



BCA AWARDS 2013

Recognising Excellence in the Built Environment

Building and Construction  Authority

We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.



Welcome to the BCA Awards 2013

The BCA Awards is an annual event to honour and pay tribute to displays of excellence in the built environment in the areas of safety, quality, sustainability and user-friendliness. For this year, the industry received a total of 293 awards:

Award categories

- 1 Green Mark Champion Award
- 177 Green Mark Awards
- 8 Green Building Individual Awards
- 26 Universal Design Mark Awards
- 31 Construction Excellence Awards
- 6 Quality Excellence Awards
- 7 Design and Engineering Safety Excellence Awards
- 22 Green and Gracious Builder Awards
- 14 Construction Productivity Awards
- 1 Built Environment Leadership Award

***Details of the awards are in the accompanying CD.**

BCA congratulates all the winners, for their unwavering commitment to excellence and dedication in driving the built environment sector to greater heights.

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MediaCorp (MSCP)	100
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BCA GREEN MARK AWARD FOR BUILDINGS	
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BCA GREEN MARK CHAMPION AWARD

The Award

The BCA Green Mark Champion Award was launched at BCA Awards 2008. This award recognises developers with strong commitment towards corporate social responsibility and outstanding achievements in environmental sustainability. It is given to developers who achieve a substantial number of Green Mark buildings at Gold level and higher.

There are two categories for the award:

- BCA Green Mark Champion
- BCA Green Mark Platinum Champion

Besides demonstrating strong commitment towards corporate social responsibility and environmental sustainability, developers must meet these criteria to qualify:

Key Assessment Criteria

Total no. of buildings rated	BCA Green Mark Champion	BCA Green Mark Platinum Champion
Green Mark Gold & above	At least 10	At least 50
Green Mark Gold ^{Plus} & above	At least 6	At least 30
Green Mark Platinum	At least 3	At least 15

BCA GREEN MARK CHAMPION AWARD



JTC Corporation

Sustainability at the Heart of JTC's Development Projects

As Singapore's leading industrial infrastructure specialist and a socially responsible corporate citizen, JTC Corporation (JTC) creates value for customers by developing sustainable and future-ready industrial infrastructure solutions that will differentiate Singapore as an investment location. Landmark projects by JTC customised for industry clusters include CleanTech Park, Jurong Island, Seletar Aerospace Park, water fabrication parks, Tuas Biomedical Parks, and Biopolis, Fusionopolis and Mediapolis at one-north. Other key projects in JTC's portfolio include Tukang Innovation Park, MedTech Park, business parks, as well as logistics hubs. Today, these industrial estates and business parks are home to a host of renowned global companies and promising local enterprises.

Sustainability is a key driver of JTC's innovative culture, and is recognised as the way forward for industrial developments. Green building strategies and eco-friendly features are actively being incorporated in JTC's developments, and innovative technologies and initiatives are being test-bedded by JTC to optimise resources. JTC also strives to explore creative space solutions to increase land productivity in land-scarce Singapore with groundbreaking projects such as the Jurong Rock Caverns, Southeast Asia's first subterranean storage facility for liquid hydrocarbons.

KEY ACHIEVEMENTS

- 10 projects awarded with BCA Green Mark (including 6 Platinum and 3 Gold^{Plus} awards. One of the Platinum awards is given to CleanTech Park for its green district design).

CleanTech One at CleanTech Park



The JTC Summit



Biopolis Phase 1 at one-north



Fusionopolis Phase 1 at one-north



BCA
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Emeritus Chairman
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& FERNER (S.E. ASIA) PTE LTD

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BUILDING AND CONSTRUCTION
AUTHORITY

Mr Tan Tian Chong
BUILDING AND CONSTRUCTION
AUTHORITY

BCA GREEN MARK AWARD FOR BUILDINGS

The Award

The BCA Green Mark scheme was launched in 2005 as a key strategic programme to raise the awareness of sustainable and environmentally friendly buildings. It evaluates buildings for their environmental impact and performance. The benefits of Green Mark buildings include cost savings resulting from efficient use of key resources such as energy and water, leading to lower operational and maintenance costs. Other less tangible benefits include enhanced occupant productivity and health due to good indoor environmental quality.

Buildings are assessed under the following criteria:

- Energy Efficiency
- Water Efficiency
- Environmental Protection
- Indoor Environmental Quality
- Other Green Features

Under the assessment system, points are awarded for incorporating environmentally friendly and sustainable features which are better than normal practice. The total number of points obtained translates to the respective award ratings of Certified, Gold, GoldPlus, and Platinum in ascending order of merit.

The BCA Green Mark Award for Buildings covers the following categories this year:

- BCA Green Mark Award for Non-Residential Buildings (New and Existing)
- BCA Green Mark Award for Residential Buildings (New and Existing)
- BCA Green Mark Award for Existing Schools
- BCA Green Mark Award for Landed Houses

BCA GREEN MARK AWARD FOR BUILDINGS

CET East Campus

New Non-Residential Buildings



Client / Developer
Singapore Workforce
Development Agency

Project Manager
Singapore Workforce
Development Agency

Architect
SAA Architects Pte Ltd

M&E Engineer
Beca Carter Hollings &
Ferner (S.E.Asia) Pte Ltd

Structural Engineer
Beca Carter Hollings &
Ferner(S.E. Asia) Pte Ltd

Quantity Surveyor
Rider Levett Bucknall LLP

ESD Consultant
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Landscape Consultant
Mace Studio Pte Ltd

Key Features

- Estimated energy savings: 2,513,950 kWh/yr;
estimated water savings: 5,806 m³/yr;
ETTV: 38.9 W/m².
- Efficient facade design with double glazed
low-e glass.
- Low flow, high delta-T chilled water plant system.
- Displacement ventilation system for lecture theatre.
- Provision of ductless jet fan system.
- Majority of water fittings rated WELS 'Excellent'.
- Non-chemical termite baiting system.
- Automatic condenser tube cleaning system for
chiller plant.

Changi DCS Plant Expansion

New Non-Residential Buildings



Client / Developer
Keppel DHCS Pte Ltd

**Project Manager
/ Main Contractor**
Taikisha (Singapore)
Pte Ltd

Architect
CK&A Consultancy
International Pte Ltd

M&E Engineer
Alpha Consulting
Engineers Pte Ltd

Structural Engineer
JHA Partnership

Landscape Consultant
3fP Landscape Atelier
Pte Ltd

Interior Design Consultant
DB&B Pte Ltd

ESD Consultant
Kaer Pte Ltd

BIPV Contractor
PV World Pte Ltd

Key Features

- Estimated energy savings: 762,034 kWh/yr; estimated water savings: 193 m³/yr; ETTV: 33.8 W/m².
- Low ETTV value with minimal glass façades.
- High efficiency chiller plant.
- Automatic cleaning system for condenser tube.
- Provision of sun pipes.
- Energy efficient LED lighting in offices.
- Extensive array of solar panels.
- Provision of sky garden.

Crest Secondary School

New Non-Residential Buildings



Client / Developer
Ministry of Education

Project Manager
Parsons Brinckerhoff
Pte Ltd

Architect
CPG Consultants Pte Ltd

M&E Engineer
AECOM Singapore Pte Ltd

Structural Engineer
Aurecon Singapore
(Pte) Ltd

Quantity Surveyor
Barton Bruce Shaw Pte Ltd

Main Contractor
Santarli Construction Pte Ltd

ESD Consultant
CPGreen – CPG Consultants
Pte Ltd

Key Features

- Estimated energy savings: 377,354 kWh/yr; estimated water savings: 20,604 m³/yr; ETTV: 36.0 W/m².
- Air-cooled VRF air-conditioning system with efficiency of 0.74 kW/ton.
- Use of ventilation simulation software to optimise natural ventilation, with common areas and classrooms being naturally ventilated.
- Photo sensors in classrooms and special teaching rooms.
- Motion sensors in toilets.
- Photovoltaic cells on the multi-purpose hall roof.
- Use of green cement and sustainable products.
- Conservation of existing building structure.

BCA GREEN MARK AWARD FOR BUILDINGS

Devan Nair Institute for Employment and Employability

New Non-Residential Buildings



Client / Developer
Singapore Workforce
Development Agency

Project Manager
Singapore Workforce
Development Agency

Architect
RSP Architects Planners
and Engineers (Pte) Ltd

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
RSP Architects Planners
and Engineers (Pte) Ltd

Quantity Surveyor
Rider Levett Bucknall LLP

Main Contractor
V3 Construction Pte Ltd

Acoustics Consultant
Acvicon Acoustics
Consultants Pte Ltd

Landscape Consultant
Grant Associates Singapore
Pte Ltd

Façade & ESD Consultant
Aurecon Singapore (Pte.) Ltd

Key Features

- Estimated energy savings: 2,215,828 kWh/yr; estimated water savings: 5,256 m³/yr; ETTV: 33.9 W/m².
- Passive design features such as low e double glazed glass, vertical window fins and a central open courtyard.
- An estimated 30% of the gross floor area is naturally ventilated.
- Smaller chillers achieving efficiency of 0.65 kW/ton at 25% part load condition.
- Use of WELS water fittings rated 'Excellent' and NEWater for cooling tower make up tank.
- Extensive greenery with a six-storey perforated green wall at North-West façade and green plot ratio of 3.0.
- Extensive use of environmentally friendly sustainable building products.
- Provision of car park lots and charging points for hybrid and electric vehicles.

BCA GREEN MARK AWARD FOR BUILDINGS

DUO Tower and DUO Galleria, Mixed-Use Development at Ophir- Rochor, Singapore (Commercial)

New Non-Residential Buildings



Clients / Developers

M+S Pte Ltd

Ophir-Rochor Commercial
Pte Ltd

Ophir-Rochor Hotel Pte Ltd

Ophir-Rochor Residential
Pte Ltd

Project Managers

CapitaLand Commercial
Project Services Pte Ltd

Sunrise MS Pte Ltd

Architects

Buro Ole Scheeren Limited

DP Architects Pte Ltd

M&E Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor

Davis Langdon KPK
(Singapore) Pte Ltd

Landscape Consultant

COEN Design International
Pte Ltd

ESD Consultant

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Lighting Consultant

International Lighting
Architecture Bureau Pte Ltd

Key Features

- Estimated energy savings: 5,379,108 kWh/yr; estimated water savings: 16,000 m³/yr; ETTV: 36.7 W/m².
- Hexagonal façade design with double glazed low-e glass.
- Low flow, high delta-T efficient chilled water plant system.
- Heat pipe to recover energy from toilet exhaust air to PAHU.
- Lush green surroundings with 100% landscape replacement.
- Carpark guidance system.
- Rainwater harvesting system coupled with siphonic rainwater drainage piping for irrigation.
- Automatic condenser tube cleaning system for chiller plan.

BCA GREEN MARK AWARD FOR BUILDINGS

FairPrice Hub

New Non-Residential Buildings



Client / Developer

NTUC FairPrice
Co-operative Ltd

Architect

ADDP Architects LLP

M&E Engineer

United Project
Consultants Pte Ltd

Structural Engineer

SCE Consultants (Pte.) Ltd

Quantity Surveyor

ST Architects & Engineers
Pte Ltd

Main Contractor

Tiong Seng Contractors (Pte)
Ltd

Landscape Consultant

O2X Studio Pte Ltd

ESD Consultant

G-Energy Global Pte Ltd

Façade Consultant

Tange Associates
Asia Pte Ltd

Key Features

- Estimated energy savings: 4,362,098 kWh/yr; estimated water savings: 83,762 m³/yr; ETTV: 39.5 W/m².
- Use of low-e double glazed glass façade.
- Efficiency of 0.58 kW/ton for chiller plant with permanent monitoring instrumentation in place.
- Demand-controlled ventilation using carbon dioxide sensors.
- Energy efficient LED lighting system for most of the common areas and carpark.
- Carpark lighting controlled by photocells.
- Photovoltaic cells to generate renewable energy onsite with 200 kWp system efficiency.
- Lifts installed with variable voltage variable frequency motor drive, sleep mode features and motion sensors for escalator.

Four Acres Singapore

New Non-Residential Buildings



Client / Developer

HSBC Institutional Trust
Services (S) Ltd as Trustee
of Ascendas Real Estate
Investment Trust

Project Manager

Ascendas Services Pte Ltd

Architect

DP Architects Pte Ltd

M&E Engineer

Gims & Associates Pte Ltd

Structural Engineer

KTP Consultants Pte Ltd

Quantity Surveyor

Rodney Chng & Associates
Pte Ltd

Main Contractor

Wee Hur Construction
Pte Ltd

Landscape Consultant

DP Green Pte Ltd

Acoustics Consultant

Acvicon Acoustics
Consultants Pte Ltd

Key Features

- Estimated energy savings: 622,512 kWh/yr; estimated water savings: 15,477 m³/yr; ETTV: 39.2 W/m².
- Chiller plant efficiency of 0.57 kW/ton at operating condition.
- Permanent M&V for monitoring of chilled water plant efficiency and heat balancing.
- Daylighting for toilets, staircases and corridors.
- Energy efficient LED and T5 lighting.
- Photovoltaic panel with 10kWp system capacity.
- Salvaging of felled trees from site.
- Green gallery as an avenue to educate building users' on the environment.

Holiday Inn Express Singapore Clarke Quay

New Non-Residential Buildings



Client / Developer
RB Capital Hotels Pte Ltd

Architect
RSP Architects Planners &
Engineers (Pte) Ltd

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
RSP Architects Planners &
Engineers (Pte) Ltd

Quantity Surveyor
Rider Levett Bucknall LLP

Main Contractor
Santarli Construction Pte Ltd

Landscape Consultant
Ong & Ong Pte Ltd

Interior Design Consultant
Wilson Associates LLC

Lighting Consultant
Project Lighting Design

Façade Consultant
BFG-HCCH Consulting Pte
Ltd

ESD Consultant
Building System and
Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 2,140,927 kWh/yr; estimated water savings: 11,900 m³/yr; ETTV: 32.2 W/m².
- Tilting façade design.
- Naturally ventilated guest corridors with natural daylighting.
- Naturally ventilated carpark.
- High efficiency chilled water plant.
- Provision of heat recovery system.
- Provision of heat pump.
- Energy efficient LED light fittings.

BCA GREEN MARK AWARD FOR BUILDINGS

ITE Headquarters and ITE College Central @ Ang Mo Kio New Non-Residential Buildings



Client / Developer
Institute of Technical
Education

Architect
RSP Architects Planners &
Engineers (Pte) Ltd

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
RSP Architects Planners &
Engineers (Pte) Ltd

Quantity Surveyor
Langdon & Seah Singapore
Pte Ltd

Main Contractor
Kajima Overseas Asia Pte Ltd

Landscape Consultant
Grant Associates Singapore
Pte Ltd

Lighting Consultant
Lighting Planners Associates
(S) Pte Ltd

Acoustic Consultant
Acvicon Acoustics
Consultants Pte Ltd

Key Features

- Estimated energy savings: 3,989,431 kWh/yr; estimated water savings: 102,085 m³/yr; ETTV: 39.7 W/m².
- Use of passive design strategies to minimise solar heat gain to building and to facilitate cross ventilation and thermal comfort in naturally ventilated spaces.
- Provision of photovoltaic panels with system capacity of 200 kWp.
- Provision of rainwater harvesting system to minimise potable water use for irrigation.
- Extensive provision of green roof and vertical greenery on the west facing facades.
- Provision of environmental canopy and daylight reflectors to maximise daylighting usage.
- Real time energy display board to inculcate better environmental awareness of the energy consumption levels and patterns among users.
- Eco tours for educational purposes.

BCA
GREEN MARK AWARD
FOR BUILDINGS

M Social Hotel

New Non-Residential Buildings



Client / Developer

City Developments Limited

Architect

Axis Architects Planners
Pte Ltd

M&E Engineer

Parson Brinckerhoff Pte Ltd

Structural Engineer

LSW Consulting Engineers
Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Main Contractor

Sumitomo Mitsui
Construction Co., Ltd.

Landscape Consultant

Tinderbox Landscape Studio
Pte Ltd

Lighting Consultant

Light Cibles Pte Ltd

ESD Consultant

Arup Singapore Pte Ltd

Key Features

- Estimated energy savings: 1,281,222 kWh/yr; estimated water savings: 22,558 m³/yr; ETTV: 37.2 W/m².
- High performance double glazed facade to reduce building cooling load.
- Extensive vertical louvers to shade building façade.
- Extensive use of LED lighting to conserve energy with 40% savings over code baseline.
- Regenerative drive lifts with sleep mode features.
- Gravity fed irrigation tank to reduce water and energy consumption.
- Use of construction materials which are SGLS certified or have more than 30% of recycled content.
- Electrical vehicle charging units and bicycle parking lots to promote green transport usage.

BCA GREEN MARK AWARD FOR BUILDINGS

Marina One East Tower, Marina One West Tower

New Non-Residential Buildings



Client / Developer

M+S Pte Ltd
(MS Commercial Pte Ltd)

Project Manager

Mapletree Project
Management Pte Ltd
Sunrise MS Pte Ltd

Architect

Ingenhoven Architects
Architects 61 Pte Ltd

M&E Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Landscape Consultants

Gustafson Porter
Bowman Ltd

ICN Design International
Pte Ltd

ESD Consultant

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Key Features

- Estimated energy savings: 12,965,159 kWh/yr; estimated water savings: 186,075 m³/yr; ETTV: 38.1 W/m².
- Horizontal expanded mesh shading elements and high performance glazing reduce direct solar radiation into building.
- Heat pipe for all PAHUs.
- NEWater for toilet flushing.
- Rainwater harvesting system.
- Lush greenery which will serve as a Biodiversity Garden.
- Good access to public transport and provision of electric car charging stations.
- Pneumatic chute system.

BCA GREEN MARK AWARD FOR BUILDINGS

Mediacorp Complex at Mediapolis @ One-North

New Non-Residential Buildings



Client / Developer
MediaCorp Pte Ltd

Project Manager
Jurong Consultants Pte Ltd

Architects
DP Architects Pte Ltd

Maki and Associates

M&E Engineer
Parsons Brinckerhoff Pte Ltd

Structural Engineer
Web Structures Pte Ltd

Quantity Surveyor
Rider Levett Bucknall LLP

Main Contractor
Kajima + Tiong Seng JV

Façade Consultant
HCCH Consulting Pte Ltd

Theatre and Acoustic Consultant
Arup Singapore Pte Ltd

Lighting Consultant
Lighting Planners Associates (S) Pte Ltd

ESD Consultant
AECOM Singapore Pte Ltda

Key Features

- Estimated energy savings: 6,180,712 kWh/yr; estimated water savings: 8,277 m³/yr; ETTV: 39.5 W/m².
- Use of low-e glazed glass.
- Use of low temperature air supply system for AHUs.
- Use of task lights and energy efficient light fittings for offices.
- Photocells coupled with dimming controls for office perimeter lighting.
- Regenerative drive lifts.
- Provision of UV emitters for all AHUs to improve indoor air quality.
- Carpark guidance system to reduce carbon emissions.

National University of Singapore - Ventus (University Campus Infrastructure)

New Non-Residential Buildings



Client / Developer
National University of
Singapore

Project Manager
Office of Estate and
Development, National
University of Singapore

Architect
MKPL Architects Pte Ltd

M&E Engineer
J Roger Preston
(Singapore) Pte Ltd

Structural Engineer
KTP Consultants Pte Ltd

Quantity Surveyor
KPK Quantity Surveyors
(Singapore) Pte Ltd

Main Contractor
BSI (1990) Pte Ltd

Landscape Consultant
ICN Design International Pte
Ltd

Acoustic Consultant
Arup Singapore Pte Ltd

ESD Consultant
Arup Singapore Pte Ltd

Key Features

- Estimated energy savings: 146,017 kWh/yr; estimated water savings: 2,263 m³/yr; ETTV: 38.5 W/m².
- Passive design from first principles.
- Windscoop design.
- Naturally ventilated semi-outdoor space providing comfort and connectivity.
- Self-shading structure.
- 47% of existing trees saved and no Tembusu trees felled for this project.
- Daylighting for corridors and atriums.
- Performance monitoring and display.

BCA GREEN MARK AWARD FOR BUILDINGS

New Primary School at Prince Charles Crescent

New Non-Residential Buildings



Client / Developer
Ministry of Education

Project Manager
Davis Langdon KPK
(Singapore) Pte Ltd

Architect
ID Architects Pte Ltd

M&E Engineer
AECOM Singapore Pte Ltd

Structural Engineer
DE Consultants S Pte Ltd

Quantity Surveyor
CPG Consultants Pte Ltd

Main Contractor
Kwan Yong Construction Pte
Ltd

Landscape Consultant
ID Architects Pte Ltd

ESD Consultant
Parsons Brinckerhoff Pte Ltd

Key Features

- Estimated energy savings: 366,168 kWh/yr; estimated water savings: 5,304 m³/yr; ETTV: 29.8 W/m².
- Designed for extensive daylighting provision.
- Motion sensors for toilets and staircases and photosensors for classrooms.
- Photovoltaic panels with system capacity of 50 kWp.
- Over 90% of water fittings rated WELS 'Excellent', reducing water consumption by 26% from baseline.
- Extensive use of environmental friendly and sustainable products in construction.
- Reduction of heat conduction into the building by application of cool paint on facades and provision of green roof.
- Educational information display integrated with features such as renewable energy generation and monitoring display.

BCA GREEN MARK AWARD FOR BUILDINGS

Nexus@one-north

New Non-Residential Buildings



Client / Developer

HSBC Institutional Trust
Services (Singapore) Ltd
as Trustee of Ascendas
Real Estate Investment
Trust

Development Manager

Ascendas Funds
Management (S) Ltd

Architect

ADDP Architects LLP

M&E Engineer

J Roger Preston
(Singapore) Pte Ltd

Structural Engineer

Fong Consult Private
Limited

Quantity Surveyor

WT Partnership (Singapore)
Pte Ltd

Main Contractor

Wee Hur Construction Pte
Ltd

Landscape Consultant

Earthscape Concepts Pte Ltd

Façade Consultant

Aurecon Singapore (Pte.) Ltd

ESD Consultant

G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 2,685,173 kWh/yr; estimated water savings: 115 m³/yr; ETTV: 38.6 W/m².
- Window-to-wall ratio of 0.46.
- Chiller plant system with efficiency of 0.59 kW/ton.
- Basement carpark with openings to promote natural ventilation and daylighting.
- Photovoltaic panels with 50kWp system capacity to harness renewable energy.
- All water fittings in the development with WELS 'Excellent' rating.
- 100% auto irrigation of all landscape areas including roof gardens.
- Lush greenery with green plot ratio of 1.9

BCA
GREEN MARK AWARD
FOR BUILDINGS

**Ng Teng Fong General
Hospital and Jurong
Community Hospital**
New Non-Residential Buildings



Client / Developer
Ministry of Health

Project Manager
PM Link Pte Ltd

Architect
CPG Consultants Pte Ltd

M&E Engineer
Parsons Brinckerhoff Pte
Ltd

Structural Engineer
CPG Consultants Pte Ltd

Quantity Surveyor
Langdon & Seah Singapore
Pte Ltd

Main Contractor
GS Engineering &
Construction Corporation

Landscape Consultant
Peridian Asia Pte Ltd

Façade Consultant
HCCH Consulting Pte Ltd

Acoustic Consultant
ZEB Technology Pte Ltd

ESD Consultant
ZEB Technology Pte Ltd

Design Consultant
Studio 505 Pty Ltd

**Hospital Planning
Consultant**
HOK International
(Singapore) Pte Ltd

Interior Design Consultant
Bent Severin & Associates
Pte Ltd

Key Features

- Estimated energy savings: 19,835,944 kWh/yr; estimated water savings: 68,350 m³/yr; ETTV: 36.6 W/m².
- Efficient façade design and shading.
- Ward design and layout that enhances natural ventilation for user comfort.
- Careful space planning to harness day lighting for a healthy healing environment, with lush green and glare-free window views.
- Simulation tools for facade optimisation and verification of heat gain, daylighting, glare and acoustics.
- Permanent measurement and verification instrumentation for the monitoring of chilled-water plant efficiency and heat balancing.
- Heat recovery for spaces with air-conditioning run for 24 hours.
- Extensive greenery such as landscape sky terraces, rooftop and ground level gardens, thus achieving a green plot ratio of 4.7

BCA GREEN MARK AWARD FOR BUILDINGS

Ngee Ann Polytechnic Block 51

New Non-Residential Buildings



Client / Developer
Ngee Ann Polytechnic

Architect
DP Architects Pte Ltd

M&E Engineer
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor
Langdon & Seah Singapore
Pte Ltd

Main Contractor
Kwan Yong Construction Pte
Ltd

Landscape Consultant
Ong & Ong Pte Ltd

Key Features

- Estimated energy savings: 2,809,629 kWh/yr; estimated water savings: 32,559 m³/yr; ETTV: 34.5 W/m².
- Water cooled air-conditioning system with system efficiency of 0.61 kW/ton.
- Computational Fluid Dynamics (CFD) simulations carried out to optimise natural ventilation in the development.
- Energy efficient LED and T5 lighting coupled with motion sensors for toilets and staircases.
- Innovative façade design with perforated metal screen and low e glass to reduce solar heat gain.
- Non-chemical water treatment system in cooling tower.
- Non-chemical anti-termite treatment.
- UV light emitters for all AHUs to improve indoor air quality.

BCA GREEN MARK AWARD FOR BUILDINGS

Ngee Ann Polytechnic Block 58

New Non-Residential Buildings



Client / Developer
Ngee Ann Polytechnic

Architect
DP Architects Pte Ltd

M&E Engineer
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor
Langdon & Seah Singapore
Pte Ltd

Main Contractor
Kwan Yong Construction Pte
Ltd

Landscape Consultant
Ong & Ong Pte Ltd

Key Features

- Estimated energy savings: 421,148 kWh/yr; estimated water savings: 4,208 m³/yr; ETTV: 38.1 W/m².
- Water cooled air-conditioning system with system efficiency of 0.61 kW/ton.
- Computational Fluid Dynamics (CFD) simulations carried out to optimise natural ventilation in the development.
- Energy efficient LED and T5 lighting coupled with motion sensors for toilets and staircases.
- Greenery at places such as the eco deck to help reduce urban heat gain.
- Non-chemical water treatment system in cooling tower.
- Non-chemical anti-termite treatment.
- UV light emitters for all AHUs to improve indoor air quality.

NUH Medical Centre

New Non-Residential Buildings



Client / Developer

National University
Hospital Singapore
Pte Ltd

Project Manager

Consultants Incorporated
Architects + Planners

Architect

Consultants Incorporated
Architects + Planners

M&E Engineer

Parson Brinckerhoff Pte Ltd

Structural Engineer

T.Y. Lin International
Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Main Contractor

Penta-Ocean Construction
Co., Ltd

Landscape Consultant

Peridian Asia Pte Ltd

Hospital Planners

Kahler Slater

ESD Consultant

Parsons Brinckerhoff Pte Ltd

Key Features

- Estimated energy savings: 12,657,449 kWh/yr; estimated water savings: 32,441 m³/yr; ETTV: 34.3 W/m².
- Chiller plant efficiency of 0.6 kW/ton.
- Measurement and verification instrumentation.
- Demand controlled ventilation system coupled with carbon dioxide sensors.
- LED lighting system for common corridors and façade lighting.
- Motion sensors for toilets and staircases.
- Regenerative lift installed with Variable Voltage Variable Frequency motor drive and sleep mode features.
- All taps and sanitary devices rated WELS 'Excellent'.

BCA GREEN MARK AWARD FOR BUILDINGS

Primary School at Bukit Panjang Site 16

New Non-Residential Buildings



Client / Developer
Ministry of Education

Project Manager
Project Innovations Pte Ltd

Architect
CPG Consultants Pte Ltd

M&E Engineer
CPG Consultants Pte Ltd

Structural Engineer
Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor
CPG Consultants Pte Ltd

Main Contractor
Hytech Builders Pte Ltd

ESD Consultant
IGnesis Consultants Pte Ltd

Key Features

- Estimated energy savings: 208,620 kWh/yr; estimated water savings: 18,880 m³/yr; ETTV: 39.3 W/m².
- Air-cooled VRF air-conditioning system efficiency of 0.71 kW/ton.
- Use of ventilation simulation to optimise natural ventilation, with a large number naturally ventilated facilities.
- Photo sensors for lighting in classrooms and special teaching rooms.
- Motion sensors for lighting in toilets.
- Photo-voltaic cells on flat roof of classroom block.
- 91% of water fittings rated WELS 'Excellent'.
- Use of green cement, green concrete and certified sustainable construction products.

BCA GREEN MARK AWARD FOR BUILDINGS

Singapore Institute of Technology @ NP Building

New Non-Residential Buildings



Client / Developer

Singapore Institute of
Technology/
Ngee Ann Polytechnic

Project Manager

PM Link Pte Ltd

Architect

DP Architects Pte Ltd

M&E Engineer

Beca Carter Hollings &
Ferner (SE Asia) Pte Ltd

Structural Engineer

Beca Carter Hollings &
Ferner (SE Asia) Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Main Contractor

V3-LHL Joint Venture

Landscape Consultant

Ong & Ong Pte Ltd

Key Features

- Estimated energy savings: 1,094,672 kWh/yr; estimated water savings: 3320 m³/yr; ETTV: 36.8 W/m².
- Efficient water-cooled air-conditioning system with system efficiency of 0.59 kW/ton.
- Energy efficient LED and T5 lighting with provision of motion sensors for toilets and staircases.
- Computational Fluid Dynamics (CFD) simulations carried out to achieve efficient natural ventilation.
- Siphonic rainwater discharge.
- Green Educational Corner with LCD display of building energy and water consumption.
- UV light emitters for all AHUs.
- Automatic condenser tube cleaning system.

Singapore Institute of Technology @ TP Building

New Non-Residential Buildings



Client / Developer
Singapore Institute of
Technology/
Temasek Polytechnic

Project Manager
Langdon & Seah Project
Management Pte Ltd

Architect
Forum Architects Pte Ltd

M&E Engineer
T.Y. Lin International Pte
Ltd

Structural Engineer
RSP Architects Planners &
Engineers (Pte) Ltd

Quantity Surveyor
Faithful+Gould Pte Ltd

Main Contractor
V3-LHL Joint Venture

ESD Consultant
T.Y. Lin International Pte Ltd

Key Features

- Estimated energy savings: 925,666 kWh/yr; estimated water savings: 3,037 m³/yr; ETTV: 32.2 W/m².
- Low window to wall ratio and high performance glazing.
- Chiller plant room with efficiency of 0.62 kW/ton.
- Vast non-air conditioned area consisting of atrium, corridors, and other common areas to reduce air conditioning requirement.
- High efficiency lighting design with 37% savings over baseline.
- Eco kiosk with interactive media for staff and students to learn about SIT campuses' green features.
- Cradle-to-cradle 100% recyclable carpet and carpet adhesive system covering half of the gross floor area.
- Extensive use of SGLS certified building materials.

BCA GREEN MARK AWARD FOR BUILDINGS

South Spine Learning Hub

New Non-Residential Buildings



Client / Developer

Nanyang Technological University

Architect

CPG Consultants Pte Ltd

Design Consultant

Heatherwick Studio

M&E Engineer

Bescon Consulting Engineers Pte

Structural Engineer

T.Y. Lin International Pte Ltd

Quantity Surveyor

Davis Langdon KPK (Singapore) Pte Ltd

ESD Consultant

CPGreen - CPG Consultants Pte Ltd

PDV Consultant

ME(TCS) Consulting Engineers

Fire Consultant

LKH Fire Engineering Pte Ltd

Landscape Consultant

Perfect Sense

Acoustic Consultant

CCW Associates Pte Ltd

Key Features

- Estimated energy savings: 612,946 kWh/yr; estimated water savings: 9,680 m³/yr; ETTV: 39.8 W/m².
- High efficiency chilled water system with variable speed drives for chilled water pumps, condenser water pumps and cooling towers.
- Use of passive displacement ventilation throughout the development.
- Energy efficient T5 lighting for tutorial rooms.
- Vertical greenery, green roof and conservation of 6 existing trees.
- Hydrophylic polymer used for planting eliminates need for irrigation system.
- Use of Ground Granulated Blast Furnace Slag, recycled concrete aggregates and other certified sustainable products in construction.
- Water efficient urinals, basin, sink and bib taps rated WELS 'Excellent'.

Spectra Secondary School

New Non-Residential Buildings



Client / Developer
Ministry of Education

Project Manager
SIPM Consultants Pte Ltd

Architect
Architects Vista Pte Ltd

M&E Engineer
Mott MacDonald
Singapore Pte Ltd

Structural Engineer
Ecas-EJ Consultants Pte Ltd

Quantity Surveyor
Barton Bruce Shaw Pte Ltd

Main Contractor
Kwan Yong Construction Pte
Ltd

ESD Consultant
Parsons Brinckerhoff Pte Ltd

Key Features

- Estimated energy savings: 466,072 kWh/yr; estimated water savings: 2,984 m³/yr; ETTV: 39.75 W/m².
- 80.6% of hardscape areas with high SRI above 29 to mitigate the urban heat island effect.
- Highly optimised VRF air-conditioning system.
- Use of LED lighting for all corridors.
- Photovoltaic panels with system capacity of 90 kWp.
- PUB ABC Waters design features such as bio-retention pond to treat stormwater run-off before discharge into public drain.
- Extensive use of environmentally friendly sustainable products.
- Use of cool paint for external wall.

Tanjong Pagar Centre

New Non-Residential Buildings



Client / Developer
GuocoLand (Singapore)
Pte Ltd

Project Manager
GuocoLand Property
Management Pte Ltd

Architect
Architects 61 Pte Ltd

M&E Engineer
Meinhardt (Singapore)
Pte Ltd

Structural Engineer
Arup Singapore Pte Ltd

Quantity Surveyor
Langdon & Seah Singapore
Pte Ltd

Landscape Consultant
Cicada Pte Ltd

ESD Consultant
Arup Singapore Pte Ltd

Key Features

- Estimated energy savings: 12,556,501 kWh/yr; estimated water savings: 85,247 m³/yr; ETTV: 34.4 W/m².
- Use of high performance double glazed low e glass.
- Chilled water plant with system efficiency of 0.61 kW/ton.
- Energy efficient T5 and LED lighting.
- Integrated solar photovoltaic panels with system capacity of about 300 kWp.
- Provision of rainwater harvesting system and recycling of air-conditioning condensate water to reduce potable water usage.
- Provision of extensive greenery.
- Green lease for tenants.

Westgate & Westgate Tower

New Non-Residential Buildings



Client / Developer

CapitaMalls Asia/
CapitaMall Trust/
CapitaLand

Project Manager

CapitaMalls Asia

Architect

RSP Architects Planners &
Engineers (Pte) Ltd

Design Consultant

Benoy Ltd

M&E Engineer

J Roger Preston
(Singapore) Pte Ltd

Structural Engineer

RSP Architects Planners &
Engineers (Pte) Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Design and Build

Contractor

Shimizu Corporation

Landscape Consultant

COEN Design International
Pte Ltd

Façade Consultant

Building Facade Group
HCCH Consulting Pte Ltd

Lighting Consultant

The Lightbox Pte Ltd

Acoustic Consultant

Acvicon Acoustic
Consultants Pte Ltd

Key Features

- Estimated energy savings: 10,004,645 kWh/yr; estimated water savings: 56,085 m³/yr; ETTV: 37.5 W/m².
- Chiller plant system with efficiency of 0.51 kW/ton.
- Naturally ventilated fine grain area with localised mechanical ventilation.
- Regenerative lifts with saving 0.52% of total energy consumption.
- 100% auto drip irrigation system.
- Substantial usage of green concrete.
- Paper recycling chute for office tower.

Yale-NUS College

New Non-Residential Buildings



Client / Developer
Yale-NUS College

Architect
Forum Architects Pte Ltd
Pelli Clarke Pelli Architects

M&E Engineer
Meinhardt (Singapore) Pte
Ltd

Structural Engineer
Meinhardt (Singapore) Pte
Ltd

Quantity Surveyor
Rider Levett Bucknall LLP

Main Contractor
Ssangyong Engineering &
Construction Co., Ltd

Landscape Consultant
Lekker Design Pte Ltd

ESD Consultant
Arup Singapore Pte Ltd

**Acoustic / Theatre Design
/ AV Consultant**
Arup Singapore Pte Ltd

Façade Consultant
Arup Singapore Pte Ltd

Lighting Consultant
Lighting Planners Associates
Pte Ltd

Lab Consultant
SKM Singapore Pte Ltd

Key Features

- Estimated energy savings: 2,809,629 kWh/yr; estimated water savings: 32,559 m³/yr; ETTV: 34.5 W/m².
- Courtyards within the campus designed to provide good shade and breezeways.
- Students' apartments designed to have good wind velocities.
- Sports hall, dining halls, student bedrooms and classrooms designed to be mixed mode to reduce cooling load.
- Living rooms in student apartments, external corridors and lift lobbies designed to be naturally ventilated and daylit.
- Occupancy sensors to control lighting and air-conditioning in faculty offices.
- Extensive greenery in courtyard, green roofs and sky garden to reduce urban heat gain effect.
- Reduction of stormwater runoff through water sensitive urban design features such as bioswales and an ecopond.

BCA GREEN MARK AWARD FOR BUILDINGS

AXA Tower

Existing Non-Residential Buildings



Building Owner
MGP Raffle Pte Limited

Facility Management
CBRE Pte Ltd

Energy Consultant
Comfort Management Pte Ltd

Green Mark Consultant
Comfort Management Pte Ltd

Key Features

- Energy savings: 2,047,985 kWh/yr; water savings: 45,025 m³/yr.
- Chiller plant system efficiency of 0.67 kW/ton.
- Energy monitoring system to monitor total building energy usage and equipment usage such as AHU, chillers and pumps.
- Long term performance based contract which monitors energy usage on a daily basis.
- PUB Water Efficient Building.
- Recovery of AHU condensate water and harvesting of rain water.
- Automatic cleaning system for condenser tube.
- Reduction in carbon emissions by 1054 tons.

Capital Tower

Existing Non-Residential Buildings



Client / Developer
CapitaCommercial Trust

Facility Management
CapitaLand Commercial
Management Pte Ltd

ESCO
G-Energy Global Pte Ltd

ESD Consultant
G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 3,016,869 kWh/yr; estimated water savings: 7,527 m³/yr.
- Proposed retrofitting work to achieve chiller system efficiency of 0.64 kW/ton.
- Measurement and verification system and heat balancing to monitor chiller plant efficiency.
- Heat recovery wheel for pre-cooling fresh air intake into building.
- Heat pump for swimming pool.
- Motion sensors coupled to lighting for all toilets and staircases.
- Recycling of AHU condensate water for cooling tower makeup.
- Automatic condenser tube cleaning system for chiller plant.

BCA GREEN MARK AWARD FOR BUILDINGS

Furama City Centre and Furama Singapore Hotel & Shopping Centre

Existing Non-Residential Buildings



Building Owner

Management Corporation
Strata Title Plan No 1246

Facility Management

Furama Hotel Singapore

ESCO

G-Energy Global Pte Ltd

ESD Consultant

G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 1,062,809 kWh/yr; estimated water savings: 17,161 m³/yr.
- Efficient chiller plant system of 0.63 kW/ton.
- Hot water heating using heat recovery from Air-Conditioning and Mechanical Ventilation system.
- Energy efficient T5 lighting for most areas and LED lighting for guest rooms, corridors and lifts.
- Motion sensors coupled to lightings for toilets and staircases.
- NEWater as alternative water supply for various sources of usage.
- Eco-Wiz food waste processor.
- Super-capacity grease trap.

Health Promotion Board

Existing Non-Residential Buildings



Building Owner
Health Promotion Board

Facility Management
One Marina Property
Services Pte Ltd

Technical Consultant
Siemens Pte Ltd

Key Features

- Estimated energy savings: 1,084,337 kWh/yr; estimated water savings: 21,230 m³/yr.
- Efficient chiller plant system of 0.61 kW/ton.
- Variable speed drives installed for chilled water pumps, condenser pumps and cooling towers.
- Automatic cleaning system for condenser tube.
- LED lighting at basement carpark and various office areas as well as motion sensors for all toilets.
- All water fittings in toilets rated or equivalent to WELS 'Excellent' rating.
- Use of compost recycled from horticulture waste.
- Roof top garden accessible to all staff.

BCA
GREEN MARK AWARD
FOR BUILDINGS

JTC Summit

Existing Non-Residential Buildings



Developer

JTC Corporation

Facility Management

JTC Corporation

ESCO

Johnson Controls (S) Pte Ltd

ESD Consultant

CPG Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,500,000 kWh/yr; estimated water savings: 13,111 m³/yr.
- Daylighting and vertical greening at lobby.
- Efficient chiller plant system of 0.65 kW/ton and light fittings as well as water efficient fittings.
- Test beddings of technologies such as chilled ceilings and passive displacement cooling.
- UV emitters in AHUs to improve indoor air quality.
- Solar film on building facades.
- Smart power plugs for power management at individual office workstations.
- Motion sensors for all office meeting rooms.

BCA
GREEN MARK AWARD
FOR BUILDINGS

**National University of Singapore -
Yong Loo Lin School of Medicine,
MD4/ MD4A**

Existing Non-Residential Buildings



Building Owner

National University of
Singapore

Facility Management

Office of Estate and
Development, National
University of Singapore

ESD Consultant

CPG Consultants Pte Ltd

Key Features

- Estimated energy savings: 359,319 kWh/yr; estimated water savings: 44,643 m³/yr.
- ETTV of 31.5 W/m².
- Naturally ventilated toilets, staircases, lift lobbies and corridors.
- Energy efficient T5 and LED lighting.
- Motion sensor coupled to lighting in all toilets.
- Majority of water fittings in development rated 'Excellent'.
- NEWater for cooling towers.
- Comprehensive campus wide recycling program.

BCA
GREEN MARK AWARD
FOR BUILDINGS

National University of Singapore - Yong Loo Lin School of Medicine, MD9

Existing Non-Residential Buildings



Building Owner

National University of
Singapore

Facility Management

Office of Estate and
Development, National
University of Singapore

ESD Consultant

CBM Solutions Pte Ltd

M&E Engineer

AUP Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,668,712 kWh/yr; estimated water savings: 5,428 m³/yr.
- Natural ventilation at common areas.
- Carbon dioxide sensors at AHUs and heat recovery unit.
- Energy efficient LED and T5 lighting.
- Photo and motion sensors for lighting in toilets and small rooms.
- Tap and sink fittings rated WELS 'Excellent'.
- Automated smart metering for water monitoring and leak detection.
- Low VOC paint and environmentally friendly adhesives used for interior areas.

BCA
GREEN MARK AWARD
FOR BUILDINGS

Robert Bosch SEA HQ

Existing Non-Residential Buildings



Building Owner

Robert Bosch (South East Asia) Pte Ltd

Facility Management

Robert Bosch (South East Asia) Pte Ltd

ESCO

G-Energy Global Pte Ltd

ESD Consultant

G-Energy Global Pte Ltd

Key Features

- Estimated water savings: 788 m³/yr.
- Low ETTV value with usage of double-glazed and single-glazed low-e glass.
- Automated sun-shading blinds to lower building cooling load.
- Efficient chiller plant system of 0.59 kW/ton.
- Use of energy efficient T5 tubes for all florescent lighting and motion sensors at toilets and staircases.
- Provision of photovoltaic panels to harvest renewable energy.
- Siphonic rainwater discharge system.
- Provision of car park lots and charging points for electric and hybrid vehicles.

BCA GREEN MARK AWARD FOR BUILDINGS

Standard Chartered @ Changi

Existing Non-Residential Buildings



Building Owner

Standard Chartered @
Changi

Facility Management

Jones Lang LaSalle

ESCO

G-Energy Global Pte Ltd

ESD Consultant

G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 98,438 kWh/yr; estimated water savings: 14,715 m3/yr.
- Use of energy efficient T5 lighting coupled with photocell sensors and motion sensors for office areas.
- Photovoltaic panels with system capacity of 96 kWp to harness renewable energy.
- Integrated grey water, condensate water and rain water harvesting system for toilet flushing.
- Green Wall corner provides educational information on environmental awareness, energy and water savings.
- Provision of numerous drought tolerant plants at first storey landscape and roof top garden.
- Extensive usage of environmentally friendly sustainable products.
- Carbon dioxide sensors and efficient air filters used in AHUs to ensure good indoor air quality.

BCA GREEN MARK AWARD FOR BUILDINGS

Swissôtel Merchant Court, Singapore

Existing Non-Residential Buildings



Building Owner

Merchant Court Ptd Ltd
trading as Swissôtel
Merchant Court, Singapore

Facility Management

Merchant Court Ptd Ltd
trading as Swissôtel
Merchant Court, Singapore

ESCO

Cofely South East Asia Pte
Ltd

ESD Consultant

Cofely South East Asia Pte
Ltd

Key Features

- Estimated energy savings: 2,277,206 kWh/yr; estimated water savings: 6,460 m³/yr.
- Efficient chiller plant system of 0.6 kW/ton.
- Automatic cleaning system for condenser tube.
- Heat pump system for hot water.
- Motion sensors for lighting at staircases.
- Extensive greenery provision.
- Recycling of cooking oil.
- Eco-Wiz system which helps to break down food waste.

BCA
GREEN MARK AWARD
FOR BUILDINGS

Echelon

New Residential Buildings



Client / Developer

City Developments
Limited/
Hong Realty (Pte) Limited/
Hong Leong Holdings
Limited

Project Manager

CDL Management Services
Pte Ltd

Architect

SCDA Architects Pte Ltd

M&E Engineer

Squire Mech Pte Ltd

Structural Engineer

KTP Consultants Pte Ltd

Quantity Surveyor

Rider Levett Bucknall LLP

Landscape Consultant

SCDA Architects Pte Ltd

ESD Consultant

Building System &
Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 2,998,060 kWh/yr; estimated water savings: 87,089 m³/yr; ETTV: 18.2 W/m².
- Energy efficient T5 and LED lighting.
- Use of cool paint for West and East facades.
- Provision of ductless fans for basement ventilation.
- Provision of gas water heaters.
- More than 50 motion sensors for lighting at staircases.
- Extensive use of sustainable products in construction.
- Pneumatic waste collection system.

Eco Sanctuary

New Residential Buildings



Client / Developer

S P Setia International (S)
Pte Ltd

Project Manager

ADDP Architects LLP

Architect

ADDP Architects LLP

M&E Engineer

CPG Consultants Pte Ltd

Structural Engineer

P&T Consultants Pte Ltd
WT Partnership (S) Pte Ltd

Main Contractor

JCWill & Associates Pte Ltd

Quantity Surveyor

WT Partnership (S) Pte Ltd

Landscape Consultant

COEN Design International
Pte Ltd

ESD Consultant

CPG Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,994,935 kWh/yr; estimated water savings: 84,140 m³/yr; RETV: 18.3 W/m².
- At least 80% of typical units with good ventilation.
- Lifts with gearless drive.
- Rainwater harvesting and siphonic rainwater discharge system.
- Energy efficient lighting with motion sensors at common areas.
- Automatic water efficient irrigation system with rain sensor.
- Use of eco-plugs in all units.
- Use of energy efficient refrigerators and washer dryers in all units.

Marina One Residences

New Residential Buildings



Client / Developer

M+S Pte Ltd
(MS Residential 1 Pte Ltd
and MS Residential 2 Pte
Ltd)

Project Managers

Mapletree Project
Management Pte Ltd
Sunrise MS Pte Ltd

Architect

Ingenhoven Architects
Architects 61 Pte Ltd

M&E Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Landscape Consultants

Gustafson Porter Bowman
Ltd
ICN Design International Pte
Ltd

ESD Consultant

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Key Features

- Estimated energy savings: 11,483,743 kWh/yr; estimated water savings: 35,245 m³/yr; RETV: 17.3 W/m².
- Innovative sunshading and high performance glazing.
- Rainwater harvesting and water efficient irrigation system.
- Lush greenery which will serve as a Biodiversity Garden.
- Energy efficient hot water system utilising heat recovery from air conditioning units.
- Extensive use of sustainable products.
- Electric vehicle charging stations.
- Pneumatic waste collection system.

BCA GREEN MARK AWARD FOR BUILDINGS

Nanyang Technological University Residential Halls 17 & 18 along Nanyang Crescent

New Residential Buildings



Client / Developer
Nanyang Technological
University

Project Manager
Office of Development &
Facilities Management,
Nanyang Technological
University

Architect
RSP Architects Planners &
Engineers (Pte) Ltd
(in association with Toyo
Ito Associates, Architects)

M&E Engineer
Mott MacDonald
Singapore Pte Ltd

Structural Engineer
KTP Consultants Pte Ltd

Quantity Surveyor
WT Partnership (S) Pte Ltd

Landscape Consultants
Sitetectonix Pte Ltd

ESD Consultant
Building System &
Diagnostics Pte Ltd

Acoustic Consultant
Alpha Acoustics Pte Ltd

**PUB-ABC Water Features
Consultants**
Greenology Pte Ltd
CPG Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,820,675 kWh/yr; estimated water savings: 14,062 m³/yr; RETV: 14.5 W/m².
- All units with double glazed windows.
- Good ventilation with average wind speed of 0.6 m/s for 70% of units.
- Solar water heater for showers.
- Photovoltaic panels.
- Extensive use of precast elements and hollow core slabs.
- Extensive stormwater management system.
- Provision of dual refuse chutes to facilitate recycling.

16B Leedon Park

Landed Houses



Client / Developer
Mr Lim Chin Huat

Architect
K2Ld Architects Pte Ltd

M&E Engineer
PTA Consultants Pte Ltd

Structural Engineer
MSE Consultants Pte Ltd

Quantity Surveyor
Ian Chng Cost Consultants
Pte Ltd

ESD Consultant
Arup Singapore Pte Ltd

Key Features

- Sunpath analysis and passive design strategies to maximise shading and indoor thermal comfort.
- Energy efficient air-conditioning system and mechanical fans for all habitable spaces.
- Solar photovoltaic panels with 6 kWp system capacity and provision of solar water heater.
- Provision of self-cleaning facades.
- Provision of electric car charging point.
- Non-chemical water treatment system for swimming pool.
- Real-time energy consumption display and eco-plugs for energy monitoring purposes.

BCA
GREEN MARK AWARD
FOR BUILDINGS

3 Leedon Park

Landed Houses



Client / Developer

Mr George Lim

Project Manager

designshop.architects LLP

Architect

HY M&E Consultancy
Services Pte Ltd

M&E Engineer

MSE Consultants Pte Ltd

Main Contractor

As-Built Pte Ltd

Key Features

- Sunpath analysis and passive design strategies to optimise shading provision and indoor thermal comfort.
- Energy efficient air-conditioning system and mechanical fans for all habitable spaces.
- Use of air purifiers for better air quality.
- Home automation system with energy monitoring devices.
- Use of cool paint as well as eco-friendly construction materials and products.
- Rainwater harvesting system and automatic irrigation drip system with rain sensors.
- Provision of water filtration system at entry point and non-chemical water treatment system for swimming pool.
- Photovoltaic grid tied system with 42 kWp system capacity.

3A Leedon Park

Landed Houses



Client / Developer

Mr George Lim

Project Manager

designshop.architects LLP

Architect

HY M&E Consultancy
Services Pte Ltd

M&E Engineer

MSE Consultants Pte Ltd

Main Contractor

As-Built Pte Ltd

Key Features

- Sunpath analysis and passive design strategies to optimise shading provision and indoor thermal comfort.
- Energy efficient air-conditioning system and mechanical fans for all habitable spaces.
- Use of air purifiers for better air quality.
- Home automation system with energy monitoring devices.
- Use of cool paint as well as eco-friendly construction materials and products.
- Rainwater harvesting system and automatic irrigation drip system with rain sensors.
- Provision of water filtration system at entry point and non-chemical water treatment system for swimming pool.
- Photovoltaic grid tied system with 45 kWp system capacity.

ACE The Place - Our Community Club @ Admiralty

New Non-Residential Buildings



Client / Developer
People's Association

Architect
Architects Team 3 Pte Ltd

M&E Engineer
William Ng Consultants
Pte Ltd

Structural Engineer
Aston Consulting Engineers

Quantity Surveyor
Franklin + Andrews Pte Ltd

Main Contractor
OKH Holdings Pte Ltd

Landscape Consultant
GreenEarth Landscape
Designers & Planners Pte Ltd

Key Features

- Estimated energy savings: 169,606 kWh/yr; estimated water savings: 4,737 m³/yr.
- Overall air-conditioning system efficiency of 0.70 kW/ton.
- Large mechanical ventilation fan in multi-purpose hall to reduce dependency on air-conditioning.
- Use of energy efficient T5 fluorescent lamps coupled with motion sensors.
- Extensive greenery, with high green plot ratio of 5.5.
- Vertical greenery as well as landscaped ramp and roof.

Capitol Development (Retail/ Hotel/ Theatre)

New Non-Residential Buildings



Client / Developer

Capitol Retail Management
Pte Ltd
(As Trustee-Manager of
Capitol Retail Trust)/

Capitol Hotel Management
Pte Ltd
(As Trustee-Manager of
Capitol Hotel Trust)

Project Manager

Capitol Investment
Holdings Pte Ltd

Architects

Richard Meier & Partners
Architects LLP

Architects 61 Pte Ltd

M&E Engineer

Arup Singapore Pte Ltd

Structural Engineer

Arup Singapore Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Main Contractor

Shimizu Corporation

Landscape Consultant

Grant Associates

ESD Consultant

Arup Singapore Pte Ltd

Lighting Consultants

Lighting Planners Associates
Inc.

Komara & Partner Ltd

Key Features

- Estimated energy savings: 6,156,605 kWh/yr; estimated water savings: 739 m³/yr ; ETTV: 41.0 W/m².
- Overall energy savings of 26.4% for the development.
- Design of new ACMV system with high efficiency of 0.60 kW/ton at frequent operating load condition.
- Fan coil units with overall average efficiency of 0.14 W/CMH.
- Adaptive reuse and conservation of façades of Stamford House, Capitol Building and Capitol Theatre.
- Chemical-less filtration system for all swimming pools.

DNV Technology Centre

New Non-Residential Buildings



Client / Developer
Ascendas Land (Singapore)
Pte Ltd

Project Manager
Ascendas Services Pte Ltd

Architects
DCA Architects Pte Ltd

M&E Engineer
Parsons Brinckerhoff Pte
Ltd

Structural Engineer
T.Y. Lin International Pte Ltd

Quantity Surveyor
Northcroft Lim Consultants
Pte Ltd

Main Contractor
Lum Chang Building
Contractors Pte Ltd

Landscape Consultant
ICN Design International Pte
Ltd

Key Features

- Estimated energy savings: 495,837 kWh/yr; estimated water savings: 6,315 m³/yr; ETTV: 35.8 W/m².
- Efficient chiller plant system of 0.64 kW/ton.
- Permanent measurement and verification instrumentation for the monitoring of chilled water plant efficiency and heat balancing.
- Energy efficient lighting system with 33.8% savings beyond code compliance.
- Extensive greenery with a green plot ratio of 5.5.
- 39% of crushed concrete recovered and sent for recycling during demolition of previous building.

DSM Dyneema APAC Technical Center

New Non-Residential Buildings



Client / Developer

DSM Singapore Industrial
Pte Ltd

Project Manager

Malayan Daching
Company Pte Ltd

Architects

CWM Consulting Engineers

M&E Engineer

William Ng Consultants Pte
Ltd

Structural Engineer

CWM Consulting Engineers

ESD Consultant

GreenA Consultants Pte Ltd

Key Features

- Estimated energy savings: 60,817 kWh/yr; estimated water savings: 4,358 m³/yr; ETTV: 38.5 W/m².
- Low-e glass with SC value of 0.25 and U value of 1.5 W/m².
- Provision of energy efficient LED and T5 lighting as well as photosensors.
- All water fittings in the development rated WELS 'Excellent'.
- Extensive use of sustainable building products in construction.
- Use of solar reflective paint.

DSO National Laboratories

New Non-Residential Buildings



Client / Developer

Ascendas Land (Singapore)
Pte Ltd

Project Manager

Ascendas Services Pte Ltd

Architects

DCA Architects Pte Ltd

M&E Engineer

Parsons Brinckerhoff Pte
Ltd

Structural Engineer

T.Y. Lin International Pte Ltd

Quantity Surveyor

Northcroft Lim Consultants
Pte Ltd

Main Contractor

Lum Chang Building
Contractors Pte Ltd

Landscape Consultant

ICN Design International Pte
Ltd

Key Features

- Estimated energy savings: 1,964,400 kWh/yr; estimated water savings: 13,625 m³/yr; ETTV: 37.5 W/m².
- Efficient chiller plant system of 0.63 kW/ton.
- Permanent measurement and verification instrumentation for the monitoring of chilled-water plant efficiency and heat balancing.
- Energy efficient lighting system with 37% savings beyond baseline code compliance.
- Rainwater harvesting with automatic drip irrigation system for landscape.
- 39% of crushed concrete recovered and sent for recycling during demolition of previous building.

**DUO, Mixed-Use
Development at Ophir-
Rochor, Singapore (Hotel)**
New Non-Residential Buildings



Clients / Developers
M+S Pte Ltd

Ophir-Rochor Commercial
Pte Ltd

Ophir-Rochor Hotel Pte Ltd

Ophir-Rochor Residential
Pte Ltd

Project Managers
CapitaLand Commercial
Project Services Pte Ltd

Sunrise MS Pte Ltd

Architects
Buro Ole Scheeren Limited

DP Architects Pte Ltd

M&E Engineer
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor
Davis Langdon KPK
(Singapore) Pte Ltd

Landscape Consultant
COEN Design International
Pte Ltd

ESD Consultant
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Lighting Consultant
International Lighting
Architecture Bureau Pte Ltd

Key Features

- Estimated energy savings: 3,060,963 kWh/yr; estimated water savings: 3,300 m³/yr; ETTV: 37.4 W/m².
- Hexagonal façade design with double glazed low-e glass.
- Water-cooled efficient chiller plant system of 0.60 kW/ton and heat recovery from toilet exhaust.
- LED lighting for basement carpark.
- Lush green surroundings with 100% landscape replacement.
- Rainwater harvesting system coupled with siphonic rainwater drainage piping used for irrigation.

MDIS Block A

New Non-Residential Buildings



Client / Developer

Management
Development Institute of
Singapore

Project Manager

Management
Development Institute of
Singapore

Architect

Ong & Ong Pte Ltd

M&E Engineer

WSP Ng Pte Ltd

Structural Engineer

PEC Civil Consultant Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Main Contractor

MA Builders Pte Ltd

Landscape Consultant

Ong & Ong Pte Ltd

Key Features

- Estimated energy savings: 309,140 kWh/yr; estimated water savings: 17,349 m³/yr; ETTV: 39.0 W/m².
- Optimisation of natural ventilation for all lift lobbies and staircases.
- Energy efficient LED lighting.
- Solar panels with system capacity of 28.8 kWp.
- Conservation of existing structure and furniture.
- Extensive roof greenery.

Paya Lebar Square Mall

New Non-Residential Buildings



Client / Developer

Paya Lebar Development
Pte Ltd

Project Manager

Guthrie Consultancy
Services Pte Ltd

Architect

DP Architects Pte Ltd

M&E Engineer

Squire Mech Pte Ltd

Structural Engineer

KTP Consultants Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Main Contractor

Low Keng Huat (Singapore)
Ltd

Landscape Consultant

DP Green Pte Ltd

Key Features

- Estimated energy savings: 4,561,904 kWh/yr; estimated water savings: 33,945 m³/yr ; ETTV: 36.5 W/m².
- Efficient chiller plant system of 0.56 kW/ton.
- Carbon dioxide sensors for regulation of pre-cooled air supply to AHUs.
- Motion sensors for lighting at staircases and toilets.
- Photocell sensors coupled to lighting at skylight area of the atrium.
- Regenerative lifts serving the offices.

School of Science and Technology, Singapore

New Non-Residential Buildings



Client / Developer
School of Science and
Technology, Singapore

Project Manager
DP Architects Pte Ltd

Architect
DP Architects Pte Ltd

M&E Engineer
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor
Langdon & Seah Singapore
Pte Ltd

Main Contractor
Sanchoon Builders Pte Ltd

Landscape Consultant
DP Green Pte Ltd

ESD Consultant
G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 624,421 kWh/yr; estimated water savings: 131,517 m³/yr; ETTV: 39.7 W/m².
- Photovoltaic grid-tied system to harvest renewable energy and offset energy consumption.
- Siphonic rainwater discharge system.
- Educational green corner to display real time information on the school's energy consumption.
- Provision of green roof, bioswale and eco-pond.
- Solar reflective paint for sports hall and classroom roof to reduce heat gain into the building.

The Academia

New Non-Residential Buildings



Client / Developer
Ministry of Health

Project Manager
PM Link Pte Ltd

Architect
CPG Consultants Pte Ltd

M&E Engineer
CPG Consultants Pte Ltd

Structural Engineer
CPG Consultants Pte Ltd

Quantity Surveyor
CPG Consultants Pte Ltd

Main Contractor
Kajima Overseas Asia Pte Ltd

Landscape Consultant
CPG Consultants Pte Ltd

ESD Consultant
CPGreen - CPG Consultants
Pte Ltd

Key Features

- Estimated energy savings: 13,589,363 kWh/yr; estimated water savings: 621,229 m³/yr; ETTV: 40.3 W/m².
- High efficiency chilled water system with heat recovery.
- Natural ventilation and daylighting at lift lobbies and atriums from Level 7 to 13.
- Energy efficient LED lighting.
- Extensive use of SGLS rated green products in construction.
- Condensate water recycling.

V Hotel

New Non-Residential Buildings



Client / Developer
Citywide Land Pte Ltd

Architect
Archiwave Architects

M&E Engineer
CMP Consultants Pte Ltd

Structural Engineer
KH Consultants

Quantity Surveyor
1MH & Associates

Main Contractor
V3 Construction Pte Ltd

Landscape Consultant
Nyee Phoe Flower Garden
Pte Ltd

ESD Consultant
G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 2,472,842 kWh/yr; estimated water savings: 307,914 m³/yr; ETTV: 39.7 W/m².
- Condenser auto-tube cleaning system to maintain chiller efficiency and reduce chiller down time for manual tube cleaning.
- Measuring instruments for monitoring of chilled water plant efficiency.
- Heat balance substantiating test for verification of chilled water plant instrumentation.
- Non-chemical cooling tower treatment.
- Provision of parking lots for hybrid cars to encourage environmentally-friendly transport usage.

Biopolis Phase 1

Existing Non-Residential Buildings



Building Owner
JTC Corporation

Facility Management
UGL Services Premas
Operations Limited

ESCO
UGL Services Premas
Operations Limited

Green Consultant
UGL Services Premas
Operations Limited

Key Features

- Estimated energy savings: 679,694 kWh/yr; estimated water savings: 48,185 m³/yr.
- Variable speed controls for all secondary chilled water pumps.
- Provision of solar hot water system and photovoltaic cells.
- Artificial lighting coupled with occupancy sensors and photosensors.
- Awarded PUB Water Efficient Building.
- Provision of vertical and roof top greenery.

BCA GREEN MARK AWARD FOR BUILDINGS

Fusionopolis Phase 1

Existing Non-Residential Buildings



Building Owner
JTC Corporation

Facility Management
CPG Facilities Management
Pte Ltd

ESCO
UGL Services Premas
Operations Limited

ESD Consultant
UGL Services Premas
Operations Limited

Key Features

- Estimated energy savings: 456,238 kWh/yr.
- Provision of variable speed controls for all secondary chilled water pumps.
- Occupancy sensors coupled to lighting for sky bridges and toilets to reduce lighting power consumption.
- Lifts and escalators with AC variable voltage and variable frequency motor drive and sleep mode features.
- Carbon monoxide monitoring system for control of car park mechanical ventilation fans.
- Water fittings for common toilets all rated WELS 'Excellent'.

BCA GREEN MARK AWARD FOR BUILDINGS

Novotel Singapore Clarke Quay

Existing Non-Residential Buildings



Building Owner

DBS Trustee Limited as trustee of CDL Hospitality Real Estate Investment Trust

Facility Management

Novotel Singapore Clarke Quay

ESCO

Cofely South East Asia Pte Ltd

ESD Consultant

Cofely South East Asia Pte Ltd

Key Features

- Estimated energy savings: 2,839,852 kWh/yr.
- Efficient chiller plant system of 0.65 kW/ton.
- Energy efficient LED lighting.
- Heat pump system for hot water.
- Planet 21 sustainability program in place.
- Tree planting program in place.

Singapore Pools Building

Existing Non-Residential Buildings



Building Owner

Singapore Pools (Private)
Limited

Facility Management

Singapore Pools (Private)
Limited

ESCO

CPG Consultants Pte Ltd

ESD Consultant

CPG Consultants Pte Ltd

M&E Consultant

CPG Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,000,180 kWh/yr; estimated water savings: 4,745m³/yr.
- Efficient chiller plant system of 0.65 kW/ton.
- Variable speed drives for chilled water and condenser water pumps.
- Energy efficient T5 lighting coupled with motion sensors for all toilets and staircases.
- NEWater for cooling tower make-up.
- Comprehensive paper recycling program in place.

UOB Plaza 1
Existing Non-Residential Buildings



Building Owner
United Overseas Bank
Limited

Facility Management
UOB Property & General
Services Division

ESCO
Kaer Pte Ltd

ESD Consultant
Kaer Pte Ltd

M&E Consultant
Belmacs Pte Ltd

Key Features

- Estimated energy savings: 6,252,940 kWh/yr; estimated water savings: 27,815 m³/yr.
- Efficient chiller plant system of 0.65kW/ton.
- Variable speed drives for pumps and cooling towers.
- Heat recovery system for PAHUs.
- Energy efficient LED lighting for carpark.
- Carbon monoxide sensors for carpark mechanical ventilation.

Victoria Theatre and Victoria Concert Hall

Existing Non-Residential Buildings



Building Owner

National Arts Council/
Singapore Symphonia Co.
Ltd

Client

Ministry of Information,
Communications and the
Arts

Architect

W Architects Pte Ltd

ESD Consultant

Arup Singapore Pte Ltd

M&E Consultant

T.Y. Lin International Pte Ltd

Key Features

- Estimated energy savings: 627,931 kWh/yr; estimated water savings: 1,722 m³/yr.
- Under floor cooling system at theatre and concert hall.
- Variable speed drive for all pumps and cooling towers which lead to efficient chiller plant system of 0.74 kW/ton.
- Passive design with naturally ventilated atrium space.
- Natural daylighting for foyers.
- Usage of recycled existing cast iron for theatre balustrades and existing timber floor boards for new dance and drama rehearsal rooms.

BCA
GREEN MARK AWARD
FOR BUILDINGS

Jewel @ Buangkok

New Residential Buildings



Client / Developer

City Developments Limited

Architect

DCA Architects Pte Ltd

M&E Engineer

Squire Mech Pte Ltd

Structural Engineer

LBW Consultants LLP

Quantity Surveyor

Rider Levett Bucknall LLP

Landscape Consultant

Tinderbox Landscape Studio
Pte Ltd

Interior Design

Axis ID Pte Ltd

CFD Consultant

Building System &
Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 2,018,193 kWh/yr; estimated water savings: 38,124 m³/yr; RETV: 21.7 W/m².
- Energy efficient T5 and LED lighting.
- Gas water heaters for all apartments.
- Use of water efficient fittings in all bathrooms.
- Landscape green area with rain-water harvesting and auto-irrigation system.
- Effective environmental management practice and use of green cement, pre-cast toilets and pre-cast panels in construction.

Capitol Development (Residential)
New Residential Buildings



Client / Developer
Capitol Residential
Development Pte Ltd

Project Manager
Capitol Investment
Holdings Pte Ltd

Architects
Richard Meier & Partners
Architects LLP
Architects 61 Pte Ltd

M&E Engineer
Arup Singapore Pte Ltd

Structural Engineer
Arup Singapore Pte Ltd

Quantity Surveyor
Langdon & Seah Singapore
Pte Ltd

Main Contractor
Shimizu Corporation

Landscape Consultant
Grant Associates

ESD Consultant
Arup Singapore Pte Ltd

Lighting Consultants
Lighting Planners Associates
Inc.
Komara & Partner Ltd

Key Features

- Estimated energy savings: 723,433 kWh/yr; estimated water savings: 739 m³/yr; RETV: 15.6 W/m².
- Use of energy efficient DX split units rated '4 ticks' in all dwelling units.
- Good building envelope design with high performance glazing and effective shading provision.
- Chemical-less filtration system for all swimming pools.
- Water consumption monitoring for all major sources of water usage.
- Extensive greenery covering 30% of the roof top area.

Corals at Keppel Bay

New Residential Buildings



Client / Developer

Keppel Bay Pte Ltd

Project Manager

Keppel Land International
Ltd

Architect

DCA Architects Pte Ltd

M&E Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer

T.Y. Lin International Pte
Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Landscape Consultant

ICN Design International Pte
Ltd

ESD Consultant

ZEB-Technology Pte Ltd

Façade Architect

R.A. Heintges & Associates

Key Features

- Estimated energy savings: 1,500,303 kWh /yr; estimated water savings: 34,243 m³/yr; RETV: 15.0 W/m².
- Efficient shading device design.
- Provision of air-conditioning and refrigerators rated '4 ticks' for all units.
- Efficient design for daylighting and natural ventilation for apartment units and common areas.
- Extensive use of sustainable products in construction.
- More than 50% of the site covered by water and greenery.

D’Nest

New Residential Buildings



Client / Developer

City Developments Limited
Hong Realty (Pte) Limited
Hong Leong Holdings
Limited

Project Manager

CDL Management Services
(Pte) Ltd

Architect

Architects 61 Pte Ltd

M&E Engineer

Parsons Brinckerhoff Pte Ltd

Structural Engineer

Parsons Brinckerhoff Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore
Pte Ltd

Landscape Consultant

COEN Design International
Pte Ltd

Key Features

- Estimated energy savings: 3,526,431 kWh/yr; estimated water savings: 41,849 m³/yr; RETV: 14.9 W/m².
- Gas water heaters for majority of residential units.
- Photovoltaic cells with system capacity of 110 kWp to harness renewable energy.
- Green walls and communal sky terraces.
- Prefabricated bathroom units.
- Double refuse chute system to facilitate recycling.

**DUO Residences, Mixed-Use
Development at Ophir-Rochor,
Singapore (Residential)**
New Residential Buildings



Clients / Developers

M+S Pte Ltd
Ophir-Rochor Commercial
Pte Ltd
Ophir-Rochor Hotel Pte Ltd
Ophir-Rochor Residential
Pte Ltd

Project Managers

CapitaLand Commercial
Project Services Pte Ltd
Sunrise MS Pte Ltd

Architects

Buro Ole Scheeren Limited
DP Architects Pte Ltd

M&E Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor

Davis Langdon KPK
(Singapore) Pte Ltd

Landscape Consultant

COEN Design International
Pte Ltd

ESD Consultant

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Lighting Consultant

International Lighting
Architecture Bureau Pte Ltd

Key Features

- Estimated energy savings: 3,600,000 kWh/yr; estimated water savings: 8000 m³/yr; RETV: 19.0 W/m².
- Hexagonal façade design with double glazed low-e glass.
- Provision of energy efficient refrigerators and water efficient washing machines.
- Rainwater harvesting system coupled with siphonic rainwater drainage piping for irrigation.
- Lush green surroundings with 100% landscape replacement.
- Electric car charging station to promote the use of environmentally friendly transport.

Golden Peony

New Residential Buildings



Client / Developer
Housing & Development Board

Project Manager
SIPM Consultants Pte Ltd

Architect
Surbana International Consultants Pte Ltd

M&E Engineer
Surbana International Consultants Pte Ltd

Structural Engineer
Surbana International Consultants Pte Ltd

Quantity Surveyor
Surbana International Consultants Pte Ltd

Main Contractor
Jian Yu Construction Pte Ltd

Landscape Consultant
Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 139,483 kWh/yr; estimated water savings: 21,107 m³/yr; RETV: 18.8 W/m².
- Good building orientation with optimum window-to-wall ratio.
- Good provision for natural ventilation and daylighting.
- Extensive greenery provision.
- Optimal use of environmentally friendly sustainable materials in construction.
- High buildability score.

Marine Parade Condominium Development

New Residential Buildings



Client / Developer
CapitaLand Singapore

Project Manager
CapitaLand Residential
Singapore

Architect
MKPL Architects Pte Ltd

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
KTP Consultants Pte Ltd

Quantity Surveyor
Davis Langdon KPK
(Singapore) Pte Ltd

Landscape Consultant
Shma Company Limited

ESD Consultant
Arup Singapore Pte Ltd

Acoustic Consultant
Arup Singapore Pte Ltd

Key Features

- Estimated energy savings: 377,542 kWh/yr; estimated water savings: 7998 m³/yr; RETV: 19.5 W/m².
- Energy efficient '4-ticks' air-conditioners for all residential units.
- Motion sensors for lighting at private lift lobbies, staircases and common toilets.
- Water efficient washing machines rated WELS 'Good' for all residential units.
- Use of non-potable water including rainwater for landscape irrigation.
- Vertical green wall.

Mixed Development at 15 Cairnhill Road (Residential)

New Residential Buildings



Client / Developer
CapitaLand Singapore

Project Manager
CapitaLand Residential
Singapore

Architect
RSP Architects Planners &
Engineers (Pte) Ltd

Structural Engineer
AECOM Singapore Pte Ltd

**M&E Engineer & ESD
Consultant**
Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Quantity Surveyor
Langdon & Seah Singapore
Pte Ltd

Lighting Consultant
WSP Ng Pte Ltd

Landscape Consultant
COEN Design International
Pte Ltd

Key Features

- Estimated energy savings: 1,617,846 kWh/yr; estimated water savings: 5,238 m³/yr; RETV: 20.0 W/m².
- Provision of energy efficient refrigerators rated '3 Ticks'.
- Use of sun pipes to bring in daylight into the development.
- Provision of green roof, rooftop gardens and Butterfly Garden.
- Non-chemical anti termite treatment.
- Pneumatic waste collection system.

**Punggol Topaz
(Punggol West C28)**
New Residential Buildings



Client / Developer
Housing & Development Board

Architect
Surbana International Consultants Pte Ltd

Structural Engineer
Surbana International Consultants Pte Ltd

M&E Engineer
Surbana International Consultants Pte Ltd

Main Contractor
Expand Construction Pte Ltd

Quantity Surveyor
Surbana International Consultants Pte Ltd

Landscape Consultant
Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,360,822 kWh/yr; estimated water savings: 108,947 m³/yr; RETV: 19.1 W/m².
- Well-ventilated with 85 to 90% of units having windows facing North and South.
- All lifts with Variable Voltage Variable Frequency motor drive and sleep mode feature.
- 70% of water fittings in the development rated WELS 'Very Good'.
- Extensive greenery provision and Community Garden.
- Good environmental management during construction.

Skies Miltonia

New Residential Buildings



Client / Developer
TG Master Pte Ltd

Architect
Surbana International
Consultants Pte Ltd

Structural Engineer
Tham & Wong LLP

M&E Engineer
Elead Associates Private

Landscape Consultant
Surbana International
Consultants Pte Ltd

Key Features

- Estimated energy savings: 3,129,436 kWh/yr; estimated water savings: 134,834 m³/yr; RETV: 22 W/m².
- Block layout designed to maximise ventilation.
- Provision of water efficient washing machines rated WELS 'Good'.
- Siphonic rainwater discharge at roof.
- Use of environmentally friendly products in construction of building and landscaping.
- Provision of 5 compost bins to recycle organic waste.

Twenty One Richards

New Residential Buildings



Client / Developer
Aurum Land Pte Ltd

Architect
Park + Associates Pte Ltd

Structural Engineer
TEP Consultants Pte Ltd

M&E Engineer
NEAM Solutions

Main Contractor
Tanglin Corporation Pte Ltd

Quantity Surveyor
LCH Quantity Surveying
Consultant

Key Features

- Estimated energy savings: 39,149 kWh/yr; estimated water savings: 68.8 m³/yr; RETV: 21.2 W/m².
- 47% reduction in power consumption for artificial lighting in common areas from minimum code requirements.
- Use of renewable energy with 125% replacement of electricity for common areas.
- Extensive use of certified sustainable construction products for residential units and common areas.
- Lush greenery with high green plot ratio of 5.3.
- Demolition protocol adopted with 30% of concrete waste being recovered and recycled.

BCA GREEN MARK AWARD FOR BUILDINGS

Waterbay

New Residential Buildings



Client / Developer

Qingjian Realty (Edgefield Plains) Pte Ltd

Architect

ADDP Architects LLP

Structural Engineer

KCL Consultants Pte Ltd

M&E Engineer

KTP International Pte Ltd

Main Contractor

Qingjian International (South Pacific) Group Development Co. Pte Ltd

Quantity Surveyor

Landgon & Seah Singapore Pte Ltd

Landscape Consultant

Mace Studio Pte Ltd

Key Features

- Estimated energy savings: 1,883,694 kWh/yr; estimated water savings: 233 m³/yr; RETV: 20.3 W/m².
- Provision of natural daylighting and ventilation for common areas and wet areas within units.
- 47 % improvement in lighting power budget.
- Motion sensors for lighting at lift lobbies, staircases and common toilets.
- Extensive use of eco friendly and sustainable materials.
- Extensive greenery with green plot ratio of 5.2.

BCA GREEN MARK AWARD FOR BUILDINGS

Waterways Banks

New Residential Buildings



Client / Developer

Housing & Development Board

Architect

ADDP Architects LLP

Structural Engineer

KTP Consultants Pte Ltd

M&E Engineer

United Project Consultants Pte Ltd

Main Contractor

Sunhuan Construction Pte Ltd

Quantity Surveyor

Landgon & Seah Singapore Pte Ltd

Landscape Consultant

Martin Lee Designs

Key Features

- Estimated energy savings: 1,841,681 kWh/yr; estimated water savings: 133,490 m³/yr; RETV: 18.6 W/m².
- Rainwater collection system for washing common corridors.
- Enhanced landscaping with ABC water design features such as rain gardens for stormwater management.
- Green roofs and sky terraces at multi-storey car park and various residential blocks.
- Centralised refuse chutes for recyclable waste.
- Sheltered bicycle parking lots provided to promote cycling around Punggol Town.

Waterway Woodcress

New Residential Buildings



Client / Developer

Housing & Development Board

Architect

ADDP Architects LLP

Structural Engineer

KTP Consultants Pte Ltd

M&E Engineer

United Project Consultants Pte Ltd

Main Contractor

Rich Construction Company Pte Ltd

Quantity Surveyor

Landgon & Seah Singapore Pte Ltd

Landscape Consultant

Martin Lee Designs

Key Features

- Estimated energy savings: 1,218,370 kWh/yr; estimated water savings: 31,845 m³/yr; RETV: 20.9 W/m².
- Provision of energy efficient LED lighting as well as motion sensors.
- Energy efficient regenerative lifts.
- Rainwater collection system for washing common corridors.
- Bioswale at precinct landscape to help clean stormwater before discharge to public drain.
- Centralised refuse chutes for recyclable waste for all residential blocks.

Woodlands Peak

New Residential Buildings



Client / Developer

Housing & Development Board

Project Manager

SIPM Consultants Pte Ltd

Architect

Surbana International Consultants Pte Ltd

Structural Engineer

Surbana International Consultants Pte Ltd

M&E Engineer

Surbana International Consultants Pte Ltd

Main Contractor

Jian Yu Construction Pte Ltd

Quantity Surveyor

Surbana International Consultants Pte Ltd

Landscape Consultant

Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 211,082 kWh/yr; estimated water savings: 31,051 m³/yr; RETV: 17.9 W/m².
- Good building orientation with optimum window-to-wall ratio.
- Extensive provision for natural ventilation & daylighting.
- Extensive greenery provision with high green plot ratio of 5.6.
- Optimal use of environmentally friendly materials.
- High buildability score.

Green House @ Astrid Hill

Landed Houses



Client / Developer

Mr Harry Chua Wah Eng

Project Manager

HC Design Pte Ltd

Architect

Strategic Design
International Architects
LLP

Structural Engineer

PAL Consultancy Pte Ltd

M&E Engineer

PTA Consultants Pte Ltd

Main Contractor

Huat Builders Pte Ltd

Quantity Surveyor

Oliver Ho & Associates

Landscape Consultant

HC Design Pte Ltd

ESD Consultant

ZEB-Technology Pte Ltd

Key Features

- Energy efficient air-conditioning system and mechanical fans for all habitable spaces.
- Use of energy efficient appliances and LED lighting for internal and external spaces.
- Solar photovoltaic panels with 6 kWp system capacity.
- Extensive provision of green roof and vertical greenery.
- Automatic irrigation drip system and rainwater harvesting with rain sensors.
- Home automation system with energy monitoring devices.
- Non-chemical treatment for swimming pool.

Greenville @ King Albert Park

Landed Houses



Client / Developer

Mdm Yeoh Kheng Sooi

Architect

Strategic Design
International Architects
LLP

Structural Engineer

BK Consulting Engineers
Pte Ltd

M&E Engineer

Progressive Engineering &
Management

Main Contractor

TSF Building Construction
Pte Ltd

Quantity Surveyor

BKG Consultants Pte Ltd

ESD Consultant

ZEB-Technology Pte Ltd

Key Features

- Energy efficient air-conditioning system and mechanical fans for all habitable spaces.
- Provision of double glazing with low e-glass to minimise heat gain to the building.
- Use of energy efficient appliances and LED lighting for internal and external spaces.
- Home automation system with energy monitoring devices.
- Provision of fresh-air intake and enhanced filtration media for all bedrooms.
- Non-chemical treatment for swimming pool.
- Solar photovoltaic panels with 5 kWp system capacity and provision of solar water heater.

BCA GREEN MARK AWARD FOR BUILDINGS

Project Name	Category	Client/ Developer/ Building Owner
978 & 988 Toa Payoh North	New Non-Residential Buildings	Mapletree Industrial Trust Management Ltd
Administration Building	New Non-Residential Buildings	Tuaspring Pte Ltd
Greenhub	New Non-Residential Buildings	Greenpac (S) Pte Ltd
Halliburton Completion Tools Manufacturing Plant	New Non-Residential Buildings	Halliburton Completion Tools Manufacturing Plant Pte Ltd
JABIL @ TAMPINES	New Non-Residential Buildings	BP-JCS Pte Ltd
Mahabodhi Monastery	New Non-Residential Buildings	Mahabodhi Monastery
Marina Bay Fire Station & Neighbourhood Police Centre	New Non-Residential Buildings	Ministry of Home Affairs
New 2-storey changing room facilities at Changi Prison Complex (Cluster A)	New Non-Residential Buildings	Singapore Prison Service
New International Headquarters Building for BreadTalk Group	New Non-Residential Buildings	BreadTalk Group Ltd
OneKM	New Non-Residential Buildings	UOL Residential Development Pte Ltd/ UOL Property Investments Pte Ltd
Pratt & Whitney SCR	New Non-Residential Buildings	Ascendas (Tuas) Pte Ltd
SingHealth Polyclinics - Geylang	New Non-Residential Buildings	SingHealth Polyclinics
Tanglin Trust School (New Senior School Annex)	New Non-Residential Buildings	Tanglin Trust School Ltd
15 Changi Business Park Central 1	Existing Non-Residential Buildings	JTC Corporation

BCA GREEN MARK AWARD FOR BUILDINGS

Project Name	Category	Client/ Developer/ Building Owner
55 Market Street	Existing Non-Residential Buildings	BMT Limited as Trustee for Frasers Commercial Trust
71 Robinson Road	Existing Non-Residential Buildings	CR – 71 Robinson Road Singapore Pte Ltd
8 on Claymore	Existing Non-Residential Buildings	Sajahtera Investments (S) Pte Ltd
Bukit Panjang Plaza	Existing Non-Residential Buildings	HSBC Institutional Trust Services (Singapore) Limited as Trustee of CapitaRetail BPP Trust
Bukit Timah Plaza	Existing Non-Residential Buildings	The Management Corporation Strata Title Plan No. 568
Century Square	Existing Non-Residential Buildings	Century Square Holding Pte Ltd
China Square Central	Existing Non-Residential Buildings	BMT Limited as Trustee for Frasers Commercial Trust
Earth Arts Building	Existing Non-Residential Buildings	Earth Arts Pte Ltd
HarbourFront Tower One and Two	Existing Non-Residential Buildings	Mapletree Investments Pte Ltd
MediaCorp (MSCP)	Existing Non-Residential Buildings	MediaCorp Pte Ltd
Naumi Hotel	Existing Non-Residential Buildings	Hind Group
Office @ Scotts Road	Existing Non-Residential Buildings	Sun Venture (S) Pte Ltd
One Raffles Quay	Existing Non-Residential Buildings	One Raffles Quay Pte Ltd
Royal Plaza on Scotts	Existing Non-Residential Buildings	Sajahtera Investments (S) Pte Ltd
Sembawang Shopping Centre	Existing Non-Residential Buildings	CapitaMall Trust

BCA GREEN MARK AWARD FOR BUILDINGS

Project Name	Category	Client/ Developer/ Building Owner
Singapore American School	Existing Non-Residential Buildings	Singapore American School Limited
Valley Point	Existing Non-Residential Buildings	River Valley Tower Pte Ltd
VivoCity	Existing Non-Residential Buildings	Mapletree Commercial Trust
Bartley Residences	New Residential Buildings	Bartley Development Pte Ltd
Eight Courtyards	New Residential Buildings	Yishun Gold Pte Ltd
Floral Spring @ Yishun	New Residential Buildings	Housing & Development Board
Golden Carnation	New Residential Buildings	Housing & Development Board
Hedges Park	New Residential Buildings	Tripartite Developers Pte Ltd
One Balmoral	New Residential Buildings	Hong Leong Holdings Limited
Punggol Parcvista	New Residential Buildings	Housing & Development Board
Segar Meadows	New Residential Buildings	Housing & Development Board
The Luxurie	New Residential Buildings	Keppel Land Realty Pte Ltd
Watercolours	New Residential Buildings	HUGE Development Pte Ltd
Temasek Junior College	Existing Schools	Ministry of Education
Modern Eco Home @ Chatsworth Park	Landed Houses	Ms Goh Chiat Jin
Charlton 27	Landed Houses	Surindipity Pte Ltd

BCA
GREEN MARK AWARD
FOR BUILDINGS

Project Name	Category	Client/ Developer/ Building Owner
30 Toh Guan Road (Annexed New Warehouse)	New Non-Residential Buildings	RBC Investor Services Trust Singapore Limited (as trustee of Cambridge Industrial Trust)
Cookhouse at Gurkha Contingent	New Non-Residential Buildings	Singapore Police Force
Duke-NUS Graduate Medical School Singapore	Existing Non-Residential Buildings	Duke-NUS Graduate Medical School
North Academic Complex (North Spine Building, Block N1, N1.1, N2, N2.1, N3, N4, Admin Building, AWS1, MW2, MW3) Nanyang Technological University	Existing Non-Residential Buildings	Nanyang Technological University
Singapore Prison Service Transit Centre	Existing Non-Residential Buildings	Singapore Prison Services
Tung Centre	Existing Non-Residential Buildings	Guocoland Pte Ltd

BCA GREEN MARK AWARD FOR BEYOND BUILDINGS

The BCA Green Mark Award for Beyond Buildings – an extension of the BCA Green Mark Award for Buildings - aims to recognise good practices in the built environment beyond the building level, in order to ensure an all-rounded sustainable and high quality built environment.

This year, projects awarded under the BCA Green Mark Award for Beyond Buildings are classified under the following:

- BCA Green Mark Award for Districts
- BCA-NParks Green Mark Award for New Parks

BCA GREEN MARK AWARD FOR DISTRICTS

The Award

The BCA Green Mark for Districts, launched in 2009, is an initiative by BCA to promote and recognise environmentally-friendly and sustainable practices in the planning and implementation of district developments. The BCA Green Mark for Districts seeks to achieve a holistic and integrated approach in the planning and design of multiple buildings and infrastructure within the district from the initiation stage.

The districts are evaluated based on the following five criteria:

- Energy Efficiency
- Water Efficiency
- Material and Waste Management
- Environmental Planning
- Green Buildings and Green Transport
- Community and Innovation

Green districts help individual buildings leverage on a more sustainable district platform, leading to better environmental performance and cost effectiveness.

By moving beyond buildings and implementing Green Mark at the district level, the scheme will allow larger scale contributions to the built environment in terms of reduction in waste, carbon emissions, energy and water consumption.

CleanTech Park



Client / Developer
JTC Corporation

Project Manager
JTC Corporation

Master Planner
JTC Corporation

Infrastructure Planners
JTC Corporation

Jurong Consultants Pte Ltd

Surbana International
Consultants Pte Ltd

Main Contractors
Eng Lam Contractors Co
Pte Ltd

Horti-Flora Services Pte Ltd

Landscape Consultant
Atelier Dreiseitl Asia Pte
Ltd

Key Features

- Estimated energy savings: 116,618 kWh/yr.
- Masterplan ring-road layout works with the natural topography and minimises need to cut-and-fill.
- Energy efficient LED lighting resulting in more than 40% energy savings from code baseline.
- District level energy monitoring and automatic control system through iEMS.
- Holistic stormwater management with 64% of overall area within central wetland natural cleansing catchment.
- Conservation and enhancement of freshwater wetland forest habitat in the central green core, with design for wildlife corridors and animal crossings.
- Jurong Rock Cavern rocks used as sub-base for the roads.
- Green trellis linking buildings to provide shade and reduce heat gain.

BCA-NParks GREEN MARK AWARD FOR NEW PARKS

The Award

The BCA–NParks Green Mark Award for New Parks, launched in 2010, is a joint initiative by the Building Construction Authority (BCA) and the National Parks Board (NParks). It aims to inspire and promote sustainable park design as well as to identify best practices in park design, construction, management and maintenance planning. The BCA–NParks Green Mark for New Parks is specifically developed for civic landscape areas, examining social and economic sustainability with a strong emphasis on environmental sustainability. This environmental assessment framework also complements the BCA–NParks Green Mark for Existing Parks.

Under a comprehensive assessment system, parks are evaluated based on seven criteria:

- Material Resources
- Water Efficiency
- Energy Efficiency
- Greenery and Urban Ecology
- Design for Ease of Maintenance and Accessibility
- Parks Development and Construction Management
- Other Green Initiatives

All new parks, including regional, neighbourhood, conservation, nature and public theme parks, can be assessed under this scheme.

Firefly Park @ Clementi



Owner
Housing & Development Board

Park Manager
Bukit Panjang Holland Town Council

Green Mark Team
Surbana International Consultants Pte Ltd

Housing & Development Board

Main Contractor
Yong Hup Seng Mesh Co Pte Ltd

Landscape Consultant
Surbana International Consultants Pte Ltd

Key Features

- Conservation of 172 existing mature trees and palms as well as introduction of 139 native trees and 6,346 native shrubs on site.
- Extensive use of sustainable finishes and construction materials on site.
- ABC features such as bioswale and rain garden for stormwater management and to minimise the use of concrete drains.
- Provision of community gardening spaces to encourage residents to farm and harvest their own crops.

BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

The BCA Green Mark Award for Occupant-Centric schemes is catered for the multi-tenanted and multi-functional aspect of the diverse buildings which make up the built environment. A single building may be occupied by different tenants, who each have different operational functions. The various schemes under the BCA Green Mark Occupant-Centric schemes allow appropriate sustainability benchmarks and criteria to be tailored for the various core operations of tenants within buildings.

This year, the BCA Green Mark Award for Occupant-Centric schemes includes the following categories:

- BCA-IDA Green Mark Award for Data Centres (Pilot)
- BCA Green Mark Award for Office Interior
- BCA Green Mark Award for Retail (Pilot)
- BCA Green Mark Award for Supermarkets (Pilot)

BCA-IDA GREEN MARK AWARD FOR DATA CENTRES

The Award

The BCA-IDA Green Mark for Data Centres, launched in 2012, is a joint collaboration between BCA and the Infocomm Development Authority of Singapore (IDA) to drive data centres in Singapore to be more energy efficient.

In this technological era, the growth of cloud-based services, online media and transactions is fuelling a rapid increase in global demand for data centres. This is resulting in a growing energy footprint for data centres as they are prodigious consumers of energy. According to IDA, it is estimated that in Singapore, the 10 largest data centres consume energy equivalent to that produced by 130,000 households. The local commercial data centre operational capacity is projected to increase by 50% from 2010 to 2015 with a corresponding increase in energy consumption.

The scheme covers both new and existing data centres. It is also applicable to both buildings specifically built for data centres as well as data centres within office buildings.

The scheme assesses data centres on the following criteria:

- Energy Efficiency
- Water Efficiency
- Sustainable Construction / Operation and Management
- Indoor Environmental Quality
- Other Green Features

**Credit Suisse Asia Pacific
Regional Data Centre**

Located At 1 Serangoon North Avenue 6
Existing Data Centre



Client / Developer
Credit Suisse AG

Project Manager
Meinhardt (Singapore)
Pte Ltd

Architect
AWP Pte Ltd

M&E Engineer
Meinhardt (Singapore)
Pte Ltd

Structural Engineer
Parsons Brinkerhoff Pte Ltd

Quantity Surveyor
Turner & Townsend Pte Ltd

Main Contractor
Obayashi Corporation

Landscape Consultant
Stephen Caffyn Landscape
Design Pte Ltd

ESD Consultant
Kaer Pte Ltd

Key Features

- Highly energy efficient data centre facility.
- Air-conditioning system efficiency of 0.67 kW/ton.
- CRAC unit air management system with Return Temperature Index (RTI) above 90%.
- Extensive monitoring of ICT equipment and virtualization to optimise power utilization.
- Continuous and ongoing M&E plant monitoring and optimization to achieve energy savings beyond the original design.
- Bi-level lighting for lighting sensor control at each row of server racks.
- Rain water harvesting and NEWater connection to reduce water consumption.
- Multi-layered façade system providing extensive insulation and sun shading.

Equinix SG2 Data Centre

Located at #02-02, Pioneer Hub
Existing Data Centre



Client / Developer
Equinix Singapore Pte Ltd

Project Manager
Confluence Project
Management Pte Ltd

Architect
AWP Pte Ltd

M&E Engineer
DSCO Group Pte Ltd

Structural Engineer
Tham & Wong LLP

Quantity Surveyor
WT Partnership (S) Pte Ltd

Main Contractor
Wah Loon Engineering
Pte Ltd

Key Features

- Chiller plant system efficiency of 0.70 kW/ton.
- Implementation of green features resulted in 10% reduction in electricity usage for SG2, translating to energy savings of 4.3 million kWh/yr.
- Cold aisle containment infrastructure, which helps lower energy consumption and increase cooling efficiency, to support higher power density installations on-site.
- Automated system of electrically commutated fans installed to improve air flow and air distribution as well as to reduce noise levels.
- Use of energy efficient motion-activated LED lighting across the entire SG2 site.
- NEWater used for ACMV system.

GOLD

BCA-IDA
GREEN MARK AWARD
FOR DATA CENTRES

Abbott Laboratories - GIS Asia Pacific Regional Facility

Located at 26 Tuas South Avenue 10
New Data Centre



Data Centre Owner
Abbott Laboratories
– Global Information
Services

Data Centre Consultant
Abbott Laboratories
– Global Information
Services (GIS) & Global
Engineering Services (GES)

**Managing Agent/
Maintenance Contractor**
Abbott Manufacturing
Singapore (AMS) Facilities
Team

M&E Engineers
Jacobs Engineering

Abbott Global Engineering
Services (GES)

Key Features

- Use of monitoring tools to monitor IT equipment utilisation and server virtualisation.
- Data centre equipped with energy metering to measure total facility power, energy usage and total IT equipment power for determination of the Power Usage Effectiveness (PUE) number.
- Modular approach to IT capacity expansion through phase expansion.
- Future IT capacity expansion cooling requirements to be managed by the Cooling Distribution Unit and Rack Rear Door Heat Exchanger.

BCA-IDA
GREEN MARK AWARD
FOR DATA CENTRES

**Singapore Tourism
Board Data Centre**

Located at Tourism Court, 1 Orchard Spring Lane
Existing Data Centre



Data Centre Owner
Singapore Tourism Board

Data Centre Consultant
Hewlett-Packard Singapore
(Sales) Pte Ltd

**Managing Agent/
Maintenance Contractor**
Hewlett-Packard Singapore
(Sales) Pte LtdTeam

M&E Engineer
Emerson Network Power
(Singapore) Pte Ltd

Key Features

- Fulfilled requirements under the SS564 certification ‘Singapore Standard for Green Data Centres’.
- Power train efficiency - a measure of the ability of the electrical power supply system to provide the required level of redundancy while maintaining high load factors - of 90% .
- Data centre equipped with energy metering to measure total facility power, energy usage and total IT equipment power for determination of the Power Usage Effectiveness (PUE) number.
- Carbon dioxide monitoring for occupied areas.

BCA GREEN MARK AWARD FOR OFFICE INTERIOR

The Award

The BCA Green Mark for Office Interior is BCA's initiative to promote and recognise environmentally-friendly and sustainable practices of office tenants.

Office buildings make up a significant percentage of the building stock in Singapore. Such buildings may be multi-tenanted, hence the way individual tenanted spaces are operated and maintained may not always be under the control of the building owner. The BCA Green Mark for Office Interior complements the BCA Green Mark for Buildings by encouraging individual office tenants within buildings to be sustainable. The scheme is applicable to both existing and new offices that have or have not undergone renovation.

The scheme, launched in 2009, has since been gaining momentum with the industry, with its take-up rate being on the rise each year. Offices are evaluated under the following criteria:

- Energy Efficiency
- Water Efficiency
- Sustainable Management and Operation
- Indoor Environmental Quality
- Other Green Features

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

American Express International Inc.

Located at #08-02, Hyflux Innovation Centre



Tenant/ Owner
American Express
International Inc.

Renovation Consultant / Contractor
Ngai Chin Construction
Pte Ltd

Facility Manager Company
American Express
International Inc.

M&E Consultant
J. Roger Preston
(Singapore) Pte Ltd

Managing Agent/ Maintenance Contractor
Cushman & Wakefield
(Singapore) Pte Ltd

ESD Consultant
Building System &
Diagnostics Pte Ltd

Interior Design Consultant
Ai Associates Pte Ltd

Cost Consultant
WT Partnership (Singapore)
Pte Ltd

Key Features

- Located in Hyflux Innovation Centre, a BCA Green Mark Platinum Building.
- Energy efficient air-conditioning system with zoning and controls.
- Extensive use of energy efficient LED Lighting.
- Motion sensors for lighting in meeting rooms and other infrequently used areas.
- 98% of office equipment rated 'Energy Star'.
- Water efficient water fittings all rated WELS 'Excellent'.
- Extensive use of sustainable materials for office fit out and operation.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

BHP Billiton Marketing Asia Pte Ltd

Located at #50-01, Marina Bay
Financial Centre Tower 2



Tenant/ Owner
BHP Billiton Marketing Asia
Pte Ltd

Project Manager
Merx Construction
Management Pte Ltd

Renovation Consultant
Facility Link & DLE J.V.

Facility Manager
Colliers International
Consultancy & Valuation
(Singapore) Pte Ltd

M&E Engineer
Arup Singapore Pte Ltd

ESD Consultant
Arup Singapore Pte Ltd

Designer
Geyer Environments
Pte Ltd

Cost Manager
Turner & Townsend Pte Ltd

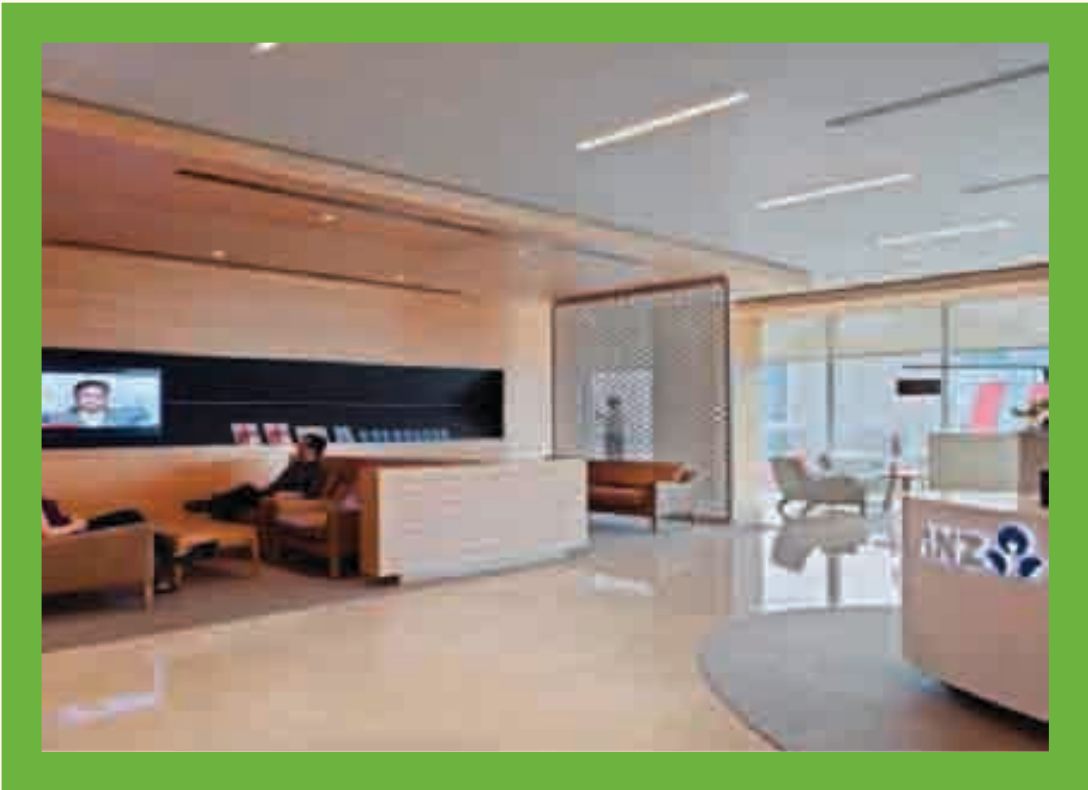
Key Features

- Energy efficient lighting design with power savings of 56% from code requirements.
- Integrated BFMS for real time monitoring of energy and water consumption.
- Energy efficient office equipment.
- Water efficient fittings.
- Furniture and carpets with recycled and recyclable contents.
- Indoor green wall.
- Centralised waste management design with no personal bins provided to staff.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

**Australia and New Zealand
Banking Group Limited**

Located at #30-00, Ocean Financial Centre



Tenant/ Owner
ANZ Banking Group
Limited

Main Contractor
ISG Asia (Singapore)
Pte Ltd

Facility Manager
Jones Lang LaSalle
Property Consultants Pte
Ltd

M&E Consultant
J Roger Preston
(Singapore) Pte Ltd

Interior Designer
Geyer Environments
Pte Ltd

Key Features

- Low lighting power budget outperforming the energy efficiency performance specified by the Singapore Standard by 37%.
- Adoption of various lighting and air-conditioning control strategies such as scheduling and extensive zoning to improve energy efficiency.
- More than 90% of office equipment by design power input are Energy Star certified.
- Reuse of more than 1,700 office chairs from the consolidated offices.
- Inter-floor staircase to connect the various business units closer together vertically and reduce reliance on lifts.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

BP Singapore Pte Ltd

Located at #02-01, Keppel Bay Tower



Tenant/ Owner
BP Singapore Pte Ltd

**Facility Manager
Company**
Johnson Controls Global
WorkPlace Solutions

**Energy Management
Consultant**
Global Facility
Management Pte Ltd

Lighting Supplier
ES-Team Lighting Pte Ltd

Key Features

- Replacement of T8 lighting with energy efficient LED lighting throughout the office resulting in a halving of lighting power bills.
- SMARTRoom Check-in System for meeting rooms resulting in 30% reduction in booking wastage, hence ensuring optimal usage of office space.
- Task lights equipped with individual occupancy sensors.
- GoGreen committee formed in 2007 to plan environmental activities for the organisation. Green measures implemented by the GoGreen committee achieved estimated operational cost savings of \$450,000 annually compared to the base year of 2007.
- Promoting the safe use of fire escape staircases to reduce lift usage.

BCA GREEN MARK AWARD FOR OFFICE INTERIOR

City Developments Limited

Located at #02-00 and #05-00, City House



Tenant/ Owner

City Developments Limited

Key Features

- Extensive use of energy efficient LED lights.
- Use of energy-saving lighting system resulting in 50% reduction in lighting consumption.
- All water fittings rated either WELS 'Very Good' or 'Excellent'.
- Long-lasting existing office furniture used since 2006.
- Extensive recycling facilities and waste management.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

Facility Link Private Limited

Located at 4 Sungei Kadut Crescent



Tenant/ Owner
Facility Link Pte Ltd

Renovation Contractor
Motivo Inc Pte Ltd

M&E Consultant
DLE M&E Pte Ltd

**Managing Agent/
Maintenance Contractor**
Facility Link Pte Ltd

ESD Consultant
Building System &
Diagnostics Pte Ltd

Key Features

- Use of photocell sensor to optimise use of daylighting.
- Provision of motion detector for lighting.
- 96 % of office equipment with energy efficient label.
- All water fittings rated WELS ‘Excellent’.
- Use of certified sustainable materials and products containing at least 30% recycled content.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

McGraw-Hill Financial

Located at #23-00, Marina Bay
Financial Centre Tower 3



Tenant/ Owner
McGraw-Hill Financial

Renovation Contractor
Ngai Chin Construction Pte
Ltd

**Facility Manager
Company**
CB Richard Ellis Pte Ltd

M&E Consultant
Meinhardt (Singapore) Pte
Ltd

**Managing Agent/
Maintenance Contractor**
CB Richard Ellis Pte Ltd

ESD Consultant
Kaer Pte Ltd

**Interior Design
Consultant**
BBFL Pte Ltd

Key Features

- Use of energy efficient lighting throughout the office space, such as LED lights and T5 tubes which have high frequency ballasts.
- Extensive lighting zoning and controls with 24-hour operated motion sensors to reduce lighting energy consumption.
- Extensive use of environmentally sustainable materials for office renovation.
- ID access printing control to reduce paper wastage.
- Water-leak detection system in pantry.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

NetApp Singapore Pte Ltd

Located at #08-01, Millenia Tower



Tenant/ Owner

NetApp Singapore Pte Ltd

Renovation Contractor

Jim & Hall's Pte Ltd

M&E Consultant

D'Perception Singapore
Pte Ltd

Other specialist consultant

Building System &
Diagnostics Pte Ltd

Key Features

- Scheduling and zoning of lighting and air conditioning for better control of energy usage.
- Motion sensors for all rooms with inconsistent occupancy rate.
- Extensive use of sustainable products for office fit-out.
- Extensive greenery provision in office to improve indoor air quality and employee productivity.
- Ergonomic lessons and flexible working hours for the welfare of NetApp employees.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

Novartis Asia Pacific Pharmaceuticals Pte Ltd

Located at #10-25/28, Mapletree Business City



Tenant/ Owner
Novartis Asia Pacific
Pharmaceuticals Pte Ltd

Project Manager
Jones Lang LaSalle
Property Consultants Pte
Ltd

M&E Consultant
T.Y. Lin International Pte
Ltd

M&E Contractor
LSK Engineering
(Singapore) Pte Ltd

Renovation Contractor
New Art Interior Pte Ltd

Interior Design
SCA Design Pte Ltd

Key Features

- Energy efficient LED lighting for reception, breakout areas, boardroom and meeting rooms.
- Photo-cell sensors along the internal office perimeter to optimise daylighting usage.
- Motion sensors coupled to lighting in internal meeting rooms.
- Video-conferencing facilities for communication with global branches to reduce fuel consumption from travelling.
- Novartis Green Committee formed to raise environmental awareness among staff and promote educational green activities.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

Project	Owner / Client / Developer
Aegis Media Asia Pacific <i>(Located at Levels 28 and 29, 1 Raffles Place Tower 2)</i>	Aegis Media Asia Pacific
AkzoNobel <i>(Located at 3 Changi Business Park Vista)</i>	Akzo Nobel Paints (Asia Pacific) Pte Ltd
Ashurst LLP <i>(Located at Level 24, Marina Bay Financial Centre Tower 3)</i>	Ashurst LLP
Clifford Chance Pte Ltd <i>(Located at Level 25, Marina Bay Financial Centre Tower 3)</i>	Clifford Chance Pte Ltd
DBS Bank Ltd <i>(Located at Levels 3,5,6, 8 to 15 and Levels 40 to 46, Marina Bay Financial Centre Tower 3)</i>	DBS Bank Ltd
Kajima Overseas Asia Pte Ltd Development Division <i>(Located at Level 19, Parkway Parade)</i>	Kajima Overseas Asia Pte Ltd Development Division
Raffles Quay Asset Management Pte Ltd <i>(Located at Level 4, Marina Bay Financial Centre Tower 1)</i>	Raffles Quay Asset Management Pte Ltd
Ricoh (Singapore) Pte Ltd <i>(Located at Level 4, Mapletree Business City)</i>	Ricoh (Singapore) Pte Ltd
United Technologies International Operations, Inc <i>(Located at Level 9, Anson House)</i>	United Technologies International Operations, Inc
Visa Worldwide Pte Ltd <i>(Located at Levels 7 and 10, Singapore Post Centre)</i>	Visa Worldwide Pte Ltd

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR

Project	Owner / Client / Developer
BNP Paribas Singapore Branch <i>(Located at Levels 31 to 34, Ocean Financial Centre)</i>	BNP Paribas Singapore Branch
BNP Paribas Wealth Management <i>(Located at Levels 25 and 26, Ocean Financial Centre)</i>	BNP Paribas Wealth Management
Kyoob-ID Pte Ltd <i>(Located at Level 1, Platinum 28)</i>	Kyoob-ID Pte Ltd
One Marina Property Services Pte Ltd <i>(Located at Level 15, One Marina Boulevard)</i>	One Marina Property Services Pte Ltd
Raymond Construction Pte Ltd <i>(Located at 57 Kaki Bukit Place)</i>	Raymond Construction Pte Ltd

BCA GREEN MARK AWARD FOR RETAIL

The Award

The BCA Green Mark for Retail was launched in 2012 to recognise the sustainable efforts of individual retail tenants. It provides recognition of retailers' commitment to reduce their environmental impact.

The retail sector is one of the highest consumers of energy per floor area. Data collected from retail buildings assessed under the Green Mark for Buildings showed that approximately 50% of the total building energy is consumed by the retail tenants. The tenant loads within such buildings also lead to high air-conditioning load within the retail mall.

As the Green Mark for Buildings is catered for building owners, it may not directly address the way building tenants consume energy. Hence, the BCA Green Mark for Retail complements the Green Mark for Buildings scheme by addressing specific areas within the tenant space such as the sustainable fit-out and operation, with a strong focus on assessing efficiency of installed light fittings and plug load energy consumption - both which are within the control of the tenant. These criteria are developed to guide and encourage tenants to fit out their shops in a sustainable manner that reduces the operating costs, energy consumption, cooling load whilst maintaining the required aesthetic.

The scheme assesses retail tenants under the following five criteria:

- Energy Efficiency
- Water Efficiency
- Sustainable Awareness and Operation
- Indoor Environmental Quality
- Other Green Features

J's Hair Studio

Located at #B1-01, ITE College East



Tenant/ Owner
Mr Johnny C.P. Tan
Ms June Ng

Landlord/ Retail Mall
ITE College East (Simei)

Renovation Consultant / Contractor
I D 95 Interior, Singapore

Other Specialist Consultant / Contractor
Mr Benn Ng Beng Chye

Key Features

- Low lighting power budget due to use of energy efficient T5 and LED lighting.
- Full control of lighting circuits based on zone spaces.
- Conservation of existing walls, flooring, ceiling including light fixtures during fit-out.
- Reuse and recycling of wood, aluminium panels and chairs from previous outlet.
- Environmentally friendly products included as part of sales product lineup.
- Provision of dedicated recycling bin and promotion of recycling via incentives for customers.
- Provision of potted plants to create a more conducive indoor environment.

Euraugo (formerly named 'Dressaday')

Located at #03-03, 313@Somerset



Tenant/ Owner
Ms Pauline Ong

Landlord/ Retail Mall
313@Somerset

Key Features

- Replacement of halogen decorative lighting with LED fittings.
- 30% improvement over baseline for lighting power budget.
- Lighting zoning control for fitting rooms.

CERTIFIED

BCA
GREEN MARK AWARD
FOR RETAIL

Royal Silver

Located at #B1-38A, 313@Somerset



Tenant/ Owner
Mr William Soh

Landlord / Retail Mall
313@Somerset

Key Features

- Maximal use of energy efficient LED for display lighting.
- Extremely low plug loads.
- Retaining and conservation of existing walls, flooring and ceiling.

BCA GREEN MARK AWARD FOR SUPERMARKETS

The Award

The BCA Green Mark for Supermarkets, launched in 2012, is an initiative by BCA to promote and recognise environmentally friendly as well as sustainable practices and features in supermarket outlets.

Within commercial buildings, tenants - including supermarket operators - have a significant impact on the total building energy consumption. There are about 300 supermarkets in Singapore, and each outlet's floor area can range from 90 m² to 4,500 m². Refrigeration, required to keep the goods and produce fresh, accounts for up to 50% of the total supermarket energy consumption. The rest of the energy is consumed by lighting, plug loads and air-conditioning. By incorporating green features, supermarkets can reduce the total energy consumed by as much as 10%.

The BCA Green Mark for Supermarkets aims to encourage supermarket operators to adopt energy efficient design, equipment and green practices at their outlets. Such measures can help supermarket operators reduce their energy consumption and utilities costs. Green supermarkets also have the power to educate and motivate supermarket patrons to be environmentally responsible.

The scheme assesses supermarkets based on the following five criteria:

- Energy Efficiency
- Water Efficiency
- Environmental Protection
- Indoor Environmental Quality
- Other Green Features

BCA
GREEN MARK AWARD
FOR SUPERMARKETS

FairPrice Finest Supermarket at Zhong Shan Park

Located at #02-01, Zhong Shan Park



Owner
NTUC FairPrice
Co-operative Ltd

M&E Consultant
HY M&E Consultancy
Service Pte Ltd

M&E Contractor
Victor Engineering &
Trading Pte Ltd

Main Contractor
Teamsystem Construction
Pte Ltd

Refrigeration Contractor
VSD Engineering
Enterprises Pte Ltd

Key Features

- Carbon dioxide refrigerant for refrigeration system to reduce carbon footprint and conserve energy.
- Centrally-controlled energy efficient refrigeration showcases fitted with doors, electronic expansion valves, anti-sweat control and electronically commutated (EC) fans.
- LED for all light fittings as well as auto zonal lighting controls and occupancy sensors installed.
- Energy Management System with remote monitoring from headquarters to monitor in-store energy consumption.
- Taps for sinks and basins rated 'Excellent' and private water meters installed to monitor consumption and detect leakages.
- Collection of recyclables and conversion of organic waste into nutrient liquid by in-store bio-helper.
- Numerous sustainable SGBC green products used for fit-out.

BCA GREEN MARK AWARD FOR SUPERMARKETS

FairPrice Finest Supermarket at myVillage at Serangoon Garden

Located at #B1-11 to #B1-K09
Serangoon Garden Village



Owner

NTUC FairPrice
Co-operative Ltd

M&E Consultant

HY M&E Consultancy
Service Pte Ltd

M&E Contractor

Victor Engineering &
Trading Pte Ltd

Main Contractor

Success Forever
Construction &
Maintenance Pte Ltd

Refrigeration Contractor

VSD Engineering
Enterprises Pte Ltd

Key Features

- Energy efficient refrigeration system using variable speed drives for compressor, electronically commutated (EC) fans for condensers, and transducers.
- Centrally controlled energy efficient refrigeration showcases installed with doors, electronic expansion valves, anti-sweat control and electronically commutated (EC) fans.
- All lights in the shop are energy efficient LED, including the lighting for display cabinets.
- Auto zonal lighting controls and occupancy sensors to further conserve energy.
- Energy Management System with remote monitoring from headquarters to track in-store refrigeration, lighting, receptacle, air conditioning and delicatessen consumption.
- Taps for sinks and basins rated 'Excellent'.
- Collection of recyclables.

BCA
GREEN MARK AWARD
FOR SUPERMARKETS

Giant Hyper at Suntec City Mall

Located at #B1-150-159, Suntec City Mall)



Owner
Cold Storage Singapore
(1983) Pte Ltd

M&E Consultant
AECOM Singapore Pte Ltd

Green Consultant
Energiz Singapore

Key Features

- Electronically commutated (EC) fan for all refrigeration cases.
- Variable speed drives for fans and compressor motors.
- 85% of display cabinets are enclosed.
- Energy efficient LED for store lighting and all refrigeration cases.
- Energy Monitoring System.
- Display of posters describing Giant's 'GO GREEN' values and policies.

GOLD

BCA GREEN MARK AWARD FOR SUPERMARKETS

FairPrice Supermarket at Ang Mo Kio 712

Located at Blk 712, Ang Mo Kio Avenue 6



Owner
NTUC FairPrice
Co-operative Ltd

M&E Consultant
HY M&E Consultancy
Service Pte Ltd

M&E Contractor
Victor Engineering &
Trading Pte Ltd

Main Contractor
Success Forever
Construction &
Maintenance Pte Ltd

Refrigeration Contractor
VSD Engineering
Enterprises Pte Ltd

Key Features

- Energy efficient refrigeration system using variable speed drives for compressor, electronically commutated (EC) fans for condensers, and transducers.
- Centrally controlled energy efficient refrigeration showcases installed with doors, electronic expansion valves, anti-sweat control and electronically commutated (EC) fans.
- All lights in the shop are energy efficient LED, including the lighting for display cabinets.
- Auto zonal lighting controls and occupancy sensors to further conserve energy.
- Energy Management System with remote monitoring from headquarters to track in-store refrigeration, lighting, receptacle, air conditioning and delicatessen consumption.

CERTIFIED

BCA GREEN MARK AWARD FOR SUPERMARKETS

Cold Storage Jelita

Located at #01-01, Jelita Shopping Centre



Owner

Cold Storage Singapore
(1983) Pte Ltd

ESD Consultant

G-Energy Global Pte Ltd

Key Features

- Refrigerated display cabinets and showcases fitted with doors and LED lighting.
- Energy efficient LED lighting for trading area and back-of-house.
- Energy Management System (EMS) to monitor and trend log major sources of energy consumption.
- Sustainable programmes in place for recycling and reusing of cardboard.
- Informative and educational posters displayed at trading area.

BCA GREEN MARK AWARD OVERSEAS



BCA International Pte Ltd is a wholly-owned subsidiary of BCA. It provides a multitude of services to help develop excellent built environments worldwide. The Green Mark certification is among one of the most popular services offered by BCA International.

The Success Of Green Mark Overseas

As one of the more than 20 Green Building rating systems recognised by the World Green Building Council (WGBC), Green Mark has gained popularity in the region as it is developed especially for the tropical climate. Green Mark can be customised to suit various countries' climatic conditions. There are more than 190 applications as of 1 March 2013.



The Green Mark scheme is not limited to buildings but also encompass landed houses and office interior, as shown by the respective award winner under these categories.

More developers are using Green Mark to provide meaningful differentiation of their buildings. Benefits of a Green Mark building include:

- Reduction in water and energy bills;
- Improvement in indoor environmental quality;
- Reduction in potential environmental impact.

GOLD

BCA
GREEN MARK AWARD
FOR BUILDINGS (OVERSEAS)

Sinarmasland Plaza, Indonesia
New Non-Residential Buildings



Client / Developer

PT Bumi Serpong Damai
Tbk

Architect

Aedas (Singapore) Pte Ltd

M&E Engineer

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

Structural Engineer

PT Haerte Widya Konsultan

Landscape Consultant

Aedas Landscape Ltd

ESD Consultant

Beca Carter Hollings &
Ferner (S.E. Asia) Pte Ltd

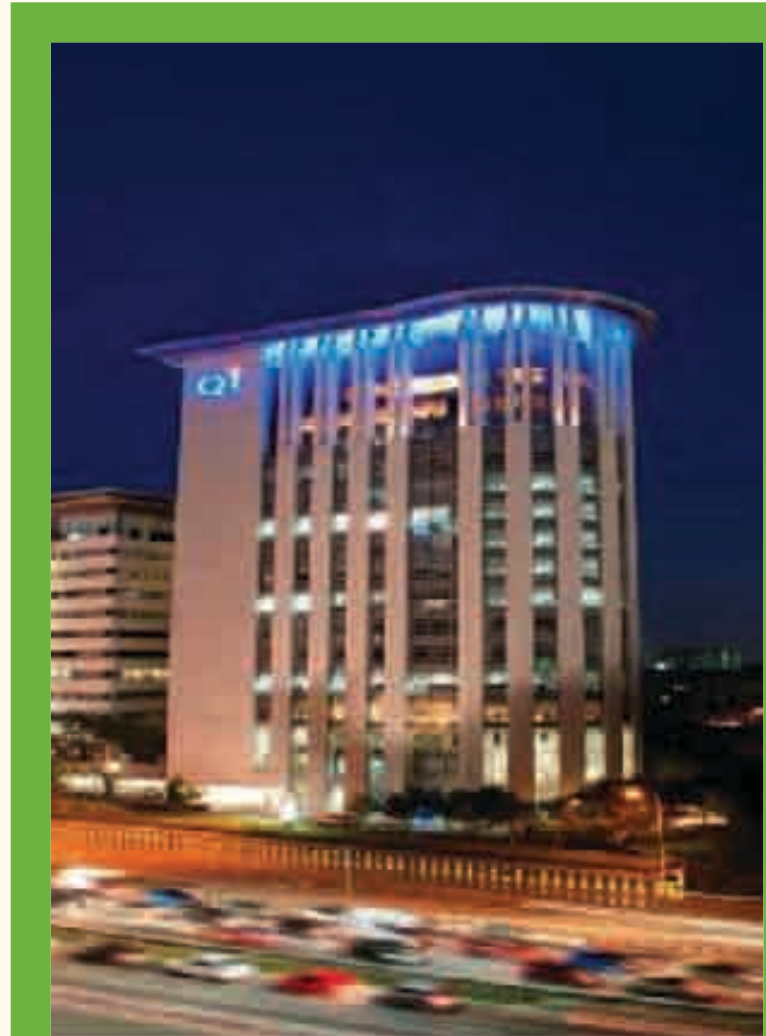
Key Features

- Estimated energy savings: 1,200,216 kWh/yr; estimated water savings: 19,134 m³/yr; ETTV: 42.0 W/m².
- Energy efficient chiller plant system.
- Naturally ventilated atrium.
- Grey water recycling.

GOLD

BCA
GREEN MARK AWARD
FOR BUILDINGS (OVERSEAS)

QI Tower, Malaysia
Existing Non Residential Buildings



Building Owner

Wawasan QI Properties Sdn
Bhd

ESD Consultant

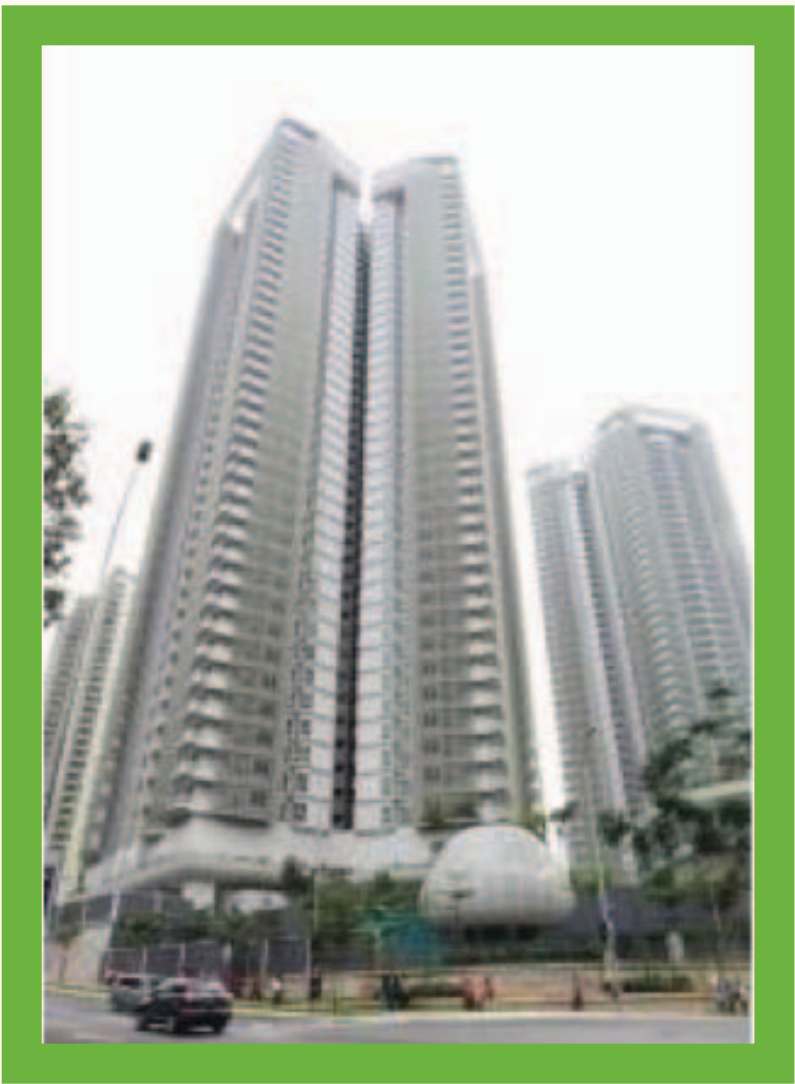
GreenA Consultants Pte Ltd

Key Features

- Estimated energy savings: 324,453 kWh/yr;
estimated water savings: 3,159 m³/yr.
- Energy efficient T5 and LED lighting as well as water
efficient fittings.
- Use of sustainable building materials in
construction as well as low VOC paint.
- Corporate environmental policy and green
procurement policy in place, and provision of green
guide for building users.

BCA
GREEN MARK AWARD
FOR BUILDINGS (OVERSEAS)

28 Mont’Kiara, Malaysia
New Residential Buildings



Client / Developer Lucky Bright Star Sdn Bhd	Structural Engineer SLP Perunding Sdn Bhd
Project Manager Akitek Habitas	Quantity Surveyor JUB Padu Sdn Bhd
Architect Liu & Wo Architects Pte Ltd	Main Contractor Aston Star Sdn Bhd
M&E Engineer J Roger Preston (Malaysia) Sdn Bhd	Landscape Consultant Malik Lip & Associates Sdn Bhd
	ESD Consultant Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 7,917,740 kWh/yr; estimated water savings: 32,000 m³/yr; RETV: 21.2 W/m².
- Energy efficient air conditioners rated ‘4-Ticks’.
- More than 50 motion sensors installed to reduce lighting energy consumption.
- High green plot ratio 7.9 with roof top gardens extensively comprising more than 50% of the roof area.

BCA
GREEN MARK AWARD
FOR BUILDINGS (OVERSEAS)

Hill Crest Residence, China
New Residential Buildings



Developer

Keppel Land China Ltd

Client

Spring City Golf & Lake
Resort

Architect

Palmer & Turner
Consultants (Shanghai) Ltd

M&E Engineer

Kunming Architectural
Design & Research Institute
Co.,Ltd

Structural Engineer

Kunming Architectural
Design & Research Institute
Co.,Ltd

Quantity Surveyor

Northcroft Lim Consultants
Pte Ltd

Contractor

Fu Jian Jiu Long Group

Landscape Consultant

Site Concepts International
Pte Ltd

ESD Consultant

Earth-In-Mind Pte Ltd

**Interior Design
Consultant**

Bent Severin & Associates
Pte Ltd

Property Management

Spring City Estate
Management Department

Key Features

- Estimated energy savings: 311,594 kWh/yr;
estimated water savings: 43,800 m³/yr.
- Construction of sewage treatment plant so treated
sewage water can be used as a non-potable water
source.
- In-house nursery to replace and nurture plants for
the developments' usage.
- Motion sensors coupled to lights at apartment lift
lobbies, adjoining corridors and staircase landings.

GOLD

BCA
GREEN MARK AWARD
FOR BUILDINGS (OVERSEAS)

Ken Rimba Legian, Malaysia
New Residential Buildings



Client / Developer
Ken Holdings Berhad

Project Manager
Ken Holdings Berhad

Architect
K.H. Tan Architects

M&E Engineer
LMC Consult Sdn Bhd

Structural Engineer
JPS Consulting Engineers
Sdn Bhd

Landscape Consultant
Landarc Associates Sdn
Bhd

ESD Consultant
Building System &
Diagnostics Pte Ltd

Key Features

- Estimated water savings: 5,900 m³/yr; .
RETV: 16.4 W/m².
- Designed for natural ventilation with favourable
building orientation and 92.7% of units with
windows facing North and South direction.
- Planted an extensive amount of 931 trees and 65
palms at site.
- Skylight roof in every unit with internal green
planters to improve indoor environmental quality.

BCA
GREEN MARK AWARD
FOR BUILDINGS (OVERSEAS)

The Estella, Vietnam
New Residential Buildings



Client / Developer
Estella Joint Venture Co. Ltd
(A joint development by Keppel Land International Ltd and Tien Phuoc Co. Ltd)

Project Manager
Estella Joint Venture Co. Ltd
(A joint development by Keppel Land International Ltd and Tien Phuoc Co. Ltd)

Architects
AWP Pte Ltd

International Construction & Investment Consultancy Co., Ltd

Quantity Surveyor
Langdon & Seah Vietnam Company Ltd

M&E Engineers
Roger Preston (Singapore) Pte Ltd

J Roger Preston (Vietnam) Co. Ltd

Structural Engineers
International Construction & Investment Consultancy Co., Ltd

DE Consultants (Singapore) Pte Ltd

Landscape Consultant
Site Concepts International Pte Ltd

ESD Consultants
Aurecon Singapore (Pte.) Ltd

Key Features

- Estimated energy savings: 5,069,429 kWh/yr; estimated water savings: 33,945 m³/yr.
- Performance of air conditioning units equivalent to ‘3 ticks’ rating under Singapore’s Energy Efficiency Labelling Scheme.
- Majority of water fittings in the development rated WELS ‘Very Good’ and non-potable water used for landscape irrigation.
- Use of titanium dioxide self-cleaning facade in all toilets within clubhouse.

BCA
GREEN MARK AWARD
FOR BUILDINGS (OVERSEAS)

**Riviera Cove Villa
Development Project,
Vietnam**
Landed Houses



Client / Developer
Riviera Cove Joint Venture
Limited Liability Company

Project Manager
Riviera Cove Joint Venture
Limited Liability Company

Architect
P&T Consultants Pte Ltd

Quantity Surveyor
Langdon & Seah Vietnam
Company Ltd

M&E Engineers
International Construction
& Investment Consultancy
Co.,Ltd

Structural Engineers
International Construction
& Investment Consultancy
Co., Ltd

DE Consultants (Singapore)
Pte Ltd

Landscape Consultant
Site Concepts International
Pte Ltd

ESD Consultants
Aurecon Singapore (Pte.)
Ltd

Main Contractors
Tuan Le Construction
Company Limited

COMA 9 Construction
Company Limited

Key Features

- Solar photovoltaic panels which harness renewable energy to power up clubhouse.
- Stormwater treatment and provision of ecopond.
- Extensive greenery with rainwater collection and use of lagoon water to minimise use of portable water for irrigation.
- Drip system and rain sensor for efficient water irrigation.

BCA
GREEN MARK AWARD
FOR OFFICE INTERIOR (OVERSEAS)

**Kami Builders Sdn Bhd,
Malaysia**

Located at Level 3A 7-15, QI Tower



Tenant

Kami Builders Sdn Bhd

Building Owner

Wawasan QI Properties
Sdn Bhd

**Renovation Consultant /
Contractor**

Axis Interior Contracts Sdn
Bhd

M&E Consultant

ISD Consultants Sdn Bhd

**Managing Agent /
Maintenance Contractor**

Jones Lang Wootton
(Singham Sulaiman Sdn
Bhd)

ESD Consultant

GreenA Consultants Pte
Ltd

Key Features

- Use of energy efficient LED and T5 lighting.
- Use of water efficient WELS rated taps and mixers.
- Carbon dioxide sensor at AHU with motorised damper.

CERTIFIED

BCA
GREEN MARK AWARD
FOR BUILDINGS (OVERSEAS)

Project	Catergory	Owner / Client / Developer
Wisma Panasonic	New Non-Residential Buildings	Panasonic Malaysia Sdn Bhd
Riverside Ville	New Residential Buildings	CapitaLand China