THE DOLLARS AND SENSE OF GREEN BUILDINGS 2006

Building the Business Case for Green Commercial Buildings in Australia.

green building council australia

8 Brindabella Circuit
Canberra
5 Star Green Star -
Office Design Certified Rating.

ACKNOWLEDGEMENTS

In April 2004, the Green Building Council of Australia (GBCA) received funding from AusIndustry under its Innovation Access Program for a project titled ‘Green Star Diffusion’. The AusIndustry project sought to disseminate information to promote the uptake of green building practices by the Australian property industry. As part of this project the GBCA undertook to examine the business case for green commercial buildings in Australia by reviewing the latest international information and local case studies.

In late 2005, the Victorian Building Commission provided additional funding to the GBCA to update the Green Star Diffusion project to identify actions for industry and government that could be used as a basis for the development of a national roadmap for sustainable building in Australia.

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Designed by Push Design.

A green building is one that incorporates design, construction and operational practices that significantly reduce or eliminate the negative impact of development on the environment and occupants with strategies for addressing:

1. energy efficiency;
2. greenhouse gas emission abatement;
3. water conservation;
4. waste avoidance, reuse and recycling;
5. pollution prevention - noise, water, air, soil & light;
6. enhanced biodiversity;
7. reduced natural resource consumption;
8. productive and healthier environments; and
9. flexible and adaptable spaces.

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THE ENVIRONMENTAL BENEFITS FROM BUILDING GREEN ARE BEYOND DISPUTE.

GREEN BUILDINGS ALSO DELIVER A SUITE OF COMPELLING ECONOMIC AND SOCIAL BENEFITS THAT CONVENTIONAL BUILDINGS DO NOT.

AUSTRALIAN AND INTERNATIONAL CASE STUDIES AND RESEARCH IDENTIFY THE FOLLOWING KEY ECONOMIC BENEFITS:

ONE
TWO
THREE
FOUR
FIVE
SIX

BENEFIT	DIVIDEND	$VALUE
Lower annual operating costs and more efficient asset management [2, 16, 42, 44, 46, 48]	60% reduction in water and energy consumption	**$120 per sqm reduced to $60 per sqm**[48]
Increased occupant productivity and well being and less staff churn [16, 30, 45, 48, 49, 56, 59, 66, 67, 73]	Productivity increase of 1-25%	**Saving of $35 - $41 per sqm** [9,48]
Higher relative investment returns [2,15, 16, 64]	Minimum 14% ROI	**Varies**
Marketing advantage [39, 44, 45, 56]	Free promotion	**Zero cost**
Higher market value for asset [15, 16, 44, 46, 48, 49, 50, 57]	10% increase	**Varies**
Higher rents [49, 60]	5-10% increase	**Varies**

INTERNATIONAL STUDIES IDENTIFY THE FOLLOWING ADDITIONAL BENEFITS

- Ethical investment opportunities [9]
- Higher tenant retention [59, 60]
- Lower risks and relative insurance costs [8, 17, 51, 55]
- Reduced capital costs, including reduced construction time and variations

More local examples of green commercial buildings are required to quantify these benefits for the Australian property industry.

Importantly, a growing body of international and local evidence shows that while buildings generally incur a small green premium above the costs of standard construction, the Australian property industry should not expect the cost to build green to exceed a 3% premium. This makes the green premium for a green CBD commercial office building less than $100 per sqm.

Australia needs to keep pace with global developments to ensure we enjoy the range of benefits from building green.

There are already signs that Australia is moving in the right direction, with an expanding stock of green commercial buildings and growing government commitments to sustainable development, reflecting leadership by industry and government alike.

But more needs to be done.

This Report is the first attempt to consolidate international findings and reinforce these with local examples and comments to build a business case for green buildings in Australia.

It identifies a number of barriers to the mainstream uptake of green building principles and practices, including a general lack of knowledge and skills about green building, and outdated and inconsistent planning and building codes.

It also identifies a range of actions which could provide a way forward in facilitating the greening of commercial buildings in Australia. They could also be used as a basis for the development of a national roadmap for sustainable building in Australia.

ACTIONS FOR GREEN GROWTH

ONE

CO-ORDINATION AND CONSISTENCY

Co-ordination and consistency in national metrics, standards, and targets to provide clarity for the industry.

- As the only national comprehensive environmental rating system which is internationally recognised, Green Star should be endorsed as the national voluntary environmental rating system for Australian buildings. (Section 6.1.1 ‘Co-ordination and Consistency’)
- The Building Code of Australia should be expanded to set minimum environmental standards that are directly related to the best practice metrics within the national voluntary tool. (Section 6.1.2 ‘National Standards’)
- Support should be given to an internationally recognised Australian environmental labelling scheme for products and materials. (Section 6.1.3 ‘National Product Labelling’)

TWO

EDUCATION

A range of green building educational programs to increase the uptake of green building practices and the demand for green commercial buildings.

- A national public education program on the benefits of green buildings should be undertaken. (Section 6.2.1 ‘Public Education’)
- Relevant government agencies and departments should provide support to extend existing educational programs that communicate the national voluntary rating tool for the benefit of professionals within the property industry. (Section 6.2.2 ‘Professional Education’)
- The Australian Property Institute should ensure green initiatives are considered by valuers, and undertake an appropriate education program for its members. (Section 6.2.3 ‘Improved Valuation Techniques’)

THREE

LEADERSHIP AND PARTNERSHIP

Government leadership and partnership with industry to support the industry’s uptake of green building practices.

- Key national targets for a sustainable built environment should be set as part of the development of an Australian Sustainability Charter, agreed upon by the Council of Australian Governments. (Section 6.3.1 ‘National Targets’)
- All governments should follow the leadership shown by the South Australian and Victorian Governments in committing to achieving best practice green building standards across a comprehensive range of environmental criteria for all new government building, procurement and tenancy fitouts. (Section 6.3.2 ‘Leadership by Example’)
- Whole of life cycle cost accounting should be included in all government tender contracts with whole of life costing used to make key contract decisions. (Section 6.3.2 ‘Leadership by Example’)
- Cost-sharing support should be provided to developers who undertake strategies that reduce the impact upon or cost of surrounding infrastructure. (Section 6.3.3 ‘Cost Sharing’)
- A national emissions trading scheme which allows the property sector to accrue and trade carbon credits from energy efficiency and demand side abatement initiatives. (Section 6.3.4 ‘Carbon Trading’)

FOUR

INCENTIVES

Fiscal incentives to accelerate the transition of the industry, particularly for improving the environmental performance of existing buildings and for the use of green building technology.

- Special tax deductions for green building practices should be developed as an incentive for developers and owners. (Section 6.4.1 ‘Special Tax Deductions’)
- Green building tax credits should be developed as an incentive for developers. (Section 6.4.2 ‘Tax Credits’)
- The amount of Capital Gains Tax payable by Australian investors and developers on the sale of properties that meet certain green building requirements should be reduced. (Section 6.4.3 ‘Capital Gains Tax’)
- Franking credits that increase net dividend returns for Socially Responsible Investments which include green buildings should be offered as an incentive. (Section 6.4.4 ‘Franking Credits’)
- State and local planning incentives and concessions for green buildings should be introduced. (Section 6.4.5 ‘State taxes and Local Concessions’)
- Division 43 of the Income Tax Assessment Act should be amended to offer a green building incentive, to encourage the development and application of green building technology. (Section 6.4.6 ‘Division 43 Allowance’)
- Research & Development tax concessions should be increased from 125% to 250% to provide additional incentive for innovation in green building practices. (Section 6.4.7 ‘Research and Development Concessions’

FIVE

RESEARCH

Further research and case studies into the benefits and barriers of green buildings to reinforce and complete the business case for green commercial buildings in Australia.

- Funding should be provided for the development of green building case studies which quantify the economic, social and environmental benefits in a way that the financial sector can understand and report on them. (Section 6.5.1 ‘Cost and Financial Benefit’)
- Funding should be provided for post-occupancy research into productivity and other gains from green buildings. (Section 6.5.2 ‘Productivity Gains’)
- As the number of green buildings in Australia increases, this Report should be updated to reinforce the business case. (Section 6.5.3 ‘Building the Business Case’)

1

INTRODUCTION

1.1 PURPOSE

Numerous international studies have identified the fact that the take up of green building principles and practices by the commercial property sector are being hampered by a lack of documented project-specific evidence that clearly demonstrates the benefits that green buildings can deliver.

Above all, the commercial property sector wants to be convinced by a compelling business case.

A number of ground breaking studies into the costs and benefits of green buildings have been documented in the United States of America (California & Seattle), Canada and the United Kingdom. However, no comparable research has been undertaken in Australia and placed in the public domain for debate – until now.

The Green Building Council of Australia (GBCA) is committed to driving the shift to a sustainable property industry in Australia.

While the GBCA has already succeeded in creating momentum to build green in Australia, this Report aims to further drive the shift to a sustainable property industry in Australia.

Building on international case studies and examples of the business case for green commercial buildings, this Report seeks to detail the financial and social benefits of green commercial buildings to the owner, manager, developer, investor and financier, tenant, and the community in an Australian context by incorporating Australian research and case studies of green developments. It also examines a number of challenges and barriers to green commercial buildings in Australia.

Finally, this Report identifies a range of actions that could provide a way forward for industry and government to drive the transition to green commercial office buildings in Australia.

They could also be used as a basis for the development of a national roadmap for future sustainable building in Australia.

1.2 REPORT STRUCTURE

This Report has been written with the diversity of the commercial property industry in mind, including leading Australian institutional investors, superannuation funds, property trusts, financial organisations, private investors, developers, asset managers, builders, design practitioners, manufacturers and suppliers. It is also relevant for key stakeholders including governments, valuers and tenants.

Section Two provides background to the rationale and approach of this Report.

Section Three covers the importance of the built environment. Specifically this section provides details of the commercial property sector; a definition of what constitutes a green building; a snapshot of the current state of the green building industry both in Australia and overseas; the story of the emerging role of the GBCA; and details of the role of government.

Section Four outlines the benefits for each segment of the property market: owners and managers; developers; investors; and tenants; as well as for the community.

Section Five considers the critical challenges and barriers facing the industry.

Section Six identifies a range of actions which could provide a way forward in facilitating the greening of commercial buildings in Australia. They could also be used as a basis for the development of a national roadmap for sustainable building in Australia.

Section Seven includes relevant websites and references.

> “IN DUE COURSE SUSTAINABILITY PRINCIPLES WILL FIND THEIR WAY INTO EVERYDAY DESIGN AND CONSTRUCTION PRACTICE, BUT THERE IS STILL SOME RESISTANCE IN AUSTRALIA. THE AUSTRALIAN MARKET WILL NOT FULLY EMBRACE SUSTAINABLE DESIGN UNTIL IT IS CONVINCED THAT MARKET DEMAND IS REAL AND SUBSTANTIAL.” [1]
>
> **John Macdonald**
> DesignInc

2

BACKGROUND

The construction of buildings consumes 32% of the world's resources. The building sector consumes 12% of fresh water in OECD countries and accounts for up to 40% of total energy consumption.[2, 3]

Some 40% of waste going to landfill is from construction and deconstruction - estimated to be at least 110,000 tonnes of waste each year.[4]

In Australia, commercial buildings produce 8.8% of national greenhouse gas emissions, generating up to 46.4million tonnes of carbon dioxide equivalent emissions[5] (increasing by at least 3% per annum).[6]

In Australia, buildings generate more than 40% of all air emissions.[2]

Estimates of the cost burden on the Australian economy from poor Indoor Environment Quality are placed at $12 billion annually.[7]

" AUSTRALIA, LIKE OTHER COUNTRIES AROUND THE WORLD, IS FACING AN IMMENSE CHALLENGE – TO CREATE SUSTAINABLE CITIES FOR THE FUTURE. AS ONE OF THE MOST URBANISED COUNTRIES IN THE WORLD, WITH WATER SHORTAGES, TRANSPORT CONGESTION AND HIGH ENERGY DEMANDS, AUSTRALIA MUST TAKE ACTION NOW TO ADDRESS HOW OUR CITIES MIGHT DEVELOP IN THE FUTURE."

Dr Mal Washer
Sustainable Cities Report
August 2005

Australia is at a cross roads with green buildings. There is immense pressure from industry stakeholders, tenants and government to build green, but there are still some pockets of skepticism in the commercial property industry, at all levels of the property food chain. The excuse is usually the cost of initiating, building, procuring and operating green.

So how do you move industry, government and tenants towards adopting sustainable measures?

The overseas experience has been that the answer lies in providing examples of the benefits of building green – both financial and non-financial – and ultimately by making a compelling business case for building green. While there seems to be consensus on the environmental and social benefits of green buildings, there is a lack of accurate and thorough financial and economic supporting information.

In the last five years several international projects have documented the cost, financial return on investment and benefits of green initiatives. Of course by their very nature development projects are unique and the ability to translate one project's costs and benefits to another in a different location is often very difficult. As the Davis Langdon report 'Costing Green: A Comprehensive Cost Database and Budgeting Methodology' notes:

'There is no one size fits all answer. Each building project is unique… Benchmarking with other comparable projects can be valuable and informative, but not predictive.' [9]

But there are some common trends.

International and local green building projects note that sustainable buildings generally incur a small green premium above the costs of standard construction. But green buildings deliver a suite of financial and environmental benefits that conventional buildings do not.

Benefits of building green include elements that are easy to quantify - such as savings in energy and water usage. Others are less easily quantified, such as improved indoor environmental quality which relates to improved occupant satisfaction, wellbeing and productivity are emerging areas of interest. Australian green building projects also point to immediate market differentiation and marketing benefits from building green.

What is known is that barriers exist to building green.

Within the property industry there are many challenges and inherent barriers that often act to ensure that green building measures are not adopted, despite the fact that a strong business case can be made for their implementation.

The major barrier is the perceived cost. Other challenges to building green include a lack of industry skills, the cost and availability of green products and materials, the cheap pricing of water and energy, the lack of incentives for demonstrating best practice, conflicting government regulation (e.g. water reuse approvals), how to value green and the plethora of rating tools confusing the industry.

The ultimate dilemma is the modification of existing building stock to introduce initiatives that reduce their environmental impact.

8 Brindabella Circuit, Canberra
5 Star Green Star - Office Design Certified Rating.

3

THE GREEN BUILDING INDUSTRY

A wide range of players are becoming interested in and involved with green building practices, including building owners and managers and their tenants, designers and architects, builders, retailers and manufacturers and, one of the key drivers, governments (federal, state, and local). In Australia, the interest in green buildings also comes from planners and valuers.

Reflecting the growing momentum to build green, for the past three years, the Property Council of Australia's monthly magazine, Property Australia, has produced an annual "Green Issue". And according to Daniel Grollo, Joint Managing Director of Grocon Pty Ltd, Australia's largest privately-owned construction company, there is no turning back. He predicts: *"In a year's time, no new commercial office building will be announced to the market unless it aims for at least a 5 Star Green Star rating."*[11]

This section covers the importance of the built environment, specifically the commercial property sector, it provides an outline of what constitutes a green building, and a snapshot of the current state of the green building industry in Australia and overseas, and examines the role of government in driving greener buildings.

The property industry is defined as all those who produce, develop, plan, design, build, alter, own or maintain the built environment, and includes building materials manufacturers and suppliers as well as end use occupiers.

3.1 IMPORTANCE OF THE BUILT ENVIRONMENT

A recent report by Merrill Lynch highlights just how important the property sector is, stating in part: *"Property is the largest asset class in the world by a significant margin. The development of property and the uses of the property have massive impacts on the environment."*[12]

" PROPERTY OWNERS HAVE AGREED THAT GREEN IS THE WAY TO GO…IT'S ALL HAPPENING. THE GREEN MOVEMENT HAS SUCCESSFULLY CONVEYED ITS POWERFUL MESSAGE. INDUSTRY HAS LISTENED…" [10]

Peter Verwer
Chief Executive, Property Council of Australia

" FOR MANY PEOPLE, THE TERM 'GREEN BUILDINGS' BRINGS IMAGES OF NATURAL MATERIALS, GREEN ROOFS, RADICAL PASSIVE DESIGN, AND TECHNOLOGICAL GIZMOS" [15]

Alan Yates
UK Building Research Establishment

The Property Council of Australia places the value of the commercial property market to the Australian economy at $320 billion.[13] The commercial property market is classified by the Property Council's Office Quality Grade Matrix – Premium and Grades A, B, C and D. Each grade includes a number of quality parameters which define a building's grade, including Environmental, Configuration, Mechanical, Lifts, Electrical, Standby Power, Building Management, Communications, Hydraulics, Security, Amenities and Parking.

Grade A commercial buildings are usually newer, larger than 30,000 - 40,000 sqm, and located in the CBD, with a high quality space and quality presentation and maintenance including: environmental initiatives; flexible floor plates; full BMCS including on floor control; in building mobile phone coverage; rated fittings; water storage; showers; and bicycle parking, to name a few features. On the other end of the spectrum are D-Grade buildings which are older (usually 25 years plus) and are described as poor quality space.

The latest Property Council of Australia 'Major Office Market Report' (July 2005) states that the total office market in Australia comprises more than 19.6 million sqm.

34.8%	A – Grade
34.9%	B – Grade
18.1%	C – Grade
12.2%	D – Grade

Considering these figures there is a clear difference between new buildings (Premium and A-Grade), existing 'good quality' buildings (B-Grade) which could improve their environmental impact through incorporating green solutions, and those buildings (C and D-Grade) which have reached the end of their life and are needing major refurbishment or demolition.

It should be noted that in 2004 the Property Council of Australia initiated a review of its Quality Matrix. The Draft Quality Matrix includes a provision that new buildings seeking to achieve Premium Grade and A-Grade buildings will have to achieve a 4 Star Green Star Certified Rating.

If the current Draft of the Office Matrices is adopted, those buildings that do not include green initiatives would be at a disadvantage. As Tom Cantwell, partner of the commercial property division of lawyers Phillips Fox noted: *"If it becomes a criteria that a premium building has to have, for example a 4 Star Green Star rating, including certain indoor environment quality, then that could cause a real shake-out of the existing building stock and there will be winners and losers…It may end up that you have a tiered system…this will impact on the rental returns and therefore the value of those buildings."*[14]

3.2 GREEN BUILDING DEFINITION

As the Canadian report 'A Business Case for Green Buildings in Canada' noted: *"…it is important to clearly understand what a green building is and what they look like prior to presenting a business case."*[16]

The environmental impact of commercial buildings is well documented. Buildings produce carbon dioxide emissions and

“ AT PRESENT, AUSTRALIA’S NON-RESIDENTIAL BUILDINGS ARE RELATIVELY ENERGY INEFFICIENT, AND THE SECTOR HAS BEEN IDENTIFIED AS ONE OF THE FASTEST GROWING SOURCES OF GREENHOUSE GAS EMISSION IN AUSTRALIA.” [17]

Dr Stephen Schuck
Bioenergy Australia

other emissions that harm air quality and contribute to global warming. Buildings also generate waste during construction and operation, and they can have poor indoor environment quality which can affect occupants’ health. By contrast, a green building minimises its environmental impact and is healthy and comfortable.

But there is still confusion as to exactly what constitutes a green building.

The GBCA defines a green building as one that incorporates design, construction and operational practices that significantly reduce or eliminate the negative impact of development on the environment and occupants with strategies for addressing:

1. energy efficiency;
2. greenhouse gas emission abatement;
3. water conservation;
4. waste avoidance, reuse and recycling;
5. pollution prevention - noise, water, air, soil & light;
6. enhanced biodiversity;
7. reduced natural resource consumption;
8. productive and healthier environments; and
9. flexible and adaptable spaces.

The Organisation of Economic Co-operation and Development (OECD) defines green buildings as those buildings that have minimum adverse impacts on the built and natural environment, in terms of the buildings themselves, their immediate surroundings and the broader regional and global setting.[3]

Green buildings are constructed and operated in ways that enhance their impact on the environment and on the building occupants.

3.3 STATE OF THE GREEN BUILDING INDUSTRY IN AUSTRALIA

The modern movement towards green buildings in Australia started with the 2000 Sydney Olympic Games, still referred to as the ‘Green Games’. Following the Olympics, the NSW Government established the Sydney Olympic Park Authority with responsibility to manage the open space, venues, parklands and development areas of the Park. The Park continues to establish best practice examples of sustainable urban development, building on its world class initiatives in energy and water conservation and technologies, green building design and ecological management.

The first well publicised green office building in Australia was the 60L (60-66 Leicester Street, Carlton, Victoria) project. 60L won the 2003 Banksia Award for ‘Leadership in Sustainable Buildings’,[18] and was seen as an example from which the property industry could learn that minimising a building’s impact on the environment could be commercially viable. 60L does not have a Green Star Certified Rating but, according to its owners, energy efficiency measures result in power savings of 65% compared to a conventional office building. Rainwater collection and on site waste water treatment mean the building only requires 10% of its water demand from the main water supply. Materials were selected with consideration of their life cycle impacts, and, together with reliance on openable windows and daylighting, they created a healthy internal environment for the occupants. It is also claimed that waste was reduced during the construction process and is minimised in its occupation.

60L also pioneered the use of green leases for Australian tenancies. Negotiated between owners/managers/developers and tenants, green leases oblige both parties to cut their environmental impacts and effectively facilitate a building’s environmental objectives being maintained for the life of the building.

While the number of green lease arrangements in place in Australia is small, the increasing demand for green leases since 60L is another indicator of the growth of the green building movement in Australia. According to an article in Property Australia in November 2004,[19] some of the more progressive tenants in the Australian commercial office market are starting to ask for environmental commitments from building owners and developers.

Two examples are:

- NSW Police Service’s lease for its Parramatta headquarters. This is an example of a tenant-driven green lease agreement that puts responsibility for building performance squarely on the landlord’s shoulders - if the building’s energy performance slips below Australian Building Greenhouse Rating (ABGR) 4.5 stars the tenant’s rent is reduced by the amount of any increase in outgoings attributable to the higher energy use; and

TABLE 1

TIMELINE OF GREEN BUILDING DEVELOPMENTS

YEAR	GREEN BUILDING DEVELOPMENT	YEAR	GREEN BUILDING DEVELOPMENT
1990	**BREEAM** Building Research Establishment Environmental Assessment Methodology (UK’s green building rating system) launched.	**2004** Sept	The first building in Australia certified under the Green Star environmental rating system for buildings. 8 Brindabella Circuit , awarded a 5 Star Green Star – Office Design Certified Rating.
1999	**LEED** Leadership in Energy & Environmental Design (USA’s green building rating system) launched.	**2005** Feb	**GREEN STAR** Office Design v2 rating tool released.
		2005 Feb	**GREEN STAR** Office As Built v2 rating tool released.
1999	First World Green Building Council organisational meeting.	**2005** May	**GREEN STAR** Office Interiors v1 rating tool released.
2000	Sydney Olympics - Green Games.	**2005** June	South Australian Government announces that all new offices built or leased by the government must achieve 5 Star Green Star – Office Design Certified Rating and all new government office fitouts must achieve a 5 Star Green Star – Office Interiors Certified Rating.
2001	World Green Building Council formed.		
2001	Australian Building Greenhouse Rating (ABGR) scheme launched.	**2005** July	Victorian Government’s new Office Accommodation Guidelines stipulate that all new offices leased or built by the government will need to achieve a 4 Star Green Star – Office Design Certified Rating and all government fitouts achieve a 4 Star Green Star – Office Interiors Certified Rating.
2002 Oct	Green Building Council of Australia formed.		
2003 Oct	Inaugural Green Building conference held at Sydney Olympic Park.	**2006** Feb	**GREEN STAR** Office Existing Building v1 released.
2003 Nov	The Australian Green Buildings Mission, led by Victorian Building Commissioner Tony Arnel, endorsed the Green Star rating system in its report on International Developments in Green Building.		
2003 Dec	**GREEN STAR** Office Design v1 rating tool released.		
2004 April	**GREEN STAR** Office As Built v1 rating tool released.		

“ GREEN STAR IS SO SIMPLE AND EASY TO UNDERSTAND THAT EVERY PROJECT CAN DO IT – YOU DON’T HAVE TO BE A SCIENTIST, YOU DON’T NEED A MAJOR RESOURCE AND A LOT OF FUNDING TO DO AN ASSESSMENT. IT SHOULD BE INTRINSIC TO YOUR DESIGN PROCESS.” [21]

Ché Wall
Joint Managing Director,
Lincolne Scott
Co-founder & Director of the GBCA;
Chair of the World Green Building
Council; Prime Minister’s
Environmentalist of the
Year 2004

- A recent deal struck by the South Australian Government which links the landlord’s fixed annual rent review to achievement of a 5 star ABGR rating: that is, if the owner doesn’t maintain its energy rating, there is no rent review.

As improvements in the measurement of employee productivity, the monitoring of building use, and benchmarking of properties continues, there will be increasing prospects for building owners to directly capture the quantitative benefits of green buildings by negotiating lease agreements and lease rental reviews linked to factors such as organisational productivity gains and green building targets. There might be even greater scope for structuring lease agreements with tenants in buildings that are retrofitted with environmental features and initiatives.

Following the development of 60L, Melbourne got another iconic building, the National@Docklands, which was completed in 2004. Built from the inside out, the building has been acknowledged as a social icon development – its highly efficient workplace not only supports the needs of the business but also looks after the health and well being of employees and the environment. The National@Docklands features a number of innovative socially sustainable design features that are unique to the building, including mixed mode ventilation and glare screens.[20]

Table 1 outlines the timeline of key green building developments which have had a significant impact on the Australian green building industry.

3.3.1 FORMATION OF THE GREEN BUILDING COUNCIL OF AUSTRALIA (GBCA)

In response to the need for a national approach to building green a number of industry and government agencies conceived the idea of a not-for-profit organisation to provide an integrative framework and a national environmental rating system for buildings. The end result was the formation of the GBCA, which was launched at the end of 2002.

The GBCA has been awarded charitable status recognising its mission is to define and develop a sustainable property industry in Australia and to drive the adoption of green building practices through market-based solutions.

Central to the work of the GBCA is the development of the Green Star environmental rating system for buildings, the only national comprehensive environmental rating scheme for buildings in Australia, based on international schemes.

In just three years the Green Building Council has established itself as the nation’s leading authority on green buildings and demand for its Green Star education and associated support services has been overwhelming. As of December 2005, the GBCA has nearly 200 member organisations, has trained more than 1,300 industry representatives in the use of Green Star and more than 50 projects around Australia have registered for Green Star certification.

Green Star Logos

It is now common on turning the sod for a new commercial building to state that the building will achieve a minimum 4 Star Green Star Certified Rating.

The GBCA created an environmental rating system for Australian buildings called ‘Green Star’ to establish a common language and standard of measurement for green buildings; to promote integrated, whole-building design; and to identify building life-cycle impacts.

Green Star separately evaluates the environmental initiatives of projects based on eight environmental impact categories:

1. Management
2. Energy efficiency
3. Water efficiency
4. Indoor Environment Quality
5. Transport
6. Material selection
7. Land Use and Ecology
8. Emissions.

Importantly, Green Star rating tools are voluntary.

The priority was to develop Green Star rating tools for the different phases of commercial Class 5 office developments. This suite of rating tools has now been completed, providing the industry with the following rating tools:

- **GREEN STAR – OFFICE DESIGN** for the design phase of new and refurbished offices
- **GREEN STAR – OFFICE AS BUILT** for the construction and procurement phase
- **GREEN STAR – OFFICE INTERIORS** for tenant fitouts
- **GREEN STAR – OFFICE EXISTING BUILDING** for existing office buildings

The current focus is the development by 2007 of Green Star rating tools for a variety of other building types, as follows:

- March 2006
  PILOT GREEN STAR – RETAIL
  to be launched for stakeholder feedback.
- April 2006
  PILOT GREEN STAR – CONVENTION DESIGN
  to be launched for stakeholder feedback.
- May 2006
  PILOT GREEN STAR – HEALTH
  to be launched for stakeholder feedback.
- August 2006
  PILOT GREEN STAR – EDUCATION
  to be launched for stakeholder feedback.
- December 2006
  PILOT GREEN STAR – RESIDENTIAL
  to be launched for stakeholder feedback.

TABLE 2

GREEN STAR CERTIFIED PROJECTS*

PROJECT TITLE	GREEN STAR RATING
8 Brindabella Circuit, Canberra, ACT The first Green Star certified project in Australia. Awarded a 5 Star Green Star - Office Design Certified Rating. (The building's tenant, the Australian Research Council has registered their fitout for assessment under Green Star - Office Interiors v1).	**Australian Excellence**
Council House 2, Melbourne, VIC The first 6 Star Green Star Certified project in Australia. Awarded a 6 Star Green Star - Office Design Certified Rating.	**World Leader**
RAAF Richmond Headquarters, NSW The first project to be awarded both a 5 Star Green Star - Office Design and a 5 Star Green Star - Office As Built Certified Rating.	**Australian Excellence**
40 Albert Road, South Melbourne, VIC The first office refurbishment project to be awarded a 6 Star Green Star - Office Design Certified Rating.	**World Leader**
30 The Bond, Sydney, NSW The first project to be awarded 5 Star Green Star - Office As Built Certified Rating.	**Australian Excellence**
Bordo International Awarded a 5 Star, Green Star - Office Design Certified Rating.	**Australian Excellence**
Kangan Bateman TAFE Automotive Centre of Excellence Awarded 5 Star, Green Star - Office Design Certified Rating for the staff office.	**Australian Excellence**

* *as of December 2005*

As of December 2005 more than 50 projects had registered for certification under various Green Star rating tools for commercial office buildings. Table 2 details those projects that have received a Green Star Certified Rating.

CASE STUDY 1
30 THE BOND, SYDNEY[22]

Lend Lease's new $112 million Sydney headquarters, 30 The Bond, at Millers Point, is a nine storey building, with a design that ensures 30% lower greenhouse gas emissions than a typical office building.

Sustainable features include:

- rooftop garden;
- natural ventilation;
- passive-chilled beam cooling (a first for a commercial building in Australia);
- fully operable shading on the façade;
- sophisticated building management system;
- use of the four storey sandstone rock face as thermal mass to cool the atrium;
- mixed mode wintergarden space; and
- specification of low Volatile Organic Compound ('VOC') emission products and materials.

Through pre and post occupancy evaluations, Lend Lease now has some idea of how successful The Bond has been for the people working there. Some 84% of respondents felt that they were more comfortable. When asked to provide reasons for their increased comfort, the responses were:

- 64% new building;
- 64% overall indoor environment conditions;
- 55% indoor air quality;
- 54% workspace;
- 43% lighting; and
- 40% air conditioning.

30 The Bond, Sydney
5 Star Green Star - Office As Built Certified Rating

40 Albert Road, South Melbourne
6 Star Green Star - Office Design Certified Rating

Paul Edwards, General Manager Environment at Bovis Lend Lease, noted that *"Everyone was skeptical about chilled beam technology working in Australia"*. But after a hot Sydney summer, Edwards said The Bond performed better than expected and on a 40 degree day it held at 23 degrees all day.

CASE STUDY 2
40 ALBERT ROAD[23]

Located in South Melbourne, this 1,200 sqm office building, built in 1987 and regenerated during 2004-05, is the first office refurbishment in Australia to be awarded a 6 Star Green Star - Office Design Certified Rating.

40 Albert Road's environmental features include:

- Building Users Guide for future occupants;
- automated ventilation system;
- high performance glazing;
- low VOC content used throughout;
- two solar PV grids;
- low flush toilets;
- solar hot water;
- grey water recycling and rainwater collection;
- elimination of cooling tower water consumption;
- recycling facilities;
- reuse of existing roof, façade and building structure; and
- high recycled content of structural concrete.

With 87% of the building structure recycled, the project claims to achieve:

- a 70% reduction in energy use compared to conventional office buildings;
- an 82% reduction in piped water use; and
- a 72% reduction in sewer discharge.

Green Star has received endorsement from a high ranking panel of Victorian property experts, which has recommended that government and industry should agree on Green Star as the basis for rating buildings, and that by 2010 all levels of government should mandate that their departments will tenant only sustainable buildings, as determined by Green Star.[24]

AUSTRALIAN GREEN BUILDINGS MISSION (2003)[24]

THE AUSTRALIAN GREEN BUILDING MISSION TRAVELLED TO EUROPE AND THE UNITED STATES IN NOVEMBER 2003 TO INVESTIGATE LEADING EDGE GREEN BUILDING DESIGN, TECHNOLOGIES AND CONSTRUCTION. LED BY VICTORIAN BUILDING COMMISSIONER, TONY ARNEL, THE DELEGATES INCLUDED:

MR TONY ARNEL
COMMISSIONER, BUILDING COMMISSION (VIC)

MR LORENZ GROLLO
MANAGING DIRECTOR, EQUISET

MR LEE WILLIAMS
RESEARCH DIRECTOR, DAVIS LANGDON

MS ANN KEDDIE
CHAIR, BUILDING APPEALS BOARD

MS ELOISE GUCCIARDO
PRINCIPAL PLANNING OFFICER, MELBOURNE CITY COUNCIL

MR CHRIS CHESTERFIELD
DIRECTOR, MELBOURNE WATER

PRU SANDERSON
CEO, MONASH PROPERTY MANAGEMENT

MR DAVID CRAVEN
SUSTAINABLE BUILDINGS DEVELOPMENT, SUSTAINABLE ENERGY AUTHORITY VICTORIA

MR DANG HODINH
DIRECTOR, VICTORIA LINCOLNE SCOTT

ROGER POOLE
CHAIRMAN, BATES SMART

MR JOHN MCDONALD
DIRECTOR, DESIGN INC

LINDSAY BEVEGE
TOUR CO-ORDINATOR, BUSINESS OUTLOOK & EVALUATION

MR BRUCE MATHEWS
MANAGING DIRECTOR, MEINHARDT (VIC)

ROBERT PECK
DIRECTOR, PECK VON HARTEL ARCHITECTS

The Mission visited a number of international best practice buildings including:

- Pier 1, San Francisco USA;
- San Francisco Public Library, San Francisco USA;
- Aspect Communications Corporate Headquarters, San Jose USA;
- The Dearborn Centre (BankOne) Chicago USA;
- David L Lawrence Convention Centre (Pittsburgh Exhibition Centre) USA;
- Swiss Re Building, London UK;
- Plantation House, London UK;
- ING Group HQ, Amsterdam Netherlands;
- ABN AMRO Building, Amsterdam Netherlands;
- Commerz Bank Building, Kaiserplatz, Frankfurt Germany; and
- Post Tower Building, Bonn Germany.

The Mission found the case for green buildings to be compelling, but that local research was required to quantify the economic, environmental and health benefits that green buildings will deliver in the Australian climate.

Recommendations included:

- Government and industry should agree on Green Star as the basis for rating buildings, and support its progressive refinement.
- A protocol should be developed to cover the linkage between planning and regulatory regimes, indicating when ESD performance needs to be specified in planning documentation.
- The Green Building Council should accelerate the development and release of the commercial office Green Star post-construction and existing buildings rating tools.
- Standards for IEQ, water reuse and recycling demolition material in all commercial buildings should be developed by 2005.
- Regulations to govern sustainable commercial buildings should be introduced by 2006.
- Australian regulatory bodies should develop a program of research into Indoor Environment Quality (IEQ).
- All levels of government should mandate that their departments will tenant only sustainable buildings, as determined by Green Star, by 2010.
- Industry and professional associations should promote education and training programs to their members that incorporate Integrated Building Design.
- The use of energy modelling and Computational Fluid Dynamics should be encouraged (CFD models: bulk airflow; air distribution; and delivery of fresh air for indoor environment quality).

“WHAT IS MISSING IS CO-ORDINATED AND CONCERTED ACTION. THIS COMMITTEE BELIEVES THAT THERE IS A NEED FOR THE AUSTRALIAN GOVERNMENT TO ASSUME A LEADERSHIP ROLE.” [25]

Dr Mal Washer
Sustainable Cities Report

3.3.2 GOVERNMENT LEADERSHIP

All levels of government (federal, state and local) have a major influence on the sustainability agenda through the vast amount of space they occupy and own, as well as through regulation, policy, incentive programs and leadership.

SOUTHERN STATES: LEADING THE WAY

South Australia and Victoria are taking the lead in green building initiatives at both the state and local government level.

Significant South Australian initiatives include the South Australian State Strategic Plan and the City of Adelaide’s ‘Adelaide Green City’ program.

The South Australian State Strategic Plan is effectively a sustainability strategy because it embraces the notion that all three elements – the social, economic and environmental – must be addressed together to build a sustainable future for South Australians.

Objective 3 of the Plan – ‘Attaining Sustainability’, outlines a priority to make South Australia world-renowned for being clean, green and sustainable, through a range of actions including:

- Government to give preference for office accommodation that meets 5 Star Green Star Certified Rating for all new leases or leases renewed with effect from June 2006;
- Develop an industry-wide greenhouse strategy by 2006;
- Develop strategies and incentives to promote developments concentrated along transport corridors that encourage alternative forms of transport such as bus, train, cycling and walking and implement those strategies;
- Determine South Australia’s ecological footprint and develop a strategy aimed at reducing the number of hectares occupied per person, to reduce the impact of human settlements and activities within 10 years;
- Increase the use of renewable electricity so that it comprises 15% of total electricity consumption within 10 years; and
- Implement actions arising from Zero Waste Strategy.

Sustainability is also the keystone of the Adelaide City Council’s approach in its ‘Adelaide Green City’ program, which encompasses protecting and enhancing the environment, promoting economic success, and meeting social needs.

The ambition is for Adelaide to be recognised internationally as a Green City [27] by 2010, through a collaborative venture between the State Government and Adelaide City Council, the community and business.

‘Adelaide Green City’ is delivering a range of visible projects in the short term, while developing a framework for high-level, longer term sustainable outcomes in the city centre.

Some of the program’s initiatives include:

- Adelaide Building Tune-Ups Project;
- Business of Sustainability;
- Central West Environmental Loop;
- Greenhouse Neutral Adelaide;
- North Terrace Solar Precinct;
- Renewable Energy Virtual Display;
- Sustainable Business Directory;
- Victoria Square Solar Lights; and
- Zero Waste Strategy.

Across the border, Victorian initiatives are also impressive.

In 2003 the Victorian Government’s Department of Sustainability and Environment released two papers:

- The ‘Principles and Guidelines for Capital Works Projects’ (July 2003).
- ‘Sustainability in the Built Environment’ Discussion Paper (September 2003).

The Guidelines are to be used in all building projects undertaken by the Department, to ensure the integration of ecological sustainability into the design and construction process.

The Guidelines provide an overview of the process of incorporating environmentally sustainable practices into building design and construction practices; the principles to be met and targets to be achieved; detailed checklists highlighting principles to be considered at all stages of the planning, design and construction process; and a summary of deliverables to be provided to demonstrate environmental sustainability has been achieved.

The ‘Sustainability in the Built Environment’ discussion paper, a result of stakeholder workshops held in 2003, helps identify the most appropriate way forward to deliver on environmental sustainability through the development approvals process. To assist in developing a sustainability framework for the planning system, two key directions were identified by the stakeholders: Performance-based objectives consistent with state-wide policy and an integrated sustainability assessment tool.

“THE GROWING DEMAND FOR GREEN BUILDINGS WILL CONTINUE WORLDWIDE, AS ENVIRONMENT AND HEALTH EMERGE AS KEY FACTORS AFFECTING BUSINESS DECISIONS… WE ARE AIMING FOR GREEN BUILDING DESIGN TO BE SELECTED FOR THE MAJORITY OF NEW COMMERCIAL BUILDINGS IN VICTORIA WITHIN THE NEXT TWO YEARS, AND FOR VICTORIA TO BE A WORLD LEADER IN GREEN BUILDINGS BY 2010.” [26]

Tony Arnel
Victorian Building Commissioner

- In November 2005 the Minister for Planning announced that proposals for office developments larger than 2500 sqm within the City of Melbourne would be assessed against a range of environmental considerations.
- Under new Office Accommodation Guidelines, effective 1 July 2005, all buildings either leased or built for the Victorian Government are required to have a 4 Star Green Star Certified Rating.
- The Victorian Building Commission has released a number of reports including:

– ‘Indoor Environment Quality Discussion Paper – Leadership Now or Damage Control in the Future’. June 2004.

Recommendations include:

– Facilitate the adoption of Green Star’s’ Indoor Environment Quality (IEQ) component as the common standard across Australia for specifying and reporting on IEQ performance.

– Issue an advisory statement recommending the use of Green Star IEQ credits as an appropriate guide for responsible practice among employers, building owners and building operators.

– Initiate work on a set of minimum IEQ standards for incorporation into the Building Code of Australia that are consistent with Green Star.

– Support a campaign to alert tenants to the benefits of good IEQ. This would stimulate demand for good buildings and thus encourage speculative private developers to undertake IEQ-focused projects.

- Through the Victorian Building Commission and Sustainability Victoria, the State Government has convened a number of green building workshops.
- VicUrban, the State’s urban development agency, was formed from a merger of the Docklands Authority and the Urban and Regional Land Corporation and opened for business on 1 August 2003.
- The City of Melbourne has shown itself to be a leader in green building initiatives, undertaking a range of environmental projects and initiatives, most notably the iconic Council House 2 development – Australia’s first 6 Star Green Star Certified commercial office building design. (refer to Case Study 2).

Other environmental projects and initiatives include:

- Queen Victoria Market Solar Energy project.
- Cities for Climate Protection.
- Zero Net Emissions by 2020 Strategy.
- The United Nations Global Compact.
- ‘Growing Green’ Environmental Sustainability Plan.

The ‘Growing Green Environmental Sustainability Plan’[28] presents an ambitious commitment to achieve a sustainable city by 2050 through a range of strategies including:

- Investing in new infrastructure to improve the environmental sustainability of open space, parks and recreational facilities;
- Reducing the energy input in the management of open space and recreational facilities;
- Reducing the use of potable (drinking) water for the management of parks, street trees and recreational facilities; and
- Reducing the negative impacts of vehicles by promoting the shift of commuters to public transport, prioritising short term parking in the core retail area and phasing out cark parking in parkland within specified time frames.

CH2, Melbourne
6 Star Green Star - Office Design Certified Rating

CASE STUDY 3 COUNCIL HOUSE 2 (CH2) MELBOURNE[29]

When the City of Melbourne realised its existing office accommodation was inadequate, they started looking for new premises. The City was committed to promoting the health and well being of staff and to meeting its key performance indicator of zero net emissions by 2020. They also wanted to influence the market and act as a leader in sustainable development. Ultimately the idea of CH2 was conceived. CH2 will be the new office accommodation for the City of Melbourne.

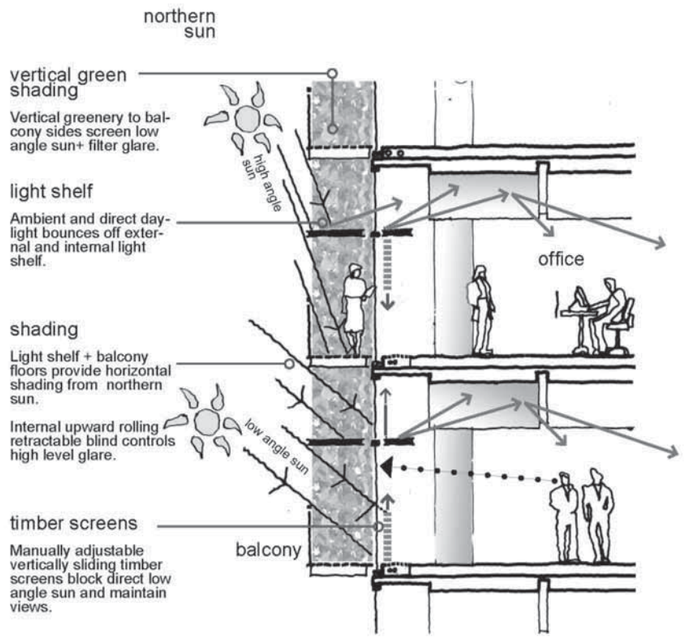
The CH2 project team claims the building’s sustainable technologies are incorporated into every conceivable part of its 10-storey development:

- a water-mining plant in the basement;
- phase-change materials for cooling;
- automatic night-purge windows;
- wavy concrete ceilings; and
- a façade of louvres (powered by photovoltaic cells) that track the sun.

Although most of the principles adopted in the building are not new, they have never before been used in Australia in such a comprehensive, interrelated fashion in an office building.

The CH2 project team worked with Adrian Leaman a leading UK occupant productivity specialist, to model the productivity gains of the new building. Leaman said there could be a 15-19% gain applied to total cost of salaries, although the CH2 team took a conservative approach, expecting the building’s improved air conditioning to deliver a 4.9% increase in staff effectiveness through reduced sick leave; and healthier, happier staff, representing a cost saving of $1.12 million a year. Leaman will be undertaking pre and post occupancy evaluations for CH2.

CH2 has also effectively dispelled a commonly cited reason for not building green, namely the delays involved with sourcing green products and materials. The project team claims it sourced all products and materials before construction started and attribute any delays to site specific factors such as the need to use a special crane which could not be used during poor weather.



CH2, Melbourne
6 Star Green Star - Office Design Certified Rating
Source: DesignInc Melbourne

DESCRIPTION OF PROJECT
Gross floor area (GFA): 12,536sqm comprising: 1,995sqm GFA basement areas, 500sqm net lettable area (NLA) – ground floor retail, 9,373sqm total NLA and 1,064sqm GFA – typical floor. New office accommodation for the City of Melbourne.

PROJECT COST
$77.14 million, CH2 building costs include:

- $29.9 million for the base building
- $11.3 million for sustainability features
- $2.8 million on education and demonstration process
- $7.1 million on requirements specific to Council.

PREMIUM
It is estimated that sustainability features added 22% to the construction cost. One of the reasons cited for the high cost was the inclusion of risk management additions such as the back up mechanical plant (chillers) and the Co-generational plant and commissioning for plant and equipment and environmental systems.

PAYBACK
The City of Melbourne took a conservative estimate of an 11 year payback time for the sustainability features to pay for themselves. However, they believe the payback period will be more in the realm of 8 years.

INTERNAL RATE OF RETURN
CH2 estimates an optimistic savings return of 7.5% per annum (10 year bond rate x 150%) after slightly more than 10 years, and a return of 13.67% per annum after 20 years. The return thereafter increases to 15.17% per annum for a 50 year investment.

The City of Melbourne believe the estimated savings from the improved effectiveness and well-being of staff represent the largest potential gain from the project.

RUNNING COSTS

	Current Bldg Consumption	Cost	CH2 Consumption	Cost	Savings
Electricity	2.3 m KW hrs	$233,000	373,000 KW hrs	$37,000	$196,000
Gas	3.8m MJ	$24,000	237,000 MJ	$1,500	$22,500
Absenteeism	–	–	1% decrease		$300,000
Productivity	–	–	Increased		$200,000

TOTAL RUNNING COSTS SAVINGS	**$718,000 PA**

Payback on $10.7m	Discount Rate of 8.4% savings indexed	11 years and savings of $44m over 35 years

ENVIRONMENTAL DRIVERS

CH2 emissions will be 64% less than a 5 star ABGR (Australian Building Greenhouse Rating) building and, when compared to the existing accommodation, is expected to:

- reduce electricity consumption by 85%;
- reduce gas consumption by 87%;
- produce only 13% of the emissions; and
- reduce water mains supply by 72%

Other savings will be achieved from:

- new LCD computer monitors that should consume 77% less energy;
- new T5 light fittings that should consume 65% less energy;
- solar panels that will provide about 60% of the hot water supply;
- photovoltaic cells that will generate about 3.5kW of solar power;
- a gas-fired co-generation plant that will provide 60kW of electricity, meeting about 40% of the building's electricity with much lower carbon dioxide emissions; and
- recycle waste heat from the cogeneration plant that will provide 40% of the building's supplementary air heating/cooling system.

FINANCIAL DRIVERS

Compared to the current City of Melbourne office accommodation, CH2 is estimated to deliver an annual saving of $718,500 on running costs, as outlined above.[30]

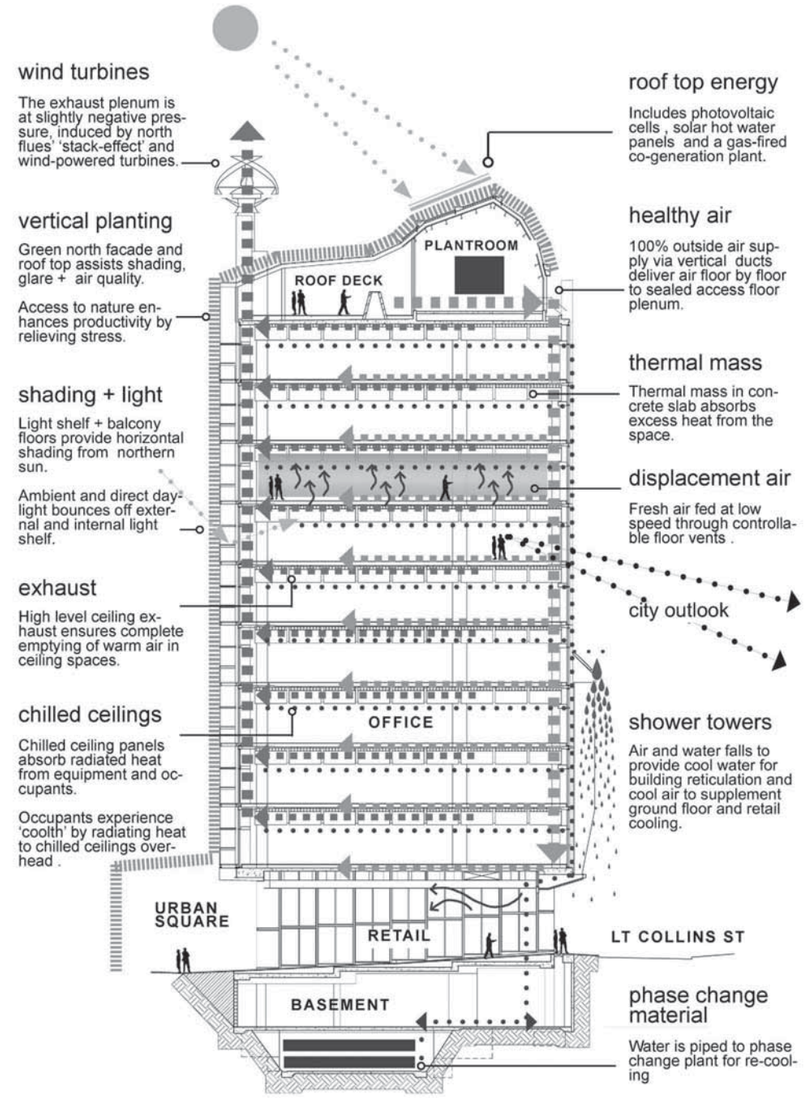
GOVERNMENT SUBSIDIES AND SUPPORT

CH2 received support for Study and Outreach Program consultants. They are developing 10 case studies to communicate their findings and modeling of CH2 to the industry. Support came from RMIT Centre for Design, University of Melbourne, Deakin University, AusIndustry, Department of Environment and Heritage, The Victorian Building Commission, Sustainability Victoria (previously known as the Sustainable Energy Authority of Victoria) and the Green Building Council of Australia.

The CH2 Design team were also involved in a joint AusIndustry/Property Council national road show titled: 'Green Buildings = Green Profits Workshop'.

COST OF GREEN STAR CERTIFICATION

It was noted that it was difficult to put an exact figure on the cost of obtaining a Green Star Certified Rating as the project incurred costs such as $180,000 on a commissioning consultant, who would have been employed anyway.



CH2, Melbourne
6 Star Green Star - Office Design Certified Rating
Source: DesignInc Melbourne

FEDERAL GOVERNMENT

Federal Government agencies have achieved a 15% reduction in energy use, and an 11.5% cut to greenhouse gas emissions since 1997-98. According to the Minister for the Environment and Heritage, Senator Ian Campbell, this translates to a $30 million a year savings to taxpayers.

As outlined in Table 3, sustainability strategies are starting to be linked to the property and construction sector rather than just to traditional environment protection or preservation actions.

“ THE INDUSTRY DOESN’T REALLY HAVE A CHOICE. A PLETHORA OF GREEN RATING TOOLS, NEW BUILDING CODES AND NOW A FEDERAL GOVERNMENT INQUIRY INTO SUSTAINABLE CITIES IS PUTTING ENORMOUS PRESSURE ON PRIME OFFICE BUILDING DESIGNERS.” [31]

Tina Perinotto
Australian Financial Review

TABLE 3

FEDERAL GOVERNMENT: SAMPLE OF GREEN POLICIES AND PROJECTS

- National Strategy for Ecologically Sustainable Development (1992);
- National Government Waste Reduction and Purchasing Guidelines (1996);
- ‘Safeguarding the future: Australia’s response to climate change’ (1997);
- Environment Protection and Biodiversity Conservation Act (1999);
- ‘Measures for Improving Energy Efficiency in Commonwealth Operations’, Department of Industry Science & Resources (2000);
- ‘State of the Environment Report’, Department of Environment and Heritage (2001);
- ‘State of Knowledge Report – Air Toxics & Indoor Air Quality in Australia’, Department of Environment and Heritage (2001);
- Building Code of Australia (‘BCA’) minimum standards for commercial buildings;
- Energy White Paper ‘Securing Australia’s Energy Future’ (2004);
- ‘National Framework for Energy Efficiency’, Department Industry Science & Resources (2004);
- ‘The Commonwealth Procurement Guidelines’, Department of Finance and Administration (2004);
- ‘Your Building’ project, Department of Environment & Heritage (2005);
- ‘ESD Design Guidelines for Government Buildings’, Department of Environment & Heritage (2005);
- ‘Sustainable Cities’ report – (building on the 2004 Inquiry into Sustainable Cities), House of Representatives Environment Committee (2005); and
- ‘Green Leases’ project, Department of Environment & Heritage (2005).

For more information go to: www.deh.gov.au

The 2004 White Paper ‘Securing Australia’s Energy Future’ foreshadowed the extension of energy performance standards for buildings and, further, that the Federal Government would introduce energy intensity targets for ‘tenant light and power’ with regard to it own agencies.[32]

In August 2004 the Ministerial Council on Energy, comprising all federal, state and territory Energy Ministers, endorsed the development of the ‘National Framework for Energy Efficiency’. Although the GBCA does not support mandatory disclosure of the energy performance of commercial buildings at the time of sale or release, preferring the disclosure of the building’s management efficiency against the asset’s potential performance, the fact that the initiative is even being considered indicates a commitment by government to sustainable initiatives.

In June 2005 the Commonwealth Department of Environment and Heritage released an ‘ESD Design Guide for Australian Government Buildings’, stating:

“The Australian Government wishes to show leadership in minimising the environmental impacts of its buildings and operations, including leased premises.” [33]

The Federal Government’s Australian Greenhouse Office, is developing ‘Guidelines for Briefing Design Consultants’, which incorporates sustainable design outcomes for Australian Government owned, and occupied office buildings. The guide is one of four companion documents being prepared by the Department of Environment and Heritage, including the already discussed ‘ESD Design Guide’, the ‘Green Lease Schedule Handbook’ and the ‘Guidelines for the Preparation of Energy Management Plans’.

The Australian Building Codes Board (ABCB) has proposed energy-efficiency measures for commercial and public buildings which are expected to be introduced nationally from 1 May 2006, through the Building Code of Australia (BCA) 2006. The changes aim to provide benefits to the environment through reduced greenhouse gas emissions and to owner/occupiers through reduced energy costs. At their November 2005 Board meeting the ABCB also created a working group to consider the ‘Sustainable Cities’ report recommendation of ‘working towards a nationally consistent building rating tool’.

The Commonwealth’s biggest asset owner is the Department of Defence. It is therefore worth noting the significance of the Department’s commitment to green buildings, as it influences both government and the industry.

RAAF Richmond
5 Star Green Star - Office Design
and 5 Star - Green Star Office
As Built Certified Ratings

CASE STUDY 4 DEPARTMENT OF DEFENCE [34]

A founding Board member of the GBCA, the Department of Defence is the largest asset owner in government, with an estimated gross replacement value of about $15 billion. Defence accounts for approximately 45% of total Commonwealth energy usage and has annual electricity costs of approximately $74 million per year.

In 2000 Defence established the Defence Energy Efficiency Program which was a three year, $25 million program to retrospectively fit existing buildings with more energy efficient fittings.

The Department of Defence is committed to reducing the operating cost of their facilities, improving the working environment for their personnel, and reducing the impact of facilities on the physical environment.

The Department is now adopting a new approach to the acquisition and management of its facilities and infrastructure whereby sustainability principles are incorporated into a whole-of-life approach towards facilities management.

The Department of Defence specifies the adoption of Green Star rating tools on all relevant office accommodation projects (new buildings and major refurbishments). The Green Star rating tools provide a very useful framework to address ESD, encourage integrated design and facilitate cultural changes in the building industry.

RAAF Richmond
5 Star Green Star - Office Design
and 5 Star - Green Star Office
As Built Certified Ratings

Other Department of Defence green buildings and infrastructure projects include, but are not limited to:

- RAAF Richmond Administrative Headquarters;
- RAAF Williamtown Squadron Headquarters Building;
- Headquarters Training Command – Army Victoria Barracks;
- Canungra redevelopment;
- RAAF Williamtown redevelopment;
- RAAF Amberley redevelopment;
- Holsworthy redevelopment; and
- RAAF College relocation.

In August 2005, the House of Representatives Standing Committee on Environment and Heritage released an extensive report following the Inquiry into 'Sustainable Cities'. Significantly, the report was a bipartisan report which also had strong industry input from not only the GBCA but also a coalition of the Property Council of Australia, Royal Australian Institute of Architects and Planning Institute of Australia.

According to the Chair of the House of Representatives Environment Committee, Dr Mal Washer:

"The message of the report is that sustainability is the responsibility of every Australian, but mechanisms need to be put in place for the Commonwealth, together with the States and Territories, to promote a 'blueprint' for our cities of the future." [35]

Of the 32 recommendations made by the Committee, nine specifically related to building design and management. A number of the recommendations of this report reinforce the recommendations of the 'Sustainable Cities' report.

To achieve this, key recommendations of the 'Sustainable Cities' report were for the establishment of an Australian Sustainability Charter, to be agreed by a Council of Australian Governments (COAG), to set key national objectives and targets for the built environment.

3.4 THE INTERNATIONAL SITUATION

The global transition to building green is well underway and it is gaining momentum.

Perhaps this is best summed up by the move to build green in China. As China's vice minister of construction, Qiu Baoxing told the U.S. Green Building Council's (USGBC) International Greenbuild 2004 Conference, the Chinese government is embarking on *"one of the largest rebuilding projects in history"*, with a commitment for all Chinese cities to reduce their buildings' energy use by 50% by 2010, and by 65% by 2020. Qui talked optimistically about his dream of reinvigorating the ancient Chinese philosophy of the balance of nature.

The Chinese government is also working to ensure the 2008 Beijing Olympics meet the environmental requirements established as a result of the Sydney 2000 Green Games, including green building demonstration projects.

Elsewhere the concept of sustainability is being embraced in different ways.

According to the Victorian Building Commissioner, Tony Arnel, who led the Green Buildings Mission.[24] Europe has advanced green buildings because it has a market that is willing to pay for good design. In terms of environmental performance and buildings, the situation in the US is more in line with the Australian experience.

In the US, the early success was the result of institutions and governments mandating LEED certified buildings. The government sector led the way in adopting green design for its projects, with government projects accounting for nearly 45% of all USGBC LEED registered projects. The portion of current construction in North America that can be defined as green is not yet 10%. That being said, the US has many more examples of 'high performance' buildings in a cross section of markets such as office, education and health.

In Asia, China, Hong Kong and India are taking the lead. Korea and Japan are also in the process of promoting the adoption of environmentally-friendly buildings, but environmental awareness among the property and construction sector in Asia is still in its early stage

There are also a number of global efforts to promote sustainability.

The World Green Building Council provides an important nonpolitical global forum for the discussion of sustainability. The World Green Building Council was founded in 1999 to provide a federated 'union' of national Green Building Councils whose common goal is the sustainable transformation of the global property industry. The World Green Building Council supports the creation of culturally, climatically and economically-appropriate rating tools, the design and construction of demonstration green development projects and other collaborative green building efforts, in both developed and developing countries. The founding countries included the United States, Australia, Canada, Spain, Japan, India and Mexico. Within this framework, member councils are working to share knowledge, resources and common principles, and to support startup councils.

Table 4 provides a snapshot of the current World Green Building Council situation (see page 34).

" FOR GREEN BUILDING TO FULFILL ITS PROMISE, THE TRANSFORMATION MUST BE GLOBAL." [36]

Huston Eubank
Executive Director,
World Green Building Council

Another global effort is the International Initiative for a Sustainable Built Environment (iiSBE), which manages the international 'Green Building Challenge' process and conference series, including its rating tool framework for assessing building performance. It has also created an extensive downloadable database of information on sustainable building. Directors of iiSBE hail from almost every continent, and its efforts are supported by the International Council for Research and Innovation in Building and Construction (CIB).

While they share a significant amount of common ground, the USGBC and iiSBE tend to attract different audiences, the former focused on industry transformation and the latter on research, system development, and global dissemination of information. There is a parallel difference between the missions of iiSBE and World GBC, though they are also seen as complementary. Recent USGBC conferences have had increasing international participation, but the iiSBE conferences claim to be the premier international sustainable building event.

The most recent global effort took place at the United Nations World Environment Day event in San Francisco in June 2005, where mayors representing 50 of the world's largest cities – including City of Melbourne's Lord Mayor John So - made a commitment to a policy that will apply a green building rating system standard to all new municipal buildings by 2012. The policy is one of 21 actions outlined by Urban Environmental Accords signed by the mayors, along with actions in relation to energy, waste reduction, urban design, urban nature, transportation, environmental health and water. Between now and World Environment Day 2012, signatory cities have committed to work to implement as many of the 21 actions as possible.

Finally, at an individual company level, it is worth noting the commitment to sustainable development by the world's second-largest construction firm, German-based Hochtief, and its U.S. subsidiary Turner Construction. Hochtief and Turner Construction were major sponsors of the World Green Building Council's 2005 Summit, where Uwe Krueger, chairman of Turner Construction International LLC, discussed the company's interest in helping to start green building councils around the world and in sustainability benchmarking for all its projects.

TABLE 4

WORLD GREEN BUILDING COUNCILS

AUSTRALIA

Current Situation
The Green Building Council of Australia formed in 2002.

Rating Tool
Green Star

Website
www.gbcaus.org

CANADA

Current Situation
The Canadian Green Building Council formed in 2002.
It has produced 'A Business Case for Green Buildings in Canada'.

Rating Tool
Has licensed the US rating system 'LEED'.

Website
www.cagbc.org

CHINA

Current Situation
China's Ministry of Construction signed a Memorandum of Understanding in 2005, pledging to organise a China Green Building Council, join the World Green Building Council, create a Chinese green building rating system and construct demonstration green building projects.

Website
www.chinacleanenergy.org/greenbuildings_docs.asp

GERMANY

Current Situation
Germany is in the early stages of forming a Green Building Council.

GREECE

Current Situation
Greece is in the early stages of forming a Green Building Council.

HONG KONG

Current Situation
Hong Kong has three bodies involved in greening buildings including:

- Professional Green Building Council a non-profit making research and education institute to promote a better sustainable built environment through professional involvement;
- Business Environment Council (BEC) - a leading independent cross-sector business association advocating environmental and sustainable development. Regional partner of the World Business Council of Sustainable Development; and
- The Buildings Department of the Hong Kong Special Administrative Region (HKSAR) government.

Rating Tool
Based on the UK rating system 'BREEAM'.

Website
www.hkpgbc.org/index.html & www.bec.org.hk

INDIA

Current Situation
Its Council is a Consortium of Indian Industries called CII. The government of the state of Andhra Pradesh, the industrial house of Godrej, and the U.S. Agency for International Development have collaborated to establish the Green Building Council and create high-profile demonstration projects.

Rating Tool
Has licensed the US rating system 'LEED'.

Website
www.greenbusinesscentre.com

ISRAEL

Current Situation
Israel is in the early stages of forming a Green Building Council.

JAPAN

Current Situation
The Japan Green Building Council was formed in 1998. The primary goal is the total reduction of global environmental impacts of building through the stages of planning, construction and waste disposal.

Website
www.jgbc.com

KOREA

Current Situation
The Korea Green Building Council was founded for evaluating and testing the Korean Green Building Rating Standard with the aim of introducing it as a new method of assessing environmental performance of buildings in Korea. The Korean GBRS is based on the Council's own assessment framework and rates the environmental performance of buildings from a "whole building" perspective over a building's life cycle.

Rating Tool
Korean Green Building Rating Standard (GBRS).

Website
www.gbc-korea.co.kr

NEW ZEALAND

Current Situation
New Zealand is in the early stages of forming a Green Building Council.

SINGAPORE

Current Situation
Singapore is in the very early stages of forming a Green Building Council. The Green Mark for Buildings was developed to promote sustainable development for the construction industry and raise environmental awareness among developers, designers and contractors when they start project concept and design, as well as during construction. The scheme will also apply for existing buildings under operations.

Rating Tool
Green Mark

Website
www.bca.gov.sg/GreenMark/green_mark_buildings.html

SOUTH AMERICA

Current Situation
The Mexico Green Building Council is evaluating possible courses of action for creating a rating system, and is helping to coordinate green building efforts with countries across Central and South America, including Argentina, Chile, Guatemala, and Costa Rica. Brazil is close to officially launching its council.

Rating Tool
Mexico currently uses the US rating system 'LEED'.

Website
www.mexicogbc.org

TAIWAN

Current Situation
The Taiwan Green Building Council was launched in 2005. Green building standards are a special chapter in Taiwan's national building code.

Six years ago, the Taiwanese government created its own rating system, called EEWH (ecology, environment, waste reduction, and health); as of March, 39 buildings had been certified as green.

Rating Tool
EEWH (Ecology, Environment, Waste reduction, and Health)

Email
Mr. Chiang-Pi Hsiao Chair
gbctaiwan@yahoo.com

UNITED ARAB EMIRATES

Current Situation
The UAE are in the final stages of forming a Green Building Council. Their vision is to achieve the highest level of sustainable built-environment through the promotion of high-performance green buildings and environmentally-friendly technologies. The UAE mission is to create a Green Building Model, encompassing standards and best practice appropriate for the environment of the UAE.

Rating Tool
Under development

Website
www.icgb05.duc.ac.ae

UNITED KINGDOM

Current Situation
The Environmental Assessment Consortium (EAC) is a multidisciplinary group of expert consultants that specialises in environmental design and energy efficiency. EAC provide a comprehensive, efficient and cost effective BREEAM consultancy service together with other related environmental design services.

Rating Tool
BREEAM is a tool that allows review for improving environmental performance throughout the life of a building. It sets a benchmark for environmental performance.

Website
www.breeam.com

UNITED STATES

Current Situation
The U.S. Green Building Council formed in 1993. It is the nation's foremost coalition of leaders from across the building industry working to promote buildings that are environmentally responsible, profitable and healthy places to live and work. The USGBC is leading a national consensus for producing a new generation of buildings that deliver high performance inside and out. Government has taken a strong and proactive leadership approach.

Rating Tool
Leadership in Energy & Environmental Design. (LEED) The LEED Green Building Rating System for Existing Buildings (LEED-EB) is a set of performance standards for the sustainable operation of existing buildings. The LEED-EB criteria cover building operations and systems upgrades in existing buildings where the majority of interior or exterior surfaces remain unchanged.

Website
www.usgbc.org

CASE STUDY 5 DOCKSIDE GREEN, VICTORIA, CANADA[38]

Dockside Green is a 4.7 hectare site located in the heart of the City of Victoria which is being developed by Windmill Developments in partnership with VanCity, a triple bottom line credit union. The development concept envisions 92,903sqm of mixed use sustainably developed buildings on a newly remediated site. All proposals are being evaluated using a triple bottom line approach.

CONCEPTUAL DESIGN

The development plan recognises that each triple bottom line component (economic, environmental and social sustainability) should not be treated as separate or individual targets independent of each other. The approach integrates and intertwines economic, environment and social objectives to enhance the attributes of each other, making it difficult to distinguish what component a particular approach is addressing.

INTEGRATED DESIGN FOR COMMUNITY AND QUALITY OF LIFE

The team is using an integrated design process tailored specifically for the Dockside lands and the Victoria community, recognising the necessity of applying integrated design principles to the whole site, as opposed to individual components and design characteristics. A holistic approach is the only way to enhance synergies between building systems, building scales and façades, landscapes, surrounding communities, activities and amenities, community health and well-being, transportation, economy and relationship building. Whole site integrated design is critical for this project given the challenges associated with remediation, meeting the community's needs and achieving the necessary density to make the project financially viable.

WHOLE SYSTEM COSTING

The sustainable community objectives strive to move the concept of whole system costing beyond building design to site and community infrastructure costs. For example, ecological stormwater management (a sound green building strategy) can also create habitat, reduce heat island effects, decrease emission of greenhouse gases, reduce infrastructure costs and improve human health. Whole system thinking is Windmill's modus operandi and, together, Windmill and VanCity are exploiting its potential to create mutually beneficial and supportive results for all ecological, social and financial aspects of the Dockside site.

WASTE IS FOOD

The proposal creates opportunities for specific functions and systems to feed off each other, thus embracing the principle of "waste is food". Waste resulting from one use will provide the nutrients for other uses. Holistic, closed loop thinking and design has the effect of improving and potentially compounding the economic, environmental and livability benefits and attributes of all uses by all occupants in the development.

Some of the key ecological features designed into Dockside Green include:

- LEED certification commitments;
- greenhouse gas neutral;
- biomass energy co-generation;
- on-site grey and blackwater treatment;
- wise energy co-op biodiesel facility;
- no potable water use in irrigation;
- potable water reduction in buildings; and
- alternative modes of transportation.

Dockside Green
Site Plan

4

THE BENEFITS OF GREEN BUILDINGS

Industry players are increasingly implementing green building practices as a result of demand from the market consumers, investors, shareholders, employees, the community and government. The benefits that can accrue to them include reduced infrastructure and plant and equipment costs, enhanced reputation or brand and reduced operational costs.

Unfortunately, the only studies that have been undertaken in this area have been conducted in North America and the UK. The most notable studies include:

- 'The Costs and Financial Benefits of Green Buildings – A report to California's Sustainable Building Task Force' ('Californian report') by Greg Kats, October 2003[2];
- 'Costing Green: A Comprehensive Cost Database and Budgeting Methodology' (Langdon report) by Davis Langdon, July 2004[9];
- 'A Business Case for Green Buildings in Canada' ('Canadian report') by Mark Lucuik, March 2005[16];
- The Royal Institution of Chartered Surveyors (RICS report), UK, released 'Green Value – Green Buildings, Growing Assets' October 2005[49].

The following sections build on the compelling cases recently presented in these international publications, noting the benefits for each segment of the property market: developers; building owners; investors; managers and tenants; as well as for the community. Where possible the international information is substantiated by Australian examples and case studies.

It should be noted that the international studies are based on numerous buildings (several hundred) that have been designed, constructed and operated with green initiatives. By comparison the number of green projects in Australia is very small.

" WHILE THE ENVIRONMENTAL AND HUMAN HEALTH BENEFITS OF GREEN BUILDINGS HAVE BEEN WIDELY RECOGNIZED... MINIMAL INCREASES IN UP-FRONT COSTS OF 0-2% TO SUPPORT GREEN DESIGN WILL RESULT IN LIFE CYCLE SAVINGS OF 20% OF TOTAL CONSTRUCTION COSTS – MORE THAN 10 TIMES THE INITIAL INVESTMENT."[39]

The Costs and Financial Benefits of Green Buildings
A Report to the California Sustainable Building TaskForce, 2003

4.1 OWNERS AND MANAGERS

Commercial buildings can be managed by their owners or by facility managers. In some cases the drivers for both are similar, such as minimising operating costs, ability to attract tenants, achieving higher returns on assets and increased property values, enhanced marketability and reduced liability and risk.

It has been said that the factors of risk, economics and corporate governance are major drivers for property owners to make their existing portfolio greener.[41]

A Jones Lang La Salle ('JLL') report, 'Commercial Property Going Green',[42] states that property owners who overhaul older buildings will be rewarded with cost reductions such as lower energy costs, waste disposal and water costs, lower environmental and emission costs, and lower operations and maintenance costs.

Investa Property Group has achieved cost reductions as well as global recognition for its reductions in waste generation, and energy and water usage (Refer to Case Study 6).

Canberra International Airport was the first organisation to be awarded 5 Star Green Star – Office Design Certified Rating for 8 Brindabella Circuit at Brindabella Business Park in the ACT. The project has achieved more than the owners expected in the way of tenant demand, stakeholder awareness and media coverage (Refer to Case Study 7).

> **“ GOING GREEN IN COMMERCIAL REAL ESTATE HAS MADE THE LEAP FROM THE REALM OF THE LEFT-WING GREENIES TO THE MAINSTREAM.”** [40]
>
> **Carolyn Cummins**
> Sydney Morning Herald

CASE STUDY 6 INVESTA PROPERTY GROUP [43]

Investa Property Group is committed to enhancing shareholder value by integrating sustainability practices as part of their business platform. Investa has a Sustainability Committee which assists the Board and guides the implementation, operation and effectiveness of the Group’s Sustainability Policy.

In 2003 Investa implemented an aggressive green strategy across its portfolio, designed to:

- introduce a waste management program, with the goal of reducing the volume of waste going to landfill from each building by 50% within 3 years;
- establish a comprehensive integrated environmental management system with the aim of reducing energy consumption in all buildings by 15% within 3 years; and
- expand their computer interfaced sub-metering system to incorporate water metering with the objective of reducing water consumption in all buildings by 25% within 3 years.

ACHIEVEMENTS TO DATE

Waste
Recycling from 0% to 40% in 1 year (1 Market St, Sydney).

Electricity
Energy consumption reduced by 15% (60 Martin Place, Sydney).

Water
Target to reduce water consumption in all buildings by 25% within 3 years (73 Miller St, North Sydney).

The leadership shown by Investa Property Group has been recognised globally, with inclusion in the 2004 Dow Jones Sustainability World Index and a ranking among the world’s top real estate groups by Sustainable Asset Management.

8 Brindabella Circuit, Canberra
5 Star Green Star - Office Design Certified Rating

CASE STUDY 7 8 BRINDABELLA CIRCUIT [44], BRINDABELLA BUSINESS PARK, ACT

Canberra International Airport has a stated commitment to sustainability:

“We are striving to set new standards in Australia, ensuring our buildings and our infrastructure deliver economic, social and environmental rewards. Our sustainable development philosophies are evident in the top-down commitment from the Chairman through to our property management team, project consultants and subcontractors.”

Brindabella Business Park at 8 Brindabella Circuit in the ACT was designed and built to the highest commercially sustainable criteria.

FOLLOWING IS A COST IMPACT ASSESSMENT OF THE PROJECT

DESCRIPTION
This was a speculative 3 storey commercial building, 4,500sqm NLA with 273sqm of retail space.
It achieved a 5 Star Green Star – Office Design Certified Rating.

CAPITAL COST
$7 million

GREEN PREMIUM
Originally Canberra International Airport estimated the increase in capital cost from building a green building would be 17%. This has now been re-estimated to 12-14%. Broken down further, 8% is estimated as the premium in being the first building to be awarded a Green Star Certified Rating.

There were other costs associated with being the first Green Star building, including delays in sourcing accredited green materials such as recycled timber, concrete and steel, as well as design changes and modeling.

NET PRESENT VALUE
Canberra International Airport did not immediately see an increase in rental return due to building green. However, the media and market interest in the building’s green design meant tenants were attracted to the building without the need for any marketing by the developer, delivering an estimated 0.5-0.7% per annum reduction in the cap rate. This is also reflected in a lower vacancy rate and marginally higher net rent. During the final stages of construction, 8 Brindabella Circuit was fully tenanted, a remarkable achievement for a speculative development.

MARKET VALUE
There has been much debate about the market value that valuers will place on green buildings. 8 Brindabella Circuit has already undertaken one valuation which came in on par with expectations. The Airport is now undertaking a second valuation and considers this will be higher.

8 Brindabella Circuit, Canberra
5 Star Green Star - Office Design
Certified Rating

ADDITIONAL BENEFITS
The impact of 8 Brindabella Circuit has been immense. It is constantly mentioned as a benchmark building and has won numerous awards. A figure could not be placed on the amount of free publicity 8 Brindabella Circuit has and continues to receive, and the carry-on effect for the rest of the Business Park has been considerable.

FUTURE PROOFING
Canberra International Airport took a long term approach when considering the ACT property market, future-proofing against the Commonwealth Government mandating all government tenancies would have to be in green buildings. They estimate that this future proofing could represent as much as 1% of capital costs.

WHO BORE THE COST?
Canberra International Airport bore the cost of construction, sharing the outgoings with tenants. It should be noted that being the first Green Star project in Australia unusual costs were also borne by consultants to the project, who were required to undertake the Green Star Accredited Professional course.

WHO CAPTURED THE BENEFIT?
Tenants will benefit from lower energy and water utility costs. Tenants will also benefit from improved Indoor Environment Quality through low Volatile Organic Compound emission products used throughout the building, access to 100% outside air, thermal modeling to ensure minimal temperature fluctuations and external shading.

GOVERNMENT SUBSIDIES
No incentives or subsidies were sought as Canberra International Airport considered this too time consuming. However, Canberra International Airport might seek Research & Development income tax concessions.

COST OF GREEN STAR
Canberra International Airport estimate they paid a premium for being the first building to be rated. Including the Green Star consultants' time they estimated a $70,000+ cost. This includes time, up-skilling, documentation and modeling.

MODELING
Canberra International Airport undertook modeling throughout the project and found that their modeling met expectations.

TENANTS
The Australian Research Council (ARC) has registered their fitout to be assessed under the Green Star – Office Interiors rating tool. Other tenants include Deloittes who, having considered a number of locations in the CBD, decided to relocate to 8 Brindabella Circuit in August 2005 because of its advanced facilities. *"The site provides our clients and personnel with a modern state-of-the-art environment to more efficiently conduct their work,"* said Deloitte's Managing Partner Bruce Glanville.

PAYBACK
The Canberra International Airport can only estimate payback on energy and water materials.

Cooling, heating and supplementary air conditioning water is reticulated to 8 Brindabella Circuit from a Central Services Building, which in turn serves all the new building in the Business Park, providing significant economies of scale. Further, by working with their cleaners, Norris Cleaning, they have implemented a centralised waste collection system, whereby two bins are placed under each desk.

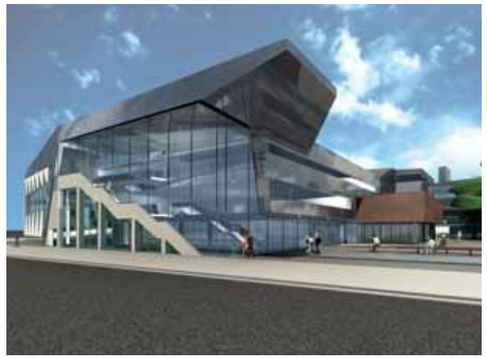
4.1.1 LOWER OPERATING COSTS

Direct operating costs include all expenditures incurred to operate and maintain a building over its full life. Obvious costs are energy and water consumption, security, cleaning, minor repairs and routine maintenance activities. However, this cost category also includes less obvious costs such as property taxes, insurance, and the costs of reconfiguring and upgrading space and services to accommodate occupant moves. Excluded are the costs of major renovations that are considered to be direct capital investments.

According to a highly successful American guide to marketing green buildings, green buildings will save on operating costs such as energy for years to come. It states:

"with the price of oil rising dramatically and the prospect of peak period electricity prices zooming up again, it just makes good sense to design the most energy-efficient building possible. Even with "triple net" leases in which the tenant pays all the operating costs, it makes sense to offer tenants buildings with the lowest possible operating cost." [45]

This guide, published in 2004, was written with the aim of raising and answering several key questions and outlining how to market green buildings.



Kangan Bateman Tafe, Melbourne
5 Star Green Star - Office Design Certified Rating

The author relied on publicly available material from the US Green Building Council and other North American data. A number of chapters are relevant to this report including Chapter 4: 'Forecasting Market Demand', Chapter 5: 'What Makes Green Buildings Valuable?' and Chapter 11: 'Selling Green Buildings'.

Energy efficiency reduces the operating costs of buildings and equipment and, hence, saves money. Cost initiatives (such as doing things in a different way) can achieve huge savings and investments in technical solutions can pay for themselves quickly. Nearly all state and territory government accommodation guidelines identify reducing government's operating expenses as a priority.

Sustainability Victoria states that successful energy management can produce economic benefits for business. Audits suggest that most businesses can save 10–25% on their annual energy costs. [46]

CASE STUDY 8 COBEII

Victorian Government initiative to reduce buildings energy consumption in operation [46]

The Commercial Office Building Energy Innovation Initiative (COBEII) is designed to showcase the benefits and commercial viability of innovative sustainable energy design in commercial buildings. Launched in 2003 by Sustainability Victoria under the Victorian Greenhouse Strategy, in partnership with the Property Council of Australia, COBEII involves Sustainability Victoria partnering with developers to design sustainable energy solutions that will significantly reduce the building's energy consumption.[47]

CASE STUDY 9 KANGAN BATEMAN TAFE AUTOMOTIVE CENTRE OF EXCELLENCE [46]

Kangan Bateman TAFE, Victoria's largest automotive education and training provider, is building a new state-of-the-art centre in Melbourne's Docklands. The building is unique in the way innovative sustainable design features have been integrated and it is the first building in Australia to use an active mass cooling and night sky cooling system (BATISO). The following case study illustrates the building's operational energy demand for ventilation and air conditioning reduced by 68%. Kangan Bateman TAFE Automotive Centre of Excellence has been awarded a 5 Star Green Star – Office Design Certified Rating for its staff office.

BATISO is also known as thermo-active slabs, active mass cooling, concrete core conditioning etc. The term BATISO comes from the amalgamation of two words batiment and isotherm - literally meaning a constant temperature holding.

Increase in capital costs:
$42,775

Percentage capital cost increase:
9%

Predicted operational cost savings:
$7,242 pa

Percentage operational cost savings:
68%

Simple payback:
5.9 years

Bordo International, Melbourne
5 Star Green Star - Office Design Certified Rating

CASE STUDY 10 BORDO INTER NATIONAL PTY LTD [46]

Bordo International Pty Ltd, also a COBEII supported project, predicts the energy savings from its green building design to be 68%. Bordo International Pty Ltd is a small, Victorian based firm supplying high quality industrial cutting tools and accessories. The new office building in Scoresby has demonstrated its green building initiatives such as careful building orientation, openable windows, super insulated ceilings and external louvres for shading. The Bordo project has achieved a 5 Star Green Star – Office Design Certified Rating.

Net Lettable area (NLA):
616m2

Simple payback for green initiatives:
3.7-7.8 years

Predicted energy intensity (case building):
192 MJ/m2/annum

Predicted energy saving
68%

Estimated greenhouse gas emissions saved:
97 t CO2e/annum

4.1.2 HIGHER RETURNS ON ASSETS AND INCREASED PROPERTY VALUES

Several studies have been undertaken on the link between building green and returns on assets and property values.

The CH2 Business Case study [48] presents a strong argument for building green to increase the value of an asset. Values for office buildings are currently around $350 per sqm gross and allow for lease incentives.

Property economists predict a substantial rise in rents (50% or more) over the next two years. The CH2 Business Case study used a gross rental value of $500 per sqm for the conventional building modeling, allocating a 10% rental premium for the initiatives to reflect the improved internal environment.

The environmental initiatives have a return on investment linked to improved productivity of employees. The salary savings are predicted to be $1.12 million per sqm per annum which amounts to $120 per sqm per annum. The conservative savings estimate of $350,000 per annum amount to approximately $35 per sqm per annum.

The outgoings (not including occupant utilities) for CH2 are reduced from $120 per sqm (current for a conventional building) to $65 per sqm due to energy and water savings. Post occupancy evaluation is expected to determine the extent of additional initiatives and will be made available following 12 months of occupation, in 2007.

The net operating income is capitalised at 8% for the conventional building. An indicative allowance for productivity improvement has been made by firming the capitalisation by 0.5%. It is assumed that both buildings are fully pre-committed.

Perhaps the most definitive study linking increased property value to building green is the Royal Institution of Chartered Surveyors' report, (RICS report), 'Green Value: Growing Buildings, Growing Assets'[49] which concludes that the market value of commercial property is linked to its environmental friendliness.

The RICS report, in partnership with ten government and private organisations, the RICS studied buildings in North America and the UK to consider the financial value of green buildings and how they contribute to a sustainable community, balancing economies with the environment. Or, to put it another way, assess whether sustainable practices make money or not.

The report, which took more than two years to complete, found that green buildings earn higher rents, attract tenants and buyers more quickly, and cost less to operate and maintain. In summary the report found that green buildings are shown to improve an asset's value, as green buildings can:

- secure tenants more quickly;
- command higher rents or prices;
- enjoy lower tenant turnover;
- cost less to operate and maintain in most cases;
- attract grants, subsidies and other inducements to do with stewardship of the environment, increasing energy efficiency and lessening greenhouse gas emissions; and
- improve business productivity for occupants, affecting churn, renewals, inducements and fitting out costs amongst others.

If there is one major area in which green buildings can add value, it is the benefit to business and if this can be realised it can even exceed the value of the real estate.

The RICS report [49] found examples of where such operating efficiencies do indeed draw demand and add value, not just to the business and the economy, but to investment and development.

TABLE 5

RICS REPORT: THEORETICAL LINKS TO VALUE[49]

GREEN OBJECTIVE	GREEN INITIATIVES	GREEN IMPACT	THEORETICAL VALUE
Sustainable Site Development	• Reduce site disturbance & soil erosion during construction • Use of natural drainage systems (e.g. swales). • Preserve or restore natural site features. • Landscape and orient building to capitalize on passive heating and cooling.	• Improved site aesthetics. • Greater public support for the development and accelerated local approval process, hence lower carrying costs. • Lower energy costs.	• Reduced development costs, improved marketability, reduced ongoing maintenance costs, improved natural appearance, higher sales/rents, absorption and re-tenanting, NOI*/ROI** benefits. • For gross leases, higher NOI. May have impact for net leases*** if benefit can be demonstrated to tenants.
Water Efficiency	• Use captured rainwater for landscaping, toilet flushing, etc. • Treat and re-use greywater, excess groundwater and steam condensate. • Use low-flow fixtures and fittings (pressure assisted or composting toilets, waterless urinals, etc.) and ozonation for laundry. • Use closed-loop systems and other water reduction technologies for processes.	• Lower water consumption/costs.	• Lower tenant CAM**** charges. Direct NOI benefit for gross leases, potential for net leases requires communicating benefit to tenants.
Energy Efficiency	• Use passive solar heating/ cooling and natural ventilation. • Enhance penetration of daylight to interior spaces to reduce need for artificial lighting. • Use thermally efficient envelope to reduce perimeter heating and size of HVAC. • Use energy management systems, monitoring and controls to continuously calibrate, adjust and maintain energy-related systems. • Use third-party commissioning agent to ensure that the installed systems work as designed. • Develop Operation and Maintenance manuals and train staff.	• Lower capital costs. • Occupant benefits. • Lower energy costs. • Operational savings (can offset higher capital costs). • Reduced capital cost of mechanical systems because control systems reduce the need for oversizing. • Lower operating costs. • Lower maintenance costs.	• Reduced operating costs, longer life cycle, lower development costs • Improved occupant productivity, lower churn, turnover, tenant inducements, etc. • Higher net income for gross leased buildings, improved yield. • Lower operating costs. On gross leases, higher ROI/NOI. On net leases, potential for improved ROI/NOI. • Marginally higher initial soft costs should be offset by long term operating cost benefits, higher ROI.

TABLE 5 (CONTINUED)

RICS REPORT: THEORETICAL LINKS TO VALUE[49]

GREEN OBJECTIVE	GREEN INITIATIVES	GREEN IMPACT	THEORETICAL VALUE
Indoor Environmental Quality	• Control pollutant sources. • Use low-emission materials. • Ventilate before occupancy. • Enhance penetration of daylight and reduce glare. • Provide outdoor views. • Provide individual occupant controls when possible.	• Superior indoor air quality, quality lighting and thermal quality. • Fewer occupant complaints. • Higher occupant productivity.	• Risk reduction. • Greater marketability. • Faster sales and lets. • Improved churn/turnover. • Higher ROI/NOI.
Reduced Consumption of Building Materials	• Select products for durability. • Eliminate unnecessary finishes and other products. • Reuse building shell from existing buildings and fixtures from demolished buildings. • Use salvaged/refurbished materials. • Design for adaptability.	• Longer building lifecycle. • Lower maintenance costs.	• Lower depreciation typically after higher investment costs. • Lower construction costs, probable lower operating/ maintenance costs, higher ROI/NOI.

KEY

* ***NOI:*** *net operating income*
** ***ROI:*** *return on investment*
*** ***Net lease:*** *a lease that requires a lessee to pay all their operating costs resulting from their occupation of the premises.*
**** ***CAM:*** *common area maintenance*

The 2003 Californian report [2] developed a 20 year present value saving of US$62.32 per sqm for energy savings, US$5.49 per sqm for water saving, US$0.32 per sqm for waste savings, and US$91.17 per sqm as a result of commissioning. The cost increase to make these projects green was US$43 per sqm, so the Present Value was estimated at US$116.25 per sqm. Based on the project financial criteria, the Internal Rate of Return for this investment would be approximately 14%, or double the project Discount Rate of 7%. By this scenario, a 9,300sqm building would achieve a direct benefit of over one million dollars over a 20 year period by incorporating green principles in its construction.

Perhaps the largest single area of value from green buildings lies in the higher gross rent as outgoings are lower. Therefore the net rent (owners) is higher for green buildings assisting to offset any increased capital cost. A higher net rent for tenants would not impact on their total (net outgoings).

4.1.3 ENHANCED MARKETABILITY

Writing in the Australian Financial Review in 2002, commercial property writer Tina Perinotto noted that ‘many organisations taking the plunge (in being green) realise the payback comes in ways far less quantifiable but perhaps more lucrative: kudos and free publicity’.[50]

Regardless of the business case, the public generally perceives green buildings as modern, dynamic, and altruistic and organisations associated with green buildings will benefit from these perceptions through employee pride, satisfaction and well-being.

Canberra International Airport, the owners of 8 Brindabella Circuit, said they could not put a financial figure on the amount of free publicity they have received from their green building, both through being the first Green Star certified project in Australia and the subsequent environmental awards they have won. Executive Director Tom Snow said it was a case of prospective tenants coming to them, causing them to completely rethink their marketing strategy. In fact the interest in the project forced the owners to create a waiting list for tenants.

4.1.4 REDUCED LIABILITY AND RISK

The Canadian report[16] claims that risks can be reduced through building green.

According to an OECD report 'Environmentally Sustainable Buildings' [3] health problems from indoor air pollution have become one of the most acute problems related to building activities. The report found that pollutants from building materials, ranging from paints to backing materials, lead to occupational health issues. Considering 25% of an office worker's life, or 40% of their waking hours are spent inside commercial buildings, there is now a realisation that conventional building practices expose people to raised levels of toxins.[51]

'Sick Building Syndrome' lawsuits, whilst unheard of in Australia, are very common in the United States and the Canadian[16] report states that owners and managers are increasingly facing legal action from tenants blaming the building for their health problems.

As more data is compiled on the risks of poor ventilation and air supply, and cross contamination of illnesses, tighter controls on the Indoor Environment Quality (IEQ) of commercial buildings in Australia could result.

Since property owners are responsible for IEQ, it is prudent for owners to reduce their liability. Tom Cantwell, Partner, Phillips Fox, believes it is *"only a matter of time before property investors have to consider sustainability in the due diligence process to mitigate their risk."* [52]

'Future proofing' is about profitability and what benefits and opportunities are ahead for organisations that anticipate and adapt rather than react. By incorporating sustainable features now, building owners are future proofing for changes in the business and regulatory environment, therefore ensuring they will not be at a competitive disadvantage in the future. With governments and large corporates increasingly incorporating green principles into their property requirements, tenants are demanding green and investors are using sustainability indexes to ascertain investments. Future proofing investments makes good business sense.

By decreasing a building's reliance on water and energy through the incorporation of conservation and management measures, a building is being future proofed against future utility price increases.

Green buildings that incorporate natural lighting and ventilation and internal energy and water generation are less reliant on external grids, are less vulnerable to grid related problems or failures such as brown-outs and black-outs or water shortages.

4.1.5 ABILITY TO ATTRACT GOVERNMENT TENANTS

By considering the property needs of just two state governments, a picture of the enormity of government office accommodation requirements develops.

For instance, the New South Wales Government occupies more than 1.1 million sqm of office accommodation and incurs an annual gross rent in excess of $270 million for that space.[53] Queensland Government accommodation exceeds 840,000 sqm, and is located in more than 200 government-owned buildings and 500 private sector leased buildings. In relation to this accommodation the QLD Department of Public Works manages a total rental revenue stream exceeding $180 million and a combined office-building works program of $32 million annually.[54]

As well as the spatial requirements for office accommodation, most state and territory governments also have accommodation guidelines which clearly identify sustainability as a key component of their property requirements. These guidelines are listed in Table 6.

In short, where a building owner or manager wishes to have a government tenant, the building will have to conform to a number of green building requirements.

TABLE 6

STATE GOVERNMENT OFFICE ACCOMMODATION GUIDELINES

STATE	GUIDELINE DETAILS
NSW	NSW Government Office Accommodation Reform Program initiated in 1996 includes: • Environmental Performance Guide for Buildings. • Sustainable Development Guideline in the Total Asset Management Manual. **website** www.gamc.nsw.gov.au
VIC	The 'Office Accommodation Guidelines 2005' principles include: • Importance of integrated design. • Workplace design requirements. • Improvements to the urban environment. The Guidelines state that 4 Star Green Star – Office Design Certified Rating is required for all new office buildings and 4 Star Green Star – Office Interiors Certified Rating for all new fitouts and that office environments should be "safe, sustainable, healthy and assist productivity." **website** www.dtf.vic.gov.au
SA	The 'Office Accommodation Guidelines'- What Makes a Good Office? includes requirements for: • Maximising daylight views. • Promoting OH&S. • Being environmentally responsible. • Pursuing energy efficiency. In December 2004 Administrative Services Minister Michael Wright stated the Government will apply Ecologically Sustainable Development principles to its owned and leased office accommodation. All newly constructed office buildings to be used by the Government must be built to at least a five-star standard, according to the Green Building Council's rating systems*." The performance ratings include categories such as energy efficiency and air quality in buildings, and the layout of office space. "The Government's commitment to sustainable development is evident from its intention to lease 10,000 sqm in office space at the proposed five-star green City Central building in Waymouth Street." **website** www.rem.sa.gov.au/office_accom
WA	'Office Accommodation Policies', Policy 14: Sustainability & Government Accommodation includes: • A - Energy – From 1 July 2006 WA will only consider proposals to accommodate an agency in premises that achieve 3.5 ABGR Base Building Rating. • B - Other Sustainability Measures which include conserving building materials; minimising waste; and enhancing indoor air quality. **website** www.dhw.wa.gov.au
QLD	The 'Government Office Accommodation Management Framework' includes: • Ecologically Sustainable Development (ESD) Office Fitout Guidelines. • The Energy Conservation Manual for Government Departments. **website** www.build.qld.gov.au
KEY	**** Green Star***

“ IF YOU ARE ABLE TO ACHIEVE SOMETHING THAT ONLY COSTS 5% EXTRA IN CAPITAL AND WILL BRING IN 10% EXTRA OVER TWO YEARS, THEN IT IS ATTRACTIVE TO DEVELOPERS.” [55]

Michael Rayner
Cox Rayner Architects

4.2 DEVELOPERS

One of the major obstacles to developers building green has been the tendency to hold a short term view – build it, sell it and move onto the next development.

However, developers have much to gain from going green. By creating more desirable working and living conditions, green buildings can offer a handsome return on investment.

A Canadian report identified the following opportunities for developers:[56]

1. CAPITAL COST SAVINGS

Optimising building environmental systems to interact synergistically can lead to substantial savings in capital costs. For example, downsizing HVAC systems through energy efficient design not only produces savings in ductwork, but by reducing the requirement for bulky mechanical equipment more floor space can be made available for leasing.

2. ENHANCED VALUE

An American BOMA study [57] showed that green buildings have an enhanced ability to rent or sell space based on their superior indoor environment. It should be noted, that this has not been financially proven in Australia due to the fact that most green buildings have not been tenanted for more than a year, as well as the issue of industry being reticent to sharing post occupancy reviews.

3. COMPRESSED SCHEDULE

An integrated team approach to design (as required when using Green Star) results in fewer design conflicts and subsequent change orders. American studies have shown that projects are routinely coming in on time and ahead of schedule.

4. IMPROVED MARKET ABILITY

Building green creates a distinct product in the marketplace, which can be integrated with corporate image and used to market the property to attract and retain employees. Certification schemes such as LEED in the USA (Green Star in Australia), are useful marketing tool’s since they help verify and substantiate green claims.

5. IMPROVED PUBLIC PROFILE & COMMUNITY RELATIONS

Building green demonstrates environmental responsibility. In the USA, this improved image has shown to have accelerated the approval process when dealing with zoning requests and environmental assessments.

6. PUBLICITY

Green Buildings can generate media interest and publicity. The increased marketing potential of a superior building can recapture the additional capital cost associated with green building through faster leasing and reduced costs for promotional advertising.

7. OPERATIONAL COST SAVINGS

Reduced lighting loads, high efficiency appliances, increased insulation, passive solar heating, passive ventilation, water conservation measures and commissioning that uncovers and corrects inefficiencies all lead to savings in operational costs. These cost savings can be used to market the project to prospective clients and tenants.

8. REDUCED LIABILITY RISK

In the USA, the insurance industry is becoming increasingly aware of lawsuits associated with building sickness and other indoor air quality issues, resulting in rising insurance costs and mould exclusion clauses. Some industry experts are predicting that insurance companies will start linking lower premiums to green buildings.

9. FUTURE PROOFING

Green buildings use less water and energy than conventional buildings, thereby providing a buffer against future increases in water and energy services costs and protecting against services shortages – another benefit that can be marketed to customers.

10. HIGHER BUILDING VALUATIONS

Reducing operating costs, capturing lease premiums and building more competitive, future proofed projects, provide a basis for higher valuations.

4.3 INVESTORS

Even though it is still in its formative stages in Australia, there is growing investor demand for investment funds to demonstrate how they approach sustainability principles.

This is highlighted by an increasing number of sustainability assessments undertaken in the financial sector including the Dow Jones Sustainability World Index, Sustainable Asset Management and, in Australia, the Banksia Environmental Foundation Award for "Leadership in Socially Responsible Investment" and Ethical Investor magazine's 'Sustainability' award.

At the same time, reporting environmental initiatives are now a mainstream corporate requirement under the Financial Services Reform Act which requires investors, including listed property trusts, to submit a socially responsible investment policy disclosure. Listed corporations face increasing governance and sustainability scrutiny by reputation organisations such as the RepuTex Index and The Corporate Responsibility Index, which list the sustainability performance of the top Australian companies.

Investment funds branding themselves as socially responsible have enjoyed strong consumer interest, billing themselves as 'green and gold' - able to get a good return on retirement savings, while helping to save the environment and promote human rights. A total of 10 billion British pounds were placed in ethical investments or deposited with ethical banks in 2004, up 18% from the previous year.[58]

The Rocky Mountain Institute, an international 'green think-tank' has many case studies that demonstrate economic benefits to organisations from the value perceived to come from addressing sustainability.'[59]

In Australia, the big financiers have found there is money to be made in businesses with positive human rights and environmental track records. AMP, Westpac, ING and Challenger are among those with socially responsible investment funds.

This was reinforced by the so-called Mays report, 'Corporate Sustainability: An Investor Perspective', written by Shaun Mays with assistance from representatives of ABN AMRO, Morgans, AMP Henderson Global Investors, BT Financial Group, Insurance Australia Group and Sustainable Asset Management. The report illustrated the advantages of factoring corporate sustainability into investment and management decisions by showing that corporate sustainability improves a company's intangible assets such as brand image, supplier relations, and appeal to customers and employees.

The majority of funds are secured by a process of positive or negative screening by investors of a firm's environmental and/or social policy and operating practices. Although it is unlikely that the Australian market will continue to grow at such pace, comfort can be generated by the fact that the more mature markets of the UK & US representing almost US$2.5 trillion are continuing to perform strongly, growing between 7-11% per annum. It is thought that the Australian markets will demand a greater level of focus in the short term, due purely to the vast quantum of funds seeking to invest in this area.[87]

The 2004 Jones Lang La Salle report 'Commercial Property Going Green' states that several large Australian investors such as public authority superannuation funds are selectively investing in firms, including property trusts, that can demonstrate their corporate responsibility.

'What in the world has sustainability got to do with superannuation?' was the title of a report released by VicSuper in 2004. VicSuper aims to invest for the long-term by placing 10% of its listed equity portfolio in large Australian and international companies rated as having the best sustainable business strategies. Their 2003/04 investments in Sustainability Leaders Australia Fund reached $80.81 million. For its substantial investments with Colonial First State Property Direct Property Investment Fund. VicSuper asked the fund to demonstrate how they integrated sustainability across their business and portfolio.

ING Office Fund claims it has been investing in green building initiatives since 1998. Eighteen of the fund's 21 properties are currently being rated under the Australian Building Greenhouse Rating (ABGR) scheme which addresses energy use. ING's Portfolio Manager views environmental programs as not only essential for future proofing, but also a way in which he can keep the fund competitive and reduce costs. He noted that ING also adheres to the energy rating scheme because it leases space to the NSW Government which has a mandate of procuring new office accommodation with a minimum 3.5 Star ABGR energy rating (1 July 2006) or a program to improve the energy performance over the term of the lease. ING believes that the focus will soon shift from energy to broader sustainability initiatives that balance resource conservation and occupant health and wellbeing. Investors can also attract higher rents for thier green buildings. Research conducted by Maguire & Robinson[60] noted that lessees were prepared to pay 5% to 10% higher rent for improved comfort and control of the environment.

A 2005 hypothetical study 'Property Valuation and Analysis Applied to the Environmentally Sustainable Development'[61] concluded that the current market incorrectly values green buildings as though they are conventional buildings, when in fact green buildings can generate higher values/benefits.

The following table is from the study. 10% profit to the developer is allocated for the conventional building while the green building delivered 15% profit. The land value for the conventional building is $2.2 million and that for the green building is $8.8 million. This hypothetical study claims that the worth of the green building ($58 million) is substantially higher than the estimated price of $40 million for the conventional building.

TABLE 7

COMPARISON OF CONVENTION AND ESD BUILDING RESIDUAL VALUES[61]

CONVENTIONAL BUILDING	FLOOR AREA	RENT/SQM	NET RENTAL	TOTALS
DEVELOPMENT RETURNS				
Gross rental value		$400		
Staff saving		$0		
		$400		
Outgoings		$80		
Net rental value	10,000	$320	$3,200,000	
Net income				$3,200,000
Capitalisation rate				8.00%
				$40,000,000
Less sales commissions & costs		1.50%		$600,000
				$39,400,000
Less vacancies				
Prelet		100.00%		
Letting up period		0		
Rent lost				$0
				$39,400,000
Less letting commissions & costs		15.00%		$480,00
Net Returns				**$39,920,000**
DEVELOPMENT COSTS				
Developer's allowance for profit & risk			10.00%	$3,538,182
				$35,381,818
Building costs			$30,000,000	
Consultants' fees	0.00%		$0	
			$30,000,000	
Construction finance				
Interest	8.00%			
Construction period	24			
			$2,400,000	
Total construction costs				$32,400,000
GROSS RESIDUAL LAND VALUE				**$2,981,818**
Less rates & taxes				$100,000
				$2,881,818
Less holdings costs				
Interest	8.00%			
Preconstruction period	6			
				$480,303
				$2,401,515
Less land purchase expenses	6.00%			$135,935
NET RESIDUAL LAND VALUE				**$2,265,580**

TABLE 7 (CONTINUED)

COMPARISON OF CONVENTIONAL AND ESD BUILDING RESIDUAL VALUES

ESD BUILDING	FLOOR AREA	RENT/SQM	NET RENTAL	TOTALS
DEVELOPMENT RETURNS				
Gross rental value		$420		
Staff saving		$100		
		$520		
Outgoings		$70		
Net rental value	10,000	$450	$4,500,000	
Net income				$4,500,000
Capitalisation rate				7.75%
				$58,064,516
Less sales commissions & costs		1.50%		$870,968
				$57,193,548
Less vacancies				
Prelet		100.00%		
Letting up period		0		
Rent lost				$0
				$57,193,548
Less letting commissions & costs		15.00%		$675,00
Net Returns				**$56,518,548**
DEVELOPMENT COSTS				
Developer's allowance for profit & risk			15.00%	$7,371,985
				$49,146,564
Building costs			$35,000,000	
Consultants' fees		0.00%	$0	
			$35,000,000	
Construction finance				
interest		8.00%		
construction period		24		
			$2,800,000	
Total construction costs				$37,800,000
GROSS RESIDUAL LAND VALUE				**$11,346,564**
Less rates & taxes				$100,000
				$11,246,564
Less holdings costs				
interest		8.00%		
preconstruction period		6		
				$1,874,427
				$9,372,137
Less land purchase expenses		6.00%		$530,498
NET RESIDUAL LAND VALUE				**$8,841,638**

> **"MANY TENANTS ARE ATTRACTED TO THE HOLISTIC AND INTEGRATED APPROACH TO ESD AS WELL AS THE OPERATIONAL SAVINGS."** [62]
>
> **Simon Hunt**
> Colliers International

4.4 TENANTS

Attracting tenants, especially those that are socially responsible, is an important motivation for some owners. There is mounting evidence that pressure is coming from large corporate and government tenants demanding green.

One indicator is the strong industry uptake of the GBCA's Green Star – Office Interiors rating tool, which is designed to assess the environmental impact of an interior fitout once construction is complete.

More than ten projects have registered (as of December 2005) to be assessed under the Green Star – Office Interiors rating tool, since its release in May 2005.

Chris O'Donnell, Managing Director of Investa believes the biggest push for more green buildings will come from tenants such as state governments demanding healthier, more pleasant environments. [63]

Markets in Europe and North America [2,9,16 and 49] are starting to show a premium for green buildings and corporate and government tenants, in particular, are showing a willingness to invest significantly more in a building that supports their sustainability policies as an environmentally responsible corporate citizen. Another driver for many owners and managers is the retention of tenants.

As an Executive General Manager at Australand put it: *"if it's cheaper for the tenants, then returns to us are only better because there are more yields and we're going to hold our tenants for longer."* [64]

Flinders Link [65] is one of several Adelaide projects registered to be assessed under the Green Star – Office Interiors rating tool.

Project environmental initiatives include:

- energy efficiency
- promotion of alternative modes of transport
- water efficiency
- indoor environment quality
- reduced embodied energy of materials
- recycling of demolished materials.

Flinders Link building owner George Kambitsis, of the Kambitsis Group, says he's looking to the long term. *"Together with the tenant, Insurance Australia Group (IAG), we had a desire for a five-star, green-rated building. Green buildings are the way of the future for office accommodation and not only present a good corporate image, but also genuinely contribute to the sustainability of built form,"* he says. The Flinders Link building is due to be completed by April 2006.

Finally, the Canadian report [16] says there is some evidence that green buildings or at least good quality natural lighting, can have a dramatic effect on retail sales. Examples included a study of 108 buildings by the Heschong Mhone Group. One finding worth noting for the retail sector was the effect of skylighting which increased sales by as much as 40%. In addition, the report includes a recently completed green banking facility in the Canadian city of Victoria which claims to have spurred a 400% jump in membership.

4.4.1 INCREASED PRODUCTIVITY

In commercial buildings, payroll costs greatly overshadow all other costs, including those involved in the design, construction and operation of a building. The Canadian Report [16] outlined annual commercial expenses as:

- maintenance 1%;
- utilities 1%;
- taxes 1%;
- rent 9%; and
- salaries a staggering 88%.

Even though the figures were based on an American study, it seems obvious that any productivity gains attributable to a green building should be included in the life cycle cost analysis, especially for an owner-occupied building.

A Californian study of office worker productivity [66] reached the following conclusions:

- An increase in daylight illumination levels up to seven metres resulted in a 13% improvement in productivity.
- An ample and pleasant view was consistently found to be associated with better office worker performance. Office workers were found to perform 10-25% better on tests of mental function and memory recall when they had the best possible view versus those with no view.
- Glare from windows decreased performance by 15-21%.
- Increased ventilation was associated with performance improvements of 4-17%.
- Physical comfort conditions were found to affect worker performance by up to 20%.
- Better quality ventilation reduces sickness by 9 – 50%.

The Californian report[67] noted that there is no standard for estimating the exact productivity impact of a green building. Each green building has a different set of technologies and design attributes, and each building's tenants have different health attributes and comfort needs.

The report goes on to say that four of the attributes associated with green building design – increased ventilation control, temperature control, lighting control and daylighting – have positively and significantly correlated with increased productivity.

The report also noted that there are quantifiable green building gains in attracting and retaining a committed workforce.

It is generally accepted that toxic substances in the workplace can increase sick days and sap energy levels.[68] Statistical evidence suggests unhealthy indoor air quality is costing Australian business about $12 billion per annum in lost productivity (FASTS 2002). According to a UTS report, while *"world's worst building workplaces"* decreased productivity by as much as 17.5%, improved air quality can increase productivity by up to 12%.

The City of Melbourne's new development, Council House 2 (CH2), states that once completed it will achieve a 4.9% productivity increase which equates to $1.12 million annual savings in increased productivity and reduced staff absenteeism.

Adrian Leaman and Bill Bordass are considered international experts in post occupancy and building use studies.

Their 2005 paper 'Productivity in Building: the Killer Variables'[69], based on extensive surveys carried out in the UK, claims that productivity gains of up to 20% can be achieved through improvements in heating, cooling, lighting, ventilation and noise, noting that occupant control over these elements is a key contributing factor.

In 1997 the ING Headquarters in Amsterdam claimed a 15% reduction in employee absenteeism due to improved comfort. Tours of this building are still offered today.

CASE STUDY 11 ING BUILDING[70]

Employee Absenteeism Reduced by 15%

The first ING Building in Amsterdam, which was completed in 1997, is seen as a pioneer in ESD buildings, by famously avoiding air conditioning, instead using its massive 18" interior concrete walls as insulation and flushing the building with cooler night air. The building was one of the first to report the productivity gains of a green building such as lower absenteeism. The Rocky Mountain Institute reported that the building uses less than a tenth of the energy of its predecessor and a fifth that of a conventional new office building in Amsterdam. The annual energy savings are approximately US$2.9 million (1999 US dollars) from features that added roughly $700,000 to the construction cost of the building and were paid back in 3 months.

4.4.2 A COMPETITIVE EDGE IN ATTRACTING AND RETAINING TALENT

In competitive recruitment markets such as professional and financial services, tenants are realising the benefits of a building's environment to gaining a competitive edge in attracting talent.

A common comment made, is failure to understand what drives Generation Y will result in failure to attract or retain the very people who hold the key to an organisation's survival.

In a presentation about 'Managing Generations in the Workplace', Roslyn Sawyers stated that Generation Y 1978-1994) have an increased awareness of environment, drought, climate change and environmental sustainability.[71]

William McCormack Place in north Queensland was a good 2002 case study on how building green provided a competitive edge in attracting and retaining talent.

William McCormack Place[72] was the first building in Australia to be awarded the highest energy rating under the Australian Building Greenhouse Rating (ABGR).

A tenant[73] of the building has stated that this has helped enhance the reputation of their organisation and is attracting employees to the organisation.

4.4.3 CHURN

Churn is defined as the frequency with which a building's occupants are moved, either internally or externally, including those who move but stay within an organisation, and those who leave a company and are replaced. Churn is caused by business restructuring, staff increases, staff reductions, bad space planning and management whims.

The Facilities Management Association undertook a survey in 2001 which concluded that the potential cost of churn in Australia was $3.6 billion. The research found that the relocation of staff costs of churn was $2482 per person or $41 per sqm net lettable area.[74]

In 87% of organisations it is the Board or senior executive team that makes the decision to create churn. Most senior managers saw churn as part of doing business and 43% believe that it is a problem that should be minimised.

The costs associated with churn include:

- management and other employee direct hours in planning & execution;
- consultants and legal fees;
- building contractors and other fitout costs;
- packing and removal costs;
- local authority approval fees; and
- specific employee time.

Indirect costs may include additional management time, staff downtime and productivity losses, disruption to other parts of the facility, additional energy consumption at weekends or evenings, damage or loss during moving and so on.

As a general guide, indirect costs are approximated as 25% of the direct costs, based on the survey data.

Green buildings can minimise the impact of churn in two ways:

- Green buildings can result in an actual decline in churn because of increased occupant comfort and satisfaction.
- Green buildings often incorporate systems, such as raised floors and moveable partitions designed to be disassembled and reused that reduce the costs of accommodating churn. For example, raised floor systems utilise the spaces beneath the floor for cabling, electrical wiring, and ventilation, and are easier and less costly to relocate specific elements (such as electrical outlets or data ports) in buildings with raised floor systems.

4.5 THE COMMUNITY

Reducing the environmental impact of development is a benefit to the community, for whom repeated surveys indicate the environment is important.

In July 2005, Trilogy Integrated Communication[75] conducted the second annual 'Trilogy Property Pulse' survey.

The theme for 2005 was once again to investigate community attitudes towards development and planning with a specific emphasis on the issues of infrastructure, the environment, property investment and the motivational factors behind choosing where to live.

The cities of Sydney and Melbourne were chosen for the study. The analysis gave an insightful comparison of the differing attitudes between the two cities. Over 400 interviews were conducted with residents of the Sydney region and Melbourne.

The objective of the survey was to gain an independent insight into the attitudes of Sydney and Melbourne residents to a range of issues related to the property industry. The research was funded and conducted wholly by Trilogy.

Passions raged, and contrasts between the two cities emerged in a number of areas. The hottest topics in the minds of residents were the environment, attitudes to investment and affordability and public transport and infrastructure.

In response to the question 'Preferences for future development' 'environmentally friendly' was Sydney's top choice out of 10 answers and Melbourne's second choice. But both cities were galvanized by one key issue of concern: water shortage. The vast majority of Melbourne residents rated all environmental issues, from climate change to recycling as very important, and on the question of green building and future development the vast majority of residents believed that all future developments should be environmentally friendly or green. However they perceived that while all residents, local and state governments care about the environment, developers and investors do not. Of course this is not necessarily the case and it illustrates the need for the industry to promote those organisations and buildings that are green.

5

CHALLENGES AND BARRIERS

The property industry is well placed to deliver significant long term environmental improvements using a broad range of measures, by creating behavioral changes at all stages of its supply chain (planning, design, procurement, construction, management, operation and valuation).

However, within the property industry there are also inherent barriers that often act to ensure that efficiency measures are not adopted, despite the fact that a strong business case can be made for their implementation.

No matter how significant the environmental and tenant benefits of green buildings, there must be a translation into the hard economic realities that are the essence of business decisions – in particular, the issue of who pays versus who gains.

Until 2003, Australia was without a national framework and metrics to support and quantify sustainability. There is a general lack of education and understanding of the fundamental principles of sustainable development. There is a lack of value attached to the long term benefits of green buildings and too great a focus on short term low cost construction and a 30 year industry history of 'build it cheap and demolish it in the future'. Finally, there is a lack of government support and leadership at all levels, including insufficient incentives and inconsistent and uncoordinated regulation to break through the short term and capital cost barriers associated with the split incentives of the development industry.

A major challenge confronting the greening of the industry is the predominance of existing building stock, and the cost of retrofitting and converting existing buildings to green assets.

" THERE ARE A LOT OF ROADBLOCKS TO GREEN BUILDINGS, ALTHOUGH THEY ARE MORE ABOUT CHANGE THAN ANYTHING ELSE. CHANGE IS HARD FOR ALL OF US, FROM INDUSTRY, GOVERNMENT TO INDIVIDUAL PEOPLE." [76]

Anthony Bernheim
US indoor air quality expert

" COST AND CONSULTATION HAVE EMERGED AS KEY ISSUES FOR ENVIRONMENTALLY SUSTAINABLE DEVELOPMENT." [77]

Martin Kelly
The Australian 2005

One of the major causes of delays in the construction of new green buildings has been the lack of appropriate green and reusable materials. Australian manufacturers have been slow to create green products.

Finally, one of the biggest challenges to the industry is the plethora or rating tools and the confusion this causes.

5.1 LACK OF CO-ORDINATION AND INCONSISTENCY

5.1.1 RATING TOOLS

In the latest Property Australia Green Issue (Dec 05-Jan06) the Property Council of Australia (PCA) outlines 6 green building tools – Green Star, BASIX, Green Globe 21, NABERS (still under development), LCADesign and ABGR.

The PCA believes a sure-fire way of confusing the market place and jamming acceptance of a green approach is to release a number of alternative approaches and rating systems.

Another challenge for the market is that rating tools are continuing to evolve and set higher benchmarks. In addition, new buildings which might be rated as the benchmark today under an existing rating tool, might not represent best practice in the future and might face considerable expense to reach new standards. The industry will need to keep up in order to remain competitive.

“ ENVIRONMENTAL RATING SYSTEMS FOR BUILDINGS ARE CONFUSING AND COULD BE DETERRING BUSINESSES FROM TAKING STEPS TO PROTECT THE ENVIRONMENT.”

Anthony Klan
The Australian, December 2005

The RICs report[49] said that while cost remains a matter of debate, the more the enhanced value exceeds the increased cost, the higher the incentive to go green. This is a point supported by Tom Snow at Canberra International Airport, who said that although they paid a premium to undertake the certification process of 8 Brindabella Circuit as the first Green Star certified project, the benefits have already outweighed the cost.

A recent series of discussion papers have highlighted frustrations with the US rating system, LEED, including: it costs too much for projects to obtain certification and building energy and associated services modeling is expensive and complicated. The discussions have resulted in continual review and improvement in the certification process which Australia has also been involved in to facilitate greater access and successful application of the rating tools.

5.1.2 INCONSISTENT STANDARDS

As discussed in Section Two government has an important role in driving the shift to sustainable development by providing leadership. This is reinforced by the international experience.

However, while promoting green, governments can effectively stifle the industry through uncoordinated and often contradictory codes and requirements. An often cited problem is obtaining approval for water conservation technologies, water harvesting solutions and greywater recycling. Another is contradictory state government policies.

The majority of government green building commitments relate only to energy.

In Australia there are national building standards that are administered through the Australian Building Codes Board, but as things stand, the Building Code of Australia is rapidly being overtaken by a proliferation of state-based schemes.

Increasingly, local governments are also adding to the proliferation of sustainability demands, producing checklists and requirements that, although well meaning, often do not guarantee an environmental outcome and with the costs of administration, are the very reason planning approvals are delayed.

5.1.3 PRODUCTS MATERIALS AND TECHNOLOGY

Designing green requires a green products and material supply chain and, according to Maria Atkinson, GBCA Executive Director, this is one of the greatest challenges facing green designers and specifiers in Australia. There are a number of tools that aim to help the industry identify green materials and manufacturers including, Ecospecifier and the Australian Environmental Labelling Association’s online green procurement databases. Currently there is only limited understanding and use of these resources.

ECOSPECIFIER

EcoSpecifier’s aim is to help architects, designers, builders and specifiers shortcut the materials sourcing process. Its broader aim is to help create a more sustainable physical environment by increasing the use of environmentally preferable and healthy products, materials and design processes.

EcoSpecifier has a database of more than 1,000 independently vetted environmentally preferable products in 30 common industry categories and 130 subcategories.

AUSTRALIAN ENVIRONMENTAL LABELLING ASSOCIATION

The Australian Environmental Labelling Association considers ecolabelling to be an environmental policy solution that can help industry regain control over its environmental destiny by creating market incentives for companies to compete on environmental grounds and by ensuring that environmental claims are accurate. Ecolabelling promises to be a key voluntary environmental approach, an efficient measure for ongoing transition towards sustainable development across whole industry sectors. (Refer to Case Study 12 for examples of products that have achieved the Good Environmental Choice Ecolabel).

8 Brindabella Circuit, Canberra
5 Star Green Star - Office Design Certified Rating.

CASE STUDY 12 PRODUCTS THAT HAVE BEEN AWARDED THE GOOD ENVIR ONMENTAL CHOICE ECOLABEL[79]

The following products are available in Australia and have been awarded the Good Environmental Choice Ecolabel

SUSTAINABLE LIVING FABRICS

The environmental loads associated with the production and use of textiles is varied. Textile fibres (whether they be wool, cotton, nylon, polyester, flax etc.) may contain toxic pesticide and herbicide residues; the detergents and fabric softeners used to clean the fibres are not always biodegradable; the dyes and finishes applied to the textiles often contain heavy-metals, chromemordants, cancer-causing ingredients and those that harm reproduction; and the waste water released into the environment following the scouring and dyeing processes often have significant impacts including the eutrophication (oxygen depletion) of natural waterways, a major threat to aquatic plant and animal life. Often, too, many of these agents remain on the finished product to the detriment of indoor air quality and human health.

In July 2004 Sustainable Living Fabrics searched for a standard that was independent and transparent and decided on the AELA's Ecolabel. In November 2004 Sustainable Living Fabrics contacted the AELA seeking their assessment of every fabric in the 'Green Living' collection. Over the next seven months every fabric in the collection was assessed and, after Sustainable Living Fabrics agreed to some changes, every fabric was certified to carry the Good Environmental Choice Ecolabel. For example, wool had to meet a European standard that it is from farms practicing eco farming methods. Originally Sustainable Living Fabrics had several polyester yarn suppliers, but to meet the Ecolabel requirements the polyester now comes from one supplier who meets the AELA standard.

WATTYL AUSTRALIA PTY LTD

Wattyl produces paints, varnishes, lacquers and special purpose protectivecoatings for a wide range of private, contract and industrial applications. Paints, lacquers, varnishes and other architectural coatings typically contain carcinogenic substances, solvents, volatile organic compounds (VOC's) and various other toxic agents. The voluntary environmental labelling standard for architectural and protective coatings identifies products that use safer alternative ingredients, or substances at levels that are not considered as hazardous, that perform equally and if not better than traditional coating products while placing a significantly lighter load on the environment through their product life-cycle.

In December 2004 Wattyl Australia Pty Ltd introduced a new breakthrough formula for water-based paints in Australia. These paints – the id range – represents a significant innovation in chemical formulation delivering a 99.7% volatile organic compound free paint for the premium interior paint market.

After a comprehensive assessment undertaken by AELA, a selection of Wattyl id interior paints has been awarded a Good Environmental Choice Ecolabel.

FORBO FLOORCOVERINGS PTY LTD

Forbo produces flooring and furniture surfacing products. They offer a unique natural material flooring and surfacing system for most commercial interior fit-out situations. In comparison to PVC and other petroleum-based flooring surfaces, Forbo produces a linseed oil-based hard wearing surface suitable for walkways and commercial and manufacturing flooring applications. In comparison to similar alternatives, Marmoleum and Artoleum display important environmentally preferable attributes relating to renewable and non-renewable raw material use, human toxicity, eco-toxicity and environmental loads associated with waste, toxicity of surface treatments and longevity from a flooring life cycle perspective. After a comprehensive assessment undertaken by AELA and by Nordic Swan, the product has been awarded an Australian Good Environmental Choice Ecolabel.

The primary materials are all natural in origin and include cork, jute, linseed oil and gum resin. Synthetic colour pigments and dyes are added during production. The product is packaged in cartonboard and transported in rolls or as tile boxes.

THE LAMINEX GROUP

Laminex creates decorative laminates, composite wood panels and allied products for the furniture and joinery market. These materials are used to make items such as work stations, partitions and wall linings. Several Laminex products have been awarded the Good Environmental Choice Label.

5.2 COST BARRIERS

5.2.1 DIRECT CAPITAL COSTS

Capital costs include the money required to design and construct buildings, including interest accrued during construction.

A major barrier to the greening of the industry is the misconception that the capital costs of green buildings are significantly higher than those of conventional buildings. Illustrating this misconception, the Financial Review's commercial property journalist, Tina Perinotto, wrote in 2003: *"Developers say they simply can't justify the expense (of incorporating ESD features) believed to be 5 per cent to 10 per cent above capital costs."*

The Canadian report[16] summarised discussion on capital costs as follows: *"Green buildings can be achieved using a number of different methods and to different levels of green. In general, the greener a building, the higher the capital costs. However, different building types and sites offer different opportunities to achieve green principles, so the costs associated with utilizing green principles are different from building to building. Accordingly, costs associated with green buildings can vary. Nonetheless, studies indicate that incorporating typical green principles in construction projects result in an increase in capital cost of between 0 and 30%, with the majority of the studies indicating the cost increases of less than 8%."*

5.2.2 SPLIT INCENTIVES

The property and construction industry represents building owners, investors, financiers, managers, developers, builders, valuers, insurers, suppliers, miscellaneous service providers and institutions and, most importantly, occupiers or tenants. In effect, the property industry's value chain links every other sector.

However, within the property industry there are also inherent barriers that often act to ensure that efficiency measures are not adopted, despite the fact that a strong business case can be made for their implementation. Most significantly, these barriers relate to the developer/builder/owner and owner/tenant divisions, or split incentives, that often result in the benefits of efficiency or improved performance measures not accruing to the party that initiated them.

Often the entity responsible for design, construction and initial financing of a building is different from those operating the building, meeting its operational expenses and paying employee salaries.

Reinforcing the split incentives nature of the industry, the initial capital cost approach only takes into account the cost of design and physical construction. It does not take into account the costs associated with a building's life. By contrast, Life Cycle Costing evaluates the cost of a building over its entire life span, from planning, design, construction and operation, as well as its ultimate re-use or demolition. Life Cycle Costing evaluates the economic performance of additional investments that may be required in green buildings. It is based on discounting all future costs and benefits to dollars of a specific reference year that are referred to as Present Value. This makes meaningful quantification of costs and benefits and the comparison of alternatives based on the same economic measure possible.

Present Value of an investment is the current value of future amounts, or the value today of future payments, discounted at the appropriate rate adjusted for risk (Discount Rate). The Internal Rate of Return is the rate of interest which, when used to discount cash flows associated with an investment property, reduces the net present value to zero.

When energy savings over time, increased durability, enhanced worker productivity, green design features and materials or the benefits of all are factored in, green building initiatives become much easier to justify. Currently the industry still does not consider life-cycle as a matter of course in building design. Most practitioners in the building profession are forced to deal almost solely with first-cost in justifying project design and procurement costs.

As the green building industry matures, it becomes clearer that integration is the key to achieving energy and environmental goals, especially if cost is a major driver. Integration is more than using the savings from one change to pay for another. A smaller chiller, for example, makes money available to upgrade the building envelope. While integration can keep construction costs down, it usually requires more time to be spent in up-front design.

It has been demonstrated that decisions made at the first phase of building design and construction can significantly affect the costs and efficiencies of later phases. Yet the Australian property industry will record a project's costs and return on investment on the upfront capital design and construction costs only. Recently government tenders have included the requirement for the industry to provide life cycle costing information to enable government to make informed decisions regarding the real – whole of life cost of the building under their operation or occupancy.

5.2.3 EXISTING BUILDING STOCK – COST OF RETROFITTING AND CONVERSION

Existing buildings predominate over new buildings and are the greatest contributors to overall levels of emissions, inefficient use of water and energy and poor indoor air quality. The capacity to upgrade these assets is often constrained by outdated technology locked into the structure of buildings.

In some cases, without incentives the owners of these existing assets are hamstrung in their ability to demonstrate a return to their shareholders from the investment needed to significantly improve their environmental performance.

As well, many owners of older buildings currently see few economic benefits in making their existing assets green. However, the tide is turning. According to Chris O'Donnell, of Investa Property Group: *"In some cases existing stock can be managed more efficiently by undertaking a program of replacement rather than a huge refit or alteration".*

5.3 LACK OF EDUCATION

5.3.1 POOR INDUSTRY KNOWLEDGE AND SKILLS SHORTAGE

At some levels there is still a lack of understanding of sustainability principles and those specific to green building, particularly among key decision makers. Industry education is a key activity of the GBCA and the number of participants in the GBCA's Green Star Accredited Professional training courses in the last three years (1,342 as at December 2005) makes it clear that the industry is thirsty for green building knowledge.

Beyond the obvious demands on the organisation's time and resources, the challenges for the GBCA as property industry educators include how to:

- convey a single coherent message in an environment where there seems to be a level of discord about what needs to be done and how;
- present Australian research when there is a shortage of relevant Australian green building research data;
- reach the wide range of stakeholders in the industry; and
- keep the information up to date when the body of knowledge about sustainability and green buildings is changing fast and constantly being added to.

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5.3.2 OUTDATED VALUATION TECHNIQUES

Unfortunately, the financial/valuation sector does not yet seem to fully comprehend or appreciate the benefits of green buildings, and therefore neither do prospective buyers. This means that the benefits are probably not being properly reflected in selling prices or lease rates, so the potential benefit to developers, owners and managers cannot be realised.

Until the financial sector understands the benefits of being green to the net value of an asset, financing calculations will not incorporate green into their decisions. It can thus be appreciated that a lack of understanding of what constitutes value in a green building is still a significant barrier to greater adoption by the investment community.

5.4 LACK OF RESEARCH

There is a lack of compiled local data which would provide the valuable evidence of cost and financial benefits for green building in Australia. There is also limited sharing of knowledge and experience about green building practices in Australia. Many in the industry are either reluctant to share their knowledge or no longer have the resources to collate the lessons learnt and benefits. The majority of development projects are completed when the individuals that could contribute valuable information on the costs and benefits have moved onto a new project. As such the opportunity to capture knowledge and share it is a challenge for the property sector.

6

THE WAY FORWARD

There are already signs that Australia is moving in the right direction but more needs to be done.

Having identified a number of challenges and barriers to the mainstream uptake of green building principles and practices, this section identifies a range of actions which could provide a way forward in facilitating the greening of commercial buildings in Australia. They could also be used as a basis for the development of a national roadmap for sustainable building in Australia.

In particular, there are significant opportunities for:

- moving towards a single national rating tool;
- co-ordinating government regulation and policy to ensure a consistent language across planning schemes and building codes;
- improving understanding of and skills in green building practices and technologies through a range of education programs;
- government leadership and partnership with industry;
- creating a range of incentives to increase the uptake of green building practices, particularly in relation to existing building stock; and
- further research into the costs and benefits of green commercial buildings in Australia.

The Green Building Council of Australia is proud of its leadership role in initiating the shift to a sustainable property industry in Australia and it stands ready to play a key role in the way forward.

6.1 CO-ORDINATION AND CONSISTENCY

In the face of a plethora of rating tools, planning schemes and standards, co-ordination and consistency is required.

There should be agreement on a single national environmental rating system for buildings, and action should be taken to develop a co-ordinated national framework of green building standards.

6.1.1 RATING TOOLS

The overseas experience has demonstrated that success in greening the property industry has only come where there is clarity about rating tools. The most successful and effective environmental rating tools are those which are comprehensive in scope and technically robust, yet also simple to apply.

Given that the transition to green buildings is a global phenomenon, it is also vital that rating tools should allow international comparison.

Ché Wall, Joint Managing Director of Lincolne Scott, GBCA Board member and World Green Building Council Chair believes we *"must settle on a globally recognised rating system for the sake of the industry."*[80] He continues: *"It isn't enough that your green building measure is meaningful in Australia. You may need international investors. Your building may be placed in an investment fund in the US for example."*

In order to ensure the Australian property industry keeps pace with international developments, and can be measured against them, there needs to be agreement about a single national environmental rating system for buildings that has international recognition.

As the only national comprehensive environmental rating system which is internationally recognised, Green Star should be endorsed as the national voluntary environmental rating system for Australian buildings.

6.1.2 NATIONAL STANDARDS

In the face of a proliferation of state and local government standards, the Building Code of Australia should be bolstered to provide a co-ordinated national standard.

The Building Codes Board already has an agenda to develop a new performance-based code that will provide a national framework in response to issues such as energy and water efficiencies, waste minimisation and other important health and well being sustainability issues such as indoor environment quality. After a commission of inquiry, new energy efficiency standards will be introduced in 2006.

The view of the Building Codes Board is that sustainability should be a goal of the Building Code of Australia alongside existing goals of health, safety and amenity. The Board has identified energy, water, materials and indoor environmental quality as issues to be considered and work to prioritise specific sustainability issues against their significance and impact, including assessments about community expectations is scheduled to start in 2005.

The Board has noted that if elements of sustainability are to be addressed for regulatory action, they would need to be subject to the Council of Australian Governments (COAG) regulatory review process.

The Building Code of Australia should be expanded to set minimum environmental standards that are directly related to the best practice metrics within the national voluntary tool.

6.1.3 NATIONAL PRODUCT LABELLING

The general consensus is that environmental labelling schemes could improve building performance indirectly through changing the behaviour of buyers.

A four year OECD research project suggests that environmental labelling schemes directly encourage manufacturers to produce materials that are better for health. The study noted that a 'simple seal of approval is easy for consumers to understand', and that 'labelling schemes may help those who have incentives to choose environmentally friendly products to make the right choice, they cannot create the incentives themselves.'[3]

The Good Environmental Choice Label is an Australian environmental labelling program which indicates the environmental performance of a product from a whole of product life perspective for consumer goods. The label is awarded to products that meet voluntary environmental performance standards which have been created and assessed in conformance to international environmental labelling standards. The program is internationally recognised and growing in demand and awareness throughout different industries.

Support should be given to an internationally recognised Australian environmental labelling scheme for products and materials.

6.2 EDUCATION

A lack of public and professional education about green buildings and their benefits is hampering the greening of commercial buildings in Australia.

The OECD report[3] noted that demand for green buildings increased where there was evidence of an educational program which identified the benefits.

6.2.1 PUBLIC EDUCATION

A green building education program for all Australians would increase the demand for green buildings.

A national public education program on the benefits of green building should be undertaken.

6.2.2 PROFESSIONAL EDUCATION

The construction sector in Australia spends the least amount of any sector on professional development and life long learning,[81] but professional education is clearly required to address the limited industry knowledge and lack of skills in green building practices and technology.

Industry education is a key activity of the GBCA and the number of participants in the GBCA's Green Star Accredited Professional training courses in the last three years (1,342 as at December 2005) makes it clear that the industry is thirsty for green building knowledge. However as a not-for-profit orgnisation, the GBCA has limited resources.

Relevant government agencies and departments should provide support to extend existing educational programs that educate industry professionals about the national voluntary rating tool.

6.2.3 IMPROVED VALUATION TECHNIQUES

In whatever country they might work, valuers are often asked to value in accordance with accounting standards, yet some green building benefits are difficult to fit within standard accounting methods. For example, a green building might last longer than a conventional one. This might lead to lower operating costs, reduced replacement, better lifespan, higher capital value and so on. But these are examples of benefits that can be difficult to express where accounting methods use only depreciation of the original cost.

> **"FURTHER RESEARCH AND DEVELOPMENT IS NEEDED TO DEVELOP THE NEXUS BETWEEN THE RATING TOOLS AND PRACTICAL VALUATION APPLICATION IN THE PROPERTY INDUSTRY ACROSS ALL GREEN STAR STANDARDS."** [82]
>
> **Craig Miles**
> Director, The Property Lab

Cost approaches can skew how sustainable practices are treated. Such approaches account for the often higher capital investment of green buildings, but in effect ignore the resulting benefits to occupiers and on market value. This can slant accounts against green buildings, deter green investment, and prove unhelpful to companies for whom sustainability is central to their corporate ethic.

The benefits, such as energy and water savings, should be looked at through a whole of life or life cycle cost methodology, not just evaluated in terms of upfront or initial capital costs.

From a life cycle savings standpoint, savings from investment in green design, material procurement and construction dramatically exceed any additional upfront costs.

While valuation is not an exact science, and the effect of new technology into buildings will always be difficult to ascertain, an understanding of the following factors will assist in a more accurate assessment of value for green buildings:

- Life cycle costing and their effect on value;
- The effect of lower building risk to capitalisation rates, discount rates and terminal yields;
- Rental rates, lease structures, and growth in rents;
- Lower operating costs and the net effect to the asset value;
- The impact upon vacancy rates, tenant retention and lease incentives;
- The cost of debt and equity;
- The financial impact of 'soft' gains such as increased productivity, improved morale and lower absenteeism;
- The financial impact of psychic income such as improved corporate image and marketing benefits.

The Australian Property Institute should ensure green initiatives are considered by valuers, and undertake an appropriate education program for its members.

6.3 LEADERSHIP AND PARTNERSHIP

Government leadership and partnership with industry would support the industry's uptake of green building practices.

6.3.1 NATIONAL TARGETS

In August 2005 the House of Representatives Environment Committee released the Sustainable Cities Report. According to committee Chair, Dr Mal Washer: *"The message of the report is that sustainability is the responsibility of every Australian, but mechanisms need to be put in place for the Commonwealth, together with the States and Territories, to promote a 'blueprint' for our cities of the future."* [83]

To achieve this, a key recommendation of the Sustainable Cities Report was for the establishment of an Australian Sustainability Charter, to be agreed by a Council of Australian Governments (COAG), to set key national objectives and targets for the built environment.

The setting of national targets would provide important leadership for the industry.

Key national targets for a sustainable built environment should be set as part of the development of an Australian Sustainability Charter, agreed upon by the Council of Australian Governments.

6.3.2 LEADERSHIP BY EXAMPLE

As well as setting co-ordinated and consistent standards (6.1.2), all levels of government (federal, state and local) could have a major influence on the demand for green buildings through the vast amount of space they occupy and own.

In particular, governments can provide valuable leadership to the industry and the wider community by setting green building standards for their own building, procurement and fitouts, as the South Australian and Victorian governments have done.

They can also show leadership by including whole of life cycle cost accounting in all government tender contracts, and by using the costing approach to make key contract decisions.

Importantly, government departments need to move beyond a narrow focus on energy targets for their buildings and/or tenancies and include water, materials, indoor environment quality and transport, as well as other holistic green building strategies that reduce the environmental impact of development.

All governments should follow the leadership shown by the South Australian and Victorian Governments in committing to achieving best practice green building standards across a comprehensive range of environmental criteria for all new government building, procurement and tenancy fitouts.

Whole of life cycle cost accounting should be included in all government tender contracts with whole of life costing used to make key contract decisions.

6.3.3 CARBON TRADING

Buildings, as diffuse emitters, could contribute to significant reductions in greenhouse gas emissions.

A national emissions trading scheme which allows for energy efficiency and demand side abatement (DSA) would provide an incentive for developers to undertake energy efficiency and demand side abatement DSA measures while also allowing industry to work in partnership with government to reduce greenhouse gas emissions.

A national emissions trading scheme to link Australia to international carbon markets is being investigated by state and territory governments. A taskforce has been established to develop a multi-jurisdictional emissions trading scheme for consideration. [84]

The NSW Greenhouse Gas Abatement Scheme (GGAS) commenced on 1 January 2003. GGAS aims to reduce greenhouse gas emissions associated with the production and use of electricity. It achieves this by using project-based activities to offset the production of greenhouse gas emissions. The monitoring the performance of benchmark participants is undertaken by the Independent Pricing and Regulatory Tribunal of NSW (IPART) in its role as Compliance Regulator.

A national emissions trading scheme should be established which allows the property sector to accrue and trade carbon credits from energy efficiency and demand side abatement initiatives.

6.3.4 COST SHARING

In Canada, government is working in partnership with industry by cost sharing with developers' strategies at the building level that reduce infrastructure costs that government and tax payers ultimately have to pay for. [85]

Traditionally, utilities which will ultimately benefit from green building initiatives often require developers to pay for all infrastructure levies, penalising not rewarding green buildings.

Utility providers will ultimately benefit greatly from onsite energy generation and water recycling as these initiatives reduce the burden on the utility's plant and avoid the need for costly upgrades and expansions. But developers who seek to install on site green facilities are being told they still need to pay the full cost of public infrastructure levies/ headworks charges even though their initiatives are not placing a burden on public infrastructure.

Utilities need to recognise the benefit of on site facilities and not only waive the levies/headworks charges but provide fiscal incentives to the installations.

Cost-sharing support should be provided to developers who undertake strategies that reduce the impact upon or cost of surrounding infrastructure.

6.4 FISCAL INCENTIVES

A detailed study is required of possible incentives (planning & fiscal) for the Australian property sector that recognises the split incentives of the industry.

Chris O'Donnell, Investa Property Group says governments should give tax incentives to green building related spending, to reward owners of old buildings that will never reach 100 per cent efficiency, but can be improved.[86]

There are a number of measures that could be adopted by government to promote a higher level of sustainable practices within the Australian property industry.

One of these measures is the use of taxation to either:

- reward taxpayers who undertake green building practices e.g. through the provision of tax concessions and incentives; or to
- penalise taxpayers who fail to undertake green building practices e.g. through the imposition of penalty taxes.

There are many examples of fiscal incentives offered worldwide for green building initiatives. Examples are provided in Table 8.

Incentives for commercial green buildings include deductions for new or renovated buildings that save 50% or more of projected annual energy costs for heating, cooling and lighting compared to model national standards, and partial deductions for efficiency improvements to individual lighting, HVAC and water heating or envelope systems.

Similar incentives are needed to ensure Australia has the capacity to meet the demands of development in a sustainable manner, to address the poor environmental performance of existing buildings and to inject much needed funds into the commercialisation and application of green technologies and products.

Green Star rating tools provide government with a third party certification of environmental improvements and thus create a transparent framework under which incentives could be applied.

The following tax and planning reform recommendations are framed around international examples of incentives for building green and fiscal incentives already offered to other Australian sectors such as the agricultural, mining and film industries.

6.4.1 SPECIAL TAX DEDUCTIONS

Currently, special tax deductions are available to promote and facilitate growth of certain industries and activities in the Australian economy.

For example:

- An immediate deduction is allowed for certain expenditure in relation to new Australian films. Without these special provisions, the expenditure would normally be deductible over the life of the copyright of the film.
- Numerous tax concessions are available to taxpayers involved in the primary production industry. These concessions range from the deferral of tax payments to special tax deductions for expenditure that would ordinarily be deductible over a longer period of time or would be non-deductible as it is of a capital nature.

These concessions include:

Accelerated Depreciation

- Expenditure incurred in relation to new horticultural plants; and
- Expenditure in relation to the installation of water facilities i.e. over three years.

Immediate Deduction

- Expenditure incurred in relation to land care i.e. quality improvement of land; and
- Profits made through the forced disposal or compulsory destruction of livestock.

Special tax concessions are also available for participants engaged in the mining industry. For example immediate tax deductions are available for expenditure incurred in relation to exploration or prospecting as well as for expenditure incurred in relation to the rehabilitation of former mining sites to their 'pre-mining condition'. Accordingly, there is a strong tax incentive for mining companies to restore mining sites to their natural state.

Special tax deductions for developers and owners that adopt green building practices would provide a strong incentive. A special tax incentive applied for improving existing buildings environmental attributes would be the catalyst for refurbishment activity that would reduce the impact of Australian city developments.

Special tax deductions for green building practices should be developed as an incentive for developers and owners.

TABLE 8

INTERNATIONAL EXAMPLES OF ENVIRONMENTAL INVESTMENTS THROUGH THE IMPLEMENTATION OF TAX POLICIES

LOCATION	SCHEME	EXAMPLE OF IMPLEMENTATION IN AUSTRALIA
USA States of New York, Maryland and Oregon	The provision of tax credits for expenditure incurred on buildings that meet certain energy efficiency standards.	Tax credit of 5% in respect of all eligible expenditure on qualifying improvements.
USA States of Idaho and Minnesota	Sales tax reductions or exemptions on the purchase of appliances and equipment that meet certain energy efficiencies.	A reduction in the amount of GST payable for equipment that meets certain performance efficiencies.
CANADA	Immediate tax deductions for the purchase of equipment that qualify as electrical energy efficient equipment.	An immediate tax write-off is allowed for the purchase of certain high efficiency equipment.

6.4.2 TAX CREDITS

The majority of tax concessions detailed above relate to the provision of tax deductions (write-offs) that can be offset against a taxpayer's taxable income.

Tax credits or tax rebates are another form of tax concession that enable a taxpayer to offset the credits from tax payable on taxable income. If the amount of tax credits exceeds the amount of tax payable, a taxpayer can, in certain circumstances, receive a refund for the difference between the two amounts.

The receipt of a tax credit would also benefit a taxpayer that is in a tax loss situation as there is a possibility of receiving a refund that would normally be carried forward.

Accordingly, a tax credit is more valuable to the taxpayer than a tax deduction. Tax concessions provided by the Federal Government in the form of tax credits would provide more incentive to the building industry to adopt green building practices.

New York offers a Green Building Tax Credit program as incentive for developers and builders of environmentally friendly buildings. This innovative program has opened a market for new technologies and has become a model for other states and communities.

To date seven buildings have been issued Credit Component Certificates under the $25 million program. Another $25 million has been allocated for credit component certificates to be issued from the years 2005-2009.

Green building tax credits should be developed as an incentive for developers

6.4.3 CAPITAL GAINS TAX

Capital gains tax (CGT) is generally applicable upon the sale of investment property where the property has increased in value.

Concessions could reduce the amount of CGT payable on the sale of properties that meet certain green building requirements would provide incentives for investors and developers of green buildings.

For example, upon the sale of the investment property, certain qualifying expenditure could be included in the asset's cost base at, say, 125% of cost. The net result would be that the amount that is subject to CGT is reduced. This would provide further incentives for investors to purchase green buildings.

The amount of Capital Gains Tax payable by Australian investors and developers on the sale of properties that meet certain green building requirements should be reduced.

6.4.4 FRANKING CREDITS

Franking credits which provide tax breaks for dividend returns to investors in certain sectors, could stimulate growth in the green building industry.

Socially Responsible Investment (SRI) markets are continuing to develop and grow. The existing Australian markets experienced phenomenal growth of 70% last year, increasing to approximately $7.5billion.[87]

The Federal Government could have a role to play in providing tax breaks for dividend returns to investors in green buildings. This has been done before to stimulate growth in vineyards and forestry, where franking credits have been made available to enhance net dividend returns.

Franking credits that increase net dividend returns for Socially Responsible Investments which include green buildings should be offered as an incentive.

6.4.5 STATE TAXES AND COUNCIL CONCESSIONS

Concessions to council rates and state taxes, such as stamp duty and land tax, could be made to encourage building owners to build/renovate or purchase property that meet certain green building requirements.

For example, a rebate on council rates could be provided for qualifying expenditure based on a percentage of expenditure incurred.

Planning concessions are also powerful tools for encouraging achievement of a standard.

Planning concessions such as density bonuses, green offset and transferable floor space schemes – similar to the City of Sydney's heritage floor space scheme – could be introduced using Green Star to assess and benchmark performance (e.g. water and energy efficiency).

There is also evidence of the success of planning concessions overseas.

State and local planning incentives and concessions for green buildings should be introduced.

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CASE STUDY 13 CITY OF SYDNEY HERITAGE FLOOR SPACE SCHEME[88]

The Heritage Floor Space (HFS) Scheme provides an incentive for the conservation and ongoing maintenance of Schedule 1 heritage items within Central Sydney.

Once conservation works to the heritage item have been completed, the owner of the heritage item may be awarded HFS. This HFS may then be allocated (sold) to a site which requires the purchase of HFS as part of an approved development application. The monies raised help conserve the heritage item.

HOW HFS WORKS

There are two components in the HFS scheme: Award of HFS & Allocation of HFS:

1. Award

The owner of a Schedule 1 heritage item may elect to apply for an award of HFS (if the relevant criteria is met) or alternatively the heritage item can be part of a development which relates to the land occupied by the heritage item.

2. Allocation

Developments can only achieve a certain development potential if HFS is transferred (allocated) to the development from the bank of awarded HFS.

AWARD OF HERITAGE FLOOR SPACE (HFS)

Heritage Floor Space may only be awarded to a heritage item if it is:

- listed as a Schedule 1 heritage item pursuant to Central Sydney Heritage Local Environmental Plan 2000; and
- is located within the City Centre or City Edge zones of the Central Sydney Local Environmental Plan 1996.

AMOUNT OF HFS TO BE AWARDED

The formula used to calculate the amount of HFS to be awarded is (for rateable buildings in private ownership):

- HFSh= 0.5As x FSRh
- HFSh = the maximum amount of heritage floor space which may be awarded (in square metres)
- As = site area
- FSRh = the FSR for the site of the heritage item
- The formula varies for non-ratable buildings, and is HFSh= 0.5 x FSAh

Note: The Council may reduce the amount of HFS to be awarded if there are elements of the building, existing or proposed, which detract from the significance of the building, or by an amount equal to any additional floorspace.

6.4.6 DIVISION 43

Division 43 of the Income Tax Assessment Act 1997, sets out deductions for capital works, enabling property investors to offset the hard construction costs of their investment property against their assessable income.

Hard construction costs may include items such as concrete, brickwork and common property items that are not plant and equipment, and even excavation.

The Divison 43 allowance is a non-cash deduction which means the money does not have to be spent up front to claim it. It is not a depreciation allowance as such, but it is a concession on the initial construction cost. It remains with the use of the property until exhausted. This concession has been used in the past to encourage investment in particular property sectors (e.g. for Commercial Property the rate is 2.5% where as for Hotels it is 4.0%).

A change in Division 43 rates could be made to promote a green building focus and reward the reduction of environmental impact by concentrating on non-plant items of buildings.

Division 43 of the Income Tax Assessment Act should be amended to offer a green building incentive, to encourage the development and application of green building technology.

6.4.7 RESEARCH AND DEVELOPMENT CONCESSIONS

To encourage Research and Development (R&D) activities in Australia, the government has provided a number of tax concessions to companies that incur expenditure on such activities.

Companies that incur expenditure on R&D may claim a number of tax concessions subject to qualification:

Immediate Deductions

- Expenditure incurred in relation to the acquisition of core technology.

Accelerated Depreciation

- Accelerated write off of up to 125% for expenditure incurred directly on R&D activities.
- Incremental write off of up to 175% is available where companies increase their level of R&D expenditure.

Refundable Tax Offset

- Small companies can elect to claim a refundable tax offset instead of an R&D deduction. This measure benefits small companies that are tax losses.

The consensus is that the current R&D concessions do not provide a significant effective incentive for Australian companies to invest in green building R&D activities.

R&D tax concessions could be increased from 125% to 250% to provide additional incentive for innovation in green building practices.

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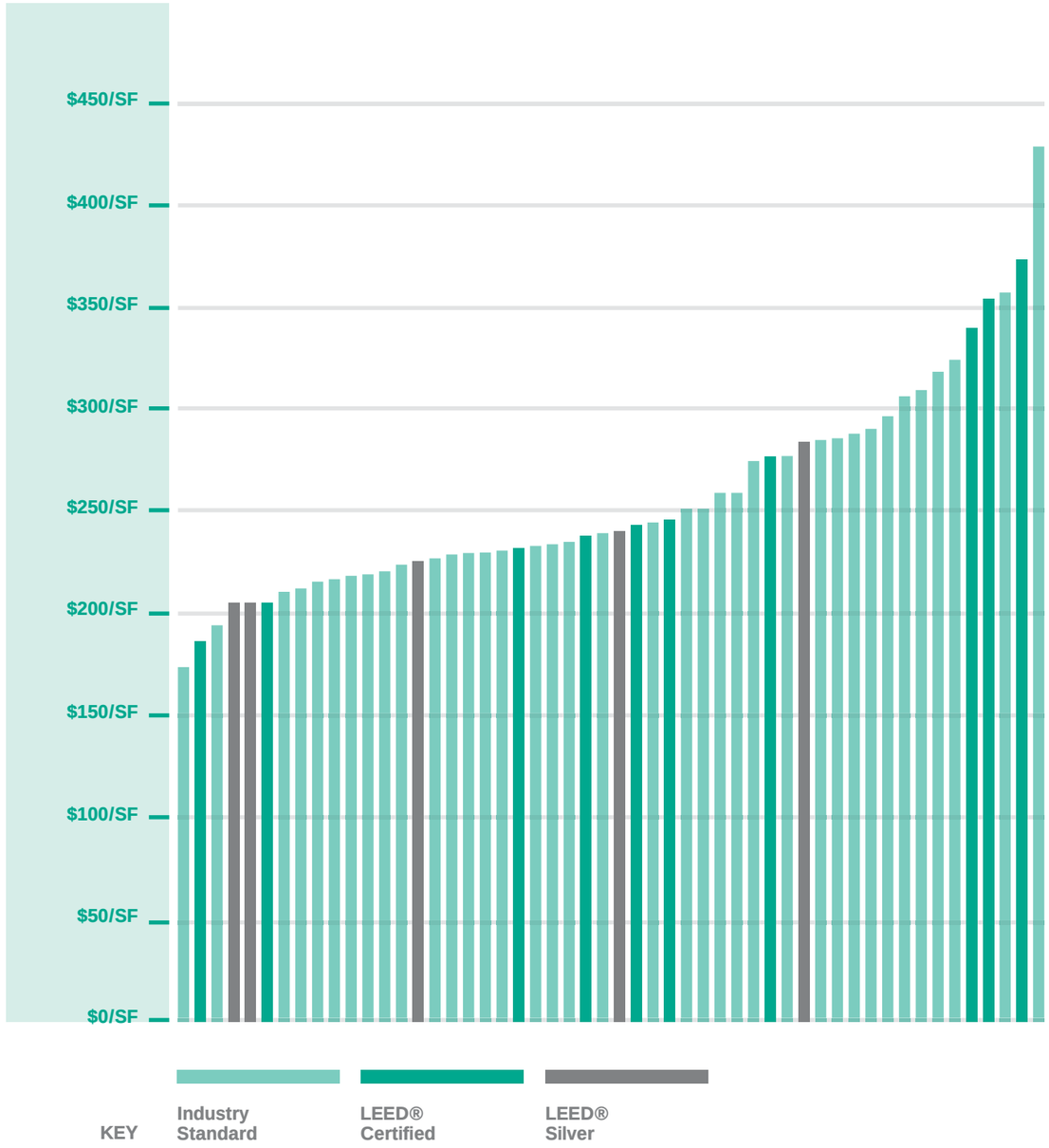
TABLE 9

DAVIS LANGDON - COST REPORT 2: COST ANALYSIS: ACADEMIC & OFFICE BUILDINGS[9]



6.5 RESEARCH

The building market is generally seen as risk-averse, with a reluctance to accept new building methods without proof that they work. It follows that as more quantitative financial data is available, there will be a wider acceptance and take-up of green buildings. In addition, the improvement in post-occupancy analysis will assist in proving the business case for green buildings.

6.5.1 COST AND FINANCIAL BENEFIT

Several international studies have focused on the capital costs of green buildings but to date little research has been done in the Australian market and there are still limited case studies.

The general international consensus is that green buildings cost around 2% more to design and construct.

The Davis Langdon report[9] examined the construction costs of 138 existing buildings across the USA. Forty five of these buildings were certified as green by the North American Green Star equivalent rating tool called 'LEED' and were labelled 'green' for the purposes of the study, and the remaining 93 buildings were defined as 'conventional'. While there was a high variation in the construction costs within both green and non green categories, the authors concluded that there was no statistically significant difference between the capital costs of green and conventional buildings. Ultimately, they concluded that comparing the cost of green buildings to conventional buildings using an average cost analysis does not provide meaningful data. However, in an analysis of initial budgets, the authors were able to conclude that *"the cost per square foot for buildings seeking LEED certification (Green Star equivalent rating tool used in the USA and Canada), falls into the existing range of costs for buildings of similar program type and many projects can achieve sustainable design within their initial budget, or with a very small supplementary funding".*

The Californian report[2] provided the first comprehensive analysis of the actual costs and financial benefits of green buildings. Examining 33 green buildings across the US, the report also undertook a comparison of the real constructed cost with a cost estimate based in similar non-green building design.

The report concluded:
"The benefits of building green include cost savings from reduced energy, water, and waste; lower operations and maintenance costs; and enhanced occupant productivity and health. An analysis of these areas indicates that total financial benefits of green buildings are over ten times the average initial investment required to design and construct a green building. Energy savings alone exceed the average increased cost associated with building green. Additionally, the relatively large impact of productivity and health gains reflects the fact that the direct and indirect cost of employees is far larger than the cost of construction or energy. Consequently, even small changes in productivity and health translate into large financial benefits."[2]

The report indicates that the average construction cost premium for green buildings is almost 2%, or about US$4/ft2 – substantially less than is generally perceived. The findings of this report point to a clear conclusion: building green is cost-effective and makes financial sense today.

Since 2003 the US Green Building Council has studied more than 200 commercial office buildings across the US and determined the cost premium to build green to be 1.84%. But it found there was absolutely no correlation between the amount of money that had to be spent and the shade of green.

There is even some evidence to suggest that the integrated thinking and solution driven design process associated with green building means that you actually reduce the amount of risk, construction time, variations and the capital costs are actually less.

The analyses provided by the Californian[2], Davis Langdon[9], Canadian[16] reports have played an important role in driving the shift to building green in the United States and it is hoped that Australia will soon have enough green buildings to conduct a similar analysis.

Based on a literature review of international and local case studies – the Green Building Council of Australia believes the Australian property industry should not expect the cost to build green to exceed a 3% premium.

But more research and case studies are required.

The Victorian Government's COBEII (see 4.1.1) is providing valuable case studies detailing cost and financial benefits of successful green buildings and more such programs should be undertaken.

Funding should be provided for the development of green building case studies which quantify the economic, social and environmental benefits in a way that the financial sector can understand and report on them.

6.5.2 PRODUCTIVITY GAINS

While international studies have provided impressive statistics on the linkage between productivity, health and well being and improved indoor environmental quality,[2,7,16,49] further study is required in this area in Australia.

As a key potential benefit of green buildings, research into productivity gains including the measurement of employee productivity and the monitoring of building use would contribute significantly to the business case as well as improving the way buildings are designed and the way they function.

Funding should be provided for post-occupancy research into productivity and other gains from green buildings.

6.5.3 BUILDING THE BUSINESS CASE

This Report builds on international findings but the sample size for green buildings in Australia is still small and availability of data on them even smaller, making the comparative local costs and benefits of green buildings difficult to ascertain.

As more local and international examples of green commercial buildings are developed and studied this Report should be updated to strengthen the business case for green commercial buildings and ultimately to drive the transition to green commercial buildings.

As the number of green buildings in Australia increases, this Report should be updated to reinforce the business case.

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Romilly's involvement in the property industry started with her move to Canberra in 1994 where she worked as a property specialist at Mallesons Stephen Jaques, one of Australia's leading law firms. In 2002 Romilly became Executive Director – ACT, Property Council of Australia, and the following year she took over the national internal portfolio of Executive Director-Sustainability. Her interest in all things green began during her undergraduate degree when her thesis was "A cost benefit analysis of a landcare project". Romilly lives on a vineyard (a green work in progress) near Lake George, north of Canberra, with her husband and three children.

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