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."

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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

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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.

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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

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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.”

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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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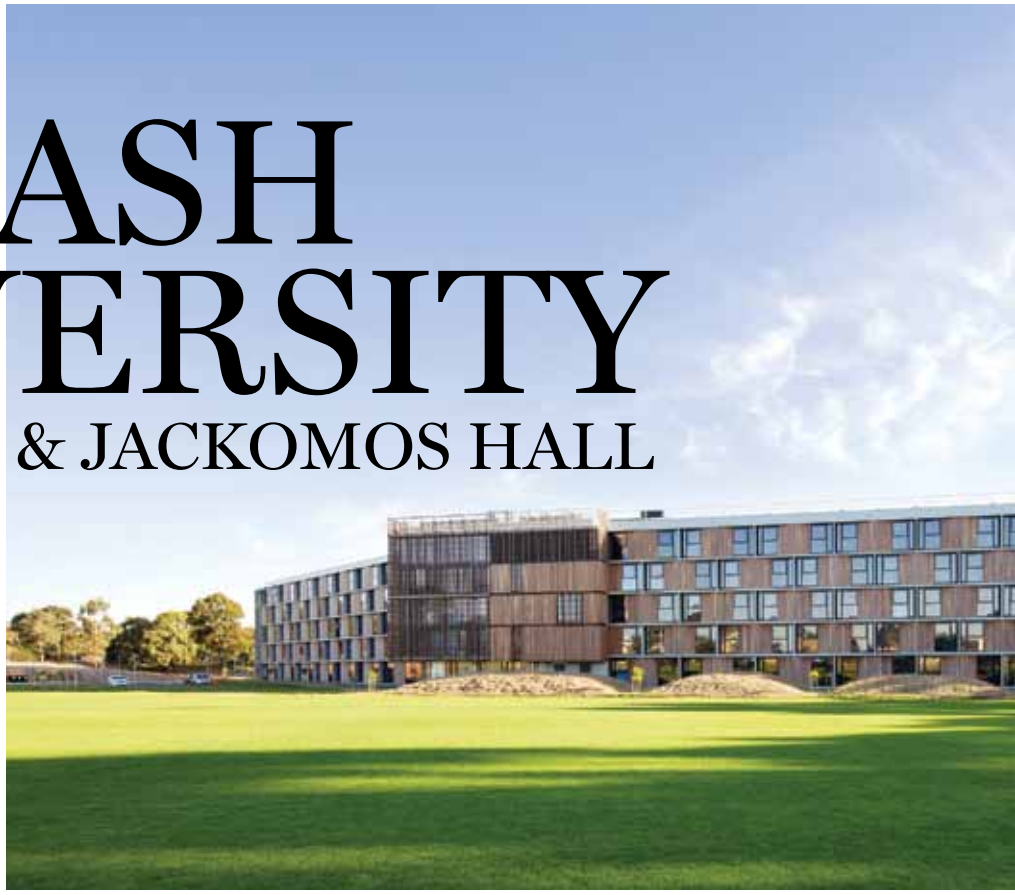
MONASH UNIVERSITY

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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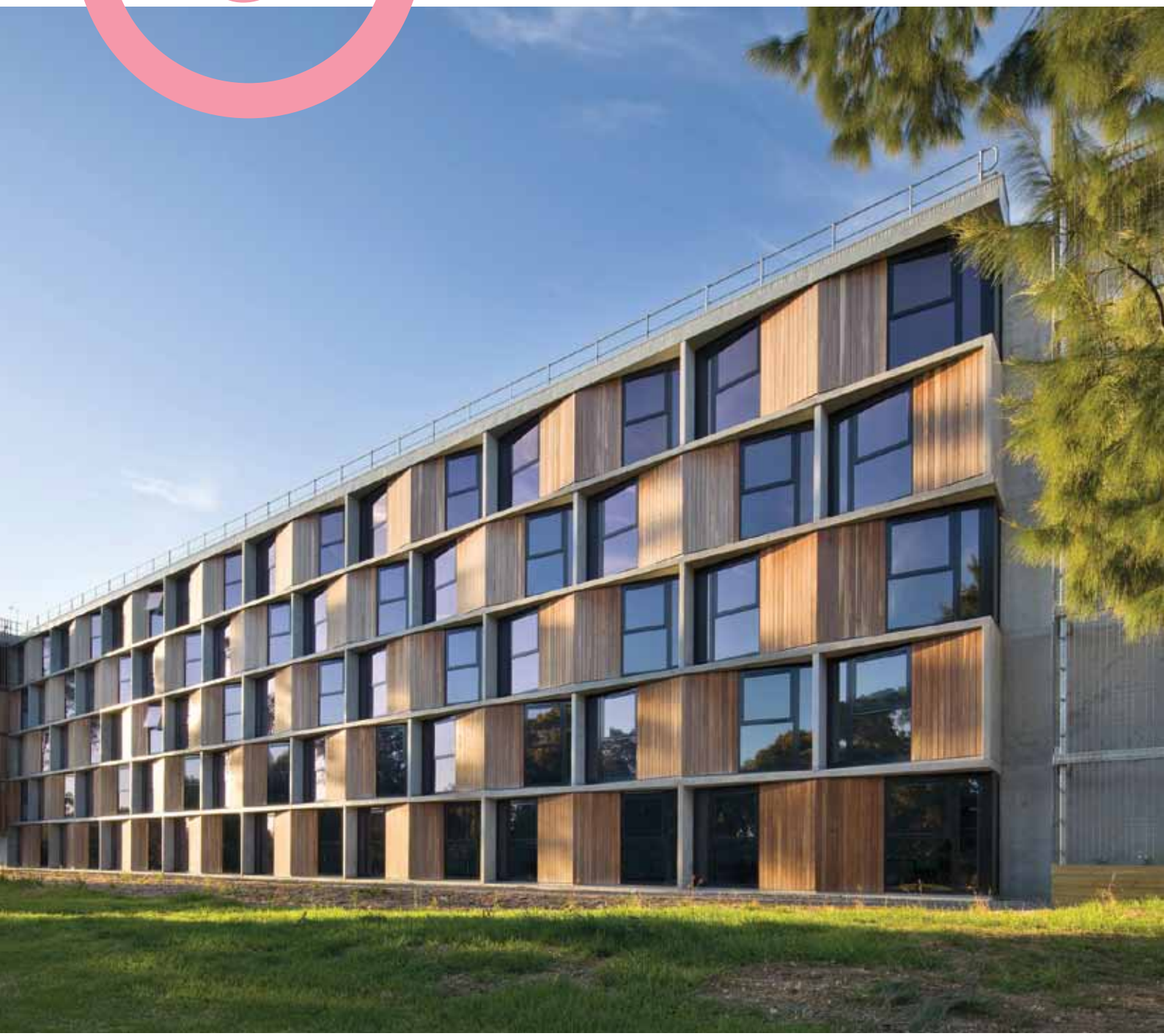


> “There is no doubt that both building performance and the university’s reputation will continue to be enhanced by our commitment to Green Star.”

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

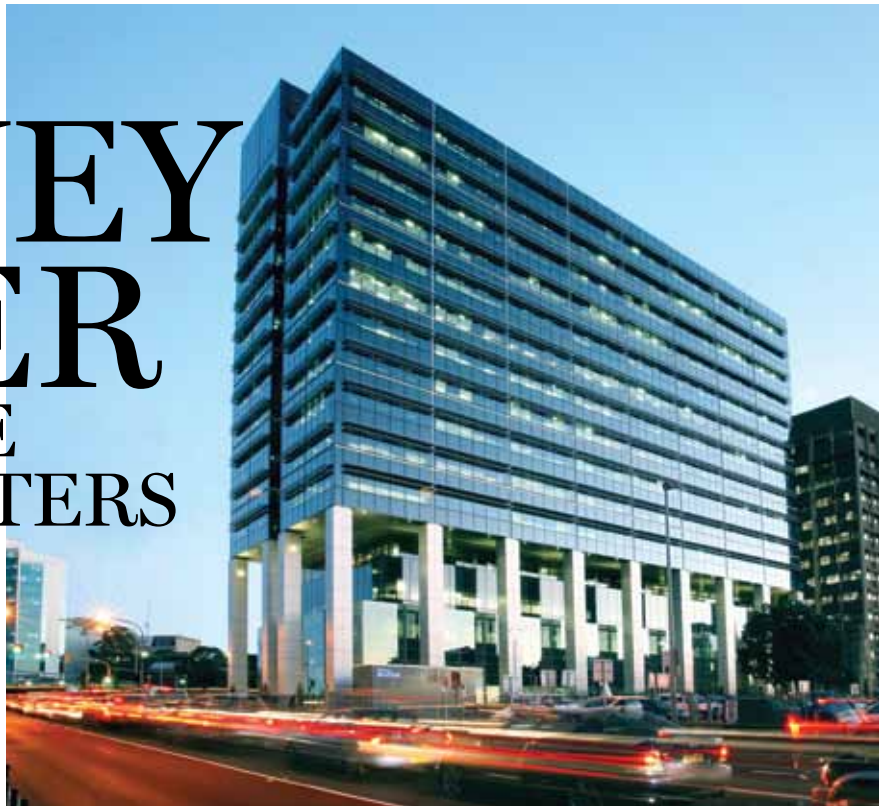
The Briggs Hall and Jackomos Hall project team combined energy-reduction strategies and efficient appliances with sustainable onsite energy-generation to deliver better energy consumption outcomes across the development. The rooftops of the Halls are home to a 153KW monocrystalline photovoltaic (PV) 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.

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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."

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THE KEY SPEC 1

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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,

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

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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."

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