



# GREEN STAR - RETAIL CENTRE V1

FACT SHEET & BUSINESS CASE



**THE GREEN BUILDING COUNCIL OF AUSTRALIA (GBCA) RELEASED THE GREEN STAR – RETAIL CENTRE V1 RATING TOOL IN AUGUST 2008 TO SUPPORT THE SUSTAINABLE PLANNING, DESIGN AND CONSTRUCTION OF HIGH-PERFORMANCE RETAIL CENTRES.**

By investing in sustainable buildings and applying the Green Star - Retail Centre v1 rating tool, owners and operators of shopping centres around Australia can:

- minimise the environmental impact of their buildings
- demonstrate their corporate social responsibility
- respond to tenant and consumer demand
- create long-term shareholder value
- receive recognition for green leadership
- achieve real cost savings.

## ABOUT GREEN STAR

The GBCA launched the Green Star environmental rating system for buildings in 2003. Green Star evaluates the green attributes of building projects based on nine categories, including energy and water efficiency, indoor environment quality and materials.

Green Star is a holistic rating tool, evaluating not only environmental attributes, but also features that affect occupant health and wellbeing, such as indoor environment quality and access to transport. Green Star rating tools can be used to rate the environmental attributes of a building at the design phase as well as at the end of construction (known as 'As-Built').

## IMAGE:

**Chadstone West Mall**  
5 star Green Star - Retail Centre Design v1

## WHY BUILD A GREEN RETAIL FACILITY? ♦



### ENVIRONMENTAL BENEFITS

The retail sector is one of the largest consumers of energy. A report from the UK Government, Energy Consumption in the United Kingdom (2002), found that 18% of all service sector electricity consumption was from the retail sector, where electricity is mainly used for lighting. This was followed by hotel and catering (17%), education (13%) and commercial offices (11%)<sup>1</sup>.

One of the largest retail building in the world, the Chicago Merchandise Mart, underwent a green overhaul in 2007.

Among the green initiatives:

- water waste was tracked, to determine which of the 2,000 toilets needed to be replaced with more efficient ones
- leaks in the air conditioning were tracked down and fixed, saving over \$4,000 a year
- many of the buildings spaces were metered individually, to determine high energy use areas, and bill tenants accordingly
- a supply shop for tenants was opened in the basement, making everything from low-vapor paints to high-efficiency bulbs available.

<sup>1</sup> Energy Consumption in the United Kingdom, UK Department of Trade and Industry, 2002, London, UK, pg. 37.

The results speak for themselves. The Merchandise Mart achieved LEED Silver certification in 2008 for a facility that now uses 35% less water and 10% less energy than before the upgrades. At the same time, utility bills last year fell about 10%, and occupancy rates climbed to 96%, from 77% a decade ago.

In Australia, Westfield worked closely with the Green Building Council of Australia to develop the Green Star – Retail Centre v1 tool, and is already integrating green principles into new developments in Albany, Doncaster and Sydney City. Each centre has measures to address energy efficiency, water conservation, recycling and waste management and sustainable urban design.

### LOWER OPERATING EXPENSES

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

### IMAGE:

**Stockland North Shore (Townsville), Retail Development**  
4 star Green Star - Retail Centre Design V1

### INCREASED RETAIL SALES

A number of international studies have found that integrating green principles – such as access to natural light – can increase sales at the till. US research company Heschong Mahone, for instance, has found evidence that daylight stores deliver higher sales than non-daylit stores.

<sup>2</sup> The Daylight and retail sales study (2003) assessed 73 store locations belonging to a major US retailer between 1999 and 2001. Of these, 24 stores had a significant amount of daylight illumination, provided primarily by diffusing skylights. Daylighting was found to increase sales up to 40%. This figure is consistent with a previous study conducted for Pacific Gas and Electric in 1999, which found that stores with skylights experienced 40% higher sales than those without.<sup>3</sup>

<sup>2</sup> Heschong Mahone Group, Daylight and Retail Sales, 2003, Executive Summary, viewed 14 May 2010 <[http://www.h-m-g.com/projects/daylighting/summaries%20on%20daylighting.htm#\\_ftn4](http://www.h-m-g.com/projects/daylighting/summaries%20on%20daylighting.htm#_ftn4)>

<sup>3</sup> Heschong Mahone Group, Skylighting and Retail Sales: An investigation into the relationship between daylight and human performance, 1999. Detailed Report for Pacific Gas and Electric Company. Fair Oaks, CA.

**IMAGE:**

**Chadstone West Mall**  
5 star Green Star - Retail Centre  
Design v1



**MARKET DIFFERENTIATION**

If owners of pre-21st century shopping centres want to draw tenants who'll pay top dollar, their properties must be as inviting as new places. That means installing not only the latest technology, but also green features such as bicycle racks, access to public transport, natural lighting and water-conserving landscapes. These green features can help to reinforce sustainability initiatives taken by tenants - a bargaining chip in demanding premium rent.

**CONSUMER-DRIVEN DEMAND**

Building green is a clear expression of a company's commitment to the environment. Consumers are demanding greener products and facilities, and investors are requiring corporations to document and report their carbon emissions - leading many retailers to highlight their green initiatives publicly.

Today's consumers want to know that the corporations they do business with operate in an environmentally friendly manner - and they are rewarding sustainability with their wallets. One US survey for Retail Customer Experience found that 46% of consumers would shop at a retailer more if it was environmentally friendly, while 47% say they would pay more for environmentally friendly services, products or brands. <sup>4</sup>

**ATTRACTING AND RETAINING STAFF**

Studies show that many employees prefer to work for companies that are environmentally conscious.<sup>5</sup> This is particularly true with younger workers, who comprise a large percentage of the retail workforce. Working from a green retail space can positively impact how employees feel about their employer - another bargaining point when commanding a rental premium.

**REDUCE LIABILITY AND RISK**

According to the OECD's Environmentally Sustainable Buildings report (2003), illness from indoor air pollution has become one of our most acute building challenges - with building materials, ranging from paints to carpets, leading to occupational health issues.<sup>6</sup>

<sup>5</sup> Recruitment and retention consultancies like Kenexa, Hewitt Associates, Robert Half and Towers Perrin have published figures demonstrating a link between environmentally friendly workplaces and engaged employees. Monster, the online recruitment job site, is one of several firms to establish a careers section devoted to job listings with environmentally conscious companies.

<sup>6</sup> Organisation for Economic Co-operation and Development, Environmentally Sustainable Buildings: Challenges and Policies, 2003, Executive Summary.

A study by the Lawrence Berkeley National Laboratory found that buildings with good IEQ can reduce the rate of respiratory disease, allergy, asthma, sick building symptoms, and enhance worker performance. The potential financial benefits of improving IEQ are 8 to 14 times the cost of investment.<sup>7</sup>

**FUTURE PROOFED ASSETS**

Governments and large corporate organisations are increasingly incorporating green principles into their property requirements, and three state governments have already mandated minimum Green Star standards for all government office buildings - with other building types expected to follow suit. By incorporating sustainable features now, owners of retail facilities are future proofing for changes in the business and regulatory environment, and ensuring they will not be at a competitive disadvantage in the future.

<sup>7</sup> Fisk, William, How IEQ Affects Health, Productivity, ASHRAE Journal 44(5):56-60, 2002, Lawrence Berkeley National Laboratory, Berkeley, CA

# KEY ATTRIBUTES ✦

**THE GREEN STAR – RETAIL CENTRE V1 RATING TOOL ASSESSES THE ENVIRONMENTAL ATTRIBUTES OF NEW AND REFURBISHED RETAIL CENTRES IN EVERY STATE ACROSS AUSTRALIA. THE RETAIL CENTRE’S BASE BUILDING AND ITS SERVICES ARE ASSESSED UNDER THE GREEN STAR – RETAIL CENTRE V1 RATING TOOL; TENANCY FITOUTS ARE NOT INCLUDED IN THE ASSESSMENT.**

The rating tool is designed to be used by owners, developers and consultants (architects, engineers, quantity surveyors, project managers, ESD consultants etc) to influence the design and construction of retail centres.

A Green Star rating is awarded based on accumulating credit points in nine categories. The Green Star – Retail Centre v1 rating tool takes into consideration the unique development requirements and impacts of retail centres. As such, the number of credits within categories and the category weightings vary from other Green Star rating tools. Examples of credits in the tool include: waste and recycling management plan, building management system, car park ventilation and trip reduction – mixed use.

The Green Star – Retail Centre v1 rating tool also includes a customised greenhouse gas emissions calculator. While the Green Star – Office suite of rating tools incorporates energy modelling consistent with the National Australian Built Environment Rating System (NABERS Energy), an equivalent modelling protocol does not exist for the retail sector. The customised greenhouse gas emissions calculator was developed in consultation with tool sponsors, the Technical Working Group and other industry stakeholders, and assesses all retail facilities equitably - independent of size or location - on their predicted greenhouse gas emissions during operation.

# CERTIFICATION ✦

## Green Star ratings will be awarded as outlined below:

The rating tools have been developed to be equitable across building sectors. This means a 5 Star Green Star – Retail Centre v1 project will demonstrate a similar level of industry leadership as 5 Star Green Star – Office v3 project.

Projects with ratings of 1, 2 or 3 Stars cannot receive certification, as these ratings represent minimum, average and good practice, whereas Green Star aims to recognise and reward best practice and above.

**THESE RATING TOOLS HAVE BEEN DEVELOPED TO BE EQUITABLE ACROSS BUILDING SECTORS.**



### 4 Star Green Star Certified Rating

Weighted score of 45-59  
Signifies 'Best Practice'



### 5 Star Green Star Certified Rating

Weighted score of 60-74  
Signifies 'Australian Excellence'



### 6 Star Green Star Certified Rating

Weighted score of 75-100  
Signifies 'World Leadership'

# CATEGORIES AND CREDITS IN GREEN STAR ✦

## GREEN STAR - RETAIL CENTRE V1



### MANAGEMENT

- Green Star Accredited Professional
- Commissioning
- Building Tuning
- Independent Commissioning Agent
- Building Users' Guides
- Environmental Management
- Waste Management
- Waste and Recycling Management Plan
- Building Management System



- Greenhouse Gas Emissions
- Energy Sub-metering
- Peak Energy Demand Reduction
- Car Park Ventilation



### LAND USE & ECOLOGY

- Ecology – Conditional Requirement
- Topsoil
- Re-use of Land
- Reclaimed Contaminated Land
- Ecological Value of Site



### TRANSPORT

- Provision of Car Parking
- Fuel-efficient Transport
- Cyclist Facilities
- Commuting Mass Transport
- Trip Reduction - Mixed Use



### EMISSIONS

- Refrigerant ODP
- Refrigerant GWP
- Refrigerant Leaks
- Insulant ODP
- Watercourse Pollution
- Discharge to Sewer
- Light Pollution
- Legionella



### INDOOR ENVIRONMENT QUALITY

- Ventilation Rates
- Air Change Effectiveness
- Carbon Dioxide Monitoring and Control
- Daylight
- Thermal Comfort
- Hazardous Materials
- Internal Noise Levels
- Volatile Organic Compounds
- Formaldehyde Minimisation
- Mould Prevention



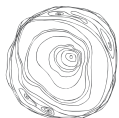
### WATER

- Occupant Amenity Water
- Water Meters
- Landscape Irrigation
- Heat Rejection Water
- Fire System Water



### INNOVATION

- Innovative Strategies and Technologies
- Exceeding Green Star Benchmarks
- Exceeding Green Star Scope



### MATERIALS

- Recycling Waste Storage
- Building Re-use
- Recycled Content & Re-used Products and Materials
- Concrete
- Steel
- PVC
- Timber
- Design for Disassembly
- Dematerialisation

### ENERGY



## CATEGORY WEIGHTINGS ✦

	ACT	NSW	NT	QLD	SA	TAS	VIC	WA
Management	10%	10%	10%	10%	10%	10%	10%	10%
IEQ	12%	12%	12%	12%	12%	12%	12%	12%
Energy	24%	24%	24%	24%	24%	24%	24%	24%
Transport	8%	8%	8%	8%	8%	8%	8%	8%
Water	19%	19%	17%	21%	22%	17%	22%	21%
Materials	10%	10%	10%	10%	10%	10%	10%	10%
Land Use & Ecology	9%	9%	11%	7%	7%	11%	7%	8%
Emissions	8%	8%	8%	8%	7%	8%	7%	7%

The Innovation Category is not subject to an environmental weighting factor as the innovation could fall under any number of Green Star categories. More information and additional guidance on the weightings for the Green Star – Retail Centre v1 rating tool can be found on the GBCA website.

## NEXT STEPS ✦

- Download the Green Star – Retail Centre v1 rating tool. This is freely available for self-assessment and can be downloaded from the GBCA website: [www.gbca.org.au](http://www.gbca.org.au)
- Join the GBCA. Demonstrate your company's commitment to sustainability, actively influence the future direction of green building and gain access to green building education, training and resources, as well as significant member discounts on certification. Find out more at: [www.gbca.org.au/membership/](http://www.gbca.org.au/membership/)
- Register your project with the GBCA for an independent third party accredited assessment. This process cost varies depending on the size of your project and whether or not you are a GBCA member. Find out more about the certification process and how to register: [www.gbca.org.au/green-star/certification/](http://www.gbca.org.au/green-star/certification/)
- Purchase additional technical manuals. As part of your certification fee you will receive 2 free Green Star - Industrial v1 Technical Manuals. You may like additional manuals for your team, which can be purchased from our online store: [www.gbca.org.au/shop/](http://www.gbca.org.au/shop/)
- Attend a workshop. The GBCA holds regular workshops on the Green Star rating tools. As part of your certification fee you may receive one free In- House Certification Workshop. Please contact your Case Manager to see if you are eligible. There are also introductory and advanced classes on Green Star; register online: [www.gbca.org.au/courses.asp](http://www.gbca.org.au/courses.asp)
- Train your entire project team on the tool. The GBCA can organise in-house training so that all your project team and sub-contractors are aware of the implications of developing a Green Star project. To obtain an in-house quote please email [education@gbca.org.au](mailto:education@gbca.org.au)

## SPONSORS

### Platinum

Mirvac  
Sustainability Victoria  
Westfield

### Gold

AMP Capital  
Colonial First State (Gandel.)

### Silver

NSW Dept Environment & Conservation  
EPA Queensland  
ING Real Estate Retail  
Stockland  
Lend Lease

## CONTACT

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# BUSINESS CASE HOME HQ NORTH SHORE

**IMAGE:**

**Home HQ North Shore**  
4 star Green Star - Retail Centre  
Design v1

**PROJECT DATA**

**Location**

1a Frederick Street, Artarmon

**Total Floor Area**

26,495 2,200 m2 NLA

**Client**

Charter Hall Group

**Development Manager**

Charter Hall

**Builder and Green Star Manager**

St Hilliers Contracting

**Architect**

Rice Daubney

**Structural/Civil Engineer**

Robert Bird Group

**Building Services Engineers**

Donnelly Simpson Cleary

**Mechanical and BMS**

MW Zander

**Hydraulics Engineers**

Nisbet & Durney

**Fire Engineers**

Precision Fire

**Electrical Engineers**

KLM

**Lifts and Escalators Engineers**

Kone

**Traffic Engineer**

GTA

**Acoustic Consultant**

Acoustic Logic

**Landscaping Consultant**

POD

**ESD modelling**

Cundall and Team Catalyst

The new Home HQ household retail centre on Sydney's North Shore is an innovatively-designed homemaker centre awarded the first rating under the Green Star - Retail Centre v1 tool. Constructed upon the former Willoughby Council Depot site, the project achieved a 4 Star Green Star rating representing 'Best Practice' environmental standards in its conversion of the existing heritage-listed industrial warehouse.

Michael Winnem, Development Director at Charter Hall, says: "Home HQ North Shore is one of Charter Hall Group's flagship retail developments. It demonstrates our commitment to developing sustainable projects that are market leading."

**REUSE, REGENERATE, REVITALISE**

The adaptive reuse, regeneration and revitalisation of the Home HQ North Shore site to best practice environmental standards has extended the life of the former warehouse structure for the benefit

of the local community, and contributed to the amenity of the Lower North Shore.

A number of elements in the structure, framing and building fabric were heritage-listed, which only permitted the adaptive reuse of the building. This meant that the redevelopment of the project contained two key challenges. The first was to design a modern, functional household retail centre within and around a heritage-listed building and the second was to integrate sustainability features into the project to ensure the new centre received a Green Star rating.

One approach the project team took to achieve the desired outcome involved the innovative use of structural and façade design to ensure that the majority of steel work on the site was reused. This approach had a dual benefit of using the heritage-listed steel gables, cranes and roof trusses as a feature of the centre, while also picking up points within the Green Star Materials category. The layout was then tailored to the space, with tenancies configured around the existing column layout to preserve materials and to make best use of the building's unique character.

**CAPITALISING ON CHARACTER**

Internally, the building was refurbished and extended to include a central void over three levels. "The central void has been extremely successful both from a tenant's and a customer's perspective", says Michael Winnem. "It provides an opportunity to showcase the heritage features of the existing building while providing customers with view lines to the centre's retailers."

The common areas of Home HQ are passively-ventilated with spill air from the tenancies, which in turn are serviced by a water- and energy-efficient central air-cooled mechanical system which is controlled by building management. This ensures that consistent and comfortable conditions are provided for shoppers while reducing operational energy requirements. The design has resulted in the centre

exceeding Green Star thermal comfort design benchmarks and significantly improved occupant comfort and amenity standards compared to similar existing developments.

**GREEN SCREENS**

Home HQ was awarded one Green Star innovation point for the installation of dedicated Ecologically Sustainable Design (ESD) screens in the central information station. The screens help raise awareness of the sustainable design credentials of the centre, as well as providing information to visitors on how they can reduce their own ecological footprints.

In addition, interactive panels with rolling displays show the centre's energy and water consumption. Once Home HQ has been running for 12 months, these rolling displays will be plotted against historical water and energy use data so that visitors can compare current and past usage.

This innovation will provide a valuable educational resource for visitors to Home HQ and will help improve understanding of ESD and its impacts throughout the wider community.

**IMAGE:**  
**Home HQ North Shore**  
 4 star Green Star - Retail Centre Design v1

**SUSTAINABILITY FOR JUST ONE PER CENT**

Perhaps the project team's greatest challenge was that the Green Star - Retail Centre v1 tool was launched after the design phase for Home HQ was complete. Due to the differences between the new tool and the Shopping Centre PILOT to which Home HQ was first designed, the project team expanded its focus beyond energy and water efficiency to take a more holistic approach to Green Star.

This meant incorporating a number of retrospective changes to the original design while the project was in the construction phase, and some very intensive efforts in both redesign and sub-contractor management. Despite these changes, the total cost for the Green Star component, over and above a non-Green Star-rated project, was less than one per cent of contract value.

And according to Alicia Maynard, Green Star Accredited Professional at St Hilliers, the Green Star process "helped enforce a robust document management system for co-ordination, collation and delivery of the project to the ESD credentials. The communication across the design team was enhanced, especially due to the changes in rating tool/ESD requirements and the design changes that occurred as a result."



## OTHER ESD INITIATIVES FEATURED IN THE PROJECT:

### Management

- An electronic Building Management System (BMS) monitors and reports on energy and water consumption and controls building services systems
- Diligent waste management practices diverted 14,000 tonnes of construction and demolition waste from landfill to recycling

### Indoor Environment Quality

- High level of thermal comfort is achieved for 60% of the nominated area
- The ventilation systems have been designed to achieve an air change effectiveness of at least 95 per cent of the nominated area.

### Transport

- The centre is easily accessible by public transport and located within close proximity to both buses and rail
- 60 bike racks for commuters are incorporated into the design.

### Water

- A 330,000 litre rainwater tank enabling rainwater harvesting, as well as water saving fixtures and fittings, was incorporated into the amenities
- HQ Home uses an air-cooled mechanical system which runs by filtering air through vents, negating the use for water in the cooling tower
- No water-based heat rejection systems are provided, as the system is a centralised air-cooled chiller.



### Emissions

- All HVAC refrigerants have an Ozone Depleting Potential (ODP) of zero
- All thermal insulants avoid the use of ozone depleting substances in both its manufacture and composition
- No direct light beam, generated from within the building or outside of the building boundary, is directed at any point in the sky.

### Materials

- HQ Home has been designed for disassembly
- Over 60 per cent of steel used for construction was recycled steel.

### Land Use and Ecology

- The HQ Home development site is located on land previously developed but under-utilised
- Enhancement of the previous existing state of the native vegetation.

### IMAGE:

**Home HQ North Shore**  
4 star Green Star - Retail Centre  
Design v1