently outperform non-green buildings in terms of comfort and productivity. Natural light, fresh air and access to views of the outdoors, as well as control over individual workspace temperature and lighting, can affect productivity directly. Staff costs are by far the greatest business expense in most businesses and an incremental increase in productivity will pay for the small premium on a green space.



An improvement in productivity of just one per cent – or five minutes each day – can mean an additional 18 hours and 20 minutes a year for each person working in a commercial office. Multiply that by the hourly rate of each person and you can quickly see the returns.

An increase of up to 15 per cent in perceived productivity has been achieved since staff moved into the 6 Star Green Star – Office As Built v2 certified One Shelley Street in Sydney. Research by the University of Technology Sydney demonstrated a direct link between sustainable building design and employees' assessment of their ability to work. The research tracked more than 2,500 Macquarie Bank employees over 15 months as they moved into their new high-performance office. "A group of participants in the study showed an average of 15 per cent net increase in perceived productivity for employees who had moved into the new building," says UTS' Senior Lecturer in the Faculty of Design, Architecture and Building, Leena Thomas.

The City of Melbourne's Council House 2 (CH2) was Australia's first 6 Star Green Star – Office Design v1 rated building, and went on to achieve a 6 Star Green Star – Office As Built v1 rating as well. This multi-award winning building has demonstrated that the productivity of office building occupants can be enhanced through good, green building design and a high-quality, healthy and comfortable interior environment. A post-occupancy survey has found that productivity has risen by an impressive 10.9 per cent since staff moved into their green office, with estimated annual cost savings of $2 million. ▶

Top: **Trevor Pearcey House**
6 Star Green Star –
Office Design v2

Right: **Surf Coast Shire**
5 Star Green Star –
Office Design v3

Umow Lai's head office in South Yarra, Victoria, highlights the very real benefits of green buildings as staff productivity levels increase. An independently-conducted occupant productivity study of the building found the 6 Star Green Star – Office Interiors v1.1 office fitout has triggered a 13 per cent increase in staff productivity. Higher rates have been recorded for administration staff who spend the most time in the office. For Managing Director of Umow Lai, Dominic Lai, the result is fantastic. "The productivity benefits we have achieved have effectively paid for the cost of our fitout," he says.

Trevor Pearcey House in Canberra was awarded a 6 Star Green Star – Office Design v2 rating in 2007 for what was then a ground-breaking retrofit, undertaken by Australian Ethical Investments (AEI). Since then, AEI has conducted an internal survey of staff perceptions, which reported a 6.2 per cent increase in productivity. AEI's former director, Howard Pender, estimates this small productivity improvement adds up to a big benefit: around $1.5 million of extra value over the past five years.

A staff retention and attraction tool

Attracting and retaining talented employees is vital to any business' success – and a Green Star-rated building is a valuable employee benefit. A 2008 Deloitte survey of organisations that had undergone at least one green building retrofit in the US revealed that 93 per cent of respondents found it easier to attract talent after their renovation, with 81 per cent reporting greater employee retention. Every company surveyed reported an increase in goodwill and brand equity. Colliers International's *Office Tenant Survey* 2012 found that 'green space' was in the top four office attributes sought by staff, alongside bike racks, child care and a gym. "Green is now the norm – where it used to be a bonus in a building, it is now expected," says Colliers International's Managing Director, Simon Hunt.

With its 6 Star Green Star – Office Interiors v1.1 rating, GPT Group's new headquarters house some of the happiest workers in Sydney. Prior to moving, just 54 per cent of GPT workers were satisfied with their level of comfort in the working environment; the new space has achieved a 97 per cent satisfaction rating. "I'm proud to say I work in a green environment," says one GPT employee. "Achieving the 6 Star Green Star rating was a wonderful acknowledgement of the importance we place on sustainability. I've never worked in an environment that feels this open, fresh and healthy, while also providing me with all the facilities I need to be productive and effective in my role."

Lend Lease's The Gauge, a 6 Star Green Star – Office Design v2 and As Built v2 project, attracted key tenant Fujitsu Australia. The Gauge's green credentials encouraged Fujitsu to achieve a 6 Star Green Star – Interiors v1.1 rating for its tenancy. The building was designed with people in mind and the layout promotes easy movement and open space, with a living green wall to help improve office air quality, reduce stress levels and enhance worker satisfaction. "We want people to enjoy working at Fujitsu and we're creating a culture which attracts and retains staff," says Chief Executive Officer, Mike Foster. "Our Green Star office is good for our employees and good for our business, even helping to reduce absenteeism by 42 per cent."

The benefits of working in a 4 Star Green Star – Office Interiors v1.1 rated office environment extend beyond reduced carbon emissions and energy costs for the Queensland Government's Environment Protection Agency (EPA) in Toowoomba. In 2012, the EPA reported that it was noticing increased interest from people seeking to work for an environmentally-aware employer. With a tight labour market, being proactive was helping EPA to be seen as an employer of choice and enhance its prospects of attracting and retaining suitably qualified employees with similar values.

'Future-proofed' assets

Governments and large corporate organisations are increasingly incorporating green principles into their property requirements, and a number of state governments have already mandated minimum Green Star benchmarks for all government office buildings – with other building types expected to follow suit. By incorporating sustainable features now, building owners are 'future-proofing' for changes in the regulatory environment, and ensuring they will not be at a disadvantage in the future. What's more, by integrating Green Star principles into their buildings, they are leaving the community with a lasting legacy.

The 2012 *Global Real Estate Sustainability Benchmark* (GRESB), which assessed a combined US$1,300 billion in assets under management, found that more than half of those companies surveyed include certified green buildings in their portfolios.

"Australia's property industry is recognised internationally as one of the most sophisticated and transparent markets," says Chief Executive Officer of ISPT Super Property, Daryl Browning. "Inherent in that status is the integrity of information, benchmarks and our legal system. Those investing in or occupying properties need benchmarks they can rely on. We think Green Star certification is one of the quality assurance measures everyone can rely on with confidence."

Victoria's Surf Coast Shire has chosen to 'future proof' its new civic building with a 5 Star Green Star – Office Design v3 rating. "Science shows us the Surf Coast will be affected by climate change in many ways. We need to prepare for more extreme weather conditions, higher utility costs, and Council needs to ensure the resources we allocate to mitigating these risks are well-directed," says Mayor Dean Webster.

Compressed schedule

An integrated team approach to design (required when seeking a Green Star rating) often leads to fewer design conflicts and change orders in the development process. Developers on Green Star-rated buildings often report that a clear vision helps time and resources to be used more efficiently from day one.

On the 6 Star Green Star – Office As Built v2 workplace6, subcontractors were appointed at the same time as the design team, including electrical and mechanical engineers. Anika Spears, then Design Project Manager from BuildCorp, said of the process: "Using Green Star led to a collaborative approach on this project which certainly influenced the final outcome of achieving the 6 Star Green Star rating. It also led to better communication throughout the project between all disciplines, forcing us to make up-front decisions and allocate responsibilities sooner rather than later."

More awards, grants and partnerships

The Royal Institution of Chartered Surveyors' report, *Green Value: Growing Buildings, Growing Assets* (2006) found that green building practices are more likely to attract grants, subsidies and other inducements that demonstrate environmental stewardship, increase energy efficiency and reduce greenhouse gas emissions.

The Melbourne Convention and Exhibition Centre was awarded a 6 Star Green Star rating for its innovative environmental design in 2008, under the Green Star – Convention Centre PILOT rating tool (a tool which has now evolved into Green Star – Public Building).

Setting a new global standard for convention centre design, the MCEC project team's innovation and ingenuity has led to more than $1 billion of economic activity for Victoria, as well as acknowledgement with dozens of awards, including the 2010 Victorian Architecture Medal, the prestigious Banksia Foundation Built Environment Award 2009, and recognition by the Design Institute of Australia for the Centre's contribution to Victoria's next generation of public amenity.

The Bond University Mirvac School of Sustainable Development in Queensland, which operates from the first 6 Star Green Star – Education PILOT rated facility in Australia, has identified a number of significant benefits from its green credentials, including attracting international students and developing research partnerships with other prestigious universities around the world. These benefits, alongside the environmental ones, have resulted in a considerable financial return on investment.

A healthy and productive place to learn

Greening America's Schools: Costs and Benefits (2006) found that green schools and universities can deliver a 41.5 per cent improvement in the health of students and teachers, as well as a 15 per cent improvement in student learning and a 25 per cent improvement on test scores due to good lighting and ventilation.

Similarly, the *Heschong Mahone Daylighting Study* (1999) of more than 21,000 students showed a dramatic correlation between daylit school environments and student performance, including a 20 per cent faster progression in maths, a 26 per cent faster progression in reading and increased performance of up to 10 per cent when students had window views.

Australia's first Green Star – Education Design v1 primary school, Peregian Springs State School on the Sunshine Coast, is already reaping the benefits of its sustainability status. The 4 Star Green Star-rated building, which was also the first education project to achieve both Design and As Built ratings, has attracted the highest pre-enrolment of any school in Queensland. Principal Gwen Sands says that "it is a pleasure to work in a school which has been built to the highest environmental standards. Studying and working in this facility encourages both our staff and students to act in a more sustainable manner and will help improve learning outcomes for our students."

At Bay View State School in Queensland, a survey has found that 100 per cent of parents are happy with the school – a result that would be the envy of any principal anywhere in Australia. Students at the 4 Star Green Star – Education As Built v1 school are benefiting from the healthy environment; the school recorded an attendance rate of 94 per cent in 2010, three per cent higher than the regional average of 91 per cent.

“

Our staff and students are finding it a wonderful place to work and learn.

”

Dr Peter Whitley
Executive Officer
GippsTAFE

25%

Research found a 25 per cent improvement on test scores due to good lighting and ventilation.

Left: **Australian Institute of Management Katitjin Centre**
6 Star Green Star – Education As Built v1

Right: **GippsTAFE**
5 Star Green Star – Education Design v1

A better place to teach

Teachers spend up to 90 per cent of their day indoors, so they benefit from buildings with natural daylight, fresh air and access to views. Research indicates that green schools lead to healthier, happier teachers who take fewer sick days. *Greening America's Schools: Costs and Benefits* (2006) estimated that teacher retention in green schools translates into a financial saving of about US$4 per square foot (roughly AUD$12 a metre) over a 20 year period.

Central Gippsland Institute of TAFE in Victoria was the first TAFE to receive a 5 Star Green Star – Education Design v1 rating. Ventilation rates in the building at Leongatha have been improved to boost concentration, health and comfort for staff and students. GippsTAFE's Chief Executive Officer, Dr Peter Whitley says the focus on IEQ is already paying off. “Our staff and students are finding it a wonderful place to work and learn. It's proof that achieving our sustainability targets has also improved learning conditions.”

A hands-on learning environment

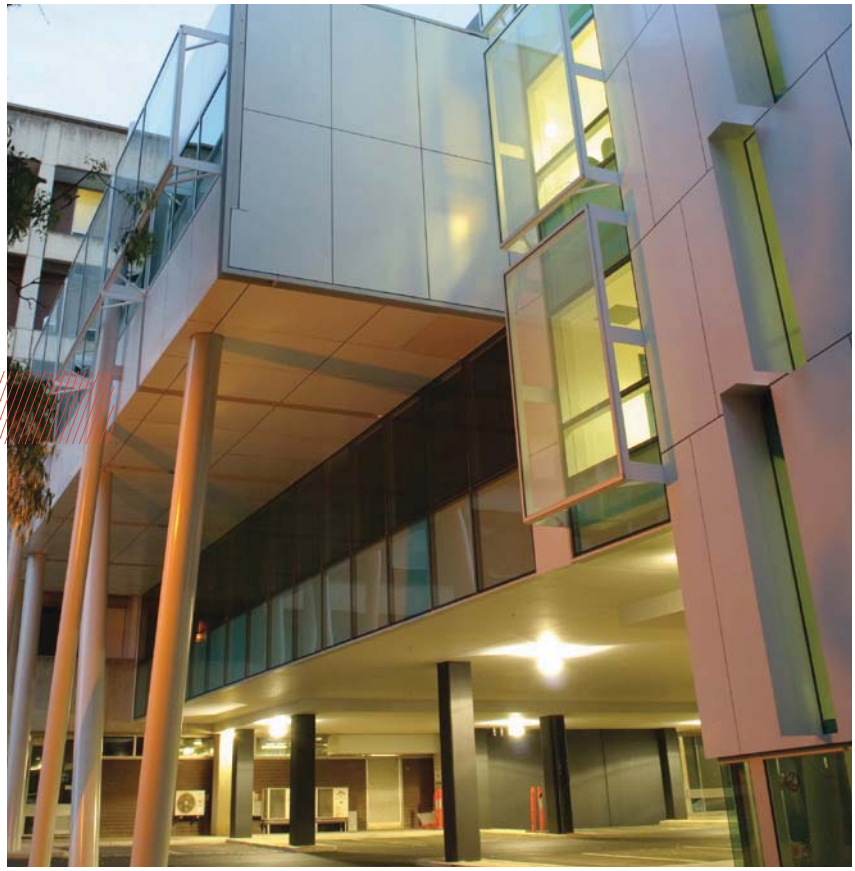
A green school is an interactive teaching tool, educating the next generation of sustainable leaders through hands-on learning. Educators report that they have been able to incorporate learning on energy use, climate change, water resources and sustainability into the students' everyday lives at green schools.

The Australian Institute of Management (AIM) wanted its 6 Star Green Star – Education Design v1 Katitjin Centre in Perth to capture the hearts and minds of its highly influential state and national decision-makers. The Katitjin Centre allows them to see, touch, feel and operate in a world-leading Green Star-rated building. As AIM's Chief Executive Officer Patrick Cullen says, the facility will “provide a tangible experience that will equip our clients with the knowledge, enthusiasm and confidence that green buildings are possible, practical and can deliver real benefits to users.”

Charles Sturt University has achieved one Green Star certification, and has two more projects registered to achieve Green Star ratings. The Green Star-rated buildings complement a raft of environmental initiatives, including an award-winning campus water management system with artificial wetlands which can be enjoyed on a self-guided sustainability walk. “Hundreds of people including school children, special interest groups and university students as well as local walkers visit the campus each year to learn about the university's green features,” says the university's Vice Chancellor, Professor Andrew Vann.

Improved patient outcomes

A range of international studies have confirmed that green healthcare facilities provide better patient care and reduce the length of stay required in hospital. The MacKenzie Health Sciences Centre in Canada found that depressed patients in sunny rooms recovered 15 per cent faster than those in darker rooms. Similarly, the Inha University Hospital in Korea found a 41 per cent reduction in average length of stay for gynaecology patients in sunlit rooms over patients in dull rooms. ▶



Flinders Medical Centre
5 Star Green Star – Healthcare Design v1
5 Star Green Star – Healthcare As Built v1

Australia's first Green Star-rated healthcare facility, the Flinders Medical Centre New South Wing in Adelaide, achieved a 5 Star Green Star – Healthcare Design v1 rating in 2011 and 5 Star Green Star – Healthcare As Built v1 certification in May 2012. The facility houses women's health services and has been designed to deliver high-quality patient care with a minimal environmental footprint. According to the Redevelopment Project Manager, Frank Zotti: "we've delivered 271 more babies in the new unit in 2011, a ten per cent increase on previous years." The numbers are positive proof of the community's support for hospitals that provide high-quality care for patients and the environment, with improved healing and recovery rates increasing bed turnover.

Increased retail sales

A number of international studies have found that integrating green principles – such as access to natural light – can increase sales at the till. A study by Heschong Mahone in 2003 found evidence that daylit stores deliver higher sales than non-daylit stores. In fact, daylighting was found to increase sales by up to 40 per cent.

A 2012 study from the University of Notre Dame in the US has found that bank branches operating from facilities rated using the USGBC's Leadership in Energy and Environmental Design (LEED) rating system opened 458 more consumer deposit accounts and had $3 million more in consumer deposit balances per facility per year over non-certified properties. The first-of-its-kind study compared the financial performance of 93 LEED-rated bank branches with 469 non-rated branches owned and operated by PNC Financial Services Group. Researchers found LEED-rated banks also had almost $1 million more in loan balances per facility per year. After controlling for other variables that influence performance (such as market demographics, branch size and advertising spend), the sales at LEED-certified branches increased by $461,300 per employee compared to non-certified locations. Utility costs per employee in LEED branches were also significantly lower than in the non-certified buildings at a reduction of $675 per employee.

HomeHQ North Shore is Australia's first 4 Star Green Star-rated bulky goods centre, achieving a 4 Star Green Star – Retail Centre v1 rating in 2009. A high standard of energy efficiency for the building was achieved through green features including an energy-efficient plant and machinery and the use of building materials that reduce the need for artificial heating and cooling by up to 60 per cent. HomeHQ says that's good news not only for the environment, but for retailers and customers too, with the cost savings to retailers able to be passed on to consumers.

Reduced liability and risk

According to the OECD's *Environmentally Sustainable Buildings* report (2003), illness from indoor air pollution has become one of our most acute building challenges – with building materials, ranging from paints to carpets, leading to occupational health issues.

A study by the Lawrence Berkeley National Laboratory (2000) found that buildings with good indoor environment quality (IEQ) can reduce the rate of respiratory disease, allergy, asthma and sick building symptoms, and enhance worker performance. The potential financial benefits of improving IEQ are eight to 14 times the cost of investment.

The legal firm, Oakley Thompson, at 500 Collins Street in Melbourne conducted pre- and post-occupancy surveys of staff to determine whether green did deliver dividends. The result? The 5 Star Green Star – Office As Built v2 office building was found to reduce staff sick leave by

> “Good for customers, good for the environment and good business for our bank.”
>
> **Rob Hunt**
> Former Managing Director
> Bendigo Bank

39 per cent – well below the national average. What's more, sick leave costs fell by 44 per cent.

Not only can efficient businesses reduce their sick leave and related cost burdens, but they can reduce their risk of litigation in property acquisitions and leasing transactions. RICS' *Sustainability & Valuation of Commercial Property* report (2012) argues that 'non-sustainable' buildings are increasingly risky. "From a valuer's perspective, the risk of litigation due to perceived negligence [from non-green buildings] also increases as sustainability becomes more important in the decision-making behind property acquisitions and leasing transactions," the report says.

Competitive advantage

Going green can deliver a defining edge in a crowded marketplace. The *BCI Green Building Market Report* (2008) found that one of the main drivers for committing to green building was the competitive advantage of green projects. A green building not only enhances the marketability of a building project, but of the entire organisation.

Australia's first Green Star – Office Design v1 certified project, 8 Brindabella Circuit in Canberra, has attracted significant free publicity from both its Green Star certification and its subsequent environmental awards. Former Executive Director of Canberra International Airport, Tom Snow, said the company could not put a financial value on all the free publicity received over the years, with the flow-on effect being a tenant waiting list.

Job creation

Green building projects can create jobs. A research report from construction analyst Davis Langdon, *Retrogreening Offices in Australia* (2009), found that refurbishing a significant quantity of office stock had the potential to create jobs for more than 10,000 people in the construction industry – which translates into almost 27,000 new jobs across the broader Australian economy.

The Redfern Housing Redevelopment project, which received a 5 Star Green Star – Multi Unit Residential PILOT rating, recognised the important links that Australia's indigenous people have with the suburb, and so mandated a minimum of 20 indigenous construction workers. This was a 'first' for a public housing project in Australia, and was rewarded with a Green Star Innovation point (INN-1). Empowering the local community was an integral part of the sustainable development, and Housing NSW provided employment opportunities to both Aboriginal and long-term unemployed people to enhance their business skills, increase their knowledge of ESD issues in the project and in general, and improve the social and economic conditions for both the individuals and their community.

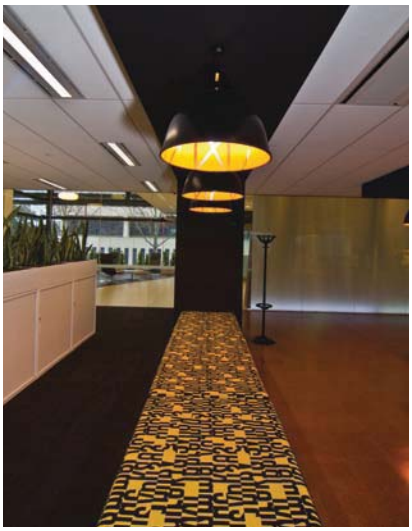
Leadership in the community

Building green is a clear expression of commitment to the environment. Increasingly, people around the world perceive green buildings as modern and ethical – and companies, councils, governments and community organisations associated with green buildings benefit from these perceptions through community pride, satisfaction and wellbeing.

With many law firms now having extensive corporate social responsibility programs and publicly committing to reducing their carbon footprint, legal offices need to be energy-efficient from both a credibility and public relations perspective. Moving to the 6 Star Green Star – Office As Built v2 1 Bligh Street in Sydney was an opportunity for Clayton Utz to demonstrate good corporate citizenship. "I think the green elements of the building are important for corporate responsibility," says partner Julie Levis.

And when the management team at the Bendigo Bank decided to build its new 5 Star Green Star – Office Design v2 certified headquarters, they saw it as an opportunity to demonstrate that corporate social responsibility starts at home. The Bendigo Bank's former Managing Director, Rob Hunt, said that green initiatives "are good for customers, good for the environment and good business for our bank." ●

CASE STUDIES 2013



2 VICTORIA AVENUE

THE PROJECT AT A GLANCE

6 Star Green Star – Office Design v2 rating representing 'World Leadership' in environmentally sustainable design

5 Star Green Star – Office As Built v2 and 5 Star Green Star – Office Interiors v1.1 ratings representing 'Australian Excellence' in environmentally sustainable construction and interiors

The first development in Western Australia to achieve Green Star As Built certification.

2 Victoria Avenue may seem small when compared to some of its high-rise counterparts in the Perth CBD, but as the very first project in Western Australia to achieve Green Star As Built certification, 2 Victoria Avenue represents big thinking, big sustainability and big leadership.

A showcase office development, 2 Victoria Avenue is the first in Western Australia to achieve the Green Star certification 'trifecta' of Design, As Built and Interiors ratings. And, through the sustainable initiatives implemented and the achievement of Green Star certified ratings across all project phases, Stockland has delivered a 'future-proofed' asset that will deliver ongoing benefits through a quality indoor environment and operational cost savings.

When asked why it was so important for Stockland to achieve a Green Star As Built rating for the development – a first in the Perth market – Stockland's Environmental Sustainability Manager, Greg Johnson, gives a simple answer.

"Sustainability is embedded in our entire business and we have been achieving Green Star ratings across a range of sectors since 2008. The achievement of a Green Star As Built rating was a key

> “We set out to deliver a flexible and sustainable 5 Star Green Star - rated office building that could ‘stand the test of time.’”

Greg Johnson
Environmental Sustainability Manager
Stockland

commitment from the beginning of the project. The As Built rating authenticates the design of the building and will ensure that 2 Victoria Avenue can meet our tenants’ needs for a high performance, sustainable office space, now and into the future.”

Johnson explains that while Stockland’s initial objective was to obtain a 5 Star Green Star – Office Design v2 rating for the base building design, an aspirational approach to sustainability and partnership with industry leaders enabled the developer to go one step further to achieve a ‘World Leadership’ 6 Star Green Star – Office Design rating.

“When it came to construction, we again decided to target 5 Star Green Star, and were pleased to achieve this level of certification for both the base building and our own fitout. Changing circumstances meant that there were a few aspects of the original design that couldn’t be practically implemented through construction, but the building has proven extremely successful nonetheless. We are thrilled with the way the building is performing three years on, and pleased with the recognition we have received for our leadership in achieving a Green Star As Built rating,” says Johnson.

WHAT 2 VICTORIA AVENUE ACHIEVED:

Water

Reducing 2 Victoria Avenue’s reliance on potable water consumption was a top priority for the project team through the building’s design and construction. “We are very conscious of the impact of local conditions. At a time when Western Australia was in the throes of drought and with utility prices ever on the rise, achieving the best possible water conservation outcome was very important,” explains Johnson. For the As Built submission, the project achieved 11 of the 13 points available under the Green Star ‘Water’ category, scoring all available points for potable water efficiency.

Water is captured from 5 Star WELS-rated showers and taps before being diverted for treatment by the building’s onsite greywater system. This treated water provides 100 per cent of water used for toilet flushing across the development. Waterless urinals further reduce water consumption and fire test water is returned to the onsite storage tank to be reused for site irrigation. ▶

PROJECT DETAILS

Owner
Stockland

Location
2 Victoria Avenue, Perth, Western Australia

Size
7,200 square metres NLA

PROJECT TEAM

Architect/Landscaping Consultant
Woodhead

Project Manager
APP

Structural/Civil Engineer
Arup

Main Contractor
Diploma Civil Construction

Building Service Engineer/ ESD Consultant
AECOM

green building council australia
6 greenstar
Office Design v2 2008

green building council australia
5 greenstar
Office As Built v2 2012

green building council australia
5 greenstar
Office Interiors v1.1 2012

Together, the water efficiency measures implemented at 2 Victoria Avenue are conserving up to 4.4 million litres per year, a saving that equates to nearly two Olympic-sized swimming pools.

Now a relatively common feature in the Australian commercial office sector, at the time that 2 Victoria Avenue was designed greywater treatment had never been implemented in a commercial building within the Perth CBD. Through the successful installation of the system, 2 Victoria Avenue became the Western Australian 'test case' for greywater. Project ESD Consultant, Graham Agar of AECOM explains how the implementation of the system at 2 Victoria Avenue has paved the way for recycled water treatment within the Perth market.

"2 Victoria Avenue was one of the first projects to achieve an approval in principal for the design of the system, but the first Perth CBD project to have the system tested, commissioned and approved for operation. The commissioning, testing and reporting procedure required to be undertaken is now well understood by both contractors and the Western Australian Department of Health, meaning future projects will benefit from the lessons learnt at 2 Victoria Avenue."

IEQ

In addition to the pioneering approach taken to the delivery of environmentally sustainable outcomes, fitout flexibility, occupant amenity and indoor environment quality (IEQ) were all high priorities. At the time that the building was designed, the Perth market was at the peak of the resources boom and the building was specifically designed to accommodate the staff fluctuation and workforce mobility typical to the resources sector. Floor plates can be easily reconfigured to accommodate multiple tenancies, which are individually monitored and controlled to maximise energy-usage efficiencies across the building. The building's active western façade incorporates automated shading, which acts to increase occupant comfort by managing glare and heat gain. The specification of low-volatile organic compound (VOC) finishes and low-formaldehyde wood composite products throughout also make 2 Victoria Avenue a healthy and comfortable place to work.

Energy

The energy efficiency initiatives at 2 Victoria Avenue, which include T5 lighting, sub-metering and motion-sensors, zoned lighting, and active chilled beam air conditioning, together save the building around 50kg of CO_2 per square metre of net lettable area each year – equating to a saving of approximately 350 tonnes of CO_2 each year and around $61,000 in electricity costs.

For its Green Star – Office Design rating, 2 Victoria Avenue was recognised with a Green Star 'Innovation' point for the inclusion of three 2.5kW wind-powered helical turbines, capable of generating between 6,600 and 9,600 kWh per year. However, public concerns and technology barriers meant that the turbines were not installed at the time of construction.

"The wind turbines were ideal on paper but, as project teams so often discover, when it came to implementation, there were external concerns raised and risks identified with the technology. As a developer, it's important to understand that no building exists or functions in isolation. In view of this, the decision was made not to pursue the implementation of the turbines," says Johnson.

Although the wind-turbine technology was not implemented, Johnson is proud of the leadership that Stockland and AECOM were able to demonstrate by incorporating the turbines into the building's design. "Knowing what we know now, we might have looked to other alternative energy generation initiatives, but at the time we were committed to the turbines not only for their energy-generation capacity, but as a way of visually demonstrating our environmental commitment to the community. We've achieved great results for energy from other initiatives, so in the end I think we came out ahead. You never know if you don't try," he concludes.

It is clear that the leadership shown and the knowledge and experience gained from 2 Victoria Avenue has inspired other developers and project teams in Western Australia to strive for Green Star ratings. Nowhere is this more evident than the exponential growth in Green Star certifications achieved in Western Australia in 2012 – triple that of the year before. By pioneering green technologies and sharing their successes, the 2 Victoria Avenue project team has forged a new, more sustainable path for the urban landscape of Perth.

2

AFFINITY VILLAGE CLUB HOUSE

THE PROJECT AT A GLANCE

5 Star Green Star – Public Building Design PILOT rating representing 'Australian Excellence' in environmentally sustainable design

First retirement living community centre to achieve a Green Star rating in Australia

Achieves substantial cost savings when compared to a 'standard' approach, up to $50,000 in utility savings each year.

A Green Star rating leaves a community with a lasting legacy – and a cost effective one at that. One of Australia's first public buildings to achieve Green Star certification, the Affinity Village community centre, called the 'club house', is a positive example of how a Green Star-rated building not only delivers energy and water efficiency, but also fosters a sense of pride within the community it serves.

Affinity Village, a Stockland Retirement Living project in Baldivis, Western Australia, now boasts one of Australia's greenest club houses, having achieved the first Green Star rating for such a facility in October 2012.

The brand new club house offers residents a range of activities, including a media room, dining room, swimming pool, gym, bowling green and café. The club house was awarded its Green Star rating for a range of environmentally sustainable initiatives, including passive solar design, high levels of indoor environment quality, the clever supply of natural light to the building, and individual metering and motion sensors which will reduce energy consumption.

Barry Mann, Stockland's General Manager of Development in Retirement Living, says: "In achieving the first Green Star rating for any retirement living building, we have demonstrated our industry leadership and set a new benchmark in sustainability.

"The energy and water initiatives within the community centre will deliver savings of up to $50,000 per year on utility bills, which bring tangible benefits to our residents. We are now working to transfer the knowledge gained from this project to other projects," Mr Mann adds.

Stockland believes the achievements on Affinity have "paved the way for us to do it even better on Selandra Rise and Mernda in Victoria, where we are using a Green Star tool we custom-built with the GBCA to rate the entire retirement village. Once again this will be a first in Australia."

2

WHAT THE AFFINITY VILLAGE CLUB HOUSE ACHIEVED:

Energy

The project achieved 12 out of the 22 points available in the Green Star 'Energy' category, with 10 points awarded for greenhouse gas emissions reduction strategies, and two points awarded for peak energy demand reduction. The building has achieved a 50 per cent reduction in emissions when compared with a standard building of similar size. Energy efficiency measures, including extra insulation in walls and ceilings, high-performance glazing to help the building retain heat in winter and stay cool in summer, and individual metering and motion sensors, ensure the club house uses only the energy it really needs – reducing the building's operating costs.

Affinity Village's club house will deliver a 62 per cent reduction in lighting energy consumption, when compared with a standard building of similar size, through the use of high-efficiency light fittings and lighting controls. A lighting control system was utilised to ensure lighting energy was not wasted, as a large portion of the building had an intermittent occupancy profile. With the combination of motion sensors and daylight harvesting, the building is able to respond to the actual use of the building and user demands.

The energy consumption from HVAC was also reduced by 59 per cent. This was achieved through a combination of heat exchange systems and, more importantly, CO_2 monitoring and control. Once again the intermittency of the occupancy profile (common to most public buildings) was the key driver in selecting this strategy.

"The operating cost benefit resulting from the club house's energy efficiency performance is expected to be more than $40,000 a year, based on current prices," says Stockland's Environment Manager – Retirement Living, Matthew Napper.

Water

The project achieved six out of 12 points available in the 'Water' category through a combination of high-efficiency fittings and fixtures and selection of low-water use plants and appropriate irrigation techniques. The 60 per cent reduction in potable water consumption represents an operational cost benefit of $2,000 a year.

"As well as the operational cost benefits, the low-water use landscaping will mean that the landscape amenity will have more resilience in any potential future water shortages or restrictions. This will not only benefit the building, but the surrounding community as well," Napper says.

In addition, energy and water consumption and savings data is displayed in real-time in the public area on screens, encouraging club house members to 'do their bit' to reduce their resource consumption whilst educating them about environmental sustainability.

Prasanna Suraweera, ESD Section Manager with Wood & Grieve Engineers says: "This outcome represents a significant achievement in this sector where sustainability has been largely ignored or lacked focus. The relatively small scale of the building presented a number of challenges which required a shift in thinking when considering appropriate strategies. Luckily, we had a dedicated project team that put a lot of effort into getting a good outcome for the project. As well as pursuing an As Built rating, we are now looking at ways to further improve this strategy and its business case."

Places for people

The Affinity Village club house is a clear demonstration that green buildings are places for people. The provision of facilities for cyclists helps to reduce transport-related emissions and supports residents' exercise and activity. Carpets and paints low in volatile organic compounds were selected, as they emit fewer chemicals and are often better for people with allergies and respiratory problems.

The residents of Affinity Village are thrilled with their new facility. "We are awestruck by the plans of our new 5 Star Green Star club house. We all feel so proud that our community centre was awarded the prestigious Green Star rating. It will be a fabulous, modern addition to our retirement village," says resident, Jenny Long.

"Overall, the sustainability features within Affinity Village's club house are predicted to reduce the annual electricity, water and gas bills for the community centre by up to 48 per cent, or up to $50,000. We've developed a building that will tread more gently on the environment, be more functional, light and spacious, healthier to be in and cheaper to run," Barry Mann concludes.

PROJECT DETAILS

Owner
Stockland Retirement Living

Location
Norwood Avenue, Baldivis, Western Australia

Size
1,190 square metres GLA

PROJECT TEAM

Project Manager
Stockland Development Pty Ltd

Main Contractor
Gallacher PTY LTD

Architect
T&Z Architects

Building Service Engineer/ESD Consultant
Wood & Grieve Engineers

Structural Engineer
Structerre

Acoustic Consultant
Herring Storer Acoustics

Landscaping Consultant
PlanE

green building council australia
5 greenstar
Public Building
Design PILOT 2012

3

ANZ CENTRE MELBOURNE

THE PROJECT AT A GLANCE

6 Star Green Star – Office Design v2, 6 Star Green Star – Office As Built v2 and 6 Star Green Star – Office Interiors v1.1 ratings, representing 'World Leadership' in sustainable design and construction

Largest single-tenanted 6 Star Green Star – Office Interiors v1.1 rated building in Australia

70% reduction in base building greenhouse gas emissions in comparison to a typical 2.5 Star NABERS Energy rated building.

For a bank that has been recognised as the most sustainable in the world no less than five times in six years by the global *Dow Jones Sustainability Index* (DJSI), it is perhaps unsurprising that ANZ should have one of the most sustainable office fitouts in Australia. What is surprising is the scale at which 'World Leadership' sustainable office design has been achieved at ANZ Centre in Melbourne's Docklands.

The 83,796 square metre office achieved 6 Star Green Star – Office Interiors v1.1 certification in July 2012, making it the largest single-tenanted 6 Star Green Star rated office fitout in the country, and only the second building in Australia to have achieved the 6 Star Green Star certification 'trifecta' of Design, As Built and Interiors ratings.

ANZ Centre is a campus-style office development comprised of two interlocking built forms of five and ten storeys, arranged around two central atria. The design of the office emphasises and facilitates teamwork, offering a range of interconnected spaces to support individual and group working styles.

According to ANZ Group General Manager for Property, Kate Langan, ANZ is reaping the rewards of its investment in the Green Star initiatives at its global headquarters.

"The implementation of ongoing operational efficiencies, made possible by ANZ Centre's Green Star-certified environmental design, has reduced our annual electricity demand by over 12 per cent since the building's opening. This has translated into energy cost savings of around $200,000 per annum, a 'good news story' in a time when energy costs are rising," she says.

ANZ Group Chief Operating Officer, Alistair Currie, is full of praise for the value that Green Star sustainability measures are adding to the operational efficiencies of the ANZ Centre, and to ANZ as a business.

"As we continue our focused expansion into Asia, ANZ Centre serves as a very important benchmark for environmental efficiency and great workspaces, and will play a major role in helping us achieve our business and sustainability objectives," he explains.

"Not only has the Centre helped ANZ reduce the size of its carbon footprint, it has also helped deliver energy cost savings by using less energy during peak times when energy is at its most expensive. This is money that can be re-directed into the business to support our super-regional strategy," Currie concludes.

3

WHAT THE ANZ CENTRE MELBOURNE ACHIEVED:

Water

ANZ Centre has been designed for maximum efficiency when it comes to potable water use. Water from taps, toilets and showers across the tenancy is reticulated to the Centre's onsite blackwater treatment plant, saving thousands of litres of potable water annually and generating significant cost savings.

Energy

The ANZ Centre building reduces its peak load energy demand with its tenancy tri-generation system. While tri-generation technology has become relatively common for powering base building loads, it is rarely used to provide direct supply to tenancies. Energy modelling conducted for ANZ Centre has determined that peak electricity demand for the tenancy has been reduced by 20 per cent.

IEQ

ANZ Centre's focus on water and energy efficiency has not come at the cost of occupant comfort, with indoor environment quality and user amenity core aspects of the design brief. The central atria allow for ample natural light to penetrate into the workspaces and facilitate visual connectivity between floors. The fitout was also awarded a Green Star 'Innovation' point for the use of underfloor air-ventilation. While the provision of underfloor heating and cooling is not uncommon, particularly in Europe, the scale at which individual comfort control has been provided to every workstation through the system is as yet a rarity within the Australian market.

The quality of internal air is further enhanced at ANZ through the use of low emission work stations, joinery and furniture. Carbon dioxide levels are constantly monitored across the workspaces and additional outside air introduced as necessary. These IEQ measures, in addition to the specification of low-emissions carpets, paints, glues and sealants across the building, combine to make ANZ Centre a healthy and productive place to work.

Transport

ANZ Centre delivers a number of significant environmental benefits as a result of sustainable transport initiatives. The building's close proximity to public transport including trains, trams, buses and cycleways, coupled with the provision of 560 bicycle racks, change-rooms, showering facilities and 974 lockers, means that ANZ employees are supported in their choice of less carbon-intensive modes of transport. The number of car parking spaces allocated to the ANZ tenancy is 94 per cent lower than the maximum allowed under local planning standards, and the project was awarded an 'Innovation' point for exceeding Green Star benchmarks.

Modelling undertaken by developer, Lend Lease, suggests that the decision not to build the extra car parking spaces equates to an embodied carbon saving of 5,681 tonnes (tCO_2-e) – the equivalent of taking 1,000 cars off our roads for a year. By providing less parking, ANZ is also leaving a sustainable legacy for the Docklands community through reductions in fossil fuel consumption attributable to private vehicle use by ANZ employees, and the consequent minimisation of city congestion.

"We are proud to cater for the growing number of staff who choose to cycle to work, particularly given the rising popularity of cycling across the wider community," says Langan. "This was a deliberate strategy from the outset and we are very proud that it continues to be so well utilised and appreciated by our staff."

PROJECT DETAILS

Owner
Australia and New Zealand Banking Group Limited

Location
833 Collins Street, Docklands, Melbourne, Victoria

Size
83,796 square metres NLA

PROJECT TEAM

Architect
HASSELL and Lend Lease Design

Project Manager/Construction
Lend Lease Project Management and Construction

ESD Consultant
Lend Lease Design

Acoustic Consultant
Acoustic Logic Consultancy and Marshall Day

Services Consultants
Norman Disney & Young, Umow Lai and AECOM

Structural Engineer
Winward Structures

Interior Designer / Landscape Architect
HASSELL

Building Surveyor
PLP Building Surveyors & Consultants

Facade Engineer
Arup

Independent Commissioning Agent
A.G. Coombs Advisory Services

green building council australia
6 greenstar
Office Design v2 2009

green building council australia
6 greenstar
Office As Built v2 2011

green building council australia
6 greenstar
Office Interiors v1.1 2012

4

DARLING QUARTER

THE PROJECT AT A GLANCE

6 Star Green Star – Office Design v2 and 6 Star Green Star – Office As Built v3 ratings signifying 'World Leadership' in sustainable design and construction

The first project in Australia to achieve 6 Star Green Star – Office As Built v3 certification

92% reduction in potable-water use when compared to a standard office building

72% reduction in carbon emissions.

Sydney's Darling Quarter embodies a new era of sustainable development. As the designer and developer of Darling Quarter, Lend Lease has leveraged the Green Star knowledge gained from its work on more than 50 Green Star-certified projects to transform a forgotten corner of the CBD into a thriving mixed use development, with the 6 Star Green Star – Office Design v2 and 6 Star Green Star – Office As Built v3-certified Commonwealth Bank Place as its striking centrepiece.

In a demonstration of how valued green building is becoming, Lend Lease's Chief Executive Officer, Construction & Infrastructure Australia, Mark Menhinnitt, explains how collaboration between the property sector, government, and corporate Australia has resulted in the delivery of this 'World Leadership' sustainable project.

Through a shared vision, Australian Prime Property Fund (APPF) Commercial, Lend Lease, the Commonwealth Bank of Australia, and the Sydney Harbour Foreshore Authority have added 58,000 square metres of Green Star-rated office space to the city, in addition to 3,000 square metres of retail area, a popular illuminated children's playground with water features, youth theatre, interactive digital façade and community green.

"Lend Lease has transformed a previously under-utilised fringe CBD site into a dynamic destination for Sydney-siders and the broader community to enjoy, with access to valuable public amenities and iconic new spaces that will leave a powerful legacy for future generations," says Menhinnitt.

From the very beginning, Green Star sustainability was the goal towards which

all Darling Quarter stakeholders agreed to strive, and Green Star has added value to all involved by providing a recognised set of benchmarks and a method of measurement to underpin the design and delivery of the project, and increasing the value and demand for sustainable building assets in general.

"Achieving high environmental ratings reduces exposure to commercial risk and asset obsolescence by ensuring assets are 'future-ready'. Without the ability to benchmark the sustainability performance of a new development, the value proposition for investment into sustainable practices is less attractive. Green Star has allowed us to articulate the sustainable performance of developments like Darling Quarter in a concise and transparent manner. This in turn, allows stakeholders to be confident that the finished building is of the highest possible environmental standards," says John Dillon, Fund Manager of APPF Commercial, the joint owner of Commonwealth Bank Place.

Jennifer Saiz, Head of Group Property for the Commonwealth Bank couldn't be happier with the bank's new Green Star-certified headquarters, and says that the high-quality internal environment at Commonwealth Bank Place has supported her organisation's transition to healthier and more efficient ways of working.

"It's been great to be able to provide a workplace that reinforces Commonwealth Bank's commitment to our people, innovation and sustainability. Implementing activity-based working at Commonwealth Bank not only enhances our people's ability to deliver great outcomes for our customers, but it is also a more sustainable way of working that reduces our impact on the environment and supports greater work life balance," she says. "Our move to Commonwealth Bank Place has not only reduced our carbon footprint, but has also improved collaboration and productivity in our teams."

WHAT DARLING QUARTER ACHIEVED:

Management

Darling Quarter was awarded a Green Star 'Innovation' point after the project became the first to achieve a 6 Star Green Star – Office As Built certification under version 3 of the rating tool. After securing a 6 Star Design rating under version 2, the project team upgraded the As Built target rating to 6 Star Green Star under version 3. The decision was risky, as construction had already commenced, but worthwhile according to Cate Harris, Head of Sustainability at Lend Lease Australia.

"We considered that a version 3 rating would recognise the additional steps that we had already taken in the design phase to 'future-proof' the building, and would serve as a clear sign to the wider market that a 6 Star Green Star – As Built v3 rating could be achieved on a large-scale building," she says. "As a result, Darling Quarter is the first building to achieve such a rating in Australia."

Energy

Energy-efficient lighting and air conditioning, onsite energy production via tri-generation and extensive building tuning, have combined to ensure Commonwealth Bank Place produces 40 per cent fewer greenhouse gas emissions than a comparable 5 Star NABERS Energy-rated building. This equates to a 72 per cent reduction in greenhouse gas emissions when compared to a typical non-Green Star-rated office building in Australia.

Now that the building is fully occupied, Lend Lease notes that the energy consumption for some uses, such as vertical transportation, is even lower than the original modelling anticipated. ▶

PROJECT DETAILS

Owner
Australian Prime Property Fund (APPF) Commercial (managed by Lend Lease) and an international investor

Location
1-25 Harbour Street, Darling Quarter, Sydney, New South Wales

Size
58,000 square metres commercial office NLA

PROJECT TEAM

Developer/Project Manager/ Construction
Lend Lease

Architect
FJMT

ESD
Lend Lease, ARUP

Mechanical and Structural
ARUP

Electrical Consultant
Aurecon

Hydraulic Consultant
Warren Smith and Partners

Independent Commissioning Agent
Norman, Disney & Young

green building council australia
6 greenstar
Office Design v2 2010

green building council australia
6 greenstar
Office As Built v3 2012


4

> “Achieving high environmental ratings reduces exposure to commercial risk and asset obsolescence by ensuring assets are ‘future-ready’.”

John Dillon
Fund Manager
APPF Commercial – joint owner of Commonwealth Bank Place

Lend Lease attributes this to the large floor plates of the building, coupled with the building’s occupancy by a single tenant and the interconnecting stairs which have reduced reliance on lifts. “The high-performance façade is also providing a significant benefit in minimising the energy consumption associated with the air conditioning systems,” says Harris.

Water

The implementation of rainwater harvesting and onsite recycling systems at Darling Quarter will result in a 92 per cent reduction in annual potable water consumption – 52 million litres of water annually. This equates to more than 20 Olympic-sized swimming pools each year. Onsite blackwater treatment facilities are designed to treat and recycle 100 per cent of blackwater generated by Commonwealth Bank Place, and treats additional effluent from mains systems through sewer mining.

Designed by Veolia Water Solutions and Technologies, the blackwater system at Darling Quarter uses a dual fixed-film biological treatment process, involving a moving bed biofilm reactor (MBBR) in combination with a membrane bio reactor (MBR).

“As a means of ‘future-proofing’ the development, it was important to increase the levels of water efficiency as much as possible,” says Jean-Christophe Schrotter, Technology & Innovation Manager at Veolia Water Solutions and Technologies. “The water systems at Commonwealth Bank Place improve upon the technological and efficiency achievements realised by any product or system on the market to date and will hedge the Commonwealth Bank of Australia against projected spikes in the price of water in the near future.”

Materials

The close relationship between Lend Lease, APPF Commercial and the Commonwealth Bank of Australia enabled a fully integrated fitout to be delivered in tandem with the base building works. “This allowed for the base building to be adapted prior to construction to satisfy tenant requirements and design aspirations. The integrated approach prevented significant amounts of material wastage that would normally occur in a traditional construction with a separate fitout,” Harris explains.

Harris believes that delivering Green Star-certified assets is becoming easier for developers, as the choice of ‘sustainable’ materials is increasingly synonymous with the selection of ‘quality’ materials. In the case of Darling Quarter, many of the materials required to meet the architectural and aesthetic aspirations of the development were directly aligned with those needed to achieve Green Star ‘Materials’ and ‘IEQ’ credit benchmarks. “An example of this is Darling Quarter’s façade, which was required for design purposes to have a very high visible light transparency (VLT). The high VLT of the façade allowed us to gain Green Star sustainability benefits through daylight availability to building occupants.”

5

GREEN AND 'FUTURE-PROOFED': ISPT'S GREEN STAR PORTFOLIO

Australian property funds management company ISPT has a simple goal – to be the best-performing wholesale property fund manager in Australia and the first choice in property for Australian superannuation funds. In a business that is by nature focused on stable, 'future-proofed' investments, the fact that Green Star-rated buildings consistently outperform their non-rated assets in value and rental return makes Green Star an obvious choice for ISPT in 2013.

But in 2006, when ISPT first began to seek Green Star certification for its commercial property assets, the business case for green building was only just beginning to take shape. For many, sustainability spelled risk, and only the true leaders were certifying at all, much less taking a portfolio approach to Green Star. Green building investment has proved a winning formula for ISPT, however, as evidenced by the 14 Green Star certifications that the Fund has achieved to date across the commercial office and retail sectors, with more in the pipeline for the year ahead.

When asked why ISPT has pursued Green Star certifications with such commitment, ISPT's Chief Executive Officer, Daryl Browning, says that Green Star has become a trusted business tool.

"Australia's property industry is recognised internationally as one of the most sophisticated and transparent markets. Inherent in that status is the integrity of information, benchmarks and our legal system. Those investing in or occupying properties need benchmarks they can rely on. We think Green Star certification is one of the quality assurance measures everyone can rely on with confidence."

ISPT Portfolio Manager Engineering & Sustainability, Rob Sviderskas, agrees. He says that Green Star is the method of measurement which enables ISPT to verify and gain third-party recognition for many of the initiatives that the organisation was already undertaking.

"ISPT's philosophy has always been to make the most from our sites by focusing on passive design and operational efficiency. Green Star codifies many elements that are inherent to our business approach, such as our commitment to operational performance efficiencies, the avoidance of waste and maximisation of indoor environment quality. It makes sense that ISPT should certify our buildings as recognition of our efforts and achievements," he says.

Stable tenants for the landlord of choice

Sviderskas explains that the increasing focus on tenants' requirements and the demand for sustainable Green Star-certified tenancies has encouraged ISPT to expand its portfolio and build long-term relationships with tenants. "ISPT has become a landlord of choice by delivering lower overheads on utilities through our focus on management and energy efficiency. As a result, we have attracted and retained stable tenants from the government and commercial sectors, which has helped us to grow our business."

An examination of some of the Green Star projects within the ISPT portfolio illustrates not only the diverse application of Green Star, but also ISPT's contribution to the mainstreaming of green building investment and sustainable property market development across Australia since 2006.

Green leadership in the west

ISPT's Green Star story begins in Western Australia, with the 4 Star Green Star – Office Design v2-rated 100 St Georges Terrace in Perth. Achieving its certified rating in 2008, 100 St Georges Terrace was only the third building to achieve Green Star certification in Western Australia – a market that is increasingly recognising the value of Green Star ratings. A speculative development designed to incorporate 'Best Practice' sustainability initiatives that were in many cases still exceptional for the Perth market, the 28,923 square metre development was fully leased by practical completion and is now home to high profile corporate tenants including NAB and Microsoft, as well as resources companies Apache Energy and INPEX.

Sviderskas says that each of the building's corporate tenants have entered into green leases, which exemplifies how ISPT is working with tenants to engender triple bottom line sustainability outcomes.

"Many of the tenants at 100 St Georges Terrace operate within the resources industry and are looking to promote an environmentally and socially responsible image – occupying a Green Star-certified building is a good start. Lowering outgoings with respect to operating costs is also important to these tenants. A green lease in a Green Star building is good for brand and bottom line," Sviderskas adds.

The initiatives helping these tenants to lower their outgoings include zoned T5 lighting design, movement sensors, high performance glazing and external sunscreen louvers to the building's façade – the efficacy of these features are confirmed in the building's 5 Star NABERS Energy rating. Water-efficient fixtures including waterless urinals, low-volume toilets and WELS-rated tapware contribute to savings on potable water in addition to cutting utilities costs.

Refurbishing for green business success

In 2012, ISPT achieved a 5 Star Green Star – Office As Built v2 rating to complement its Design and Interiors ratings for 500 Bourke Street in Melbourne. Headquarters to NAB since construction in 1978, the 37-storey, 47,000 square metre building underwent one of Australia's largest integrated base building and tenant fitouts.

The long history and strong partnership between the bank and building owner enabled an integrated and collaborative approach to the refurbishment. The majority of NAB's 3,800 staff were able to occupy the building throughout the refurbishment – with building management simply moving staff to the redeveloped floors as they were completed.

Daryl Browning has said ISPT is committed to environmental sustainability with a corporate policy aimed at achieving a minimum 5 Star Green Star rating on all office refurbishments, and that the NAB building was an "example of sustainability in a significant building where the tenant also appreciates and endorses the goal. ISPT and NAB's collaborative effort to complete an integrated solution on this scale demonstrates the strong relationship between the two parties."

Sustainable features of the 500 Bourke Street refurbishment include upgrades to the building management system for increased efficiency and flexibility, rezoned lighting and the installation of an energy-efficient lighting control system, upgrades to the building's existing air conditioning system (including a new plant and the replacement of valves, filters and controls), installation of water-efficient fittings, rainwater harvesting for use in irrigation and toilet flushing, and upgraded lockers, showers and bike storage facilities.

Green light for sustainable shops

Another lighthouse property is ISPT's Wintergarden retail redevelopment project, which represents a sustainable diversification of the company's asset portfolio. Achieving 5 Star Green Star – Retail Centre Design v1 certification in July 2012 and currently targeting a complementary As Built rating, the Centre has revitalised the Queen Street Mall precinct in Brisbane and delivered a sustainable shopping centre development that generates fewer emissions, is energy- and water-efficient and offers better indoor environment quality (IEQ) for retail tenants and shoppers alike.

"Green Star certification is emerging as a priority among retail asset owners and tenants. As with ISPT's commercial portfolio, we were keen to lead by example in demonstrating the environmental and economic benefits that can be achieved through sustainable design in the retail sphere. While some retail tenants are aware of and seek Green Star facilities, this is still very much an untapped market. Our goal is to educate the retail tenancy market by 'walking the talk' with developments like Wintergarden," explains Sviderskas.

Sviderskas points out that Green Star-designed and certified facilities are beneficial to centre owners, as they reduce landlord exposure to rising operational costs. The approach of ISPT in refurbishing Wintergarden rather than building new has also paid dividends. "Our portfolio includes many existing buildings and, wherever possible, we try to utilise existing systems and to refurbish existing structures. A high level of performance can often be achieved without the need for huge capital investment in building new – it's all about putting what's there to the best possible use," says Sviderskas. This has proved the case for Wintergarden, where 60 per cent of the existing structure was reused for the new development. ISPT estimate that this reuse alone has saved the equivalent of ten years of operational use in embodied greenhouse gas emissions. Now that's true sustainability!

Left: **500 Bourke Street**
5 Star Green Star – Office Design v2
5 Star Green Star – Office As Built v2
5 Star Green Star – Office Interiors v1.1

Right-top: **100 St George Terrace**
4 Star Green Star – Office Design v2

Right-bottom: **Wintergarden**
5 Star Green Star – Retail Centre Design v1

6

LEND LEASE: GREENING THE RESIDENTIAL SECTOR ONE APARTMENT AT A TIME

Convesso
4 Star Green Star –
Multi Unit Residential v1

In many ways, the residential sector is the final frontier of built environment sustainability. The Australian Department of Climate Change and Energy Efficiency estimates that energy consumption within Australia's residential sector will have increased 56 per cent on 1990 levels by 2020, and the Australian Bureau of Statistics reports that households are among the highest consumers of water annually, second only to the agricultural sector.

These figures, and the ever-escalating price of utilities, council rates and owners' corporation fees, mean that the residential construction sector is a prime candidate for a sustainability overhaul. And yet, while the green credentials of a commercial office building can make or break tenancy or commercial asset investment negotiations, sustainability rarely factors into the discussion when it comes to residential investment by individual home buyers.

Despite the challenges that the multi unit residential market poses to sustainable developers, Lend Lease has taken a leading stance by putting sustainability on its residential radar since 2009. Lend Lease's Green Star projects include the Convesso and Serrata developments at Melbourne's Victoria Harbour, and the Antias development at Sydney's Jacksons Landing, which have all achieved 4 Star Green Star – Multi Unit Residential ratings, as well as the recently-completed Forté in Victoria Harbour, which is registered for Green Star. Through these projects, Lend Lease has struck the ideal balance between location, style, comfort, cost and sustainability; delivering Green Star-rated homes that are desirable, affordable and sustainable.

The price is right

Lend Lease reports that the experience and knowledge shared between Convesso, Serrata and Antias are helping to generate cost-efficiencies in the delivery of other sustainable residential developments.

"Lend Lease is increasingly seeing the cost of Green Star ratings for residential developments coming down. We are working closely with industry and project partners to further reduce costs by working collaboratively to address sustainability issues from the commencement of each project," says Ben Coughlan, Lend Lease's Victorian State Manager, Apartments.

Convesso, which was certified under the Green Star – Multi Unit Residential Design PILOT rating tool in 2009, achieved its 4 Star Green Star rating at a mere two per cent 'green premium', and has provided a cost-effective model of delivery that Lend Lease is applying to subsequent developments.

While we have only anecdotal evidence of green-rated residential buildings achieving higher returns on investment in Australia, recent international research by Nils Kok and Matthew Kahn has found that US homes with a green certification achieve a nine per cent 'green premium' at sale time. The researchers undertook a pricing analysis of all 1.6 million single-family home sales in

California from 2007-2012, controlling for all other variables that typically influence selling price, such as location, size, age and amenities. They found that the average sale price of a non-certified California home is $400,000, with green certification raising the price by more than $34,800.

"Due to the nature of the multi unit residential market, one of our biggest focuses for apartment developments is the delivery of positive environmental outcomes which also reduce owners' corporation fees," says Ben Coughlan.

"Of course, reductions in fees are highly dependent on how residents use their dwellings, so we've installed comprehensive energy and water metering and monitoring systems into our new apartments to empower residents to more actively understand and manage their consumption," Coughlan says.

Passive design plays a large role in keeping costs down, Coughlan goes on to explain. "We are seeing an evolution of sustainability within the residential sector and are honing our ability to achieve Green Star 'Indoor Environment Quality' and 'Energy' credits through an innovative yet simple passive design approach."

This approach includes the installation of high-performance façade glazing and insulation for apartment walls and ceilings, which have negated the need for mechanical air conditioning to individual apartments. Optimal building orientation and operable windows maximise natural light and cross-ventilation while keeping apartments at a comfortable temperature in both summer and winter.

New technology cuts usage and cost

Lend Lease has implemented new-age technology to help the residents of Convesso, Serrata and Antias significantly reduce the amounts of energy and water they use. "All apartments feature smart meters linked to in-home displays which enable residents to view their real time and historic energy and water data," says Coughlan.

The Fujitsu Switch Automation system, designed especially for Lend Lease and first implemented at Convesso, is the first cloud-based energy monitoring and home automation solution in the market. The system continuously monitors energy and hot and cold water usage and was designed to comply with the Green Star energy monitoring requirements. The system has been rolled out at Antias and Forté. Similar types of systems are also being rolled out at other apartment buildings.

"We're commencing post-occupancy studies which will assist with quantifying these benefits but feedback to date has been very positive with both the in-home display systems and the TV at the lobby entry being positively received and numerous residents attending information sessions on the sustainability and technology within the building," says Coughlan.

At the Green Star-registered Forté, Lend Lease anticipates that energy reduction strategies will decrease bills by around $300 a year. The 10-storey Forté, Australia's first timber high-rise building, was constructed from prefabricated wooden panels made from cross-laminated timber (CLT), a material discussed in depth at Green Cities 2011 in Melbourne. This innovation reduces the amount of energy-intensive materials required for construction, as the multiple timber layers are glued and then pressed giving them structural strength which research suggests is akin to concrete or steel, and enabling the building to bear the load of the 10 storeys. The use of timber also provides long-term capture of carbon so that Forté effectively becomes a 'carbon sink'. Forté will reduce CO_2 equivalent emissions by more than 1,400 tonnes when compared to concrete and steel – the equivalent of removing 345 cars from our roads.

Green homes for sustainable communities

Lend Lease's residential developments are not only delivering greener homes, they are also contributing to the development of sustainable urban communities and lifestyles. Located in Melbourne's Victoria Harbour precinct, the Convesso and Serrata developments form part of one the largest sustainable urban renewal projects in Australia, and are helping to integrate higher density living into the urban landscape and psyche of Melbourne.

In Sydney, Lend Lease intends to create Australia's first large-scale carbon neutral community at the Barangaroo South regeneration project on Sydney Harbour. The project is focused around the use of centralised precinct services to support energy efficiency, water recycling and a reduction in waste to landfill. Lend Lease's vision features a centralised cooling system, including harbour water cooling to eliminate the use of water-intensive cooling towers, a central blackwater treatment plant and onsite renewable energy. Commercial towers are being designed to achieve 6 Star Green Star Design and As Built ratings, and residential developments to achieve 5 Star Green Star ratings.

Barangaroo South, along with Victoria Harbour and numerous other Lend Lease projects, is registering to participate in the Green Star – Communities PILOT process.

"Lend Lease recognises that sustainability goes beyond individual buildings. A combination of environmental, social and economic initiatives are enabling us to deliver sustainability across entire precincts and communities," Coughlan concludes.

7

MCDONALD'S KILSYTH SOUTH RESTAURANT

THE PROJECT AT A GLANCE

4 Star Green Star – Custom Design rating, representing 'Best Practice' in environmentally sustainable design

First Green Star-certified restaurant in Australia

First Green Star – Custom-certified project in the country.

As a 60-year-old organisation with more than 33,000 restaurants in 118 countries, there is no doubt that McDonald's is a sovereign in the world of quick service food. In 2012, McDonald's also became a leader in the world of built environment sustainability.

Working with the Green Building Council of Australia's (GBCA's) Green Star – Custom rating tool development team, McDonald's Australia has broken new ground for the hospitality industry by becoming the first food industry provider to develop a Green Star – Custom rating tool to assess and certify its outlets. McDonald's Australia also became the first quick service food company in the nation to achieve a Green Star rating for a restaurant, when McDonald's Kilsyth South was awarded 4 Star Green Star – Custom Design certification in June 2012.

"McDonald's has embarked upon a journey towards environmental sustainability. Partnering with the Green Building Council of Australia has allowed us to take this to the next level and become the first quick service restaurant to develop and build a certified Green Star building," explains David Bridger, Director of National Design & Construction at McDonald's Australia.

"The Custom rating tool development initiative, and the Green Star ratings to follow, will allow McDonald's Australia to continue to demonstrate an ongoing commitment to the environment and maintain our position as an industry leader in all facets of our business."

McDonald's has worked hard to improve the energy and water efficiency of its restaurants in recent years, with onsite rainwater tanks becoming a standard restaurant specification in 2010 and the implementation of energy-efficient cooking grills significantly reducing energy usage across the chain. The development of the McDonald's Green Star – Custom rating tool has provided an avenue for the verification of these green initiatives, in addition to offering a bespoke framework for the measurement of sustainable improvement.

"For McDonald's, it was important to create a tool system that recognised the

unique requirements of its quick service restaurants. A number of new credits were specially created to account for these unique features, such as an emphasis on the indoor environmental quality of the drive-through counter/kitchen areas and reducing car idling periods in drive-through lanes," explains Lawrence Yu of JHA Consulting Engineers, the lead ESD consultant for the Kilsyth South restaurant project.

McDonald's Australia has embraced the opportunities that the Green Star rating tool development process has provided to evaluate the design and construction of its restaurants in an holistic manner.

"The process we went through to develop our Green Star – Custom rating tool gave us the opportunity to look at what we currently do as a company, and consider what aspects of our restaurants we can make more efficient. The new rating tool and process gave us the ability to peel back the layers of our Kilsyth South building and develop a fresh approach to analysing every aspect of our buildings as a total package. Through this process we were able to meet our goal easily and achieve 4 Star Green Star certification," says Bridger.

McDonald's reports that it has received positive feedback from the staff and licencee of McDonald's Kilsyth South since the restaurant was completed, and that the lessons learnt at this restaurant are informing the ongoing restaurant development and operational approach.

"Our restaurants are a key part of what we do, so it is important that we invest in tools and processes that make these as sustainable as possible. The Green Star – Custom rating tool development initiative and Green Star ratings will allow McDonald's Australia to demonstrate our ongoing commitment to the environment, and maintain our position as an industry leader in all facets of our business," concludes Bridger.

> "The Custom rating tool development initiative, will allow McDonald's Australia to continue to demonstrate an ongoing commitment to the environment and maintain our position as an industry leader."
>
> **David Bridger**
> Director of National Design & Construction
> McDonald's Australia

WHAT MCDONALD'S KILSYTH SOUTH ACHIEVED:

Energy

Energy efficiency was a key area of focus for the development of the McDonald's Green Star – Custom rating tool, with the restaurant incorporating a number of features to maximise the efficiency of equipment and reduce peak demand.

"Through the Green Star – Custom process, a complete revamp of the 'Energy' section of the rating tool was undertaken, which led JHA, in consultation with the Green Star development team, to create a unique checklist for energy-saving initiatives. The checklist encourages continual improvement, and is forward-looking in that it includes credits which recognise the energy efficiency measures currently being developed by McDonald's, while also setting some aspirational targets for the company's restaurants," explains Yu.

"In addition to the typical energy efficiency items recognised by Green Star tools, this bespoke energy checklist also gave recognition to some of McDonald's in-house energy efficiency measures that were demonstrated to exceed current industry benchmarks." ▶

PROJECT DETAILS

Owner
McDonald's Australia

Location
108 Canterbury Road,
Kilsyth South, Victoria

Size
488 square metres GFA

PROJECT TEAM

Architect
Richmond & Ross / Timmins and Whyte

Building Service Engineer
JHA Consulting Engineers

green building council australia
4 greenstar
Custom Design PILOT 2012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The Green Building Council of Australia's Director of Green Star Development, Jorge Chapa, says that the checklist was a 'first' for Green Star. "This was the first time we developed deemed-to-satisfy requirements for the 'Energy' category. All energy modelling was undertaken upfront, and the project team was provided with a checklist of options that would be awarded points. The learnings from this project are being used to inform the Green Star Revolution project to make Green Star easier to use for everyone," Chapa says.

In line with the checklist, the commercial kitchen equipment and air conditioning systems installed at the Kilsyth South store were all specified for their capacity to reduce peak energy demand below a base case standard-practice restaurant. Photovoltaic panels were also installed on the restaurant's roof to supplement the main energy supply. Together, these measures will reduce monthly peak energy demand by up to 24 per cent. Over the course of the year, this reduction equates to a saving of more than 370 kilograms of CO_2 emissions – a huge saving for a small building.

Water

The installation of water-efficient WELS-rated tapware and fixtures within the kitchen areas and bathrooms of McDonald's Kilsyth South is significantly reducing the amount of potable water consumed by the building. Water modelling calculations completed by the project team indicate that up to 48 per cent of the estimated water requirements for the store will be satisfied by rainwater that is collected and stored onsite. This non-potable supply is used for landscape irrigation and toilet-flushing. Overall, water-efficient design initiatives have the capacity to reduce the restaurant's potable water consumption by up to 595 kilolitres per year – that's 66 per cent less than a comparable standard practice building.

IEQ

McDonald's was determined that its commitment to sustainability should not come at the cost of its employees' health and comfort. "As a responsible employer, the quality of the physical environment that we provide for our people is extremely important to McDonald's and it was essential to us that the environmental improvements made would not be detrimental to our staff or customers," says Bridger. With this in mind, a key objective identified through the Green Star – Custom process was the improvement of thermal comfort conditions for staff working within the restaurant's kitchen areas.

Regulating temperatures within the commercial kitchen setting represented a significant challenge, with air temperatures soaring in periods of high activity due to hot grills and fryers, particularly in the summer months.

"Addressing thermal comfort was really challenging as the load within kitchen areas is highly variable and, more importantly, whatever we did could not impact McDonald's cooking processes in any way," explains Yu. "As increasing the amount of cooling within these areas would significantly increase energy consumption, and would be difficult to control and regulate, we decided to explore the idea of using increased air movement to improve occupant comfort."

The innovative kitchen ventilation boost system that was developed and installed strikes the right balance between comfort, sustainability and cost, using jet nozzles to direct air into hot areas, providing cooling to staff without affecting the cooking process.

"We are proud that the significant environmental achievements, such as the considerable reductions to energy consumption through material and equipment selection, have gone hand-in-hand with innovative design and improving the indoor environment for our employees and customers," says Bridger. "Our Green Star achievements will help McDonald's stay at the forefront of sustainability in our market and to raise industry standards."

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METCASH DISTRIBUTION CENTRE

THE PROJECT AT A GLANCE

4 Star Green Star – Industrial Design v1 and 4 Star Green Star – Industrial As Built v1 ratings representing 'Best Practice' in environmentally sustainable industrial facility design and construction

Designed and constructed to deliver a 30% reduction in energy consumption and a 34% reduction in greenhouse gas emissions in comparison to a standard practice facility.

While many still consider the terms 'industrial' and 'sustainability' to be mutually exclusive, Goodman has challenged this long-held notion on a grand scale at its recent development for Metcash in Eastern Creek, Western Sydney. Incorporating over 82,000 square metres of ambient and temperature-controlled warehouse storage areas and 5,500 square metres of A-grade corporate office space, the Metcash Distribution Centre sets a new 'best practice' standard for green industrial facilities in Australia.

Metcash has consolidated its operational activities from five separate locations down to one highly-sustainable facility, generating enormous efficiencies for the business and significantly reducing operating costs. In fact, it's estimated that the consolidation process, in combination with a prime site location, will reduce logistics costs by up to 20 per cent. The Distribution Centre's energy efficiency initiatives alone have the capacity to generate ongoing operational cost savings of 30 per cent, when compared to a standard warehouse facility.

From the outset, Goodman and Metcash agreed to target Green Star Design and As Built certifications for the Centre, and the development was awarded its 4 Star Green Star – Industrial Design v1 rating in June 2012, followed by its 4 Star Green Star – Industrial As Built v1 certification in October 2012. The facility is the first distribution centre

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to achieve an As Built rating under the Green Star – Industrial rating tool.

According to James Vesper, Goodman's Head of Sustainability, Green Star certification has provided an industry-accepted sustainability benchmark for Goodman's Australian development team to work toward, and enabled them to gain independent verification of environmentally sustainable design and construction initiatives across Goodman's developments.

"Green Star assisted Goodman and Metcash to develop an early vision for the project, based on the performance requirements that Metcash was targeting. It provided an excellent framework to work with and shaped a performance scope for builders Hansen Yuncken and ESD consultants Cundall," he explains.

Vesper sees the success of the Metcash facility as representative of a shift in thinking on the value proposition of sustainability and certification within the industrial sector. "Sustainability was a key consideration across all aspects of the Metcash development. The delivered outcome is commercially competitive and aims to provide Metcash with a competitive edge."

WHAT THE METCASH DISTRIBUTION CENTRE ACHIEVED:

Energy

Brendon Quinn, General Manager of NSW Industrial Development at Goodman, managed the Metcash development project and says that reducing energy consumption was a primary focus. "Our main aim was to reduce operational costs for Metcash and to reduce greenhouse gas emissions, so our greatest design focus was on energy, particularly reducing energy consumption for HVAC systems, refrigeration systems and artificial lighting," he explains.

"In terms of design initiatives, the project included critical performance basics such as maximising natural light and the installation of high-performance insulation. The lighting systems are energy-efficient, incorporating T5 fluorescents across the ambient temperature areas and awnings, with lighting controls and daylight harvesting sensors," Quinn adds. LED lighting has been installed in the temperature-controlled areas, and skylights help to reduce the warehouse's overall reliance on artificial lighting. Combined, the energy saving initiatives that have been implemented at the Centre are reducing energy consumption by around 30 per cent. ▶

PROJECT DETAILS

Owner
Goodman

Location
Bungarribee Industrial Estate,
71 Huntingwood Drive,
Eastern Creek, New South Wales

Size
82,854 square metres GFA

PROJECT TEAM

Client
Metcash

Developer
Goodman

Architect
Giles Tribe Architects

Project Manager/ Building Contractor
Hansen Yuncken

ESD Consultants
Cundall

green building council australia
4 greenstar
Industrial Design v1 2012

green building council australia
4 greenstar
Industrial As Built v1 2012


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Emissions calculations completed by the project team indicate that the lighting design alone will save over 2.8 million kilograms of CO_2 each year and generate 61 per cent less emissions than a comparable standard practice facility. Goodman forecasts that the investment in sustainable lighting design will have been repaid many years before Metcash's initial lease term of 15 years is up, with the additional investment of approximately $250,000 on T5 fluorescents across the main warehouse to be repaid within three years when compared to traditional metal halide fittings.

Water

The Metcash project team has capitalised on the expansive roof areas typical of large industrial facilities in order to boost the water efficiency of the Distribution Centre. Up to 300,000 litres of rainwater per year is captured by the warehouse's roof before being diverted for tank storage. This ample non-potable supply is used for landscape irrigation, toilet-flushing, cooling towers and truck washing needs across the development, contributing to reduced operational costs for Metcash.

IEQ

Despite the industrial setting, the Centre's design incorporates many initiatives aimed at improving indoor environment quality (IEQ) and the workplace enjoyment of staff. The design achieved all available Green Star points for 'Daylight', 'Volatile Organic Compounds (VOCs)', 'Formaldehyde Minimisation', 'Daylight Glare Control' and 'Air Distribution System' credits, which has ensured that the Distribution Centre is a healthy and comfortable place to work. "Increased natural daylight within the office and warehouse, improved air circulation to create comfort conditions, and a focus on providing breakout spaces and amenity within the specific work zones were all priorities," explains Quinn.

Materials

The Metcash Distribution Centre project was awarded a Green Star 'Innovation' point for the jointless steel fibre reinforced concrete used for the warehouse floor slab. The mix incorporates 35 kilograms per cubic metre of Propex Novocon FE1050 steel fibres, negating the need for traditional reinforcing bars. The specification of this concrete mix over that usually used for warehouse developments generates a significant environmental benefit due to dematerialisation and improved durability.

The use of the steel fibre mix has saved around 2,960 cubic metres (16 per cent) of slab concrete and reduced the amount of steel used by 40 per cent, or 260 tonnes. An environmental footprint analysis, conducted by ESD consultant Cundall, indicates that these material input reductions equate to a 10 per cent reduction in CO_2 emissions per square metre. Sustainability Manager Simone Concha from Hansen Yuncken adds that the mix also required less formwork when it was poured and will continue to save money and materials over the long-term through the increased durability it provides. "Conventional concrete floors have a multitude of shrinkage and movement joints that can be susceptible to wear and tear and degradation over time," she says. "The use of this new concrete will improve the long-term operational efficiency of the Metcash facility."

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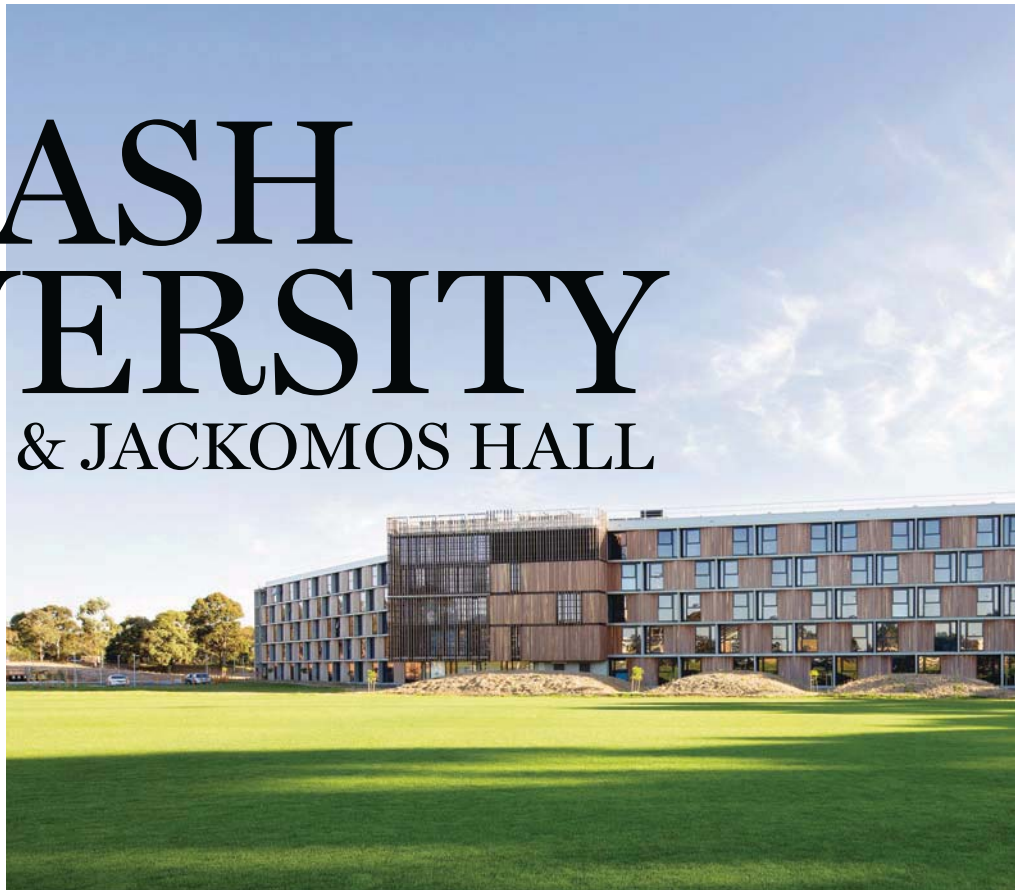
MONASH UNIVERSITY

BRIGGS HALL & JACKOMOS HALL



THE PROJECT AT A GLANCE

5 Star Green Star – Multi Unit Residential Design v1 and 5 Star Green Star – Multi Unit Residential As Built v1 ratings representing 'Australian Excellence' in environmentally sustainable residential design and construction

The first project to achieve 5 Star Green Star – Multi Unit Residential As Built v1 certification in Australia

The first university in Australia to deliver sustainable low-cost housing to students under Round 2 of the National Rental and Affordability Scheme (NRAS)

The largest residential photovoltaic installation in Australia, capable of supplying 35% of annual electricity demand.

Victoria's Monash University has emerged as a leading sustainable education provider in 2012. In addition to championing the environmental cause through student education and research, Monash has embarked upon a diverse program of works that puts green research into practice and is delivering sustainable places for students to live and learn.

An ongoing commitment to achieving Green Star Design and As Built certifications for all new campus infrastructure developments has provided a framework for Monash to deliver a range of benefits. Green Star is not only helping the university to provide greener learning spaces through projects such as the 5 Star Green Star – Education Design v1 certified Monash Peninsula Activity & Recreation Centre, it has also provided a blueprint for the delivery of environmentally and economically sustainable on-campus accommodation for students.

According to Brett Walters, Monash University's Environmental Sustainability Manager, the university's "broad and deep commitment to sustainability" began with the 2005 Monash University Guide to Sustainable Development, known as the 'EcoAccord'.

"The EcoAccord informed project teams on best practice but in itself did not guarantee an holistic sustainable outcome. We chose to pursue Green Star As Built ratings in 2009 as a mechanism to drive the delivery of sustainable new buildings, with an aspiration set that developments undergoing certification would deliver a 5 Star Green Star As Built outcome."

"As an independently assessed, national, industry-accepted process, Green Star As Built certification has allowed Monash University to be confident that its sustainability aspirations can be delivered and verified. All construction industry participants understand Green Star and this aids the delivery of sustainable outcomes. Monash remains confident that the continued use of the Green Star suite of tools will improve the performance and reduce the environmental impacts of its buildings," says Walters.

In addition to ensuring better environmental outcomes, the university's commitment to Green Star certification for its construction program is also paying reputational dividends. The university's new student accommodation project has been recognised with several awards, including the Victorian Architecture Award for Multiple Housing 2012, and a Royal Institute of British Architects 2012 International Award. The university expects that the provision of

affordable and sustainable housing will also help to attract top students. "There is no doubt that both building performance and the university's reputation will continue to be enhanced by our commitment to Green Star," says Walters.

Green living for green learning

The 5 Star Green Star – Multi Unit Residential Design and As Built v1 certified Briggs Hall and Jackomos Hall is certainly a development of firsts. The project is the first residential development in Australia to achieve a 5 Star Green Star – Multi Unit Residential As Built v1 rating. And, through the project, Monash has become the first university in Australia to deliver low-cost student housing under the National Rental Affordability Scheme (NRAS).

"Offering fully self-contained environmentally sustainable accommodation for up to 600 students across two five-storey apartment buildings, Briggs Hall and Jackomos Hall showcase the application of modern sustainable design principles on a significant scale, and in a relatively low-cost design and build project, delivered ahead of schedule and budget. We are proud to set a new standard for sustainable student housing in Australia," concludes Walters.

WHAT THE BRIGGS HALL AND JACKOMOS HALL PROJECT ACHIEVED:

IEQ

Despite budgetary constraints, achieving the best possible indoor environment quality (IEQ) was a top priority for the project team. The two halls achieved all available Green Star points for dwelling ventilation, without the need to install any mechanical air conditioning systems, and the buildings' high-performance external façades were custom-designed to maximise external air provision and manage heat load. "Incorporating innovative solutions, such as trickle ventilators to increase the provision of outside air to the dwellings, was an important factor in achieving a synergy between a Green Star rating and affordable housing," explains the Project's ESD Consultant, Emmanuelle Delomenede from Norman, Disney & Young.

Double-glazing, window shading, high-performance insulation and ceiling fans were all installed to maximise thermal comfort for the student residents. These features reduce greenhouse gas emissions and minimise heat gain in the warmer months, while energy-efficient gas-fired central boilers have been installed to provide heating to the apartments via hydronic radiator panels in the winter.

"Heating and cooling typically accounts for 40 per cent of the overall energy consumption within residential buildings. The integrated package of measures at Briggs Hall and Jackomos Hall delivers high levels of occupancy control and comfort while at the same time delivering high-efficiency heating and cooling with very low levels of CO_2 emissions," says Delomenede.

Student resident, Jesse Cardy, loves the space and access to natural light that his new apartment provides. "The best thing about the room is just how open it is – the window is full-length and bright – and you get that nice sun coming in in the morning," he says.

Photography by John Gollings

PROJECT DETAILS

Owner
Monash University

Location
Monash University Clayton Campus, Clayton, Victoria

Size
20,200 square metres GFA

PROJECT TEAM

Architect
BVN Architecture

ESD Consultant
Norman Disney & Young

Structural/Civil Engineer
Bonacci Group

Construction Consultants
Broad APM

green building council australia
5 greenstar
Multi Unit Residential
Design v1 2011

green building council australia
5 greenstar
Multi Unit Residential
As Built v1 2012

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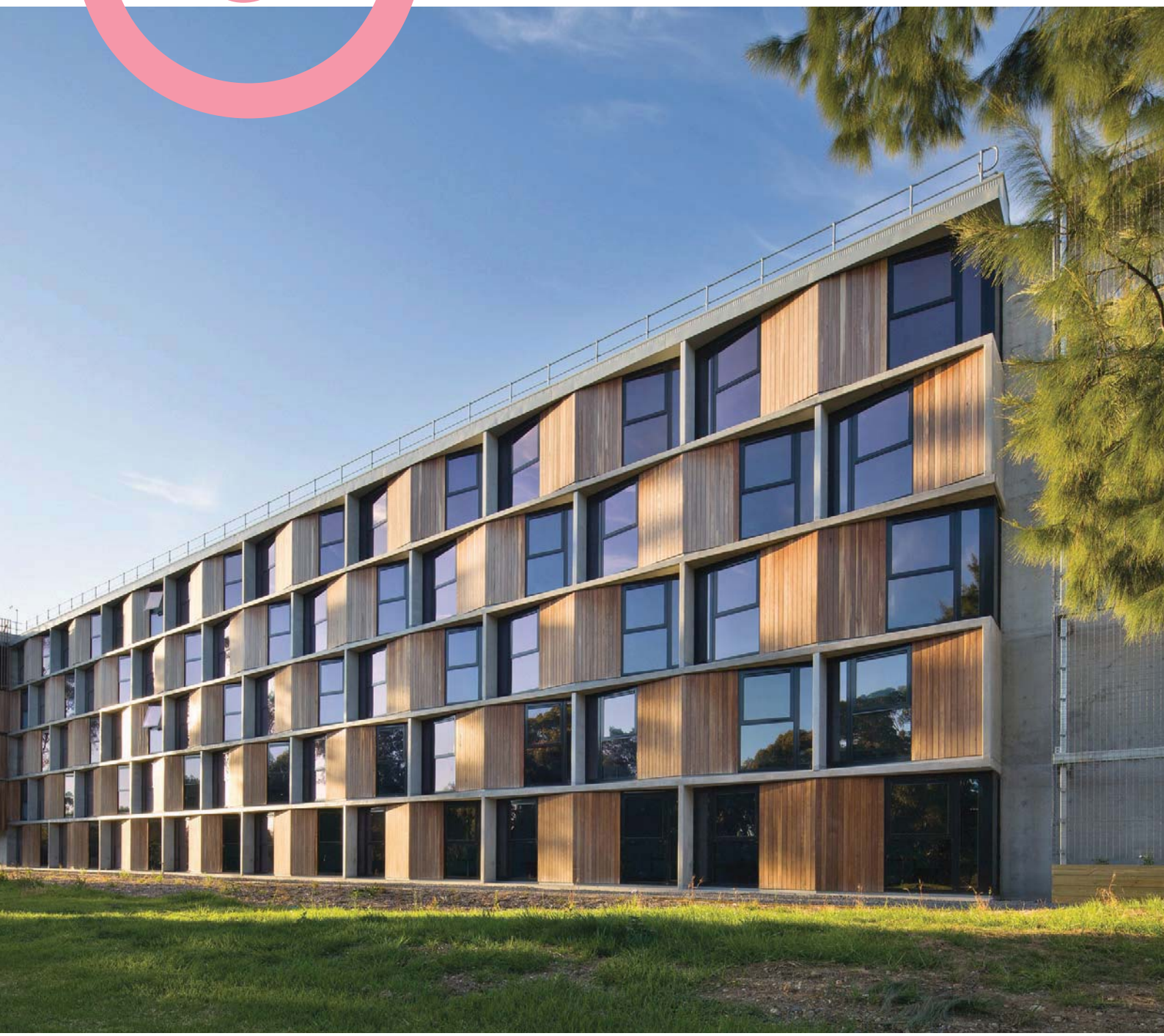


> “There is no doubt that both building performance and the university’s reputation will continue to be enhanced by our commitment to Green Star.”

Brett Walters
Environmental Sustainability Manager
Monash University

Water

The solar pre-heat systems installed on the roofs of the two apartment buildings are capable of reducing the annual demand for hot water by five per cent, while 5 Star WELS-rated taps and 3 Star WELS-rated showers have been installed to reduce potable water consumption. Furthermore, 100 per cent of the buildings’ non-potable water demand, including laundries, toilet-flushing and landscape irrigation, is met through a combination of rainwater harvesting, fire test water reuse and greywater recycling, significantly reducing the development’s impact.

The project was also awarded a Green Star ‘Innovation’ point for exceeding the benchmarks of the Emi-5 ‘Watercourse Pollution’ credit. Delomenede explains that prior to the Halls’ construction, external stormwater from surrounding areas received little treatment before being discharged to the small lake located at the rear of the development. An holistic approach to water management has facilitated a significant reduction to peak stormwater flows and improvements to the quality of water discharged to the waterways surrounding the site.

Energy

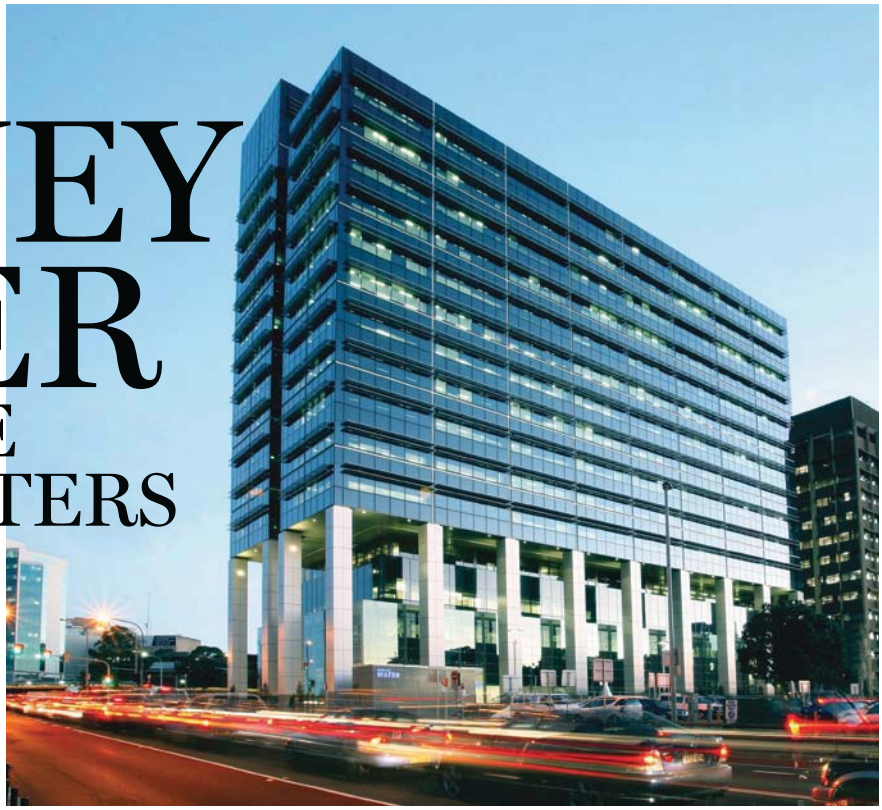
The Briggs Hall and Jackomos Hall project team combined energy-reduction strategies and efficient appliances with sustainable onsite energy-generation to deliver better energy consumption outcomes across the development. The rooftops of the Halls are home to a 153KW monocrystalline photovoltaic (PV) array – the largest residential solar installation in Australia – which is capable of supplying up to 35 per cent of the buildings’ annual electricity demand.

Delomenede says that all appliances were selected with the highest energy star ratings in mind and the buildings’ design includes smart controls such as shutdown switches to each apartment and lighting sensors in the common areas to minimise energy use when these spaces are unoccupied.

“Overall, the Halls consume around 45 per cent less energy than a standard multi unit residential building. The energy generation through the renewable systems and overall reduction in energy consumption not only reduces the buildings’ overall carbon footprint but is passed on to the students as a direct benefit in the form of reduced operating costs,” Delomenede concludes.

10

SYDNEY WATER CORPORATE HEADQUARTERS



THE PROJECT AT A GLANCE

5 Star Green Star – Office Design v2, 5 Star Green Star – Office As Built v2 and 5 Star Green Star – Office Interiors v1.1 ratings representing 'Australian Excellence' in environmentally sustainable design, construction and interiors

All available points achieved for the 'Water' category within the Green Star – Office As Built submission.

10

Sydney Water is in the business of sustainable water management. With responsibility for the provision of water to Sydney and surrounding areas, Sydney Water has three core objectives: to safeguard public health, protect the environment and thrive in a competitive business environment. Green Star is helping Sydney Water to achieve these objectives at its 5 Star Green Star-certified headquarters in Parramatta.

Australia has the world's fourth highest per capita consumption of water, despite our water scarcity, says the Organisation for Economic Cooperation and Development (OECD). With this in mind, the project team made an early commitment to achieve the highest possible levels of water efficiency in the new building.

In line with Sydney Water's 'Water 4 Life' sustainability objectives, which include a target of 12 per cent recycled water usage for the Greater Sydney area by 2015, Sydney Water committed to setting a best practice example of recycled water use and the minimisation of potable water reliance.

"Given the nature of Sydney Water's business, water consumption was a key area to be targeted through the Green Star process. Our imperative was to score maximum points within the 'Water' category, which we ultimately achieved in our As Built submission," explains Sydney Water Facilities Management & Maintenance Manager, Craig Heitmann. "Our Green Star office is helping us to 'walk the talk' on water efficiency, and lead by sustainable example."

As a publicly funded, government-owned corporation, Sydney Water is committed to fiscal responsibility for all infrastructure investment, operations and service delivery. In line with this commitment, sustainable initiatives and the achievement of 5 Star Green Star certifications for the new office project were achieved at a minimal cost premium. "The green initiatives we introduced to achieve our Green Star ratings had a relatively minor impact on capital costs for the building – in the order of three per cent," Heitmann says.

The achievement of the ratings will provide significant ongoing benefits to Sydney Water and to the wider community, both through the operational cost savings and through the education Sydney Water staff gained throughout the process, Heitmann adds.

"Implementing the Green Star initiatives focused Sydney Water staff not only on the benefits that sustainability initiatives could deliver for our building, but also how their daily activities impact the environment – at work and in general."

“Prioritise the training of your staff and contractors in environmentally sustainable design. This will ensure that your target initiatives are implemented effectively and as designed.”

Jamie Loader
National Operations and Sustainability Manager
Brookfield

WHAT SYDNEY WATER CORPORATE HEADQUARTERS ACHIEVED:

Water

As a champion of the water-wise movement, Sydney Water's Parramatta Headquarters are designed to be a leader in water efficiency, in line with the organisation's core aim to protect the environment. Sydney Water has achieved a 5 Star NABERS Water rating for the tenancy and reports that, through careful consideration of water efficiency across all uses, the building consumes up to 60 per cent less potable water than a comparable standard-practice building.

Contributing to these savings is the onsite blackwater treatment system, which recycles the building's waste water, as well as rainwater from the onsite collection and storage system, and return water from the building's cooling towers. The system can produce up to 41,000 litres of recycled water per day to supply a range of non-potable uses including cooling towers, toilet-flushing and landscape irrigation. That equates to nearly six Olympic-sized swimming pools of water each year. Water consumption is further reduced by the water-efficient fixtures that have been implemented throughout the building, including 6 Star WELS-rated urinals and 4 Star WELS-rated toilets and taps.

Transport

The central location of Sydney Water's Headquarters in the heart of Parramatta provides easy access for staff to the many public transport options available locally. The parking provided for the building is 50 per cent below the maximum allowance, and the Parramatta train station is less than a block away, meaning the project gained full points under the Green Star 'Provision of Car Parking' and 'Commuting Mass Transport' credits.

"The site was primarily chosen for its close proximity to the local bus stops and train station," explains Jamie Loader, National Operations and Sustainability Manager from Brookfield, the owner of Sydney Water HQ. "Great 'end-of-trip' facilities such as bike storage, lockers and showers are also increasing the number of Sydney Water workers who commute to work by bike, helping to reduce traffic congestion and carbon emissions within the local community. These initiatives contributed to the achievement of such high scores in the Green Star 'Transport' category," he says. ▶

PROJECT DETAILS

Owner
Brookfield Asset Management

Location
1 Smith Street, Parramatta, New South Wales

Size
23,335 square metres NLA

PROJECT TEAM

Developer
Brookfield Multiplex

Tenant
Sydney Water

Base Building Architect
Denton Corker Marshall

Interior Design and Landscape Architecture
Woods Bagot

ESD/Services Consultants
WSP

Environment Management
EcCell Environmental Management

Structural Engineer
Robert Bird

Lighting Design
Vision Design

Acoustic Consultants
Acoustic Logic Consultancy

green building council australia
5 greenstar
Office Design v2 2009

green building council australia
5 greenstar
Office As Built v2 2010

green building council australia
5 greenstar
Office Interiors v1.1 2011


10

Management

The Sydney Water project also scored highly in the 'Management' category, achieving all available points for management across the Design and As Built submissions. "We were able to achieve full points through an integrated and comprehensive approach to management, including the engagement of Green Star Accredited Professionals through the delivery process, focused commissioning, the training of facilities and operations teams, and the high level of recycling and reuse of materials achieved during the construction phase," says Loader.

Loader and Heitmann both attest to the benefits of a comprehensive commissioning process and the collaboration between the design and construction team at Brookfield Multiplex and the building management team at Sydney Water. "Armed with this shared knowledge, our building management team can ensure that any changes made to management strategies or schedules are aligned with the original design intent," explains Heitmann.

The great results achieved at Sydney Water prompt Loader to offer the following advice to other organisations undertaking Green Star projects: "Prioritise the training of your staff and contractors in environmentally sustainable design. This will ensure that your target initiatives are implemented effectively and as designed."

IEQ

Providing a comfortable and healthy office environment for Sydney Water employees was also supported by Green Star initiatives. "The brief was to provide A-grade office space for up to 1,500 Sydney Water staff, while being flexible in the approach to workplace design and providing excellent staff amenities," says Loader. Superior thermal comfort has been achieved through the implementation of chilled beam technology, and outside air rates are 100 per cent above Australian Standard requirements. More than half of the office's workstations have direct line of sight to the exterior of the building, and flat panel LCD computer monitors with anti-glare screens have been specified to improve the experience of Sydney Water workers.

These changes have paid dividends, with a post-occupancy study conducted for the building recording a 44 per cent increase in general occupant satisfaction when compared to Sydney Water's old head office. The same post-occupancy study predicted increases to employee productivity of up to three per cent, based on the responses that employees gave across a number of IEQ satisfaction categories.

THE GPT GROUP
HEAD OFFICE FITOUT

When Australian property company The GPT Group (GPT) made the decision to upgrade its head office space in Sydney's MLC Centre, the conversation quickly turned to how a Green Star refurbishment could help transform the Group's operating model and reinvigorate the GPT brand.

Achieving 6 Star Green Star – Office Interiors v1.1 certification in July 2012, the project has pushed the envelope of sustainable fitouts through the delivery of an exceptionally sustainable 'World Leadership' workspace, all within a building that is more than 30 years old.

The new fitout, which spans floors 50-52 of one of Sydney's most iconic office towers, represented a challenging project, not only for its location within the upper-reaches of a CBD skyscraper, but for the ambitious structural changes that were required to the base building itself.

Architect Harry Seidler originally designed the MLC Centre between 1972 and 1975; it opened in 1978 and was awarded the coveted Sir John Sulman medal in 1983. Fitout architect Woods Bagot has introduced modern inter-floor workplace connectivity to GPT's new office via a sweeping central staircase, which required major reconfiguration of each floor plate, and the building's façade was also altered in order to effect visual and environmental improvements.

THE PROJECT AT A GLANCE

6 Star Green Star – Office Interiors v1.1 certified, representing 'World Leadership' in sustainable office fitouts

50% reduction in energy bills

75% reduction in paper usage

96% of fitout waste diverted from landfill

97% overall occupant satisfaction.

“

Through careful management and selection of materials we have been able to dramatically reduce our total carbon footprint.

”

Bruce Precious
National Sustainability Manager
The GPT Group

At first glance, airy open-plan common areas and picture-postcard windows make the GPT office more reminiscent of a trendy inner city café or club than commercial office space. However, the layout and design features are as sustainable and functional as they are aesthetically appealing.

The GPT project team has combined the effective use of innovative design, technology and organisation-wide behavioural change to consolidate and reduce the size of the GPT tenancy from five floors to three, and create a showcase of GPT's Green Star expertise and industry leadership.

The Green Star-certified office has become a symbol of the organisation's approach to business and has delivered a significant boost to GPT's brand. Since the achievement of its 'World Leadership' certification, GPT has been recognised with accolades for the office and business alike, including three NSW Government Green Globe Awards across the 'Energy Efficiency', 'Business Sustainability' and 'Built Environment Sustainability' categories. GPT has also been named the world's most sustainable real estate company for 2012/13 by the *Dow Jones Sustainability Index.*

WHAT THE GPT GROUP HEAD OFFICE FITOUT ACHIEVED:

Materials

The efficient use of sustainable materials was a core tenet of the GPT fitout design brief, resulting in full points scored for many of the Green Star 'Materials' credits. Adhering to the philosophy of 'everything old is new again', the project team repurposed and reintegrated many items from the old fitout into the new space. In fact, the project was awarded Green Star 'Innovation' points for achieving an incredible 96 per cent waste diversion rate, exceeding the highest Green Star benchmark by 16 per cent.

Some of the ways that 'waste' products were reintegrated into the fitout include the recycling of timber wall panelling from the old office to create new joinery, and the reintroduction of much of the old office furniture after a simple upholstery refresh.

In other examples of creative material reuse, old floorboards from the halls of Kempsey High School on the NSW Mid North Coast now form a point of interest as wall panelling in the office's reception area, while Coca-Cola bottles have been given a second life as a component of the Emeco Navy 111 chairs used in the kitchen.

PROJECT DETAILS

Owner
The GPT Group

Location
Level 50-52, MLC Centre,
19 Martin Place, Sydney,
New South Wales

Size
2,854 square metres NLA

PROJECT TEAM

Project Applicant/Manager
The GPT Group

Fitout Architect/Interior Design
Woods Bagot

ESD, lighting, mechanical and acoustic consultants:
Arup

Main contractor:
Buildcorp

Structural Engineers:
GCA Consulting

green building council australia
6 greenstar
Office Interiors v1.1 2012

11

GPT entered into product stewardship agreements with all suppliers, ensuring that fitout items have a low environmental impact – now, and at the end of their useful life. "Through careful management and selection of materials we have been able to dramatically reduce our total carbon footprint. Not that long ago this would have been difficult to achieve but the number of sustainable suppliers has increased exponentially. A world of suppliers has sprung up around Green Star," explains GPT National Sustainability Manager, Bruce Precious.

Management

GPT staff members no longer have dedicated desks, instead embracing the benefits of activity-based working. In combination with dematerialisation, this new work model has allowed GPT to reduce individual desk spaces by 17 per cent. "We've saved space through clever design and, despite the increased density, people feel they have more space, not less," explains one GPT worker.

In a testament to the benefits of 6 Star Green Star fitouts, the first employee self-assessment post-occupancy study for the office – conducted three months after the move – found that employees felt 15 per cent more productive in the new space.

Bruce Precious explains that while initially there was some resistance to change, particularly with the implementation of activity-based working, engagement initiatives such as the 'work environment passport' have made for a smooth transition into the new green office. Under the passport scheme, employees were rewarded for showing their understanding of different aspects of change. The passport has helped increase the understanding and uptake of new office technology, with wireless computing, soft phones and a 'swipe-to-print' system reducing paper consumption at the office by more than 70 per cent. Further, GPT has reduced onsite paper storage by an incredible 90 per cent – from 900 lineal metres down to 90.

Energy

Huge efficiencies have been gained at GPT with the installation of suspended T5 lights, LED downlights and desk lamps. Energy-efficient fittings, combined with lower overall artificial light provision and the installation of motion sensors, have cut the amount of energy used for lighting within the GPT tenancy by 70 per cent, with overall energy bills halved.

IEQ

ESD consultant Arup completed a comprehensive survey to determine the effectiveness of existing air conditioning which then informed the engineering and implementation of new systems. To boost the air change and energy efficiency of the base building's dual active chilled beam and variable air volume (VAV) systems, the project team introduced supplementary air conditioning for meeting rooms and installed louvres within the façade to increase the levels of fresh outside air. Optimising air conditioning efficiency has helped to achieve significant reductions in energy use across the tenancy, with air change efficiency now 50 per cent higher than Australian standard requirements.

In line with the aims of the Green Star 'IEQ' category, a significant boost to indoor environment quality has been achieved through the specification of sustainable low-VOC furniture, carpets and soft furnishings and the introduction of more than 500 plants to further improve air quality for GPT workers. As a result, occupant comfort has increased significantly, with the latest post-occupancy study showing a massive jump in GPT employees' comfort and satisfaction in their new workplace. Prior to the move, 54 per cent of GPT workers were happy with the temperature, ventilation and acoustics, while in the new space the overall comfort ratings have jumped up to 97 per cent.

"I find the control I have over the environment as a user of the space is fabulous – being able to move around and chase the sunshine around the building, or adjust the lighting and air as I need it is great," said one GPT worker.

Another GPT employee sums up the sense of pride the people at GPT feel for their new workplace. "I'm proud to say I work in a green environment," the employee said. "Achieving the 6 Star Green Star rating was a wonderful acknowledgement of the importance we place on sustainability. I've never worked in an environment that feels this open, fresh and healthy, while also providing me with all the facilities I need to be productive and effective in my role."

12

THE KEY SPEC 1

12

THE PROJECT AT A GLANCE

5 Star Green Star – Industrial Design v1 rating representing 'Australian Excellence' in environmentally sustainable design

First speculative industrial facility to achieve a Green Star rating.

To a large extent, the industrial market is still about tin sheds on concrete slabs. Despite the potential to increase operational efficiencies, cut costs and reduce the environmental footprint of facilities – not to mention reduce worker injuries and boost employee satisfaction and performance – the industrial sector has been slow to capitalise on the benefits of green building. While just 38 per cent of companies surveyed in Jones Lang LaSalle's *Industrial Investor Survey* 2011 reported that sustainability initiatives were part of their investment strategy, organisations like Australand have recognised that a Green Star rating represents a 'future-proofed' investment and is advantageous when securing tenants. Australand achieved a 5 Star Green Star – Industrial v1 rating for The Key Spec 1 building near Melbourne in 2012, an achievement that is all the more significant as it was a speculative development.

"For Australand, the main driver for achieving a Green Star rating – even when we're undertaking a speculative development – is the advantage it can provide in securing tenants. A Green Star rating gives us an extra edge in our marketing, as it provides credible, third party assurance," says Australand's Sustainability Manager, Paolo Bevilacqua.

The Key Spec 1, which comprises two large warehouses and offices inside one 27,000 square metre building, incorporates sustainable features such as efficient lighting on a sensor system, solar hot water, certified sustainable timber, and rainwater recycling systems to provide water for irrigation and toilet-flushing.

Bevilacqua says that the inclusion of sustainable features assures Australand that its asset will be high-performing over time. "In the past, when we've sold assets, a Green Star rating has provided another incentive for the purchaser. In the case of The Key Spec 1, which Australand owns, Green Star certification gives us assurance that we're 'future-proofing' our investment. When combined with the fact that it will reduce occupancy costs for our customers,

“

Green Star certification gives us assurance that we’re ‘future-proofing’ our investment.

”

Paolo Bevilacqua
Sustainability Manager
Australand

we believe the Green Star rating gives both Australand and our customers a competitive edge in the market as utility costs continue to rise.”

Construction costs on average represent only 11 per cent of the total cost to build, operate and maintain an industrial facility over a typical 40-year lifecycle. Yet decisions made in the construction phase, often based on the lowest bid, can significantly increase operating costs over the life of the building – costs that are borne by the building’s tenants for many years to come.

Bevilacqua says there was a significant additional investment, of around $750,000, in green features at the facility amounting to a green premium of around six or seven per cent of design and construction costs. “Since building The Key Spec 1 project, we’ve revised our design approach, costs have come down, and we think a 4 Star Green Star rating requires an additional investment of two to three per cent on our base design, which will comfortably provide a return on investment within a few years. We learnt a lot from this project, which will inform future projects and we expect additional investment for a 5 Star Green Star project to reduce to around four to five per cent.”

The Key Spec 1 project was fully leased prior to completion, demonstrating Australand’s ability to deliver environmentally sustainable, highly-competitive projects that will provide benefits to tenants well into the future.

Sean McMahon, Executive General Manager of Australand’s Commercial and Industrial business, confirmed that The Key Spec 1 project was “consistent with Australand’s strategy to take a leadership position in the industrial sector with respect to environmentally-sustainable development and forms part of the more than 140,000 square metres of Australand industrial space that is Green Star certified or registered.”

WHAT THE KEY SPEC 1 ACHIEVED:

Energy

While many organisations that operate from large warehouses, particularly logistics management companies, have corporate sustainability strategies which aim to reduce the impact of their properties and distribution centres, until now the focus of such strategies has largely been on transport emissions. “Reducing emissions from properties is likely to be far more cost-effective from a dollar per tonne point of view than reducing emissions from transport. Building upgrades to lighting, insulation and HVAC, for example, may provide a better return,” Bevilacqua explains.

At The Key Spec 1, passive design strategies have minimised the need for artificial lighting and mechanical systems. Highly efficient lighting systems, incorporating T5 lighting with dimmable ballasts, and daylight and motion sensors, are expected to cut lighting energy consumption by 90 per cent compared to standard lighting schemes. Solar hot water panels provide a renewable source of energy to heat water, while sub-metering of energy allows for improved monitoring and management.

Tyres 4 U, one of the tenants at the facility, has reduced electricity usage on a per square metre basis by 55 per cent, when compared to its previous facility. This has also resulted in a total saving in electricity costs, despite more than doubling the size of its warehouse. Jeremy Lane, Branch Manager for Tyres 4 U, says “we have noticed about a 40 per cent decrease in our total electricity bills.

PROJECT DETAILS

Owner
Australand

Location
144-166 Atlantic Drive, The Key Industrial Park, Keysborough, Victoria

Size
27,195 square metres GLA

Tenants
Tyres 4 U and Early Settler Group

PROJECT TEAM

Project Manager/Main Contractor
Australand

Architect
Australand and JMA Architects

Building Service Engineer and Sustainability Consultant
WSP

green building council australia
5 greenstar
Industrial Design v1 2012

The previous warehouse was 4,362 square metres compared to the new facility of 10,060 square metres."

Analysis suggests that electricity and maintenance savings from the efficient lighting system installed in the facility will be in the order of $325,000 over the first 10 years of operation.

Sub-metering systems are also being included in planning for future developments. "It sets a benchmark, so we know that if we incorporate these initiatives we're going to get certain savings. Rather than relying on modelling, we can now verify the savings using metered data," Bevilacqua explains.

The energy efficiency and solar hot water generation are expected to reduce total greenhouse gas emissions by 90 per cent, when compared to a standard practice development that simply complies with Building Code of Australia (BCA) requirements. This represents a saving of 1,760 tonnes of carbon each year, equivalent to the annual emissions of 220 average Melbourne homes.

Water

Rainwater collection tanks provide water for irrigation and toilet-flushing. Combined with water-wise 3 and 4 Star WELS fixtures, potable water consumption is expected to be half that of a standard industrial facility. In addition, a fire test water recycling system will ensure more than 80 per cent of all fire system test water is captured and available for reuse.

IEQ

As would be expected in such a leading project, the use of low off-gassing materials, such as low-VOC paints, carpets, adhesives and sealants and low-emission formaldehyde composite wood products, was specified, as was sustainably-sourced, certified timber.

However the main improvement in IEQ is through the high levels of daylight achieved, with 10 per cent of the warehouse roof being translucent sheeting and around half of the office façade areas glazed. This provides high levels of natural lighting in both the office and warehouse spaces during most operational hours, minimising the need for artificial light and providing a more comfortable and productive work space.

Tyres 4 U's Jeremy Lane says that the "picking errors have been reduced as a result of the high-performance lighting, and stock takes are now more efficient as the tyres are easier to identify when counting. No lights are left on when they aren't needed, as they switch off automatically after twenty minutes without movement. This has also reduced our costs. The amount of natural light from the roof has substantially increased, and with it staff morale."

Performance

While the Green Star – Industrial v1 rating tool addresses the challenge of sustainability in new and newly-refurbished facilities, it does not address the performance of the vast number of existing industrial buildings, many of which operate well below best practice benchmarks. Australand is a principal sponsor of the Green Star – Performance rating tool, which will assess the operational performance of existing buildings. This will enable building owners to measure ongoing performance and establish benchmarks before embarking on sustainable building upgrades.

"It will also enable us to verify our claims regarding sustainability, and give our customers more confidence that their buildings are environmentally efficient and cost-effective," says Bevilacqua. "Sustainability can be a simple way to deliver cost-savings in a warehouse. It is certainly the low-hanging fruit in the industrial industry which is yet to be picked."

12


A
GLOBAL
GREEN
LEADER

The recent *Global Real Estate Sustainability Benchmark* (GRESB), published in September 2012, shows that in the green building arena, Australia remains a global leader.

The survey of 450 global property companies and funds, representing US $1,300 billion in global assets under management, has found that Australian companies score higher than their peers in any other region.

While Australian companies accounted for just nine per cent of survey respondents, 35 per cent are considered by GRESB to be global leaders in sustainability. A stunning 95 per cent of Australian companies surveyed had internal resources dedicated to sustainability and all but one respondent had senior management accountability for sustainability.

These results reaffirm that the industry's commitment to green building is being recognised globally.

"Australia can be proud of its reputation as a leader in green buildings and sustainable communities," says Tim Beresford, Austrade's Executive Director of Australian Operations.

"A 'can do' attitude and willingness to collaborate is enabling Australian companies to combine the intelligence, experience, tradition and innovation from other countries to create world-leading green projects," Tim adds.

Chief Executive Officer of the World Green Building Council, Jane Henley, agrees. "Australia was one of the world's earliest adopters of green building practices – and that leadership is evident today. Certainly, the GBCA's international reputation has helped Australian companies to position themselves as leaders in the global green building market," Jane says.

The GPT Group, for example, was announced the world's most sustainable real estate company in the 2012/2013 *Dow Jones Sustainability Index,* which evaluates the performance of the largest 2,500 companies listed on the Dow Jones.

Similarly, Lend Lease has secured its reputation as a leader in sustainability both nationally and internationally and now has 53 Green Star-rated projects under its belt, including offices, shopping centres and apartments.

> "Australia is definitely among the 'lucky countries' in terms of its capacity to respond to sustainable building issues and climate change."

Brett Pollard
Principal
HASSELL

This expertise helped Lend Lease secure lucrative contracts for the London Olympics.

Many Australian professional services firms now have international reputations as sustainability specialists. Moving between offices around the world, Woods Bagot's Director of Sustainability, Mark Kelly, is engaged in the sustainability dialogue with a range of international clients. Mark thinks Australia is "definitely punching above its weight relative to the size of its population and the size of the construction economy. The Green Building Council of Australia has been very influential and we are now seeing the university, commercial and lifestyle sectors imbued with a philosophy of sustainable design."

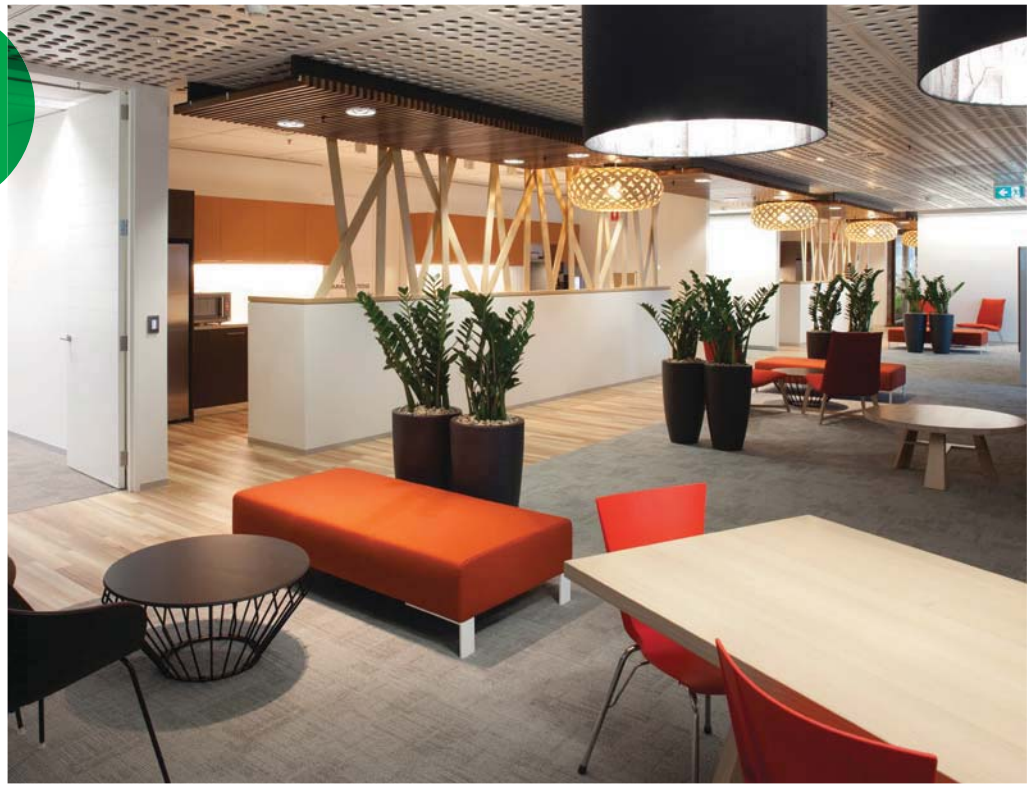
"Australia is definitely among the 'lucky countries' in terms of its capacity to respond to sustainable building issues and climate change," says Brett Pollard, Principal at HASSELL.

"As a relatively wealthy economy, emerging green building technologies requiring upfront financial investment are within the reach of many. We also have a remarkable opportunity to capitalise on our unique climate to harness and use alternative energy sources. ▶

EPA Victoria Office Fitout
6 Star Green Star – Office Interiors v1.1

Photography by Paul Ebbage

A GLOBAL GREEN LEADER



Sinclair Knight Merz
Melbourne Office
5 Star Green Star –
Office Interiors v1.1

Government policy clearly plays a major part in driving innovation in green building, as does the leadership of the Green Building Council of Australia," Brett adds.

"Over the past decade, there has been huge growth in the commitment by Australian companies to undertake formal green building certification using Green Star. Similarly, there's been a huge accumulation of knowledge within the design community about sustainable building practices – thanks largely to training available through Green Star and LEED accreditation programs. Green technologies and practices advance quickly," Brett adds.

Woodhead's Chief Executive Officer and Managing Director, Angelo Di Marco, agrees, adding that while projects were once incentivised solely by rating tools such as Green Star, today other drivers include "tenant demand and regulatory changes, harmonisation of regulatory energy efficiency assessments, and innovative schemes such as environmental upgrade agreements in NSW.

"While great things have been done, and Australia might be leading the charge, the concern is that the pace of change is not fast enough – even in this country. At the end of the day, sustainability is a global problem, and we should continue to engage with our global partners using our collective skills and technological know how to keep pushing the boundaries."

Australia's geography and remote location make international connections a priority for sparking innovation and inspiration. We do need to work harder to forge those connections – and much of the GBCA's international work rests on establishing and strengthening relationships with other green building councils to drive innovation in Australia. Austrade is currently working alongside the GBCA to attract investment in Australia's sustainable built environment, and showcase Australian capabilities.

"Australian governments and businesses are working to raise awareness of the merits of highly-rated buildings and to encourage investment in retrofitting existing building stock and developing efficient precincts and buildings. Many of the challenges being addressed by the green building movement are global in nature. In this context, the importance of international connections cannot be understated," says Tim Beresford.

Woods Bagot's Mark Kelly is confident that Australia will maintain its momentum. "Australia loves being out in front and showing the world what to do, and certainly the rivalry between some of our big cities can't hurt. There is a real sense of commitment to achieving minimum standards in Australia, reinforced with a professional obligation to 'do the right thing'. Australia is in a very good position to lead by example."

Australia has inspired the world for a decade, and will continue to do so for many years to come, says Rick Fedrizzi, the USGBC's President, Chief Executive Officer and Founding Chair, and Chair of the World Green Building Council.

"Australia was an early leader in sustainability and continues to set the pace for global markets. Among many of Australia's leadership initiatives, Green Star has been a huge catalyst for international green building, and the Green Building Council of Australia has created countless opportunities for green businesses and buildings. Since witnessing the GBCA in action, I've been very inspired – personally and professionally – by this country's accomplishments in the sustainability realm." ●

Peter Doherty Institute, University of Melbourne
5 Star Green Star – Education Design v1

Photography: Grimshaw Architects

THE METHOD OF MEASUREMENT

Each year, the Green Building Council of Australia writes nearly a thousand letters to governments, attends hundreds of meetings with politicians and policy makers, prepares dozens of government submissions, and distributes a media release every week covering political, technical or industry issues.

With close working relationships with all three tiers of government, and a seat on every government round table on sustainability in the built environment, the GBCA's advocacy strategy is starting to pay off.

The GBCA's advocacy efforts are focused on five green building priorities, as more governments rely on Green Star as the method of measurement to demonstrate accountability, financial responsibility and transparency, and ensure their buildings and communities are truly sustainable.

State Government Office – Dandenong Site C2
6 Star Green Star – Office Design v3
6 Star Green Star – Office As Built v3

More governments rely on Green Star as the method of measurement to demonstrate accountability, financial responsibility and transparency, and ensure their buildings and communities are truly sustainable.

1

PRIORITY 1: PROVIDE VISIONARY GOVERNMENT LEADERSHIP

One of the most influential ways for federal, state and local governments to demonstrate their green leadership is to commit to achieving Green Star ratings for all buildings they own, occupy or develop, whether offices, schools, hospitals or public buildings, and whether new developments, building refurbishments or interior fitouts. This demonstrates both financial responsibility and long-term thinking.

The Victorian and Queensland governments have both mandated minimum Green Star standards for their office accommodation, and the South Australian Government has mandated Green Star for all the buildings within its Bowden Urban Village development.

The Victorian Government's Environment Protection Authority achieved a 6 Star Green Star – Office Interiors v1.1 rating for its headquarters in late 2012. Victorian Minister for Climate Change and Environment, Ryan Smith, said that the Green Star rating represents world leadership in sustainable office fitouts, and that the EPA now has "a vibrant and healthy workspace that delivers on every aspect of environmental, social and economic sustainability."

Perth's Metropolitan Redevelopment Authority has also mandated Green Star for two major projects: the Perth City Link and Elizabeth Quay. "A Green Star rating is more than a buzz word, it is a valuable tool that is helping the property industry and redevelopment authorities like the East Perth Redevelopment Authority to demonstrate environmentally-sustainable best practice in its developments," says the MRA.

2

PRIORITY 2: RETROFIT AND IMPROVE EXISTING BUILDINGS

Greening the vast amount of existing building stock in Australia is an enormous challenge. State and territory governments are introducing a range of policy incentives to improve existing buildings' energy efficiency, reduce water use, widen the range of green building materials used and reduce construction and demolition waste.

The GBCA is working closely with politicians and policy makers in all jurisdictions to recognise the long-term value embedded in the built environment, and to unlock the opportunities within the nation's existing building stock through supportive policies and incentives such as environmental upgrade agreements and the use of the Green Star – Performance rating tool, due for release this year.

The Edmund Barton Building in Canberra, home of the Australian Federal Police, achieved 5 Star Green Star – Office Design and As Built v2 certification for a complete retrofit in 2009. Speaking at the Edmund Barton Building's re-opening, the Australian Federal Police's Commissioner, Tony Negus, said that "the building now houses over 2,000 people, and the 46,000 square metres of floor space has been completely re-fitted to provide the modern office and technical requirements of a 21st century law enforcement organisation. Importantly, a number of key environmental best practice initiatives were incorporated in the building's refurbishment," including double-glazing, new chilled beam air conditioning and energy-efficient lighting.

3

PRIORITY 3: GREEN EDUCATION AND HEALTHCARE FACILITIES

Every pupil has a right to fresh air, daylight and good indoor environment quality within a building that reflects long-term sustainability goals and financial responsibility. Governments are recognising the importance of green schools to enhance learning, reduce teacher turnover and absences, and support the community to live more sustainably.

Six government schools in the ACT are either certified or registered to achieve Green Star ratings, while a further six state schools in Queensland have achieved Green Star ratings. The Tasmanian Government has committed to Green Star benchmarks for all new public buildings, including schools and hospitals. The first project registered by the Tasmanian Government was the Jordan River Learning Federation's Senior School. Australian Greens Leader, Senator Christine Milne, has said: "Greener buildings are not only better for our environment, but they are much more pleasant to work and spend time in and they save money on energy bills. It's great that Jordan River Learning Federation's students will get the opportunity to learn both in and about these buildings."

Just as schools are going green, sustainability is emerging as a focus in the healthcare sector, as more patients and staff demand facilities that decrease average lengths of stay, reduce the spread of secondary infections and improve the health and wellbeing of healthcare professionals. ▶

3

PRIORITY 3:
GREEN EDUCATION AND HEALTHCARE FACILITIES
(Continued)

The South Australian Government achieved the first Green Star rating for a healthcare project, with the Flinders Medical Centre – New South Wing achieving 5 Star Green Star – Healthcare Design and As Built v1 ratings. Subsequently, the government committed to achieving a Green Star rating for the New Royal Adelaide Hospital, and promises that the "planning and construction of the hospital has been guided by stringent environmental standards and will embrace environmentally sustainable practices."

4

PRIORITY 4:
MOVE BEYOND BUILDINGS TO COMMUNITIES AND CITIES

The Green Star – Communities rating tool provides best practice benchmarks for delivering adaptable, liveable, prosperous and sustainable cities, communities and precincts.

The new rating tool was launched in June 2012 by Federal Minister for Transport and Infrastructure, Anthony Albanese, who said that Green Star – Communities "goes to the heart of what we are seeking to achieve with our National Urban Policy – and that is to make our cities more productive, sustainable and liveable. The Green Building Council of Australia is to be commended for developing this tool, which will be of vast help to governments, developers and the public who want the best information to guide their decisions about sustainability."

State and territory governments are lining up to register their projects for Green Star – Communities PILOT ratings. ACT Deputy Chief Minister, Treasurer and Minister for Economic Development, Andrew Barr, has said: "The introduction of the Green Star – Communities rating tool can only continue to improve our standard of building and planning, and I look forward to the benefits of its implementation in future developments around the ACT."

5

PRIORITY 5:
EMBED GREEN SKILLS ACROSS ALL INDUSTRY TRAINING

The demand for 'green collar workers' across the economy continues to grow. To capitalise on these job opportunities, we must have the necessary skills. In much the same way that OH&S has become an integrated part of industry training, green skills must be embedded into curricula to ensure we develop better, safer, greener buildings and provide people with job opportunities and skills in a low-carbon economy.

The $9 million Plumbing Industry Climate Action Centre in Victoria was created to expand the green plumbing sector and boost jobs and opportunities for the Victorian economy. At the time of opening, just 10 per cent of Victoria's 20,000 plumbers had sufficient green skills to meet the growing demand for environmentally sustainable plumbing. The 5 Star Green Star – Education Design v1-rated centre tackles this skills gap head-on by delivering integrated education and training and providing a real-world example of innovative design and sustainable plumbing. ●

ANZ Centre 833 Collins
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2
6 Star Green Star – Office Interiors v1.1

Photography by Earl Carter

EDUCATION IN EXPONENTIAL TIMES

In the multi-screen world of the 21st century, with tablet computers, smart phones and the internet at our fingertips, we now consume more than 11 hours of information each day.

Alvin Toffler first coined the phrase 'information overload' in his 1970 best seller, *Future Shock*. Yet even he would be unable to fathom the sheer amount of information available to us today. A mind-boggling 800,000 petabytes (a million gigabytes per petabyte) in the storage universe and 3.6 zettabytes (a million petabytes per zettabyte) is consumed in homes each day, and this is expected to increase 44-fold by 2020.

At the same time, the amount of technical information available is doubling every two years.

In this brave new world, we are just as likely to learn about the latest Green Star rating tool from our iPad while sitting on the train as we are in a classroom or conference.

In *The Information Diet*, author Clay Johnson argues we should all consume information that is as close to the source as possible – and the closest source for reliable, relevant information on Green Star is now online.

During the past decade, the Green Building Council of Australia has trained more than 40,000 people, giving them a 'top level' view of Green Star. Now we're helping these people get down to the detail.

Our new online courses recognise and encourage increased specialisation within the industry. We understand that the education requirements of an architect, engineer and facility manager differ dramatically. Short online courses are available to help people to zero-in on the information they need to work smarter and deliver sustainable outcomes.

At the same time, the CPD program now features five professional streams: Green Star Accredited Professional status for Design and As Built, Communities, Interiors, and Green Star Associate, with a new accreditation also being launched to coincide with the release of the Green Star – Performance rating tool later in 2013. Each accredited professional stream has prerequisites, including a tailored foundation course and eligibility criteria, and each stream's course content focuses on the development of specialised Green Star skills.

Green Star Faculty member, Joe Karten of Built, argues that e-learning has the potential to drive the uptake of green building practices in regional and remote Australia, and to share our green building expertise with the world.

"People crave a human connection and require educational 'hand-holding' when the content is new. However, webinars make it possible for instant feedback between students and teachers. We will see this method for delivering green building education continue to flourish. The benefit to industry will be the convenience and scalability of on-demand Green Star education."

Aurecon's Digby Hall, another member of the Green Star Faculty, believes it's important to differentiate between 'information' and 'learning'. While a vast amount of information, from certification processes to technical manual interpretations,

can be successfully consumed online, Digby believes that "face-to-face is still by far the best format for learning about collaboration, team work and project management as it simulates the way project teams actually work in the real world."

The GBCA is continuing to meet demand by delivering both public and in-house courses face-to-face, while the new online learning platform will enhance the well-established education delivered in person through Green Cities, Master Classes, 'In the Know' briefings and Green Star Day. The material covered in online courses can also be delivered face-to-face on request.

Organised site tours also provide the ultimate in education, enabling people to see, feel, hear, smell and understand green buildings. Self-guided walking tours that can be downloaded from the GBCA website, the first of which was developed for Sydney in conjunction with World Green Building Week, are also helping people to engage with green buildings and understand their increasingly important place in our cities.

Sustainability in the built environment is being driven by collaboration and information sharing, and the Green Building Council of Australia is confident that e-learning will further the green discourse on a larger, global scale.

Embracing the opportunities of exponential education has its challenges and opportunities. "We can move towards 'training as commodity' where the information is broad in scale but always a little behind what's happening in the real world, in which case we'll still ultimately lose the race," Digby Hall muses.

"Or we can offer 'inspirational' education, where the training provides cutting-edge knowledge, connects people around the globe with the best knowledge and experience in every field and is almost like a social network of green knowledge that is freely shared. Which direction this takes is up to us."

Watch out, as the reach and impact of green building education grows exponentially! ●

WE ARE LIVING IN EXPONENTIAL TIMES...

4 years
the average length of time that Australian employees stay with their company

55
the percentage of Australia's population using Facebook

845 million
monthly active users on Facebook

100 billion
Google searches each month – up from 2.7 billion in 2006

340 million
tweets sent through Twitter each day

60
the number of text messages the average teen sends each day

2011
the year digital music sales outstripped physical sales for the first time

72
the percentage of Apple's revenue that comes from the iPhone and iPad

100,000
the number of words the average person now consumes during a day

Statistics current as of October 2012.

THE RISE & RISE

OF COLLABORATIVE CONSUMPTION

Q&A WITH RACHEL BOTSMAN

In 2012, social innovator Rachel Botsman enthralled and inspired the crowds at Green Cities with her insights into collaborative consumption and how it could unlock vast stores of untapped potential within the built environment.

While the 20th century was about hyper consumption, the 21st century is about collaborative consumption, Rachel argued, saying that "we have moved from the age of ownership to the age of access."

People are trading, selling and renting their under-used cars, clothes, ideas, skills and even spare bedrooms over the internet. So, twelve months on, how is this megatrend being embraced and where do the opportunities lie?

Have there been any shifts in the collaborative consumption space in the last year, particularly with relation to the built environment?

There are a rising number of ideas that use social, mobile and location-based technology to unlock the idling capacity specifically of built environments or unused space.

The phenomenal success of Airbnb, the marketplace that matches people with space to rent with people looking for a space to stay, has paved the way for the broader space category. An increasing number of entrepreneurs, investors and property developers are asking: where else is there massive value in underutilised or unused space?

Liquidspace, essentially a real-time market that enables you to find all kinds of workspaces whenever and wherever you need it, is a really good example. The average commercial office space is only used a third of the time. Combine this statistic with an ever-increasing mobile or distributed workforce (already exceeding one billion) and it's a massive opportunity. It explains why, in the past 18 months, we have seen Loosecubes, Coworkify, DeskWanted UG, Kodesk and OpenDesks, to name a few, all trying to crack the on-demand office space market.

In addition to the likes of Liquidspace, environments purposely created for 'co-working' (where independent workers pay a fee to share a space) are doubling year-on-year, with much of the growth coming from Spain, Australia and Japan. The beautiful thing about co-working is that it's not just about the space per se but the collaboration that typically occurs among workers. We can learn a lot about designing broader environments for collaboration by observing co-working spaces.

You challenged our Green Cities 2012 delegates to seize the opportunities available to make better use of 'idling capacity'. How are developers grasping those opportunities?

A handful of developers are completely rethinking how spaces can be designed so that resources can be more easily shared, repaired and redistributed. But I would say that the opportunity is still largely unrecognised.
In addition, the even bigger opportunity is in thinking about all the idling capacity that exists in built environments, not just in the residential or office space but in utilities, physical goods, gardens, skills of people and so on.

There are also broader opportunities for people to collaborate around housing and property such as the successful co-housing model championed in Denmark. ▶

Q&A WITH RACHEL BOTSMAN

Are any governments at the city scale capitalising on the opportunities that collaborative consumption presents?

Seoul recently announced that it wants to become a 'sharing city', where people are actively encouraged to share spaces, skills, and material possessions they own but do not fully utilise. Mayor Park Won is trying to raise awareness of the options available and how it "can help us save social expenses spent for safety and welfare," he says. The city is actively promoting 20 projects including parking lot sharing; it has evaluated that if just five per cent of resident parking lots were shared when they would otherwise be sitting empty (i.e. when people are at work), it is the equivalent to building 1,862 new parking spaces that could save the city 23.3 billion won, or more than AUD $20 million. I also like that they are encouraging medical-instrument sharing among hospitals because it's an area where typically municipalities will say there are too many barriers to making it happen.

Mayor Edwin Lee of San Francisco is also very proactive in trying to grow collaborative consumption, continually highlighting the triple benefits it represents for the city from a social, economic and environmental standpoint. He has gone beyond just raising awareness and is investing in the infrastructure to make it scalable. For example, Mayor Lee has formed the first Sharing Economy Working Group that brings together city departments, community stakeholders and collaborative consumption companies and this group is getting its teeth sunk into trickier policy issues that are emerging such as taxation, insurance and regulation.

Where do you see governments' role in supporting collaborative consumption, such as through funding, partnerships or education campaigns? Where do the opportunities lie?

Governments play a critical role in scaling collaborative consumption beyond raising awareness of what is on offer. My top four asks of government are:

- **Remove the barriers and red tape:** Many innovative, collaborative consumption companies are enabling people to monetise and share their assets in ways and on a scale never before possible. This throws up all kinds of insurance and policy issues. For example, if someone decides to rent out their private parking spot, should the owner face laws that prohibit properties being used for certain business purposes? There are currently a lot of grey areas in which entrepreneurs and users don't know where cities and local councils stand on such issues.
- **Proactively make policy changes:** In certain states in the US, such as Oregon and California, legislation has passed that makes peer-to-peer car sharing possible. The bills basically reduce the risk for the vehicle owners.
- **Invest in the required infrastructure:** There are a myriad of ways that governments can help put the right infrastructure in place including: designating more on-street parking spaces for car sharing systems; subsidise car sharing programs in large residential and office complexes; invest in bike sharing systems; create low-rent office spaces for start-ups; facilitate the use of empty commercial spaces for things like skill sharing; and build or invest in platforms that enable garden or land sharing.
- **Encourage the big brands that the space is an opportunity not a threat:** In the UK and US, big companies are being encouraged to either partner with start-ups or create their own models of collaborative consumption. For example, GM has partnered with P2P car sharing platform RelayRides; Google has invested in Getaround; and BMW has partnered with Parkatmyhouse.

> "I believe we are at the start of a massive transformation in the way we think about ownership."

Collaborative consumption models promote access over ownership. People seem receptive to this idea for small-ticket items such as lawn mowers. What about the big ticket items, such as property? How do you think this will affect the way people view their homes in the future?

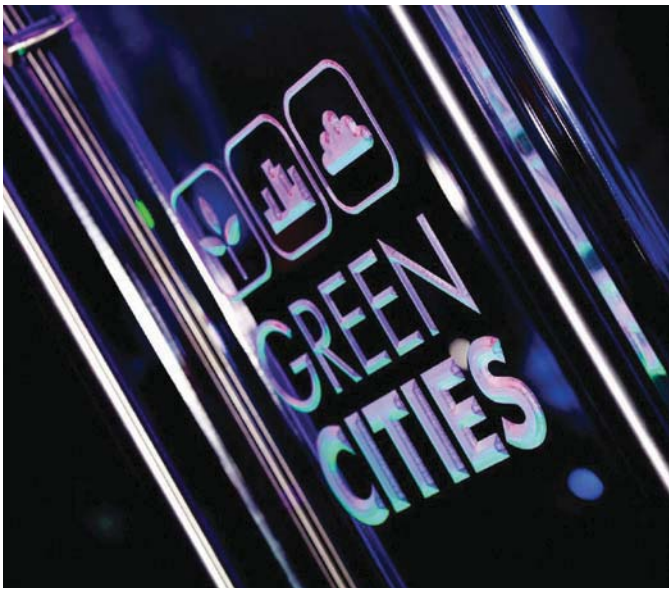
I believe we are at the start of a massive transformation in the way we think about ownership. A critical driver of this shift is that many goods that we previously physically and individually owned have now dematerialised into the cloud. Books, movies, films and so on have become digital – and digital goods are more easily shared. So the concept of owning something is changing.

At the same time, you have big items such as cars, where ownership used to be perceived as a symbol of freedom and personal identity, but are now increasingly viewed as a burden. More and more people are questioning the logic of spending $7,000 a year (on average) on costs when the car sits idle for 23 hours a day. Why not just pay to access one when you need it?

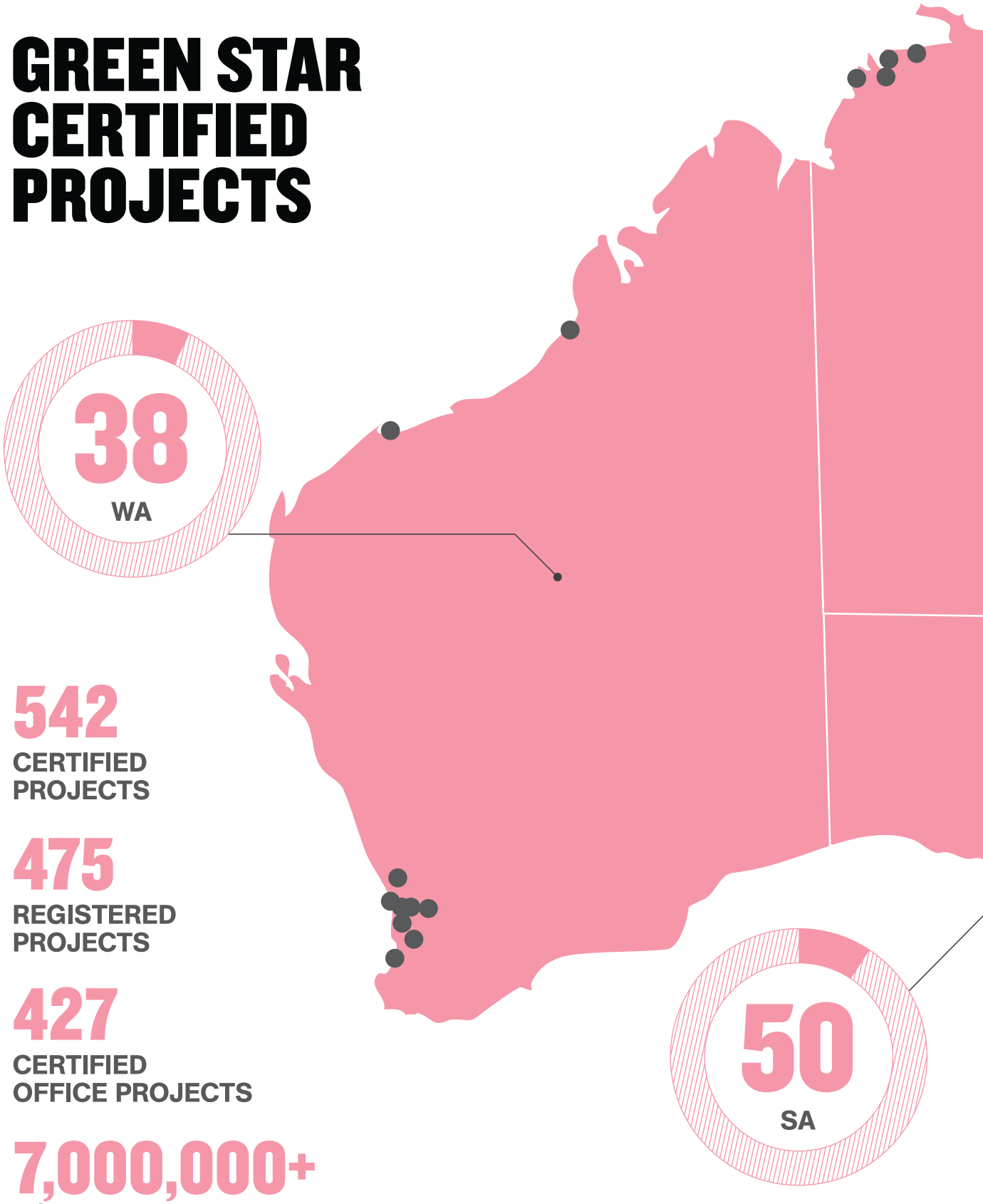
I don't believe the changing attitude to cars is a reactionary trend to the recession, because if you look at the data it indicates a shift in values and spending habits. For example, a recent survey in Germany revealed that 75 per cent of 18-24 year olds would rather live without their car than their smartphone.

The question is: will that shift to other traditional categories of ownership such as property? Yes, it is highly likely. Harvard University's Joint Center for Housing Studies recently reported that the home ownership rate among adults younger than 35 declined by 12 per cent between 2006 and 2011. I believe the future attitude towards homes will be similar to cars – our aspirations around ownership are changing.

The Atlantic magazine recently published an article on this subject, called 'The Cheapest Generation,' in which it argued: "If the Millennials are not quite a post-driving and post-owning generation, they'll almost certainly be a less-driving and less-owning generation." ●



GREEN STAR CERTIFIED PROJECTS



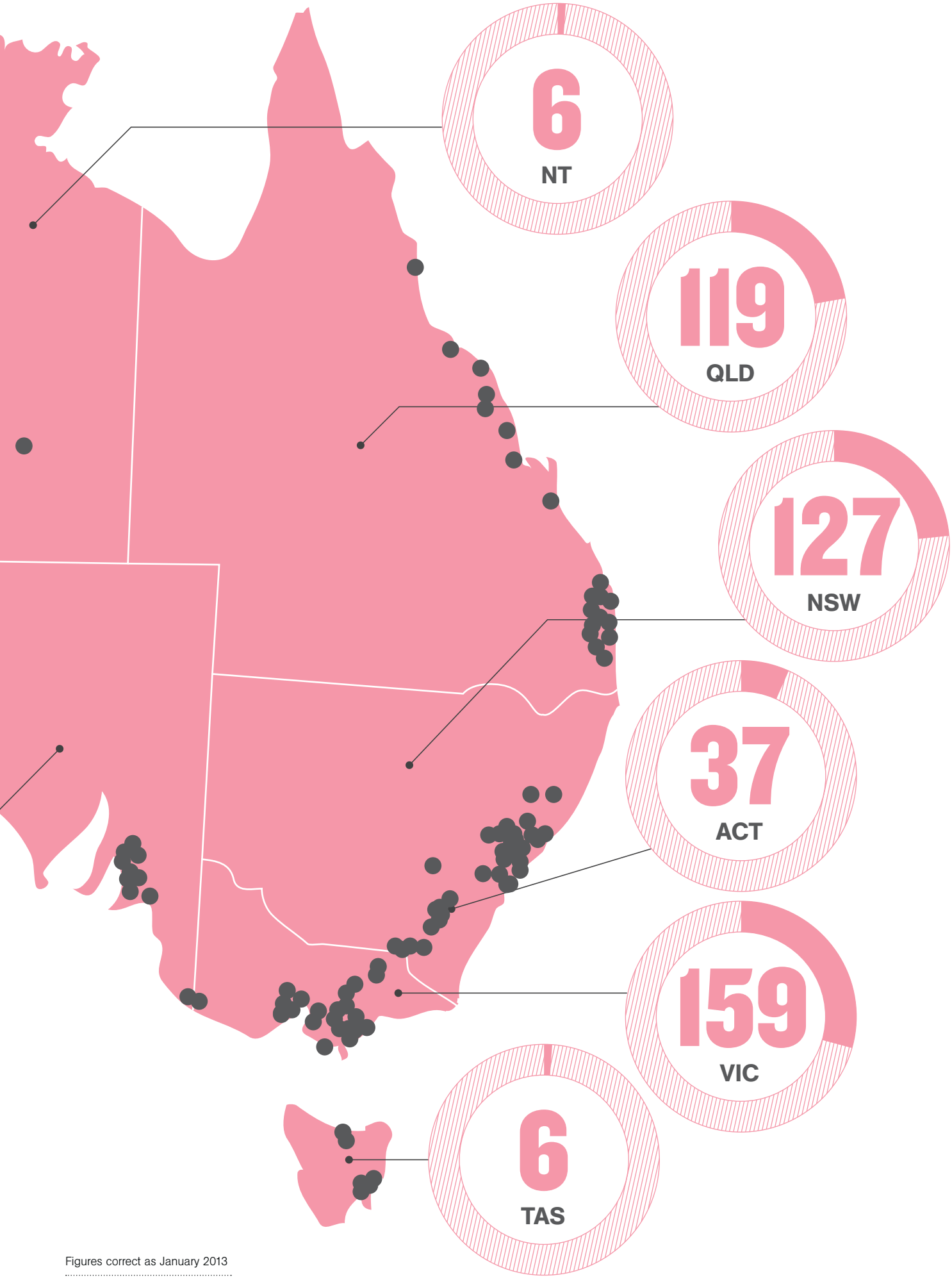
542
CERTIFIED PROJECTS

475
REGISTERED PROJECTS

427
CERTIFIED OFFICE PROJECTS

7,000,000+
M^2 CERTIFIED

147
CERTIFIED IN THE LAST 12 MONTHS



Figures correct as January 2013

Green Star shines at Barangaroo

Lend Lease is proud to support the Green Building Council of Australia's newest rating tool, Green Star – Communities, by piloting it on the $6 billion Barangaroo South development in Sydney.

Lend Lease took an industry-leading position on the first green building rating tools nearly a decade ago. We are now working with the GBCA on the next generation of rating tools which examine projects at the precinct scale, aiming to enhance the design and delivery of more sustainable, productive and liveable communities.

The Barangaroo South urban regeneration project on Sydney Harbour will be benchmarked against credits in the Green Star – Communities categories of Liveability, Economic Prosperity, Environment, Design, Governance and Innovation.

You'll find more information at: **www.barangaroosouth.com.au**

Lend Lease

greenstar **Developed by the** Green Building Council Australia

“

While we can lay claim to many victories, many more lie ahead. Together, we can continue to reshape and redefine our built environment, and create a future that is more sustainable, prosperous and liveable for all Australians.

”

Daniel Grollo
Chair
Green Building Council of Australia

green building council australia

DESIGNING FUTURE CITIES

SUSTAINABLE | ATTRACTIVE | COMPETITIVE

Today, more than 50% of the world population lives in cities. By the year 2050 it is estimated to be 70%. This places great demands on planning including buildings, infrastructure and the social environment.

Designing Future Cities is about taking a holistic approach - we want to help make them sustainable, attractive and competitive. WSP were inspired by other industries that are driven by innovation and change. The fashion industry is one such sector that, exists in symbiosis with cities, with good design at its heart.

See how seven designers helped us interpret the nine key themes on future cities **www.wspgroupfuturecities.com**, and check out our brochure.

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RESHAPING & REDEFINING

OUR BUILT ENVIRONMENT

18%

of Australia's CBD office market is Green Star – certified.

Mahatma Gandhi once said that "dreams at first seem impossible, then seem improbable, and finally, when we commit ourselves, become inevitable."

It's true that what once seemed a dream has become a reality as the green building movement evolves into one that is respected throughout Australia, and indeed the world.

Internationally, Australia continues to strengthen its position as a global green leader. Dozens of reports demonstrate that we punch well above our weight. The latest *Global Real Estate Sustainability Benchmark* (GRESB), published in September 2012, surveyed companies representing US $1,300 billion in global assets under management. Despite Australian companies accounting for just nine per cent of survey respondents, 35 per cent are considered to be global leaders in sustainability.

Nationally, Green Star continues to shine. In the office sector, Green Star-rated buildings account for 18 per cent of the CBD market. This rises to 20 per cent in Queensland, 22 per cent in Victoria and a whopping 25 per cent in South Australia.

Of course, Green Star is not restricted to offices. We now have more than 120 education facilities either certified or registered to achieve Green Star certification. In the last twelve months, we have expanded our offerings to new building types, including fire stations, retirement villages, community centres, supermarkets and McDonald's restaurants.

At an individual company level, we are seeing many emerging leaders take a strong stance on sustainability through portfolio- or precinct-wide commitments to Green Star. All three tiers of government continue to rise to the challenge set by our advocacy agenda – to lead by example – and embed Green Star into all new projects. Many of these are for twenty year projects which will ensure Green Star influences the built environment for many decades to come.

When the founding board members gathered at our first board meeting in October 2002, we had a grand vision and a fierce determination to transform Australia's property and construction industry.

Today, I'm proud to see that the growth in the Green Building Council of Australia's reach and reputation, and the market penetration of Green Star, has exceeded our most optimistic expectations.

While we can lay claim to many victories, many more lie ahead. Together, we can continue to reshape and redefine our built environment, and create a future that is more sustainable, prosperous and liveable for all Australians.

Daniel Grollo
Chair
Green Building Council of Australia

SIGNPOSTS ON THE ROAD TO SUSTAINABILITY

It's true that change is the only constant. The challenges of new governments and regulation, access to finance, shifting public attitudes to climate change and skills shortages have all altered the structure of Australia's green building industry — and will continue to do so for many years to come.

Despite these challenges, sustainability is here to stay. The *Harvard Business Review* has identified sustainability as one of the world's unstoppable 'megatrends', comparable to mass production, globalisation and the IT revolution.

The latest *Davis Langdon Construction Sentiment Survey* reveals that sustainability is ranked the number one opportunity for the property and construction industry over the next five years. One of the major risks for the industry is failing to adapt to a carbon-constrained economy.

So, what lies ahead for Australia's built environment? Where do the opportunities and risks lie?

Retrofitting

Increasing asset value remains a key driver for green building activity in Australia, and upgrading older buildings is no longer simply an option, but a commercial imperative. The *Johnson Controls Energy Efficiency Indicator Survey*, published in July 2012, found that the green building market is favouring existing buildings over new construction. Forty one per cent of respondents said they planned to pursue green certification for existing buildings, compared with 27 per cent for new buildings. The US Green Building Council's Leadership in Energy and Environment Design for Existing Buildings: Operations and Maintenance (LEED-EBOM) has certified more than 2,000 projects, with a further 6,400 registered for certification. We expect the Green Star — Performance rating tool to have a similar impact in Australia.

Scalability

Australia is yet to capitalise on the eco-district trend which is shaping other parts of the world. From Freiburg in Germany to Greensburg in Kansas, and from Sweden's Malmö to China's Tianjin, sustainability is being embraced at the neighbourhood, precinct or even city level. Australia's built environment industry needs to take the lessons learnt from green buildings and scale them to communities, districts and cities. Green Star — Communities provides the framework to help us to do this.

Workspaces

The old nine-to-five routine is dead, as technology makes anytime, anywhere working possible. People are increasingly viewing the office as a meeting hub — a place to formulate ideas and collaborate, rather than to 'do work'. This is already changing the way we design and construct offices. Activity-based working structures are increasingly being integrated into high-performance Green Star buildings. In this new world of work, buildings that are not flexible and adaptable to shifting work patterns will become obsolete. Read more in our feature article in *Evolution*, page 12.

Quality

Increasingly, green is synonymous with quality, and Green Star is the method of measurement. The Property Council of Australia's revised *Guide to Office Building Quality* has identified 5 Star Green Star and 5 star NABERS Energy ratings as the benchmarks for new Premium Grade buildings. Peter Verwer, Chief Executive of the Property Council of Australia, has said that the new expanded environmental performance metrics in the Guide "demonstrate what industry already knows — sustainable design and management of office buildings has become part of core business."

Financing

The economists may have consigned the Global Financial Crisis to history, but securing finance remains a challenge. Davis Langdon's latest *Construction Sentiment Survey* has found that access to finance is one of the industry's top five challenges. In the current business climate, financiers are increasingly viewing Green Star as an invaluable tool for risk mitigation and 'future proofing'.

Energy

Energy security is a long-term global challenge, particularly in growing economies such as China and India. These countries recognise that energy security also requires unprecedented investment in energy efficiency. Despite living in a country with more sunny days than anywhere else on the planet, we are still lagging behind Asia, Europe and North America in the installation of solar panels. This will change as solar, wind and photovoltaic systems are integrated into buildings and used as building materials, rather than simply being installed 'on top'.

Technology

Technology is transforming the way we design and construct our buildings. Expect a more sophisticated approach to building monitoring as building information modelling (BIM) systems become more comprehensive. BIM will enable cross-disciplinary teams to share knowledge and track the data of complex building projects. The result will be greener, healthier buildings.

Affordability

Many people associate green with higher costs – but that's changing. New business models, technologies and high performance materials are bringing green within reach. At the same time, as utility costs skyrocket, people are beginning to understand that affordability means more than the cost of a building the day the auctioneer's hammer falls. With Green Star ratings being awarded to social housing projects and low-cost university accommodation, we now have positive proof that green building delivers both environmental and financial sustainability.

Regulation

Regulation is already reshaping the built environment, with mandatory disclosure driving higher levels of energy efficiency in commercial buildings, and the carbon price encouraging more informed decision-making across the economy. At the same time, governments are increasingly recognising that Green Star is an assurance of quality and a demonstration of fiscal responsibility. State and local governments are increasingly requiring developers to meet Green Star benchmarks for all new projects and choosing Green Star to 'future proof' their investments.

CSR

The rise and rise of corporate social responsibility is demanding more transparency and accountability from companies in all industries. More than 5,500 companies around the world issued sustainability reports last year, up from about 800 a decade ago. Much of this is being driven from inside the corporate machine. PricewaterhouseCoopers has found that 88 per cent of young workers choose employers based on strong CSR values, and 86 per cent would consider leaving if a company's CSR values no longer met their expectations. Appealing to the next generation of workers makes operating from a Green Star-rated building a business imperative.

Despite the many challenges we face, the signposts are all pointing in one direction. With more than seven billion people in the world, the need to stretch resources even further will secure sustainability as a central design principle – and the Green Building Council of Australia will continue to work with our members to realise our collective vision for sustainable buildings, communities and cities.

Romilly Madew
Chief Executive
Green Building Council
of Australia

THE EVOLUTION OF THE OFFICE

ANZ Centre 833 Collins
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2
6 Star Green Star – Office Interiors v1.1

Photography by Earl Carter

UTION

The traditional office space is undergoing its most dramatic shift since the creation of the cubicle.

ANZ Centre 833 Collins
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2
6 Star Green Star – Office Interiors v1.1

Photography by Earl Carter

See case study on page 60

Driven by advances in communication technologies, demands for more flexible working arrangements, a dawning environmental awareness and an increased emphasis on cost reduction and productivity, we're witnessing a remarkable change in the way people work – and where they work.

While concepts of office-based work extend back as far as ancient Egypt, for much of human history it wasn't limited to a physical location. In the elaborate Roman bureaucracy, for instance, the office was a mobile 'bureau' of scribes and administrators who would work wherever it suited them. Later, offices from the Uffizi Palace in Florence to the Bank of England were created as administrative adjuncts to the centralised power of the state.

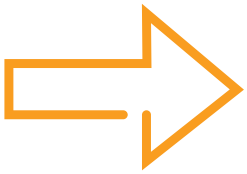
It took the telegraph and telephone to transform offices from places of work to places of power – with decision-making happening in the office, rather than on the factory floor. With the dawning of the Industrial Revolution in the mid-18th century, bankers, insurers, mercantilists and merchants needed large numbers of clerks and specialised office space was required.

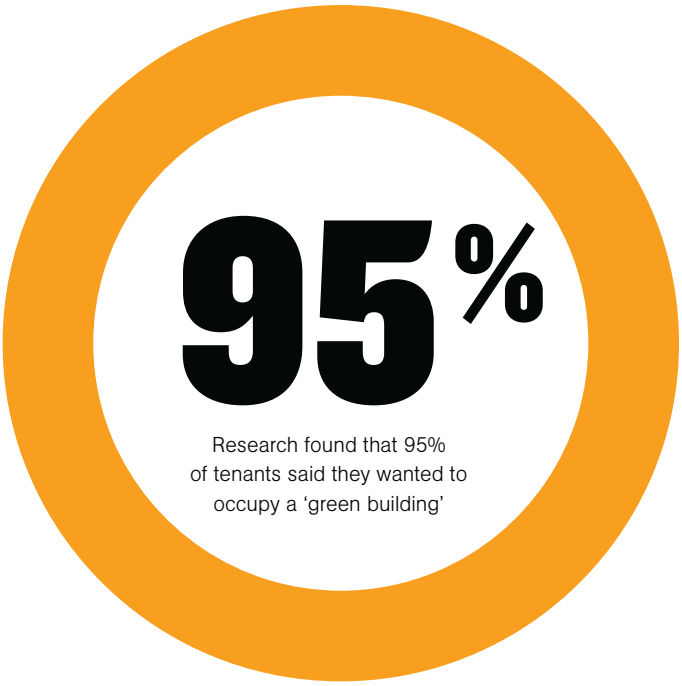
Other innovations revolutionised the very shape of the office. The first Otis passenger lift, installed at 488 Broadway in New York City in 1857, sent buildings skyward. The Home Insurance Building in Chicago, built in 1884, was the first to use structural steel in its frame. And the first modern air conditioner, invented by Carrier in 1902, led to buildings with large floor plates. By 1906, Sears, Roebuck and Co opened its mail order and headquarters operation in a 280,000 square metre building in Chicago, at the time, the largest building in the world.

American engineer Frederick Taylor is credited as one of the first to design an efficient, purpose-built office space. In the early twentieth century, Taylor's designs crowded workers together in factory-style open environments while bosses monitored their work from private offices.

By the 1960s, socialist values encouraged more egalitarian office spaces, with arrangements dependent on functions - side-by-side workstations for clerks, or pinwheel desk patterns for designers.

In 1968, Herman Miller was inspired to create a product based on this new workplace philosophy, known as 'The Action Office'. Enter the office cubicle – the first modular furniture system, with low dividers and flexible work surfaces. By the 1980s, as the ranks of middle ▶





managers swelled, the cubicle concept was taken to the extreme, with high modular walls dividing desks, restricting natural light and blunting collaboration.

The last decade or so has seen a significant reduction in the average office space per employee. In 1995, it was around 30 square metres; today it is 20 square metres or less. This shrinking workspace can be attributed, in part, to companies leveraging hot desking or activity-based working, as well as teleworking.

Today, designers are attempting to part the sea of cubicles and style more sociable spaces, recognising that workspaces must reflect the range of tasks the office worker conducts during a day. At the same time, Green Star is driving an increased focus on good indoor environment quality, and pushing designers to create more sustainable, suitable, resource-conscious working environments which place people 'front and centre'.

The Green Star – Office Interiors v1.1 rating tool, which was released in May 2006, has encouraged higher levels of environmental sustainability in office fitouts by providing best practice benchmarks for everything from natural light and fresh air, to waste management and low-emissions materials. More than 100 offices around Australia have achieved Green Star certification under the rating tool, with another 100 plus projects registered for certification. In late 2012, the Green Building Council of Australia released the next generation Green Star – Interiors tool, which takes sustainability beyond the office and enables other building types to reap the benefits of green interiors.

Sustainable spaces

At the intersection of sustainability, technology and cost-saving sits the office of the future – one which promotes flexibility, adaptability and mobility. Increasingly, we are seeing high-performance green buildings designed around activity-based working or 'free range' principles. Large organisations, particularly the big financial institutions, are recognising that they no longer need to accommodate their entire workforce in a structured, cubicle-filled workplace, and so small, stuffy offices are making way for hot desks and collaborative hubs flooded with natural light and with views of the outdoors.

When calculating the amount of space needed for the entire workforce, it is well documented that up to 40 per cent of the assigned desks in a traditional-style office space are empty at any given time, with people absent, at meetings or elsewhere in the building.

"Clearly organisations are keen on controlling costs, but in parallel, most are driving a higher strategic agenda such as fostering creativity, improving customer service, people performance or speed to market," says Natalie Slessor, Head of Workplace, within Lend Lease's Business Solutions Team.

"The new agile or activity-based workplaces allow people to concentrate, create and collaborate in spaces designed to truly support those tasks. So today, it's not about personalising a desk, or rather expecting just one desk or meeting room type to support a wide variety of tasks throughout the day, it's about personalising your day – selecting the right places to do your best work," Natalie adds.

To be successful, this model requires a diverse hierarchy of spaces, with plenty of options, including quiet space for focused work, meetings, café-style working and relaxation spaces. It also requires a commitment by organisations to ensure that the shift is an empowering one for staff, by looking for ways other than the personal desk to provide a sense of security, identity and engagement.

"These new diverse and choice-filled spaces and places are healthy and sustainable by their very nature. People move more as they work in different ergonomic settings regularly, but these spaces use less square meterage per person as a general rule, less energy as every desk is cleared and unplugged everyday, less paper and there is more staff empowerment. This, in turn, delivers sustainable outcomes that reach beyond the workplace and back into people's homes and communities," Natalie concludes.

Attracting and retaining the top talent

A sustainable workplace is increasingly becoming a powerful recruitment and retention tool. The *Colliers International 2012 Office Tenant Survey* found that sustainable design, activity-based working and the attraction and retention of staff are the top priorities for most businesses. The report found that a whopping 95 per cent of tenants said they wanted to occupy a 'green' building, up from 75 per cent in 2010.

"Building choice is incredibly important to staff in this day and age – they not only want to be well located, with good access to

The complete refit of GPT's office space has pushed the envelope of sustainable fitouts by delivering an energy, water and resource efficient workspace within a building that is more than 30 years old.

public transport and facilities such as child care, bike racks and change rooms, but they also want to work in a flexible, modern environment that is sustainably designed," says Simon Hunt, Colliers International Managing Director of Office Leasing.

"Where sustainable building design used to be an issue for those at the top of a business, it is now being driven from the bottom up. Workers don't feel the need to familiarise themselves with every detail of things like legislation and ratings systems, but they do want to be able to say they work in a 'green building'.

"Green is now the norm – where it used to be a bonus in a building, it is now expected," Simon adds.

ANZ's headquarters in Melbourne's Docklands is an impressive example of a 'world leadership' sustainable building on a massive scale. Designed by HASSELL in collaboration with Lend Lease Developments, the 83,000 square metre office achieved 6 Star Green Star – Office Interiors v1.1 certification in July 2012, making it the largest single-tenanted 6 Star Green Star-rated office fitout in the country, and only the second building in Australia to have achieved the 6 Star Green Star certification 'trifecta' of Design, As Built and Interiors ratings.

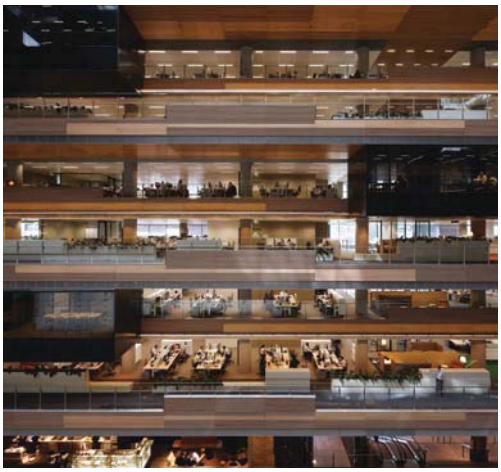
The design of ANZ's office emphasises and facilitates teamwork, offering a range of interconnected spaces to support individual and group working styles. ANZ General Manager Property, Kate Langan, says that "staff resoundingly told us that their physical work environment is important for their individual productivity and the recognition we have received from the GBCA through our Green Star ratings clearly shows that the ANZ Centre has gone a long way to meeting our staff's expectations of their work environment."

The new GPT headquarters in Sydney's iconic, Harry Siedler-designed MLC Centre, achieved 6 Star Green Star – Office Interiors v1.1 certification in July 2012. The complete refit of GPT's office space has pushed the envelope of sustainable fitouts by delivering an energy, water and resource efficient workspace within a building that is more than 30 years old.

Acknowledging that its workforce was more mobile than ever before, GPT created an office environment in which staff no longer have individual work spaces, but instead shift between a mix of open plan work areas, group meeting spaces and soundproof 'pods', all connected to a wireless network. As a result, the number of desks has decreased from 328 to 272 and GPT still has a 20 per cent daily vacancy rate – an indication of the highly mobile workforce.

"GPT already has fewer desks than people," says GPT's Head of Change & Sustainability, Rosemary Kirkby. "People are free to choose where they will work on a daily basis, including at places outside the MLC Centre. The cost of churn has been eliminated. This workplace acknowledges that we are all different and provides choices to satisfy individual preferences."

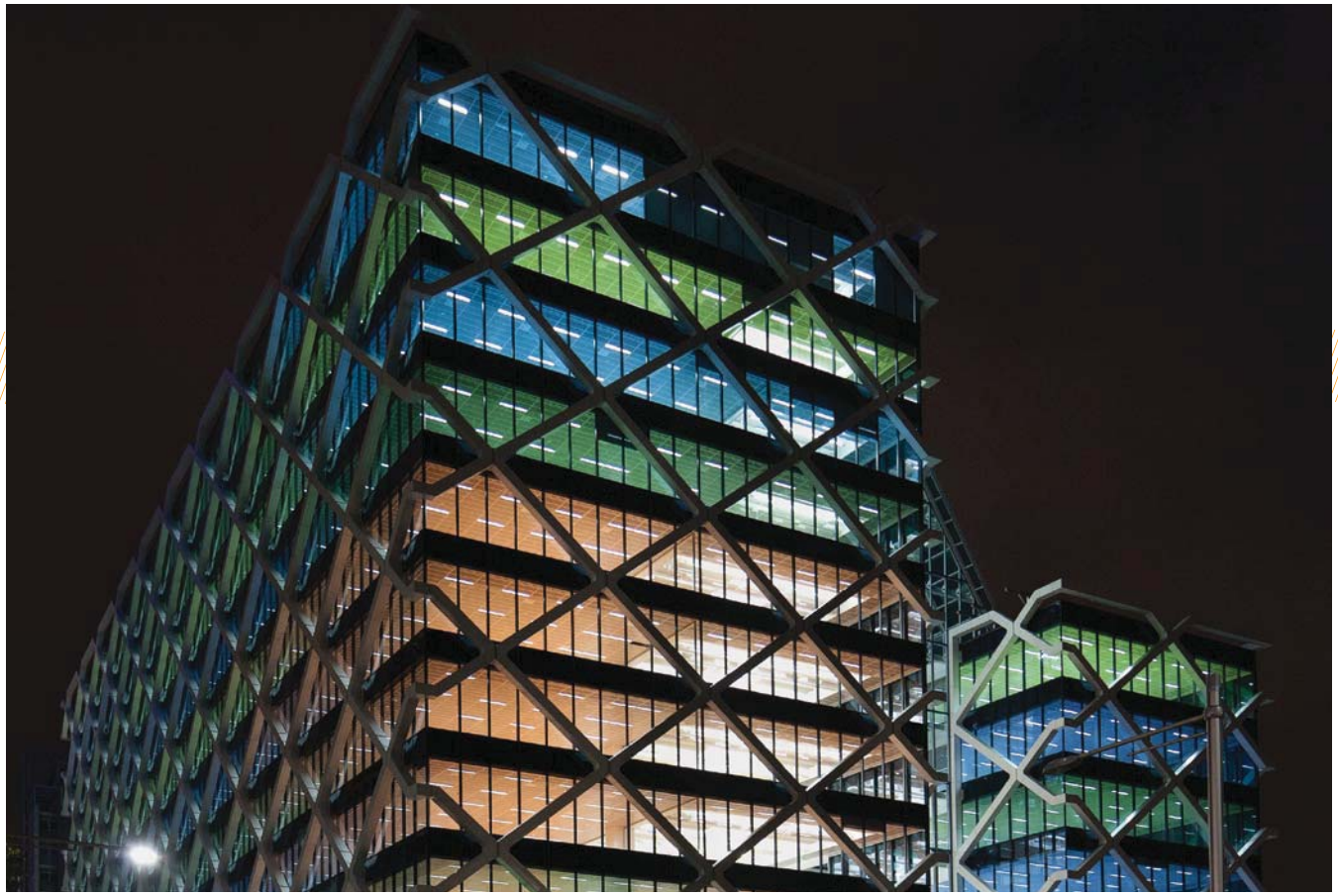
The new GPT office has reduced paper storage by 90 per cent, paper use by 75 per cent, with expected energy costs to halve and lighting energy consumption to fall by 70 per cent. The company is also paying lower rental costs due to the reduction in ▶



Left: **ANZ Centre 833 Collins**
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2
6 Star Green Star – Office Interiors v1.1

Photography by Earl Carter

Right: **One Shelly Street**
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2



floor space. The GPT office is an indicator of a future in which office buildings are meeting places for people to connect and collaborate, rather than places where people 'go to work'.

Rosemary says that the design of the next generation work environment for GPT's Melbourne staff is underway.

"The design of the Melbourne office is being used as a laboratory to test ideas about the future of work and its associated technologies. It will be analogous with a theatre set, easily reconfigured and supportive of human interaction. In this, it will support an increasing amount of project work. It will be managed actively so that spare space does not stand idle but is available for use by others, including our customers. Our intention is to construct a place which will not need further significant investment over the life of the lease – and that's a good sustainability story!"

Productivity plus

Macquarie Group was one of the first companies to seize the opportunities presented by an activity-based working model and a sustainable workplace, after moving to One Shelley Street in Sydney, which has 6 Star Green Star – Office Design v2 and As Built v2 ratings.

Research by the University of Technology Sydney, which tracked 2,500 Macquarie Bank employees over 15 months as they moved into their new high-performance office, has found that the combination of activity-based working and world-class environmental attributes are escalating productivity to new heights.

"A group of participants in the study showed an average of 15 per cent net increase in perceived productivity," says UTS' Senior Lecturer in the Faculty of Design, Architecture and Building, Leena Thomas.

As real estate represents around seven to eight per cent of general business costs, compared to wages which represent up to eighty per cent, a modest increase in productivity can make a large impact on a company's bottom line.

The old 'carrot and stick' model of incentivising based on speed and competition is detrimental to creativity, and our most inspired solutions emerge when we are relaxed, playful and engaged. Work is becoming less defined by hours seen to be at a desk, and is based more on an agreed successful outcome, with a flexible pathway to get there.

Future visions

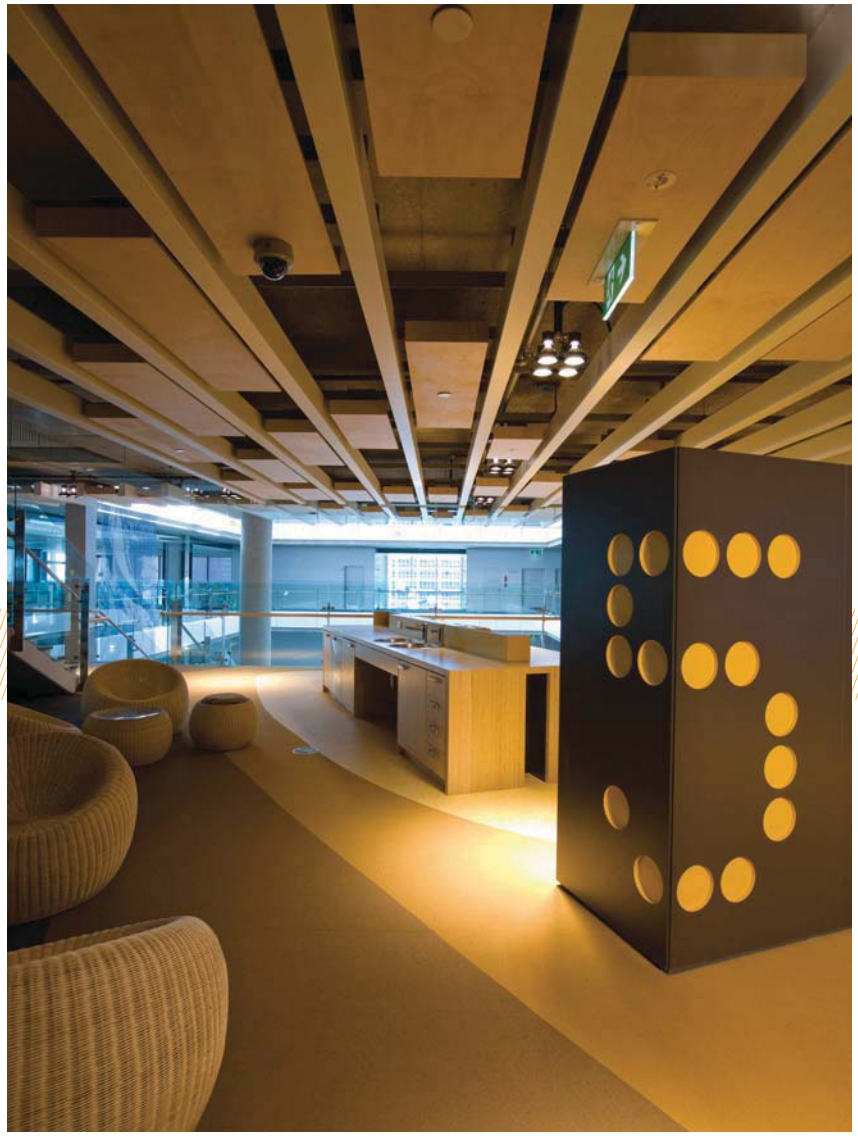
Just as the decanters of booze are no longer on display and the smoke-filled meeting rooms that Don Draper and his colleagues occupied are a thing of the past, the office environment of today will be replaced as society's values continue to evolve.

"Offices will definitely need to change, because the way people use offices to do their work will change," says HASSELL's Head of Knowledge and Sustainability, Steve Coster.

"The idea that the office building is the only space in which to do work is already diminishing, as people are mobile and the office is just one of many destinations. Similarly, while the desk was once the only place we sat to do our work, today we are moving between a range of different types of spaces and activities within the office."

Two credits within the new Green Star – Interiors rating tool address ergonomics and quality of amenities – how the space works as a whole. The 'Quality of Amenities' credit, in particular, recognises the importance of facilitating more than just 'water cooler conversations' by designing spaces that encourage people to interact.

"The office of the future will be less about design trends and more focused on the true needs of the organisation," says ISIS Group's sustainability specialist, Josh Bruce. "Companies will place a greater emphasis on understanding their people, function, stakeholders, clients and commercial objectives to create an office that enriches and empowers staff and stakeholders." ▶



SA Water HQ Tenancy
6 Star Green Star
– Office Interiors v1.1

For Josh, flexibility is paramount. The future office will be flexible, adaptable and "respond to changes in staff needs, economic conditions and strategy". This will require "a more rigorous consideration of social, environmental and economic factors in the design, construction and operational phases of an office."

Of course, technology's role in evolving the office cannot be understated. Wireless internet connections, tablets and smart phones, Skype and social media are enabling people to embrace 'anytime, anywhere' working. We can still have a 'face-to-face' conversation but be in different cities – or even different countries. Smart integration of technology into buildings and digital infrastructure into communities will ensure a more seamless transition to 'work' as a practice, rather than a place.

More attention will also be given to the materials we use and, as more evidence comes to light about their detrimental effects, we will avoid introducing harmful volatile organic compounds, particularly formaldehyde, into our indoor environments through our choice of furnishings and finishes.

While the focus of introducing new workplace models has often been around cost savings, there are far richer benefits of the new workplace, and sustainability is just one of them, says Steve Coster.

"The most immediate way to reduce the carbon footprint of your building is to have a smaller one – this makes a much larger impact than a marginal reduction in energy use. Workplaces are generally under-utilised spaces, so designing a space that is used more intensively has an inherent sustainability benefit. In addition, spaces that are flexible and adaptable will become more valuable, as organisations can change team structures and locations more quickly and easily.

"In the future, and in this context of more mobile, dynamic, sustainable ways of working, the office will play an even more critical role than it does today. It will be the physical place where people gain critical exposure to their colleagues, connect with their managers and work through challenges together. This is a fundamentally different emphasis to its previous role as the place where 'work gets done'. Instead, the office's function will be to facilitate coaching, sharing and monitoring – those important parts of work that are best done face-to-face." ●

Beyond offices

The new Green Star – Interiors PILOT rating tool, released in late 2012, assesses the interior fitout of any building type – whether that's a hospital, a school, a shop or an office.

Green Star – Interiors contains fewer credits than its predecessor, as well as improved flexibility, reduced documentation requirements and clearer compliance requirements which make this rating tool easier and cheaper to use.

For more information:
gbca.org.au/interiors

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King George Central, Brisbane

» Project incorporates a 1,000kW capacity co-generation plant
» 6 Star Green Star - Office Design v2

QUT Science & Technology Precinct

» Project incorporates a 834kW capacity tri-generation plant
» Floth assisted the project team in achieving a 5 Star Green Star - Education v1 rating

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RISING STARS OF GREEN STAR

How do you achieve Green Star certification for a project in just one round of assessment? Our 'Rising Stars' know, with each having prepared a successful submission that resulted in a Green Star rating in Round One.

We asked our Rising Stars for their hot tips for achieving Green Star certification, and for their insights into emerging trends, technologies or approaches that are shaping up to be 'future winners' for Australia's sustainable built environment.

RISING STARS OF GREEN STAR

GRAHAM AGAR
Associate Director, AECOM
Worked on Parkland Road Office Building, Perth
4 Star Green Star – Office Design v2

Hot tip: "Read the technical manual! If you get stuck, then read the manual. If you really can't get the documentation required, then read the manual. If all else fails then read the manual."

Future winner: "ESD consultants will be appointed at the feasibility and planning stage and will be retained by the building owner as independent advisors throughout the design, construction and tuning stages. This will help to ensure that buildings are designed, perform and are maintained to their ultimate potential."

ROCKY SLATER
Design Manager, Built Environs Pty Ltd
Worked on Worldpark Adelaide Building, Adelaide
5 Star Green Star – Office As Built v2

Hot tips: "A robust and comprehensive in-house Green Star management system that breaks each credit down into individual components is a must. Each component or task must be assigned to a person responsible. Maintain a dialogue with your case manager, as they are eager to assist you to achieve the best certification results possible. Keep abreast of GBCA updates and improvements, both online and through the e-newsletter. Go to relevant conferences and maintain involvement in the CPD program. And remain flexible!"

Future winner: "Expect to see fully lifecycled building materials, where the project team can select a product and understand the complete history of where the raw materials were sourced – both recycled and raw products."

REBECCA BREUER
ESD and Mechanical Engineer, Aurecon
Worked on the EPA Victoria office fitout, Melbourne
6 Star Green Star – Office Interiors v1.1

Hot tip: "Be clear, succinct and to the point in demonstrating compliance – that is, only submit what is asked for in the technical manual, nothing more."

Future winner: "The pressure on organisations to demonstrate that they are operating their businesses responsibly has increased and will continue to increase. This leads to greater attention on the sustainable operations of facilities and is driving efficiencies that have not previously been tapped across a wide range of build types and locations."

LYNDON CHRISTIAN
ESD/Services Team Leader, Hutchinson Builders
Worked on 53 Albert Street, Brisbane
4 Star Green Star – Office Design v2

Hot tip: "Ensuring that you have all parties engaged within the agreed design and delivery process from Day One is critical. Providing the teams with clear and concise direction to ensure they meet criteria guidelines is also important. A peer review from an external Green Star Accredited Professional allows a fresh set of eyes to review the package in its complete form prior to submission. This can sometimes identify the simplest of mistakes made by the team across related target credits."

Future winner: "Designs that include high performance façades, onsite generation such as solar and gas fired systems, rainwater harvesting and water treatment, high-efficiency HVAC systems and electrical equipment, best practice control systems and commissioning are the basis for achieving ongoing reductions in building operational costs." ▶

RISING STARS OF GREEN STAR

RAY CHUNG
Senior ESD/Mechanical Engineer,
Floth Pty Ltd
Worked on CSR Triniti Project, Sydney
5 Star Green Star – Office Interiors v1.1

Hot tip: "Make the documentation as clear and relevant as possible. Having a team that understands Green Star is also paramount – especially the client and the builder."

Future winner: "My idea of winning – both now and in the future – is having the right philosophy and setting the right, realistically-achievable goals, then communicating those goals with stakeholders and seeing it through."

THORSTEN PADEFFKE
Discipline Leader ESD, Irwinconsult Pty Ltd
Worked on DEEWR fitout, Darwin
4 Star Green Star – Office Interiors v1.1

Hot tip: "Concentrate on the three C's of communication, coordination and control. Communication is imperative; the information flow between the Green Star Accredited Professional and consultant team should be precise, to the point and responsive. Any uncertainties within the submission should be clarified with the GBCA through TCs or CIRs – do not second-guess. Coordination of responsibilities for Green Star evidence should occur early in the process, followed by regular submission workshops. Quality control of Green Star evidence is also important – assessors have very little time for each credit so the relevant information needs to be easy to find and correctly worded."

Future winner: "Building biology, the scientific study of the holistic interrelationships between humans and the built environment, is an emerging trend. While it is well established in Europe it is still regarded as a fringe division of ESD in Australia. Essentially an extension of the Indoor Environment Quality (IEQ) category, it examines material toxicity, electromagnetic radiation, indoor air pollutants and comfort."

MATT PONTIN
Director, EMF Griffiths
Worked on The Rocket, South East Queensland
4 Star Green Star – Office Design v2

Hot tip: "Green Star certification is all about team work and attention to detail. Our role is to make sure everyone is aware of the significance of the details and to make the process as painless as possible for those involved. If the requirements are clearly communicated and understood, the team stands a good chance of Round One success."

Future winner: "Thinking outside the air-conditioned box! So much energy is expended on delivering conditions that satisfy leasing terms, rather than scientifically delivering comfort conditions. If we can challenge the accepted norms, we can then start to look at mainstream application of natural and mixed-mode ventilation."

ANITA PURSER
Project Engineer, Irwinconsult Pty Ltd
Worked on Surf Coast Shire Civic Building,
Regional Victoria
5 Star Green Star – Office Design v3

Hot tip: "Locking in design principles and sufficient detail at the end of design development is paramount. This way, the whole team is clear as to what they should be including in their documentation. If this doesn't happen then it is almost impossible to get a good result in Round One."

Future winner: "Environmental building upgrades are already a hot topic among building design professionals, and are now being recognised by building owners. More work needs to be done, though, to convince building owners that environmental building upgrades also make financial sense."

DHVANIT SHAH
Sustainability Team Leader, JBA Consulting Engineers Pty Ltd
Worked on DEEWR fitout, Darwin
4 Star Green Star – Office Interiors v1.1

Hot tips: "I see Green Star as a strict auditing process. I make sure that all the essential information is provided in Round One by consulting all discipline consultants. I provide consultants who are new to the submission process with templates of contracts and sample consultant briefs. This makes my part easy. PDF bookmarks and highlighting make for easy-to-read submissions. I have received several good comments from different assessors for this technique."

Future winner: "Super-efficient lighting layout, installation of co-generation plants and energy-efficient air conditioning systems such as under floor air distribution and chilled beams are the future winners in my opinion."

MARK TICKLE
Project Manager, Grocon
Worked on Monash University's 370 Docklands Drive, Melbourne
5 Green Star – Office Design v2

Hot tip: "The secret is being thorough, clear and concise in the compilation of the submission documentation and addressing each deliverable individually – and providing only the documentation required."

Future winner: "Green Star and other building rating systems have driven a considerable improvement in sustainable design, regardless of whether buildings are rated or not. This trend will continue, as awareness of sustainability grows, both within the construction industry and with building occupants."

HANNAH BLOSSOM
Associate Director, Irwinconsult Pty Ltd
Worked on Surf Coast Shire Civic Building, Regional Victoria
5 Star Green Star – Office Design v3

Hot tip: "It's all in the detail. We focus on ensuring coordination across all disciplines. Once the team has completed the submission to its satisfaction, we undertake an internal review before submitting to the GBCA. Consistency across credits is a big focus in this process."

Future winner: "The time will have to come, eventually, when we start to consider energy more holistically – including embodied energy of construction materials. This is some time away, but it's coming."

LE HAN TAN
Principal Mechanical Engineer, AECOM
Worked on 8 Australia Avenue, Sydney Olympic Park, Sydney
4 Star Green Star – Office Design v2

Hot tip: "Try to make things as easy as possible for the Green Star assessor by directing them to the appropriate information. Where necessary, include additional descriptive diagrams to simplify understanding of complex drawings and systems. Only include the necessary documentation requested in the technical manual and TCs."

Future winner: "I think smart and adaptive building facade systems are a future winner."


46B
48B

MAKING THE CASE FOR GREEN STAR CERTIFICATION

With more than 500 Green Star building projects now a reality, it is no longer enough for organisations to claim leadership status with just one or two Green Star-rated buildings.

Metcash Distribution Centre
4 Star Green Star – Industrial Design v1

4 Star Green Star – Industrial As Built v1

See case study on page 74

In 2013, the emerging green leaders are those companies making portfolio or precinct-wide commitments to Green Star.

Organisations such as Places Victoria and Lend Lease, which are working together on Victoria Harbour in Melbourne, have committed to achieve Green Star ratings for all new buildings. Lend Lease, again, is embedding Green Star into the Barangaroo South development in Sydney, while all new Cbus Property acquisitions must have a Green Star rating. In the education sector, Monash and Melbourne universities are applying Green Star to all new construction projects. These developments alone will ensure Green Star influences the built environment for many decades to come.

"The development and use of green building rating tools, such as Green Star in Australia, have assisted in the evolution of the green building concept and provide a common language and metric for establishing what is 'green' and what may be 'green wash'," says Lend Lease's Head of Sustainability, Cate Harris.

"Green Star ratings have become a trusted industry hallmark of quality design, effective delivery and efficient operation. The market now talks in 'stars'. It has become a trusted currency of the property sector and its customers who recognise these benefits and the future value that they represent," she adds.

Meanwhile, South Australia's Urban Redevelopment Authority has mandated Green Star for all the buildings within its Bowden Urban Village development. The Tasmanian Government has committed to Green Star benchmarks for all new public buildings, including schools and hospitals. Perth's Metropolitan Redevelopment Authority is mandating Green Star for two major projects: the Perth City Link and Elizabeth Quay. And, after achieving the first Green Star rating for a healthcare project, SA Health is looking to achieve Green Star ratings for other projects including the New Royal Adelaide Hospital. These state and local government agencies have risen to the challenge set by the Green Building Council of Australia's advocacy agenda – to lead by example.

For all of these demonstrations of leadership, though, there are many other organisations that want all the benefits of a Green Star-rated building – such as lower operating costs, improved productivity and health, and a future-proofed asset – without wanting to commit to certification.

So, why are the leading companies choosing to pursue the Green Star plaque?

Independent verification

There are some within the industry who claim that going down the 'certifiable' route, rather than seeking certification, is less onerous and costly. However, the vast majority of the cost of Green Star certification is for the modelling and documentation – all of which is necessary to verify that sustainability goals are being met regardless of whether or not a Green Star rating is achieved. Once the performance modelling has been carried out, the additional cost for certification is minimal – but it does provide the third party validation that is priceless.

Monash University has achieved a number of Green Star ratings, including the first As Built rating for a multi unit residential development. According to Brett Walters, the university's Environmental Sustainability Manager, this "broad and deep commitment to sustainability" began with the 2005 Monash University Guide to Sustainable Development, known as the 'EcoAccord'.

"The EcoAccord informed project teams on best practice but in itself did not guarantee an holistic sustainable outcome. We chose Green Star As Built in 2009 as a mechanism to drive the delivery of sustainable new buildings, with an aspiration set that developments undergoing certification would deliver a 5 Star As Built outcome," Brett says.

Monash University has four major building projects registered for Green Star ratings, and Walters argues that the As Built aspect and the 'Management' category are critical, "as they provide some certainty that design aspirations will be met."

Seeking Green Star outcomes without Green Star certification is much the same as keeping your own financial accounts and auditing them yourself too. There are numerous stories of project teams that are asked to pursue Green Star 'benchmarks' as a condition of a tender only to discover that the green features aren't up to scratch or have been scaled back during the construction process. In Monash University's case, Green Star As Built ratings provide an 'insurance policy' of sorts.

"As an independently assessed, national, industry-accepted process, Green Star As Built has allowed Monash University to be confident that its sustainability aspirations can be delivered and verified. All construction industry participants understand Green Star and this aids the delivery of sustainable outcomes. Monash remains confident that the continued use of the Green Star suite of tools will improve the performance and reduce the environmental impacts of its buildings," Brett adds. ▶

Monash University, Briggs Hall and Jackomos Hall
5 Star Green Star – Multi Unit Residential Design v1

5 Star Green Star – Multi Unit Residential As Built v1

Photography by John Gollings

See case study on page 78

Building 215 Engineering Pavilion
5 Star Green Star – Education Design v1

A competitive edge

Tenants and buyers are increasingly demanding Green Star-rated buildings to 'future proof' their businesses against rising energy and water prices, to attract and retain staff, and to demonstrate that corporate social responsibility starts at home.

While the industrial market is still grey, rather than green, some organisations are starting to recognise that a Green Star rating represents a 'future-proofed' investment. Australand, for example, achieved a 5 Star Green Star – Industrial Design v1 rating for The Key Spec 1 building in Melbourne at the end of 2012. This achievement is all the more significant as it was a speculative development.

"For Australand, the main driver for certifying – even when we're undertaking a speculative development – is the advantage it can provide in securing tenants. A Green Star rating gives us an extra edge in our marketing, as it provides credible, third party assurance," says Australand's Sustainability Manager, Paolo Bevilacqua.

"In the past, when we've sold assets, a Green Star rating has provided another justification for the purchaser. In the case of The Key Spec 1, which Australand owns, Green Star certification gives us assurance that we're 'future proofing' our investment. When combined with the fact that it will reduce occupancy costs for our customers, we believe the Green Star rating gives both Australand and our customers a competitive edge in the market as utility costs continue to rise."

Paolo says the $750,000 for the green features amounted to a green premium of around six or seven per cent. "Since building The Key Spec 1, we've revised our design approach, costs have come down, and we think a 4 Star Green Star rating requires an additional investment of two to three per cent on base design which will comfortably provide a return on investment within a few years."

Green leadership

A Green Star rating can provide a clear expression of a company's commitment to minimising its environmental footprint. Increasingly, people around the world perceive green buildings as modern and ethical – and corporations, governments and community organisations with Green Star-rated buildings benefit from these perceptions through brand equity, community satisfaction and staff wellbeing.

In 2007, NAB embarked on an extensive refurbishment program to transform its property portfolio and reduce its carbon emissions. Recognising a significant part of a building's potential to operate efficiently is determined at the design phase, NAB incorporated environmental design requirements into its property design and performance standards, for both new builds and major refurbishments.

"We were seeking an holistic rating system that we could direct our project team to, so that

> “We were seeking an holistic rating system that we could direct our project team to, so that there was no ambiguity around what we would be working together to achieve.”

Nicola Murphy
Senior Manager – Environment & Sustainability
NAB

there was no ambiguity around what we would be working together to achieve – leadership in environmental design. Green Star provided this for us,” says NAB’s Senior Manager Environment & Sustainability, Nicola Murphy.

“Five years later, having completed a number of Green Star – Office Interiors v1.1 refurbishments across Australia, and with several more in progress, Green Star certification is providing NAB and our stakeholders with the confidence that we are achieving our environmental design aspirations,” Nicola adds.

More than a plaque

So, how do you convince an organisation that a Green Star rating is about more than paying for a plaque?

“We tell our clients that third party certification is the difference between having proof that your building is green and green washing,” says Jane Toner, Senior Associate at Sustainable Built Environments.

“We find many councils around Australia, in particular, are mandating that new developments must be equivalent to 4 Star Green Star benchmarks – but what does that actually mean? Without Green Star certification it means nothing.”

Jane says that many developers, when pressed to meet 4 Green Star benchmarks, will go for the absolute minimum of 45 points. “We explain that any project team seeking a 4 Star rating would include some buffer points to guarantee a 4 Star rating, but if they are not getting the development certified it’s all academic anyway.”

Some Green Star credits lend themselves to being ‘Green Star-equivalent’ – for example there is rainwater harvesting or there is not. However, a large number of credits cannot be claimed as ‘certifiable’ without actually undertaking the documentation. Is the level of daylight high enough? How much better is the stormwater management than business-as-usual? Is all the paint really low-VOC?

“We tell our clients that if they want the certainty that their requirements are being met, they can’t do that without certification,” Jane says.

The City of Gosnells, just south east of Perth, sees its new Civic Centre as a ‘future-proofed’ investment able to withstand tighter environmental legislation, the rising cost of utilities and the introduction of a price on carbon. Paul McAllister, who project-managed the 5 Star Green Star – Office Design v2 project, says the council expects a five year payback period on the extra outlay of $750,000, demonstrating that building green is a smart financial decision. As McAllister points out: “We have a commitment to fiscal responsibility for our rate payers. That’s why we decided to build green.” ▶

City of Gosnells Civic Centre Redevelopment
5 Star Green Star – Office Design v2

Karen Billington, Sustainability Manager at Northrop Consulting, says client commitment to Green Star certification is best achieved through a detailed cost analysis.

"We assess each Green Star credit against the design brief and identify potential areas of additional cost – either capital costs for new or improved equipment, consultancy costs for modelling and reporting, or contractor costs for additional site management," Karen says.

This breakdown can often be a useful tool to help the client understand the design provisions of the project.

"We find that, initially, when compared to the original design brief, the additional costs for Green Star can be considerable. We then meet with the client to work through our analysis, and most of the time we find the client will say 'I expected that this would be provided as part of best practice building design. Haven't we included this in our design brief?'," Karen explains.

"Following our discussions with the client, we will revise our cost analysis to show a reduction in 'additional Green Star costs'. Many of the Green Star initiatives essentially then become part of the standard building brief. We find that, inevitably, the client will choose to pursue a certified Green Star rating because the additional costs are far less than they anticipated and they can prove a strong business case to do so."

Kay Crowley, Director of Murchie Consulting, says that her approach is to be "consultative and find out what is important to the client. We work with our client to determine their priorities. If it's about community leadership or education, then we push them to achieve Green Star certification, as there is no better way to demonstrate that commitment."

Realising higher returns

The latest research into the value of Green Star-rated buildings provides positive proof that Green Star-rated projects deliver higher returns on investment than their non-green counterparts.

The *Australian Green Property Investment Index*, published by IPD in September 2012, found that Green Star-certified buildings in the Sydney and Melbourne CBDs outperformed the broader office market. Green Star returns were strongest in the Sydney CBD with rated buildings (12%) outperforming the rest of the market (9.2%) by 280 basis points. In the Melbourne CBD, Green Star-rated buildings (11.9%) outperformed the market (10.9%) by 100 basis points.

The *Building Better Returns* report, published in 2011 by the Australian Property Institute and Property Funds Association, yields even more spectacular results, reporting that Green Star-rated buildings delivered a 12 per cent 'green premium' in value and a five per cent premium in rent.

For ISPT Super Property, Green Star ratings act as 'quality assurance'. When ISPT first sought Green Star certification, the business case for green building was only just beginning to take shape. For many at this time, sustainability spelled risk, and only the true leaders were certifying at all, much less taking a portfolio approach to Green Star. Green building investment has proved a winning formula for IPST, as evidenced by the 14 Green Star certifications achieved to date across the commercial office and retail sectors, with more in the pipeline for the year ahead.

"Australia's property industry is recognised internationally as one of the most sophisticated and transparent markets," says ISPT's Chief Executive Officer, Daryl Browning. "Inherent in that status is the integrity of information, benchmarks and our legal system. Those investing in or occupying properties need benchmarks they can rely on. We think Green Star certification is one of the quality assurance measures everyone can rely on with confidence."

With Green Star rating tools now available for every building type, and for every stage of the building lifecycle, the industry is moving away from a building-by-building approach to sustainability. It's clear that the leaders of the industry are no longer choosing Green Star for 'lighthouse' projects. They are insisting on Green Star for every project.

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GREEN STAR REVOLUTION

THE REVOLUTION IS BUILDING

In 2011, the Green Building Council of Australia introduced Green Star Revolution: a commitment to make Green Star simpler, faster, more consistent and more cost-effective.

Since then, we've been working hard to deliver a revolutionary rating system that is:

1. **EASY-TO-USE**
2. **EFFICIENT**
3. **COST-EFFECTIVE**
4. **CONSISTENT**
5. **TRANSPARENT**
6. **RIGOROUS**
7. **INNOVATIVE**

Here are some of the projects on which we've been working and some of the outcomes that they are delivering.

1. EASY TO USE

Online technical manuals

Members of the Green Building Council of Australia now have anytime, anywhere, free access to online technical manuals. In the past, it was possible for project teams to use the wrong technical manual for projects, and subsequently prepare incorrect submissions. The new online technical manuals, which are now free, ensure that there are no barriers to project teams accessing the right information. At the same time, sub-contractors who need information on a single credit can access it online for free.

The Green Star Rating Tool Technical Manual Viewer makes it easy to search for keywords and find the information you need. "As lecturer in building, construction and sustainability at the University of Canberra, I recommend the Green Building Council of Australia's website as a great resource for teaching, learning and research. In my lectures on Green Star rating tools, I can weblink to the individual rating tools for buildings or communities, and we can review and discuss credit intent and technical criteria against case studies. This helps my students to apply Green Star best practice to their own projects at work," says Assistant Professor, Building and Construction Management Faculty of Business, Government & Law at the University of Canberra, Gesa Ruge.

2. EFFICIENT

Free Area Definition Rulings

The Area Definition Ruling service was introduced in 2012 to assist teams requiring a higher degree of certainty about how Green Star should be applied to their particular project. An Area Definition Ruling can highlight where alternative approaches are needed, and whether extra information will be required in Green Star submissions. In complex projects, this free service can save time and money.

One Green Star project, the Gold Coast Rapid Transit Project: Depot Building recently required the service to clarify some hard-to-define areas. "We found being able to clarify the areas upfront was very helpful, and the extra assistance from the Green Building Council of Australia made it a positive experience. Gaining that additional clarification has made it easier for us to achieve our desired outcome," says the project's coordinator and Green Star Accredited Professional, Built Environs' Sonya Blackburn.

3. COST-EFFECTIVE

Credit-by-credit assessment

The new credit-by-credit assessment service is helping project teams to achieve more certainty about the likely outcome of credit claims prior to the regular rounds of assessment and reduce the need for 'buffer' credit claims.

Deborah Davidson, Director of ESD consultancy dsquared, found the new assessment service beneficial when working with the Bowden Urban Village development in Adelaide.

"Every new building on this urban infill site is required by Renewal SA to achieve at least a 5 Star Green Star Design rating. By working with the GBCA and Renewal SA, we were able to pre-assess common credits across the site. These can readily be used by each developer, giving them a head start on the journey to 5 Star," Deborah says.

"As these are the first residential Green Star projects in SA, the credit-by-credit assessment service has shown the industry that working with the GBCA in this way can help reduce time and costs on a project. This allows the developers to concentrate on the delivery of a sustainable community, and raises the profile of Green Star in residential developments," Deborah adds.

4. CONSISTENT

Deemed-to-satisfy provisions

According to ESD Consultant at Norman Disney & Young, Mark Taylor, the deemed-to-satisfy provisions introduced into the 'Commuting Mass Transport' credits has been another useful improvement to Green Star and the consistency of assessments.

"A large proportion of projects fall into the covered post codes, which means that we can make a quick and easy assessment of the likely points available. Early certainty about points makes the entire process more cost-effective and transparent, and reduces the perceived risk for clients at an earlier stage," Mark says. ▶

5. TRANSPARENT

Green Star Day

In 2012, the GBCA introduced the 'Green Star Day' educational format to help the industry engage with the Green Star team, sharpen its skills and earn CPD points into the bargain. Participants were able to get 'up close and personal' with the Green Star team, and ask the tough questions.

Cundall's sustainability specialist, David Collins, said that he "learnt a lot about the future directions of Green Star and how that will apply to the building industry across many sectors," while Interface's Sofie Kogos said it was "concise and very engaging."

TCs and CIRs online

Transparency is also behind publishing a new round of Technical Clarifications (TCs) and Credit Interpretation Requests (CIRs), which will ensure the entire industry has access to previous rulings at no charge.

6. RIGOROUS

Restrictions on Green Star Design ratings

Green Star – Design ratings for projects registered after 1 January 2013 will be valid for 24 months from a building's practical completion. By limiting the length of time that building projects can market a Green Star – Design rating, we are strengthening the robustness of Green Star, and ensuring that project teams that achieve As Built and future Green Star – Performance ratings are recognised and rewarded.

"Once a building is constructed, our focus should be on what was actually built, not the design. The GBCA's new measure will support the uptake of more Green Star – As Built ratings, and ensure that green design translates into green buildings," says Grocon's Chief Executive Officer, Daniel Grollo.

Refining the Green Star 'Materials' category

As the industry's understanding of sustainability expands, and as Green Star evolves, we continue to challenge the industry to meet increasingly higher benchmarks. Our work to refine the Green Star 'Materials' category has been integrated into the new Green Star – Interiors rating tool, and we are exploring rigorous new approaches with the release of discussion papers on lifecycle assessment and construction and demolition waste management.

President and Chief Executive Officer of Interface Asia Pacific, Rob Coombs, believes that Green Star has had a far-reaching impact across Australia's supply chain and we are now reaping the benefits. "Manufacturing has been driven to comply with new benchmarks for emissions, recycled content and product stewardship. In fact, Green Star has introduced a new competitive dynamic that, these days, is often the difference between winning and losing business," Rob says.

7. INNOVATIVE

Innovative new rating tools

We continue to work on developing and delivering the next generation of Green Star rating tools, including:

Green Star – Custom

In 2012, new customised rating tools were released or under development for fire and railway stations, and for student accommodation. We also certified the first ever Green Star restaurant – McDonald's Kilsyth South in Melbourne.
"Restaurants previously fell outside the scope of the Green Star rating system, so the collaboration with the GBCA now means that McDonald's can join the league of Green Star leaders," said McDonald's Kilsyth South licensee Howard Armitage.

Green Star – Performance

A number of high-profile projects are keen to test the Green Star – Performance rating tool when it is released in 2013. "Green Star – Performance will enable us to verify our claims regarding sustainability, and give tenants and prospective tenants more confidence that their buildings are environmentally efficient and cost-effective," says Paolo Bevilacqua, Sustainability Manager with principal sponsor, Australand.

Green Star – Communities

Dozens of project teams are lining up to register their projects for Green Star – Communities PILOT ratings. Minister for Infrastructure and Transport, the Hon Anthony Albanese MP, says that Green Star – Communities "goes to the heart of what we are seeking to achieve with our National Urban Policy – and that is to make our cities more productive, sustainable and liveable. The Green Building Council of Australia is to be commended for developing this tool, which will be of vast help to governments, developers and the public who want the best information to guide their decisions about sustainability." ●

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> “Green Star has introduced a new competitive dynamic that, these days, is often the difference between winning and losing business.”

Rob Coombs
President and Chief Executive Officer
Interface Asia Pacific

Just five years ago, a trip to the local hardware store was a challenge for any environmentally-conscious renovator. Shower heads used 22 litres of water a minute, light bulbs were incandescent and most paints contained chemicals that left you with a headache.

Today, green products that were once expensive and hard to source are now affordable and accessible – and these products are now stocked on the shelves of every hardware store in the land. Water-efficient fittings, LED lights and compact fluorescents, paints low in volatile organic compounds – the list is endless.

With an increasing number of building professionals guided by Green Star in the design and construction of their projects, as well as in the procurement process, the demand for green products is greater than ever before. In fact, a 2012 report by Accenture found that a third of firms selling environmentally-friendly products are struggling to keep up with demand.

The vast majority of businesses surveyed by Accenture said that sustainability was vital to their future growth, and that regulation and corporate reputation were becoming less important as sustainability continued to rise in a virtuous circle of commercial opportunity and investment growth.

President and Chief Executive Officer of Interface Asia Pacific, Rob Coombs, believes that Green Star has had a far-reaching impact across Australia’s supply chain and we are now reaping the benefits.

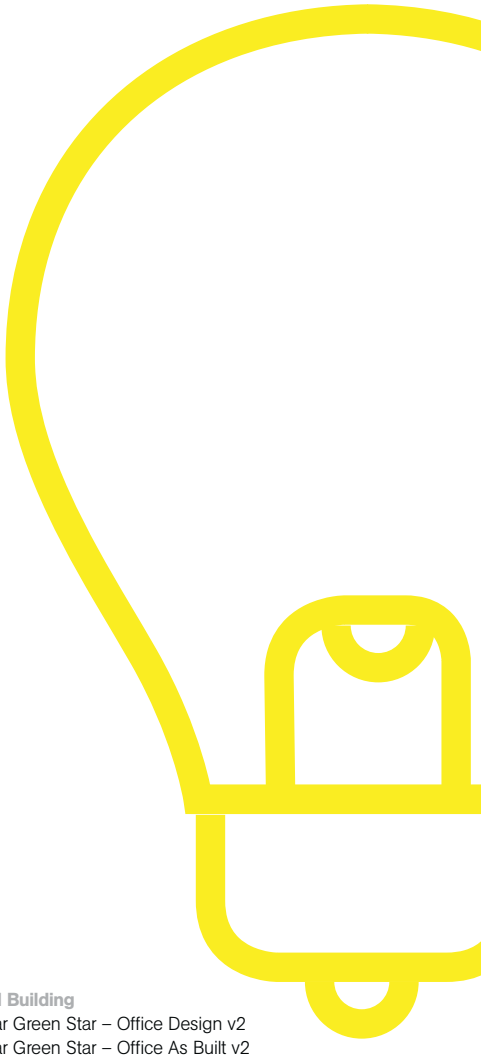
“Manufacturing has been driven to comply with new benchmarks for emissions, recycled content and product stewardship. In fact, Green Star has introduced a new competitive dynamic that, these days, is often the difference between winning and losing business,” Rob says.

Interface has established a goal to be entirely sustainable, which it calls ‘Mission Zero’, by 2020. As a result, Interface views all its product development and work processes through a lens of sustainability.

Rob says manufacturers today must ask themselves “to what degree do products and the processes adopted demonstrate a commitment to a lower environmental footprint and compliance with Green Star standards?

“Once you influence upstream supply, the effect on the environment is multiplied. Interface read this change very early and our ability to support Green Star compliance has been one of the key drivers behind our growth in recent years,” Rob explains.

Dulux sustainability specialist, Rod Vockler, agrees, saying that Green Star was the primary driver for the development and release of Dulux Professional EnvirO2. ▶



AHM Building
4 Star Green Star – Office Design v2
4 Star Green Star – Office As Built v2

One of the first low-VOC product offerings on the market, EnvirO2 paved the way for future low-VOC paint innovations such as the reduction of VOC levels in the mainstay Dulux Wash & Wear range.

"Certainly, the Green Building Council of Australia is influencing product choice," Rod says. "We felt it was important to provide the industry with sustainable products. Early adoption has made it easier for Dulux to provide innovative products that meet painters' needs and environmental requirements, while maintaining a leading position in the market."

"Rating systems have supported the growth of our business for many years. As our research and development is undertaken in the US, product innovation has been, in part, driven by the USGBC's Leadership in Energy and Environmental Design (LEED) rating tools," says Frank Harrington, Commercial Manager of Solatube Australia, which produces high-performance daylighting systems.

"We are starting to see the design community take on our daylighting systems for Green Star projects, and, as we found in the US, we expect that Green Star will also help drive our sales in the commercial space in Australia"

Furniture manufacturer Schiavello Group has established a reputation for environmental sustainability. According to Mark Thomson, Schiavello's Corporate Sustainability Principal, Green Star has "complemented our natural approach to ESD and has assisted us to fine-tune various processes and market offerings. Green Star gives us an industry-leading benchmark as not only a baseline for measuring our efforts, but a respected medium to highlight our capabilities," Mark says.

One of Schiavello's most recent innovations is a workplace platform which can adapt to new workplace developments and technologies. This means workspace managers can redeploy existing infrastructure rather than replacing entire systems to accommodate ever-evolving workspace needs. "It's a significant shift away from heavy workstations that become quickly dated and end up in landfills," Mark says.

From green dreams to everyday reality

Countless case studies of Green Star-rated projects are positive proof of how Green Star has accelerated the innovation cycle to a lightning speed. Many green building design features and technologies that were once leading-edge are now integrated into new projects as a matter of course.

"Green Star gives us an industry-leading benchmark as not only a baseline for measuring our efforts, but a respected medium to highlight our capabilities."

Mark Thomson
Corporate Sustainability Principal
Schiavello

Lend Lease's 30 The Bond in Sydney, which achieved Australia's first Green Star – Office As Built rating, featured the first large-scale application of chilled beam technology in Australia. Paul Edwards, the then General Manager Environment at Bovis Lend Lease, said at the time that "everyone was sceptical about chilled beam technology working in Australia."

It took only a few 40 degree days, during which 30 The Bond maintained a comfortable 23 degrees, for the technology to become accepted. In fact, by 2007 – just three years later – chilled beam systems were used more widely in Australia than in the United States.

The highest ever scoring Green Star building, Pixel, showcases so many leading-edge ideas that the team submitted 30 separate innovation claims and were awarded the maximum of five Green Star Innovation points. The Pixel team's commitment to green thinking even drove changes to government regulations.

Schiavello
Climate workplace platform

The project was restricted from using innovative vacuum toilets due to local council policies. Determined to get a positive outcome, the Pixel team successfully lobbied the local council and Grocon is now distributing the technology throughout Australia and integrating the vacuum toilets into other projects, including Melbourne Water's new headquarters.

Innovation and investment

Green Star requirements have been a key consideration in product development, says Laminex Group's General Manager – Marketing, George Bej. "How products will perform in line with Green Star helps drive innovations and directs investment. Sustainable design is socially responsible but it is also smart design. It requires a willingness to take the next step in product research and development, and invest in the solution."

The Laminex Group has adopted a serious approach to sustainability. All four Australian manufacturing plants are Chain of Custody (CoC) certified, which requires tracking at all stages of manufacturing and distribution to ensure the final product is produced from legally-sourced wood fibres. In addition, The Laminex Group took the pioneering step to transition all E1 raw and decorated MDF products to an even lower formaldehyde classification E0 MDF as standard – which emits half the formaldehyde of E1 – at no extra cost to customers.

And the move has been good for business. "We find customers are increasingly turning to us to share our sustainability expertise. Our leadership in this area has helped to shift attitudes internally – we find our manufacturing staff are more environmentally-conscious than ever before, and are always looking for ways to improve our company's environmental performance," George says.

Kingspan's Karim Muri says his company's sustainability initiatives also gained a push from Green Star. Kingspan manufactures high-performance insulation and Karim says "Green Star has accelerated our initiatives. We were noticing a lot more demand from architects about our applicability to Green Star and our relevant credentials."

Green Star's presence in the market has driven manufacturers to find more sustainable processes and reduce environmental impact on the factory floor. "As well as helping to reduce the carbon footprints of buildings, we also wanted to show that we could reduce the carbon footprint of our products before they even get to the site," Karim says.

One of Kingspan's innovations was the redesign of the Air-Cell cross-linked foam range so that it no longer needs to be packaged with cardboard cores. Kingspan estimates this saves almost 22,000 kilograms of cardboard waste material on construction sites annually. "If all those cores were rolled flat, they'd cover close to 30,000 square metres, or about 5 soccer fields. While cardboard is a recyclable waste, it's clearly far better not to produce the waste in the first place."

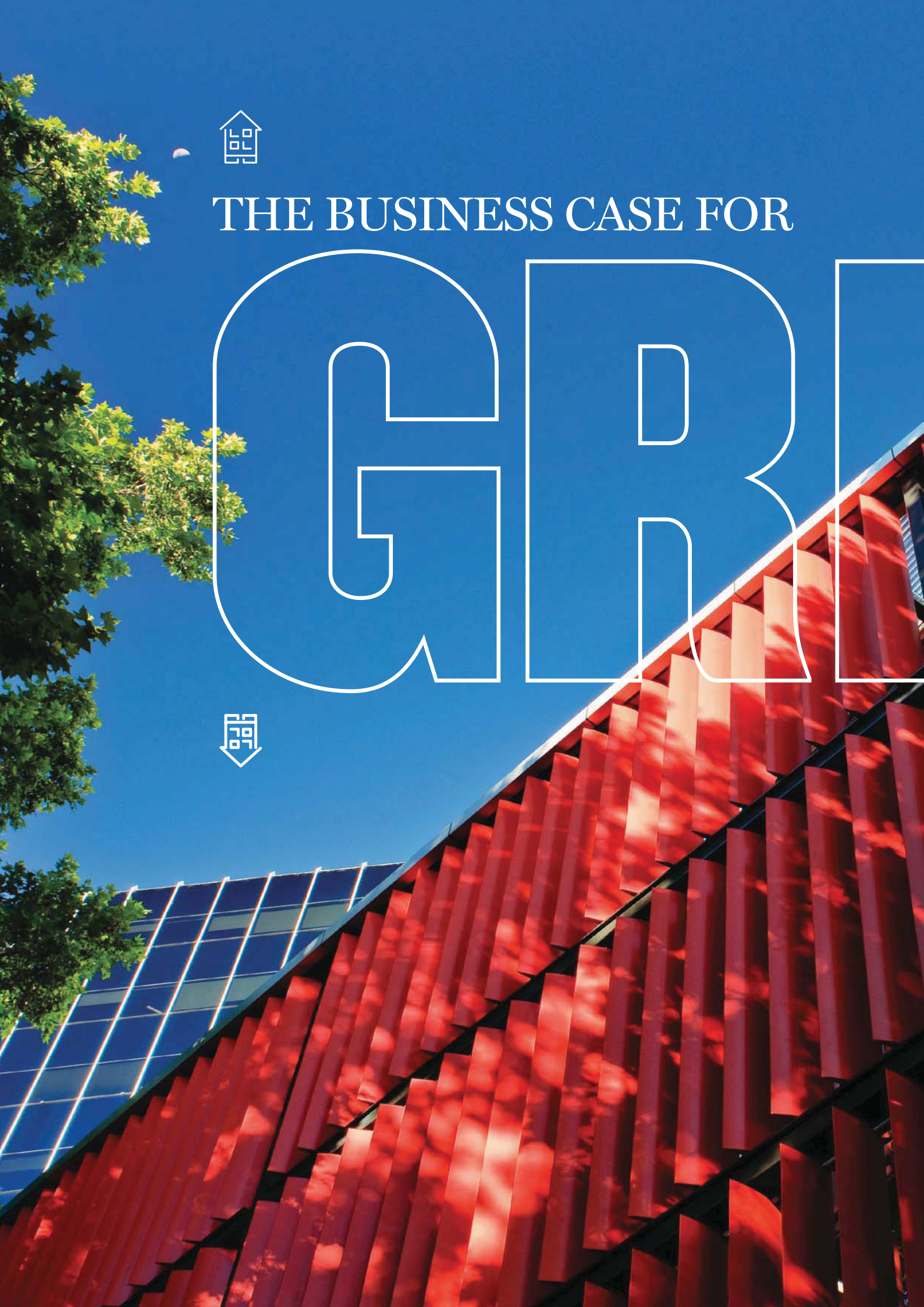
Another innovation reduced manufacturing waste by eliminating the need to trim the edges of the Air-Cell bubble range before being packaged. This has saved almost 15,000 square metres, or 5,500 kilograms, of waste going to landfill each year.

Equally impressive is Godfrey Hirst's $3.5 million water recycling facility that opened in 2010 and is now saving 250 million litres of water a year. By reprocessing 175 million litres of effluent production water along with 75 million litres of captured storm water and returning it to Class A water for reuse, the facility saves 250 million litres of water each year – the equivalent of 100 Olympic-sized swimming pools.

Robert Lunardelli, an environmental engineer at Godfrey Hirst says that both external and internal forces have driven the company's environmental initiatives – and Green Star is one of them. "Increased cost of resources and services and increasing consumer demand for products with positive environmental credentials manufactured by companies with sustainable practices" have converged, Robert says.

In this environment, manufacturers and suppliers are beginning to understand the importance of maintaining responsibility for their products throughout their lifecycle. This, in turn, helps purchasers to make buying decisions based on what's right not just today and tomorrow, but well into the future. Now THAT'S true sustainability.

Pixel Building
6 Star Green Star – Office Design v3
6 Star Green Star – Office As Built v3



THE BUSINESS CASE FOR

GR

GREEN BUILDING

The business case for green building continues to stack up. We now have evidence that green buildings deliver a range of quantitative and qualitative benefits: from lower operating costs and increased office productivity, through to faster patient recovery times and improved student results on tests.

2 Victoria Avenue
6 Star Green Star – Office Design v1

5 Star Green Star – Office As Built v2

5 Star Green Star – Office Interiors v1.1

See case study on page 56

Green buildings provide a bricks-and-mortar demonstration of an organisation's commitment to fiscal responsibility – something that is increasingly important in both the public and private sectors.

Better environment

Buildings are the single largest contributor to the world's greenhouse gas emissions, using 40 per cent of global energy and generating up to 40 per cent of carbon emissions.

In Australia, commercial and residential buildings alone contribute 23 per cent of Australia's total greenhouse gas emissions. Minimising a building's carbon footprint can make a significant positive impact on the global environment.

Innova21, the University of Adelaide's Faculty of Engineering, Computer and Mathematical Sciences building, was the first project in Australia to achieve a 6 Star Green Star – Education Design v1 rating. The use of geothermal energy storage is expected to reduce the building's cooling-related CO_2 emissions by 58 per cent, while the natural gas-fired tri-generation plant will deliver a 60.3 per cent reduction in peak electrical demand as well as significant savings in carbon emissions.

The Lilyfield Housing Redevelopment in Sydney achieved a 5 Star Green Star – Multi Unit Residential PILOT rating in 2009. Housing NSW invested in environmentally sustainable initiatives such as gas-boosted solar hot water systems, 267 square metres of solar panels and a 4 kilowatt photovoltaic system to power common area lighting. These initiatives deliver annual savings of $19,000 – or $213 per unit – meaning the annual electricity bill for households is down by 25 per cent.

Lower operating costs

Green buildings are built for high levels of energy and water efficiency, so they are cheaper to operate. The US General Service Administration's *Assessing Green Building Performance* (2008), found that green buildings:

- consume 26 per cent less energy than the average building
- generate 33 per cent fewer greenhouse gas emissions.

In fact, a minimal two per cent upfront cost to support green design can result, on average, in lifecycle savings of 20 per cent of total construction costs – more than 10 times the initial investment.

Global infrastructure services consultancy, Cardno, operates from the 6 Star Green Star – Office As Built v2 Green Square North Tower in Brisbane, developed by Leighton Properties. Support Services Manager at Cardno, Rebecca Ernst, was impressed by the financial reward of a Green Star-rated building. "Since moving from our old 4,500 square metre office space to our new 7,800 square metre space in Green Square North Tower, our monthly energy bills have dropped from an average of $12,000 to approximately $8,000 per month. For us, this is positive proof that moving to a green building was a smart financial decision," she says.

Melbourne University's The Spot, which achieved a 5 Star Green Star – Education PILOT rating, used 46 per cent less energy

Lilyfield Housing Redevelopment
5 Star Green Star – Multi Unit Residential PILOT

in its first year than comparable buildings across the rest of the University. According to its annual financial report, "the whole building's energy use is considered to be exceptional".

This translates into savings of more than $180,000 a year compared to the average of equivalent buildings on campus, a saving which will more than repay the sustainability premium of five per cent.

With the largest Green Star fitout in the country, ANZ is reaping the rewards of its multi-million dollar investment in the sustainability initiatives at its global headquarters. The ANZ Centre has achieved a 6 Star Green Star – Office Interiors v1.1 rating, and as ANZ Group General Manager for Property, Kate Langan, says "The implementation of ongoing operational efficiencies, made possible by ANZ Centre's environmental design, has reduced our annual electricity demand by 12 per cent since the buildings opening. This has translated into energy cost savings of around $200,000 per annum"

Fiscal responsibility

Green buildings provide a bricks-and-mortar demonstration of an organisation's commitment to fiscal responsibility – something that is increasingly important in both the public and private sectors.

The City of Gosnells achieved a 5 Star Green Star – Office Design v2 rating for the retrofit of its Civic Centre, near Perth. The sustainable transformation means the Civic Centre is now 'future-proofed' to withstand tighter environmental legislation and the introduction of a price on carbon. The Council expects a five year payback period on the extra outlay of $750,000, demonstrating that building green is a smart financial decision.

According to Peter Slattery, of law firm, Johnson Winter & Slattery, operating from a Green Star-rated building has strengthened his firm's green credentials and demonstrated its commitment to fiscal responsibility. "The energy efficiency of the building is obviously very important," Slattery says of his firm's headquarters at 20 Bond Street in Sydney, which has a 4 Star Green Star – Office Design v3 rating. "Our clients do expect us to operate an efficient business from a cost perspective," he explains. ▶

46%

Melbourne University's The Spot used 46 per cent less energy in its first year than comparable buildings across the University.

Innova21
6 Star Green Star – Education Design v1

Photography by Dianna Snape

Convesso 8 Waterside Place
4 Star Green Star
– Multi Unit Residential PILOT

See case study on page 68

65%

Convesso 8 Waterside Place in Melbourne is designed to deliver a 65 per cent reduction in business-as-usual heating and cooling energy

Higher returns

Green Star-rated buildings deliver consistently higher returns on investment than their non-green counterparts. *The Building Better Returns report* (2011), published by the Australian Property Institute and Property Funds Association, found that Green Star-rated buildings are delivering a 12 per cent 'green premium' in value and a five per cent premium in rent, when compared to non-rated buildings.

Similarly, the *Australian Green Property Investment Index*, published by IPD in September 2012, found that Green Star-certified buildings in the Sydney and Melbourne CBDs outperformed the broader office market. Green Star returns were strongest in the Sydney CBD with rated buildings (12%) outperforming the rest of the market (9.2%) by 280 basis points. In the Melbourne CBD, Green Star-rated buildings (11.9%) outperformed the market (10.9%) by 100 basis points.

Recent international research suggests these higher returns are not restricted to the commercial market. Researchers Nils Kok and Matthew Kahn conducted a pricing analysis of all 1.6 million single-family home sales in California from 2007-2012, controlling for all other variables that typically influence selling price, such as location, size, age and amenities. They found that homes with a green certification achieve a nine per cent 'green premium'. The average sale price of a non-certified California home is $400,000, with green certification raising the price by more than $34,800.

Here in Australia, the refurbished Szencorp Building was the second to achieve a 6 Star Green Star – Office Design v1 rating. In its first three years of operation following the refurbishment, the building realised energy savings of 65 per cent, as well as an 88 per cent saving in water consumption compared to industry average standards. According to the company's former Group Manager for Sustainable Buildings, Rina Madden, "The project has proven that sustainable buildings are a good business model – retrofitting reduces day-to-day running costs and increases a building's value."

With its 4 Star Green Star – Multi Unit Residential PILOT rating, Convesso 8 Waterside Place in Melbourne is designed to deliver a 65 per cent reduction in business-as-usual heating and cooling energy through a high-performance double glazing system and insulation to all walls and ceilings. It's also delivering dividends for the developer. Lend Lease's Executive Director, Hugh Martin, says: "It is clear that sustainable buildings like Convesso make business sense. They represent smart financial investments today and environmentally responsible investments in our future."

Attractive to tenants and buyers

Greener buildings both attract prospective tenants and help retain existing tenants – reducing risk and increasing building value into the bargain. The GBCA's *Valuing Green* (2008) report found that green buildings attract better quality tenants, such as government and 'top tier' corporates with stable businesses and strong commitments to corporate social responsibility.

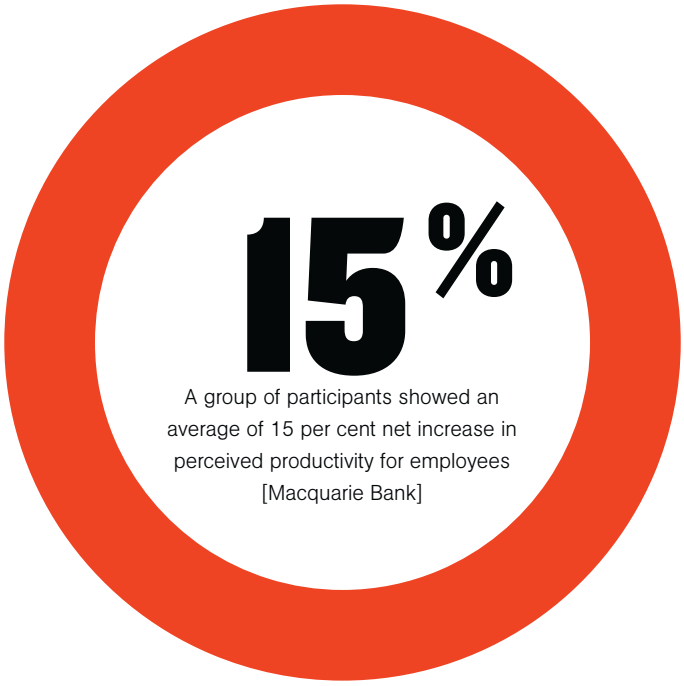
Four years later, Colliers International's *2012 Tenant Sentiment Survey* has found that 95 per cent of tenants want to be in a green building, up from 75 per cent two years earlier. "Leasing only Green Star-rated properties was once the domain of government departments but that trend is now enveloping mainstream businesses," reported the *Sydney Morning Herald's* commercial property editor in 2011. "Buildings that are considered prime and A-grade are being dismissed by potential tenants as they are not up to standard. As a result, some tenants that may wish to relocate are now waiting until a suitably highly rated Green Star office becomes available."

This report is backed up by Jones Lang LaSalle's *Global Corporate Occupier Sustainability Report* (2011), which found that, of the 143 top-level corporate real estate leaders surveyed internationally, 92 per cent consider sustainability criteria when making their location decisions. And interestingly, just under half of the respondents said they would pay up to a 10 per cent premium for sustainable office space.

In 2012, Australand achieved a 5 Star Green Star – Industrial Design v1 rating for The Key Spec 1 building in Melbourne. This achievement is all the more significant, as it was a speculative development. "For Australand, the main driver for certifying – even when we're undertaking a speculative development – is the advantage it can provide in securing tenants. A Green Star rating gives us an extra edge in our marketing, as it provides credible, third party assurance," says Australand's Sustainability Manager, Paolo Bevilacqua.

Productivity benefits

Green buildings consistently outperform non-green buildings in terms of comfort and productivity. Natural light, fresh air and access to views of the outdoors, as well as control over individual workspace temperature and lighting, can affect productivity directly. Staff costs are by far the greatest business expense in most businesses and an incremental increase in productivity will pay for the small premium on a green space.



An improvement in productivity of just one per cent – or five minutes each day – can mean an additional 18 hours and 20 minutes a year for each person working in a commercial office. Multiply that by the hourly rate of each person and you can quickly see the returns.

An increase of up to 15 per cent in perceived productivity has been achieved since staff moved into the 6 Star Green Star – Office As Built v2 certified One Shelley Street in Sydney. Research by the University of Technology Sydney demonstrated a direct link between sustainable building design and employees' assessment of their ability to work. The research tracked more than 2,500 Macquarie Bank employees over 15 months as they moved into their new high-performance office. "A group of participants in the study showed an average of 15 per cent net increase in perceived productivity for employees who had moved into the new building," says UTS' Senior Lecturer in the Faculty of Design, Architecture and Building, Leena Thomas.

The City of Melbourne's Council House 2 (CH2) was Australia's first 6 Star Green Star – Office Design v1 rated building, and went on to achieve a 6 Star Green Star – Office As Built v1 rating as well. This multi-award winning building has demonstrated that the productivity of office building occupants can be enhanced through good, green building design and a high-quality, healthy and comfortable interior environment. A post-occupancy survey has found that productivity has risen by an impressive 10.9 per cent since staff moved into their green office, with estimated annual cost savings of $2 million. ▶

Top: **Trevor Pearcey House**
6 Star Green Star –
Office Design v2

Right: **Surf Coast Shire**
5 Star Green Star –
Office Design v3

Umow Lai's head office in South Yarra, Victoria, highlights the very real benefits of green buildings as staff productivity levels increase. An independently-conducted occupant productivity study of the building found the 6 Star Green Star – Office Interiors v1.1 office fitout has triggered a 13 per cent increase in staff productivity. Higher rates have been recorded for administration staff who spend the most time in the office. For Managing Director of Umow Lai, Dominic Lai, the result is fantastic. "The productivity benefits we have achieved have effectively paid for the cost of our fitout," he says.

Trevor Pearcey House in Canberra was awarded a 6 Star Green Star – Office Design v2 rating in 2007 for what was then a ground-breaking retrofit, undertaken by Australian Ethical Investments (AEI). Since then, AEI has conducted an internal survey of staff perceptions, which reported a 6.2 per cent increase in productivity. AEI's former director, Howard Pender, estimates this small productivity improvement adds up to a big benefit: around $1.5 million of extra value over the past five years.

A staff retention and attraction tool

Attracting and retaining talented employees is vital to any business' success – and a Green Star-rated building is a valuable employee benefit. A 2008 Deloitte survey of organisations that had undergone at least one green building retrofit in the US revealed that 93 per cent of respondents found it easier to attract talent after their renovation, with 81 per cent reporting greater employee retention. Every company surveyed reported an increase in goodwill and brand equity. Colliers International's *Office Tenant Survey* 2012 found that 'green space' was in the top four office attributes sought by staff, alongside bike racks, child care and a gym. "Green is now the norm – where it used to be a bonus in a building, it is now expected," says Colliers International's Managing Director, Simon Hunt.

With its 6 Star Green Star – Office Interiors v1.1 rating, GPT Group's new headquarters house some of the happiest workers in Sydney. Prior to moving, just 54 per cent of GPT workers were satisfied with their level of comfort in the working environment; the new space has achieved a 97 per cent satisfaction rating. "I'm proud to say I work in a green environment," says one GPT employee. "Achieving the 6 Star Green Star rating was a wonderful acknowledgement of the importance we place on sustainability. I've never worked in an environment that feels this open, fresh and healthy, while also providing me with all the facilities I need to be productive and effective in my role."

Lend Lease's The Gauge, a 6 Star Green Star – Office Design v2 and As Built v2 project, attracted key tenant Fujitsu Australia. The Gauge's green credentials encouraged Fujitsu to achieve a 6 Star Green Star – Interiors v1.1 rating for its tenancy. The building was designed with people in mind and the layout promotes easy movement and open space, with a living green wall to help improve office air quality, reduce stress levels and enhance worker satisfaction. "We want people to enjoy working at Fujitsu and we're creating a culture which attracts and retains staff," says Chief Executive Officer, Mike Foster. "Our Green Star office is good for our employees and good for our business, even helping to reduce absenteeism by 42 per cent."

The benefits of working in a 4 Star Green Star – Office Interiors v1.1 rated office environment extend beyond reduced carbon emissions and energy costs for the Queensland Government's Environment Protection Agency (EPA) in Toowoomba. In 2012, the EPA reported that it was noticing increased interest from people seeking to work for an environmentally-aware employer. With a tight labour market, being proactive was helping EPA to be seen as an employer of choice and enhance its prospects of attracting and retaining suitably qualified employees with similar values.

'Future-proofed' assets

Governments and large corporate organisations are increasingly incorporating green principles into their property requirements, and a number of state governments have already mandated minimum Green Star benchmarks for all government office buildings – with other building types expected to follow suit. By incorporating sustainable features now, building owners are 'future-proofing' for changes in the regulatory environment, and ensuring they will not be at a disadvantage in the future. What's more, by integrating Green Star principles into their buildings, they are leaving the community with a lasting legacy.

The 2012 *Global Real Estate Sustainability Benchmark* (GRESB), which assessed a combined US$1,300 billion in assets under management, found that more than half of those companies surveyed include certified green buildings in their portfolios.

"Australia's property industry is recognised internationally as one of the most sophisticated and transparent markets," says Chief Executive Officer of ISPT Super Property, Daryl Browning. "Inherent in that status is the integrity of information, benchmarks and our legal system. Those investing in or occupying properties need benchmarks they can rely on. We think Green Star certification is one of the quality assurance measures everyone can rely on with confidence."

Victoria's Surf Coast Shire has chosen to 'future proof' its new civic building with a 5 Star Green Star – Office Design v3 rating. "Science shows us the Surf Coast will be affected by climate change in many ways. We need to prepare for more extreme weather conditions, higher utility costs, and Council needs to ensure the resources we allocate to mitigating these risks are well-directed," says Mayor Dean Webster.

Compressed schedule

An integrated team approach to design (required when seeking a Green Star rating) often leads to fewer design conflicts and change orders in the development process. Developers on Green Star-rated buildings often report that a clear vision helps time and resources to be used more efficiently from day one.

On the 6 Star Green Star – Office As Built v2 workplace6, subcontractors were appointed at the same time as the design team, including electrical and mechanical engineers. Anika Spears, then Design Project Manager from BuildCorp, said of the process: "Using Green Star led to a collaborative approach on this project which certainly influenced the final outcome of achieving the 6 Star Green Star rating. It also led to better communication throughout the project between all disciplines, forcing us to make up-front decisions and allocate responsibilities sooner rather than later."

More awards, grants and partnerships

The Royal Institution of Chartered Surveyors' report, *Green Value: Growing Buildings, Growing Assets* (2006) found that green building practices are more likely to attract grants, subsidies and other inducements that demonstrate environmental stewardship, increase energy efficiency and reduce greenhouse gas emissions.

The Melbourne Convention and Exhibition Centre was awarded a 6 Star Green Star rating for its innovative environmental design in 2008, under the Green Star – Convention Centre PILOT rating tool (a tool which has now evolved into Green Star – Public Building).

Setting a new global standard for convention centre design, the MCEC project team's innovation and ingenuity has led to more than $1 billion of economic activity for Victoria, as well as acknowledgement with dozens of awards, including the 2010 Victorian Architecture Medal, the prestigious Banksia Foundation Built Environment Award 2009, and recognition by the Design Institute of Australia for the Centre's contribution to Victoria's next generation of public amenity.

The Bond University Mirvac School of Sustainable Development in Queensland, which operates from the first 6 Star Green Star – Education PILOT rated facility in Australia, has identified a number of significant benefits from its green credentials, including attracting international students and developing research partnerships with other prestigious universities around the world. These benefits, alongside the environmental ones, have resulted in a considerable financial return on investment.

A healthy and productive place to learn

Greening America's Schools: Costs and Benefits (2006) found that green schools and universities can deliver a 41.5 per cent improvement in the health of students and teachers, as well as a 15 per cent improvement in student learning and a 25 per cent improvement on test scores due to good lighting and ventilation.

Similarly, the *Heschong Mahone Daylighting Study* (1999) of more than 21,000 students showed a dramatic correlation between daylit school environments and student performance, including a 20 per cent faster progression in maths, a 26 per cent faster progression in reading and increased performance of up to 10 per cent when students had window views.

Australia's first Green Star – Education Design v1 primary school, Peregian Springs State School on the Sunshine Coast, is already reaping the benefits of its sustainability status. The 4 Star Green Star-rated building, which was also the first education project to achieve both Design and As Built ratings, has attracted the highest pre-enrolment of any school in Queensland. Principal Gwen Sands says that "it is a pleasure to work in a school which has been built to the highest environmental standards. Studying and working in this facility encourages both our staff and students to act in a more sustainable manner and will help improve learning outcomes for our students."

At Bay View State School in Queensland, a survey has found that 100 per cent of parents are happy with the school – a result that would be the envy of any principal anywhere in Australia. Students at the 4 Star Green Star – Education As Built v1 school are benefiting from the healthy environment; the school recorded an attendance rate of 94 per cent in 2010, three per cent higher than the regional average of 91 per cent.

“

Our staff and students are finding it a wonderful place to work and learn.

”

Dr Peter Whitley
Executive Officer
GippsTAFE

25%

Research found a 25 per cent improvement on test scores due to good lighting and ventilation.

Left: **Australian Institute of Management Katitjin Centre**
6 Star Green Star – Education As Built v1

Right: **GippsTAFE**
5 Star Green Star – Education Design v1

A better place to teach

Teachers spend up to 90 per cent of their day indoors, so they benefit from buildings with natural daylight, fresh air and access to views. Research indicates that green schools lead to healthier, happier teachers who take fewer sick days. *Greening America's Schools: Costs and Benefits* (2006) estimated that teacher retention in green schools translates into a financial saving of about US$4 per square foot (roughly AUD$12 a metre) over a 20 year period.

Central Gippsland Institute of TAFE in Victoria was the first TAFE to receive a 5 Star Green Star – Education Design v1 rating. Ventilation rates in the building at Leongatha have been improved to boost concentration, health and comfort for staff and students. GippsTAFE's Chief Executive Officer, Dr Peter Whitley says the focus on IEQ is already paying off. “Our staff and students are finding it a wonderful place to work and learn. It's proof that achieving our sustainability targets has also improved learning conditions.”

A hands-on learning environment

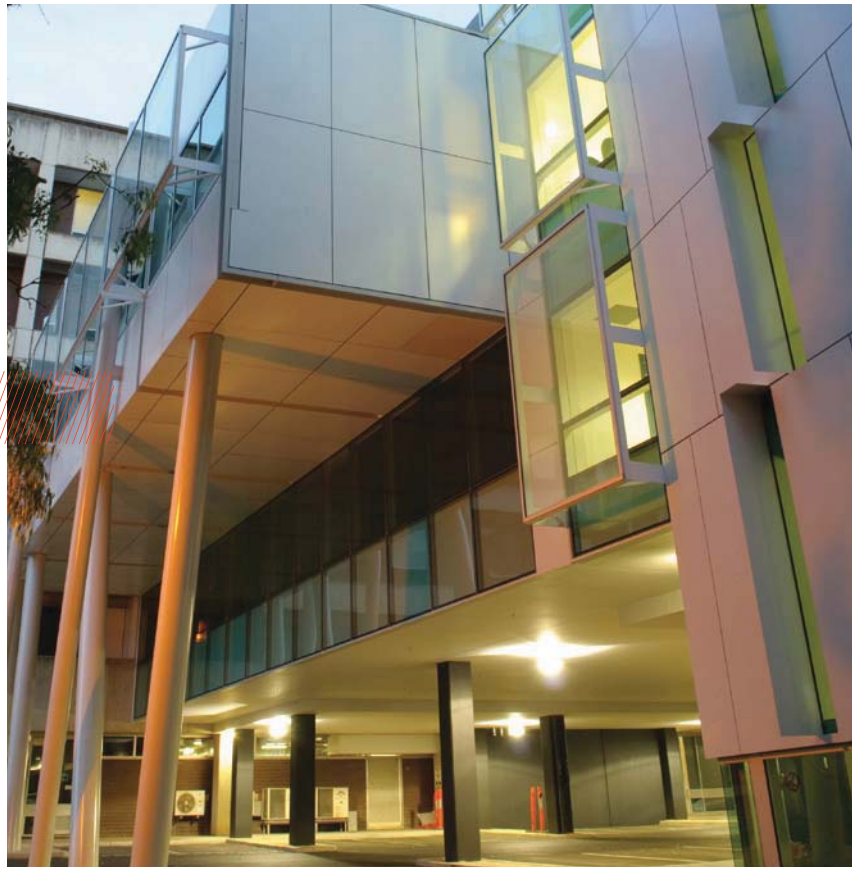
A green school is an interactive teaching tool, educating the next generation of sustainable leaders through hands-on learning. Educators report that they have been able to incorporate learning on energy use, climate change, water resources and sustainability into the students' everyday lives at green schools.

The Australian Institute of Management (AIM) wanted its 6 Star Green Star – Education Design v1 Katitjin Centre in Perth to capture the hearts and minds of its highly influential state and national decision-makers. The Katitjin Centre allows them to see, touch, feel and operate in a world-leading Green Star-rated building. As AIM's Chief Executive Officer Patrick Cullen says, the facility will “provide a tangible experience that will equip our clients with the knowledge, enthusiasm and confidence that green buildings are possible, practical and can deliver real benefits to users.”

Charles Sturt University has achieved one Green Star certification, and has two more projects registered to achieve Green Star ratings. The Green Star-rated buildings complement a raft of environmental initiatives, including an award-winning campus water management system with artificial wetlands which can be enjoyed on a self-guided sustainability walk. “Hundreds of people including school children, special interest groups and university students as well as local walkers visit the campus each year to learn about the university's green features,” says the university's Vice Chancellor, Professor Andrew Vann.

Improved patient outcomes

A range of international studies have confirmed that green healthcare facilities provide better patient care and reduce the length of stay required in hospital. The MacKenzie Health Sciences Centre in Canada found that depressed patients in sunny rooms recovered 15 per cent faster than those in darker rooms. Similarly, the Inha University Hospital in Korea found a 41 per cent reduction in average length of stay for gynaecology patients in sunlit rooms over patients in dull rooms. ▶



Flinders Medical Centre
5 Star Green Star – Healthcare Design v1
5 Star Green Star – Healthcare As Built v1

Australia's first Green Star-rated healthcare facility, the Flinders Medical Centre New South Wing in Adelaide, achieved a 5 Star Green Star – Healthcare Design v1 rating in 2011 and 5 Star Green Star – Healthcare As Built v1 certification in May 2012. The facility houses women's health services and has been designed to deliver high-quality patient care with a minimal environmental footprint. According to the Redevelopment Project Manager, Frank Zotti: "we've delivered 271 more babies in the new unit in 2011, a ten per cent increase on previous years." The numbers are positive proof of the community's support for hospitals that provide high-quality care for patients and the environment, with improved healing and recovery rates increasing bed turnover.

Increased retail sales

A number of international studies have found that integrating green principles – such as access to natural light – can increase sales at the till. A study by Heschong Mahone in 2003 found evidence that daylit stores deliver higher sales than non-daylit stores. In fact, daylighting was found to increase sales by up to 40 per cent.

A 2012 study from the University of Notre Dame in the US has found that bank branches operating from facilities rated using the USGBC's Leadership in Energy and Environmental Design (LEED) rating system opened 458 more consumer deposit accounts and had $3 million more in consumer deposit balances per facility per year over non-certified properties. The first-of-its-kind study compared the financial performance of 93 LEED-rated bank branches with 469 non-rated branches owned and operated by PNC Financial Services Group. Researchers found LEED-rated banks also had almost $1 million more in loan balances per facility per year. After controlling for other variables that influence performance (such as market demographics, branch size and advertising spend), the sales at LEED-certified branches increased by $461,300 per employee compared to non-certified locations. Utility costs per employee in LEED branches were also significantly lower than in the non-certified buildings at a reduction of $675 per employee.

HomeHQ North Shore is Australia's first 4 Star Green Star-rated bulky goods centre, achieving a 4 Star Green Star – Retail Centre v1 rating in 2009. A high standard of energy efficiency for the building was achieved through green features including an energy-efficient plant and machinery and the use of building materials that reduce the need for artificial heating and cooling by up to 60 per cent. HomeHQ says that's good news not only for the environment, but for retailers and customers too, with the cost savings to retailers able to be passed on to consumers.

Reduced liability and risk

According to the OECD's *Environmentally Sustainable Buildings* report (2003), illness from indoor air pollution has become one of our most acute building challenges – with building materials, ranging from paints to carpets, leading to occupational health issues.

A study by the Lawrence Berkeley National Laboratory (2000) found that buildings with good indoor environment quality (IEQ) can reduce the rate of respiratory disease, allergy, asthma and sick building symptoms, and enhance worker performance. The potential financial benefits of improving IEQ are eight to 14 times the cost of investment.

The legal firm, Oakley Thompson, at 500 Collins Street in Melbourne conducted pre- and post-occupancy surveys of staff to determine whether green did deliver dividends. The result? The 5 Star Green Star – Office As Built v2 office building was found to reduce staff sick leave by

> “Good for customers, good for the environment and good business for our bank.”
>
> **Rob Hunt**
> Former Managing Director
> Bendigo Bank

39 per cent – well below the national average. What's more, sick leave costs fell by 44 per cent.

Not only can efficient businesses reduce their sick leave and related cost burdens, but they can reduce their risk of litigation in property acquisitions and leasing transactions. RICS' *Sustainability & Valuation of Commercial Property* report (2012) argues that 'non-sustainable' buildings are increasingly risky. "From a valuer's perspective, the risk of litigation due to perceived negligence [from non-green buildings] also increases as sustainability becomes more important in the decision-making behind property acquisitions and leasing transactions," the report says.

Competitive advantage

Going green can deliver a defining edge in a crowded marketplace. The *BCI Green Building Market Report* (2008) found that one of the main drivers for committing to green building was the competitive advantage of green projects. A green building not only enhances the marketability of a building project, but of the entire organisation.

Australia's first Green Star – Office Design v1 certified project, 8 Brindabella Circuit in Canberra, has attracted significant free publicity from both its Green Star certification and its subsequent environmental awards. Former Executive Director of Canberra International Airport, Tom Snow, said the company could not put a financial value on all the free publicity received over the years, with the flow-on effect being a tenant waiting list.

Job creation

Green building projects can create jobs. A research report from construction analyst Davis Langdon, *Retrogreening Offices in Australia* (2009), found that refurbishing a significant quantity of office stock had the potential to create jobs for more than 10,000 people in the construction industry – which translates into almost 27,000 new jobs across the broader Australian economy.

The Redfern Housing Redevelopment project, which received a 5 Star Green Star – Multi Unit Residential PILOT rating, recognised the important links that Australia's indigenous people have with the suburb, and so mandated a minimum of 20 indigenous construction workers. This was a 'first' for a public housing project in Australia, and was rewarded with a Green Star Innovation point (INN-1). Empowering the local community was an integral part of the sustainable development, and Housing NSW provided employment opportunities to both Aboriginal and long-term unemployed people to enhance their business skills, increase their knowledge of ESD issues in the project and in general, and improve the social and economic conditions for both the individuals and their community.

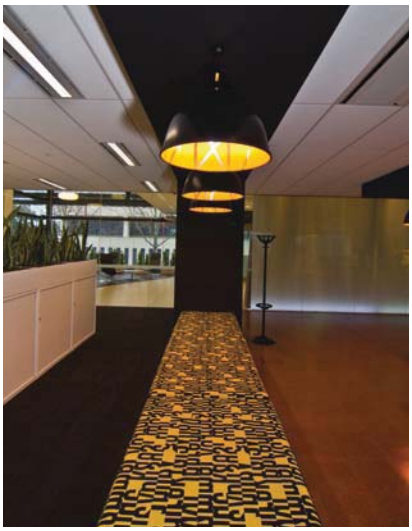
Leadership in the community

Building green is a clear expression of commitment to the environment. Increasingly, people around the world perceive green buildings as modern and ethical – and companies, councils, governments and community organisations associated with green buildings benefit from these perceptions through community pride, satisfaction and wellbeing.

With many law firms now having extensive corporate social responsibility programs and publicly committing to reducing their carbon footprint, legal offices need to be energy-efficient from both a credibility and public relations perspective. Moving to the 6 Star Green Star – Office As Built v2 1 Bligh Street in Sydney was an opportunity for Clayton Utz to demonstrate good corporate citizenship. "I think the green elements of the building are important for corporate responsibility," says partner Julie Levis.

And when the management team at the Bendigo Bank decided to build its new 5 Star Green Star – Office Design v2 certified headquarters, they saw it as an opportunity to demonstrate that corporate social responsibility starts at home. The Bendigo Bank's former Managing Director, Rob Hunt, said that green initiatives "are good for customers, good for the environment and good business for our bank." ●

CASE STUDIES 2013



2 VICTORIA AVENUE

THE PROJECT AT A GLANCE

6 Star Green Star – Office Design v2 rating representing 'World Leadership' in environmentally sustainable design

5 Star Green Star – Office As Built v2 and 5 Star Green Star – Office Interiors v1.1 ratings representing 'Australian Excellence' in environmentally sustainable construction and interiors

The first development in Western Australia to achieve Green Star As Built certification.

2 Victoria Avenue may seem small when compared to some of its high-rise counterparts in the Perth CBD, but as the very first project in Western Australia to achieve Green Star As Built certification, 2 Victoria Avenue represents big thinking, big sustainability and big leadership.

A showcase office development, 2 Victoria Avenue is the first in Western Australia to achieve the Green Star certification 'trifecta' of Design, As Built and Interiors ratings. And, through the sustainable initiatives implemented and the achievement of Green Star certified ratings across all project phases, Stockland has delivered a 'future-proofed' asset that will deliver ongoing benefits through a quality indoor environment and operational cost savings.

When asked why it was so important for Stockland to achieve a Green Star As Built rating for the development – a first in the Perth market – Stockland's Environmental Sustainability Manager, Greg Johnson, gives a simple answer.

"Sustainability is embedded in our entire business and we have been achieving Green Star ratings across a range of sectors since 2008. The achievement of a Green Star As Built rating was a key

> “We set out to deliver a flexible and sustainable 5 Star Green Star - rated office building that could ‘stand the test of time.’”

Greg Johnson
Environmental Sustainability Manager
Stockland

commitment from the beginning of the project. The As Built rating authenticates the design of the building and will ensure that 2 Victoria Avenue can meet our tenants’ needs for a high performance, sustainable office space, now and into the future.”

Johnson explains that while Stockland’s initial objective was to obtain a 5 Star Green Star – Office Design v2 rating for the base building design, an aspirational approach to sustainability and partnership with industry leaders enabled the developer to go one step further to achieve a ‘World Leadership’ 6 Star Green Star – Office Design rating.

“When it came to construction, we again decided to target 5 Star Green Star, and were pleased to achieve this level of certification for both the base building and our own fitout. Changing circumstances meant that there were a few aspects of the original design that couldn’t be practically implemented through construction, but the building has proven extremely successful nonetheless. We are thrilled with the way the building is performing three years on, and pleased with the recognition we have received for our leadership in achieving a Green Star As Built rating,” says Johnson.

WHAT 2 VICTORIA AVENUE ACHIEVED:

Water

Reducing 2 Victoria Avenue’s reliance on potable water consumption was a top priority for the project team through the building’s design and construction. “We are very conscious of the impact of local conditions. At a time when Western Australia was in the throes of drought and with utility prices ever on the rise, achieving the best possible water conservation outcome was very important,” explains Johnson. For the As Built submission, the project achieved 11 of the 13 points available under the Green Star ‘Water’ category, scoring all available points for potable water efficiency.

Water is captured from 5 Star WELS-rated showers and taps before being diverted for treatment by the building’s onsite greywater system. This treated water provides 100 per cent of water used for toilet flushing across the development. Waterless urinals further reduce water consumption and fire test water is returned to the onsite storage tank to be reused for site irrigation. ▶

PROJECT DETAILS

Owner
Stockland

Location
2 Victoria Avenue, Perth, Western Australia

Size
7,200 square metres NLA

PROJECT TEAM

Architect/Landscaping Consultant
Woodhead

Project Manager
APP

Structural/Civil Engineer
Arup

Main Contractor
Diploma Civil Construction

Building Service Engineer/ ESD Consultant
AECOM

green building council australia
6 greenstar
Office Design v2 2008

green building council australia
5 greenstar
Office As Built v2 2012

green building council australia
5 greenstar
Office Interiors v1.1 2012

Together, the water efficiency measures implemented at 2 Victoria Avenue are conserving up to 4.4 million litres per year, a saving that equates to nearly two Olympic-sized swimming pools.

Now a relatively common feature in the Australian commercial office sector, at the time that 2 Victoria Avenue was designed greywater treatment had never been implemented in a commercial building within the Perth CBD. Through the successful installation of the system, 2 Victoria Avenue became the Western Australian 'test case' for greywater. Project ESD Consultant, Graham Agar of AECOM explains how the implementation of the system at 2 Victoria Avenue has paved the way for recycled water treatment within the Perth market.

"2 Victoria Avenue was one of the first projects to achieve an approval in principal for the design of the system, but the first Perth CBD project to have the system tested, commissioned and approved for operation. The commissioning, testing and reporting procedure required to be undertaken is now well understood by both contractors and the Western Australian Department of Health, meaning future projects will benefit from the lessons learnt at 2 Victoria Avenue."

IEQ

In addition to the pioneering approach taken to the delivery of environmentally sustainable outcomes, fitout flexibility, occupant amenity and indoor environment quality (IEQ) were all high priorities. At the time that the building was designed, the Perth market was at the peak of the resources boom and the building was specifically designed to accommodate the staff fluctuation and workforce mobility typical to the resources sector. Floor plates can be easily reconfigured to accommodate multiple tenancies, which are individually monitored and controlled to maximise energy-usage efficiencies across the building. The building's active western façade incorporates automated shading, which acts to increase occupant comfort by managing glare and heat gain. The specification of low-volatile organic compound (VOC) finishes and low-formaldehyde wood composite products throughout also make 2 Victoria Avenue a healthy and comfortable place to work.

Energy

The energy efficiency initiatives at 2 Victoria Avenue, which include T5 lighting, sub-metering and motion-sensors, zoned lighting, and active chilled beam air conditioning, together save the building around 50kg of CO_2 per square metre of net lettable area each year – equating to a saving of approximately 350 tonnes of CO_2 each year and around $61,000 in electricity costs.

For its Green Star – Office Design rating, 2 Victoria Avenue was recognised with a Green Star 'Innovation' point for the inclusion of three 2.5kW wind-powered helical turbines, capable of generating between 6,600 and 9,600 kWh per year. However, public concerns and technology barriers meant that the turbines were not installed at the time of construction.

"The wind turbines were ideal on paper but, as project teams so often discover, when it came to implementation, there were external concerns raised and risks identified with the technology. As a developer, it's important to understand that no building exists or functions in isolation. In view of this, the decision was made not to pursue the implementation of the turbines," says Johnson.

Although the wind-turbine technology was not implemented, Johnson is proud of the leadership that Stockland and AECOM were able to demonstrate by incorporating the turbines into the building's design. "Knowing what we know now, we might have looked to other alternative energy generation initiatives, but at the time we were committed to the turbines not only for their energy-generation capacity, but as a way of visually demonstrating our environmental commitment to the community. We've achieved great results for energy from other initiatives, so in the end I think we came out ahead. You never know if you don't try," he concludes.

It is clear that the leadership shown and the knowledge and experience gained from 2 Victoria Avenue has inspired other developers and project teams in Western Australia to strive for Green Star ratings. Nowhere is this more evident than the exponential growth in Green Star certifications achieved in Western Australia in 2012 – triple that of the year before. By pioneering green technologies and sharing their successes, the 2 Victoria Avenue project team has forged a new, more sustainable path for the urban landscape of Perth.

2

AFFINITY VILLAGE CLUB HOUSE

THE PROJECT AT A GLANCE

5 Star Green Star – Public Building Design PILOT rating representing 'Australian Excellence' in environmentally sustainable design

First retirement living community centre to achieve a Green Star rating in Australia

Achieves substantial cost savings when compared to a 'standard' approach, up to $50,000 in utility savings each year.

A Green Star rating leaves a community with a lasting legacy – and a cost effective one at that. One of Australia's first public buildings to achieve Green Star certification, the Affinity Village community centre, called the 'club house', is a positive example of how a Green Star-rated building not only delivers energy and water efficiency, but also fosters a sense of pride within the community it serves.

Affinity Village, a Stockland Retirement Living project in Baldivis, Western Australia, now boasts one of Australia's greenest club houses, having achieved the first Green Star rating for such a facility in October 2012.

The brand new club house offers residents a range of activities, including a media room, dining room, swimming pool, gym, bowling green and café. The club house was awarded its Green Star rating for a range of environmentally sustainable initiatives, including passive solar design, high levels of indoor environment quality, the clever supply of natural light to the building, and individual metering and motion sensors which will reduce energy consumption.

Barry Mann, Stockland's General Manager of Development in Retirement Living, says: "In achieving the first Green Star rating for any retirement living building, we have demonstrated our industry leadership and set a new benchmark in sustainability.

"The energy and water initiatives within the community centre will deliver savings of up to $50,000 per year on utility bills, which bring tangible benefits to our residents. We are now working to transfer the knowledge gained from this project to other projects," Mr Mann adds.

Stockland believes the achievements on Affinity have "paved the way for us to do it even better on Selandra Rise and Mernda in Victoria, where we are using a Green Star tool we custom-built with the GBCA to rate the entire retirement village. Once again this will be a first in Australia."

2

WHAT THE AFFINITY VILLAGE CLUB HOUSE ACHIEVED:

Energy

The project achieved 12 out of the 22 points available in the Green Star 'Energy' category, with 10 points awarded for greenhouse gas emissions reduction strategies, and two points awarded for peak energy demand reduction. The building has achieved a 50 per cent reduction in emissions when compared with a standard building of similar size. Energy efficiency measures, including extra insulation in walls and ceilings, high-performance glazing to help the building retain heat in winter and stay cool in summer, and individual metering and motion sensors, ensure the club house uses only the energy it really needs – reducing the building's operating costs.

Affinity Village's club house will deliver a 62 per cent reduction in lighting energy consumption, when compared with a standard building of similar size, through the use of high-efficiency light fittings and lighting controls. A lighting control system was utilised to ensure lighting energy was not wasted, as a large portion of the building had an intermittent occupancy profile. With the combination of motion sensors and daylight harvesting, the building is able to respond to the actual use of the building and user demands.

The energy consumption from HVAC was also reduced by 59 per cent. This was achieved through a combination of heat exchange systems and, more importantly, CO_2 monitoring and control. Once again the intermittency of the occupancy profile (common to most public buildings) was the key driver in selecting this strategy.

"The operating cost benefit resulting from the club house's energy efficiency performance is expected to be more than $40,000 a year, based on current prices," says Stockland's Environment Manager – Retirement Living, Matthew Napper.

Water

The project achieved six out of 12 points available in the 'Water' category through a combination of high-efficiency fittings and fixtures and selection of low-water use plants and appropriate irrigation techniques. The 60 per cent reduction in potable water consumption represents an operational cost benefit of $2,000 a year.

"As well as the operational cost benefits, the low-water use landscaping will mean that the landscape amenity will have more resilience in any potential future water shortages or restrictions. This will not only benefit the building, but the surrounding community as well," Napper says.

In addition, energy and water consumption and savings data is displayed in real-time in the public area on screens, encouraging club house members to 'do their bit' to reduce their resource consumption whilst educating them about environmental sustainability.

Prasanna Suraweera, ESD Section Manager with Wood & Grieve Engineers says: "This outcome represents a significant achievement in this sector where sustainability has been largely ignored or lacked focus. The relatively small scale of the building presented a number of challenges which required a shift in thinking when considering appropriate strategies. Luckily, we had a dedicated project team that put a lot of effort into getting a good outcome for the project. As well as pursuing an As Built rating, we are now looking at ways to further improve this strategy and its business case."

Places for people

The Affinity Village club house is a clear demonstration that green buildings are places for people. The provision of facilities for cyclists helps to reduce transport-related emissions and supports residents' exercise and activity. Carpets and paints low in volatile organic compounds were selected, as they emit fewer chemicals and are often better for people with allergies and respiratory problems.

The residents of Affinity Village are thrilled with their new facility. "We are awestruck by the plans of our new 5 Star Green Star club house. We all feel so proud that our community centre was awarded the prestigious Green Star rating. It will be a fabulous, modern addition to our retirement village," says resident, Jenny Long.

"Overall, the sustainability features within Affinity Village's club house are predicted to reduce the annual electricity, water and gas bills for the community centre by up to 48 per cent, or up to $50,000. We've developed a building that will tread more gently on the environment, be more functional, light and spacious, healthier to be in and cheaper to run," Barry Mann concludes.

PROJECT DETAILS

Owner
Stockland Retirement Living

Location
Norwood Avenue, Baldivis, Western Australia

Size
1,190 square metres GLA

PROJECT TEAM

Project Manager
Stockland Development Pty Ltd

Main Contractor
Gallacher PTY LTD

Architect
T&Z Architects

Building Service Engineer/ESD Consultant
Wood & Grieve Engineers

Structural Engineer
Structerre

Acoustic Consultant
Herring Storer Acoustics

Landscaping Consultant
PlanE

green building council australia
5 greenstar
Public Building
Design PILOT 2012

3

ANZ CENTRE MELBOURNE

THE PROJECT AT A GLANCE

6 Star Green Star – Office Design v2, 6 Star Green Star – Office As Built v2 and 6 Star Green Star – Office Interiors v1.1 ratings, representing 'World Leadership' in sustainable design and construction

Largest single-tenanted 6 Star Green Star – Office Interiors v1.1 rated building in Australia

70% reduction in base building greenhouse gas emissions in comparison to a typical 2.5 Star NABERS Energy rated building.

For a bank that has been recognised as the most sustainable in the world no less than five times in six years by the global *Dow Jones Sustainability Index* (DJSI), it is perhaps unsurprising that ANZ should have one of the most sustainable office fitouts in Australia. What is surprising is the scale at which 'World Leadership' sustainable office design has been achieved at ANZ Centre in Melbourne's Docklands.

The 83,796 square metre office achieved 6 Star Green Star – Office Interiors v1.1 certification in July 2012, making it the largest single-tenanted 6 Star Green Star rated office fitout in the country, and only the second building in Australia to have achieved the 6 Star Green Star certification 'trifecta' of Design, As Built and Interiors ratings.

ANZ Centre is a campus-style office development comprised of two interlocking built forms of five and ten storeys, arranged around two central atria. The design of the office emphasises and facilitates teamwork, offering a range of interconnected spaces to support individual and group working styles.

According to ANZ Group General Manager for Property, Kate Langan, ANZ is reaping the rewards of its investment in the Green Star initiatives at its global headquarters.

"The implementation of ongoing operational efficiencies, made possible by ANZ Centre's Green Star-certified environmental design, has reduced our annual electricity demand by over 12 per cent since the building's opening. This has translated into energy cost savings of around $200,000 per annum, a 'good news story' in a time when energy costs are rising," she says.

ANZ Group Chief Operating Officer, Alistair Currie, is full of praise for the value that Green Star sustainability measures are adding to the operational efficiencies of the ANZ Centre, and to ANZ as a business.

"As we continue our focused expansion into Asia, ANZ Centre serves as a very important benchmark for environmental efficiency and great workspaces, and will play a major role in helping us achieve our business and sustainability objectives," he explains.

"Not only has the Centre helped ANZ reduce the size of its carbon footprint, it has also helped deliver energy cost savings by using less energy during peak times when energy is at its most expensive. This is money that can be re-directed into the business to support our super-regional strategy," Currie concludes.

3

WHAT THE ANZ CENTRE MELBOURNE ACHIEVED:

Water

ANZ Centre has been designed for maximum efficiency when it comes to potable water use. Water from taps, toilets and showers across the tenancy is reticulated to the Centre's onsite blackwater treatment plant, saving thousands of litres of potable water annually and generating significant cost savings.

Energy

The ANZ Centre building reduces its peak load energy demand with its tenancy tri-generation system. While tri-generation technology has become relatively common for powering base building loads, it is rarely used to provide direct supply to tenancies. Energy modelling conducted for ANZ Centre has determined that peak electricity demand for the tenancy has been reduced by 20 per cent.

IEQ

ANZ Centre's focus on water and energy efficiency has not come at the cost of occupant comfort, with indoor environment quality and user amenity core aspects of the design brief. The central atria allow for ample natural light to penetrate into the workspaces and facilitate visual connectivity between floors. The fitout was also awarded a Green Star 'Innovation' point for the use of underfloor air-ventilation. While the provision of underfloor heating and cooling is not uncommon, particularly in Europe, the scale at which individual comfort control has been provided to every workstation through the system is as yet a rarity within the Australian market.

The quality of internal air is further enhanced at ANZ through the use of low emission work stations, joinery and furniture. Carbon dioxide levels are constantly monitored across the workspaces and additional outside air introduced as necessary. These IEQ measures, in addition to the specification of low-emissions carpets, paints, glues and sealants across the building, combine to make ANZ Centre a healthy and productive place to work.

Transport

ANZ Centre delivers a number of significant environmental benefits as a result of sustainable transport initiatives. The building's close proximity to public transport including trains, trams, buses and cycleways, coupled with the provision of 560 bicycle racks, change-rooms, showering facilities and 974 lockers, means that ANZ employees are supported in their choice of less carbon-intensive modes of transport. The number of car parking spaces allocated to the ANZ tenancy is 94 per cent lower than the maximum allowed under local planning standards, and the project was awarded an 'Innovation' point for exceeding Green Star benchmarks.

Modelling undertaken by developer, Lend Lease, suggests that the decision not to build the extra car parking spaces equates to an embodied carbon saving of 5,681 tonnes (tCO_2-e) – the equivalent of taking 1,000 cars off our roads for a year. By providing less parking, ANZ is also leaving a sustainable legacy for the Docklands community through reductions in fossil fuel consumption attributable to private vehicle use by ANZ employees, and the consequent minimisation of city congestion.

"We are proud to cater for the growing number of staff who choose to cycle to work, particularly given the rising popularity of cycling across the wider community," says Langan. "This was a deliberate strategy from the outset and we are very proud that it continues to be so well utilised and appreciated by our staff."

PROJECT DETAILS

Owner
Australia and New Zealand Banking Group Limited

Location
833 Collins Street, Docklands, Melbourne, Victoria

Size
83,796 square metres NLA

PROJECT TEAM

Architect
HASSELL and Lend Lease Design

Project Manager/Construction
Lend Lease Project Management and Construction

ESD Consultant
Lend Lease Design

Acoustic Consultant
Acoustic Logic Consultancy and Marshall Day

Services Consultants
Norman Disney & Young, Umow Lai and AECOM

Structural Engineer
Winward Structures

Interior Designer / Landscape Architect
HASSELL

Building Surveyor
PLP Building Surveyors & Consultants

Facade Engineer
Arup

Independent Commissioning Agent
A.G. Coombs Advisory Services

green building council australia
6 greenstar
Office Design v2 2009

green building council australia
6 greenstar
Office As Built v2 2011

green building council australia
6 greenstar
Office Interiors v1.1 2012

4

DARLING QUARTER

THE PROJECT AT A GLANCE

6 Star Green Star – Office Design v2 and 6 Star Green Star – Office As Built v3 ratings signifying 'World Leadership' in sustainable design and construction

The first project in Australia to achieve 6 Star Green Star – Office As Built v3 certification

92% reduction in potable-water use when compared to a standard office building

72% reduction in carbon emissions.

Sydney's Darling Quarter embodies a new era of sustainable development. As the designer and developer of Darling Quarter, Lend Lease has leveraged the Green Star knowledge gained from its work on more than 50 Green Star-certified projects to transform a forgotten corner of the CBD into a thriving mixed use development, with the 6 Star Green Star – Office Design v2 and 6 Star Green Star – Office As Built v3-certified Commonwealth Bank Place as its striking centrepiece.

In a demonstration of how valued green building is becoming, Lend Lease's Chief Executive Officer, Construction & Infrastructure Australia, Mark Menhinnitt, explains how collaboration between the property sector, government, and corporate Australia has resulted in the delivery of this 'World Leadership' sustainable project.

Through a shared vision, Australian Prime Property Fund (APPF) Commercial, Lend Lease, the Commonwealth Bank of Australia, and the Sydney Harbour Foreshore Authority have added 58,000 square metres of Green Star-rated office space to the city, in addition to 3,000 square metres of retail area, a popular illuminated children's playground with water features, youth theatre, interactive digital façade and community green.

"Lend Lease has transformed a previously under-utilised fringe CBD site into a dynamic destination for Sydney-siders and the broader community to enjoy, with access to valuable public amenities and iconic new spaces that will leave a powerful legacy for future generations," says Menhinnitt.

From the very beginning, Green Star sustainability was the goal towards which

all Darling Quarter stakeholders agreed to strive, and Green Star has added value to all involved by providing a recognised set of benchmarks and a method of measurement to underpin the design and delivery of the project, and increasing the value and demand for sustainable building assets in general.

"Achieving high environmental ratings reduces exposure to commercial risk and asset obsolescence by ensuring assets are 'future-ready'. Without the ability to benchmark the sustainability performance of a new development, the value proposition for investment into sustainable practices is less attractive. Green Star has allowed us to articulate the sustainable performance of developments like Darling Quarter in a concise and transparent manner. This in turn, allows stakeholders to be confident that the finished building is of the highest possible environmental standards," says John Dillon, Fund Manager of APPF Commercial, the joint owner of Commonwealth Bank Place.

Jennifer Saiz, Head of Group Property for the Commonwealth Bank couldn't be happier with the bank's new Green Star-certified headquarters, and says that the high-quality internal environment at Commonwealth Bank Place has supported her organisation's transition to healthier and more efficient ways of working.

"It's been great to be able to provide a workplace that reinforces Commonwealth Bank's commitment to our people, innovation and sustainability. Implementing activity-based working at Commonwealth Bank not only enhances our people's ability to deliver great outcomes for our customers, but it is also a more sustainable way of working that reduces our impact on the environment and supports greater work life balance," she says. "Our move to Commonwealth Bank Place has not only reduced our carbon footprint, but has also improved collaboration and productivity in our teams."

WHAT DARLING QUARTER ACHIEVED:

Management

Darling Quarter was awarded a Green Star 'Innovation' point after the project became the first to achieve a 6 Star Green Star – Office As Built certification under version 3 of the rating tool. After securing a 6 Star Design rating under version 2, the project team upgraded the As Built target rating to 6 Star Green Star under version 3. The decision was risky, as construction had already commenced, but worthwhile according to Cate Harris, Head of Sustainability at Lend Lease Australia.

"We considered that a version 3 rating would recognise the additional steps that we had already taken in the design phase to 'future-proof' the building, and would serve as a clear sign to the wider market that a 6 Star Green Star – As Built v3 rating could be achieved on a large-scale building," she says. "As a result, Darling Quarter is the first building to achieve such a rating in Australia."

Energy

Energy-efficient lighting and air conditioning, onsite energy production via tri-generation and extensive building tuning, have combined to ensure Commonwealth Bank Place produces 40 per cent fewer greenhouse gas emissions than a comparable 5 Star NABERS Energy-rated building. This equates to a 72 per cent reduction in greenhouse gas emissions when compared to a typical non-Green Star-rated office building in Australia.

Now that the building is fully occupied, Lend Lease notes that the energy consumption for some uses, such as vertical transportation, is even lower than the original modelling anticipated. ▶

PROJECT DETAILS

Owner
Australian Prime Property Fund (APPF) Commercial (managed by Lend Lease) and an international investor

Location
1-25 Harbour Street, Darling Quarter, Sydney, New South Wales

Size
58,000 square metres commercial office NLA

PROJECT TEAM

Developer/Project Manager/ Construction
Lend Lease

Architect
FJMT

ESD
Lend Lease, ARUP

Mechanical and Structural
ARUP

Electrical Consultant
Aurecon

Hydraulic Consultant
Warren Smith and Partners

Independent Commissioning Agent
Norman, Disney & Young

green building council australia
6 greenstar
Office Design v2 2010

green building council australia
6 greenstar
Office As Built v3 2012


4

> “Achieving high environmental ratings reduces exposure to commercial risk and asset obsolescence by ensuring assets are ‘future-ready’.”

John Dillon
Fund Manager
APPF Commercial – joint owner of Commonwealth Bank Place

Lend Lease attributes this to the large floor plates of the building, coupled with the building’s occupancy by a single tenant and the interconnecting stairs which have reduced reliance on lifts. “The high-performance façade is also providing a significant benefit in minimising the energy consumption associated with the air conditioning systems,” says Harris.

Water

The implementation of rainwater harvesting and onsite recycling systems at Darling Quarter will result in a 92 per cent reduction in annual potable water consumption – 52 million litres of water annually. This equates to more than 20 Olympic-sized swimming pools each year. Onsite blackwater treatment facilities are designed to treat and recycle 100 per cent of blackwater generated by Commonwealth Bank Place, and treats additional effluent from mains systems through sewer mining.

Designed by Veolia Water Solutions and Technologies, the blackwater system at Darling Quarter uses a dual fixed-film biological treatment process, involving a moving bed biofilm reactor (MBBR) in combination with a membrane bio reactor (MBR).

“As a means of ‘future-proofing’ the development, it was important to increase the levels of water efficiency as much as possible,” says Jean-Christophe Schrotter, Technology & Innovation Manager at Veolia Water Solutions and Technologies. “The water systems at Commonwealth Bank Place improve upon the technological and efficiency achievements realised by any product or system on the market to date and will hedge the Commonwealth Bank of Australia against projected spikes in the price of water in the near future.”

Materials

The close relationship between Lend Lease, APPF Commercial and the Commonwealth Bank of Australia enabled a fully integrated fitout to be delivered in tandem with the base building works. “This allowed for the base building to be adapted prior to construction to satisfy tenant requirements and design aspirations. The integrated approach prevented significant amounts of material wastage that would normally occur in a traditional construction with a separate fitout,” Harris explains.

Harris believes that delivering Green Star-certified assets is becoming easier for developers, as the choice of ‘sustainable’ materials is increasingly synonymous with the selection of ‘quality’ materials. In the case of Darling Quarter, many of the materials required to meet the architectural and aesthetic aspirations of the development were directly aligned with those needed to achieve Green Star ‘Materials’ and ‘IEQ’ credit benchmarks. “An example of this is Darling Quarter’s façade, which was required for design purposes to have a very high visible light transparency (VLT). The high VLT of the façade allowed us to gain Green Star sustainability benefits through daylight availability to building occupants.”

GREEN AND 'FUTURE-PROOFED': ISPT'S GREEN STAR PORTFOLIO

Australian property funds management company ISPT has a simple goal – to be the best-performing wholesale property fund manager in Australia and the first choice in property for Australian superannuation funds. In a business that is by nature focused on stable, 'future-proofed' investments, the fact that Green Star-rated buildings consistently outperform their non-rated assets in value and rental return makes Green Star an obvious choice for ISPT in 2013.

But in 2006, when ISPT first began to seek Green Star certification for its commercial property assets, the business case for green building was only just beginning to take shape. For many, sustainability spelled risk, and only the true leaders were certifying at all, much less taking a portfolio approach to Green Star. Green building investment has proved a winning formula for ISPT, however, as evidenced by the 14 Green Star certifications that the Fund has achieved to date across the commercial office and retail sectors, with more in the pipeline for the year ahead.

When asked why ISPT has pursued Green Star certifications with such commitment, ISPT's Chief Executive Officer, Daryl Browning, says that Green Star has become a trusted business tool.

"Australia's property industry is recognised internationally as one of the most sophisticated and transparent markets. Inherent in that status is the integrity of information, benchmarks and our legal system. Those investing in or occupying properties need benchmarks they can rely on. We think Green Star certification is one of the quality assurance measures everyone can rely on with confidence."

ISPT Portfolio Manager Engineering & Sustainability, Rob Sviderskas, agrees. He says that Green Star is the method of measurement which enables ISPT to verify and gain third-party recognition for many of the initiatives that the organisation was already undertaking.

"ISPT's philosophy has always been to make the most from our sites by focusing on passive design and operational efficiency. Green Star codifies many elements that are inherent to our business approach, such as our commitment to operational performance efficiencies, the avoidance of waste and maximisation of indoor environment quality. It makes sense that ISPT should certify our buildings as recognition of our efforts and achievements," he says.

Stable tenants for the landlord of choice

Sviderskas explains that the increasing focus on tenants' requirements and the demand for sustainable Green Star-certified tenancies has encouraged ISPT to expand its portfolio and build long-term relationships with tenants. "ISPT has become a landlord of choice by delivering lower overheads on utilities through our focus on management and energy efficiency. As a result, we have attracted and retained stable tenants from the government and commercial sectors, which has helped us to grow our business."

An examination of some of the Green Star projects within the ISPT portfolio illustrates not only the diverse application of Green Star, but also ISPT's contribution to the mainstreaming of green building investment and sustainable property market development across Australia since 2006.

Green leadership in the west

ISPT's Green Star story begins in Western Australia, with the 4 Star Green Star – Office Design v2-rated 100 St Georges Terrace in Perth. Achieving its certified rating in 2008, 100 St Georges Terrace was only the third building to achieve Green Star certification in Western Australia – a market that is increasingly recognising the value of Green Star ratings. A speculative development designed to incorporate 'Best Practice' sustainability initiatives that were in many cases still exceptional for the Perth market, the 28,923 square metre development was fully leased by practical completion and is now home to high profile corporate tenants including NAB and Microsoft, as well as resources companies Apache Energy and INPEX.

Sviderskas says that each of the building's corporate tenants have entered into green leases, which exemplifies how ISPT is working with tenants to engender triple bottom line sustainability outcomes.

"Many of the tenants at 100 St Georges Terrace operate within the resources industry and are looking to promote an environmentally and socially responsible image – occupying a Green Star-certified building is a good start. Lowering outgoings with respect to operating costs is also important to these tenants. A green lease in a Green Star building is good for brand and bottom line," Sviderskas adds.

The initiatives helping these tenants to lower their outgoings include zoned T5 lighting design, movement sensors, high performance glazing and external sunscreen louvers to the building's façade – the efficacy of these features are confirmed in the building's 5 Star NABERS Energy rating. Water-efficient fixtures including waterless urinals, low-volume toilets and WELS-rated tapware contribute to savings on potable water in addition to cutting utilities costs.

Refurbishing for green business success

In 2012, ISPT achieved a 5 Star Green Star – Office As Built v2 rating to complement its Design and Interiors ratings for 500 Bourke Street in Melbourne. Headquarters to NAB since construction in 1978, the 37-storey, 47,000 square metre building underwent one of Australia's largest integrated base building and tenant fitouts.

The long history and strong partnership between the bank and building owner enabled an integrated and collaborative approach to the refurbishment. The majority of NAB's 3,800 staff were able to occupy the building throughout the refurbishment – with building management simply moving staff to the redeveloped floors as they were completed.

Daryl Browning has said ISPT is committed to environmental sustainability with a corporate policy aimed at achieving a minimum 5 Star Green Star rating on all office refurbishments, and that the NAB building was an "example of sustainability in a significant building where the tenant also appreciates and endorses the goal. ISPT and NAB's collaborative effort to complete an integrated solution on this scale demonstrates the strong relationship between the two parties."

Sustainable features of the 500 Bourke Street refurbishment include upgrades to the building management system for increased efficiency and flexibility, rezoned lighting and the installation of an energy-efficient lighting control system, upgrades to the building's existing air conditioning system (including a new plant and the replacement of valves, filters and controls), installation of water-efficient fittings, rainwater harvesting for use in irrigation and toilet flushing, and upgraded lockers, showers and bike storage facilities.

Green light for sustainable shops

Another lighthouse property is ISPT's Wintergarden retail redevelopment project, which represents a sustainable diversification of the company's asset portfolio. Achieving 5 Star Green Star – Retail Centre Design v1 certification in July 2012 and currently targeting a complementary As Built rating, the Centre has revitalised the Queen Street Mall precinct in Brisbane and delivered a sustainable shopping centre development that generates fewer emissions, is energy- and water-efficient and offers better indoor environment quality (IEQ) for retail tenants and shoppers alike.

"Green Star certification is emerging as a priority among retail asset owners and tenants. As with ISPT's commercial portfolio, we were keen to lead by example in demonstrating the environmental and economic benefits that can be achieved through sustainable design in the retail sphere. While some retail tenants are aware of and seek Green Star facilities, this is still very much an untapped market. Our goal is to educate the retail tenancy market by 'walking the talk' with developments like Wintergarden," explains Sviderskas.

Sviderskas points out that Green Star-designed and certified facilities are beneficial to centre owners, as they reduce landlord exposure to rising operational costs. The approach of ISPT in refurbishing Wintergarden rather than building new has also paid dividends. "Our portfolio includes many existing buildings and, wherever possible, we try to utilise existing systems and to refurbish existing structures. A high level of performance can often be achieved without the need for huge capital investment in building new – it's all about putting what's there to the best possible use," says Sviderskas. This has proved the case for Wintergarden, where 60 per cent of the existing structure was reused for the new development. ISPT estimate that this reuse alone has saved the equivalent of ten years of operational use in embodied greenhouse gas emissions. Now that's true sustainability!

Left: **500 Bourke Street**
5 Star Green Star – Office Design v2
5 Star Green Star – Office As Built v2
5 Star Green Star – Office Interiors v1.1

Right-top: **100 St George Terrace**
4 Star Green Star – Office Design v2

Right-bottom: **Wintergarden**
5 Star Green Star – Retail Centre Design v1

6

LEND LEASE: GREENING THE RESIDENTIAL SECTOR ONE APARTMENT AT A TIME

Convesso
4 Star Green Star –
Multi Unit Residential v1

In many ways, the residential sector is the final frontier of built environment sustainability. The Australian Department of Climate Change and Energy Efficiency estimates that energy consumption within Australia's residential sector will have increased 56 per cent on 1990 levels by 2020, and the Australian Bureau of Statistics reports that households are among the highest consumers of water annually, second only to the agricultural sector.

These figures, and the ever-escalating price of utilities, council rates and owners' corporation fees, mean that the residential construction sector is a prime candidate for a sustainability overhaul. And yet, while the green credentials of a commercial office building can make or break tenancy or commercial asset investment negotiations, sustainability rarely factors into the discussion when it comes to residential investment by individual home buyers.

Despite the challenges that the multi unit residential market poses to sustainable developers, Lend Lease has taken a leading stance by putting sustainability on its residential radar since 2009. Lend Lease's Green Star projects include the Convesso and Serrata developments at Melbourne's Victoria Harbour, and the Antias development at Sydney's Jacksons Landing, which have all achieved 4 Star Green Star – Multi Unit Residential ratings, as well as the recently-completed Forté in Victoria Harbour, which is registered for Green Star. Through these projects, Lend Lease has struck the ideal balance between location, style, comfort, cost and sustainability; delivering Green Star-rated homes that are desirable, affordable and sustainable.

The price is right

Lend Lease reports that the experience and knowledge shared between Convesso, Serrata and Antias are helping to generate cost-efficiencies in the delivery of other sustainable residential developments.

"Lend Lease is increasingly seeing the cost of Green Star ratings for residential developments coming down. We are working closely with industry and project partners to further reduce costs by working collaboratively to address sustainability issues from the commencement of each project," says Ben Coughlan, Lend Lease's Victorian State Manager, Apartments.

Convesso, which was certified under the Green Star – Multi Unit Residential Design PILOT rating tool in 2009, achieved its 4 Star Green Star rating at a mere two per cent 'green premium', and has provided a cost-effective model of delivery that Lend Lease is applying to subsequent developments.

While we have only anecdotal evidence of green-rated residential buildings achieving higher returns on investment in Australia, recent international research by Nils Kok and Matthew Kahn has found that US homes with a green certification achieve a nine per cent 'green premium' at sale time. The researchers undertook a pricing analysis of all 1.6 million single-family home sales in

California from 2007-2012, controlling for all other variables that typically influence selling price, such as location, size, age and amenities. They found that the average sale price of a non-certified California home is $400,000, with green certification raising the price by more than $34,800.

"Due to the nature of the multi unit residential market, one of our biggest focuses for apartment developments is the delivery of positive environmental outcomes which also reduce owners' corporation fees," says Ben Coughlan.

"Of course, reductions in fees are highly dependent on how residents use their dwellings, so we've installed comprehensive energy and water metering and monitoring systems into our new apartments to empower residents to more actively understand and manage their consumption," Coughlan says.

Passive design plays a large role in keeping costs down, Coughlan goes on to explain. "We are seeing an evolution of sustainability within the residential sector and are honing our ability to achieve Green Star 'Indoor Environment Quality' and 'Energy' credits through an innovative yet simple passive design approach."

This approach includes the installation of high-performance façade glazing and insulation for apartment walls and ceilings, which have negated the need for mechanical air conditioning to individual apartments. Optimal building orientation and operable windows maximise natural light and cross-ventilation while keeping apartments at a comfortable temperature in both summer and winter.

New technology cuts usage and cost

Lend Lease has implemented new-age technology to help the residents of Convesso, Serrata and Antias significantly reduce the amounts of energy and water they use. "All apartments feature smart meters linked to in-home displays which enable residents to view their real time and historic energy and water data," says Coughlan.

The Fujitsu Switch Automation system, designed especially for Lend Lease and first implemented at Convesso, is the first cloud-based energy monitoring and home automation solution in the market. The system continuously monitors energy and hot and cold water usage and was designed to comply with the Green Star energy monitoring requirements. The system has been rolled out at Antias and Forté. Similar types of systems are also being rolled out at other apartment buildings.

"We're commencing post-occupancy studies which will assist with quantifying these benefits but feedback to date has been very positive with both the in-home display systems and the TV at the lobby entry being positively received and numerous residents attending information sessions on the sustainability and technology within the building," says Coughlan.

At the Green Star-registered Forté, Lend Lease anticipates that energy reduction strategies will decrease bills by around $300 a year. The 10-storey Forté, Australia's first timber high-rise building, was constructed from prefabricated wooden panels made from cross-laminated timber (CLT), a material discussed in depth at Green Cities 2011 in Melbourne. This innovation reduces the amount of energy-intensive materials required for construction, as the multiple timber layers are glued and then pressed giving them structural strength which research suggests is akin to concrete or steel, and enabling the building to bear the load of the 10 storeys. The use of timber also provides long-term capture of carbon so that Forté effectively becomes a 'carbon sink'. Forté will reduce CO_2 equivalent emissions by more than 1,400 tonnes when compared to concrete and steel – the equivalent of removing 345 cars from our roads.

Green homes for sustainable communities

Lend Lease's residential developments are not only delivering greener homes, they are also contributing to the development of sustainable urban communities and lifestyles. Located in Melbourne's Victoria Harbour precinct, the Convesso and Serrata developments form part of one the largest sustainable urban renewal projects in Australia, and are helping to integrate higher density living into the urban landscape and psyche of Melbourne.

In Sydney, Lend Lease intends to create Australia's first large-scale carbon neutral community at the Barangaroo South regeneration project on Sydney Harbour. The project is focused around the use of centralised precinct services to support energy efficiency, water recycling and a reduction in waste to landfill. Lend Lease's vision features a centralised cooling system, including harbour water cooling to eliminate the use of water-intensive cooling towers, a central blackwater treatment plant and onsite renewable energy. Commercial towers are being designed to achieve 6 Star Green Star Design and As Built ratings, and residential developments to achieve 5 Star Green Star ratings.

Barangaroo South, along with Victoria Harbour and numerous other Lend Lease projects, is registering to participate in the Green Star – Communities PILOT process.

"Lend Lease recognises that sustainability goes beyond individual buildings. A combination of environmental, social and economic initiatives are enabling us to deliver sustainability across entire precincts and communities," Coughlan concludes.

7

MCDONALD'S KILSYTH SOUTH RESTAURANT

THE PROJECT AT A GLANCE

4 Star Green Star – Custom Design rating, representing 'Best Practice' in environmentally sustainable design

First Green Star-certified restaurant in Australia

First Green Star – Custom-certified project in the country.

As a 60-year-old organisation with more than 33,000 restaurants in 118 countries, there is no doubt that McDonald's is a sovereign in the world of quick service food. In 2012, McDonald's also became a leader in the world of built environment sustainability.

Working with the Green Building Council of Australia's (GBCA's) Green Star – Custom rating tool development team, McDonald's Australia has broken new ground for the hospitality industry by becoming the first food industry provider to develop a Green Star – Custom rating tool to assess and certify its outlets. McDonald's Australia also became the first quick service food company in the nation to achieve a Green Star rating for a restaurant, when McDonald's Kilsyth South was awarded 4 Star Green Star – Custom Design certification in June 2012.

"McDonald's has embarked upon a journey towards environmental sustainability. Partnering with the Green Building Council of Australia has allowed us to take this to the next level and become the first quick service restaurant to develop and build a certified Green Star building," explains David Bridger, Director of National Design & Construction at McDonald's Australia.

"The Custom rating tool development initiative, and the Green Star ratings to follow, will allow McDonald's Australia to continue to demonstrate an ongoing commitment to the environment and maintain our position as an industry leader in all facets of our business."

McDonald's has worked hard to improve the energy and water efficiency of its restaurants in recent years, with onsite rainwater tanks becoming a standard restaurant specification in 2010 and the implementation of energy-efficient cooking grills significantly reducing energy usage across the chain. The development of the McDonald's Green Star – Custom rating tool has provided an avenue for the verification of these green initiatives, in addition to offering a bespoke framework for the measurement of sustainable improvement.

"For McDonald's, it was important to create a tool system that recognised the

unique requirements of its quick service restaurants. A number of new credits were specially created to account for these unique features, such as an emphasis on the indoor environmental quality of the drive-through counter/kitchen areas and reducing car idling periods in drive-through lanes," explains Lawrence Yu of JHA Consulting Engineers, the lead ESD consultant for the Kilsyth South restaurant project.

McDonald's Australia has embraced the opportunities that the Green Star rating tool development process has provided to evaluate the design and construction of its restaurants in an holistic manner.

"The process we went through to develop our Green Star – Custom rating tool gave us the opportunity to look at what we currently do as a company, and consider what aspects of our restaurants we can make more efficient. The new rating tool and process gave us the ability to peel back the layers of our Kilsyth South building and develop a fresh approach to analysing every aspect of our buildings as a total package. Through this process we were able to meet our goal easily and achieve 4 Star Green Star certification," says Bridger.

McDonald's reports that it has received positive feedback from the staff and licencee of McDonald's Kilsyth South since the restaurant was completed, and that the lessons learnt at this restaurant are informing the ongoing restaurant development and operational approach.

"Our restaurants are a key part of what we do, so it is important that we invest in tools and processes that make these as sustainable as possible. The Green Star – Custom rating tool development initiative and Green Star ratings will allow McDonald's Australia to demonstrate our ongoing commitment to the environment, and maintain our position as an industry leader in all facets of our business," concludes Bridger.

> "The Custom rating tool development initiative, will allow McDonald's Australia to continue to demonstrate an ongoing commitment to the environment and maintain our position as an industry leader."
>
> **David Bridger**
> Director of National Design & Construction
> McDonald's Australia

WHAT MCDONALD'S KILSYTH SOUTH ACHIEVED:

Energy

Energy efficiency was a key area of focus for the development of the McDonald's Green Star – Custom rating tool, with the restaurant incorporating a number of features to maximise the efficiency of equipment and reduce peak demand.

"Through the Green Star – Custom process, a complete revamp of the 'Energy' section of the rating tool was undertaken, which led JHA, in consultation with the Green Star development team, to create a unique checklist for energy-saving initiatives. The checklist encourages continual improvement, and is forward-looking in that it includes credits which recognise the energy efficiency measures currently being developed by McDonald's, while also setting some aspirational targets for the company's restaurants," explains Yu.

"In addition to the typical energy efficiency items recognised by Green Star tools, this bespoke energy checklist also gave recognition to some of McDonald's in-house energy efficiency measures that were demonstrated to exceed current industry benchmarks." ▶

PROJECT DETAILS

Owner
McDonald's Australia

Location
108 Canterbury Road,
Kilsyth South, Victoria

Size
488 square metres GFA

PROJECT TEAM

Architect
Richmond & Ross / Timmins and Whyte

Building Service Engineer
JHA Consulting Engineers

green building council australia
4 greenstar
Custom Design PILOT 2012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The Green Building Council of Australia's Director of Green Star Development, Jorge Chapa, says that the checklist was a 'first' for Green Star. "This was the first time we developed deemed-to-satisfy requirements for the 'Energy' category. All energy modelling was undertaken upfront, and the project team was provided with a checklist of options that would be awarded points. The learnings from this project are being used to inform the Green Star Revolution project to make Green Star easier to use for everyone," Chapa says.

In line with the checklist, the commercial kitchen equipment and air conditioning systems installed at the Kilsyth South store were all specified for their capacity to reduce peak energy demand below a base case standard-practice restaurant. Photovoltaic panels were also installed on the restaurant's roof to supplement the main energy supply. Together, these measures will reduce monthly peak energy demand by up to 24 per cent. Over the course of the year, this reduction equates to a saving of more than 370 kilograms of CO_2 emissions – a huge saving for a small building.

Water

The installation of water-efficient WELS-rated tapware and fixtures within the kitchen areas and bathrooms of McDonald's Kilsyth South is significantly reducing the amount of potable water consumed by the building. Water modelling calculations completed by the project team indicate that up to 48 per cent of the estimated water requirements for the store will be satisfied by rainwater that is collected and stored onsite. This non-potable supply is used for landscape irrigation and toilet-flushing. Overall, water-efficient design initiatives have the capacity to reduce the restaurant's potable water consumption by up to 595 kilolitres per year – that's 66 per cent less than a comparable standard practice building.

IEQ

McDonald's was determined that its commitment to sustainability should not come at the cost of its employees' health and comfort. "As a responsible employer, the quality of the physical environment that we provide for our people is extremely important to McDonald's and it was essential to us that the environmental improvements made would not be detrimental to our staff or customers," says Bridger. With this in mind, a key objective identified through the Green Star – Custom process was the improvement of thermal comfort conditions for staff working within the restaurant's kitchen areas.

Regulating temperatures within the commercial kitchen setting represented a significant challenge, with air temperatures soaring in periods of high activity due to hot grills and fryers, particularly in the summer months.

"Addressing thermal comfort was really challenging as the load within kitchen areas is highly variable and, more importantly, whatever we did could not impact McDonald's cooking processes in any way," explains Yu. "As increasing the amount of cooling within these areas would significantly increase energy consumption, and would be difficult to control and regulate, we decided to explore the idea of using increased air movement to improve occupant comfort."

The innovative kitchen ventilation boost system that was developed and installed strikes the right balance between comfort, sustainability and cost, using jet nozzles to direct air into hot areas, providing cooling to staff without affecting the cooking process.

"We are proud that the significant environmental achievements, such as the considerable reductions to energy consumption through material and equipment selection, have gone hand-in-hand with innovative design and improving the indoor environment for our employees and customers," says Bridger. "Our Green Star achievements will help McDonald's stay at the forefront of sustainability in our market and to raise industry standards."

8

METCASH DISTRIBUTION CENTRE

THE PROJECT AT A GLANCE

4 Star Green Star – Industrial Design v1 and 4 Star Green Star – Industrial As Built v1 ratings representing 'Best Practice' in environmentally sustainable industrial facility design and construction

Designed and constructed to deliver a 30% reduction in energy consumption and a 34% reduction in greenhouse gas emissions in comparison to a standard practice facility.

While many still consider the terms 'industrial' and 'sustainability' to be mutually exclusive, Goodman has challenged this long-held notion on a grand scale at its recent development for Metcash in Eastern Creek, Western Sydney. Incorporating over 82,000 square metres of ambient and temperature-controlled warehouse storage areas and 5,500 square metres of A-grade corporate office space, the Metcash Distribution Centre sets a new 'best practice' standard for green industrial facilities in Australia.

Metcash has consolidated its operational activities from five separate locations down to one highly-sustainable facility, generating enormous efficiencies for the business and significantly reducing operating costs. In fact, it's estimated that the consolidation process, in combination with a prime site location, will reduce logistics costs by up to 20 per cent. The Distribution Centre's energy efficiency initiatives alone have the capacity to generate ongoing operational cost savings of 30 per cent, when compared to a standard warehouse facility.

From the outset, Goodman and Metcash agreed to target Green Star Design and As Built certifications for the Centre, and the development was awarded its 4 Star Green Star – Industrial Design v1 rating in June 2012, followed by its 4 Star Green Star – Industrial As Built v1 certification in October 2012. The facility is the first distribution centre

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to achieve an As Built rating under the Green Star – Industrial rating tool.

According to James Vesper, Goodman's Head of Sustainability, Green Star certification has provided an industry-accepted sustainability benchmark for Goodman's Australian development team to work toward, and enabled them to gain independent verification of environmentally sustainable design and construction initiatives across Goodman's developments.

"Green Star assisted Goodman and Metcash to develop an early vision for the project, based on the performance requirements that Metcash was targeting. It provided an excellent framework to work with and shaped a performance scope for builders Hansen Yuncken and ESD consultants Cundall," he explains.

Vesper sees the success of the Metcash facility as representative of a shift in thinking on the value proposition of sustainability and certification within the industrial sector. "Sustainability was a key consideration across all aspects of the Metcash development. The delivered outcome is commercially competitive and aims to provide Metcash with a competitive edge."

WHAT THE METCASH DISTRIBUTION CENTRE ACHIEVED:

Energy

Brendon Quinn, General Manager of NSW Industrial Development at Goodman, managed the Metcash development project and says that reducing energy consumption was a primary focus. "Our main aim was to reduce operational costs for Metcash and to reduce greenhouse gas emissions, so our greatest design focus was on energy, particularly reducing energy consumption for HVAC systems, refrigeration systems and artificial lighting," he explains.

"In terms of design initiatives, the project included critical performance basics such as maximising natural light and the installation of high-performance insulation. The lighting systems are energy-efficient, incorporating T5 fluorescents across the ambient temperature areas and awnings, with lighting controls and daylight harvesting sensors," Quinn adds. LED lighting has been installed in the temperature-controlled areas, and skylights help to reduce the warehouse's overall reliance on artificial lighting. Combined, the energy saving initiatives that have been implemented at the Centre are reducing energy consumption by around 30 per cent.

PROJECT DETAILS

Owner
Goodman

Location
Bungarribee Industrial Estate,
71 Huntingwood Drive,
Eastern Creek, New South Wales

Size
82,854 square metres GFA

PROJECT TEAM

Client
Metcash

Developer
Goodman

Architect
Giles Tribe Architects

Project Manager/ Building Contractor
Hansen Yuncken

ESD Consultants
Cundall

green building council australia
4 greenstar
Industrial Design v1 2012

green building council australia
4 greenstar
Industrial As Built v1 2012


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Emissions calculations completed by the project team indicate that the lighting design alone will save over 2.8 million kilograms of CO_2 each year and generate 61 per cent less emissions than a comparable standard practice facility. Goodman forecasts that the investment in sustainable lighting design will have been repaid many years before Metcash's initial lease term of 15 years is up, with the additional investment of approximately $250,000 on T5 fluorescents across the main warehouse to be repaid within three years when compared to traditional metal halide fittings.

Water

The Metcash project team has capitalised on the expansive roof areas typical of large industrial facilities in order to boost the water efficiency of the Distribution Centre. Up to 300,000 litres of rainwater per year is captured by the warehouse's roof before being diverted for tank storage. This ample non-potable supply is used for landscape irrigation, toilet-flushing, cooling towers and truck washing needs across the development, contributing to reduced operational costs for Metcash.

IEQ

Despite the industrial setting, the Centre's design incorporates many initiatives aimed at improving indoor environment quality (IEQ) and the workplace enjoyment of staff. The design achieved all available Green Star points for 'Daylight', 'Volatile Organic Compounds (VOCs)', 'Formaldehyde Minimisation', 'Daylight Glare Control' and 'Air Distribution System' credits, which has ensured that the Distribution Centre is a healthy and comfortable place to work. "Increased natural daylight within the office and warehouse, improved air circulation to create comfort conditions, and a focus on providing breakout spaces and amenity within the specific work zones were all priorities," explains Quinn.

Materials

The Metcash Distribution Centre project was awarded a Green Star 'Innovation' point for the jointless steel fibre reinforced concrete used for the warehouse floor slab. The mix incorporates 35 kilograms per cubic metre of Propex Novocon FE1050 steel fibres, negating the need for traditional reinforcing bars. The specification of this concrete mix over that usually used for warehouse developments generates a significant environmental benefit due to dematerialisation and improved durability.

The use of the steel fibre mix has saved around 2,960 cubic metres (16 per cent) of slab concrete and reduced the amount of steel used by 40 per cent, or 260 tonnes. An environmental footprint analysis, conducted by ESD consultant Cundall, indicates that these material input reductions equate to a 10 per cent reduction in CO_2 emissions per square metre. Sustainability Manager Simone Concha from Hansen Yuncken adds that the mix also required less formwork when it was poured and will continue to save money and materials over the long-term through the increased durability it provides. "Conventional concrete floors have a multitude of shrinkage and movement joints that can be susceptible to wear and tear and degradation over time," she says. "The use of this new concrete will improve the long-term operational efficiency of the Metcash facility."

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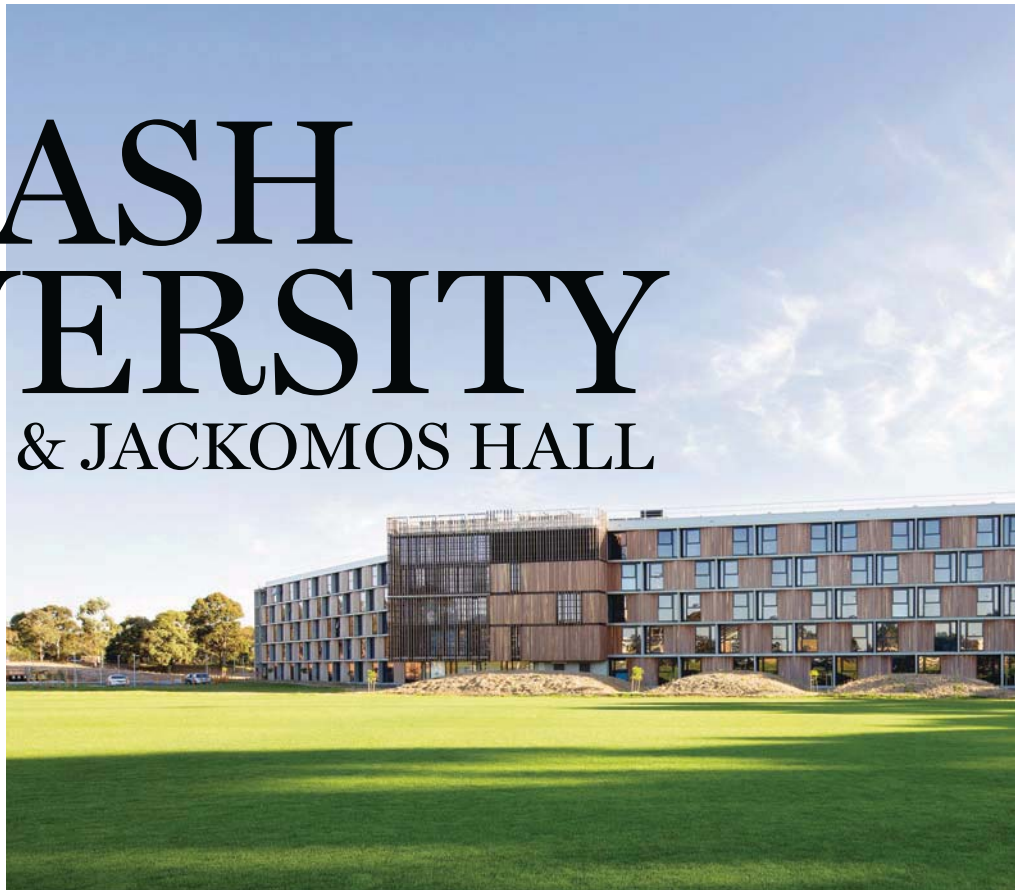
MONASH UNIVERSITY

BRIGGS HALL & JACKOMOS HALL



THE PROJECT AT A GLANCE

5 Star Green Star – Multi Unit Residential Design v1 and 5 Star Green Star – Multi Unit Residential As Built v1 ratings representing 'Australian Excellence' in environmentally sustainable residential design and construction

The first project to achieve 5 Star Green Star – Multi Unit Residential As Built v1 certification in Australia

The first university in Australia to deliver sustainable low-cost housing to students under Round 2 of the National Rental and Affordability Scheme (NRAS)

The largest residential photovoltaic installation in Australia, capable of supplying 35% of annual electricity demand.

Victoria's Monash University has emerged as a leading sustainable education provider in 2012. In addition to championing the environmental cause through student education and research, Monash has embarked upon a diverse program of works that puts green research into practice and is delivering sustainable places for students to live and learn.

An ongoing commitment to achieving Green Star Design and As Built certifications for all new campus infrastructure developments has provided a framework for Monash to deliver a range of benefits. Green Star is not only helping the university to provide greener learning spaces through projects such as the 5 Star Green Star – Education Design v1 certified Monash Peninsula Activity & Recreation Centre, it has also provided a blueprint for the delivery of environmentally and economically sustainable on-campus accommodation for students.

According to Brett Walters, Monash University's Environmental Sustainability Manager, the university's "broad and deep commitment to sustainability" began with the 2005 Monash University Guide to Sustainable Development, known as the 'EcoAccord'.

"The EcoAccord informed project teams on best practice but in itself did not guarantee an holistic sustainable outcome. We chose to pursue Green Star As Built ratings in 2009 as a mechanism to drive the delivery of sustainable new buildings, with an aspiration set that developments undergoing certification would deliver a 5 Star Green Star As Built outcome."

"As an independently assessed, national, industry-accepted process, Green Star As Built certification has allowed Monash University to be confident that its sustainability aspirations can be delivered and verified. All construction industry participants understand Green Star and this aids the delivery of sustainable outcomes. Monash remains confident that the continued use of the Green Star suite of tools will improve the performance and reduce the environmental impacts of its buildings," says Walters.

In addition to ensuring better environmental outcomes, the university's commitment to Green Star certification for its construction program is also paying reputational dividends. The university's new student accommodation project has been recognised with several awards, including the Victorian Architecture Award for Multiple Housing 2012, and a Royal Institute of British Architects 2012 International Award. The university expects that the provision of

affordable and sustainable housing will also help to attract top students. "There is no doubt that both building performance and the university's reputation will continue to be enhanced by our commitment to Green Star," says Walters.

Green living for green learning

The 5 Star Green Star – Multi Unit Residential Design and As Built v1 certified Briggs Hall and Jackomos Hall is certainly a development of firsts. The project is the first residential development in Australia to achieve a 5 Star Green Star – Multi Unit Residential As Built v1 rating. And, through the project, Monash has become the first university in Australia to deliver low-cost student housing under the National Rental Affordability Scheme (NRAS).

"Offering fully self-contained environmentally sustainable accommodation for up to 600 students across two five-storey apartment buildings, Briggs Hall and Jackomos Hall showcase the application of modern sustainable design principles on a significant scale, and in a relatively low-cost design and build project, delivered ahead of schedule and budget. We are proud to set a new standard for sustainable student housing in Australia," concludes Walters.

WHAT THE BRIGGS HALL AND JACKOMOS HALL PROJECT ACHIEVED:

IEQ

Despite budgetary constraints, achieving the best possible indoor environment quality (IEQ) was a top priority for the project team. The two halls achieved all available Green Star points for dwelling ventilation, without the need to install any mechanical air conditioning systems, and the buildings' high-performance external façades were custom-designed to maximise external air provision and manage heat load. "Incorporating innovative solutions, such as trickle ventilators to increase the provision of outside air to the dwellings, was an important factor in achieving a synergy between a Green Star rating and affordable housing," explains the Project's ESD Consultant, Emmanuelle Delomenede from Norman, Disney & Young.

Double-glazing, window shading, high-performance insulation and ceiling fans were all installed to maximise thermal comfort for the student residents. These features reduce greenhouse gas emissions and minimise heat gain in the warmer months, while energy-efficient gas-fired central boilers have been installed to provide heating to the apartments via hydronic radiator panels in the winter.

"Heating and cooling typically accounts for 40 per cent of the overall energy consumption within residential buildings. The integrated package of measures at Briggs Hall and Jackomos Hall delivers high levels of occupancy control and comfort while at the same time delivering high-efficiency heating and cooling with very low levels of CO_2 emissions," says Delomenede.

Student resident, Jesse Cardy, loves the space and access to natural light that his new apartment provides. "The best thing about the room is just how open it is – the window is full-length and bright – and you get that nice sun coming in in the morning," he says.

Photography by John Gollings

PROJECT DETAILS

Owner
Monash University

Location
Monash University Clayton Campus, Clayton, Victoria

Size
20,200 square metres GFA

PROJECT TEAM

Architect
BVN Architecture

ESD Consultant
Norman Disney & Young

Structural/Civil Engineer
Bonacci Group

Construction Consultants
Broad APM

green building council australia
5 greenstar
Multi Unit Residential
Design v1 2011

green building council australia
5 greenstar
Multi Unit Residential
As Built v1 2012

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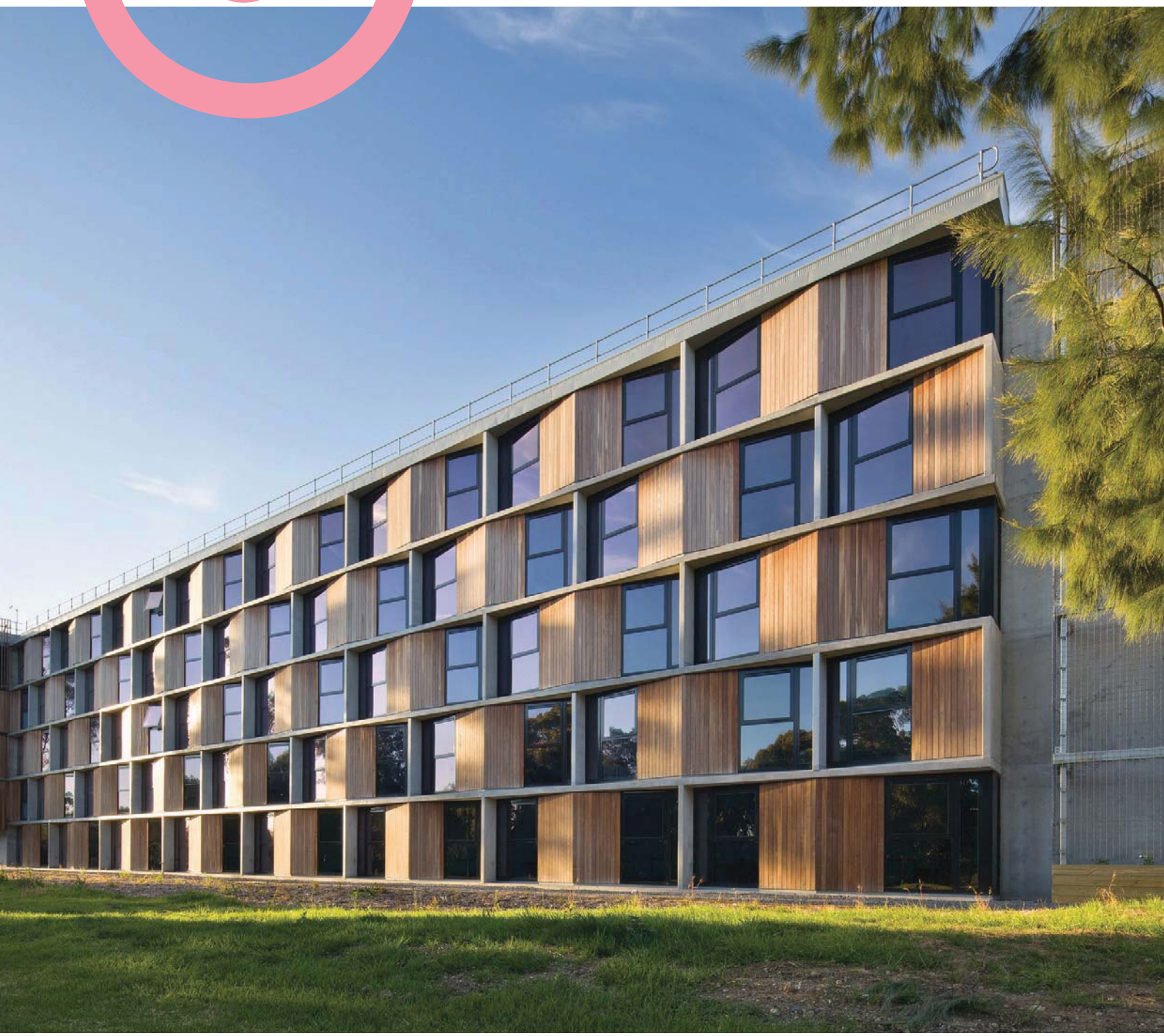

> “There is no doubt that both building performance and the university’s reputation will continue to be enhanced by our commitment to Green Star.”

Brett Walters
Environmental Sustainability Manager
Monash University

Water

The solar pre-heat systems installed on the roofs of the two apartment buildings are capable of reducing the annual demand for hot water by five per cent, while 5 Star WELS-rated taps and 3 Star WELS-rated showers have been installed to reduce potable water consumption. Furthermore, 100 per cent of the buildings’ non-potable water demand, including laundries, toilet-flushing and landscape irrigation, is met through a combination of rainwater harvesting, fire test water reuse and greywater recycling, significantly reducing the development’s impact.

The project was also awarded a Green Star ‘Innovation’ point for exceeding the benchmarks of the Emi-5 ‘Watercourse Pollution’ credit. Delomenede explains that prior to the Halls’ construction, external stormwater from surrounding areas received little treatment before being discharged to the small lake located at the rear of the development. An holistic approach to water management has facilitated a significant reduction to peak stormwater flows and improvements to the quality of water discharged to the waterways surrounding the site.

Energy

The Briggs Hall and Jackomos Hall project team combined energy-reduction strategies and efficient appliances with sustainable onsite energy-generation to deliver better energy consumption outcomes across the development. The rooftops of the Halls are home to a 153KW monocrystalline photovoltaic (PV) array – the largest residential solar installation in Australia – which is capable of supplying up to 35 per cent of the buildings’ annual electricity demand.

Delomenede says that all appliances were selected with the highest energy star ratings in mind and the buildings’ design includes smart controls such as shutdown switches to each apartment and lighting sensors in the common areas to minimise energy use when these spaces are unoccupied.

“Overall, the Halls consume around 45 per cent less energy than a standard multi unit residential building. The energy generation through the renewable systems and overall reduction in energy consumption not only reduces the buildings’ overall carbon footprint but is passed on to the students as a direct benefit in the form of reduced operating costs,” Delomenede concludes.

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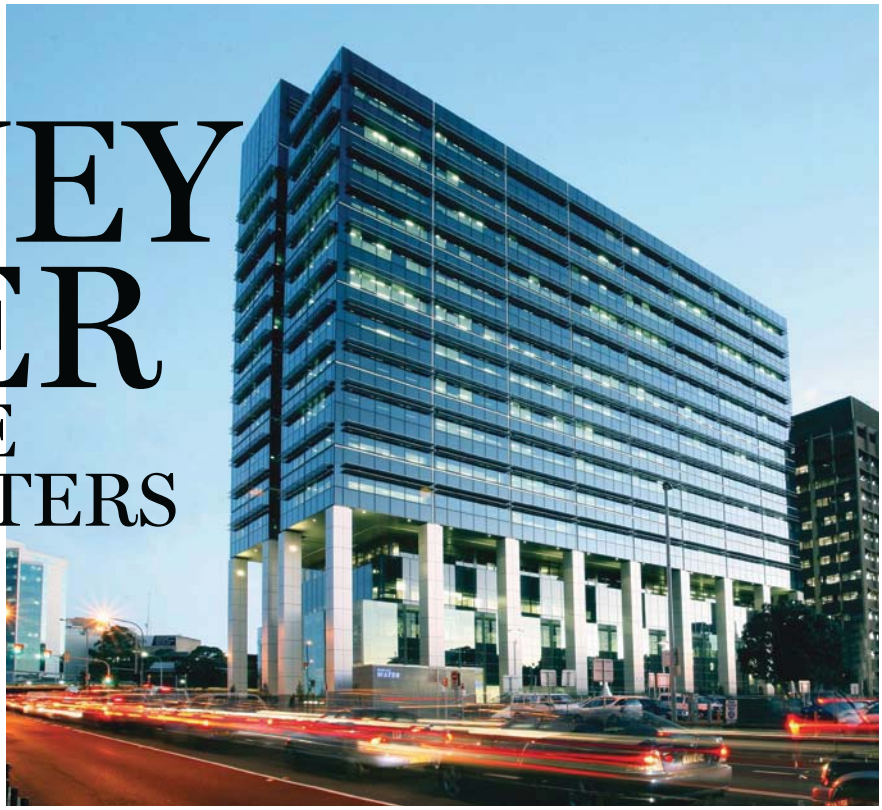
SYDNEY WATER CORPORATE HEADQUARTERS



THE PROJECT AT A GLANCE

5 Star Green Star – Office Design v2, 5 Star Green Star – Office As Built v2 and 5 Star Green Star – Office Interiors v1.1 ratings representing 'Australian Excellence' in environmentally sustainable design, construction and interiors

All available points achieved for the 'Water' category within the Green Star – Office As Built submission.

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Sydney Water is in the business of sustainable water management. With responsibility for the provision of water to Sydney and surrounding areas, Sydney Water has three core objectives: to safeguard public health, protect the environment and thrive in a competitive business environment. Green Star is helping Sydney Water to achieve these objectives at its 5 Star Green Star-certified headquarters in Parramatta.

Australia has the world's fourth highest per capita consumption of water, despite our water scarcity, says the Organisation for Economic Cooperation and Development (OECD). With this in mind, the project team made an early commitment to achieve the highest possible levels of water efficiency in the new building.

In line with Sydney Water's 'Water 4 Life' sustainability objectives, which include a target of 12 per cent recycled water usage for the Greater Sydney area by 2015, Sydney Water committed to setting a best practice example of recycled water use and the minimisation of potable water reliance.

"Given the nature of Sydney Water's business, water consumption was a key area to be targeted through the Green Star process. Our imperative was to score maximum points within the 'Water' category, which we ultimately achieved in our As Built submission," explains Sydney Water Facilities Management & Maintenance Manager, Craig Heitmann. "Our Green Star office is helping us to 'walk the talk' on water efficiency, and lead by sustainable example."

As a publicly funded, government-owned corporation, Sydney Water is committed to fiscal responsibility for all infrastructure investment, operations and service delivery. In line with this commitment, sustainable initiatives and the achievement of 5 Star Green Star certifications for the new office project were achieved at a minimal cost premium. "The green initiatives we introduced to achieve our Green Star ratings had a relatively minor impact on capital costs for the building – in the order of three per cent," Heitmann says.

The achievement of the ratings will provide significant ongoing benefits to Sydney Water and to the wider community, both through the operational cost savings and through the education Sydney Water staff gained throughout the process, Heitmann adds.

"Implementing the Green Star initiatives focused Sydney Water staff not only on the benefits that sustainability initiatives could deliver for our building, but also how their daily activities impact the environment – at work and in general."

> “Prioritise the training of your staff and contractors in environmentally sustainable design. This will ensure that your target initiatives are implemented effectively and as designed.”

Jamie Loader
National Operations and Sustainability Manager
Brookfield

WHAT SYDNEY WATER CORPORATE HEADQUARTERS ACHIEVED:

Water

As a champion of the water-wise movement, Sydney Water’s Parramatta Headquarters are designed to be a leader in water efficiency, in line with the organisation’s core aim to protect the environment. Sydney Water has achieved a 5 Star NABERS Water rating for the tenancy and reports that, through careful consideration of water efficiency across all uses, the building consumes up to 60 per cent less potable water than a comparable standard-practice building.

Contributing to these savings is the onsite blackwater treatment system, which recycles the building’s waste water, as well as rainwater from the onsite collection and storage system, and return water from the building’s cooling towers. The system can produce up to 41,000 litres of recycled water per day to supply a range of non-potable uses including cooling towers, toilet-flushing and landscape irrigation. That equates to nearly six Olympic-sized swimming pools of water each year. Water consumption is further reduced by the water-efficient fixtures that have been implemented throughout the building, including 6 Star WELS-rated urinals and 4 Star WELS-rated toilets and taps.

Transport

The central location of Sydney Water’s Headquarters in the heart of Parramatta provides easy access for staff to the many public transport options available locally. The parking provided for the building is 50 per cent below the maximum allowance, and the Parramatta train station is less than a block away, meaning the project gained full points under the Green Star ‘Provision of Car Parking’ and ‘Commuting Mass Transport’ credits.

“The site was primarily chosen for its close proximity to the local bus stops and train station,” explains Jamie Loader, National Operations and Sustainability Manager from Brookfield, the owner of Sydney Water HQ. “Great ‘end-of-trip’ facilities such as bike storage, lockers and showers are also increasing the number of Sydney Water workers who commute to work by bike, helping to reduce traffic congestion and carbon emissions within the local community. These initiatives contributed to the achievement of such high scores in the Green Star ‘Transport’ category,” he says. ▶

PROJECT DETAILS

Owner
Brookfield Asset Management

Location
1 Smith Street, Parramatta, New South Wales

Size
23,335 square metres NLA

PROJECT TEAM

Developer
Brookfield Multiplex

Tenant
Sydney Water

Base Building Architect
Denton Corker Marshall

Interior Design and Landscape Architecture
Woods Bagot

ESD/Services Consultants
WSP

Environment Management
EcCell Environmental Management

Structural Engineer
Robert Bird

Lighting Design
Vision Design

Acoustic Consultants
Acoustic Logic Consultancy

green building council australia
5 greenstar
Office Design v2 2009

green building council australia
5 greenstar
Office As Built v2 2010

green building council australia
5 greenstar
Office Interiors v1.1 2011


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Management

The Sydney Water project also scored highly in the 'Management' category, achieving all available points for management across the Design and As Built submissions. "We were able to achieve full points through an integrated and comprehensive approach to management, including the engagement of Green Star Accredited Professionals through the delivery process, focused commissioning, the training of facilities and operations teams, and the high level of recycling and reuse of materials achieved during the construction phase," says Loader.

Loader and Heitmann both attest to the benefits of a comprehensive commissioning process and the collaboration between the design and construction team at Brookfield Multiplex and the building management team at Sydney Water. "Armed with this shared knowledge, our building management team can ensure that any changes made to management strategies or schedules are aligned with the original design intent," explains Heitmann.

The great results achieved at Sydney Water prompt Loader to offer the following advice to other organisations undertaking Green Star projects: "Prioritise the training of your staff and contractors in environmentally sustainable design. This will ensure that your target initiatives are implemented effectively and as designed."

IEQ

Providing a comfortable and healthy office environment for Sydney Water employees was also supported by Green Star initiatives. "The brief was to provide A-grade office space for up to 1,500 Sydney Water staff, while being flexible in the approach to workplace design and providing excellent staff amenities," says Loader. Superior thermal comfort has been achieved through the implementation of chilled beam technology, and outside air rates are 100 per cent above Australian Standard requirements. More than half of the office's workstations have direct line of sight to the exterior of the building, and flat panel LCD computer monitors with anti-glare screens have been specified to improve the experience of Sydney Water workers.

These changes have paid dividends, with a post-occupancy study conducted for the building recording a 44 per cent increase in general occupant satisfaction when compared to Sydney Water's old head office. The same post-occupancy study predicted increases to employee productivity of up to three per cent, based on the responses that employees gave across a number of IEQ satisfaction categories.

THE GPT GROUP
HEAD OFFICE FITOUT

When Australian property company The GPT Group (GPT) made the decision to upgrade its head office space in Sydney's MLC Centre, the conversation quickly turned to how a Green Star refurbishment could help transform the Group's operating model and reinvigorate the GPT brand.

Achieving 6 Star Green Star – Office Interiors v1.1 certification in July 2012, the project has pushed the envelope of sustainable fitouts through the delivery of an exceptionally sustainable 'World Leadership' workspace, all within a building that is more than 30 years old.

The new fitout, which spans floors 50-52 of one of Sydney's most iconic office towers, represented a challenging project, not only for its location within the upper-reaches of a CBD skyscraper, but for the ambitious structural changes that were required to the base building itself.

Architect Harry Seidler originally designed the MLC Centre between 1972 and 1975; it opened in 1978 and was awarded the coveted Sir John Sulman medal in 1983. Fitout architect Woods Bagot has introduced modern inter-floor workplace connectivity to GPT's new office via a sweeping central staircase, which required major reconfiguration of each floor plate, and the building's façade was also altered in order to effect visual and environmental improvements.

THE PROJECT AT A GLANCE

6 Star Green Star – Office Interiors v1.1 certified, representing 'World Leadership' in sustainable office fitouts

50% reduction in energy bills

75% reduction in paper usage

96% of fitout waste diverted from landfill

97% overall occupant satisfaction.

> Through careful management and selection of materials we have been able to dramatically reduce our total carbon footprint.

Bruce Precious
National Sustainability Manager
The GPT Group

At first glance, airy open-plan common areas and picture-postcard windows make the GPT office more reminiscent of a trendy inner city café or club than commercial office space. However, the layout and design features are as sustainable and functional as they are aesthetically appealing.

The GPT project team has combined the effective use of innovative design, technology and organisation-wide behavioural change to consolidate and reduce the size of the GPT tenancy from five floors to three, and create a showcase of GPT's Green Star expertise and industry leadership.

The Green Star-certified office has become a symbol of the organisation's approach to business and has delivered a significant boost to GPT's brand. Since the achievement of its 'World Leadership' certification, GPT has been recognised with accolades for the office and business alike, including three NSW Government Green Globe Awards across the 'Energy Efficiency', 'Business Sustainability' and 'Built Environment Sustainability' categories. GPT has also been named the world's most sustainable real estate company for 2012/13 by the *Dow Jones Sustainability Index.*

WHAT THE GPT GROUP HEAD OFFICE FITOUT ACHIEVED:

Materials

The efficient use of sustainable materials was a core tenet of the GPT fitout design brief, resulting in full points scored for many of the Green Star 'Materials' credits. Adhering to the philosophy of 'everything old is new again', the project team repurposed and reintegrated many items from the old fitout into the new space. In fact, the project was awarded Green Star 'Innovation' points for achieving an incredible 96 per cent waste diversion rate, exceeding the highest Green Star benchmark by 16 per cent.

Some of the ways that 'waste' products were reintegrated into the fitout include the recycling of timber wall panelling from the old office to create new joinery, and the reintroduction of much of the old office furniture after a simple upholstery refresh.

In other examples of creative material reuse, old floorboards from the halls of Kempsey High School on the NSW Mid North Coast now form a point of interest as wall panelling in the office's reception area, while Coca-Cola bottles have been given a second life as a component of the Emeco Navy 111 chairs used in the kitchen.

PROJECT DETAILS

Owner
The GPT Group

Location
Level 50-52, MLC Centre,
19 Martin Place, Sydney,
New South Wales

Size
2,854 square metres NLA

PROJECT TEAM

Project Applicant/Manager
The GPT Group

Fitout Architect/Interior Design
Woods Bagot

ESD, lighting, mechanical and acoustic consultants:
Arup

Main contractor:
Buildcorp

Structural Engineers:
GCA Consulting

green building council australia
6 greenstar
Office Interiors v1.1 2012

GPT entered into product stewardship agreements with all suppliers, ensuring that fitout items have a low environmental impact – now, and at the end of their useful life. "Through careful management and selection of materials we have been able to dramatically reduce our total carbon footprint. Not that long ago this would have been difficult to achieve but the number of sustainable suppliers has increased exponentially. A world of suppliers has sprung up around Green Star," explains GPT National Sustainability Manager, Bruce Precious.

Management

GPT staff members no longer have dedicated desks, instead embracing the benefits of activity-based working. In combination with dematerialisation, this new work model has allowed GPT to reduce individual desk spaces by 17 per cent. "We've saved space through clever design and, despite the increased density, people feel they have more space, not less," explains one GPT worker.

In a testament to the benefits of 6 Star Green Star fitouts, the first employee self-assessment post-occupancy study for the office – conducted three months after the move – found that employees felt 15 per cent more productive in the new space.

Bruce Precious explains that while initially there was some resistance to change, particularly with the implementation of activity-based working, engagement initiatives such as the 'work environment passport' have made for a smooth transition into the new green office. Under the passport scheme, employees were rewarded for showing their understanding of different aspects of change. The passport has helped increase the understanding and uptake of new office technology, with wireless computing, soft phones and a 'swipe-to-print' system reducing paper consumption at the office by more than 70 per cent. Further, GPT has reduced onsite paper storage by an incredible 90 per cent – from 900 lineal metres down to 90.

Energy

Huge efficiencies have been gained at GPT with the installation of suspended T5 lights, LED downlights and desk lamps. Energy-efficient fittings, combined with lower overall artificial light provision and the installation of motion sensors, have cut the amount of energy used for lighting within the GPT tenancy by 70 per cent, with overall energy bills halved.

IEQ

ESD consultant Arup completed a comprehensive survey to determine the effectiveness of existing air conditioning which then informed the engineering and implementation of new systems. To boost the air change and energy efficiency of the base building's dual active chilled beam and variable air volume (VAV) systems, the project team introduced supplementary air conditioning for meeting rooms and installed louvres within the façade to increase the levels of fresh outside air. Optimising air conditioning efficiency has helped to achieve significant reductions in energy use across the tenancy, with air change efficiency now 50 per cent higher than Australian standard requirements.

In line with the aims of the Green Star 'IEQ' category, a significant boost to indoor environment quality has been achieved through the specification of sustainable low-VOC furniture, carpets and soft furnishings and the introduction of more than 500 plants to further improve air quality for GPT workers. As a result, occupant comfort has increased significantly, with the latest post-occupancy study showing a massive jump in GPT employees' comfort and satisfaction in their new workplace. Prior to the move, 54 per cent of GPT workers were happy with the temperature, ventilation and acoustics, while in the new space the overall comfort ratings have jumped up to 97 per cent.

"I find the control I have over the environment as a user of the space is fabulous – being able to move around and chase the sunshine around the building, or adjust the lighting and air as I need it is great," said one GPT worker.

Another GPT employee sums up the sense of pride the people at GPT feel for their new workplace. "I'm proud to say I work in a green environment," the employee said. "Achieving the 6 Star Green Star rating was a wonderful acknowledgement of the importance we place on sustainability. I've never worked in an environment that feels this open, fresh and healthy, while also providing me with all the facilities I need to be productive and effective in my role."

12

THE KEY SPEC 1

12

THE PROJECT AT A GLANCE

5 Star Green Star – Industrial Design v1 rating representing 'Australian Excellence' in environmentally sustainable design

First speculative industrial facility to achieve a Green Star rating.

To a large extent, the industrial market is still about tin sheds on concrete slabs. Despite the potential to increase operational efficiencies, cut costs and reduce the environmental footprint of facilities – not to mention reduce worker injuries and boost employee satisfaction and performance – the industrial sector has been slow to capitalise on the benefits of green building. While just 38 per cent of companies surveyed in Jones Lang LaSalle's *Industrial Investor Survey* 2011 reported that sustainability initiatives were part of their investment strategy, organisations like Australand have recognised that a Green Star rating represents a 'future-proofed' investment and is advantageous when securing tenants. Australand achieved a 5 Star Green Star – Industrial v1 rating for The Key Spec 1 building near Melbourne in 2012, an achievement that is all the more significant as it was a speculative development.

"For Australand, the main driver for achieving a Green Star rating – even when we're undertaking a speculative development – is the advantage it can provide in securing tenants. A Green Star rating gives us an extra edge in our marketing, as it provides credible, third party assurance," says Australand's Sustainability Manager, Paolo Bevilacqua.

The Key Spec 1, which comprises two large warehouses and offices inside one 27,000 square metre building, incorporates sustainable features such as efficient lighting on a sensor system, solar hot water, certified sustainable timber, and rainwater recycling systems to provide water for irrigation and toilet-flushing.

Bevilacqua says that the inclusion of sustainable features assures Australand that its asset will be high-performing over time. "In the past, when we've sold assets, a Green Star rating has provided another incentive for the purchaser. In the case of The Key Spec 1, which Australand owns, Green Star certification gives us assurance that we're 'future-proofing' our investment. When combined with the fact that it will reduce occupancy costs for our customers,

“

Green Star certification gives us assurance that we’re ‘future-proofing’ our investment.

”

Paolo Bevilacqua
Sustainability Manager
Australand

we believe the Green Star rating gives both Australand and our customers a competitive edge in the market as utility costs continue to rise.”

Construction costs on average represent only 11 per cent of the total cost to build, operate and maintain an industrial facility over a typical 40-year lifecycle. Yet decisions made in the construction phase, often based on the lowest bid, can significantly increase operating costs over the life of the building – costs that are borne by the building’s tenants for many years to come.

Bevilacqua says there was a significant additional investment, of around $750,000, in green features at the facility amounting to a green premium of around six or seven per cent of design and construction costs. “Since building The Key Spec 1 project, we’ve revised our design approach, costs have come down, and we think a 4 Star Green Star rating requires an additional investment of two to three per cent on our base design, which will comfortably provide a return on investment within a few years. We learnt a lot from this project, which will inform future projects and we expect additional investment for a 5 Star Green Star project to reduce to around four to five per cent.”

The Key Spec 1 project was fully leased prior to completion, demonstrating Australand’s ability to deliver environmentally sustainable, highly-competitive projects that will provide benefits to tenants well into the future.

Sean McMahon, Executive General Manager of Australand’s Commercial and Industrial business, confirmed that The Key Spec 1 project was “consistent with Australand’s strategy to take a leadership position in the industrial sector with respect to environmentally-sustainable development and forms part of the more than 140,000 square metres of Australand industrial space that is Green Star certified or registered.”

WHAT THE KEY SPEC 1 ACHIEVED:

Energy

While many organisations that operate from large warehouses, particularly logistics management companies, have corporate sustainability strategies which aim to reduce the impact of their properties and distribution centres, until now the focus of such strategies has largely been on transport emissions. “Reducing emissions from properties is likely to be far more cost-effective from a dollar per tonne point of view than reducing emissions from transport. Building upgrades to lighting, insulation and HVAC, for example, may provide a better return,” Bevilacqua explains.

At The Key Spec 1, passive design strategies have minimised the need for artificial lighting and mechanical systems. Highly efficient lighting systems, incorporating T5 lighting with dimmable ballasts, and daylight and motion sensors, are expected to cut lighting energy consumption by 90 per cent compared to standard lighting schemes. Solar hot water panels provide a renewable source of energy to heat water, while sub-metering of energy allows for improved monitoring and management.

Tyres 4 U, one of the tenants at the facility, has reduced electricity usage on a per square metre basis by 55 per cent, when compared to its previous facility. This has also resulted in a total saving in electricity costs, despite more than doubling the size of its warehouse. Jeremy Lane, Branch Manager for Tyres 4 U, says “we have noticed about a 40 per cent decrease in our total electricity bills.

PROJECT DETAILS

Owner
Australand

Location
144-166 Atlantic Drive, The Key Industrial Park, Keysborough, Victoria

Size
27,195 square metres GLA

Tenants
Tyres 4 U and Early Settler Group

PROJECT TEAM

Project Manager/Main Contractor
Australand

Architect
Australand and JMA Architects

Building Service Engineer and Sustainability Consultant
WSP

green building council australia
5 greenstar
Industrial Design v1 2012

The previous warehouse was 4,362 square metres compared to the new facility of 10,060 square metres."

Analysis suggests that electricity and maintenance savings from the efficient lighting system installed in the facility will be in the order of $325,000 over the first 10 years of operation.

Sub-metering systems are also being included in planning for future developments. "It sets a benchmark, so we know that if we incorporate these initiatives we're going to get certain savings. Rather than relying on modelling, we can now verify the savings using metered data," Bevilacqua explains.

The energy efficiency and solar hot water generation are expected to reduce total greenhouse gas emissions by 90 per cent, when compared to a standard practice development that simply complies with Building Code of Australia (BCA) requirements. This represents a saving of 1,760 tonnes of carbon each year, equivalent to the annual emissions of 220 average Melbourne homes.

Water

Rainwater collection tanks provide water for irrigation and toilet-flushing. Combined with water-wise 3 and 4 Star WELS fixtures, potable water consumption is expected to be half that of a standard industrial facility. In addition, a fire test water recycling system will ensure more than 80 per cent of all fire system test water is captured and available for reuse.

IEQ

As would be expected in such a leading project, the use of low off-gassing materials, such as low-VOC paints, carpets, adhesives and sealants and low-emission formaldehyde composite wood products, was specified, as was sustainably-sourced, certified timber.

However the main improvement in IEQ is through the high levels of daylight achieved, with 10 per cent of the warehouse roof being translucent sheeting and around half of the office façade areas glazed. This provides high levels of natural lighting in both the office and warehouse spaces during most operational hours, minimising the need for artificial light and providing a more comfortable and productive work space.

Tyres 4 U's Jeremy Lane says that the "picking errors have been reduced as a result of the high-performance lighting, and stock takes are now more efficient as the tyres are easier to identify when counting. No lights are left on when they aren't needed, as they switch off automatically after twenty minutes without movement. This has also reduced our costs. The amount of natural light from the roof has substantially increased, and with it staff morale."

Performance

While the Green Star – Industrial v1 rating tool addresses the challenge of sustainability in new and newly-refurbished facilities, it does not address the performance of the vast number of existing industrial buildings, many of which operate well below best practice benchmarks. Australand is a principal sponsor of the Green Star – Performance rating tool, which will assess the operational performance of existing buildings. This will enable building owners to measure ongoing performance and establish benchmarks before embarking on sustainable building upgrades.

"It will also enable us to verify our claims regarding sustainability, and give our customers more confidence that their buildings are environmentally efficient and cost-effective," says Bevilacqua. "Sustainability can be a simple way to deliver cost-savings in a warehouse. It is certainly the low-hanging fruit in the industrial industry which is yet to be picked."

12


SUSTAINABILITY BEYOND BUILDINGS
Sustainability Consulting Advice across the Built Environment
BUILDINGS | INFRASTRUCTURE | PRECINCTS | POLICY
Northrop Sustainability is leading the way. We are at the forefront of the Green Star Communities movement and our people are qualified professionals under the new Australian Green Infrastructure Council (AGIC) scheme. Our focus extends beyond buildings. When it comes to innovation and sustainable design solutions, Northrop Sustainability has the cutting-edge expertise and industry savvy to ensure efficiency at every stage of your project.
"Northrop has a strong understanding of sustainability issues across project disciplines. Northrop have provided proactive advice and practical solutions which satisfy and in many cases exceed expectations."
Viv Allanson, CEO Maroba Caring Communities
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info@hydroheat.com.au


A
GLOBAL
GREEN
LEADER

The recent *Global Real Estate Sustainability Benchmark* (GRESB), published in September 2012, shows that in the green building arena, Australia remains a global leader.

The survey of 450 global property companies and funds, representing US $1,300 billion in global assets under management, has found that Australian companies score higher than their peers in any other region.

While Australian companies accounted for just nine per cent of survey respondents, 35 per cent are considered by GRESB to be global leaders in sustainability. A stunning 95 per cent of Australian companies surveyed had internal resources dedicated to sustainability and all but one respondent had senior management accountability for sustainability.

These results reaffirm that the industry's commitment to green building is being recognised globally.

"Australia can be proud of its reputation as a leader in green buildings and sustainable communities," says Tim Beresford, Austrade's Executive Director of Australian Operations.

"A 'can do' attitude and willingness to collaborate is enabling Australian companies to combine the intelligence, experience, tradition and innovation from other countries to create world-leading green projects," Tim adds.

Chief Executive Officer of the World Green Building Council, Jane Henley, agrees. "Australia was one of the world's earliest adopters of green building practices – and that leadership is evident today. Certainly, the GBCA's international reputation has helped Australian companies to position themselves as leaders in the global green building market," Jane says.

The GPT Group, for example, was announced the world's most sustainable real estate company in the 2012/2013 *Dow Jones Sustainability Index,* which evaluates the performance of the largest 2,500 companies listed on the Dow Jones.

Similarly, Lend Lease has secured its reputation as a leader in sustainability both nationally and internationally and now has 53 Green Star-rated projects under its belt, including offices, shopping centres and apartments.

> "Australia is definitely among the 'lucky countries' in terms of its capacity to respond to sustainable building issues and climate change."

Brett Pollard
Principal
HASSELL

This expertise helped Lend Lease secure lucrative contracts for the London Olympics.

Many Australian professional services firms now have international reputations as sustainability specialists. Moving between offices around the world, Woods Bagot's Director of Sustainability, Mark Kelly, is engaged in the sustainability dialogue with a range of international clients. Mark thinks Australia is "definitely punching above its weight relative to the size of its population and the size of the construction economy. The Green Building Council of Australia has been very influential and we are now seeing the university, commercial and lifestyle sectors imbued with a philosophy of sustainable design."

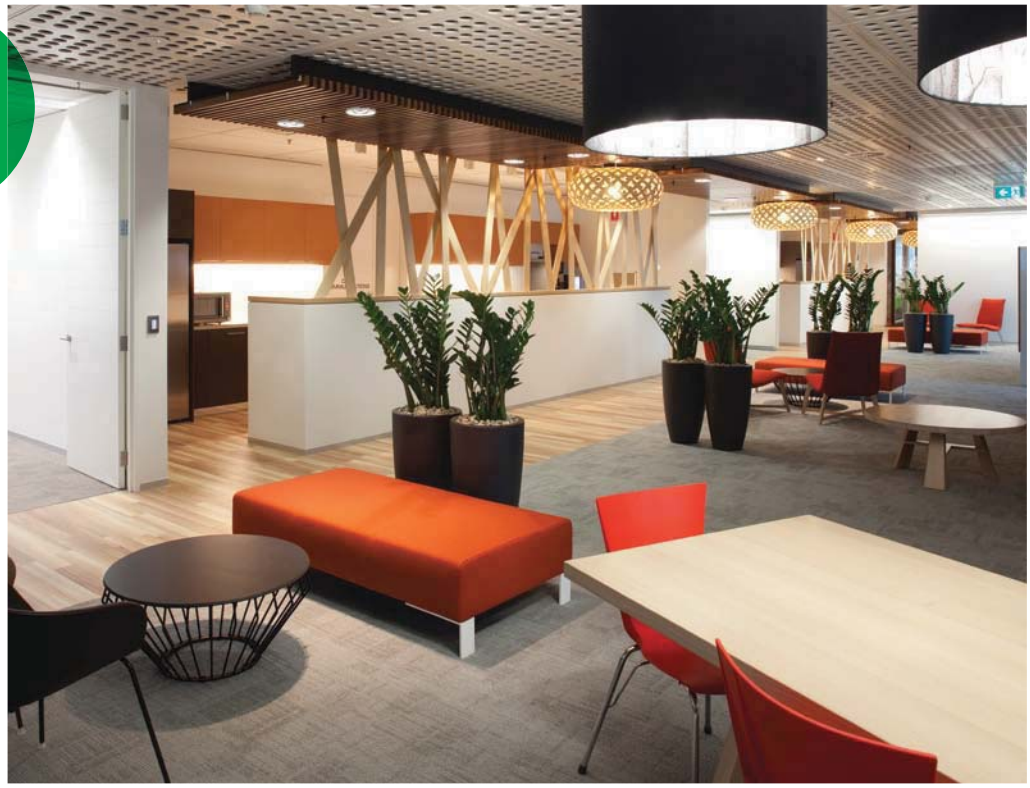
"Australia is definitely among the 'lucky countries' in terms of its capacity to respond to sustainable building issues and climate change," says Brett Pollard, Principal at HASSELL.

"As a relatively wealthy economy, emerging green building technologies requiring upfront financial investment are within the reach of many. We also have a remarkable opportunity to capitalise on our unique climate to harness and use alternative energy sources. ▶

EPA Victoria Office Fitout
6 Star Green Star –
Office Interiors v1.1

Photography by Paul Ebbage

A GLOBAL GREEN LEADER



Sinclair Knight Merz
Melbourne Office
5 Star Green Star –
Office Interiors v1.1

Government policy clearly plays a major part in driving innovation in green building, as does the leadership of the Green Building Council of Australia," Brett adds.

"Over the past decade, there has been huge growth in the commitment by Australian companies to undertake formal green building certification using Green Star. Similarly, there's been a huge accumulation of knowledge within the design community about sustainable building practices – thanks largely to training available through Green Star and LEED accreditation programs. Green technologies and practices advance quickly," Brett adds.

Woodhead's Chief Executive Officer and Managing Director, Angelo Di Marco, agrees, adding that while projects were once incentivised solely by rating tools such as Green Star, today other drivers include "tenant demand and regulatory changes, harmonisation of regulatory energy efficiency assessments, and innovative schemes such as environmental upgrade agreements in NSW.

"While great things have been done, and Australia might be leading the charge, the concern is that the pace of change is not fast enough – even in this country. At the end of the day, sustainability is a global problem, and we should continue to engage with our global partners using our collective skills and technological know how to keep pushing the boundaries."

Australia's geography and remote location make international connections a priority for sparking innovation and inspiration. We do need to work harder to forge those connections – and much of the GBCA's international work rests on establishing and strengthening relationships with other green building councils to drive innovation in Australia. Austrade is currently working alongside the GBCA to attract investment in Australia's sustainable built environment, and showcase Australian capabilities.

"Australian governments and businesses are working to raise awareness of the merits of highly-rated buildings and to encourage investment in retrofitting existing building stock and developing efficient precincts and buildings. Many of the challenges being addressed by the green building movement are global in nature. In this context, the importance of international connections cannot be understated," says Tim Beresford.

Woods Bagot's Mark Kelly is confident that Australia will maintain its momentum. "Australia loves being out in front and showing the world what to do, and certainly the rivalry between some of our big cities can't hurt. There is a real sense of commitment to achieving minimum standards in Australia, reinforced with a professional obligation to 'do the right thing'. Australia is in a very good position to lead by example."

Australia has inspired the world for a decade, and will continue to do so for many years to come, says Rick Fedrizzi, the USGBC's President, Chief Executive Officer and Founding Chair, and Chair of the World Green Building Council.

"Australia was an early leader in sustainability and continues to set the pace for global markets. Among many of Australia's leadership initiatives, Green Star has been a huge catalyst for international green building, and the Green Building Council of Australia has created countless opportunities for green businesses and buildings. Since witnessing the GBCA in action, I've been very inspired – personally and professionally – by this country's accomplishments in the sustainability realm." ●

Peter Doherty Institute, University of Melbourne
5 Star Green Star – Education Design v1

Photography: Grimshaw Architects

THE METHOD OF MEASUREMENT

Each year, the Green Building Council of Australia writes nearly a thousand letters to governments, attends hundreds of meetings with politicians and policy makers, prepares dozens of government submissions, and distributes a media release every week covering political, technical or industry issues.

With close working relationships with all three tiers of government, and a seat on every government round table on sustainability in the built environment, the GBCA's advocacy strategy is starting to pay off.

The GBCA's advocacy efforts are focused on five green building priorities, as more governments rely on Green Star as the method of measurement to demonstrate accountability, financial responsibility and transparency, and ensure their buildings and communities are truly sustainable.

State Government Office – Dandenong Site C2
6 Star Green Star – Office Design v3
6 Star Green Star – Office As Built v3

More governments rely on Green Star as the method of measurement to demonstrate accountability, financial responsibility and transparency, and ensure their buildings and communities are truly sustainable.

1

PRIORITY 1: PROVIDE VISIONARY GOVERNMENT LEADERSHIP

One of the most influential ways for federal, state and local governments to demonstrate their green leadership is to commit to achieving Green Star ratings for all buildings they own, occupy or develop, whether offices, schools, hospitals or public buildings, and whether new developments, building refurbishments or interior fitouts. This demonstrates both financial responsibility and long-term thinking.

The Victorian and Queensland governments have both mandated minimum Green Star standards for their office accommodation, and the South Australian Government has mandated Green Star for all the buildings within its Bowden Urban Village development.

The Victorian Government's Environment Protection Authority achieved a 6 Star Green Star – Office Interiors v1.1 rating for its headquarters in late 2012. Victorian Minister for Climate Change and Environment, Ryan Smith, said that the Green Star rating represents world leadership in sustainable office fitouts, and that the EPA now has "a vibrant and healthy workspace that delivers on every aspect of environmental, social and economic sustainability."

Perth's Metropolitan Redevelopment Authority has also mandated Green Star for two major projects: the Perth City Link and Elizabeth Quay. "A Green Star rating is more than a buzz word, it is a valuable tool that is helping the property industry and redevelopment authorities like the East Perth Redevelopment Authority to demonstrate environmentally-sustainable best practice in its developments," says the MRA.

2

PRIORITY 2: RETROFIT AND IMPROVE EXISTING BUILDINGS

Greening the vast amount of existing building stock in Australia is an enormous challenge. State and territory governments are introducing a range of policy incentives to improve existing buildings' energy efficiency, reduce water use, widen the range of green building materials used and reduce construction and demolition waste.

The GBCA is working closely with politicians and policy makers in all jurisdictions to recognise the long-term value embedded in the built environment, and to unlock the opportunities within the nation's existing building stock through supportive policies and incentives such as environmental upgrade agreements and the use of the Green Star – Performance rating tool, due for release this year.

The Edmund Barton Building in Canberra, home of the Australian Federal Police, achieved 5 Star Green Star – Office Design and As Built v2 certification for a complete retrofit in 2009. Speaking at the Edmund Barton Building's re-opening, the Australian Federal Police's Commissioner, Tony Negus, said that "the building now houses over 2,000 people, and the 46,000 square metres of floor space has been completely re-fitted to provide the modern office and technical requirements of a 21st century law enforcement organisation. Importantly, a number of key environmental best practice initiatives were incorporated in the building's refurbishment," including double-glazing, new chilled beam air conditioning and energy-efficient lighting.

3

PRIORITY 3: GREEN EDUCATION AND HEALTHCARE FACILITIES

Every pupil has a right to fresh air, daylight and good indoor environment quality within a building that reflects long-term sustainability goals and financial responsibility. Governments are recognising the importance of green schools to enhance learning, reduce teacher turnover and absences, and support the community to live more sustainably.

Six government schools in the ACT are either certified or registered to achieve Green Star ratings, while a further six state schools in Queensland have achieved Green Star ratings. The Tasmanian Government has committed to Green Star benchmarks for all new public buildings, including schools and hospitals. The first project registered by the Tasmanian Government was the Jordan River Learning Federation's Senior School. Australian Greens Leader, Senator Christine Milne, has said: "Greener buildings are not only better for our environment, but they are much more pleasant to work and spend time in and they save money on energy bills. It's great that Jordan River Learning Federation's students will get the opportunity to learn both in and about these buildings."

Just as schools are going green, sustainability is emerging as a focus in the healthcare sector, as more patients and staff demand facilities that decrease average lengths of stay, reduce the spread of secondary infections and improve the health and wellbeing of healthcare professionals. ▶

PRIORITY 3:
GREEN EDUCATION AND HEALTHCARE FACILITIES
(Continued)

The South Australian Government achieved the first Green Star rating for a healthcare project, with the Flinders Medical Centre – New South Wing achieving 5 Star Green Star – Healthcare Design and As Built v1 ratings. Subsequently, the government committed to achieving a Green Star rating for the New Royal Adelaide Hospital, and promises that the "planning and construction of the hospital has been guided by stringent environmental standards and will embrace environmentally sustainable practices."

PRIORITY 4:
MOVE BEYOND BUILDINGS TO COMMUNITIES AND CITIES

The Green Star – Communities rating tool provides best practice benchmarks for delivering adaptable, liveable, prosperous and sustainable cities, communities and precincts.

The new rating tool was launched in June 2012 by Federal Minister for Transport and Infrastructure, Anthony Albanese, who said that Green Star – Communities "goes to the heart of what we are seeking to achieve with our National Urban Policy – and that is to make our cities more productive, sustainable and liveable. The Green Building Council of Australia is to be commended for developing this tool, which will be of vast help to governments, developers and the public who want the best information to guide their decisions about sustainability."

State and territory governments are lining up to register their projects for Green Star – Communities PILOT ratings. ACT Deputy Chief Minister, Treasurer and Minister for Economic Development, Andrew Barr, has said: "The introduction of the Green Star – Communities rating tool can only continue to improve our standard of building and planning, and I look forward to the benefits of its implementation in future developments around the ACT."

PRIORITY 5:
EMBED GREEN SKILLS ACROSS ALL INDUSTRY TRAINING

The demand for 'green collar workers' across the economy continues to grow. To capitalise on these job opportunities, we must have the necessary skills. In much the same way that OH&S has become an integrated part of industry training, green skills must be embedded into curricula to ensure we develop better, safer, greener buildings and provide people with job opportunities and skills in a low-carbon economy.

The $9 million Plumbing Industry Climate Action Centre in Victoria was created to expand the green plumbing sector and boost jobs and opportunities for the Victorian economy. At the time of opening, just 10 per cent of Victoria's 20,000 plumbers had sufficient green skills to meet the growing demand for environmentally sustainable plumbing. The 5 Star Green Star – Education Design v1-rated centre tackles this skills gap head-on by delivering integrated education and training and providing a real-world example of innovative design and sustainable plumbing. ●

ANZ Centre 833 Collins
6 Star Green Star – Office Design v2
6 Star Green Star – Office As Built v2
6 Star Green Star – Office Interiors v1.1

Photography by Earl Carter

EDUCATION IN EXPONENTIAL TIMES

In the multi-screen world of the 21st century, with tablet computers, smart phones and the internet at our fingertips, we now consume more than 11 hours of information each day.

Alvin Toffler first coined the phrase 'information overload' in his 1970 best seller, *Future Shock*. Yet even he would be unable to fathom the sheer amount of information available to us today. A mind-boggling 800,000 petabytes (a million gigabytes per petabyte) in the storage universe and 3.6 zettabytes (a million petabytes per zettabyte) is consumed in homes each day, and this is expected to increase 44-fold by 2020.

At the same time, the amount of technical information available is doubling every two years.

In this brave new world, we are just as likely to learn about the latest Green Star rating tool from our iPad while sitting on the train as we are in a classroom or conference.

In *The Information Diet*, author Clay Johnson argues we should all consume information that is as close to the source as possible – and the closest source for reliable, relevant information on Green Star is now online.

During the past decade, the Green Building Council of Australia has trained more than 40,000 people, giving them a 'top level' view of Green Star. Now we're helping these people get down to the detail.

Our new online courses recognise and encourage increased specialisation within the industry. We understand that the education requirements of an architect, engineer and facility manager differ dramatically. Short online courses are available to help people to zero-in on the information they need to work smarter and deliver sustainable outcomes.

At the same time, the CPD program now features five professional streams: Green Star Accredited Professional status for Design and As Built, Communities, Interiors, and Green Star Associate, with a new accreditation also being launched to coincide with the release of the Green Star – Performance rating tool later in 2013. Each accredited professional stream has prerequisites, including a tailored foundation course and eligibility criteria, and each stream's course content focuses on the development of specialised Green Star skills.

Green Star Faculty member, Joe Karten of Built, argues that e-learning has the potential to drive the uptake of green building practices in regional and remote Australia, and to share our green building expertise with the world.

"People crave a human connection and require educational 'hand-holding' when the content is new. However, webinars make it possible for instant feedback between students and teachers. We will see this method for delivering green building education continue to flourish. The benefit to industry will be the convenience and scalability of on-demand Green Star education."

Aurecon's Digby Hall, another member of the Green Star Faculty, believes it's important to differentiate between 'information' and 'learning'. While a vast amount of information, from certification processes to technical manual interpretations,

can be successfully consumed online, Digby believes that "face-to-face is still by far the best format for learning about collaboration, team work and project management as it simulates the way project teams actually work in the real world."

The GBCA is continuing to meet demand by delivering both public and in-house courses face-to-face, while the new online learning platform will enhance the well-established education delivered in person through Green Cities, Master Classes, 'In the Know' briefings and Green Star Day. The material covered in online courses can also be delivered face-to-face on request.

Organised site tours also provide the ultimate in education, enabling people to see, feel, hear, smell and understand green buildings. Self-guided walking tours that can be downloaded from the GBCA website, the first of which was developed for Sydney in conjunction with World Green Building Week, are also helping people to engage with green buildings and understand their increasingly important place in our cities.

Sustainability in the built environment is being driven by collaboration and information sharing, and the Green Building Council of Australia is confident that e-learning will further the green discourse on a larger, global scale.

Embracing the opportunities of exponential education has its challenges and opportunities. "We can move towards 'training as commodity' where the information is broad in scale but always a little behind what's happening in the real world, in which case we'll still ultimately lose the race," Digby Hall muses.

"Or we can offer 'inspirational' education, where the training provides cutting-edge knowledge, connects people around the globe with the best knowledge and experience in every field and is almost like a social network of green knowledge that is freely shared. Which direction this takes is up to us."

Watch out, as the reach and impact of green building education grows exponentially!

WE ARE LIVING IN EXPONENTIAL TIMES...

4 years
the average length of time that Australian employees stay with their company

55
the percentage of Australia's population using Facebook

845 million
monthly active users on Facebook

340 million
tweets sent through Twitter each day

100 billion
Google searches each month – up from 2.7 billion in 2006

60
the number of text messages the average teen sends each day

2011
the year digital music sales outstripped physical sales for the first time

72
the percentage of Apple's revenue that comes from the iPhone and iPad

100,000
the number of words the average person now consumes during a day

Statistics current as of October 2012.

THE RISE & RISE

OF COLLABORATIVE CONSUMPTION

Q&A WITH RACHEL BOTSMAN

In 2012, social innovator Rachel Botsman enthralled and inspired the crowds at Green Cities with her insights into collaborative consumption and how it could unlock vast stores of untapped potential within the built environment.

While the 20th century was about hyper consumption, the 21st century is about collaborative consumption, Rachel argued, saying that "we have moved from the age of ownership to the age of access."

People are trading, selling and renting their under-used cars, clothes, ideas, skills and even spare bedrooms over the internet. So, twelve months on, how is this megatrend being embraced and where do the opportunities lie?

Have there been any shifts in the collaborative consumption space in the last year, particularly with relation to the built environment?

There are a rising number of ideas that use social, mobile and location-based technology to unlock the idling capacity specifically of built environments or unused space.

The phenomenal success of Airbnb, the marketplace that matches people with space to rent with people looking for a space to stay, has paved the way for the broader space category. An increasing number of entrepreneurs, investors and property developers are asking: where else is there massive value in underutilised or unused space?

Liquidspace, essentially a real-time market that enables you to find all kinds of workspaces whenever and wherever you need it, is a really good example. The average commercial office space is only used a third of the time. Combine this statistic with an ever-increasing mobile or distributed workforce (already exceeding one billion) and it's a massive opportunity. It explains why, in the past 18 months, we have seen Loosecubes, Coworkify, DeskWanted UG, Kodesk and OpenDesks, to name a few, all trying to crack the on-demand office space market.

In addition to the likes of Liquidspace, environments purposely created for 'co-working' (where independent workers pay a fee to share a space) are doubling year-on-year, with much of the growth coming from Spain, Australia and Japan. The beautiful thing about co-working is that it's not just about the space per se but the collaboration that typically occurs among workers. We can learn a lot about designing broader environments for collaboration by observing co-working spaces.

You challenged our Green Cities 2012 delegates to seize the opportunities available to make better use of 'idling capacity'. How are developers grasping those opportunities?

A handful of developers are completely rethinking how spaces can be designed so that resources can be more easily shared, repaired and redistributed. But I would say that the opportunity is still largely unrecognised.
In addition, the even bigger opportunity is in thinking about all the idling capacity that exists in built environments, not just in the residential or office space but in utilities, physical goods, gardens, skills of people and so on.

There are also broader opportunities for people to collaborate around housing and property such as the successful co-housing model championed in Denmark. ▶

Q&A WITH RACHEL BOTSMAN

Are any governments at the city scale capitalising on the opportunities that collaborative consumption presents?

Seoul recently announced that it wants to become a 'sharing city', where people are actively encouraged to share spaces, skills, and material possessions they own but do not fully utilise. Mayor Park Won is trying to raise awareness of the options available and how it "can help us save social expenses spent for safety and welfare," he says. The city is actively promoting 20 projects including parking lot sharing; it has evaluated that if just five per cent of resident parking lots were shared when they would otherwise be sitting empty (i.e. when people are at work), it is the equivalent to building 1,862 new parking spaces that could save the city 23.3 billion won, or more than AUD $20 million. I also like that they are encouraging medical-instrument sharing among hospitals because it's an area where typically municipalities will say there are too many barriers to making it happen.

Mayor Edwin Lee of San Francisco is also very proactive in trying to grow collaborative consumption, continually highlighting the triple benefits it represents for the city from a social, economic and environmental standpoint. He has gone beyond just raising awareness and is investing in the infrastructure to make it scalable. For example, Mayor Lee has formed the first Sharing Economy Working Group that brings together city departments, community stakeholders and collaborative consumption companies and this group is getting its teeth sunk into trickier policy issues that are emerging such as taxation, insurance and regulation.

Where do you see governments' role in supporting collaborative consumption, such as through funding, partnerships or education campaigns? Where do the opportunities lie?

Governments play a critical role in scaling collaborative consumption beyond raising awareness of what is on offer. My top four asks of government are:

- **Remove the barriers and red tape:** Many innovative, collaborative consumption companies are enabling people to monetise and share their assets in ways and on a scale never before possible. This throws up all kinds of insurance and policy issues. For example, if someone decides to rent out their private parking spot, should the owner face laws that prohibit properties being used for certain business purposes? There are currently a lot of grey areas in which entrepreneurs and users don't know where cities and local councils stand on such issues.
- **Proactively make policy changes:** In certain states in the US, such as Oregon and California, legislation has passed that makes peer-to-peer car sharing possible. The bills basically reduce the risk for the vehicle owners.
- **Invest in the required infrastructure:** There are a myriad of ways that governments can help put the right infrastructure in place including: designating more on-street parking spaces for car sharing systems; subsidise car sharing programs in large residential and office complexes; invest in bike sharing systems; create low-rent office spaces for start-ups; facilitate the use of empty commercial spaces for things like skill sharing; and build or invest in platforms that enable garden or land sharing.
- **Encourage the big brands that the space is an opportunity not a threat:** In the UK and US, big companies are being encouraged to either partner with start-ups or create their own models of collaborative consumption. For example, GM has partnered with P2P car sharing platform RelayRides; Google has invested in Getaround; and BMW has partnered with Parkatmyhouse.

> "I believe we are at the start of a massive transformation in the way we think about ownership."

Collaborative consumption models promote access over ownership. People seem receptive to this idea for small-ticket items such as lawn mowers. What about the big ticket items, such as property? How do you think this will affect the way people view their homes in the future?

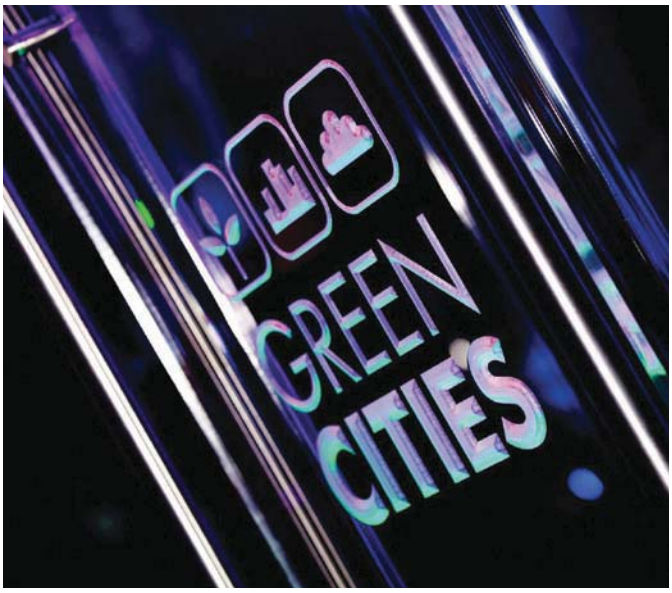
I believe we are at the start of a massive transformation in the way we think about ownership. A critical driver of this shift is that many goods that we previously physically and individually owned have now dematerialised into the cloud. Books, movies, films and so on have become digital – and digital goods are more easily shared. So the concept of owning something is changing.

At the same time, you have big items such as cars, where ownership used to be perceived as a symbol of freedom and personal identity, but are now increasingly viewed as a burden. More and more people are questioning the logic of spending $7,000 a year (on average) on costs when the car sits idle for 23 hours a day. Why not just pay to access one when you need it?

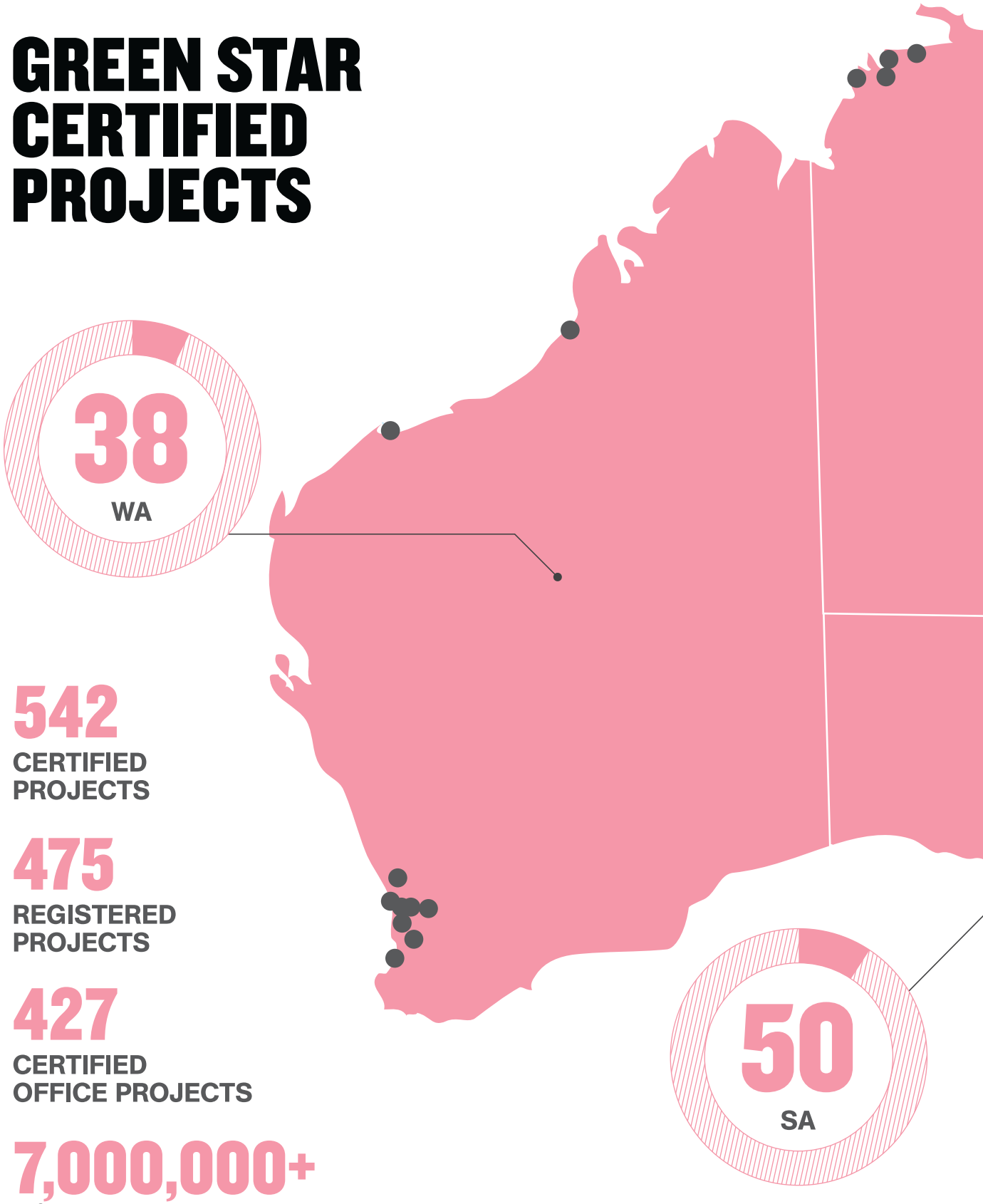
I don't believe the changing attitude to cars is a reactionary trend to the recession, because if you look at the data it indicates a shift in values and spending habits. For example, a recent survey in Germany revealed that 75 per cent of 18-24 year olds would rather live without their car than their smartphone.

The question is: will that shift to other traditional categories of ownership such as property? Yes, it is highly likely. Harvard University's Joint Center for Housing Studies recently reported that the home ownership rate among adults younger than 35 declined by 12 per cent between 2006 and 2011. I believe the future attitude towards homes will be similar to cars – our aspirations around ownership are changing.

The Atlantic magazine recently published an article on this subject, called 'The Cheapest Generation,' in which it argued: "If the Millennials are not quite a post-driving and post-owning generation, they'll almost certainly be a less-driving and less-owning generation."



GREEN STAR CERTIFIED PROJECTS



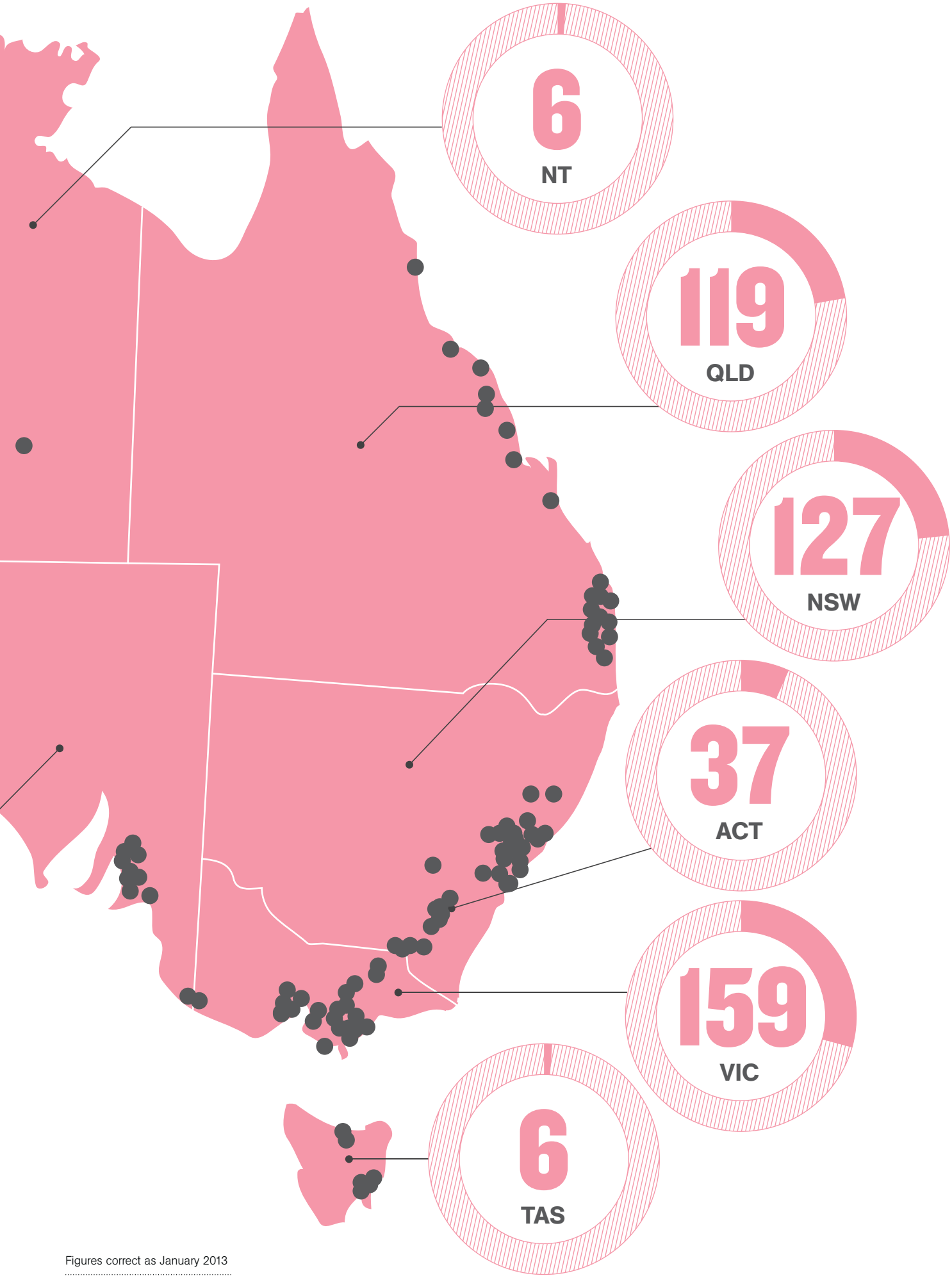
542
CERTIFIED PROJECTS

475
REGISTERED PROJECTS

427
CERTIFIED OFFICE PROJECTS

7,000,000+
M^2 CERTIFIED

147
CERTIFIED IN THE LAST 12 MONTHS



Figures correct as January 2013

Green Star shines at Barangaroo

Lend Lease is proud to support the Green Building Council of Australia's newest rating tool, Green Star – Communities, by piloting it on the $6 billion Barangaroo South development in Sydney.

Lend Lease took an industry-leading position on the first green building rating tools nearly a decade ago. We are now working with the GBCA on the next generation of rating tools which examine projects at the precinct scale, aiming to enhance the design and delivery of more sustainable, productive and liveable communities.

The Barangaroo South urban regeneration project on Sydney Harbour will be benchmarked against credits in the Green Star – Communities categories of Liveability, Economic Prosperity, Environment, Design, Governance and Innovation.

You'll find more information at: **www.barangaroosouth.com.au**

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