

Sustainability

ENVIRONMENT MATTERS FOR REAL ESTATE ASIA PACIFIC

Sustainable Hotels Without Reservations

The Greening of Hospitality in Asia

Australia's Green Building Journey

How the Country Became a World Leader in Sustainability

Retrofitting Existing Buildings:

The Low Cost, High Volume Solution to Climate Change

Market news from around the region

Climate change news and analysis

CBRE



CONTENTS

03 **FOREWORD**
Introduction by Chris Brooke, Executive
Managing Director, Consulting, Asia Pacific,
for CB Richard Ellis

04 **MARKET NEWS**
A roundup of green building news from
across the region

08 **CLIMATE CHANGE NEWS**
The latest developments relating to climate
change and how they affect the real estate
industry

10 **MAIN FEATURE**
Retrofitting Existing Buildings: The Low
Cost, High Volume Solution to Climate
Change

16 **FEATURE**
Sustainable Hotels Without Reservations:
The Greening of Hospitality in Asia

22 **FEATURE**
Australia's Green Building Journey: How
the Country Became a World Leader in
Sustainability

FOREWORD



“Retrofitting existing buildings is a proven high-volume, low-cost strategy to improve energy efficiency, thereby helping us tackle one of the major causes of climate change”

Welcome to the the fourth issue of Sustainability Asia Pacific, CB Richard Ellis’ twice yearly publication covering the latest regional news and developments in green real estate.

This rebranded fourth issue sees us expand our coverage to include contributions from our colleagues in the Pacific. The Australian property sector has been working towards a more sustainable built environment for some time but has made particularly rapid progress over the past five years and is now widely regarded as an international leader in the field. In this issue we take a look at some of the events and drivers that have influenced the country’s journey so far.

Also in this edition we examine some of the opportunities and challenges associated with retrofitting existing buildings for sustainability. Much of the

focus and attention of the green real estate agenda in Asia Pacific to date has been on driving sustainability in new buildings. However, the majority of buildings that will be around in thirty years’ time in most markets are already in existence. It is clear, therefore, that the greatest opportunity to reduce primary energy use lies within existing building stock. Improving the energy efficiency and environmental performance of existing buildings will be a crucial step in making significant inroads toward tackling climate change.

Finally, we profile the increasing importance of sustainability in the hospitality sector. While green hotels are by no means a new concept, the hospitality industry in Asia is currently enjoying a period of profound evolutionary change in the way that its buildings are designed, constructed and operated. We examine this trend, talk to a

few of the companies behind some of the truly game-changing projects in the region and look to what’s ahead.

In addition, we provide our usual round-up of green real estate news from the major markets around the region and review the latest issues and developments related to climate change and the possible implications for the property sector.

Thanks once again for your ongoing support and I hope you enjoy the fourth issue of Sustainability Asia Pacific.

A handwritten signature in black ink that reads "Chris Brooke".

CHRIS BROOKE
EXECUTIVE MANAGING DIRECTOR
CONSULTING, ASIA PACIFIC

MARKET NEWS

A roundup of green building news from across the region

Australia



Investa launches tri-generation electricity system

Investa Property Group has teamed up with electricity retailers Origin and Cogent to install a new low-emissions electricity generating system at Coca-Cola Place in North Sydney. The tri-generation system uses natural gas to produce electricity on-site as well as capturing waste heat to provide heating and cooling. Tri-generation provides efficiency of up to 80% compared to coal-fired power stations which are capable of converting only 30% to 40% of their fuel energy into electricity. The system will feed excess energy back into the electricity grid, creating a virtual energy precinct providing power to another Investa building, Deutsche Bank Place, across the harbour in the Sydney CBD.

Perth office block earns five-star NABERS rating

A 18,000 sq. m nine storey office building at 235 St George's Terrace in Perth has achieved the city's first five star NABERS energy base building rating for a new office development. The tower is also the first building in Western Australia to secure a five star green star office design rating. Green features include water saving amenities, improved air and lighting quality, waste water recycling and office finishes and paints and carpets which minimise the use of volatile organic compounds.

Survey finds green buildings achieve better returns

A survey conducted by IPD has found that commercial office buildings with green energy ratings consistently generate better returns than non-green offices. Between March 2009 and March 2011 the IPD Green Property Index found

that new offices with Green Star ratings outperformed non-rated buildings in each star rating. Total returns for non-rated assets over the two-year period were 4% compared with 7.4% for all stars. The best performer was 4-star (10.8%), followed by 6 star (5.4%) and 5-star (5%).

Legion House to be powered by off grid bio-gas system

GPT Group, LaSalle Investments and Grocon have announced plans to power the refurbished Legion House office tower in the Sydney CBD with an off-grid bio mass gas system which would also supply energy to the adjacent building at 161 Castlereagh Street. The scheme calls for Legion House to be disconnected from the mains electricity grid and the installation of a bio mass gas energy system. The surplus power created would be supplied to the office tower at No. 161. The two developers say the Legion House building's energy system combined with the use of sustainable building materials such and other environmental features would make it one of the greenest in the world.

China



New guidelines issued on renewable energy architecture

The Ministry of Finance and Ministry of Housing and Urban-Rural Development (MOHURD) published a circular on March 11 outlining policy related to the development of renewable energy architecture. Major pledges include setting higher renewable energy production targets from solar, geothermal, and bio-fuel energy, and achieving renewable energy consumption of 20% by 2020. Renewable construction will be raised to 2.5 billion sq. m by the end of 2015, thereby providing alternative energy equal to 3,000 tons of coal. Development

of green construction and conservation projects will be stepped up and subsidies for green city projects will be provided. Overall a great emphasis will be placed on renewable energy from organisation and leadership to housing construction, finance, and real estate at the central and local level.

MOHURD aims to reduce energy usage in public buildings

On May 14th MOHURD issued the "Notice on Further Promoting Energy Saving Work for Public Buildings," which pledged to reduce the energy consumption per unit area for public buildings by 10% and the energy consumption per unit area for large public buildings by 15% during the period of the 12th Five-Year Plan. The new policy is expected to be a boon for listed energy saving building companies.

ADB provides green building financing in China

The Asian Development Bank has announced plans to provide US\$46 million (RMB 300 million) in partial credit guarantee to Shanghai Pudong Development Bank (SPDB) to support private sector financing of energy-efficient buildings across China. The ADB said that by sharing credit risk with its partner bank, it hopes to ease the financial bottleneck and expand private sector investment in energy-saving green buildings in industry, commercial and social infrastructure. SPDB is the first bank to partner with the ADB on the programme and is also understood to be the first domestic bank in China offering a full range of green credit solutions to companies.

BRE and Vanke unveil masterplan for Green Building Park

British green building firm BRE Global and Chinese developer Vanke signed an MoU in June to create a masterplan for a 450,000 sq. m site in Beijing described as a "Green Building Park". The project will feature an Innovation Park showcasing British design, materials, construction products and technology for sustainable homes as well as a range of Vanke's

demonstration homes built to the government's Green Star standard. The development will also be home to Vanke's research and development centre.

Hong Kong



New floor area rules come into force

Beginning on April 1, developers seeking gross floor area concessions for green features in new buildings are required to undergo HK BEAM-Plus green building certification by the Hong Kong Green Building Council. Other new mandatory requirements include revealing the building's predicted energy consumption, increasing the area for planting and greening, and improving the streetscape and urban air ventilation around new buildings. Once these requirements are met the GFA concessions will be capped at 10%.

Metropolis Tower offers free battery charges to tenants

Tenants at The Metropolis Tower office building in Hung Hom are to be offered free battery charges for their electric cars as part of the landlord's strategy to entice environmentally aware occupiers. Building owner Prosperity REIT last year invested HK\$1 million to install a green roof on the 15-storey Grade A office building which included the fitting of three solar panels, a wind turbine and a battery system to capture energy.

School aims to set benchmark for sustainable design in Hong Kong

Hong Kong Academy's new campus in Sai Kung is aiming to set new standards for green buildings in the city and targeting the highest possible rating under the BEAM Plus system. The 15,000 sq. m building, scheduled to be completed in 2013, will feature a facade optimised for solar penetration, daylight dispersal and

insulation from heat. Classrooms will be fitted with an energy-efficient overhead lighting system which will allow lights closest to windows to dim or turn off when there is sufficient daylight. Occupancy sensors will turn lights off when rooms or corridors are vacant. Other features will include a ventilation system comprising zoned air systems providing conditioned air to "banks" of classroom spaces.

India



IGBC and CII launch updated LEED India rating system

The Indian Green Building Council (IGBC) and Confederation of Indian Industry (CII) launched the new LEED India green building rating system in February. The new system, which is an updated version of the one launched in 2007, includes enhanced energy and water efficiency baselines and a new emphasis on promoting naturally ventilated buildings and encouraging passive technology. The new rating system came into effect in April of this year. The IGBC is facilitating projects registered under the LEED-NC India 2007 standard to transition to the updated system.

Townships get green guideline ratings

In January the IGBC launched its 'Green Townships Rating System' designed to address the issues of urban sprawl, automobile dependency and social and environmental disconnect. The rating system applies to large scale developments such as integrated townships, satellite cities, gated communities and campuses with multiple buildings. In order for it to qualify for certification at least 25% of the total built-up area in a township should be earmarked for residential use. Other ratings cover site selection, land use, transportation and infrastructure resource planning. Three projects - Mahindra World City in Chennai, Ramky in Hyderabad and

BCIL ZED Earth in Bangalore - have so far been registered for the rating.

Authorities in Mumbai consider mandatory green building measures

Authorities in the state of Maharashtra have unveiled proposed legislation to promote the construction of green buildings. If implemented, the policies would require all future buildings in Mumbai to be fitted out with solar panels for water heating, rain water harvesting features, water recycling equipment and high-grade construction material providing good insulation. Authorities also reportedly plan to extend tax benefits to existing buildings provided they are retrofitted within a certain timeframe.

US and India establish green tech fund

The US India Joint Clean Energy Research and Development Centre has announced that it will offer US\$100 million in public and private sector funding towards research on green technology. The centre was launched in November 2010 with the intent of funding joint projects between US and Indian research groups involving bio-fuels, solar energy and building efficiency.

Indonesia



Austria opens green embassy in Jakarta

The Austrian embassy has inaugurated what is being billed as the first truly green building in Jakarta. The design of the new US\$1.7 million Austrian Embassy building, which opened in June, is based on the principles of effective shading which provides rooms with sufficient natural temperature and light. Most rooms are not air-conditioned and instead depend on a radiant cooling system where a temperature-controlled surface cools indoor temperatures by removing heat.

MARKET NEWS

The building water system collects and stores rainwater in tanks which is then used in the septic system and for garden irrigation. No waste was produced during the construction process.

Japan



Smart town project planned in Fujisawa City

Panasonic and eight other companies including Tokyo Gas and Orix together with Fujisawa City council have unveiled plans for the Fujisawa Sustainable Smart Town (Fujisawa SST) project. The scheme calls for the development of around 1,000 houses as well as commercial and public facilities. The low-carbon smart town is scheduled to be completed in fiscal 2013 at a total cost of JPY60 billion. Panasonic plans to use solar photovoltaic power generation systems and household rechargeable batteries for houses, facilities, common zones and other parts of the town, and aims to cut the town's overall CO2 emissions by 70% from 1990 levels.

Roppongi Hills supplies excess power to TEPCO

Roppongi Hills, which is managed by Mori Building, supplied excess power of 4,000 kilowatts to Tokyo Electric Power Company (TEPCO) from March 18 to April 30 after the Tokyo metropolitan area suffered severe power shortages following the March 11 earthquake. The high-rise building in Minato-ku has its own internal power generation system which runs on municipal gas.

DBJ establishes green building certification system

The Development Bank of Japan (DBJ) has unveiled the DBJ Green Building Certification System in which office buildings are given four different ratings

in accordance with their environmental capabilities and the level of anti-disaster and anti-crime measures they employ. By making investments and extending loans, the DBJ provides financing to building owners seeking to create environmentally friendly buildings. The DBJ recently used the system to certify Mitsubishi Estate's Marunouchi Park Building, and subsequently extended loans to it.

Korea



Zero-carbon office block opens in Seoul

In April the National Institute of Environmental Research (NIER) opened what it says is the world's first zero carbon business building. Located in Incheon near Seoul, the 2,500 sq. m US\$8 million building is a project of the Ministry and Environment and forms part of the government's drive to reduce carbon emissions. The NIER says the building uses passive and active systems to cut energy consumption by 40%. Photovoltaic panels on the roof produce the building's electricity while solar and geothermal pumps work together to provide heat. Insulation on the walls and triple-glazed windows ensure the building is kept warm in winter and cool in the summer. The NIER hopes the building will cut CO2 emissions by 100 tons a year and save around US\$100,000 in energy costs.

Malaysia



Govt considering green building incentives

The Malaysian government is considering providing incentives for the construction of houses and facilities which adhere to the Green Building Index (GBI), according to comments made by Deputy Prime Minister Tan Sri Muhyiddin Yassin in May. Muhyiddin was speaking at the unveiling of the Diamond Building in Putrajaya, which is the government's third green building after the low energy office belonging to the Ministry of Energy, Green Technology and Water Ministry and the Malaysian Green Technology Corporation's green energy office.

Rainwater harvesting systems mandatory in selected new buildings

A new regulation in the Uniform Building by-laws passed in May has made it mandatory to install a rain water harvesting system in new semi-detached homes, bungalows and government buildings. Developers who fail to include the feature in their new buildings will not be able to obtain approval for their development plans. Owners of existing buildings in these asset classes are also being encouraged to install the feature.

New Zealand



Auckland tower achieves three 5 Green Star ratings

The Deloitte Centre on Queen Street in Auckland has become the first building in New Zealand to attain three 5 Green Star ratings. The New Zealand Green Building Council (NZGBC) said the 21-storey 23,000 sq. m premium office tower had added a 5 Green Star Office Interior rating (achieved by tenant Bank of New Zealand) to its 5 Green Star Office Design and Built ratings (achieved by developer Brookfield Multiplex).

Philippines



Net Lima set to become country's first certified green building

The Net Lima mixed-use tower planned to be built in the heart of Manila's business district, Bonifacio Global City, is set to become the first building in the Philippines to be certified under the country's recently developed BERDE (Building For Ecologically Responsive Design Excellence) rating system. The 1,550,000 sq. ft complex designed by Chad Oppenheim consists of three towers, ranging from 24 to 40 storeys, built on top of a six-level garage, and is scheduled to be completed in 2014. The building features a high performance glass curtain wall wrapped with an aluminum brise-soleil.

Singapore



National Parks Board to subsidise skyscraper greenery

The National Parks Board has announced that it will subsidise up to half the cost of installing Singapore's skyscrapers with plants on rooftops or vertically on walls. The government originally launched the Green Roof Incentive Scheme in 2009 to encourage the development of green roofs on existing buildings. The scheme is now being upgraded to the new Skyrise Greenery Incentive Scheme, which will help existing buildings across the city create green roofs as well as green walls.

Singapore tops Asian Green City Index

Singapore has ranked first in the Economist

Intelligence Unit's Asian Green City Index. The city was the only metropolis in the study to be rated "well above average" in a five-category rating index. Hong Kong, Osaka, Tokyo, Yokohama and other cities were ranked as "above average". Singapore scored "well above average" in the water and waste management category and "above average" in the energy and carbon dioxide, land-use and buildings, transport, sanitation, air quality and environmental governance categories.

Taiwan



Taipei 101 achieves LEED-EB Platinum Certification

Taipei 101 has become the tallest building in the world to attain LEED-EB platinum certification. Over the past two years the building's automation and energy efficiency have been improved to achieve a 10% saving in electricity usage and water consumption. It is expected the building will save NT\$36 million (US\$1.2 million) each year on energy costs compared to 2007 levels. The project has been hailed as an important milestone for the green building industry and is expected to encourage the owners of other supertall buildings to achieve green certification. The 508-metre tall Taipei 101 is currently the second tallest building in the world after the 828-metre high Burj Khalifa in Dubai.

President calls for more green buildings

Taiwanese President Ma Ying-jeou has reiterated his support for sustainable development and has called for the construction of more green buildings. Speaking at a national architecture awards ceremony in February, Ma said green buildings could help reduce carbon emissions and revealed that retrofitting the Presidential Office building with

sustainable features had reduced energy usage by more than 20% over the last two years. In related news, Christina Liu, minister of the Council for Economic Planning and Development (CEPD), said in June that the government was planning the development of seven "star industries", one of which is green energy and 'smart' green buildings.

Vietnam



Govt sets energy saving targets for 2011-2015

The Ministry of Industry and Trade has announced targets to reduce power consumption by 8%-10% from 2011 to 2015. The five year national strategic programme will be facilitated by raising public awareness and encouraging companies to upgrade current technology. The campaign will focus on spurring public awareness of energy saving, and energy efficiency in the industrial production, construction, and transportation sectors. Demand for electricity in the country is expected to increase by around 15%-17% annually in the coming years.

VAA establishes Vietnam Green Architecture Council

The Vietnam Association of Architects (VAA) has announced the establishment of the Vietnam Green Architecture Council to encourage architects and investors to seek green solutions in research, creative design and construction. The Council plans to publish a manual of equipment and materials suitable for green buildings to foster knowledge about green architecture for professionals and students in the country. The VAA recently signed an MoU with the Vietnam Green Building Council pledging to raise awareness and disseminate information on green design and sustainable development in Vietnam.

Climate Change News

Unpublished estimates from the International Energy Agency (IEA) obtained by the UK's Guardian newspaper in May show that greenhouse gas emissions rose by an unprecedented amount in 2010 to reach the highest recorded carbon output in history. The IEA's figures found that a record 30.6 gigatonnes of carbon dioxide was released into the atmosphere last year, a rise of 1.6 gigatonnes on 2009. The global financial downturn had only a small effect on emissions, with data showing a slight decline from 29.3 gigatonnes in 2008 to 29 gigatonnes in 2009.

Developing countries accounted for around three quarters of the rise in 2010 as emerging economies weathered the financial crisis comparatively well whilst most of the developed world struggled with a recession. According to the IEA, annual energy-related emissions must not exceed 32 gigatonnes by 2020 if the world is to escape the most dramatic effects of global warming. However, this figure could be breached this year if emissions rise by a similar amount as they did in 2010.

A study published in the Proceedings of the National Academy of Sciences in July has found that rapid increase in

the number of coal-fired power stations in China has effectively "masked" the impact of global warming over the past ten years, as sulphur emissions from the power plants create a cooling effect. Despite the last decade being the hottest ever recorded, global surface temperatures did not increase, leading many observers to ask whether climate change had ceased. However, the study explains that the warming effect from rising greenhouse gas emissions was offset by the cooling produced by the rise in sulphur pollution, combined with the sun entering a less intense part of its 11-year cycle. Scientists warn that warming is likely to resume when the sulphur is cleaned up and carbon dioxide exerts its full heating effect.

Greenhouse gas emissions rose by an unprecedented amount in 2010 to reach the highest recorded carbon output ever

Talks held by negotiators representing 180 nations have ended without a clear resolution on extending the Kyoto Protocol, which expires at the end of 2012. The discussions, which took place between June 6 and 17, were reported to have made some progress on sharing green technology such as solar and wind power

and approaches to assist poor countries adapt to climate change impacts. However, representatives failed to resolve disputes between rich and poor nations about extending the Protocol, which requires cuts in greenhouse gases by almost 40 industrialised nations until 2012. Environment ministers will meet again in Durban, South Africa, later this year in another attempt to resolve the standoff.

The C40 Large Cities Climate Summit took place in Sao Paulo, Brazil in early June and was marked by the announcement of a new partnership between the C40 and the World Bank. The partnership is intended to help cities accelerate current actions to reduce greenhouse gas emissions and become more resilient to climate change. It will see the World Bank commit US\$6.4 billion for billion for climate change adaptation and mitigation projects in C40 cities, which it hopes will unlock up to US\$50 billion in private capital.

80% of the world's major cities anticipate climate change could threaten successful business operations in their city

The partnership will provide a standardised framework for C40 cities to measure and report on their greenhouse gas emissions and provide them with access to the World Bank's capacity building and technical assistance programmes. C40 cities presently account for around 8% of the global population, 12% of global greenhouse gas emissions and 21% of global GDP.

The C40 summit also saw the release of a report by the Carbon Disclosure Project (CDP) which found that almost 80% of the world's major cities anticipate that climate change could threaten successful business operations in their city. The report surveyed governments of 42 of the world's major cities on climate change

A government report has warned that up to AU\$226 billion in assets in coastal regions of Australia could potentially be at risk from rising sea levels resulting from climate change

attitudes and readiness and found a widespread belief that business may be interrupted by extreme weather events resulting in property damage and supply chain disruption. Extreme weather events could also increase the cost of insurance premiums and security.

The report found that city leaders are gradually beginning to rise to the challenge posed by climate change, with 43% saying they are already dealing with the effects of climate change in their cities. 62% of respondents said they had already developed a climate change action plan whilst 57% had implemented targets for greenhouse gas reductions. Key priorities identified by cities in the survey included buildings, green spaces, renewable energy, transport, energy savings and waste management. Asia Pacific cities featured in the survey included Bangkok, Seoul, Sydney, Tokyo and Yokohama.

A report released in June by the United Nation's housing agency UN-HABITAT and the regional U.N. commission UNESCAP, titled "The State of Asian Cities 2010/2011", has argued that Asian cities have paid insufficient attention to environmental and climate change issues, which is exacerbating the region's challenges with poverty, development and ecology. The report noted that Asian cities face a number of obstacles in improving their resilience to climate change impacts including the lack of integration of climate change concerns into cities' and countries' overall policies and programmes and a lack of city-specific strategies and action plans.

The study also states that in 2006 around 80% of the region's total primary energy supply came from fossil fuels while less than 0.25% came from geothermal or other new and renewable energy

sources. The UN noted that the energy demands of urban areas are major contributors to greenhouse gases and urged new approaches to make Asian cities sustainable and resilient to climate change impacts.

A report released in June by the Australian Minister for Climate Change and Energy Efficiency warned that around AU\$226 billion in assets in coastal regions of the country could potentially be at risk from rising sea levels resulting from climate change. The Climate Change Risks to Coastal Settlements and Industry study identified the major risks to commercial and light industrial real estate and road and rail systems in coastal areas based on a sea level rise of 1.1 metres, which is the high-end scenario for 2100. Coastal assets at risk from the impact of inundation and erosion include between 5,800 and 8,600 commercial buildings with a value ranging from AU\$58 to AU\$81 billion (2008 replacement value) and between 3,700 and 6,200 light industrial buildings with a value of between AU\$4.2 and AU\$6.7 billion (2008 replacement value).

Victoria with 1,500–2,000 buildings and Western Australia with 1,500–2,000 have the most commercial buildings at risk followed by Queensland (900–1,400), NSW (700–1,200) and South Australia (900–1,500), according to the report. Queensland and New South Wales have the most residential buildings at risk with between 44,000 and 68,000 residential buildings under threat in each state. Minister Greg Combet said adaptation measures could vary depending on the location and particular situation, but could potentially include revisions to planning regimes and building codes in cities. ■

Retrofitting Existing Buildings: The low cost, high volume solution to climate change

Improving the energy efficiency and environmental performance of existing buildings is a crucial step towards tackling climate change. Sustainability Asia Pacific examines some of the challenges and opportunities associated with retrofitting existing buildings in the region

Until relatively recently, much of the focus and attention of the green real estate agenda in Asia Pacific has been on driving sustainability in new buildings. Indeed, the scale and pace of construction witnessed across the region in recent years in markets such as China and India has provided ample opportunity for developers to construct modern structures in compliance with green building codes and certification schemes. However, although the region sees a large quantum of brand new commercial floorspace constructed every year, the green proportion of which is slowly increasing, the majority of buildings that will be around in thirty years' time in most markets are already in existence. In some cities, new buildings typically represent just 1-2% of total stock, meaning that sustainable new build projects can only have so much impact. It is clear, therefore, that the greatest opportunity to reduce primary energy use lies within existing building stock, and that improving the energy efficiency and environmental performance of existing buildings will be a crucial step towards making significant inroads toward tackling climate change.

According to the U.S. Green Building Council (USGBC), green retrofitting involves any kind of upgrade of an existing building that is wholly or partially occupied to improve its energy efficiency and environmental performance, reduce water use, and improve the comfort and quality of the space in terms of natural light, air quality, and noise, all of which is done in a way that it is financially beneficial to the owner. The building and its equipment should then be maintained to sustain these improvements over time. Most retrofitting processes typically involve improving air conditioning and lighting components (in most cases by installing completely new systems) elevators and, in some cases, the building façade. High profile green retrofit projects conducted in recent years have included the 80-year old

Empire State Building in New York, which has been fitted with new windows that are four times more efficient at retaining heat or keeping air cool. The retrofit, which is scheduled to be completed later this year, will reduce the building's energy use by around 40% and cut bills by more than US\$4 million.

Redevelopment can be a long and expensive process conducted over a period of several years

Retrofitting holds a number of commercial and environmental advantages over redevelopment. From a financial perspective, retrofitting is more cost effective and means landlords can continue to generate income from their properties as opposed to missing out on what could be as many as four to five years of rental income if they redevelop the property. Indeed, redevelopment is a long and expensive process conducted over a period of several years and requires landlords having to wait for leases to expire, pay for the existing structure to be demolished, the site cleared and the construction of the new structure to be completed. From a green perspective, there are significant benefits to be gained from retrofitting existing buildings as opposed to pulling them down. Retrofitting older buildings is preferable because it avoids the waste associated with demolition and conserves the embodied energy within them, as opposed to using more energy to construct new buildings, which includes activities such as quarrying, transporting and processing raw materials, as well as the construction activity itself.

Retrofitting can also have a significant impact on the bottom line, with improved energy efficiency and reduced water usage resulting in operational savings. In 2010 a study by Arup and Davis Langdon for the Property Council of Australia found that green retrofits produced a return

of better than 10% on investment. The study, which analysed a city centre office tower, a city fringe high rise and a suburban office, all of which were built in the 1980s, provided clear evidence that upgrading an existing building to achieve a minimum 4.5 star NABERS rating could provide a positive return on investment for building owners. "Retrofitting makes economic sense in most cases," says Dr. Vincent Cheng, Head of Building Sustainability for Arup in Hong Kong. "The main incentives for developers are financial as retrofitting can improve the value of their property. The bottom line is the main driver," he continues. Other observers believe increased workforce productivity ultimately holds the greatest potential savings. According to the USGBC, improved lighting quality and control of thermal systems in retrofitted buildings can result in a 3% increase in staff productivity. As more tenants begin to recognise the potential savings resulting from increased productivity, they will begin to demand new and upgraded green buildings. Other benefits of retrofitting include future-proofing to anticipate tenant demand and improving occupier comfort.

Retrofitting can have a significant impact on the bottom line, with improved energy efficiency and reduced water usage resulting in operational savings

The retrofitting process itself is not without its challenges or difficulties. Whilst these challenges may sometimes be complex, they are not insurmountable. Most existing buildings were not originally constructed with energy efficiency in mind, whilst it is also much more difficult to alter a building once it has been built, as opposed to including energy efficiency features at the design stage. Many older buildings suffer from outdated fittings and systems, aging infrastructure, and inadequate

MAIN FEATURE

operations resources. “Major challenges in conducting green retrofitting projects include meeting building regulations and interior replanning,” says Dr. Cheng. “Other issues may center around installing a new window façade on the outside of a building, which may cause light pollution and not meet building regulations,” he continues.

Retrofitting can be quite an intense experience for tenants and therefore the engagement process is absolutely crucial

In many cases a property is vacated when a retrofit is conducted, but quite often the process is completed with tenants still occupying the building. “Basic retrofits involve enhancing energy efficiency by installing new air conditioning systems including chillers, boilers, air distribution systems, Building Management Systems, energy efficient lighting and control systems, solar PV and solar hot water systems and so on,” says Nick Mavropsi, Regional Director for Technical Services (Pacific) for CB Richard Ellis. “This requires extensive planning, constant communication with all Stakeholders and mostly performed outside normal working hours to minimise disruption to tenant environmental conditions and without tenants having to move or relocate,” he explains. In these cases, having a good management team is crucial. “Retrofitting can be quite an intense experience for tenants”, says Rebecca Pearce, Head of Sustainability (Pacific) for CB Richard Ellis. “If the project is managed poorly, tenants could potentially have to cope with a myriad of environmental issues such as construction waste and noise, which could stretch their relationship and friendship with building management. This underlines the importance of good building management and emphasises how the engagement process is absolutely crucial,” she continues.

Elsewhere around the region, a number



The retrofit of the China Resources building in Wan Chai, Hong Kong will result in energy savings of 11.4% per year and water reduction of 36% per year

of leading developers have commenced sustainable retrofitting projects under their own initiative, in the absence of any regulatory incentives, driven by their commitment to corporate social responsibility and also by the understanding that retrofitting an existing building is more cost effective than demolishing it and constructing an entirely new one. Once such developer is China Resources Property Ltd, which in 2009 began a facelift of its 50-storey, 100,000 sq m flagship China Resources Building in Wan Chai, Hong Kong, which, when completed, will be the first building retrofit project in Hong Kong to achieve LEED-CS Gold certification. “This project is really a demonstration of who we are and what we are all about,” says Amber-Marie Beard, Project Architect for China Resources Property Limited. “We are one of China’s leading government-owned companies and awareness of sustainability is growing both within the country and

Financial considerations were a major factor behind China Resources’ decision to retrofit the property instead of redevelop

the company. This project is the first step towards illustrating the company’s commitment to corporate social responsibility and the most prominent way for us to start,” she continues.

Financial considerations were a major factor behind the company’s decision to retrofit instead of demolish and rebuild the property, which was originally constructed in 1983. The entire project is estimated to cost HK\$600 million but demolishing the building in favour of a brand new one would have easily cost twice as much in construction costs alone. Redevelopment would also have meant forgoing any revenue from tenants for four

to five years while the old building was demolished and the new one built. The company estimates that it would have cost HK\$10,000 (US\$1,282) more per square metre to redevelop the existing building. Other financial benefits from the retrofit, for which Arup is the sustainability consultant, will be the increase in rental income from attracting international tenants looking to occupy space in a green building. “The retrofitted building will be of Grade A standard and we are keen to attract major international tenants with corporate social responsibility and sustainability requirements,” says Beard. “We are looking to capture that market,” she continues. The savings in environmental terms will also be significant. By not using new concrete and steel, the retrofit will cut the building’s embodied energy by 15-20%. Around 81% of the construction and demolition waste from the project will be diverted from landfill and recycled. China Resources hopes the retrofitted building will achieve energy savings of 11.4% per year and water reduction of 36% per year, whilst reducing carbon emissions by 7.5% or 1,370 tons per year.

The China Resources Building retrofit is being carried out in phases, beginning with the property management office, common areas and vacant floors.

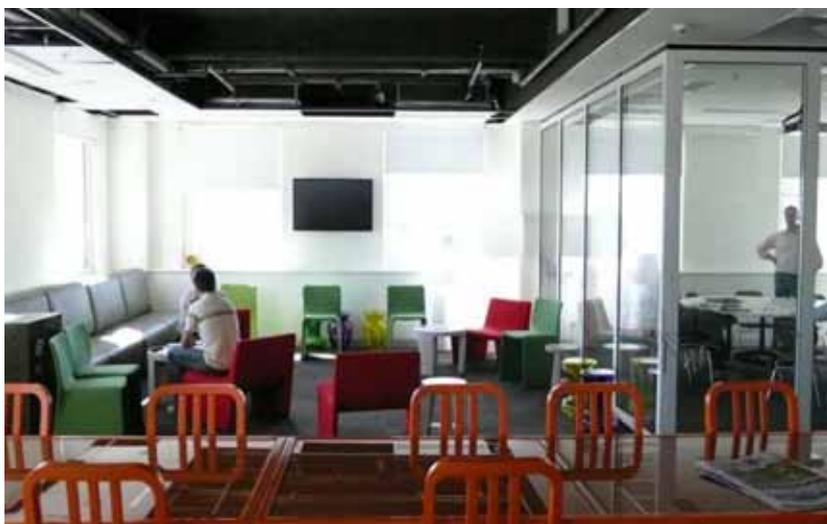
A major challenge around retrofits as opposed to redevelopment is the lack of freedom and the fact that you are stuck in an existing environment and layout

Conducting a full building retrofit with tenants in situ is not without its challenges, however. “We made sure there was always space on one floor for tenants to relocate to if they wished and also utilised space in the exhibition centre for meetings and conferences,” says Beard. As with all retrofit projects, there were limitations on what could be done with the existing structure. “A major challenge around retrofits as opposed to redevelopment is the lack of freedom. You’re stuck in an existing environment and layout,” she explains. “Renovations and retrofits can be messy and dirty, and quite often you never know what you will find, even though you have the internal plans. There are always pipes and wires you never thought would be there,” she adds. Asbestos can also often be a major problem in buildings constructed before the 1990s.

Once the China Resources Building retrofit is complete the building will feature a façade which optimises daylight

and energy consumption by using a glazing system that allows only 5% of solar energy to be transmitted indoors, naturally reducing interior temperature. The air-tightness of this façade will also reduce the need for air conditioning. Toilets will be fitted with dual-flush water closets, low-flow sensor faucet urinals and shower heads, which will help achieve water reduction targets. Air handling units will be supplemented by a CO2 demand control ventilation system able to determine whether a space is occupied, and to control the amount of air circulated in a space, thereby improving energy efficiency and air quality at the same time. Some green features are not always practical, however. “We looked at installing solar panels but the cost and benefits weren’t worth it,” says Beard. “Other green features were more important. They may have not as been as pretty or as visible as solar panels, but they brought us closer to the environmental goals we were looking to achieve,” she explains.

On the occupier side there are a number of types of organisations leading the drive towards green workplaces. Recent years have seen a number of large Fortune 500 multinationals adopt corporate sustainability practices and reporting and many have begun to occupy and fit-out



Parsons Brinckerhoff viewed its new office in Adelaide as a good opportunity to demonstrate its green credentials

MAIN FEATURE

commercial space to green standards wherever possible. Demand has also come from government agencies as the policies they set mandate that they lease green space. In addition, other forward thinking companies have begun to occupy space in green buildings as awareness of the triple bottom line benefits grows. Many, such as Parsons Brinckerhoff, one of the world's leading planning, engineering, and program and construction management organizations, are opting to retrofit older buildings to sustainability standards as opposed to taking up space in new green buildings.

In late 2008 Parsons Brinckerhoff moved its operations in Adelaide to one of the city's most iconic buildings at 1 King



In Australia the Local Government Property fund has been retrofitting its portfolio (including this building at 28 Margaret Street in Sydney) as part of its SRI policy

Although it would have been far more straightforward to lease space in a new green building, Parsons Brinckerhoff believed it would be more challenging and worthwhile to upgrade an existing one

William Street, in the process retrofitting its new facilities to a 5 star Green Star rating standard. “The building offered us good commercial terms, a great location and the means to fulfill all the criteria we had set for our new office fit-out. It also represented a good opportunity for us demonstrate our values. We have a formal sustainability policy, a commitment to being carbon neutral and offer a variety of environmental and sustainability services to our clients,” says Ashley Manna, Office Move Project Manager for Parsons Brinckerhoff in Adelaide. “Although it would have been far more straightforward to lease space in a new green building, we felt it would be more challenging and worthwhile to upgrade an existing one,” he continues. The project required Parsons Brinckerhoff to work with the landlord on some base building retrofit work as part of their moving into the building, necessitating an integrated fit-out. The relationship with the building owner and facilities manager was therefore crucial to the success of the project. “All parties shared a common vision for the building and this really helped us build a solid platform to work on,” says Manna. Two and a half years on, the new office is regarded as a benchmark for the rest of the building and is viewed as a blueprint for future upgrades to other floors.

Encouraging landlords to implement green retrofits on their buildings presents a number of challenges for governments in the region aiming to reduce carbon emissions. In some countries such as Australia, authorities have adopted a carrot and stick approach, mandating that buildings achieve a certain level of energy efficiency and performance whilst also providing a proportion of the funding required to get the buildings up to standard. “In Australia the government

is major driver motivating institutional investors to upgrade their properties to meet energy efficiency requirements so they don't get left behind,” says Rebecca Pearce. “It is also the government tenants who are really focusing on occupying space in green buildings,” she adds. Nick Mavropsi agrees.

“The government is a major occupier of leased space in Australia and has mandated to occupy energy efficient space”, he explains. They are also backing this up with funding. There are a number of funding opportunities through both Commonwealth and State Governments to assist industry. Over the last couple of years, we have assisted our clients in obtaining this funding and there are a number of retrofit projects which cost around AU\$2 million, and Commonwealth funding has contributed to AU\$500,000 towards these projects. So it is really the government which is driving the market,” he continues. Aside from the requirements mandating the disclosure of NABERS ratings for buildings of over 2,000 sq m for sale or lease, other landlords in Australia, such as Local Government Property Fund (LGPF) an unlisted property fund managed and controlled by Local Government Super (LGS), are retrofitting their properties as part of their policy of Socially Responsible Investment (SRI).

Elsewhere around the region, the market for sustainable retrofitting in is still in its early stages of development as authorities begin to take steps towards offering greater incentives. In Singapore, the Building and Construction Authority has created a SING\$100 million fund to help owners of existing buildings with the costs of green building retrofits. The city has already recorded some notable milestones in the

area of green retrofitting, with the 33-year HarbourFront Centre recently being awarded a Green Mark Platinum Award. The building was installed with a new air-conditioning system which resulted in an efficiency improvement of almost 50%, and a more efficient lighting system which reduced electricity costs by more than 30%. Elsewhere, in May 2011 the Asian Development Bank announced it would provide RMB 300 million (US\$46 million) in partial credit guarantees to Shanghai Pudong Development Bank to facilitate lending to private-sector energy efficient building projects in China, which would include providing loans to companies seeking to retrofit old buildings.

One major obstacle to retrofitting in Asia, particularly in Hong Kong, is the widespread perception that 'new is better'

Despite the progress being made in some markets, redevelopment is still preferred by most developers in Asia. "One major obstacle we often find we encounter, particularly in Hong Kong, is the widespread perception that 'new is better'," says Dr. Cheng. "Most green buildings in the region are new builds," he continues. Dr. Cheng says many building owners in the region lack knowledge on whether to retrofit or redevelop their property, or whether it should undergo a major or minor refit. Other landlords, particularly those in Hong Kong, maybe believe that their property is not suitable or practical to be retrofitted. "Things have changed a lot over the past two to three years in Hong Kong and the government beginning to encourage the conversion of older industrial buildings for office or other use," he continues. "There could be opportunities here for retrofitting," he adds. China represents the biggest opportunity in the region, with the government having been very proactive in introducing stringent energy codes and other legislation which is helping drive

the market for sustainable retrofitting. "It's definitely the market with the most potential," says Dr. Cheng. "Buildings in China age very quickly and are often poorly planned and positioned. There are many opportunities on the mainland to retrofit buildings that were constructed just 15-20 years ago. Shopping malls in particular are looking to upgrade and attract more high-end shops and consumers. In the next 5-10 years we will see the market in Tier-II cities become more sophisticated and consumers demanding higher quality buildings," he continues.

Whilst the construction of modern new green buildings slowly gathers pace across the region and is to be commended and indeed encouraged, retrofitting existing structures represents an effective high-volume, low-cost approach to tackling climate change by reducing energy use. The combination of lower operating costs and higher asset value for a smaller proportion of the outlay compared to redevelopment means climate change is not the only justification; retrofitting makes economical sense as well. Whilst retrofitting is not without its challenges, and may not be appropriate for all building stock, it is quite often largely a hassle free process.

Although the private sector is slowly becoming more committed to sustainability and is beginning to consider sustainability in its real estate decisions, some companies have not been insisting on retrofitted space in older buildings or even offices in newer green buildings. "Over the past few years following the global financial downturn, occupiers may have been thinking about financials over perceived 'softer issues' such as sustainability", says Rebecca Pearce. "However, with increasing energy costs and greater market awareness of energy efficiency, sustainability is likely to become part of the financial considerations. With this and the potential benefits to productivity, demand for green

Owners will be forced to respond to stricter building codes by retrofitting their existing properties

buildings will definitely continue to grow in the years ahead," she continues.

As governments across the region gradually introduce stricter building codes and mandate greater energy efficiency in buildings, owners will be forced to respond by retrofitting their existing properties. Some are already one step ahead. "China Resources Property is currently retrofitting several of our properties in Bangkok but the rationale is not about achieving a rental premium in the market," says Amber-Marie Beard. "It is being done to hang on to key international tenants with a commitment to corporate social responsibility, who may be tempted to leave for some of the newer LEED certified stock which is about to come on stream. So it's not about the rents, it's about staying competitive," she adds. ■

Sustainable Hotels without Reservations

While green hotels are by no means a new concept, the hospitality industry in Asia is currently enjoying a period of profound evolutionary change in the way that its buildings are designed, constructed and operated. Sustainability Asia Pacific examines this trend, talks the companies behind some of the truly game-changing projects in the region and looks to what's ahead.

naked Stables Private Reserve in the forested mountains of Zhejiang province, China

Green hotels...no really...

Most green travelers are by now fairly anaesthetized to the ubiquitous guest room tent card requesting cooperation in hanging up towels so they don't get laundered every day, only to have the towels laundered every day regardless. In Asia it's not uncommon for guest rooms to be colder than the mini-bar when one firsts walks in. Many hotels make the right noises about the environment but those seemingly little details that guests always seem to notice conspire to demonstrate that following through with environmental commitments is rarely straight forward. However, as some hoteliers have been forced to point out, this has been due in part to the perceived demand from some guests for levels of service and standards that are intrinsically less environmentally responsible, presenting a sustainability dilemma in terms of achieving environmental performance while sufficiently satisfying stakeholders to remain profitable.

Many hotels make the right noises about the environment but following through is rarely straightforward

There is growing evidence that this position is broadly changing. Back in 2008, a Deloitte business traveler survey¹ reported that 90% of respondents expected hotel facilities to be implementing environmental initiatives and 20% even claimed they had stayed in lodgings that did not allow their experience to be as green as they had wanted. Consumer concerns regarding "green washing" in the industry are now a key issue providing a strong imperative to demonstrate real environmental

The strong link between environmental impact and operating costs coupled with the hotel industry's highly competitive nature provide a particularly sound business case to drive the green revolution

performance through actions, rather than discuss it through copy on the corporate website.

Fortunately, the strong link between environmental impact and operating costs in the hotel business, coupled with the industry's highly competitive nature, provide a particularly sound business case to drive the current deep green revolution. But to the outside observer, the industry as a whole still appears to be grappling with developing standards by which to benchmark and communicate actual green performance in a standardised, transparent manner.

The green hotel tower of Babel

As consumer awareness of environmental issues and the contributors to them increase, being able to demonstrate environmental commitment through actual performance becomes more of a competitive advantage issue. To that end it is important to have some method of evaluating that performance to help verify achievements and provide clear messaging to stakeholders that environmental goals are being met. Arguably the problem for the hotel industry is not that these certification schemes do not exist, it's that there are too many of them vying for global dominance (see inset on P.18), providing a lack of clarity to the market, and consumers in particular. This is confusion is perhaps not lost on some major players in the industry, with some going as far as creating their own internal standards, such as Hilton's "Green Engage" system.

Perhaps due to the inextricable link between hotels and buildings, the hospitality industry has increasingly turned to established green building rating systems to certify the sustainability of

their facilities, most notably in Singapore where thirteen hotel facilities have been certified using the Green Mark rating system to date. Elsewhere in the region, the industry has shown considerable interest in using LEED to certify hotel buildings.

Taking the LEED in green hotels

Green Hotels are, in fact, nothing new to Asia and neither is using LEED to provide third party certification. Back in 2000 the Heritage Kandalama hotel in Sri Lanka became the first LEED certified building outside of the USA and the first LEED certified hotel anywhere in the world when it received a bronze certification under, the then just launched pilot of, LEED for New Construction thus setting the pace for the industry to follow.

Recently, both Starwood and Marriott committed to passing designs through the LEED volume registration program to streamline the LEED documentation and certification as well as project design process, thereby providing triple bottom line benefits to their businesses. Other major operators such as Fairmont have also made commitments to using LEED as a framework to green the production of new hotels.

In Asia there are 13 LEED certified hotels, including 7 recent LEED for Existing Buildings Platinum projects in India, and a further 73 hotel projects across the region have been registered with the USGBC that are pending award of certification.

It's not just the global giants of the hotel industry that are embracing LEED as a framework to green their premises. Founder and Managing Director of BEE inc. (a Shanghai and Hong Kong-based

¹ "The Staying Power of Sustainability – balancing opportunity and risk in the hospitality industry" Deloitte 2008



Green Hotel Certification Standards

The hotel industry has no shortage of schemes through which to demonstrate environmentally responsible performance. Many of these relate to the management of the hotel operator including:

- Green Globe
- Earth Check
- Green Hotels Global
- Green Seal
- ENERGY STAR for Hospitality
- Audubon Green Leaf Eco Rating Program
- Sustainable Tourism Eco-Certification Program
- ASEAN Green Hotels Standard
- China National Green Hotel Standard
- Green Leaf Standard (Thailand)
- EcoTel (India Focused)
- The Green Key International (in Asia only represented in Japan with four hotels)
- Green Key Global (no Asian representation)

In terms of actually certifying buildings, hotel companies have thus far sought to use the various green building rating systems created for general commercial property. The USGBC's LEED green building rating system has proved universally popular for this purpose and there is a growing number of registered and certified, new and existing building LEED hotel projects throughout the region.

The USGBC has created a dedicated web page for the industry, providing specific advice and downloadable content for hotel project stakeholders. Moreover the USGBC is creating specialty LEED for Hospitality versions of both LEED NC and LEED EB:OM for the 4th iteration of the system due to be launched in 2012.

sustainable engineering consultancy and sourcing company), Alessandro Bisagni, who has worked on several new green hotel projects across the region, comments: "Often because they are smaller, the boutique hotel projects are more flexible in their decision making and able to push boundaries further. This means that while they take LEED as a

framework to aid in the green design of their project, they use it to go beyond the prescriptive

requirements of the LEED platform, enabling them to take sustainable performance to new levels."

Hotels that restore more than just your sense of wellbeing

One such example of a boutique hotelier who has gained success from pushing environmental performance beyond conventional norms is the URBN group, famous for opening China's first carbon neutral hotel. URBN Shanghai was built within a renovated industrial building yet delivers luxury and cutting edge contemporary design to the growing market of guests who appreciate the inherent beauty of using recycled and natural materials, such as locally sourced old wood and bricks reused from homes undergoing renovation in the old French concession. URBN's commitment goes far beyond the aesthetic side of sustainability though and a lot of its environmental performance happens behind the scenes, unbeknown to guests. For example URBN Shanghai employs an energy efficient water recycling and purification system that

allows the hotel to reduce its load on the municipal supply by up to 70% than it would otherwise need. Shortly after opening URBN participated in a joint program between the US Agency for International Development (USAID), US-China Sustainable Buildings Partnership (SBP), and ICF International to investigate no cost and low cost solutions to improve the energy efficiency of URBN Shanghai resulting in a 36% reduction in overall electricity consumption in 2009 versus their 2008 baseline, despite a 12% increase in occupancy rates for the same period.

URBN's Marketing Director, Victoria Hajjar notes "Our energy efficiency project took a holistic approach to reducing demand from structural aspects like insulation and double glazing to using vegetation to help with cooling and setting lights to lower levels of illumination. We've been able to demonstrate significant reduction in energy usage with minimal cost outlay and this is something we're going to take even further with our next two projects."

A lot of the environmental performance of URBN Shanghai happens behind the scenes, unbeknown to guests

Those two new projects were announced in the past few months. URBN Sanlin in Pudong is a joint venture with Vanke to be built on the old Shanghai Village Expo site, and URBN Luxiangyuan is a joint venture with Shanghai's largest publically listed developer, Chengtou. URBN Salin will pursue LEED certification (targeting gold) as well as the China '3 Star' green building rating system certification as frameworks to incorporate more green features. URBN Sanlin, which will employ glamorous Japanese design interiors, will take the green aesthetics of URBN Shanghai and "pump them up" with installations from old cars and carpet made from bamboo fibre. From a technology perspective the project will incorporate features such as a ground



Above and top right: URBN Shanghai was built within a renovated industrial building using recycled and natural materials



A rendering of URBN Sanlin

source heat pump and a vegetated green roof which will combine to reduce cooling demand in the summer and reduce the need for fossil fuel powered heating in the winter, as well as indoor environment focused initiatives such as CO₂ monitors in guest rooms. The building is designed on stilts to reduce site impact and will have a water recycling and purification system that delivers cleaner water to the Shanghai municipal system than it receives. “Our intention is that URBN Sanlin should have a positive environmental impact; not just preserving, but enhancing the local environment and providing an ecological refuge for local wildlife.” says Hajjar.

People, planet and profit in practice

Encouragingly, this drive to move beyond ‘green buildings’ that do less harm to the environment towards ‘restorative buildings’ that have a positive effect on it is also being adopted by other visionaries in China. naked Retreats, also based in Shanghai, serves another sector of the hospitality market in Eastern China, as the company’s name suggests, stripping away

the stress and providing an escape from the pressures of city living in the world’s second largest economy.

naked’s first project, opened in 2007, was a chic complex created out of six renovated traditional homes in Sanjiuwu, a small rural village in the bamboo forested mountains of Zhejiang province. naked Home Village was conceptualized as a home away from home, Managing Director, Gabriela Lo, explains, “Because we’re a relatively young company at naked we didn’t inherit an existing corporate culture, we had the freedom to create our own based on our philosophy of living a simple and sustainable life.”

When renovating the traditional village houses to create the hotel, green building features were included, such as local building materials (many of which were recycled); a grey water recycling system; solar panels for water heating; and the use of a bamboo pellet boiler for heating in the winter. naked Home Village extends its positive impact through community engagement, employing local villagers (literally the neighbours) as staff, setting

up a waste management scheme for the village and engaging the local school children on environmental issues generating strong local support for naked’s vision.

naked’s next project, the naked Stables Private Reserve, is a luxury Afro-Asian themed eco-resort of statuesque tree-top villas and rammed earth huts, set amongst the forests and tea plantations of Moganshan. Targeting LEED Platinum, this project has taken the lessons learned from naked Home Village to the next



naked Stables Private Reserve highlights traditional building techniques using natural materials such as bamboo

naked Home Village extends its positive impact through community engagement by employing local villagers and educating local school children on environmental issues



naked Stables Private Reserve is targeting LEED Platinum certification

level. A comprehensive sustainability approach has been adopted for all aspects of the project, from master planning, design and construction, to engaging with the local community to help build and later run the resort, maximizing the socio-economic benefits of the development and fostering a local sense of pride in its presence. Site disturbance in the forest was minimized by the use of stilt-borne treetop villas that utilize pre-fabricated panels, reducing construction work and waste on site.

naked Stables Private Reserve showcases the vernacular of traditional building techniques from the area, including stonework, buildings made entirely from bamboo and employing some of the few remaining local craftsmen who know the old techniques used to make traditional rammed earth walls, which have the additional benefit of providing excellent insulation qualities. The project also blends in modern technology to enhance environmental performance, including low-e double glazed fenestration, rain water collection systems for roof and road run off coupled with grey water recycling for use in toilet flushing. All black water is treated before being discharged. Along with passive design to reduce energy demand naked have taken the innovative step (for the hotel industry) of installing electricity sub meters on the individual buildings to be able to engage guests on the issue of energy use and provide them

with incentives to become part of the team in lowering demand.

Taking the green back downtown

A far cry from the serenity of the eco-retreats of the Zhejiang mountains is the hustle and bustle of Hong Kong's business hotel market. When it first opened in 2001, the Rosedale Hotel in Causeway Bay set a new benchmark for sustainability in Hong Kong's hotel industry. Rosedale, and its development partner ITC, were the first to employ a prefabricated façade in Hong Kong, benefiting from the consistent high quality production of the pre-cast formwork to reduce costs associated with construction time and interior fit out. The building has since been a case study in the region for this building process, including being used by the Hong Kong SAR government in the development of its GFA concession legislation.

For their latest project, in Tai Kok Tsui, near the Olympic MTR station, Rosedale and ITC are again raising the bar. The Rosedale Kowloon is expected to open in Q1 2012, and at which point should be the first certified green hotel building in Hong Kong (targeting LEED Gold). This move is driven in part from senior management commitment to green building at ITC, who have a number of other non-hotel green developments in the pipeline.

There are also tangible business benefits in

pursuing green for Rosedale as an operator in the highly competitive business hotel market. As Director of Business Development, Lucas Chanter, explains, "Rosedale is developing the brand to widen our client base. Demonstrating a commitment to environmental responsibility is a key aspect to augmenting that brand enhancement. Our guests are getting greener and achieving LEED certification is a differentiator that is potentially worth a couple of room-nights a year extra to our business."

Rosedale's guests are getting greener and achieving LEED certification is a big differentiator

In addition to being able to tick off an increasingly important box for some corporate (and personal) travelers, Chanter is looking forward to realising the bottom line benefits that the buildings' green features will provide in terms of reduced operating costs. As a unique class of commercial real estate, hotels have a singular environmental footprint. If managed poorly they can be hugely energy and water inefficient and generate proportionally more waste than other non-residential assets. While this is in some sense a challenge, it also presents a great opportunity because when managed properly the savings from realising efficiencies in these buildings are that much greater.

Although the LEED design process caused Rosedale and ITC to rethink some specifications, such as inclusion of a real time energy monitoring BMS coupled with an upgraded HVAC system with variable speed drives, a green roof and sky lounge with high solar reflective index (SRI) decking made from recycled plastic, as well as LED and T5 lighting and low-flow showers in guest rooms, all of these features will contribute to significant operation savings.

Some ideas that came out of the LEED design process turned out not to be feasible. A rainwater capture and storage system was ruled out due to current Hong Kong legislation and the small plot area combining to make it impossible to site the storage tank. While some aspects of LEED for New Construction may not be open to Rosedale and ITC, it hasn't stopped them from looking beyond the framework at other areas in which they can drive environmental performance throughout their brand.

For example, the company is installing a new smart room card system connected to all power supply in each room, including lighting, AC and plug sockets. This new system cannot be fooled by guests into thinking they're present when they leave the room by placing another card in the slot, it has to be their specific room key.

Rosedale is also looking beyond technology at stakeholder engagement and education for



Rosedale Kowloon, which is expected to be the first certified green hotel building in Hong Kong when it opens in Q1 2012

both staff and guests, green procurement and hotel management practices. "We're looking at everything right down to the soap for the guest rooms," says Chanter, "We recognise that we can't just rest on the laurels of a LEED certification for the building itself and are looking at other systems, like Green Globes, to ensure our ongoing operations and services to guests are increasingly greener."

Checking out

The future for green hotels in Asia is therefore a very bright one. From a real estate perspective, many eyes are trained on the hospitality sector specializations that are due to come out in version 4 of the building design and construction and building operation and maintenance versions of LEED, to be released next year. In the long term, expected increases in energy and food prices coupled with growing stress on the region's water supplies should also give the greener hotels a tangible competitive advantage.

The uncompromising back to basics, total sustainability, success of naked Retreats; the big picture environmental responsibility, city oases of URBAN; and Rosedale's reinventing approach to green business hotels without capital premiums are all standard bearers for flags under which several other companies also march. However it should be noted that as with all industries, as a whole, real sustainability is not yet the norm. For the solution to making this the case we need to look towards collective stakeholder participation.

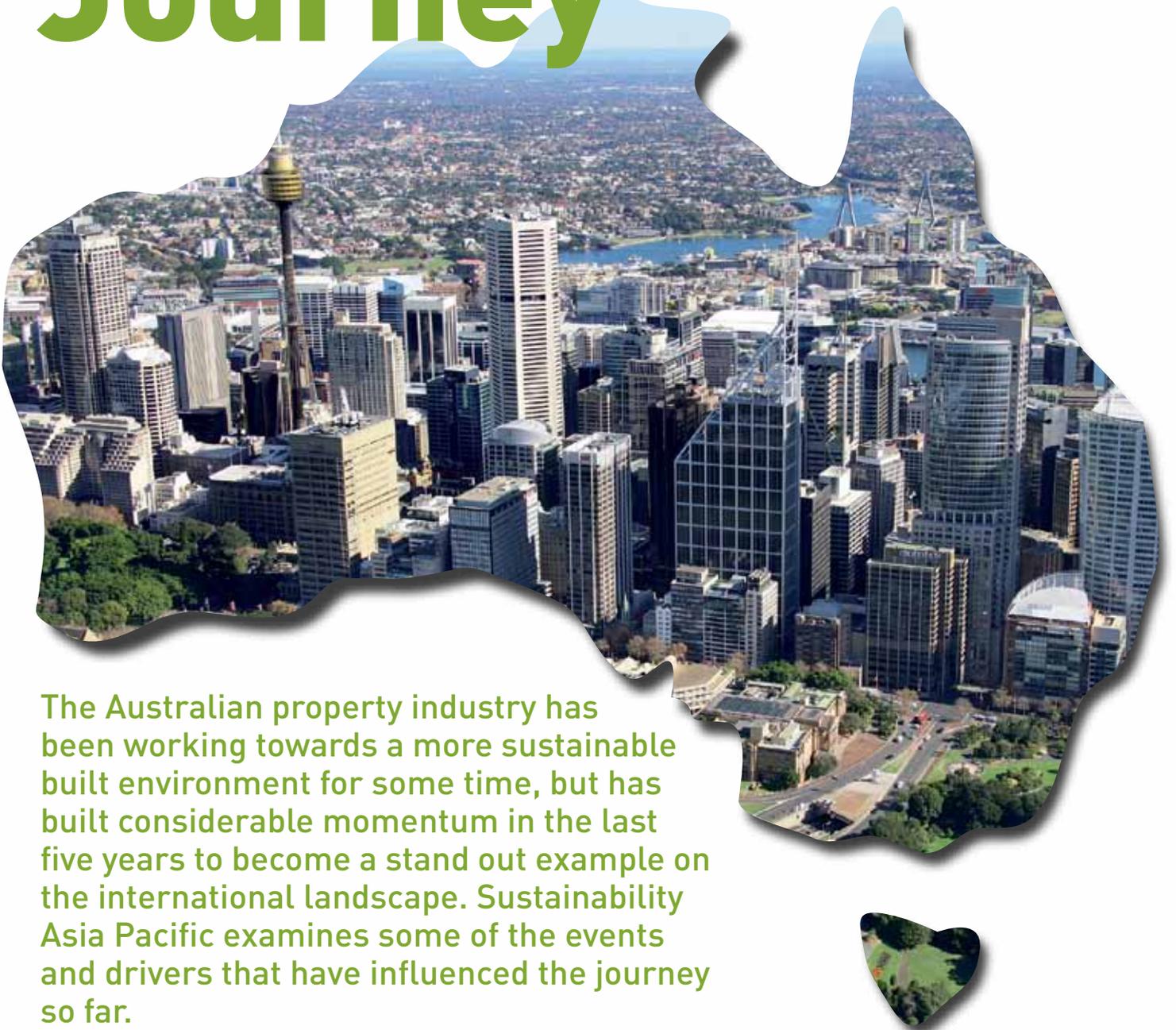
According to BEE inc.'s Bisagni, "The drive for sustainability in the hotel sector needs to come from the bottom-up as well as from the top-down. Government regulations and certification systems like LEED will drive market adoption, but consultants still need to have confidence to propose sustainable ideas and solutions to clients. Smart design does not always mean additional cost; consultants know

this but are often afraid to speak up. The more we collectively strive to find viable sustainable solutions to projects, the more these solutions will become the norm."

Therefore, as a final footnote to this article, which necessarily infers a lot of onus is on the broader hotel industry to put its house in order with respect to sustainability, it should be noted that we all have a significant part to play in helping the hospitality sector to be more environmentally sustainable. Empowering decision makers within the hotel industry to move towards greener strategies can be as simple leaving comments regarding green features or operational procedures you'd like to see on the in-room suggestion form. At a corporate level, more companies are choosing to require hotels to complete environmental surveys as part of their review for trips, events or corporate packages. If your company does not yet have one, the USGBC produces a good example available for download from its dedicated green hospitality web page – Green Venue Selection Guide (USGBC). ■

Disclosure statement: CB Richard Ellis is the sole marketing agent for naked Stables Private Reserve

Australia's Green Building Journey



The Australian property industry has been working towards a more sustainable built environment for some time, but has built considerable momentum in the last five years to become a stand out example on the international landscape. Sustainability Asia Pacific examines some of the events and drivers that have influenced the journey so far.

At the United Nations climate change conference in 1997 the Australian government declined to commit to the Kyoto Protocol, which sought to reduce the collective greenhouse gas emissions of developed countries by at least 5 per cent below 1990 levels during 2008 to 2012. Despite, or perhaps due to, this lack of commitment at a federal level, a number of state governments put in place key initiatives that have created a robust framework for the improvement of the sustainability of our built environment.

In 1996 the government of New South Wales, Australia's most populous state, set up a Sustainable Energy Development Authority (SEDA) to promote energy efficiency for homes and businesses. The following year the NSW government announced substantial GHG emissions reduction targets (e.g. 15% by 2001) and sponsored the development of the Australian Building Greenhouse Rating system (ABGR). This was Australia's first building rating system and focussed solely on commercial office buildings. The rating was based on the previous 12 months energy consumption and required annual updates. Initially launched in 1997 at state level, ABGR ratings were expanded to cover the whole of Australia in 2001 and then transformed in 2005 into the NABERS program – the National Australian Built Environment Rating Scheme.

NABERS ratings now cover Energy, Water, Waste and Indoor Environment aspects of a building's operation and the scope of the program has been expanded to cover other building types (e.g. shopping centres, hotels, schools etc). The ratings remain focussed on actual, measured performance against benchmarks (with

locational adjustments) rather than set design criteria. The NABERS scheme has been widely accepted across Australia – it is relatively low cost and allows easy comparison between buildings - and forms the backbone of several government energy efficiency initiatives.

Australia's other locally developed rating system is the Green Building Council of Australia's (GBCA) Green Star system. Based on the USGBC's LEED and UK's BREEAM system with adjustments for Australian climatic and market conditions, Green Star was launched as a pilot in 2003 with the first rating awarded in 2004 to 8 Brindabella Circuit in Canberra. Like the LEED New Construction rating tool, Green Star is based on a credit point system with specific criteria across 8 categories, and additional recognition for innovation. Ratings are either Design (prior to construction) or As Built (post completion, validating that works have been carried out in accordance with the design intent). Originally designed as a 5 star system Green Star was updated in 2005 to include an additional star rating – 6 stars – recognising the increasing ambition of developers and innovative practices. The type of buildings covered has increased dramatically, with coverage of Education, Healthcare, Retail and Industrial sectors as well as Office buildings and Office interiors.

Since the GBCA's establishment in 2002 it has been a major force in raising awareness of environmentally sound building practices and promoting a sustainable property industry in Australia. The Green Star rating system has significant market penetration in the commercial office sector, and is almost universally adopted for major new developments as a benchmark of good

practice. Along with industry education and advocacy works, the GBCA provides well coordinated support for owners and developers adopting the rating system and pursuing innovation, promoting the advancement of industry practice.

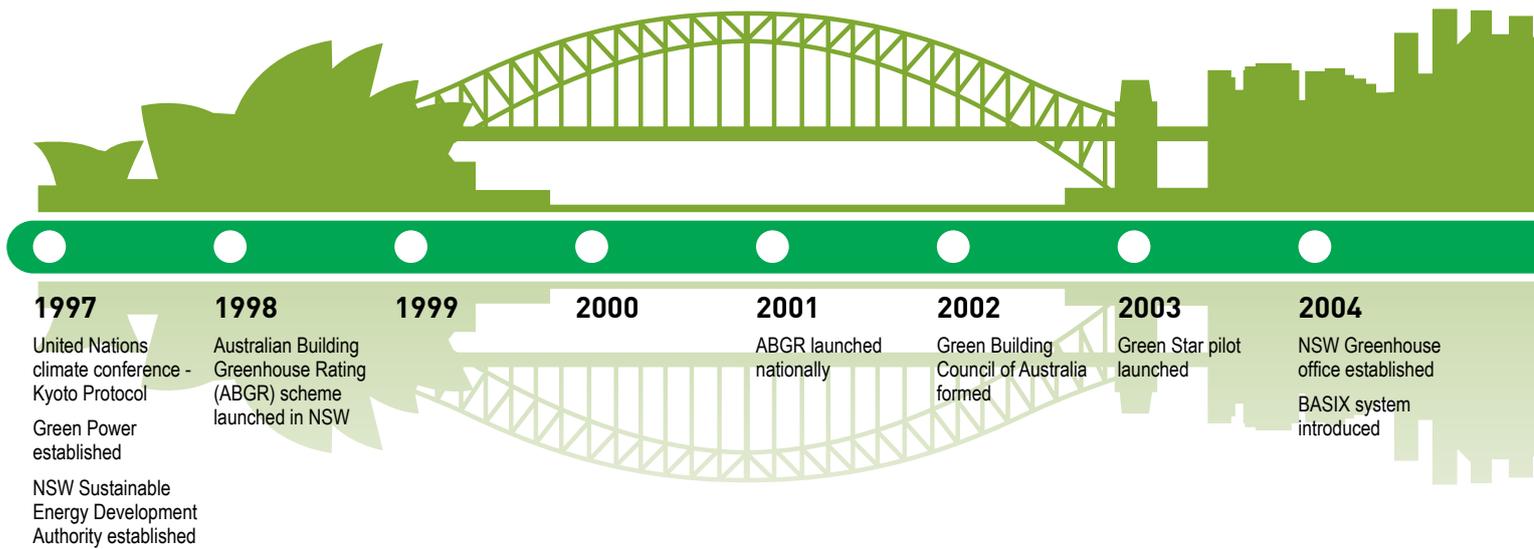
The NABERS scheme is relatively low cost and allows easy comparison between buildings

The ABGR/NABERS and Green Star rating systems were developed as voluntary initiatives, allowing owners and developers to demonstrate their good behaviour against recognised benchmarks. In the mid-2000's the motivation to measure and promote sustainable property performance increased markedly as governments acted to set an example. In 2004 the NSW Greenhouse Office was established and the modelling of energy and water consumption (seeking reduction) was made mandatory for all new residential buildings as part of the planning approvals process. In the same year the City of Melbourne commissioned the CH2 building, a new council headquarters incorporating passive solar design principles and multiple innovations such as a water recycling and black water treatment, wind turbines, rooftop photovoltaic cells, a gas fired co-generation plant and a displacement air conditioning system incorporating 100% fresh air and a phase change chiller plant. This building became the first 6 star Green Star building under the expanded rating regime and generated unprecedented interest from the property industry and the public due to its highly visible and ambitious sustainability innovations.

The second half of the decade saw an increase in federal legislation to influence energy efficiency and carbon emissions reporting and reduction. The Energy Efficiency Opportunities Act (2006) requires corporations with high energy use (over 139,000 MWh per annum) to identify, evaluate and report publicly

The Green Star rating system has significant market penetration in the commercial office sector in Australia and is almost universally adopted for major new developments as a benchmark of new practice

Green Building Timeline



on projects to increase efficiency and reduce consumption. This legislation affects approximately 220 companies and reportedly covers 60% of all energy used by businesses in Australia. The National Greenhouse and Energy Reporting Act was introduced the following year and focuses on the accurate and complete reporting of GHG emissions and energy use, rather than the reduction of the same. Thresholds for this obligation are lower at 27,777 MWh per annum for a facility or building and 55,555MWh for a corporate entity. The EEO and NGER legislation is not specifically directed at the property industry but many of the major institutional investors and funds have been impacted by these schemes, reporting on energy used and projects across their portfolios – registered companies include Dexus, Stockland

and Lend Lease. The public visibility of reporting, and associated penalties, has generated a focus on energy and emissions management with follow on effects for property and portfolio management practices.

Another key game changer was the introduction in 2006 of the Government Green Lease Schedule, which sets out minimum environmental standards and operational practices for buildings and office space occupied by federal (and later state) government departments. Minimum NABERS Energy ratings of 4.5 stars (out of a possible 5) are required for all new leases and renewals, creating a strong motivation for owners to build to high standards of efficiency and retrofit where possible to provide improvements and ensure competitiveness of their asset in

The Government Green Lease Schedule has motivated owners to build and retrofit to high standards of efficiency to ensure their asset remains competitive in the marketplace

the market. Such has been the effect of this requirement that a two tier market appears to have emerged, particularly notable in Canberra. “Since 2007, the Canberra office market has witnessed an unprecedented building boom, with a 42% addition to stock in square metre terms,” says Kevin Stanley, Executive Director, Global Research & Consulting for the Pacific region.

“This building boom has led to a rise in vacancy across all grades of stock,

**2005**

NABERS commercialised

2006

CH2 building achieves 6* Green Star rating

Government Green Lease Schedule mandated

Energy Efficiency Opportunities Act passed

2007

National Greenhouse & Energy Reporting Act passed

Sustainable Sydney 2030 vision launched

Australia ratifies Kyoto protocol

2008

Green Building Fund launched

Emissions Trading Scheme proposed

2009

National Strategy on Energy Efficiency released

Renewable Energy Target set

UN Climate Change Conference - Copenhagen Accord

2010

Emissions Trading Scheme legislation abandoned

Building Code of Australia revised - new energy efficiency measures

Building Energy Efficiency Disclosure Act passed

Mandatory disclosure comes into effect

Melbourne's 1200 Buildings program launched

2011

Environmental Upgrade Agreements

Tax Breaks for Green Buildings program introduced and delayed

Investa exports power to grid from tri-generation plant at Coca Cola Place

1 Bligh Street opens - Australia's first 6* Green Star high rise

Carbon Tax proposals outlined

although the difference in this rise between Grade A and Grade C/D is significant. The Grade A vacancy rate has increased from zero in mid 2007 to 11.0% in January 2011, although this is now falling. Meanwhile, the average vacancy across Grade C and D over the same period has moved from 2.4% to 19.8% and is still rising," he continues.

The Green Building Fund was launched in October 2008 and brought about a surge in retrofitting projects

At present government budgets are tight and workforce expansion is also at a low cyclical point, leading to little current expansion in occupied stock. "The requirement for Government to occupy

only 4.5 star rated buildings is a structural change to the market, which is likely to see low graded buildings struggle to attract enough tenants to reduce vacancy and put upward pressure on rentals, even after Government starts to expand its workforce once again," explains Stanley. "This situation casts doubt over the future use of these secondary buildings for offices and may lead to a significant downward re-rating of their value. This, in turn, may stimulate re-use of the building or redevelopment of the site to a higher and better use," he adds.

Following the change of federal government in late 2007 Australia ratified the Kyoto Protocol and established a commitment to emissions reduction at a national level. In support of this commitment was the development of the

National Strategy on Energy Efficiency, one element of which was the Green Building Fund, launched in October 2008. The Green Building Fund provided grants to owner of up to \$500,000 or 50% of the value for retrofitting projects focussed on improving the energy efficiency of Australia's existing office buildings. Grants were awarded on merit considering the potential for emissions reduction calculated using the NABERS criteria. Seven rounds of funding were made available, totalling approximately \$120m, with shopping centres and hotels included in the final round.

The Green Building Fund created a surge in retrofitting projects with many owners enabled to undertake multiple improvements as one project to achieve efficiencies and benefits for occupiers.

The government has provided “carrots” such as the Green Building Fund along with a number of “sticks” including greater regulatory controls

Innovation and the use of Australian technology were encouraged, stimulating the local sustainable construction & engineering industries. CBRE successfully completed several Green Building Fund projects for clients, including the use of rooftop solar photovoltaic cells, a gas fired tri-generation plant to provide low emissions electricity and a new air conditioning technology (the Shaw Method of Air Conditioning) that addresses humidity to increase the indoor environmental quality to occupants whilst decreasing energy requirements.

Many major property owners benefitted from the fund, which ran until early 2011. Brian Churchill, Property Portfolio Manager for Local Government Superannuation is an enthusiastic supporter of the initiative. “The Green Building Fund was the best program the federal government ever implemented. It was a call to arms. It provided practical financial incentives and rewarded innovations in technology. Six of our

buildings received funding and it helped with all of them,” he says. One building in the Local Government Super portfolio, 120 Sussex Street, has achieved a 5 star NABERS rating – the highest possible – following a Green Building Fund financed upgrade project. Managed by CBRE, the building is now operating at 50% of its 2007 energy consumption levels with increased tenant comfort and reduced air conditioning complaints.

After providing the “carrot”, the government then chose to adopt the “stick” approach of increased regulatory control. The revised Building Code of Australia (BCA), released in 2010, included new mandatory energy efficiency and emissions reduction measures for all new buildings. Also in 2010 the Building Energy Efficiency Disclosure act was passed mandating the disclosure of a NABERS Energy rating for all office sales and leasing transactions over 2000 square metres.

The market awareness of energy efficiency that the Commercial Building Disclosure scheme was designed to achieve is becoming a reality. Purchaser and tenant awareness is rising and articles such as the “Worst Performing Offices Revealed” story in the Australian Financial Review (dated 24th March 2011) bear witness to changing criteria in property decision making. As owners become aware of potential shortcomings of their building’s performance enquiries are increasing for building audits and improvement programs. Unfortunately this increased demand has not been matched with new grant programs. Some owners may be regretting not acting sooner to secure funding given the conclusion of the Green Building Fund program.

A further national incentive is in planning in the form of a one off tax deduction for capital investment in energy efficiency projects. Originally planned for launch in July 2011 this program has been delayed until 2012 to respond to industry concerns at the design of the scheme, success criteria and delays of up to 3 years until real financial benefits might be seen.



The revised Building Code of Australia (BCA) released in 2010 includes new mandatory energy efficiency and emissions reduction measures for all new buildings

In the meantime the Victoria and New South Wales state governments have developed a new incentive mechanism known as an Environmental Upgrade Agreement – operated in Melbourne under the 1200 Buildings program. Under this scheme owners enter into a three way agreement with a lender and the local council. The lender provides funding (at commercial rates) for the project which is then repaid to the council with rate payments (local government taxes). The council then passes payments on to the lender. The aim of this mechanism is essentially to allow the costs of efficiency projects to be passed on to tenants, thus overcoming the “split incentive” where tenants are the main beneficiaries of investment through savings in the building’s outgoings. So far uptake has been slow but is expected to increase as the details of funding are resolved by financial institutions and the reality of the end of the Green Building Fund “free money” becomes more evident.

Rising electricity prices and the mandatory disclosure of energy ratings will amplify the focus on energy efficiency in the years ahead

Shifting our focus away from the existing building sector and back to new development, we have seen a step change in new building sustainability innovation in the last 5 years. One example in the Sydney market is a new office tower of 42,000sqm at 1 Bligh Street. Developed by Dexus and CBus Property, and now managed by CBRE, this is Australia’s first a 6 star Green Star high rise building. In addition to a carefully considered envelope with triple skin glazing and automated louvres to provide natural ventilation the building incorporates a tri-generation plant, rooftop solar panels and a hybrid air conditioning system using chilled beam cooling to the perimeter and VAV system for central zones. The construction stage, managed by Grocon,

also considered sustainability, including the on site recycling of 90% of rubble from demolition and solar power for site offices. Occupants will benefit from improvements to the quality of the indoor environment through day lighting, lighting management systems and high quantities of fresh air. These features were actively marketed as contributing to increased productivity, with associated economic benefits.

CBRE have recently provided advisory services for Grocon on the redevelopment of Legion House in Sydney which will incorporate a biomass gasification plant to create energy on site by burning waste paper from the office tower adjacent. Legion House is designed to become Australia’s first commercial office building operating entirely independent of the electricity grid, with potential to export excess power.

Innovations such as these help to maintain the green building dialogue and continue to raise the sustainability ambitions of occupiers, owners and investors. Whilst some difficulties have been experienced as new technologies are applied, lessons are being learnt and challenges overcome. This is demonstrated in the agreement reached recently between Investa, Origin Energy and Ausgrid (who manage the energy infrastructure) at Coca cola Place in North Sydney. Since its commissioning the trigeneration system had been underutilised due to low demand levels. The new agreement permits the exporting of excess energy into the electricity grid to create a virtual energy precinct across the Investa portfolio. This represents a breakthrough for on site generators and could open the way for the formation of low emission energy precincts.

So in which direction will we head next? Will the sustainable property

The real estate sector is now recognised as a major player in Australia’s sustainability story

industry be able to maintain momentum? Global corporate occupiers continue to speak of corporate and environmental responsibility. Major Australian property companies continue to note energy efficiency targets for their buildings – Dexus & GPT have both committed to achieving an average 4.5 star NABERS rating across their portfolio. Rising electricity prices and the mandatory disclosure of energy ratings will amplify the focus on energy efficiency and a new debate is about to begin with the proposed carbon tax. Over the last 10 years the Australian property industry has recognised the scope of possible improvements and acted with assistance, encouragement and regulation from all levels of government. The industry has in turn been recognised as a major player in Australia’s sustainability story. ■

EDITORIAL

Jonathan Hills

Associate Director
CBRE Global Research and
Consulting, Asia Pacific
T: (852) 2820 2881
E: jonathan.hills@cbre.com.hk

SUSTAINABILITY CONTACTS

ASIA

Dr. Richie Lee

Executive Director
Energy and Sustainability
T: (86) 21 2401 1479
E: richie.lee@cbre.com.cn

Tim Shen

Director
Sustainability, Asia
T: (852) 2820 2815
E: tim.shen@cbre.com.hk

INDIA

Arunkumar Madhansingh

Manager
Asset Services
T: (91) 22 4069 0100
E: arunkumar.madhansingh@
cbre.co.in

JAPAN

Misako Endoh

Senior Executive Secretary
CBRE K.K.
T: (81) 3 5470 8576
E: misako.endoh@cbre.co.jp

PACIFIC

Rebecca Pearce

Head of Sustainability
Pacific
T: (61) 2 9333 3445
E: rebecca.pearce@cbre.com.au

©2011 CB Richard Ellis, Inc. We obtained the information above from sources we believe to be reliable. However, we have not verified its accuracy and make no guarantee, warranty or representation about it. It is submitted subject to the possibility of errors, omissions, change of price, rental or other conditions, prior sale, lease or financing, or withdrawal without notice. We include projections, opinions, assumptions or estimates for example only, and they may not represent current or future performance of the property. You and your tax and legal advisors should conduct your own investigation of the property and transaction.

CB RICHARD ELLIS ASIA PACIFIC OFFICES

AUSTRALIA

Adelaide
Brisbane
Busselton
Cairns
Canberra
Camden
Gold Coast
Ipswich
Mandurah
Melbourne
Mulgrave
New Castle
Northern Beaches
North Sydney
Parramatta
Perth
South Sydney
South Yarra
Sunshine Coast
Sydney
Tweed Heads
Underwood

CAMBODIA

Phnom Penh

CHINA

Beijing
Chengdu
Chongqing
Dalian
Guangzhou
Hangzhou
Hong Kong
Macau
Qingdao
Shanghai

Shenyang
Shenzhen
Tianjin
Wuhan

INDIA

Bangalore
Chennai
Hyderabad
Kolkata
Mumbai
New Delhi
Pune

JAPAN

Fukuoka
Hiroshima
Kanazawa
Kobe
Kyoto
Nagoya
Nihonbashi
Osaka
Saitama
Sapporo
Sendai
Shinjuku
Takamatsu
Tokyo
Yokohama

KOREA

Seoul

MALAYSIA

Johor Bahru
Kuala Lumpur
Penang

NEW ZEALAND

Auckland
Hamilton
North Auckland
South Auckland
Christchurch
Wellington

PHILIPPINES

Cebu
Manila

SINGAPORE

TAIWAN

Taipei

THAILAND

Bangkok
Phuket

VIETNAM

Danang
Hanoi
Ho Chi Minh City