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**Built Environment Leadership Award**

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Green Mark For Buildings Award

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 from efficient use of key resources such as energy and water, leading to lower operation and maintenance costs. Other less tangible benefits include enhanced occupant productivity and health due to good indoor environmental quality.

Green Mark for Buildings includes the following categories:

a. Non-Residential New Buildings
b. Non-Residential Existing Buildings
c. Residential New Buildings
d. Landed Houses
e. Overseas Projects for above categories
Green Mark Advisory Committee

Chairman
Mr Lee Chuan Seng
Chairman
Beca Carter Hollings & Ferner
(S.E.A.) Pte Ltd

Deputy Chairmen
Mr Kevin Wong
Group CEO
Keppel Land Limited

Mr Lam Siew Wah
Deputy CEO
(Industry Development)
Building and Construction Authority

Mr Richard Hassell
Founding Director
WOHA Architects Pte Ltd

Members
Mr Alan Tan Hock Seng
Housing & Development Board

Mr Cheong Yew Kee
2B Architects

Mr Eddie Wong
City Developments Limited

Prof Lee Siew Eang
National University of Singapore

Dr Nirmal Kishnani
National University of Singapore

Mr Ong Seng Eng
National Environment Agency

Prof Raymond Wong
Nanyang Technological University

Mr Russell Cole
Arup Singapore Pte Ltd

Mr Tay Leng Chua
United Premas Limited

Mr Vincent Han
Vincent Han & Associates

Mr Vincent Low
G-Energy Global Pte Ltd

Mr Vincent Tong
AECOM

Mr Wong Hooe Wai
The Ascott Limited

Mr Chin Chi Leong
Building and Construction Authority

Mr Tan Tian Chong
Building and Construction Authority
Green Mark for Buildings Award

Education Resource Centre
(Non-Residential New Buildings)

Client / Developer
National University of Singapore

Project Manager
National University of Singapore

Architect
W Architects Pte Ltd

M&E Engineer
Parsons Brinckerhoff Pte Ltd

Structural Engineer
T.Y. Lin International Pte Ltd

Quantity Surveyor
Rider Levett Bucknall

Main Contractor
Kim Seng Heng Engineering Construction Pte Ltd

Landscape Consultant
Sitetectonix Pte Ltd

Acoustic Consultant
Acviron Acoustics Consultants Pte Ltd

Lighting Consultant
Lighting Planners Associates (S) Pte Ltd

ESD Consultant
Parsons Brinckerhoff Pte Ltd

Key Features:
• Estimated energy savings: 953,044 kWh/yr; Estimated water savings: 4,132 m³/yr; ETTV (Envelope Thermal Transfer Value): 39.87 W/m².

• Chilled ceiling.

• Lighting Management System.

• Natural ventilation design.

• Double vestibule doors.
Green Mark for Buildings Award

Lian Beng Building
(Non-Residential New Buildings)

Client / Developer
Lian Beng Investment Pte Ltd

Architect
AKDA Architects

M&E Engineer
Rankine & Hill (S) Pte Ltd

Structural Engineer
Tham & Wong LLP

Main Contractor
Deenn Engineering Pte Ltd

Key Features:

- Estimated energy savings: 196,342 kWh/yr; Estimated water savings: 3,579 m³/yr; ETTV: 38.69 W/m².
- Incorporated extensive building outer skin (screen).
- Heat Recovery System.
- Motion sensors.
- Solar Photo-Voltaic Cells to produce electricity.
- Rainwater Recycling System.
- Extensive use of SGLS products and products with 30% or more recycled content.
- Provision of roof garden.
Green Mark for Buildings Award

Solaris
(Non-Residential New Buildings)

Client / Developer
SB (Solaire) Investment Pte Ltd

Project Manager
Soil-Build (Pte) Ltd

Design Architect
T.R. Hamzah & Yeang Sdn. Bhd

Project Architect
CPG Consultants Pte Ltd

M&E Engineer
CPG Consultants Pte Ltd

Structural Engineer
Arup Singapore

Façade Consultant
Aurecon Singapore (Pte) Ltd

Quantity Surveyor
PEB Consultants

Main Contractor
Soil-Build (Pte) Ltd

Landscape Consultant
Tropical Environment Pte Ltd

Acoustic Consultant
Acviron Acoustics Consultants Pte Ltd

ESD Consultant
Aurecon Singapore (Pte) Ltd

Key Features:

- Estimated energy savings: 2,828,470 kWh/yr; Estimated water savings: 11,785 m³/yr; ETTV: 39.92 W/m².

- Operable skylight louver.

- Natural ventilated Atrium with daylight design.

- Solar shaft to enhance the natural daylight to the building.

- Eco-Cell and 400m³ Rainwater Harvesting Tank.

- Extensive roof gardens and continuous vertical landscaping.
Green Mark for Buildings Award

United World College South East Asia (East Campus) (Non-Residential New Buildings)

**Developer**
JTC Corporation

**User/Applicant**
United World College South East Asia

**Architect**
P&T Consultants Pte Ltd

**M&E Engineer**
United Project Consultants Pte Ltd

**Structural Engineer**
P&T Consultants Pte Ltd

**Quantity Surveyor**
KPK Quantity Surveyors (Singapore) Pte Ltd

**Main Contractor**
China Construction (South Pacific) Development Co Pte Ltd

**Landscape Consultant**
P&T Consultants in Association with Martin Lee Designs

**ESD Consultant**
Building System & Diagnostic Pte Ltd

**Key Features:**

- Estimated energy savings: 3,081,960 kWh/yr; Estimated water savings: 83,481 m³/yr; ETTV: 39.55 W/m².
- Air-conditioning plant system efficiency: 0.58 kW/ton.
- Passive design and building layout to minimise heat gain and maximise natural ventilation.
- Extensive use of solar thermal system.
- Collection of rainwater for landscape irrigation using a rain garden.
- Rooftop garden, building façades incorporated with huge green walls to reduce the ambient temperature.
Green Mark for Buildings Award

W Singapore Sentosa Cove
(Non-Residential New Buildings)

**Platinum**

**Client / Developer**
City Developments Limited

**Project Manager**
City Developments Limited

**Architect**
Axis Architects Planners Pte Ltd

**M&E Engineer**
Meinhardt (Singapore) Pte Ltd

**Structural Engineer**
KTP Consultants Pte Ltd

**Quantity Surveyor**
Davis Langdon & Seah Singapore Pte Ltd

**Main Contractor**
Ssangyong Engineering & Construction Co Ltd

**Landscape Consultant**
Cicad Pte Ltd

**ESD Consultant**
G-Energy Global Pte Ltd

**Lighting Consultant**
Light Cibles

**Acoustic Consultant**
Acviron Acoustics Consultants Pte Ltd

**Key Features:**

- Estimated energy savings: 3,338,446 kWh/yr; Estimated water savings: 22,200 m³/yr; ETTV: 42.25 W/m².
- Air-conditioning plant system efficiency: 0.65 kW/ton.
- Passive design and building layout to minimise heat gain.
- Sensor is activated to turn off air-conditioning system when the sliding door to the balcony is ajar.
- Motion sensor for staircase and toilet.
- Use of heat pump for hot water system.
- Rainwater harvesting and collection of condensate from air-conditioning system.
Green Mark for Buildings Award

Woh Hup Building
(Non-Residential New Buildings)

Client / Developer
Woh Hup Holdings (Pte) Ltd

Architect
RSP Architects Planners Engineers (Pte) Ltd

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
RSP Architects Planners Engineers (Pte) Ltd

Main Contractor
Woh Hup (Pte) Ltd

Landscape Consultant
COEN Design International (Pte) Ltd

ESD Consultant
Kaer Pte Ltd

Façade Consultant
Aurecon Singapore (Pte) Ltd

Key Features:

• Estimated energy savings: 199,728 kWh/yr; Estimated water savings: 2,757 m³/yr; ETTV: 36.81 W/m².

• Studies on natural ventilation are conducted to ensure thermal comfort is achievable without air-conditioning, especially in open-plan office area.

• Daylighting and Glare Analysis for maximum daylight harvesting throughout the building, especially in occupied office spaces.

• Solar Rooftop Garden, a seamless integration of solar farming with a landscape garden.

• 100% replacement of potable water for toilet flushing by Greywater Recycling System.

• 100% replacement of potable water for landscape irrigation by Rainwater Harvesting and Condensate Recovery.

• 30% Recycled Concrete Aggregate and 30% Washed Copper Slag concrete used in all superstructure elements.

• Pre and Post Occupancy Evaluation studies to be conducted by specialist to determine the tangible benefits of green buildings.
Green Mark for Buildings Award

InnoVillage @ SP
(Special Buildings)

Client / Developer
Singapore Polytechnic

Project Manager
AnA Contractor Pte Ltd

Architect
LG Architects & Associates

M&E Engineer
Oxbridge Consultant International Pte Ltd

Structural Engineer
Inter-Systems Consultant

Main Contractor
A Contractor Pte Ltd

ESD Consultant
United Premas Limited

Key Features:

• Estimated energy savings: 119,273 kWh/yr; Estimated water savings: 927 m³/yr.

• More than 80% of construction materials in InnoVillage @ SP are made from recycled railings, doors, windows and office containers.

• All toilets and common areas designed to utilise natural ventilation and daylighting.

• Motion sensor, dimmer control and sun pipes installed.

• Test-bedding site for clean energy such as Bio-fuel and solar power.

• Clean energy competency center to showcase and display ten Singapore iconic solar stations.

• Solar PV with 61 kWp capacity.
Green Mark for Buildings Award

Samwoh Eco Green Building
(Special Buildings)

Client / Developer
Samwoh Corporation Pte Ltd

Project Manager
Samwoh Corporation Pte Ltd

Architect
CLLA Architects

M&E Engineer
YP Ng & Associate Engineers

Structural Engineer
TP Seow Consultants

Quantity Surveyor
Samwoh Corporation Pte Ltd

Main Contractor
Megastone Holdings Pte Ltd

Landscape Consultant
Nature Landscapes

Key Features:

• Estimated energy savings: 343,088 kWh/yr; Estimated water savings: 2,828 m³/yr; ETTV: 42.8 W/m².

• Perforated cladding and solar films to improve ETTV.

• VRV 3 air-conditioning system, T5 artificial lighting with high frequency ballast and motion detectors to reduce the energy consumption.

• Sanitary wares with WELs, water sub-meters and regulated irrigation system to improve the water efficiency.

• Rooftop garden, vertical greening and other greenery provisions.

• Use of products certified under Singapore Green Label Scheme.

• Use of concrete with high dosage of recycled materials for structural and external works.
Green Mark for Buildings Award

Zero Energy Building @ BCA Academy
(Special Buildings)

Client / Developer
Building and Construction Authority

Project Manager
Beca Carter Holling & Ferner (S.E.A.) Pte Ltd

Architect
DP Architects Pte Ltd

M&E Engineer
Beca Carter Holling & Ferner (S.E.A.) Pte Ltd

Structural Engineer
Beca Carter Holling & Ferner (S.E.A.) Pte Ltd

Quantity Surveyor
Davis Langdon & Seah Singapore Pte Ltd

Main Contractor
ACP Construction Pte Ltd

Key Features:

- Estimated energy savings: 388,720 kWh/yr; Estimated water savings: 3,620 m³/yr; ETTV: 43.79 W/m².
- Sunshading devices and efficient glazings.
- ACMV System (high performance chillers, displacement ventilation, personalised ventilation, underfloor air distribution system).
- Photovoltaic Technology of 190kWp capacity.
- Solar assisted stack ventilation.
- Mirror ducts, light pipes and light shelves.
- Sensors and monitoring system for all rooms.
Key Features:

- Estimated energy savings: 1,774,785 kWh/yr; Estimated water savings: 13,000 m³/yr.
- Air-conditioning plant system efficiency: 0.66 kW/ton.
- LED lighting for all guestrooms, corridors and lifts.
- Extensive food waste recycling for bio-methanisation.
- Environmentally friendly bio enzyme for cleaning.
- Heat recovery system for hot water needs.
- Motion sensors to control staircase and toilet lighting.
Green Mark for Buildings Award

Parkway Parade
(Non-Residential Existing Buildings)

Client / Developer
The Management Corporation Strata
Title No. 1008
Managing Agent
Lend Lease

ESCO
United Premas Limited

Key Features:

• Estimated energy savings: 2,998,596 kWh/yr; Estimated water savings: 65,106 m³/yr.

• Air-conditioning plant system efficiency: 0.66 kW/RT.

• Energy efficient LED lights and extensive use of T5 fluorescent lighting with high frequency ballast in the carpark.

• Motion sensors are installed in staircases and office tower toilets to control the lighting. Photo sensors are installed at areas with abundant daylight such as under the atrium skylight, outer perimeter of the carpark and toilets in the 1st and 2nd storey.

• Carpark guidance system to direct drivers to the nearest available parking lots, thus reducing the amount of CO emissions from the vehicles.

• Greenlots charging station is provided to encourage the use of electric motorbikes.

• Green Lease will be applied to new and renewing tenants to encourage the use of energy efficient equipment within the tenanted areas. With this, the overall building cooling load can be reduced, hence saving energy.

• Food waste from the F&B outlets are separated into organic and inorganic wastes. The organic wastes undergo anaerobic digestion which is converted into energy, and its by-products are used as soil conditioner.
PoMo
(Non-Residential Existing Buildings)

Client / Developer
Paradiz Investments Pte Ltd / Lend Lease
Project Manager
Bovis Lend Lease Pte Ltd
Main Contractor
Bovis Lend Lease Pte Ltd
ESCO
Johnson Controls (S) Pte Ltd

Key Features:

• Estimated energy savings: 1,366,327 kWh/yr; Estimated water savings: 4,240 m³/yr.

• Air-conditioning plant system efficiency: 0.657 kW/RT.

• To control the lighting, photo sensors are installed at the atrium skylight and motion sensors are installed in staircases and toilets at the common area. Replacement from T8 to T5 fluorescent lighting with high frequency ballast.

• Ultraviolet light filter for Air Handling Unit (AHU) to prevent mould and fungi, removes odour, VOC and kills up to 90% of bacteria. This improves and maintains the indoor air quality in the building.

• Greenlots charging station is provided to encourage the use of electric motorcycles.

• Green Lease and Tenancy collaboration. Tenant’s provisions are specified in the Green Lease and there is control on the energy usage. The Green Lease scheme has already been implemented for new and renewing tenants. With this, the overall building cooling load can be reduced and hence saves energy.

• Organic wastes undergo anaerobic digestion which is then converted into energy and the by-products are used as bio-compost.

• NEWater system for cooling tower make-up water.
Key Features:

- Estimated energy savings: 2,800,000 kWh/yr; Estimated water savings: 6,000 m³/yr.
- Air-conditioning plant system efficiency: 0.65 kW/ton.
- Use of sprinkler tank as a Thermal Energy Storage to improve efficiency of the chiller plant during night load.
- Light pipes to bring daylight to basement.
- Water Efficient Features – Use of ‘Excellent’ PUB WELS (Water Efficient Labeling Scheme) rating for all water fittings.
- Extensive landscaping, 5th Level Roof Garden and interior green wall at main lobby.
The Galen
(Non-Residential Existing Buildings)

**Client / Developer**
Singapore Science Park Ltd

**Facility Manager**
Ascendas Services Pte Ltd

**ESCO**
Trane Singapore

**Key Features:**
- Estimated energy savings: 5,500,000 kWh/yr; Estimated water savings: 4,500 m³/yr.
- Air-conditioning plant system efficiency: 0.562kW/ton.
- Harvesting of rainwater for irrigation.
- Strong promotion on green initiatives and policy to tenants.
Green Mark for Buildings Award

Cube 8
(Residential New Buildings)

Client / Developer
City Developments Limited

Architect
ADDP Architects

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
LSW Consulting Engineers Pte Ltd

Quantity Surveyor
KPK Quantity Surveyors (Singapore) Pte Ltd

Landscape Consultant
COEN Design International Pte Ltd

Acoustic Consultant
ZEB-Technology Pte Ltd

ESD Consultant
Building System & Diagnostics Pte Ltd

Key Features:

- Estimated energy savings: 510,442 kWh/yr; Estimated water savings: 5986 m³/yr; RETV (Residential Envelope Transmittance Value): 19.94 W/m².

- Double glazed low-E and laminated glass window with sun shading device to minimise heat gain and provide acoustic barrier for unit indoor comfort.

- Introduction of sky-gardens at multiple levels to create more greenery and social spaces within the development.

- Rainwater harvest and irrigation system for landscape planting.

- Landscape design and drainage act as filtration systems to purify rainwater before discharging into public drain.

- Pneumatic Waste Collection System with additional chute for recyclable refuse.
Key Features:

- Estimated energy savings: 2,442,347 kWh/yr; Estimated water savings: 28,968 m³/yr; RETV: 19.98 W/m².

- Development adopted “biomimicry concept” as its design inspiration. The “Bio-Shelter” vertical green acts as a giant tree, a natural insulation, with its primary function to serve as a vertical green lung and reduce the carbon footprint by filtering pollutants and carbon dioxide in the air.

- The base of the “Bio-Shelter” is a sloped canopy. The skeletal frame functions as a channeling device to harvest water to irrigate the extensive landscaped environment.

- “Floating” sky terraces with lush greeneries at selected levels of each block serve as additional vertical green lungs and vantage points.

- Pneumatic Waste Collection System with additional chute for recyclable refuse.
Green Mark for Buildings Award

Voları
(Residential New Buildings)

Client / Developer
City Developments Limited

Project Manager
City Developments Limited

Architect
Architects 61 Pte Ltd

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
KTP Consultants Pte Ltd

Quantity Surveyor
Davis Langdon & Seah Singapore Pte Ltd

Main Contractor
Tiong Seng Contractors (Pte) Ltd

Landscape Consultant
DLQ Design Pte Ltd

Interior Designer
Axis ID Pte Ltd

Ventilation and Solar Consultant
Building System & Diagnostics Pte Ltd

Acoustic Consultant
Acviron Acoustics Consultants Pte Ltd

Key Features:

• Estimated energy savings: 550,914 kWh/yr; Estimated water savings: 1,687 m^3/yr; RETV: 18.11 W/m².

• Passive and low energy architecture – North-South oriented building layout.

• 4-tick air-conditioners to be provided to all units.

• CFD study shows that the wind flow at most areas is 0.6m/s and above.

• Use of Pneumatic Dual Chute System.

• Cobiax Construction System to increase construction sustainability.
Key Features:

- Estimated energy savings: 793,962 kWh/yr; Estimated water savings: 40,616 m³/yr; RETV: 18.01 W/m².
- North-South orientation to minimise solar gain in apartments.
- Grid-tied photovoltaic system of 68.7kWp.
- Extensive landscape with sky gardens at various levels of the tower blocks.
- Bioretention swales are used to help pre-treat all hardscape run-off.
- Dual chutes are provided at all common areas on every level to encourage recycling.
Green Mark for Buildings Award

SkyVille @ Dawson
(Residential New Buildings)

Client / Developer
Housing & Development Board

Project Manager
WOHA Architects Pte Ltd

Architect
WOHA Architects Pte Ltd

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

Structural Engineer
LBW Consultants LLP

Quantity Surveyor
KPK Quantity Surveyors (Singapore) Pte Ltd

Landscape Consultant
ICN Design International Pte Ltd

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

Key Features:

- Estimated energy savings: 322,552 kWh/yr; Estimated water savings: 52,872 m³/yr; RETV: 19.56 W/m².
- North-South orientation, with balconies or horizontal ledges to provide shade.
- Grid-tied photovoltaic system of 60kWp.
- Extensive landscape with sky gardens at various level of the tower blocks.
- Bioretention swales are used to help pre-treat all hardscape run-off.
- Dual chutes are provided at all common areas on every level to encourage recycling.
Green Mark for Buildings Award

137 Market Street ★ GoldPlus
(Non-Residential New Buildings)

Client / Developer
Grace Global Ventures I Pte Ltd

Project Manager
Grace Investment Ventures Pte Ltd

Architect
Teh Joo Heng Architects

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

Structural Engineer
Web Structures Pte Ltd

ESD Consultant
Aurecon Singapore (Pte) Ltd

Facade Consultant
Aurecon Singapore (Pte) Ltd

Quantity Surveyor
Barton Associates Pte Ltd

Main Contractor
Shanghai Chong Kee Furniture & Construction Pte Ltd

Lighting Consultant
Fabulux Pte Ltd

Key Features:
- Estimated energy savings: 477,672 kWh/yr;
  Estimated water savings: 1,797 m³/yr;
  ETTV: 41.59 W/m².
- Heatpipe to dehumidify fresh air more efficiently and reduce cooling capacity of precool unit.
- Photocell sensors for lighting at office perimeter and rear staircase.
- Motion sensors for lighting and MV at staircases and toilets.
- More than 50% of the existing structural elements are conserved.
- SGLS certified products for waterproofing, ceiling and fire protection board.
- Air purging system to improve indoor air quality.

Caterpillar Reman Facility ★ GoldPlus
(Non-Residential New Buildings)

Client / Developer
Caterpillar S.A.R.L. Singapore Branch

Architect
RSP Architects Planners & Engineers (Pte) Ltd

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
RSP Architects Planners & Engineers (Pte) Ltd

Quantity Surveyor
Davis Langdon & Seah Singapore Pte Ltd

Main Contractor
Ando Singapore Pte Ltd

EM Consultant
Building System & Diagnostics Pte Ltd

Key Features:
- Estimated energy savings: 1,786,361 kWh/yr;
  Estimated water savings: 118,159 m³/yr;
  ETTV: 41.68 W/m².
- Air-conditioning plant system efficiency: 0.75 kW/ton.
- Use of NEWater for processing / flushing of toilets.
- Extensive use of recycled finishes and green concrete.
- Provision of Educational Visitors’ Centre.
- Use of Pre-Engineered Building (PEB) System.
Green Mark for Buildings Award

GKE Warehouse cum Office (Non-Residential New Buildings)

**Client / Developer**
GKE Warehousing & Logistics Pte Ltd

**Architect**
Lua Architects Associates Pte Ltd

**M&E Engineer**
PTP Engineers

**Structural Engineer**
CS Consulting Engineers Pte Ltd

**Quantity Surveyor**
CS Consulting Engineers Pte Ltd

**Main Contractor**
Hua Siah Construction Pte Ltd

**Landscape Consultant**
Athinai Garden Orchid & Gardening Centre

**Other**
Design Phase Pte Ltd

**Key Features:**
- Estimated energy savings: 12,92,752 kWh/yr;
  Estimated water savings: 9,820 m³/yr;
  ETTV: 42.71 W/m².
- 100kWp mono-crystalline solar panel system is installed. The system is expected to provide 10% of the energy consumption of the building, generating 112MWh of electricity a year for 25 years.
- A rain water harvesting system is designed to provide all the water needed for toilet and urinal flushing; irrigation and general washing, saving 40% of potable water.
- A roof garden is built on the 7th floor of the office block, green strips are provided in the drive way and small islands of greenery are incorporated wherever possible to cool the surrounding and improve air quality and aesthetics.

MDIS Residences @ Stirling (Non-Residential New Buildings)

**Client / Developer**
Management Development Institute of Singapore

**Architect**
Ong&Ong Pte Ltd

**M&E Engineer**
Lincoln Scott Ng Pte Ltd

**Structural Engineer**
DEC Civil Consultant Pte Ltd

**Quantity Surveyor**
Davis Langdon & Seah Singapore Pte Ltd

**Main Contractor**
Sanchoon Builders Pte Ltd

**Landscape Consultant**
Ong&Ong Pte Ltd

**ESD Consultant**
Lincoln Scott Ng Pte Ltd

**Key Features:**
- Estimated energy savings: 621,398 kWh/yr;
  Estimated water savings: 56,940 m³/yr;
  ETTV: 39.70 W/m².
- Air-conditioning plant system efficiency: 0.716 kW/ton.
- Adopted passive design with building orientated to maximise North-South orientation and facing.
- Extensive greenery at terrace deck and roof top and provision of buffer zones to reduce solar heat gain.
- Extensive use of environmentally friendly materials, low VOC paint and solvent free paints and coating were used to ensure good indoor air quality.
- Hybrid solar vacuum tube and heat pump system were used to reduce energy consumption for hot water usage.
Key Features:

- Estimated energy savings: 3,004,265 kWh/yr; Estimated water savings: 40,113.5 m³/yr; ETTV: 38.98 W/m².

- Use of energy efficient low-E double glazed glass.

- Light harvesting airwell.

- External courtyard stair.

- Power monitoring of office floors, at reception lobby.

- Green wall and roof garden.

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Key Features:

- Estimated energy savings: 7,096,331 kWh/yr; Estimated water savings: 171 m³/yr; ETTV: 41.49 W/m².

- Use of double glazed low-E glass.

- Use of T5 lighting for all office areas and LED downlights for passenger lift lobbies.

- Use of Heat Elevator for heating of storage water and heat exchanger wheel for the Energy Recovery System.

- Vertical Green and double-volume Sky Gardens.

- Hybrid carpark lots / Electric carpark lots (with charging device) / Connection with MRT station / Bicycle lots.

- Dry stream as bioswale to filter surface water run-off.
Green Mark for Buildings Award

Condominium at Pasir Ris Grove (Parcel 2)
(Residential New Buildings)

Client / Developer
City Developments Limited/ Hong Realty (Pte) Ltd/ Hong Leong Holdings Ltd
Project Manager
CDL Management Services Pte Ltd
Architect
Architects 61 Pte Ltd
M&E Engineer
Meinhardt (Singapore) Pte Ltd
Structural Engineer
TEP Consultants Pte Ltd
Quantity Surveyor
Davis Langdon & Seah Singapore Pte Ltd
Main Contractor
Hyundai Engineering & Construction Co., Ltd
Landscape Consultant
Sald Pte Ltd
Interior Designer
Index Design Pte Ltd
ESD Consultant
ARUP Singapore Pte Ltd

Key Features:
- Estimated energy savings: 5,845,446 kWh/yr;
  Estimated water savings: 19,800 m³/yr;
  RETV: 21.00 W/m².
- Extensive shading to façade using RC fins.
- Energy efficient lighting and use of motion sensors.
- Collection of rainwater for irrigation and automatic sub-soil drip irrigation system with moisture sensors for landscape.
- Pneumatic Waste Collection System with dual chute for recycling waste.

Natura Loft
(Residential New Buildings)

Client / Developer
Qingjian Realty Pte Ltd
Architect
ADDP Architect
M&E Engineer
United Project Consultants Pte Ltd
Structural Engineer
Engineers Partnership
Quantity Surveyor
Lan Chng Cost Consultants Pte Ltd
Main Contractor
Qingjian Group Co Ltd Singapore Branch

Key Features:
- Estimated energy savings: 2,326,656 kWh/yr;
  Estimated water savings: 252,989 m³/yr;
  RETV: 20.45 W/m².
- North-South orientation of building layout to minimise west facing façade.
- Use of photocells at basement and dual circuit zoning for lighting at common areas and corridors to reduce energy usage.
- Use of secondary roof system to eliminate the use of waterproofing at roof level so less maintenance will be required.
- Raised landscape deck design addresses existing site profile with minimal earth cutting works and allows for energy savings.
- Green roofs at multi-storey and basement car parks provide shading while enhancing the landscape, and in turn reduce the energy consumption required for cooling.
Proposed Condominium at Farrer Road  (Residential New Buildings)

Client / Developer
Morganite Pte. Ltd.
(Jointly developed by CapitaLand with three other shareholders, including Hotel Properties Limited and a fund managed by Morgan Stanley Real Estate)

Project Manager
CapitaLand Residential Singapore Pte Ltd

Lead Designer
Zaha Hadid Architects

Architect
RSP Architects Planners & Engineers Pte Ltd

Quantity Surveyor
Davis Langdon & Seah Singapore Pte Ltd

Landscape Consultant
ICN Design International Pte Ltd

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

Key Features:
• RETV: 21.07 W/m².
• Lush greenery with a rainwater harvesting system and a water-efficient drip irrigation system.
• Carpark with carbon monoxide sensors to regulate the operation of ductless fans.
• Installation of motion sensors at lift lobbies.
• Photovoltaic cells at roof tops to generate renewable energy.

The Interlace (Residential New Buildings)

Client / Developer
Ankerite (Pte) Ltd
(Jointly developed by CapitaLand with two other shareholders, including Hotel Properties Limited)

Project Manager
CapitaLand Residential Singapore Pte Ltd

Lead Designer
Office for Metropolitan Architecture

Architect
RSP Architects Planners & Engineers (Pte) Ltd

M&E Engineer
Squire Mech Pte Ltd

Structural Engineer
RSP Architects Planners & Engineers (Pte) Ltd

Quantity Surveyor
Davis Langdon & Seah Singapore Pte Ltd

Main Contractor
Woh Hup (Pte) Ltd

Landscape Consultant
ICN Design International (Pte) Ltd

Acoustic Consultant
Avviron Acoustics Consultants Pte Ltd

Lighting Consultant
Lighting Planners Associates (S) Pte Ltd

Key Features:
• Estimated energy savings: 9,102,046 kWh/yr;
  Estimated water savings: 20,635 m³/yr.
• Building envelope design with deep overhanging balcony/planter for sun shading and orientation of blocks to minimise west facing facades.
• Extensive use of natural ventilation and daylighting by creating a 20% opening at the basement carpark.
• Photovoltaic cells at roof tops to generate renewable energy.
• Extensive green roof terraces and landscaping.
Green Mark for Buildings Award

**Caltex Clementi Petrol Station** ★ Gold
(Non-Residential New Buildings)

**Client / Developer**
Chevron Singapore Pte Ltd

**Architect**
OGP Konsult Pte Ltd

**M&E Engineer**
Regional Engineering Pte Ltd

**Structural Engineer**
OGP Konsult Pte Ltd

**Main Contractor**
Kwong Ngee Engineering Pte Ltd

**Key Features:**
- Estimated energy savings: 84,384 kWh/yr;
  Estimated water savings: 4,752 m³/yr.
- Use of energy efficient lighting such as LED lights.
- Motion detector used in toilets and store-room.
- Eco-concrete used for driveway.
- Low VOC paint used for retail building and boundary wall.

**Genentech ECP-1 Facility** ★ Gold
(Non-Residential New Buildings)

**Client / Developer**
Roche Singapore Technical Operations Pte Ltd

**Project Manager**
Bovis Lend Lease Pharmaceutical 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**
Bovis Lend Lease Pharmaceutical Pte Ltd

**Main Contractor**
Bovis Lend Lease Pharmaceutical Pte Ltd

**Landscape Consultant**
Earthscape Concepts

**Design Engineering Consultant**
Jacobs Engineering Singapore Pte Ltd

**Key Features:**
- Estimated energy savings: 765,128 kWh/yr;
  Estimated water savings: 7,074 m³/yr.
- 24mm thick double-glazed low-E glass wall used at Admin area.
- AHU condensate are recycled back to Cooling Tower.
- Centrifugal chiller with a variable frequency drive (VFD) to maximise part load efficiency and energy savings.
- Modular construction for entire production block.
Green Mark for Buildings Award

GSK-SN02 Warehouse ★ Gold  
(Non-Residential New Buildings)

Client / Developer
GlaxoSmithKline Biologicals

Architect
APdS Architects

M&E Engineer
Megatrends Consulting Engineers

Structural Engineer
LSW Consulting Engineers Pte Ltd

Main Contractor
Sumitomo Mitsui Construction Co. Ltd

Key Features:
- Estimated energy savings: 316,438.00 kWh/yr;
  Estimated water savings: 140 m³/yr.
- Excellent thermal performance with external wall and cladding.
- Highly efficient air-conditioning system.
- Numerous SGLS products for various applications.
- Recycling of condensate.

Jurong Data Centre Development ★ Gold  
(Non-Residential New Buildings)

Client / Developer
Jurong Data Centre Development Pte Ltd

Project Manager
M+W Zander (S) Pte Ltd

Architect
AWP Pte Ltd

M&E Engineer
Lincolne Scott Ng Pte Ltd

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

Quantity Surveyor
Turner & Townsend

Main Contractor
M+W Zander (S) Pte Ltd

Landscape Contractor
The Building Group Pte Ltd

ESD Consultant
Kaer Pte Ltd

Key Features:
- Estimated energy savings: 6,093,998 kWh/yr;
  Estimated water savings: 17,520 m³/yr.
- Energy efficient chillers at 0.536 kW/ton.
- T5 lighting system with motion sensor controls.
- Engaged third-party testing and commissioning specialist.
- Recovery of condensate water to be used as make-up water for cooling tower.
Green Mark for Buildings Award

**Kim Chuan Telecommunications Complex 2**
(Non-Residential New Buildings)

**Developer**
HSBC Institutional Trust Services (S) Ltd

**Client**
Singapore Telecommunications Ltd

**Project Manager**
3HPA Asia Pacific Pte Ltd

**Architect**
CPG Consultants Pte Ltd

**M&E Engineer**
CPG Consultants Pte Ltd

**Structural Engineer**
CPG Consultants Pte Ltd

**Quantity Surveyor**
WT Partnership (S) Pte Ltd

**Main Contractor**
Kienta Engineering Construction Pte Ltd

**ESD Consultant**
Kaer Pte Ltd

**Key Features:**

- Estimated energy savings: 7,016,736 kWh/yr.
- Energy efficient ACMV system.
- Energy efficient T5 lighting system.
- Green Lease Agreement.

**Merlimau Building Project**
(Non-Residential New Buildings)

**Client / Developer**
Singapore Refining Company Private Limited

**Project Manager**
Singapore Refining Company Private Limited

**Architect**
H.U.A.Y. Architects

**M&E Engineer**
Alpha Consulting Engineers Pte Ltd

**Structural Engineer**
Hainal-Konyi (S) Pte Ltd

**Quantity Surveyor**
Davis Langdon & Seah Singapore Pte Ltd

**ESD Consultant**
Aurecon Singapore (Pte) Ltd

**Interior Design**
J-Plan Associates Pte Ltd

**Key Features:**

- Estimated energy savings: 1,478,624 kWh/yr;
  Estimated water savings: 537 m³/yr.
- Highly efficient air-conditioning system.
- T5 lighting and use of motion sensors.
- Solar-powered water heater.
- Use of water efficient fittings and SGLS Products.
Green Mark for Buildings Award

**Mochtar Riady Building / NUS Business School**
(Non-Residential New Buildings)

- **Client / Developer**: National University of Singapore
- **Project Manager**: National University of Singapore
- **Architect**: Design-Environment Group Architects LLP
- **Design Consultant**: COX + DEG Architects & Planners
- **M&E Engineer**: AECOM Singapore Pte Ltd
- **Structural Engineer**: AECOM Singapore Pte Ltd
- **Quantity Surveyor**: CPG Consultants Pte Ltd
- **Main Contractor**: Guan Ho Construction Co. Pte Ltd
- **Landscape Consultants**: Keikan Sekkei (S) Pte Ltd + Design Environment Group Architects LLP

**Key Features:**
- Estimated energy savings: 395,000 kWh/yr;
  Estimated water savings: 18,375 m³/yr.
- Low-E double glazed glass.
- Energy efficient motor for AHU.
- EMS – Energy management system.
- Use of water efficient fittings, sub-meters, leak detection system.
- Use of siphonic water discharge system at roof and hybrid car park lots.

**nex**
(Non-Residential New Buildings)

- **Client / Developer**: Gold Ridge Private Ltd
- **Project Manager**: Guthrie Consultancy Services Pte Ltd
- **Architect**: SAA Architects Pte Ltd
- **M&E Engineer**: AECOM Singapore Pte Ltd
- **Structural Engineer**: AECOM Singapore Pte Ltd
- **Quantity Surveyor**: Davis Langdon & Seah Singapore Pte Ltd
- **Main Contractor**: Low Keng Huat (Singapore) Ltd
- **Landscape Consultant**: Broadway Malyan Pte Ltd

**Key Features:**
- Estimated energy savings: 7,499,417 kWh/yr;
  Estimated water savings: 122,509 m³/yr.
- Water efficient irrigation system with rain sensors, irrigation valves and thick-walled dripper line.
- Provision of green wall as part of the external façade.
- Provision of green features such as sky terrace and garden walk at different levels.
Green Mark for Buildings Award

**Office @ Scotts Road**
(Non-Residential New Buildings)

- **Client / Developer**
  Sun Venture (S) Investments Pte Ltd

- **Project Manager & Main contractor**
  Boustead Projects Pte Ltd

- **Architect**
  DSA Architects

- **Mechanical Contractor**
  Design Aire Engineering (S) Pte Ltd

- **Electrical Contractor**
  Tai Lee Hang Electrical Engineering Pte Ltd

- **Structural Engineer**
  BC Koh & Partners

- **Landscape Consultant**
  Earthscape Concepts Pte Ltd

- **Lighting Consultant**
  The Lightbox Pte Ltd

- **ESD Consultant**
  G-Energy Global Pte Ltd

**Key Features:**
- Estimated energy savings: 441,476 kWh/yr; Estimated water savings: 1,290 m³/yr.
- Daylighting design for atrium.
- Environmentally friendly materials used within the development
- Extensive use of green roofs to lower ambient temperature and heat gain into the building.

**Plaza 8 @ CBP**
(Non-Residential New Buildings)

- **Client / Developer**
  HSBC Institutional Trust Services (S) Ltd as Trustee of Ascendas Real Estate Investment Trust (A-REIT)

- **Project Manager**
  Ascendas Services Pte Ltd

- **Architect**
  ADDP Architects

- **M&E Engineer**
  J Roger Preston (S) Pte Ltd

- **Development Manager**
  Ascendas Funds Management (S) Ltd

- **Structural Engineer**
  KTP Consultants Pte Ltd

- **Quantity Surveyor**
  WT Partnership (S) Pte Ltd

- **Main Contractor**
  Lum Chang Building Contractors Pte Ltd

- **Landscape Consultant**
  Martin Lee Designs

- **ESD Consultant**
  G-Energy Global Pte Ltd

- **Curtain Wall Consultant**
  Arup Façade Engineering

- **Acoustic Consultant**
  Acviron Acoustic Consultants Pte Ltd

**Key Features:**
- Estimated energy savings: 169,130 kWh/yr; Estimated water savings: 24,948 m³/yr.
- Motion sensors at all staircases and toilets.
- Rainwater collection tank for irrigation.
- Intensive green roof to lower ambient temperature and heat gain.
- Siphonic rainwater discharge system.
Green Mark for Buildings Award

Poh Ern Shih Temple  ★ Gold
(Non-Residential New Buildings)

Key Features:
- Estimated energy savings: 558,168 kWh/yr;
  Estimated water savings: 8,000 m³/yr.
- Use of solar panel for electrical power,
  water heater and staircase lighting.
- Rainwater collection tank for irrigation.
- Use of hydro energy to charge electric
  wheel chairs.

Client / Developer
Poh Ern Shih Temple
Project Manager
Lee Coo Consultant Associates
Architect
Lee Coo Consultant Associates
M&E Engineer
Squire Mech Pte Ltd
Structural Engineer
KTP Consultants Pte Ltd
Quantity Surveyor
WT Partnership International Ltd
Main Contractor
Wee Hur Construction Pte Ltd
ESD Consultant
Grenzone Pte Ltd

Singapore Commodity Hub Extension  ★ Gold
(Non-Residential New Buildings)

Key Features:
- Estimated energy savings: 2,491,648 kWh/yr;
  Estimated water savings: 2,186 m³/yr.
- Development is designed and orientated
  to have minimum west facing façade.
- Entire hub is designed to be naturally
  ventilated.
- Installed 11,477kWh of PV panels to power
  common areas.

Client / Developer
CWT Ltd
Project Manager
Precise Development Pte Ltd
Architect
ACE Architects & Associate Pte Ltd
M&E Engineer
YT Lim Consulting Engineers
Structural Engineer
Aston Consulting Engineers
Quantity Surveyor
Precise Development Pte Ltd
Main Contractor
Precise Development Pte Ltd
Sustainable Consultant
Building System and Diagnostics Pte Ltd
Green Mark for Buildings Award

**IBM Singapore Technology Park**
(Non-Residential New Buildings)

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**Client / Developer**
Boustead Projects Investments Pte Ltd

**Project Manager**
Boustead Projects Pte Ltd

**Architect**
Hwang Architects

**M&E Engineer**
Boustead Projects Pte Ltd

**Structural Engineer**
BC Koh & Partners

**Main Contractor**
Boustead Projects Pte Ltd

**Landscape Consultant**
Earthscape Concepts

**ESD Consultant**
G-Energy Global Pte Ltd

**Key Features:**
- Estimated energy savings: 3,328,062 kWh/yr;
  Estimated water savings: 1,711 m³/yr.
- Energy efficient light fittings.
- Excellent WELS rated water fittings.
- Steel fiber concrete used on entire ground slab.

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**Tanglin Trust School (6th Form Centre)**
(Non-Residential New Buildings)

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**Client / Developer**
Tanglin Trust School Ltd

**Architect**
DP Architects Pte Ltd

**M&E Engineer**
Belmacs Pte Ltd

**Structural Engineer**
KTP Consultants Pte Ltd

**Quantity Surveyor**
Barton Bruce Shaw Pte Ltd

**Main Contractor**
Seah Construction Pte Ltd

**Landscape Consultant**
DP Architects Pte Ltd

**Key Features:**
- Estimated energy savings: 800,003 kWh/yr;
  Estimated water savings: 12,439 m³/yr.
- Use of skylight to maximise natural lighting.
- Energy efficient T5 lighting with high frequency ballast was used to ensure efficient energy consumption and visual comfort.
- Motion sensors in toilets, CO and photocell sensors in carpark, ensure that energy consumption is effectively managed and controlled.
Green Mark for Buildings Award

TATA Communications Exchange
(Non-Residential New Buildings)

Key Features:
• Estimated energy savings: 66,501 kWh/yr; Estimated water savings: 2,340 m³/yr.
• Energy efficient envelope design was incorporated to minimise solar heat gain into the interior to minimise cooling load.
• Energy efficient light fitting with electronic ballast were used in all areas.
• Motion sensors in toilet and CO sensors were incorporated in MV system to ensure effective energy management.
• Extensive use of environmentally friendly material and low VOC paint was used in all internal areas to improve indoor air quality.

Client / Developer
Mapletree Trustee Pte Ltd As Trustee of Mapletree Singapore Industrial Trust
Architect
Kung & Tan Architects
M&E Engineers
HPS Consulting Engineers
I²R Consulting & Engineering Services Pte Ltd
TW International Counsel Pte Ltd
GIMS & Associates
Structural Engineer
City-Tech Associates
Quantity Surveyor
WT Partnership
Main Contractor
Jiang Huang Consultation Co. Pte Ltd
Sustainable Consultant
ZEB-Technology Pte Ltd

Tuas Lodge 1
(Non-Residential New Buildings)

Client / Developer
Dormitory Investments Pte Ltd
Architect
3P Ecotecture
M&E Engineer
AUP Consultants Pte Ltd
Structural Engineer
A. J’s Ingenieurs
Main Contractor
5 star Dormitory Management Pte Ltd

Key Features:
• Estimated energy savings: 241,470 kWh/yr.
• The orientation of the building was designed to minimise west façade.
• Sustainable construction achieved with steel structure system and drywall partition.
• Greywater recycling was incorporated.
• Extensive use of fluorescent luminaries with high frequency ballasts.
Green Mark for Buildings Award

**UE BizHub EAST ★ Gold**
Hotel, Suites, Serviced Offices & Convention Centre  
(Non-Residential New Buildings)

- **Client / Developer**  
  United Engineers Developments Pte Ltd
- **Project Manager**  
  United Engineers Developments Pte Ltd
- **Architect**  
  CPG Consultants Pte Ltd
- **M&E Engineer**  
  J Roger Preston Singapore Pte Ltd
- **Structural Engineer**  
  CPG Consultants Pte Ltd
- **Quantity Surveyor**  
  Davis Langdon & Seah Singapore Pte Ltd
- **Main Contractor**  
  Greatearth Construction Pte Ltd
- **Landscape Consultant**  
  Martin Lee Designs
- **Façade Consultant**  
  Aurecon Singapore (Pte) Ltd
- **ESD Consultant**  
  CPG Consultants Pte Ltd

**Key Features:**
- Estimated energy savings: 996,977 kWh/yr;  
  Estimated water savings: 378 m³/yr.
- Use of LED downlights in all hotel rooms.
- Heat exchanger wheel for the energy recovery system.
- Use of recycled products e.g., pre-cast wheel stoppers, channel drains / road kerbs as well as green wall (dry wall system) to replace brick walls for all shared walls between hotel rooms.
- Vertical greening.

**West Park BizCentral ★ Gold**
(Non-Residential New Buildings)

- **Client / Developer**  
  SB (Westpark) Investment Pte Ltd
- **Architect**  
  AC Consortium Pte Ltd
- **M&E Engineer**  
  William Ng Consultants Pte Ltd
- **Structural Engineer**  
  T C Sin & Associates
- **Main Contractor**  
  Soil-Build (Pte) Ltd
- **Landscape Consultant**  
  O2X Studio
- **Sustainable Consultant**  
  Building System and Diagnostics Pte Ltd

**Key Features:**
- Estimated energy savings: 604,198 kWh/yr;  
  Estimated water savings: 1,450 m³/yr.
- The orientation of the building was designed to minimise heat gain from the west façade.
- Carparks were designed to be naturally ventilated.
- Rainwater harvesting was incorporated to ensure efficient use of water for irrigation.
- Extensive use of environmentally friendly and sustainable materials.
- Titanium dioxide (TiO₂) coating was incorporated in most of the toilets to improve air quality.
Green Mark for Buildings Award

3M Woodlands Plant  ★ Gold
(Non-Residential Existing Buildings)

**Client / Developer**
3M Singapore Pte Ltd

**Key Features:**
- Estimated energy savings: 3,196,171 kWh/yr;
  Estimated water savings: 122,640 m³/yr.
- Extensive use of 3M HVAC filter to reduce power consumption at the AHU motor. Its filter design allows higher airflow and lower pressure drop.
- Use of 3M solar film in the facade glass to reduce heat load into the building.

Keppel Bay Tower  ★ Gold
(Non-Residential Existing Buildings)

**Client / Developer**
HarbourFront One Private Limited
(A joint venture between Keppel Corporation Limited, Keppel Land Limited and HarbourFront Private Limited)

**Facility Manager**
Keppel FMO Pte Ltd

**ESCO**
Kaer Pte Ltd

**Key Features:**
- Double glazed tinted windows, low heat transmittance coating.
- LED lighting replacements used in car park, lobby and divisional office, and motion sensors for toilet lighting and escalators.
- Permanent instrumentation to monitor and optimise air-conditioning plant efficiency.
Green Mark for Buildings Award

**Parliament House**  
(Non-Residential Existing Buildings)  

**Client / Developer**  
Government of Republic of Singapore c/o Parliament of Singapore

**ESD Consultant**  
CNA Group Ltd

### Key Features:
- Estimated energy savings: 820,000 kWh/yr; Estimated water savings: 1,200 m³/yr.
- Cool paint application on roofing areas to reduce solar heat gain into the building through the roofs.
- Rain sensor and weather programme to reduce cooling load demand on rainy day.
- TiO₂ treatment in toilets to improve indoor air quality and sanitation standard.

**Plaza By The Park**  
(Non-Residential Existing Buildings)

**Client / Developer**  
City Developments Limited

**ESCO**  
G-Energy Global Pte Ltd

### Key Features:
- Estimated energy savings: 1,441,820 kWh/yr; Estimated water savings: 7,600 m³/yr.
- Air-conditioning plant system efficiency: 0.65 kW/ton
- The chiller system is fitted with Auto Condenser Tube Cleaning System and Variable Speed Drives for all pumps and cooling towers.
- AHUs are fitted with Variable Speed Drives, DDC controllers and CO₂ sensors with modulating valve to respond accordingly to load condition.
- Pre-cool AHUs are installed with heat pipes to provide better humidity control by reducing moisture in the air.
Green Mark for Buildings Award

Singapore Changi Airport Terminal 3
(Non-Residential Existing Buildings)

Client / Developer
Changi Airport Group (Singapore) Pte Ltd

Managing Agent/Facility Manager
Changi Airport Group (Singapore) Pte Ltd

ESCO
United Premas Limited

Key Features:
• Estimated energy savings: 11,928,200 kWh/yr;
  Estimated water savings: 56,500 m³/yr.
• Innovative roof design using 919 skylights to infuse the interiors with natural daylight.
• Air-conditioning distribution for Terminal 3 departure hall is diffused at level close to the occupied zones by jet diffusers.
• Automatic sunshades to adjust its orientation according to the sun path.
• Extensive Green Wall – a 300 metres long and 5 storey high ‘vertical garden’.
• The use of a Pneumatic Waste Collection System.

Treetops Executive Residences
(Non-Residential Existing Buildings)

Client / Developer
British and Malayan Trustees Ltd

Project Manager
DTZ Property Management Services Pte Ltd

ESCO
Comfort Management Pte Ltd

Key Features:
• Energy savings: 1,861,297 kWh/yr.
• Air-conditioning plant system efficiency: 0.72 kW/ton.
• ACMV Optimisation – 25% of energy is being saved from total building energy consumption.
• Greenery – Greenery Provision (GnP) of Treetops is at a high value of 5.96.
• Water filters and electronic air filters to improve the water and air quality for guests at Treetops.
Green Mark for Buildings Award

YS-ONE  ★ Gold
(Non-Residential Existing Buildings)

Client / Developer
Housing & Development Board

Key Features:
• Estimated energy savings: 509,280 kWh/yr; Estimated water savings: 608 m³/yr.
• Strong emphasis on natural ventilation with daylighting optimised for the common areas.
• Extensive use of T8 fluorescent lighting with high frequency ballast. Motion sensors to control fans and lighting in toilets at common areas.
• A PUB Water Efficient Building.
• Segregation of recyclables and non-recycled wastes at bin centre.

76 Shenton  ★ Gold
(Residential New Buildings)

Client / Developer
Hong Leong Holdings Ltd

Project Manager
Hong Leong Holdings Ltd

Architect
DP Architects Pte Ltd

M&E Engineer
Belmacs Pte Ltd

Structural Engineer
T.Y. Lin International Pte Ltd

Quantity Surveyor
KPK Quantity Surveyors (Singapore) Pte Ltd

Landscape Consultant
DLQ Design Pte Ltd

Key Features:
• Estimated energy savings: 1508,514 kWh/yr; Estimated water savings: 39,5214 m³/yr.
• Use of low-E hard coat single glazed glass to reduce heat gain.
• Efficient air-conditioning system.
• Efficient lighting system with motion sensors.
• Extensive greenery and efficient irrigation system.
Green Mark for Buildings Award

Ascentia Sky ★ Gold
(Residential New Buildings)

Client / Developer
Winpride Investment Pte Ltd

Project Manager
Wing Tai Property Management Pte Ltd

Architect
P & T Consultants Pte Ltd, Architects

M&E Engineer
United Project Consultants Pte Ltd

Structural Engineers
P & T Consultants Pte Ltd, C & S Engineer

Quantity Surveyor
Rider Levett Bucknall

Main Contractor
Greatearth Construction Pte Ltd

Landscape Consultant
Cicada Private Limited

Acoustic Consultant
Acviron Acoustics Consultants Pte Ltd

Key Features:
• Estimated energy savings: 1,753,467 kWh/yr;
  Estimated water savings: 11,027 m³/yr.
• Extensive landscaping, sky terraces and
garden to lower ambient temperature.
• Motion sensors to control lighting at
staircases and lobbies.
• Use of solar tubes.

Elliot at the East Coast ★ Gold
(Residential New Buildings)

Client / Developer
Elliot Development Pte Ltd

Project Manager
GuocoLand Property Management Pte Ltd

Architect
DP Architects Pte Ltd

M&E Engineer
M & P Consulting Engineers

Structural Engineer
Arup Singapore Pte Ltd

Quantity Surveyor
KPK Quantity Surveyors (Singapore) Pte Ltd

Main Contractor
V3 Construction Pte Ltd

Landscape Consultant
Salad Dressing

Other
Design Minako Pte Ltd

Key Features:
• Estimated energy savings: 54,054 kWh/yr;
  Estimated water savings: 1,302 m³/yr.
• Heat recovery system for common
area toilets.
• Motion sensors for staircases, private
lobbies and toilets at common area.
• Solar Spike Light.
• Bio-swale System for 1st Storey.
Green Mark for Buildings Award

**Martin Place Residences** ★Gold
(Residential New Buildings)

**Client / Developer**
FCL land Pte Ltd

**Architect**
Design Link Architects Pte Ltd

**M&E Engineer**
United Project Consultants Pte Ltd

**Structural Engineer**
DE Consultants (S) Pte Ltd

**Quantity Surveyor**
KPK Quantity Surveyors (Singapore) Pte Ltd

**Main Contractor**
Keong Hong Construction Pte Ltd

**Landscape Consultant**
Mace Studio Pte Ltd

**Key Features:**
- Estimated energy savings: 1,955,919 kWh/yr; Estimated water savings: 64,727 m³/yr.
- Adopted passive design with building orientated to maximise North-South orientation and facing.
- Motion sensors in staircases and CO sensors in carpark to ensure effective energy management.
- Gas heaters were used to minimise the demand for electricity.
- Pneumatic Refuse Collection System was used to ensure good indoor environmental quality.

**Meadows @ Peirce** ★Gold
(Residential New Buildings)

**Client / Developer**
UOL Development Pte Ltd (A subsidiary of UOL Group Ltd)

**Architect**
Ong&Ong Pte Ltd

**M&E Engineer**
Alpha Consulting Engineers Pte Ltd

**Structural Engineer**
TEP Consultants Pte Ltd

**Quantity Surveyor**
Rider Levett Bucknall

**Main Contractor**
Poh Lian Construction Pte Ltd

**Landscape Consultant**
Salad Dressing

**Key Features:**
- Estimated energy savings: 2,874,544 kWh/yr; Estimated water savings: 22,992 m³/yr.
- Extensive use of horizontal shading such as balcony and planters to maximise thermal comfort and facilitate natural ventilation.
- Energy efficient air-conditioning systems and lighting.
- Use of motion sensors in common areas such as staircase half landings.
- Provision of energy monitoring device to help homeowners manage their energy usage and cost.
Green Mark for Buildings Award

Park Central @ AMK ★ Gold
(Residential New Buildings)

Client / Developer
Greatearth Developments Pte Ltd
Architect
CPG Consultants Pte Ltd
M&E Engineer
United Project Consultants Pte Ltd
Structural Engineer
Engineers Partnership
Main Contractor
Greatearth Construction Pte Ltd
Landscape Consultant
Site Concepts International Pte Ltd

Key Features:
• Estimated energy savings: 2,152,376 kWh/yr;
  Estimated water savings: 304,641 m³/yr.
• Energy saving air-conditioning system
  (with 4 ticks) is provided to every
  residential unit.
• All common areas, internal wet areas and
  MSCP are naturally ventilated.
• Energy saving gas heaters are provided to
  every residential unit.
• The development features an extensive
  green roof over 100m in length, located
  above the multi-storey carpark.

Punggol East C30B ★ Gold
(Residential New 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
Main Contractor
Right Construction Pte Ltd
Landscape Consultant
Surbana International Consultants Pte Ltd

Key Features:
• Estimated energy savings: 247,436 kWh/yr;
  Estimated water savings: 888 m³/yr.
• Energy efficient lighting.
• Provision of bicycle racks.
• Internal and external clothes drying rack.
Tampines Lodge
(Residential New Buildings)

Key Features:
• Estimated energy savings: 177,227 kWh/yr;
  Estimated water savings: 5,866 m³/yr.
• Energy efficient lighting.
• Provision of bicycle racks.
• Internal and external clothes drying rack.

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
Ken-Pal (S) Pte Ltd

Landscape Consultant
Surbana International Consultants Pte Ltd

Woodlands N5C20
(Residential New Buildings)

Key Features:
• Estimated energy savings: 43,737 kWh/yr.
• Energy efficient lighting.
• Provision of bicycle racks.
• Internal and external clothes drying rack.

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
Sunhuan Construction Pte Ltd

Landscape Consultant
Surbana International Consultants Pte Ltd
**Green Mark for Buildings Award**

**The Trizon**  
(Residential New Buildings)  
★★Gold

- **Client / Developer**  
  Ideal Homes Pte Ltd (A subsidiary of Singapore Land Ltd)
- **Architect**  
  P & T Consultants Pte Ltd
- **M&E Engineer**  
  United Project Consultants Pte Ltd
- **Structural Engineer**  
  P & T Consultants Pte Ltd
- **Quantity Surveyor**  
  Davis Langdon & Seah Singapore Pte Ltd
- **Main Contractor**  
  China Construction (South Pacific) Development Co Pte Ltd
- **Landscape Consultant**  
  Site Concepts International Pte Ltd

**Key Features:**
- Estimated energy savings: 1,340,228 kWh/yr; Estimated water savings: 8,544 m³/yr.
- Use of low-E glass to enhance the overall thermal performance of buildings.
- Energy efficient air-conditioning systems and lighting.
- Use of motion sensors in common areas such as staircase half landings.
- Extensive greenery provisions.

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**Trevista**  
(Residential New Buildings)  
★★Gold

- **Client / Developer**  
  Choice Homes Gamma Pte Ltd (A subsidiary of NTUC Choice Homes Co-operative Ltd)
- **Architect**  
  Yang Architects Pte Ltd
- **M&E Engineer**  
  Belmacs Pte Ltd
- **Structural Engineer**  
  Tham & Wong LLP
- **Quantity Surveyor**  
  Davis Langdon & Seah Singapore Pte Ltd
- **Main Contractor**  
  Dragages Singapore Pte Ltd
- **Landscape Consultant**  
  Mace Studio Pte Ltd
- **Sustainable Consultant**  
  Squire Mech Pte Ltd

**Key Features:**
- Estimated energy savings: 1,408,192 kWh/yr; Estimated water savings: 127,024 m³/yr.
- Use of horizontal shading such as balcony and planters to achieve better thermal comfort.
- Energy efficient air-conditioning systems and lighting.
- Extensive use of sustainable materials for both structural and non-structural application.
- Rainwater harvesting for landscape irrigation and provision of Ecopond.
<table>
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<th>Project Name</th>
<th>Category</th>
<th>Client / Developer</th>
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<td>*SCAPE</td>
<td>Non-Residential New Buildings</td>
<td>Ministry of Community Development, Youth and Sports</td>
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<td>2</td>
<td>Co-Location of Syariah Court and Tribunal for Maintenance of Parents with Red Cross Home for the Disabled</td>
<td>Non-Residential New Buildings</td>
<td>Ministry of Community Development, Youth and Sports</td>
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<td>Maha Bodhi School &amp; Ministry of Education</td>
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<td>Non-Residential Existing Buildings</td>
<td>CapitaMall Trust</td>
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<td>9</td>
<td>Capital Square</td>
<td>Non-Residential Existing Buildings</td>
<td>Keppel Land Limited</td>
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<td>Great Eastern Centre (MCST 2781)</td>
<td>Non-Residential Existing Buildings</td>
<td>The Management Corporation Strata Title Plan No. 2781</td>
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<tr>
<td>11</td>
<td>School of Chemical and Biomedical Engineering Block N1.3</td>
<td>Non-Residential Existing Buildings</td>
<td>Nanyang Technological University</td>
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<tr>
<td>S/No</td>
<td>Project Name</td>
<td>Category</td>
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<td>12</td>
<td>Science Centre Singapore (Main Building)</td>
<td>Non-Residential Existing Buildings</td>
<td>Science Centre Board</td>
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<td>Non-Residential Existing Buildings</td>
<td>Standard Chartered Bank</td>
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<tr>
<td>14</td>
<td>Tung Centre</td>
<td>Non-Residential Existing Buildings</td>
<td>The Management Corporation Strata Title Plan No. 1500</td>
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<td>111 Emerald Hill</td>
<td>Residential New Buildings</td>
<td>LaSalle Investment Management Pte Ltd</td>
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<td>16</td>
<td>CASPIAN</td>
<td>Residential New Buildings</td>
<td>Yishun Land Pte Ltd (A subsidiary of Frasers Centrepoint Ltd)</td>
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<td>17</td>
<td>Lush on Holland Hill</td>
<td>Residential New Buildings</td>
<td>SP Holland Hill Pte Ltd</td>
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<tr>
<td>18</td>
<td>Luxus Hills (Phase 1)</td>
<td>Landed Houses</td>
<td>Singapore United Estates (Pte) Ltd (A subsidiary of Bukit Sembawang Estates Ltd)</td>
</tr>
</tbody>
</table>
Green Mark For New Parks Award

The Award

BCA-NParks Green Mark for New Parks is a joint initiative by the Building and 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 scheme is specifically developed for civic landscape areas examining social and economic sustainability with strong emphasis on environmental sustainability. This environmental assessment framework also articulates in compatibility with BCA-NParks Green Mark Park scheme for existing parks.

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

- Material Resource
- 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 and neighbourhood parks, conservation and nature parks as well as public theme parks, can be assessed under this scheme.

Full pilot assessments were successfully conducted early this year. Dairy Farm Nature Park and Greenwood Sanctuary @ Admiralty are the first parks to be presented with the BCA-NParks Green Mark for New Parks Award in 2010.
Key Features:

- Transforming a quarry into a wetland to attract aquatic birds such as bitterns, sandpipers, waterhen etc.

- Conservation of built heritage is achieved by conserving a heritage cowshed and a heritage bungalow in the park.

- Parks equipment and walkways are constructed using recycled materials and environmentally friendly materials.

- Installation of PV panels to produce 20% of the park’s total energy consumption.

- Installation of energy efficient lighting and water efficient fittings.

- Buildings are designed and built to maximise the use of natural day lighting and natural ventilation.
Green Mark for New Parks Award

Greenwood Sanctuary @ Admiralty (New Parks)

Client / Developer/ Owner
Housing & Development Board

Consultant
Surbana International Consultants Pte Ltd

Contractor
Horti-Flora Services Pte Ltd

Key Features:

• Parks equipment and walkways are constructed using recycled materials and environmentally friendly materials.

• 79.7% of the park's surface runoff is supported by bio-retention ponds.

• Use of percolation tank to harvest rainwater.

• No concrete drains were used for the entire park.

• Installation of energy efficient lighting throughout the park.
# Green Mark for Existing Parks Award (Certified)

<table>
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<th>S/No</th>
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</tr>
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<tbody>
<tr>
<td>1</td>
<td>Bedok Reservoir Park</td>
<td>Existing Park</td>
<td>National Parks Board</td>
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<tr>
<td>2</td>
<td>West Coast Park</td>
<td>Existing Park</td>
<td>National Parks Board</td>
</tr>
<tr>
<td>3</td>
<td>Japanese Garden (Seiwaen)</td>
<td>Existing Park</td>
<td>JTC Corporation</td>
</tr>
</tbody>
</table>
Green Mark For Office Interior Award

The Award

The BCA Green Mark for Office Interior is an initiative of the Building and Construction Authority (BCA) to promote and recognise environmentally friendly and sustainable practices and features in office tenants. It complements NEA’s Energy Smart Office Label and BCA Green Mark for Buildings schemes which assess the building, whereas BCA Green Mark for Office Interior assesses the office tenant of buildings. The offices are evaluated based on the following five criteria:

- Energy Efficiency
- Water Efficiency
- Sustainable Management & Operation
- Indoor Environment Quality
- Other Green Features
Under the assessment system, points are awarded for incorporating environmentally friendly features which are better than normal practice. The assessment identifies designs where specific targets are met. Meeting one or more indicates that the tenant’s office is likely to be more environmentally friendly than offices where the issues have not been addressed. The total number of points obtained provides an indication of the environmental friendliness of the office design. Offices are awarded Platinum, Gold Plus, Gold or Certified rating depending on the points scored.

The assessment process involves a pre-assessment briefing to the project team for a better understanding of the criteria requirements and evaluation of the certification level sought. The actual assessment would then be carried out at a later stage to verify the relevant reports and documentary evidence and ensure that the project meets the intents of the criteria and certification level. Subsequently, the offices are required to have triennial assessments. This is to ensure that the Green Mark Certified offices continue to be well-maintained.
Green Mark for Office Interior Award

Deutsche Bank AG, Asia Pacific Head Office

Key Features:
• Provision of energy efficient T5 lighting for office areas.
• Recycle bins available at all floors.
• Energy Star-labelled IT equipment.
• Global energy monitoring and tracking platform.

Tenant / Owner
Deutsche Bank AG

Facility Manager Company
Jones Lang LaSalle Property Consultants Pte Ltd

Maintenance Contractor
RYB Engineering Pte Ltd

Noble Resources Pte Ltd

Tenant / Owner
Noble Resources Pte Ltd

Renovation Consultant / Contractor
D’perception Singapore Pte Ltd

M&E Consultant
D’perception Consultant

Key Features:
• Provision of energy efficient lighting system with zoning and control, provision of photo-cell sensors and motion sensors to reduce the artificial lighting.
• Provision of energy efficient office equipment.
• Use of sustainable products in office fit-out work.
• Certified carbon neutral company.
Green Mark for Office Interior Award

Squire Mech Pte Ltd ★ Gold

Tenant / Owner
Squire Mech Pte Ltd

Renovation Consultant / Contractor
Space Culture Planner Pte Ltd

M&E Consultant
Squire Mech Pte Ltd

Other Specialist Consultants / Contractors
1. Vanguard Interiors Pte Ltd
2. Philip Electronics Singapore Pte Ltd
3. Siak Oun Engineering Pte Ltd
4. Fire-Mech Pte Ltd

Key Features:

• Provision of energy efficient lighting system with zoning and control.

• Installation of photo sensors and motion sensors to unfrequented usage areas such as pantry, printing areas.

• Maintained at least 50% of existing furniture, existing walls and suspended ceilings during the renovation works platform.
## Green Mark for Office Interior Award (Certified)

<table>
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<tbody>
<tr>
<td>1</td>
<td>Kajima Overseas Asia Pte Ltd (Development Division)</td>
<td>Office Interior</td>
<td>Kajima Overseas Asia Pte Ltd</td>
</tr>
</tbody>
</table>
Green Mark For Districts Award

The Award

The Green Mark for Districts is an initiative by the Building and Construction Authority (BCA) to promote and recognise environmentally friendly and sustainable practices in the planning and implementation of district developments. This is an extension of the popular BCA Green Mark for Buildings scheme to the entire district level to encourage holistic and integrated environmentally friendly planning and design. The districts are evaluated based on the following five criteria:

- Energy Efficiency
- Water Management
- Material & Waste Management
- Environmental Quality & Protection
- Green Building & Other Green Features
Green District practices can substantially reduce the negative environmental impact associated with district development.

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

Green District planning can help reduce energy use and operating cost, improve occupant productivity and well-being, and create a sustainable community.

Pilot Green Mark District projects show a 10% – 40% of energy saving and more than 40% of water saving.
Green Mark for Districts Award

National University of Singapore University Town

Client / Developer
National University of Singapore

Project Manager
Office of University Town Development

Architects
DP Architects Pte Ltd & Skidmore, Owings & Merrill LLP

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

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

Quantity Surveyors
Davis Langdon & Seah Singapore Pte Ltd, Rider Levett Bucknall

Main Contractors
Chye Joo Construction Pte Ltd, Sato Kogyo (S) Pte Ltd

Landscape Consultant
Sitetectonix Pte Ltd

Acoustic Consultant
Acviron Acoustics Consultants Pte Ltd

Other Consultants
Bo Steiber Lighting Design, Arboculture Pte Ltd

Key Features:

• Estimated energy savings: 3,854,779 kWh/yr; Estimated water savings: 244,800 m³/yr.

• Carbon sequestration computation is considered in greenery provision and softscape selection.

• Urban Heat Island effect is reduced by lush greenery shading roads and selection of hardscape materials as well as green roofs on buildings.

• Lush native species softscape selection is considered with studies of University Town biodiversity analysis.

• Waste management recycling strategies involve dedicated collection areas for (1) recyclables, (2) food/organic waste, (3) horticultural waste for off-site composting.

• Salvaged demolition waste from neighbouring construction sites to use as backfill material for roads and pathways.

• CNG powered shuttle buses are used as internal loop transport.

• Educational web portal and programs organised by NUS Campus Sustainability Committee for students to understand and track Green House Gases reduction target in NUS campus. http://www.nus.edu.sg/oes/
Green Mark for Districts Award

Resorts World Sentosa
(District)

Client / Developer
Resorts World at Sentosa Pte Ltd

Project Manager
DP Consultants Pte Ltd

Architect
DP Architects Pte Ltd

M&E Engineers
Meinhardt (Singapore) Pte Ltd, BECA Carter Hollings & Ferner (SE Asia) Pte Ltd

Structural Engineer
Maunsell Consultants (Singapore) Pte Ltd

Quantity Surveyor
DLS/KPK IR Pte Ltd

Main Contractors
Builder for MC01/MC02: Kajima-Tiong Seng Joint Venture
Builder for MC03: Low Keng Huat (Singapore) Limited
Builder for MC04: China Jingye Engineering Corporation Limited (Singapore branch)

Landscape Consultant
ICN design International

Lighting Consultant
Light Cibles

Acoustic Consultant
Acviron Acoustics Consultants Pte Ltd

ESD Consultant
G-Energy Global Pte Ltd

Key Features:

• Eco Lake at West Zone with active, beautiful and clean water design features.

• Collection of rainwater and AHU condensate for Eco-lagoon which provides the water needed for the water-rides within USS and for landscape irrigation.

• Extensive greenery within the development, rooftop gardens and vertical greenery.

• Conservation of forest habitat, animal species and restored trees.

• Recycled and converted 300 existing trees into furniture within the development.

• Eco-Cooler system to provide both spot cooling and open space cooling for canopy area and queue line within Universal theme park.

• Photovoltaic cells of 500kWp.

• Pneumatic Waste System to provide waste management for the resort via a series of enclosed network of conveyance piping.
The success of Green Mark overseas
As one of the 21 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. More developers are using Green Mark to provide meaningful differentiation to their buildings in the building and real estate market. Benefits of having a Green Mark building include:

– Reduction in water and energy bills;
– Improvement in indoor environmental quality for a healthy living;
– Reduction of potential environmental impact.

As of 2009, there are more than 70 Green Mark projects across the ASEAN region, China, India and the Middle East.

About BCA International Pte Ltd
BCA International Pte Ltd is a wholly-owned subsidiary of BCA. It provides a multitude of services in developing excellent built environments worldwide. Green Mark certification is among one of the most popular services offered by BCA International.
Green Mark for Buildings Award (Overseas Projects)

Ken Bangsar, Malaysia
(Residential New Buildings)

Key Features:
• Estimated energy savings: 640,000 kWh/yr; Estimated water savings: 1,600 m³/yr.
• 54 motion sensors at stairs, refuse collection point, surau and circulation.
• Production of hot water at common toilet through heat pump.
• Extensive building structure re-use for re-development > 70%.
• Existing building materials salvaged and recycled for other projects.
Green Mark for Buildings Award (Overseas Projects)

GTower, Malaysia
(Non-Residential New Buildings)

Key Features:
• Estimated energy savings: 5,204,518 kWh/yr; Estimated water savings: 3,594 m³/yr.
• Use of energy efficient lighting and motion sensors for all staircases and toilets.
• Extensive landscaping, green roof and vertical greening.
• Extensive use of recycled material.
• Salt chlorinators swimming pool system.

Client / Developer
GTower Sdn Bhd

Architects
BEP Akitek Sdn Bhd, The Architectural Network

M&E Engineer
Jurutera Perunding Valdun Sdn Bhd

Structural Engineer
TY Lin International Sdn Bhd

Quantity Surveyor
Perunding Kos T&K Sdn Bhd

Main Contractor
IJM Construction Sdn Bhd

Landscape Consultant
ICN Design International

ESD Consultant
G-Energy Global Pte Ltd

Lighting Consultant
Lumino Design Consultants Sdn Bhd

Interior Designer
Axis Network Design Consultants Sdn Bhd
Key Features:

- Estimated energy savings: 209,527 kWh/yr; Estimated water savings: 95,160 m³/yr.
- Energy efficient air-conditioning system.
- Kitchen and wardrobe cabinets manufactured from low formaldehyde emission particle boards made of recycled wood.
- Paint used in the interior contains low volume of Volatile Organic Compounds.
Green Mark for Buildings Award (Overseas Projects)

The Arcadia, China
(Residential New Buildings)

Gold

Client / Developer
Keppel Land China Ltd
Tianjin Merryfield Property Development Co.Ltd

Project Manager
Keppel Land China Ltd

Architects
DP绮博建筑设计咨询（上海）有限公司
九源建筑设计有限公司

M&E Engineer
九源建筑设计有限公司

Structural Engineer
九源建筑设计有限公司

Quantity Surveyor
北京威宁谢工程咨询有限公司

LDI

Main Contractor
天津一建建筑工程有限公司

Landscape Consultant
Site Concepts International

ESD Consultant
Aurecon Singapore (Pte) Ltd

Interior Designer
Suying Design

Other
DTZ 戴德梁行房地产顾问（天津）有限公司

Key Features:

• Estimated energy savings: 356,234 kWh/yr; Estimated water savings: 7,787 m³/yr.

• Extensive greenery in the development.

• All villas are provided with Class 1 (4 ticks equivalent) energy efficient air-conditioners.

• Energy efficient gas heaters are extensively used.

• Thermal-heating flooring system is incorporated in all villas.
The La Quinta, China  
(Residential New Buildings)

Green Mark for Buildings Award (Overseas Projects)

Gold

The La Quinta, China
(Residential New Buildings)

Client / Developer
Keppel Land China Ltd
Spring City Golf & Lake Resort, Kunming, China

Project Manager
Keppel Land China Ltd

Architect
The Office of Bangkok Architects Co. Ltd (OBA)

M&E Engineer

Quantity Surveyor
DLS Consultant Pte Ltd

LDI

Landscape Consultant
Site Concepts International Ltd

ESD Consultant
Aurecon Singapore (Pte) Ltd

Interior Designer
Studio Fifty Four Co Ltd

Key Features:

- Estimated energy savings: 415,730 kWh/yr; Estimated water savings: 1,783 m³/yr.
- Heat pump for water heater system is used in every villa.
- Electrical buggy is provided as internal transportation around the development.
Green Mark for Buildings Award (Overseas Projects)
(Certified)

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<td>Villa Riviera (China)</td>
<td>Residential New Buildings</td>
<td>Keppel Land China Ltd Shanghai Minghong Property</td>
</tr>
<tr>
<td>2</td>
<td>Challis Damansara (Malaysia)</td>
<td>Residential New Buildings</td>
<td>Sunway City Berhad</td>
</tr>
</tbody>
</table>
Green Mark for Office Interior Award (Overseas Projects)

BHP Billiton Shared Services Centre Malaysia Sdn Bhd

Tenant/ Owner
BHP Billiton Shared Services Centre Malaysia Sdn Bhd

Renovation Consultant / Contractor
PDM International Sdn Bhd / GSIB Sdn Bhd

Facility Manager Company
Cofreth (M) Sdn Bhd

M&E Consultant
ADC Power Concept Sdn Bhd

Key Features:

• Open layout office design and standardised fit-out to ensure reusability of office furniture and systems with minimal cost and wastage.

• Provision of energy efficient lighting system with zoning and control.

• Provision of extensive recycling facilities and waste management.