





BCA Awards 2014 Listing (Green Mark Awards Category)

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 record total of 227 Green Mark Awards. 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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Nanyang Technological University

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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 Number 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

Keppel Land Limited



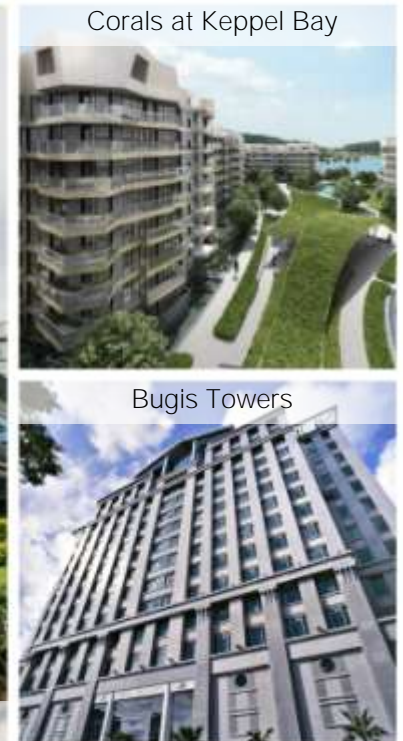
As Asia's leading developer, Keppel Land adopts a proactive approach towards environmental management and protection to create a sustainable future. Keppel Land is dedicated to develop properties that improve the quality of life of communities across Asia through integrating sustainability into our business operations.

Keppel Land is committed to establish and maintain high standards of environmental protection, and aims to continually innovate to improve its environmental performance. Since 2012, Keppel Land has set as a benchmark for all new projects in Singapore to obtain at least the BCA Green Mark Gold^{PLUS} rating, with a further target for all completed commercial buildings in Singapore to meet at least the BCA Green Mark Gold^{PLUS} standard in 2015.

Keppel Land also inculcates a green mindset among its stakeholders through its 'Go Green with Keppel Land' outreach and 'Tenants Go-green' programmes to share and promote environmental awareness and green office practices.

KEY ACHIEVEMENTS

32 Green Mark projects (including 4 Platinum and 5 Gold^{PLUS} awards)



Nanyang Technological University



A fast-rising global university, NTU is a leader in sustainable research with over \$1.2 billion in competitive funding. Under its strategic blueprint, Sustainable Earth is the **pinnacle of NTU's Five Peaks of Excellence** or research areas in which it aims to make a global mark. The others are Future Healthcare, New Media, Innovation and the Best of East and West.

NTU's lush green campus is a living laboratory for sustainability. Centres at NTU conducting sustainability research include the Earth Observatory of Singapore, Singapore Centre on Environmental Life Sciences Engineering, Nanyang Environment & Water Research Institute, and Energy Research Institute @ NTU. The centerpiece of **NTU's campus** is the award-winning building that houses the School of Art, Design and Media with its signature sloping green roof.

NTU has ambitions to go even further. It is embarking on a campus-wide initiative to reduce 35% of its energy and waste consumption by 2020.

KEY ACHIEVEMENTS

18 Green Mark projects (including 8 Platinum and 1 Gold^{PLUS} awards)

NTU Learning Hub



NTU Residential Hall at North Hill



NTU Residential Halls at Nanyang Drive



School of Art, Design and Media building, NTU

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, Gold^{PLUS}, 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 Healthcare Facilities (Pilot scheme)

APERIA

New Non-Residential Buildings

PLATINUM



Client / Developer	PLC 8 Development Pte Ltd
Architect	ADDP Architects LLP
M&E Engineer	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Structural Engineer	T C Sin & Associates
Quantity Surveyor	WT Partnership (S) Pte Ltd
Main Contractor	Soil-Build (Pte) Ltd
Landscape Consultant	Earthscape Concepts Pte Ltd
ESD Consultant	Aurecon Singapore (Pte.) Ltd
Façade Consultant	Aurecon Singapore (Pte.) Ltd

Key Features

- Estimated energy savings: 8,687,925 kWh/yr; estimated water savings: 12,118 m³/yr; ETTV: 35.51 W/m²
- Targeted chiller plant efficiency of 0.6 kW/ton
- Primarily North-South oriented with use of high performance glazing to minimise heat gain
- Extensive greenery and sky gardens
- Skylit retail mall atrium and pedestrian areas through the Block Link
- Recycling of AHU condensate and provision of heat pipes for heat recovery
- UV emitters for AHUs and low VOC paint for internal walls to improve indoor air quality
- Green lease for tenants to ensure building's design intent is maintained and adhered to during operation

AS8 Building, National University of Singapore

New Non-Residential Buildings

PLATINUM



Client / Developer	National University of Singapore
Project Manager	National University of Singapore
Architect	Architects 61 Pte Ltd
M&E Engineer	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Structural Engineer	KTP Consultants Pte Ltd
Quantity Surveyor	Rider Levett Bucknall LLP
Landscape Consultant	COEN Design International Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 698,471 kWh/yr; estimated water savings: 3,441 m³/yr; ETTV: 35.3 W/m²
- Consolidated chilled water system for multiple buildings with guaranteed performance of 0.65 kW/ton
- Use of LED lighting throughout the entire development, with motion sensors for toilets and staircases
- Use of lifts with variable voltage variable frequency motor drive and sleep mode features
- Majority of water fittings **rated WELS 'Excellent'**
- Use of rainwater for landscape irrigation
- Use of green cement in the development
- Extensive use of locally certified sustainable products in construction

CDL Green Gallery @ SBG Heritage Museum

New Non-Residential Buildings

PLATINUM



Client / Developer	City Developments Limited
Project Manager	City Developments Limited
Architect	DP Architects Pte Ltd
M&E Engineer	Mott MacDonald Singapore Pte Ltd DP Engineers Pte Ltd
Structural Engineer	Mott MacDonald Singapore Pte Ltd
Quantity Surveyor	Langdon & Seah Singapore Pte Ltd
Main Contractor	Swee Hong Limited
Landscape Consultant	Uniseal Creative Solutions Pte Ltd
ESD Consultant	DP Sustainable Design Pte Ltd

Key Features

- Estimated energy savings: 18,969 kWh/yr (excluding photovoltaic cells); estimated water savings: 263 m³/yr; ETTV: 14.71 W/m²
- Prefabricated and recyclable building module
- Carbon neutral eco-friendly building envelope material
- High COP air-conditioning system and energy efficient LED light fittings
- Zero net building energy consumption with 100% energy replacement by photovoltaic cells
- Zero use of potable water, with pond water tapped for landscape irrigation and selection of drought tolerant species
- Off-site construction to protect site with conservation of all existing trees
- Provision of vertical greenery for more than 26% of applicable façade areas as well as green roof

CleanTech Two

New Non-Residential Buildings

PLATINUM



Client / Developer	JTC Corporation
Project Manager	JTC Corporation
Architect	Jurong Consultants Pte Ltd
M&E Engineer	Jurong Consultants Pte Ltd
Structural Engineer	Jurong Consultants Pte Ltd
Quantity Surveyor	Davis Langdon KPK (Singapore) Pte Ltd
Main Contractor	Sanchoon Builders Pte Ltd
Landscape Consultant	Tropical Environment Pte Ltd

Key Features

- Estimated energy savings: 3,029,580 kWh/yr; estimated water savings: 19,417m³/yr; ETTV: 29.78 W/m²
- Chiller plant system with targeted efficiency of 0.58 kW/ton, with liquid desiccant cooling system as well as use of Phase Change Material thermal storage
- 46.7% improvement in lighting power budget over code
- 40 kWp solar panels as a renewable energy source
- Conservation of selected existing trees
- Harvested rainwater for irrigation, NEWater for cooling towers and grey water recycling for flushing
- Individual BTU Meters for all tenant spaces and implementation of green lease
- IAQ dashboard and low energy fume hoods for all fitted laboratories

Das Spektrum@CBP New Non-Residential Buildings

PLATINUM



Client / Developer	Rohde & Schwarz Property Singapore Pte Ltd
Project Manager	Langdon & Seah Project Management Pte Ltd
Architect	Forum Architects Pte Ltd
M&E Engineer	T.Y. Lin International Pte Ltd
Structural Engineer	Web Structures Pte Ltd
Quantity Surveyor	Langdon & Seah Singapore Pte Ltd
Main Contractor	Soil-Build (Pte) Ltd
Landscape Consultant	Lekker Design Pte Ltd
Esd Consultant	Earth-In-Mind Pte Ltd

Key Features

- Estimated energy savings: 765,713 kWh/yr; estimated water savings: 46,673 m³/yr; ETTV: 39.36 W/m²
- Use of energy efficient T5 lighting and task lights, with 37.7% improvement in lighting power budget from code
- Provision of energy efficient features such as solar thermal heaters, heat recovery devices and motion sensors for staircases
- **Majority of water fittings rated WELS 'Excellent'**
- Rainwater harvesting and recycling of AHU condensate as non-potable water sources for landscape irrigation
- Extensive use of sustainable products in construction
- Extensive coverage of greenery within development, with green plot ratio of 4.8
- Provision of electric vehicle charging station and bicycle lots

DB Schenker

New Non-Residential Buildings

PLATINUM



Client / Developer	Schenker Singapore Pte Ltd
Main Contractor	Boustead Projects Pte Ltd
Architect	HA Architects Pte Ltd
ACMV Contractor	Design Air Engineering Pte Ltd, IGnesis Consultants Pte Ltd
Structural Engineer	YH Liew Consulting Engineers
Electrical Contractor	Nylect Engineering Pte Ltd
Plumbing Contractor	Tat Lee Sanitary & Plumbing Pte Ltd
ESD Consultant	IGnesis Consultants Pte Ltd

Key Features

- Estimated energy savings: 2,216,750 kWh/yr; estimated water savings: 1,183 m³/yr; ETTV:14.9 W/m²
- Chiller plant overall part load efficiency of 0.63 kW/ton
- 34.4% improvement in air distribution efficiency over baseline
- Efficient lighting system with 47% improvement over code
- Motion sensors for staircases half-landings
- Use of cooling tower water treatment system which can achieve 7 or better cycles of concentration at acceptable water quality
- Use of recycle concrete aggregates and washed copper slag in construction
- Recycling of 100% of AHU condensate

Design School, Singapore Polytechnic

New Non-Residential Buildings

PLATINUM



Client / Developer	Singapore Polytechnic
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	WT Partnership (Singapore) Pte Ltd
Main Contractor	CKT Thomas Pte Ltd
Landscape Consultant	COEN Design International Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 590,844 kWh/yr; estimated water savings: 5,928 m³/yr; ETTV: 37.54 W/m²
- Efficient chiller plant system targeting performance of 0.63 kW/ton
- Energy efficient T5 and LED lighting resulting in 34% improvement over code lighting power budget
- Naturally ventilated corridors and lift lobbies
- Majority of water fittings rated WELS 'Excellent'
- Use of NEWater for landscape irrigation
- Use of ground granulated blast furnace slag, recycled concrete aggregates and washed copper slag in construction
- Use of food composter at food court to convert food waste to water for cleaning

ESSEC Business School, Nepal Hill

New Non-Residential Buildings

PLATINUM



Client / Developer	ESSEC
Project Manager	Property Facility Services 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	Langdon & Seah Singapore Pte Ltd
Main Contractor	Obayashi Corporation
Landscape Consultant	Peridian Asia Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 461,169 kWh/yr ; estimated water savings: 2,586 m³/yr; ETTV: 38.8 W/m²
- VRF air conditioning system with design efficiency of 0.71 kW/ton
- Adoption of energy efficient T5 and LED lighting
- Use of solar thermal water heaters
- Majority of water fittings rated WELS 'Excellent'
- Extensive use of recycled concrete aggregates and other locally certified sustainable products in construction
- Lush greenery with green plot ratio of 3.9
- Green education corner

Galaxis

New Non-Residential Buildings

PLATINUM



Client / Developer	Ascendas Fusion 5 Pte Ltd
Project Manager	Ascendas Services Pte Ltd
Architect	Aedas (Singapore) Pte Ltd
M&E Engineer	Mott MacDonald Singapore Pte Ltd
Structural Engineer	Meinhardt Infrastructure Pte Ltd
Quantity Surveyor	WT Partnership (S) Pte Ltd
Main Contractor	Singapore Piling & Civil Engineering Pte Ltd
Landscape Consultant	Earthscape Concepts Pte Ltd
Lighting Consultant	Light Cibles Pte Ltd
ESD Consultant	Ascendas Services Pte. Ltd.

Key Features

- Estimated energy savings: 4,407,322 kWh/yr ; estimated water savings: 17,606 m³/yr; ETTV: 34.77 W/m²
- Chiller plant system with targeted efficiency of 0.61 kW/ton
- Use of T5 lighting for office areas and LED lamps for common areas, resulting in 39.6% savings over code lighting power budget
- Heat recovery wheel to recover cool air from toilet exhaust for pre-cool AHU unit on rooftop
- Majority of water fittings rated WELS 'Excellent'
- Usage of green cement and washed copper slag for the construction of the super structure
- Extensive use of sustainable products in construction
- Extensive greenery on podium, mid-level roof and roof top, with a green plot ratio of 2.96

IES Green Building at Bukit Tinggi

New Non-Residential Buildings

PLATINUM



Client / Developer	Institution Of Engineers Singapore
Architect	RSP Architects & Engineers
M&E Engineer	Squire Mech Pte Ltd
Structural Engineer	RSP Architects Planners & Engineers (Pte) Ltd
Quantity Surveyor	Langdon & Seah Singapore Pte Ltd
Main Contractor	Expeditious Pte Ltd
Green Specialist	Er. Joseph Goh, Ms Thong Lee Ying
Energy Modelling	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 80,344 kWh/yr ; estimated water savings: 3773 m³/yr; ETTV: 39.9 W/m²
- Expected operating part load efficiency of less than 0.75 kW/ton for air cooled system
- Energy efficient LED and T5 lighting with 39% savings over code
- PUB ABC Waters design features such as rain gardens to treat stormwater run-off
- 21 kWp photovoltaic system to replace 25% of total building energy consumption
- All water fittings in development rated WELS 'Excellent'
- Green gallery housing exhibits
- Eco tour around the development for students, professionals and national bodies

INSEAD Leadership Development Centre New Non-Residential Buildings

PLATINUM



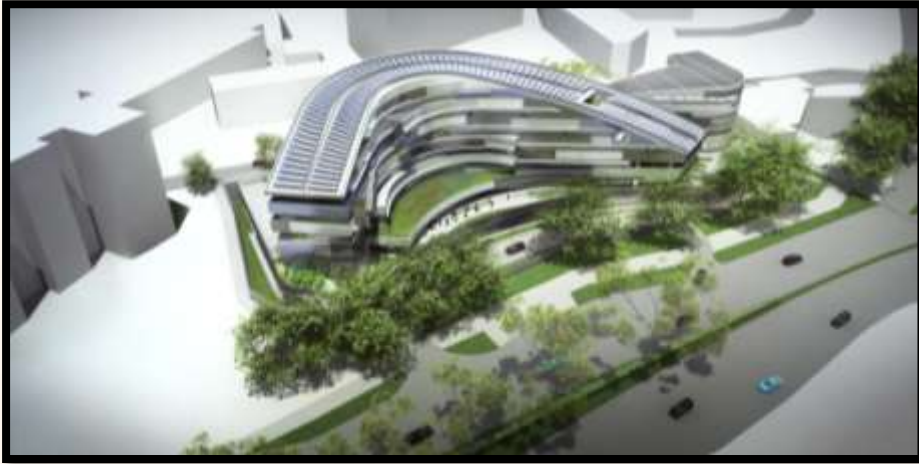
Client / Developer	INSEAD (Incorporated in Singapore)
Project Manager	Lend Lease Singapore Pte Ltd
Architect	RSP Architects Planners and Engineers (Pte) Ltd
M&E Engineer	Bescon Consulting Engineers Pte
Structural Engineer	CPG Consultants Pte Ltd
Main Contractor	Lend Lease Singapore Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd
Client / Developer	INSEAD (Incorporated in Singapore)
Project Manager	Lend Lease Singapore Pte Ltd

Key Features

- Estimated energy savings: 911,428 kWh/yr; estimated water savings: 6,180 m³/yr; ETTV: 31.17 W/m²
- Simulated energy savings of 35.8% with energy efficient features as compared to reference energy model
- Chiller plant operating efficiency of 0.58 kW/ton
- Low face velocity design for air system fan resulting in high airside savings of 55% over SS553
- Energy efficient LED and T5 lighting with 32% savings over code
- Solar photovoltaic panels with system capacity of 100kWp
- Extensive use of environmentally friendly sustainable materials in construction
- Provision of waste food bio digester

INTERPOL Global Complex for Innovation New Non-Residential Buildings

PLATINUM



Client / Developer	Ministry of Home Affairs
Project Manager	SIPM Consultants 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	Incorporated Builders Pte Ltd
ESD Consultants	CPGreen - CPG Consultants Pte Ltd ZEB-Technology Pte Ltd

Key Features

- Estimated energy savings: 1,203,478 kWh/yr; estimated water savings: 11,160 m³/yr; ETTV: 25.16 W/m²
- Chiller plant system with targeted full load performance of 0.55 kW/ton
- Energy efficient T5 and LED lighting with savings of 43.3 % from code
- Provision of motion sensors and photocell sensors
- Use of solar photovoltaic panels to harness renewable solar energy for 4% of building electricity consumption
- Majority of water fittings rated WELS 'Excellent'
- Extensive use of green cements, recycled concrete aggregates and washed copper slag in construction
- Provision of stormwater management system

Keppel Data Centres, Keppel Datahub 2

New Non-Residential Buildings

PLATINUM



Client / Developer	Keppel Datahub 2 Pte Ltd
Architect	BK Consulting Engineers Pte Ltd
M&E Engineer	Plan-One Engineering Services
Structural Engineer	BK Consulting Engineers Pte Ltd
Main Contractor	Acme Associates Pte Ltd
Green Mark Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 15,326,774 kWh/yr; estimated water savings: 3001 m³/yr; ETTV: 10.66 W/m²
- Chilled water system efficiency of 0.6 kW/ton
- Provision of variable speed controls for chilled-water pumps and cooling tower fans
- Motion sensors for staircases half landing
- Naturally ventilated carparks, toilets and staircases
- Majority of water fittings rated 'Excellent'
- Restoration, conserving or relocating of trees on site
- Adoption of demolition protocol to maximise resource recovery of demolition materials for reuse or recycling with recovery rate of more than 35% crushed concrete waste

Mapletree Benoi Logistics Hub

New Non-Residential Buildings

PLATINUM



Client / Developer	HSBC Institutional Trust Services (Singapore) Ltd as Trustee of Mapletree Logistics Trust
Architect	Kung & Tan Architects
M&E Engineer	Gims & Associates Pte Ltd
Structural Engineer	Tham & Wong LLP
Quantity Surveyor	Turner & Townsend Pte Ltd
Main Contractor	Jian Huang Construction Co Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 1,439,410 kWh/yr; estimated water savings: 1,829 m³/yr
- Efficient lighting layout and fittings with high bay motion sensor control, resulting in 50% savings from code
- Roof with skylight stripe integrated with photo sensor
- Daylight and CFD simulation done to optimise building design
- All water fittings rated WELS 'Excellent'
- Building constructed using sustainable materials and recycled concrete aggregates
- Adoption of flat slab design resulting in low concrete usage index of 0.48 m³/m²
- Extensive recycling of demolition materials from existing site

Mapletree Business City II

New Non-Residential Buildings

PLATINUM



Client / Developer	Mapletree Investments Pte Ltd
Project Manager	Mapletree Investments Pte Ltd
Architect	DCA Architects Pte Ltd
M&E Engineer	Mott MacDonald Singapore Pte Ltd
Structural Engineer	P&T Consultants Pte Ltd
Quantity Surveyor	Northcroft Lim Consultants Pte Ltd
Landscape Consultant	Shma Company Ltd
Facade Consultant	Aurecon Singapore (Pte.) Ltd
Lighting Consultant	The Lightbox Pte Ltd

Key Features

- Estimated energy savings: 8,628,208 kWh/yr; estimated water savings: 31,030 m³/yr; ETTV: 33.88 W/m²
- Building designed to minimise of East-West facing façades
- Use of existing chilled water plant from Mapletree Business City I to save resources
- Energy efficient T5 and LED lighting
- Energy efficient features such as motion sensors, heat recovery features and induction VAV system
- Lush greenery with an impressive green plot ratio of 8.4
- Extensive use of green cements, recycled concrete aggregates and washed copper slag in construction
- Adoption of demolition protocol, with more than 35% of crushed concrete waste to be sent to approved recyclers with proper facilities

Nanyang Polytechnic Campus Expansion New Non-Residential Buildings

PLATINUM



Client / Developer	Nanyang Polytechnic, Singapore Institute of Technology
Project Manager	PM Link 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	WT Partnership (S) Pte Ltd
Main Contractor	Gammon Pte Ltd
Landscape Consultant	COEN Design International Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 3,365,133 kWh/yr ; estimated water savings: 19,248 m³/yr; ETTV: 39.04 W/m²
- High efficiency water cooled chiller plant system targeting average performance of 0.64 kW/ton
- Naturally ventilated atrium, study and common areas
- Efficient T5 and LED lighting system with motion sensors control
- All water fittings rated WELS 'Excellent'
- Use of green cements, recycled concrete aggregates and washed copper slag in construction
- Extensive use of building components made of sustainable materials in construction
- Green education program and eco kiosk to spread environmental awareness to users and students

Passion Wave at Marina Bay

New Non-Residential Buildings

PLATINUM



Client / Developer	People's Association
Project Manager	MS61 Pte Ltd
Architect	Liu & Wo Architects Pte Ltd
M&E Engineer	GIMS & Associates Pte Ltd
Structural Engineer	Meinhardt (Singapore) Pte Ltd
Quantity Surveyor	PEB Consultants
Main Contractor	QXY Resources Pte Ltd
Landscape Consultant	BHNA Pte Ltd
ESD Consultant	GreenA Consultants Pte Ltd

Key Features

- Estimated energy savings: 186,101 kWh/yr ; estimated water savings: 9,500 m³/yr; ETTV: 34.88 W/m²
- 57.6% improvement in lighting power budget from code
- All fittings in the development rated WELS 'Excellent'
- Use of recycled concrete aggregates in construction
- Well designed covered cycling stations with provision of bicycle air-pump and built-in bicycle locks
- Enhanced green connectivity with eco-gardens with educational trail
- Wind turbine powered by exhaust air to dry jackets
- Salvaged tree trunks for perimeter parking kerb

Production Coordination Centre at Sembmarine Integrated Yard @ Tuas

New Non-Residential Buildings

PLATINUM



Client / Developer	Jurong Shipyard Pte Ltd
Architect	Sembcorp Architects & Engineers Pte Ltd
M&E Engineer	Sembcorp Architects & Engineers Pte Ltd
Structural Engineer	Sembcorp Architects & Engineers Pte Ltd
Quantity Surveyor	Sembcorp Architects & Engineers Pte Ltd
Main Contractor	Ang Cheng Guan Construction Pte Ltd
Landscape Consultant	Chen Wa Landscape

Key Features

- Estimated energy savings: 766,513 kWh/yr ; estimated water savings: 7,977 m³; ETTV: 39.16 W/m²
- Targeted overall air-conditioning plant part load efficiency of 0.62 kW/ton
- Selection of energy efficient T5 and LED lighting
- Extensive use of water fittings are rated WELS 'Excellent'
- Use of about 2754 tonnes of recycled concrete aggregates and 1154 tonnes of washed copper slag to replace concrete coarse and fine aggregates respectively.
- Recovery of AHU condensate water for cooling tower makeup
- Provision of siphonic rainwater drainage system
- Use of titanium dioxide self-cleaning paint for all external facades

Proposed Erection of New Market and Hawker Centre with 2 Basement Carparks

New Non-Residential Buildings

PLATINUM



Client / Developer	National Environment Agency
Project Manager	PM Link Pte Ltd
Architect	SQFT Architect Pte Ltd
M&E Engineer	CPG Consultants Pte Ltd
Structural Engineer	CPG Consultants Pte Ltd
Quantity Surveyor	CPG Consultants Pte Ltd
Main Contractor	Lam Soon Construction Pte Ltd
ESD Consultant	Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 635,442 kWh/yr ; estimated water savings: 57,124 m³/yr
- Naturally ventilated design with adjustable louvers
- Energy efficient light fittings and fans
- Design to optimise daylight with sun pipes daylight sensors
- Water efficient features such as WELS 'Excellent' rated water fittings and rainwater harvesting system
- Extensive use of sustainable products in construction
- Provision of vertical green wall
- Food waste recycling strategies

Royal Square at Novena New Non-Residential Buildings

PLATINUM



Client / Developer	Hoi Hup Sunway Novena Pte Ltd
Project Manager	Hoi Hup Sunway Novena Pte Ltd
Architect	Consortium 168 Architects Pte Ltd
M&E Engineer	Rankine & Hill (S) Pte Ltd
Structural Engineer	CP Lim & Partners LLP
Main Contractor	Straits Construction Singapore Pte Ltd
Landscape Consultant	Sitetectonix Pte Ltd
ESD Consultant	Arup Singapore Pte Ltd
Façade Consultant	Arup Singapore Pte Ltd

Key Features

- Estimated energy savings: 3,598,563 kWh/yr ; estimated water savings: 19,058 m³/yr; ETTV: 30.95 W/m²
- Overall design chilled water plant efficiency of 0.58 kW/ton
- Optimized building envelope with the use of glass with good solar coefficient and shading devices.
- Creatively designed Musical Stairs running adjacent to escalators, a commendable passive design strategy to promote the use of stairs over escalators or lifts
- Use of energy efficient LED and T5 lighting
- Use of motion sensors coupled to lighting at lift lobbies, staircases and common toilets
- Improved indoor environment for a healthy building
- Extensive greenery with green plot ratio of 5.42 as well as restoration of selected trees on site

SBF Center

New Non-Residential Buildings

PLATINUM



Client / Developer	Far East Opus Pte Ltd
Project Manager	Langdon & Seah Singapore Pte Ltd
Architect	DP Architects Pte Ltd
M&E Engineer	Meinhardt (Singapore) Pte Ltd
Structural Engineer	Meinhardt (Singapore) Pte Ltd
Quantity Surveyor	Langdon & Seah Singapore Pte Ltd
Main Contractor	Woh Hup Pte Ltd
Landscape Consultant	DP Green Pte Ltd
ESD Consultant	DP Sustainable Design Pte Ltd

Key Features

- Estimated energy savings: 1,944,300 kWh/yr ; estimated water savings: 20,779 m³/yr; ETTV: 33.67 W/m²
- Energy efficient air-conditioning system with expected operated part load condition of 0.576 kW/ton
- 45% improvement in air distribution system efficiency over code
- Energy efficient lighting with 40.6% improvement from code lighting power budget
- Use of alternative water sources such as rainwater and NEWater to reduce reliance on usage of potable water
- Extensive use of green concrete
- High green plot ratio of 8.4
- Heat recovery from toilet exhaust

Sentosa Family Entertainment Centre New Non-Residential Buildings

PLATINUM



Client / Developer	Sentosa Development Corporation
Architect	CPG Consultants Pte Ltd, AWP Pte Ltd
M&E Engineer	CPG Consultants Pte Ltd, ST Architects & Engineers Pte Ltd
Structural Engineer	KTP Consultants Pte Ltd
Main Contractor	Debenho Pte Ltd
Landscape Consultant	Envirospec Pte Ltd
Lighting Consultant	Meinhardt Light Studio Pte Ltd
ESD Consultant	G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 1,181,800 kWh/yr; estimated water savings: 38,787 m³/yr; ETTV: 32 W/m²
- Chiller plant system with efficiency of 0.56 kW/ton
- Use of energy efficient T5 and LED lighting, with 37.1% improvement in lighting power budget from code
- All water fittings in the development rated WELS 'Excellent'
- Extensive use of SGLS certified products
- Conservation of 3 existing trees on site
- Total green roof area of 3,734m², constituting 51% of the total accessible roof space
- Green educational corners and eco-trail to showcase green features within the development

Singapore Institute of Technology @ SP Building & SPorts ARena New Non-Residential Buildings

PLATINUM



Client / Developer	Singapore Polytechnic, Singapore Institute of Technology
Project Manager	Project Innovations Pte Ltd
Architect	DP Architects Pte Ltd
M&E Engineer	AECOM Singapore Pte Ltd
Structural Engineer	AECOM Singapore Pte Ltd
Quantity Surveyor	Langdon & Seah Singapore Pte Ltd
Main Contractor	Koon Seng Construction Pte Ltd
Landscape Consultant	DP Green Pte Ltd
ESD Consultant	DP Sustainable Design Pte Ltd

Key Features

- Estimated energy savings: 1,574,262 kWh/yr; estimated water savings: 2660 m³/yr; ETTV: 23.96 W/m²
- Computational Fluid Dynamics (CFD) simulations carried out to achieve efficient natural ventilation
- Efficient water-cooled air-conditioning system with targeted system efficiency of 0.63 kW/ton
- Energy efficient LED and T5 lighting, with 40.3% savings from code
- UV light emitters for all AHUs
- Automatic cleaning system for condenser tube
- Siphonic rainwater discharge system
- Green educational corner with LCD display of energy and water consumption

Singapore Management University School of Law New Non-Residential Buildings

PLATINUM



Client / Developer

Singapore Management University

Project Manager

SIPM Consultants Pte Ltd

Architect

MKPL Architects Pte Ltd

M&E Engineer

AECOM Singapore

Structural Engineer

Meinhardt (Singapore) Pte Ltd

Quantity Surveyor

Rider Levett Bucknall LLP

Landscape Consultant

Sitetectonix Pte Ltd

Lighting Designer

Light Cibles Pte Ltd

ESD / Façade Acoustics Consultant

Arup Singapore Pte Ltd

Key Features

- Estimated energy savings: 2,055,741 kWh/yr; estimated water savings: 29,584 m³/yr; ETTV: 37.74 W/m²
- Chiller plant system efficiency of 0.621 kW/ton
- Naturally ventilated and shaded atrium and foyers
- Daylighting in library and foyers
- Restoration of trees on site, conserving or relocating of existing trees on site
- Use of lifts and escalators with variable voltage variable frequency motor drive and sleep mode features
- Extensive use of sustainable products in construction
- Recycling of AHU condensate

Sunhuan Building

New Non-Residential Buildings

PLATINUM



Client / Developer	Sunhuan Construction Pte Ltd
Architect	ACE Architects & Associates
M&E Engineer	HPX Consulting Engineers
Structural Engineer	TENWIT Consultants Pte Ltd
Quantity Surveyor	Sunhuan Construction Pte Ltd
Main Contractor	Sunhuan Construction Pte Ltd, Sun Fong Trading Pte Ltd (JV)
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 344,461 kWh/yr; estimated water savings: 1,831 m³/yr; ETTV: 34.95 W/m²
- Minimized west facades with all units/ rooms with windows facing North and South
- Naturally ventilated toilets, corridors, lift lobbies and staircases with CFD simulations carried out to further optimise natural ventilation
- VRF system part load performance of 0.65 kW/ton with use of Phase Change material to reduce the office area cooling load
- Energy efficient LED and T5 lighting for offices, factory and common areas
- Motion sensors for toilets, staircases and photo-sensors for lift lobbies
- All water fittings in the development rated WELS 'Excellent'
- Extensive use of sustainable products in construction

Temasek Polytechnic – West Wing 1 & 2

New Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 1,060,438 kWh/yr; estimated water savings: 2,907 m³/yr; ETTV: 32.50 W/m²
- Chiller plant system with high targeted efficiency of 0.58 kW/ton
- Automatic condenser tube cleaning system for chiller plant
- Use of energy efficient T5 lighting resulting in 33.8% improvement over code lighting power budget
- Solar photovoltaic panels on roof of School of Aerospace and Engineering with expected energy yield of 82,000 kWh/year
- Louvers for efficient natural ventilation of atriums, lift lobbies and corridors
- Majority of water fittings rated WELS 'Excellent'
- Extensive usage of sustainable products in construction

Client / Developer	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 Construction Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

The Academic & Workshop Block, BCA Academy

New Non-Residential Buildings

PLATINUM



Client / Developer	BCA Academy Of the Built Environment
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	Progressive Builders Pte Ltd
Landscape Consultant	COEN Design International Pte Ltd
CFD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 967,057 kWh/yr ; estimated water savings: 4751 m³/yr; ETTV: 34.88 W/m²
- Use of integrated BIM for better coordination across the entire construction value chain during both design and construction
- Active chilled beam and passive displacement ventilation system at classrooms
- Under-floor displacement air-conditioning system for lecture theatres
- Solar photovoltaic panels of 34.5 kWp to replace building consumption by 2.27%
- WELS 'Excellent' rated water fittings
- Use of sustainable building products, green cements, recycled concrete aggregates and washed copper slag
- Green tour with innovation deck to demonstrate green building design best practices

The Integrated Building

New Non-Residential Buildings

PLATINUM



Developer	Ministry of Health
Client	Changi General Hospital
Architect	RDC Architects Pte Ltd
M&E Engineer	Parsons Brinckerhoff Pte Ltd
Structural Engineer	Parsons Brinckerhoff Pte Ltd
Quantity Surveyor	Langdon & Seah Singapore Pte Ltd
Main Contractor	Penta-Ocean Construction Co., Ltd
Landscape Consultant	Mace Studio Pte Ltd
ESD Consultant	Parsons Brinckerhoff Pte Ltd

Key Features

- Estimated energy savings: 4,232,517 kWh/yr ; estimated water savings: 4,593 m³/yr; ETTV: 38.7 W/m²
- Design for natural ventilation by layout optimisation and wind catchers
- Chilled water plant design efficiency of 0.57 kW/ton
- 32.9% improvement in lighting power budget from code
- Hot water generation using heat pump to recover heat from chilled water return
- 35 kWp of Photovoltaic cells installation for renewable energy generation
- 100% replacement of potable water usage for landscape irrigation, cooling tower and toilet flushing
- Extensive greenery with green plot ratio of 5.15

313@Somerset

Existing Non-Residential Buildings

PLATINUM



Building Owner	Lend Lease Retail Investments 1 Pte Ltd
ESCO	Kaer Pte Ltd
ESD Consultant	Kaer Pte Ltd

Key Features

- Estimated energy savings: 986,768 kWh/yr; estimated water savings: 14,190 m³/yr
- First retail building with development performance contracting as a means to maintain committed plant efficiency and optimise plant performance on an ongoing basis
- Measured and verified operating chiller plant efficiency of 0.64 kW/ton
- More than 23% airside savings with energy saving ventilation technologies such as heat recovery wheels, jet fans, big ass fans, CO and CO₂ sensors
- Renewable energy production with use of cogeneration technology and photovoltaic panels
- First building with tenant green lease coupled with incentive schemes for continued Platinum performance.
- 81% of total water consumption by non-potable water
- Recycling of cooking oil

Alexandra Point

Existing Non-Residential Buildings

PLATINUM



Building Owner	FCL Alexandra Point Pte Ltd
ESD / Green Consultant	Kaer Pte Ltd
ESCO	Kaer Pte Ltd

Key Features

- Estimated energy savings: 1,162,068 kWh/yr; estimated water savings: 30,646 m³/yr
- Chiller plant system efficiency of 0.60kW/ton with variable speed drive controls for chillers, pumps, cooling tower
- 52% improvement in air distribution system efficiency over code
- 37% improvement in lighting power budget over code
- All water fittings in the development committed to be rated WELS 'Excellent'
- Energy, environmental and green procurement policies in place
- Real time display for continuous remote monitoring of building's chiller plant performance
- Green interactive corner

Bugis Junction & Bugis Junction Towers (MCST 2137)

Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 5,804,205 kWh/yr; estimated water savings: 1,072 m³/yr
- Chiller plant design system efficiency at 0.6 kW/ton with performance guaranteed
- Use of energy efficient T5 and LED lighting in the retail mall and office common areas
- Strong tenant and occupant centric green initiatives such as lunch-time green talks and recycling of various items including books, spectacles, lamps and mobile phones
- Use of skylight in the retail mall spaces to introduce daylighting to the indoor spaces
- Planned installation of 181 kWp photovoltaic panels estimated to recover 0.5% of the total annual building energy consumption

Building Owner	The Management Corporation Strata Title Plan No. 2137
Building Management	CapitaMall Trust (for Bugis Junction) K-REIT Asia (for Bugis Towers)
ESD Consultant	Kaer Pte Ltd
ESCO	Kaer Pte Ltd

Central Mall Office Tower

Existing Non-Residential Buildings

PLATINUM



Building Owner	City Developments Limited
Facility Management	City Developments Limited
ESCO	CBM Solutions Pte Ltd
ESD / Green Consultant	CBM Solutions Pte Ltd

Key Features

- Estimated energy savings: 780,585 kWh/yr
- Chiller plant system efficiency of 0.61 kW/ton, with variable speed drive controls in place
- 52.71% improvement in air distribution system efficiency over code
- Use of energy efficient LEDs and T5 light fittings, with 32.5% improvement in lighting power budget over code
- Motion sensors for toilets and staircases half landings
- PUB Water Efficient Building
- Provision of rooftop greenery
- Use of low VOC paint and environmentally friendly adhesives

City House

Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 1,248,429 kWh/yr
- Committed to upgrade chiller plant system to meet efficiency of 0.595 kW/ton
- Installation of variable speed drive controls for pumps and cooling towers
- Nanoflex technology for all office lightings, with 34.7% improvement in lighting power budget over code
- Motion sensors for toilets and staircases half-landings
- Use of lifts with variable voltage variable frequency motor drive and sleep mode features
- All water fittings rated WELS 'Excellent' or 'Very Good'
- Provision of drought tolerant plants and roof top garden

Building Owner

City Developments Limited

Facility Management

City Developments Limited

ESCO

CBM Solutions Pte Ltd

ESD / Green Consultant

CBM Solutions Pte Ltd

Connection ONE

Existing Non-Residential Buildings

PLATINUM



Building Owner

Housing & Development Board

Facility Management

Indeco Engineers Pte Ltd

ESCO

Johnson Controls (S) Pte Ltd

ESD / Green Consultant

Johnson Controls (S) Pte Ltd

Key Features

- Estimated energy savings: 1,997,999 kWh/yr; estimated water savings: 3,485 m³/yr
- Chiller plant system efficiency of 0.58 kW/ton
- Energy efficient LED lightings used for common areas and carpark
- Majority of carpark is naturally ventilated
- Use of lifts with variable voltage and variable frequency motor drive and sleep mode features
- Use of NEWater for irrigation, toilet flushing, cleaning of common area and cooling tower make up water
- Provision of vertical greenery
- Priority parking lots for CNG/ hybrid/ electric vehicles

Copthorne King's Hotel

Existing Non-Residential Buildings

PLATINUM



Building Owner

Republic Hotels & Resorts Limited

ESCO

Kaer Pte Ltd

ESD Consultant

Kaer Pte Ltd

Key Features

- Estimated energy savings : 1,310,204 kWh/yr; estimated water savings: 2,487 m³/yr
- Efficient chiller plant with system efficiency of 0.65 kW/ton
- Auto condenser tube cleaning system
- Use of energy efficient LED lighting and T5 tubes, with 44% improvement in lighting power budget over code
- Use of heat pump for hot water generation and heat recovery system
- PUB Water Efficient Building
- Energy Management System for control and monitoring of the chiller plant

Daikin Airconditioning (Singapore)

Existing Non-Residential Buildings

PLATINUM



Building Owner

Daikin Airconditioning (Singapore) Pte Ltd

Facility Management

Daikin Airconditioning (Singapore) Pte Ltd

ESCO

DTZ Facilities & Engineering (S) Limited

ESD Consultant

DTZ Facilities & Engineering (S) Limited

Key Features

- Estimated energy savings: 461,328 kWh/yr; estimated water savings: 4,476 m³/yr
- Efficient VRV system and air distribution system
- 79.3% improvement in air distribution system efficiency over baseline
- Natural ventilated factory warehouse and carpark
- Use of energy efficient LED lighting
- PUB Water Efficient Building
- Extensive vertical and roof top greenery
- Provision of priority parking lots for hybrid and electric vehicles within the development

DBS Asia Hub Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 1,434,742 kWh/yr; estimated water savings: 4,583 m³/yr
- Building envelope designed with double glazed low emission glass achieving a ETTV of 40.75 W/m²
- Air distribution system achieving 41.4 % savings over baseline requirements
- Lighting power budget achieving 26.8% savings over baseline requirements
- Use of lifts with variable voltage variable frequency motor drive and sleep mode features
- Water fittings rated WELS 'Excellent' and 'Very Good'
- Comprehensive energy and water efficiency improvement plans as well as IAQ and waste management programs
- Recycling of coffee beans as well as fruit and vegetable scraps to compost for landscape greenery

Building Sole Tenant	DBS Bank Ltd
Facility Management	Jones Lang LaSalle Property Management Pte Ltd
ESD Consultant	Aurecon Singapore Pte Ltd

Fuji Xerox Towers

Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 926,951 kWh/yr
- Chiller plant efficiency of 0.62 kW/ton
- Carpark guidance system
- Naturally ventilated atrium
- Use of regenerative lifts with variable voltage variable frequency motor drive and sleep mode features
- Recycling of AHU condensate
- PUB Water Efficient Building

Building Owner

City Developments Limited

Facility Management

City Developments Limited

ESCO

CBM Solutions Pte Ltd

ESD / Green Consultant

CBM Solutions Pte Ltd

Furama RiverFront Singapore

Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 2,882,728 kWh/yr
- Measured and verified good chiller plant system efficiency of 0.59 kW/ton
- LED lighting for common areas
- Heat pump system for hot water provision
- PUB Water Efficient Building
- Environmentally-friendly enzymes cultivated from kitchen food waste to be used for cleaning purposes
- Recycling programmes to promote segregation of waste

Building Owner	Furama RiverFront, Singapore
Facility Management	Furama RiverFront, Singapore
ESCO	G-Energy Global Pte Ltd
ESD Consultant	G-Energy Global Pte Ltd
Others	Chan Han Chong Consulting Engineers

Great World Serviced Apartments

Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 2,771,140 kWh/yr; estimated water savings: 5,500 m³/yr
- Efficient central chiller plant with system efficiency of 0.62 kW/RT and targeted to improve to 0.59 kW/RT after optimisation
- Efficient T5 and LED lightings installed in the car parks, lobbies and apartment units
- Heat pump used for jacuzzi pool hot water system
- Motion sensors linked to the lightings are provided for staff toilets and gym toilets; and photocell sensors for the lightings in the lift lobbies
- Cooling Energy Data Collection System (CEDCS) allows the building management to monitor energy consumed for cooling of respective units

Building Owner	Midpoint Properties Limited
Facility Management	Great World Serviced Apartments
ESCO	G-Energy Global Pte Ltd
ESD Consultant	G-Energy Global Pte Ltd

HarbourFront Centre

Existing Non-Residential Buildings

PLATINUM



Building Owner	HarbourFront Centre Pte Ltd
Facility Management	HarbourFront Centre Pte Ltd
ESCO	LJ Energy Pte Ltd
ESD / Green Consultant	LJ Energy Pte Ltd

Key Features

- Estimated energy savings: 7,000 kWh/yr; estimated water savings: 50,500 m³/yr
- Chiller plant system efficiency of 0.65 kW/RT
- Variable speed drive controls for all pumps and cooling towers serving the chiller plant, as well as upgraded permanent M&V system
- Variable speed drives for all escalators serving the retail mall
- 28.5% improvement in lighting power budget over code
- Automatic temperature set-back controls for chiller plant to regulate and avoid overcooling of indoor space temperature when outdoor ambient temperature is low
- Automatic controls to regulate the fresh air intake for all AHUs based on carbon dioxide levels
- Use of NEWater for cooling tower make-up water consumption resulting in a reduction of potable water consumption of about 24%

HDB Centre of Building Research Existing Non-Residential Buildings

PLATINUM



Building Owner

Housing & Development Board

Facility Management

HDB Building Research Institute

Key Features

- Estimated energy savings: 439,236 kWh/yr
- Use VRV air-conditioning system with efficiency of 0.73 kW/ton
- Use of solar photovoltaic panels replacing 10.5% of electricity consumption of common areas
- Use of energy efficient LED lighting
- Use of self-cleaning paint for the building façade.
- Use of eco lift constructed using recycled concrete aggregates panels
- PUB Water Efficient Building
- Extensive greenery at rooftop and vertical greenery

HDB Hub

Existing Non-Residential Buildings

PLATINUM



Building Owner

Housing & Development Board

Facility Management

CPG Facilities Management Pte Ltd

ESCO

Johnson Controls (S) Pte Ltd

ESD Consultant

Johnson Controls (S) Pte Ltd

Key Features

- Estimated energy savings: 6,017,174 kWh/yr
- Chiller plant system efficiency of 0.625 kW/ton
- LED lightings for common areas and carpark
- Lift installed with variable voltage variable frequency motor drive controls and sleep mode features
- Installation of solar photovoltaic panels at rooftop generating 1.23% of total building electricity consumption
- Extensive greenery supplemented by vertical green walls
- Priority parking lots for CNG/ hybrid/ electric vehicles
- Provision of green corner at HDB Gallery

ITE College West

Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 38,858 kWh/yr; estimated water savings: 29,930 m³/yr
- Achieved ETTV of 39 W/m².
- Chiller plant operating system efficiency of 0.64 kW/ton
- Permanent monitoring instrumentation in place for continuous monitoring of chiller system performance.
- 37.4% improvement in lighting power budget from code
- Energy efficient escalators and lifts with variable voltage variable frequency motor drive and sleep mode features
- PUB Water Efficient Building, with majority of water fittings rated WELS 'Excellent'
- Provision of extensive greenery including rooftop gardens and vertical greenery

Building Owner	Gammon Capital (West) Pte Ltd
Facility Management	DTZ Facilities & Engineering (S) Limited
ESCO	DTZ Facilities & Engineering (S) Limited
ESD / Green Consultant	DTZ Facilities & Engineering (S) Limited

Keppel Bay Tower

Existing Non-Residential Buildings

PLATINUM



Building Owner

HarbourFront One Private Limited

Facility Management

Keppel FMO Pte Ltd

ESD Consultant

Johnson Controls (S) Pte Ltd

ESCO

Johnson Controls (S) Pte Ltd

Key Features

- Estimated energy savings: 760,793 kWh/yr; estimated water savings: 4,255 m³/yr
- Chiller plant system efficiency of 0.60 kW/ton with provision of permanent instrumentation to monitor the chiller plant operating system efficiency
- PUB Water Efficient Building
- LED lighting for car park and staircases, with motion sensor controls for lighting at staircases and toilets
- All AHUs equipped with high efficiency MERV 14 air filter
- Automatic condenser tube cleaning system for chiller plant
- Conducted energy audits for tenants, with several tenants having been awarded the Green Mark for Office Interiors

King's Centre

Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 926,673 kWh/yr;
- Chiller plant efficiency of 0.624 kW/ton
- Variable speed drives for all pumps and cooling towers
- Replacement on staircase and carpark lights to energy efficient LED
- Motion sensors coupled to LED lighting for staircases and carparks
- Carpark ventilation system linked to CO sensors
- Solar photovoltaic cells replacing 0.57% of the total building consumption
- Owner committed to install MERV 13 filters in all AHUs

Building Owner	City Developments Limited
Facility Management	City Developments Limited
ESCO	CBM Solutions Pte Ltd
ESD Consultant	CBM Solutions Pte Ltd
Others	CBM Engineering

Mapletree Anson

Existing Non-Residential Buildings

PLATINUM



Building Owner	DBS Trustee Ltd as Trustee of Mapletree Commercial Trust
Facility Management	Mapletree Commercial Property Management Pte Ltd
ESCO	6-Sigma Automation Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd
IAQ Auditor	TÜV SÜD PSB Pte Ltd

Key Features

- High efficiency central cooling plant with measured and verified efficiency of 0.63 kW/ton, and VSD controls for chillers, pumps and cooling towers
- 48.9% improvement in air distribution system efficiency over baseline
- Heat pipe technology used at PAHU to pre-cool the outdoor fresh air
- Extensive use of energy efficient T5 lighting for office space, with 33% savings in lighting power budget over code
- CO₂ sensors integrated with demand control ventilation for offices AHU to reduce fresh air intake when human occupancy is low
- CO sensor to activate ductless MV carpark jet fans when CO levels are above unacceptable limits
- Indoor air quality audit conducted to ensure good indoor air quality within office premises

Mapletree Business City Existing Non-Residential Buildings

PLATINUM



Building Owner

Mapletree Investments Pte Ltd

Facility Management

Mapletree Business City Pte Ltd

ESD Consultant

Building System & Diagnostics Pte Ltd

IAQ Auditor

TÜV SÜD PSB Pte Ltd

Key Features

- Estimated energy savings: 15,020,093 kWh/yr; estimated water savings: 94,000 m³/yr
- Measured and verified operating system efficiency of 0.58 kW/ton, with variable speed drive controls
- Extensive use of energy efficient T5 lighting for office space, with 39% savings from code
- Intelligent BMS control to turn off lighting at common areas when not in use
- Waste heat recovery system to produce hot water for F&B and amenities usage
- Run-around coil technology at pre-cooled AHU to pre-cool outdoor fresh air
- CO₂ sensors integrated with demand control ventilation for offices AHU to reduce fresh air intake when human occupancy is low
- Indoor air quality audit conducted to ensure a good indoor air quality in office premises

Manulife Centre

Existing Non-Residential Buildings

PLATINUM



Building Owner

Elishan Investments Pte Ltd

Facility Management

Elishan Investments Pte Ltd

ESCO

CBM Solutions Pte Ltd

ESD Consultant

CBM Solutions Pte Ltd

Key Features

- Estimated energy savings: 27,010 kWh/yr
- Chiller plant efficiency of 0.55 kW/ton
- 20.3% improvement in lighting power budget over code
- Use of lifts with variable voltage and variable frequency motor drive and sleep mode features
- PUB Water Efficient Building
- Provision of rooftop greenery with use of drought tolerant plants.
- Use of carbon dioxide sensors to regulate fresh air intake at AHUs.
- Use of heat recovery system for showering facilities

Mitsubishi Electric Building

Existing Non-Residential Buildings

PLATINUM



Building Owner

Mitsubishi Electric Asia Pte Ltd

Facility Management

Mitsubishi Electric Asia Pte Ltd

ESD Consultant

Building System & Diagnostics Pte Ltd

IAQ Auditor

TÜV SÜD PSB Pte Ltd

Key Features

- Estimated energy savings: 666,776 kWh/yr; estimated water savings: 299 m³/yr
- Use of Mitsubishi Electric VRF systems with good efficiency
- 85.9% improvement in air distribution system efficiency from baseline
- Use of energy efficient T5 lighting throughout the entire building
- Use of Mitsubishi photovoltaic panels to generate renewable energy
- PUB Water Efficient Building
- Use of “I see” sensor in FCUs for precision room air con temperature control
- Use of Smart ME controller in meeting rooms detecting occupancy, lux level, humidity and temperature

Nanyang Auditorium

Existing Non-Residential Buildings

PLATINUM



Building Owner

Nanyang Technological University

Facility Management

SMM Pte Ltd

ESD / Green Consultant

Nanyang Technological University

Key Features

- Estimated energy savings: 644,100 kWh/yr
- Chilled water plant efficiency of 0.62 kW/ton
- Use of leak detection system in critical area of plant rooms
- Use of lifts with variable voltage and variable frequency motor drive and sleep mode features
- Installation of photovoltaic panels that can replace 43% of building's energy consumption
- All water fittings rated WELS 'Excellent'

Palais Renaissance

Existing Non-Residential Buildings

PLATINUM



Building Owner

City Developments Limited

Facility Management

City Developments Limited

ESCO

CBM Solutions Pte Ltd

ESD / Green Consultant

CBM Solutions Pte Ltd

Key Features

- Estimated energy savings: 572,162 kWh/yr; estimated water savings: 592,832 m³/yr
- Planned upgrading of chiller plant system to achieve an overall plant efficiency of 0.57 kW/ton
- Use of LEDs at common areas, staircases and carpark
- Use of motion sensors at toilets and staircases
- Naturally ventilated staircases
- PUB Water Efficient Building
- Provision of rooftop greenery with use of drought tolerant plants
- CO sensors for carpark mechanical ventilation system

PARKROYAL on Kitchener Road

Existing Non-Residential Buildings

PLATINUM



Building Owner

New Park Hotel (1989) Pte Ltd

Facility Management

PARKROYAL on Kitchener Road

ESD Consultant

G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 2,839,187 kWh/yr
- Chiller plant system efficiency of 0.64 kW/ton
- Use of energy efficient T5 and LED lighting, with 34% improvement in lighting power budget from code
- Use of heat pumps to generate hot water for various usages within the hotel
- Use of lifts with variable voltage variable frequency motor drive and sleep mode features
- PUB Water Efficient Building
- Use of compost recycled from horticultural waste
- Provision of priority parking lots for hybrid/ electric vehicles

Samwoh Eco Green Building

Existing Non-Residential Buildings

PLATINUM



Building Owner

Samwoh Corporation Pte Ltd

Facility Management

Samwoh Corporation Pte Ltd /

Daikin Airconditioning (Singapore) Pte Ltd

Key Features

- Estimated energy savings: 145,798 kWh/yr; estimated water savings: 6,914 m³/yr
- Perforated cladding and 3M solar films to improve ETTV
- 73.4% improvement in air distribution system efficiency over baseline
- Energy efficient T5 lighting for office and corridors
- Use of regenerative lifts with variable voltage variable frequency motor drive and sleep mode features
- Majority of water fittings rated WELS 'Excellent'
- Use of concrete with high dosage of recycled materials for structural and external works
- Provision of rooftop garden and vertical greenery

Singapore Management University – City Campus

Existing Non-Residential Buildings

PLATINUM



Building Owner

Singapore Management University

Facility Management

Office of Facilities Management

ESD Consultant

Johnson Controls (S) Pte Ltd

ESCO

Johnson Controls (S) Pte Ltd

Key Features

- Estimated energy savings: 2,264,861 kWh/yr; estimated water savings: 48,019 m³/yr
- Façade clad with double and low-e glazing, effectively reducing solar heat gains into the building
- Chiller plant system efficiency of 0.60 kW/ton with variable speed drive controls
- Provision of permanent instrumentation to monitor the chiller plant operating system efficiency
- 30.4% improvement in air distribution system efficiency over code
- Use of energy efficient T5 and PLC lighting with electronic ballast, resulting in 34% savings over code
- Non-chemical water treatment system for cooling tower
- Electronic air cleaner for all AHUs

SMU Administration Building

Existing Non-Residential Buildings

PLATINUM



Building Owner

Singapore Management University

Facility Management

Office of Facilities Management

ESD Consultant

Johnson Controls (S) Pte Ltd

ESCO

Johnson Controls (S) Pte Ltd

Key Features

- Estimated energy savings: 966,485.96 kWh/yr; estimated water savings: 12,552 m³/yr
- Façade clad with double and low-e glazing, resulting in good ETTV of 36.05 W/m²
- Chiller plant system to be upgraded to meet high efficiency of 0.60 kW/ton
- Use of efficient T5 lighting with 31% savings in lighting power budget over code
- All AHUs designed with the implementation of electronic air cleaners
- Auto condenser tube cleaning system for chiller plant
- PUB Water Efficient Building
- Provision of priority green lots for hybrid/ CNG/ electrical vehicles as well as bicycle lots

Republic Plaza

Existing Non-Residential Buildings

PLATINUM



Building Owner

Facility Management

ESCO

ESD / Green Consultant

City Developments Limited

CBM Pte Ltd

CBM Solutions Pte Ltd

CBM Solutions Pte Ltd

Key Features

- Estimated energy savings: 1,248,429 kWh/yr
- Efficient chiller plant system with efficiency of 0.627 kW/ton
- Provision of permanent instrumentation to accurately monitor the chiller plant operating system efficiency
- Variable speed drive controls for chilled water and condenser water pumps as well as AHUs
- Auto condenser tube cleaning system for the chiller plant
- LED lightings for car park and staircases and motion sensors for staircases and toilets
- PUB Water Efficient Building
- Provision of vertical greenery

Research Techno Plaza

Existing Non-Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 808,438 kWh/yr
- New chiller plant achieved system efficiency of 0.599 kW/ton
- All new pumps provided with variable speed drives
- Permanent instrumentation installed for measuring and verification of the new chiller plant system with heat balance substantiating test provided in the BMS
- Use of compost recycled from horticultural waste
- Energy, environmental and green procurement policies in place
- PUB Water Efficient Building
- Use of leak detection system in critical area of plant rooms

Building Owner

Nanyang Technological University

Facility Management

SMM Pte Ltd

ESD Consultant

Bescon Consulting Engineers Pte

ESCO

DTZ Facilities & Engineering (S) Limited

Revenue House

Existing Non-Residential Buildings

PLATINUM



Building Owner

Inland Revenue Authority of Singapore

Facility Management

One Marina Property Services Pte Ltd

ESD Consultant

Honeywell Pte Ltd

ESCO

Honeywell Pte Ltd

Key Features

- Estimated energy savings: 3,797,525 kWh/yr
- High performance variable frequency chiller plant system with an efficiency of 0.598 kW/ton
- Variable speed drive controls installed for chilled water pumps, condenser pumps and cooling towers
- Automatic condenser tube cleaning system for all chillers
- Electronic air cleaners, as well as CO₂ monitoring and control system for all AHUs
- CO monitoring and control system for car park fans
- PUB Water Efficient Building
- Rain water harvesting system

The Concourse

Existing Non-Residential Buildings

PLATINUM



Building Owner

Hong Fok Land Ltd

Facility Management

Hong Fok Land Ltd

ESCO

Johnson Controls (S) Pte Ltd

ESD Consultant

Johnson Controls (S) Pte Ltd

Key Features

- Estimated energy savings: 3,183,279 kWh/yr
- Chiller plant system efficiency achieved 0.6 kW/RT with variable speed drives controls for pumps and cooling towers
- Automatic condenser tube cleaning system for chiller plant and recycling of AHU condensate
- Replacement of fittings to high efficiency T5 and LED lighting with targeted 34.4% savings over code
- Motion sensors control of lightings at common corridors, staircases and toilets.
- Majority of water fittings rated WELS 'Excellent'
- Provision of priority green lots for hybrid/ CNG/ electrical vehicles as well as charging unit and bicycle lots

Wee Kim Wee School of Communication & Information Existing Non-Residential Buildings

PLATINUM



Building Owner

Nanyang Technological University

Facility Management

SMM Pte Ltd

ESD Consultant

Bescon Consulting Engineers Pte

ESCO

DTZ Facilities & Engineering (S) Limited

Key Features

- Estimated energy savings: 688,052 kWh/yr
- Chilled water for air-conditioning system supplied from adjacent building's chiller plant, with operating efficiency of the new plant being 0.599 kW/ton
- All new pumps provided with variable speed drives
- Permanent instrumentation installed for measuring and verification of the new chiller plant system with heat balance substantiating test provided in the BMS
- Use of energy efficient T5 lighting, with motion sensors coupled to lighting in the toilets and staircases, and photo sensors for lighting in the lift lobbies
- Provision of solar photovoltaic panels with capacity of 125 kWp on the roof
- PUB Water Efficient Building

Lush Acres New Residential Buildings

PLATINUM



Client / Developer

City Developments Limited

Architect

ADDP Architects LLP

M&E Engineer

United Project Consultants Pte Ltd

Structural Engineer

LSW Consulting Engineers Pte Ltd

Quantity Surveyor

Langdon & Seah Singapore Pte Ltd

Landscape Consultant

Site Concepts International Pte Ltd

Interior Designer

Index Design Pte Ltd

Key Features

- Estimated energy savings: 2,794,494 kWh/yr; estimated water savings: 62,068 m³/yr; RETV: 19.35 W/m²
- 82.8% of units with good natural ventilation as verified via CFD simulation
- 50.3% improvement in lighting power budget over code
- Provision of energy efficient lifts, ventilation systems, motion sensors and gas heaters for occupants
- Use of mainly WELS 'Very Good' and 'Excellent' water efficient fittings
- Low concrete usage index of 0.38
- Extensive use of locally certified sustainable and environmental friendly products
- Green transportation amenities such as electric vehicle charging stations, bike storage racks as well as convenient access to public transport

Residential Hall at North Hill, Nanyang Technological University

New Residential Buildings

PLATINUM



Key Features

- Estimated energy savings: 1,602,500 kWh/yr; Estimated water savings: 20,000 m³/yr; RETV: 9.44 W/m²; ETTV for podium: 40.0 W/m²
- 88.4% of units with good natural ventilation as demonstrated using ventilation simulation analysis
- Naturally ventilated and daylit common areas
- Energy efficient LED and T5 lighting
- Provision of solar water heater with energy efficient heat pump as auxiliary supply
- Innovative construction method with the use of volumetric system
- Extensive use of sustainable products within dwelling units and common areas
- Provision of double refuse chute and recycling bins to promote recycling

Client / Developer	Nanyang Technological University
Architect	P&T Consultants Pte Ltd, Guida Moseley Brown Architects
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	Franklin + Andrews Pte Ltd
Landscape Consultant	Sitetectonix Pte Ltd
Lighting Consultant	Fabulux Pte Ltd
ESD Consultant	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd

The Venue Residences

New Residential Buildings

PLATINUM



Client / Developer	City Developments Limited/ Hong Leong Holdings Limited
Project Manager	CDL Management Services Pte Ltd
Architect	Aedas Pte Ltd
M&E Engineer	United Project Consultants Pte Ltd
Structural Engineer	Meinhardt (Singapore) Pte Ltd
Quantity Surveyor	Rider Levett Bucknall LLP
Landscape Consultant	Salad Dressing
Interior Design	Suying Metropolitan Studio
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 2,556,589 kWh/yr; estimated water savings: 43,447 m³/yr; RETV: 18.97 W/m²
- Majority of dwelling units with good natural ventilation
- Use of energy efficient T5 and LED lighting
- Use of WELS rated water efficient fittings
- Use of non-potable water and water efficient irrigation system with rain sensor for landscape areas
- Use of green cements, recycled aggregates and washed copper slag for construction
- Lush greenery with good green plot ratio of 5.3
- Use of low VOC paints for all internal walls and environmentally friendly adhesives for applicable areas

Undergraduate Residential Hall 22, 23 and 24 at Nanyang Crescent, NTU

New Residential Buildings

PLATINUM



Client / Developer	Nanyang Technological University
Project Manager	Office of Development & Facilities Management
Architect	SAA Architects Pte Ltd
M&E Engineer	AECOM Singapore Pte Ltd
Structural Engineer	KTP Consultants Pte Ltd
Quantity Surveyor	WT Partnership (S) Pte Ltd
Landscape Consultant	Tulin Designs Pte Ltd
Acoustic Consultant	ACVIRON Acoustics Consultants Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 1,590,465 kWh/yr; estimated water savings: 47,902 m³/yr; RETV: 16.49 W/m²
- 70% of units with good natural ventilation as demonstrated using ventilation simulation analysis, with implementation of passive design strategies such as double louver system to allow cross ventilation within the units
- 32.3% improvement in lighting power budget from code
- Provision of solar hot water system
- Majority of water fittings rated WELS 'Excellent'
- Transplanting of 23 trees
- Provision of electric vehicle charging stations within the development
- Provision of double refuse chute and recycling bins to promote recycling

Sengkang General and Community Hospitals

Healthcare Facilities

PLATINUM



Client / Developer	Ministry of Health
Project Manager	Rider Levett Bucknall LLP
Architect	DP Architects Pte Ltd
M&E Engineer	Parsons Brinckerhoff Pte Ltd
Structural Engineer	Meinhardt (Singapore) Pte Ltd
Quantity Surveyor	Davis Langdon KPK (Singapore) Pte Ltd
Landscape Consultant	DP Green Pte Ltd
Façade Consultant	Building Façade Group
Lighting Consultant	Meinhardt Light Studio
ESD Consultant	DP Sustainable Design Pte Ltd

Key Features

- ETTV of 38.93 W/m²
- Computational Fluid Dynamics (CFD) simulations carried out to optimise natural ventilation
- Design chiller plant efficiency of 0.63 kW/ton
- Low face velocity of air-Conditioning units to improve energy savings
- Low loss transformers and efficient UPS systems
- Energy recovery for AHUs
- Heat pump for hot water
- Healing garden, staff garden and spaces for horticultural therapy as well as provision of green roof and rooftop garden

Yishun Community Hospital (YCH) & Geriatric Education & Research Institute (GERI) Healthcare Facilities

PLATINUM



Client / Developer	Ministry of Health / MOH Holdings Pte Ltd / Alexandra Health Systems
Project Manager	Rider Levett Bucknall LLP
Architect	CIAP Architects Pte Ltd
M&E Engineer	Parsons Brinckerhoff Pte Ltd
Structural Engineer	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Quantity Surveyor	Davis Langdon KPK (Singapore) Pte Ltd
Main Contractor	Kimly-Shimizu Joint Venture
Landscape Consultant	Site Concepts International Pte Ltd
Façade Consultant	Arup Singapore Pte Ltd
TBP / ESD Consultant	ZEB-Technology Pte Ltd
Hospital Planner	Kahler Slater Inc

Key Features

- Building envelope designed to achieve ETTV of 38 W/m²
- Optimized ward layout and façade design through simulation support to enhance natural ventilation for user comfort
- Meticulous facade design through wind-driven rain (WDR) analysis for naturally ventilated wards and corridors to minimise impact from rain
- Harnessing of daylight while putting in place measures to ensure a glare free environment
- Chiller plant system efficiency of less than 0.58 kW/ton
- Solar thermal system to address hot water demand of wards and kitchen with heat pump auxiliary system
- Extensive greenery through provision of various green spaces such as gardens and roof-top greenery, with a green plot ratio greater than 5.0
- Pre-cooled AHU with IAQ improvement technologies such as titanium dioxide coatings and UVC emitters for enhanced indoor air quality

B House Landed Houses

PLATINUM



Client / Developer	Ms Belinda Young
Design Architect	Pomeroy Studio Pte Ltd
Project Manager	HILADT Architects LLP
Landscape Design Consultant	Pomeroy Studio Pte Ltd
M&E Engineer	Bescon Consulting Engineers Pte
ESD Consultant	Pomeroy Studio Pte Ltd
Structural Engineer	S B Ng & Associates CE
Quantity Surveyor	Group Survey 4
Interior Design Consultant	Pomeroy Studio Pte Ltd

Key Features

- Estimated energy savings: 19,337 kWh/yr; estimated water savings: 465 m³/yr
- Louvered façade with monsoon windows to adapt to tropical climatic conditions, low window to wall ratio and coated low-e glass
- Passive lean design with slender floor plates to optimise daylight intake and enhanced natural ventilation by use of CFD analysis
- Grid-tied solar photovoltaic system of 15.3 kWp installed on roof
- Provision of stormwater management system
- Landscape designed for retention of existing greenery and to maximize use of tropical species yet enhancing green plot ratio
- Effective design integration/ application of modular and dry construction systems to optimise concrete usage on site
- Extensive use of sustainable materials and products
- Energy efficient air-conditioning system and LED lighting

Mat Jambol House

Landed Houses

PLATINUM



Client / Developer	Mr. Randy Chan
Architect	Zarch Collaboratives Pte Ltd
Structural Engineer	CF Consultants
Main Contractor	Bestbuilt Construction Pte Ltd
Landscape Consultant	Zarch Collaboratives Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd
Bio-Pool Consultant	Pool Mech Pte Ltd

Key Features

- Estimated energy savings: 4,336 kWh/yr; estimated water savings: 97 m³/yr
- Excellent natural ventilation performance for 82% of internal habitable spaces using ventilation simulation analysis
- Use of energy efficient lighting such as LED as well as harvesting of skylight
- Use of energy efficient refrigerator and air-conditioning system rated '4 ticks'
- Installation of 5 kWp solar photovoltaic panels
- Provision of solar water heater system
- Extensive use of sustainable products in construction
- Non-chemical treatment for pool

DSO National Laboratories (Phase 2)

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	Ascendas Land (Singapore) Pte Ltd
Project Manager	Ascendas Services Pte. Ltd.
Architect	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: 4,012,911 kWh/yr; estimated water savings: 23,990 m³/yr; ETTV: 36.84 W/m²
- Targeted chiller plant system efficiency of 0.63 kW/ton with use of variable speed drive controls
- Energy efficient lighting system with 31.63% saving over code
- Rainwater harvesting with automatic drip irrigation system for landscape
- Conservation of selected existing trees
- Recovery and recycling of 39% of crushed concrete during demolition of existing old building

Indian Heritage Centre New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	National Heritage Board
Project Manager	SIPM Consultants Pte Ltd
Architect	Robert Greg Shand Architects
M&E Engineer	Mott MacDonald Singapore Pte Ltd
Structural Engineer	Surbana International Consultants Pte Ltd
Quantity Surveyor	Mott MacDonald Singapore Pte Ltd
Main Contractor	Yong Xing Construction Pte Ltd
Gallery Consultant	gsmprjct creation pte ltd
Lighting Consultant	Ong & Ong Pte Ltd
Façade Consultant	EASE Consultants

Key Features

- Estimated energy savings: 199,000 kWh/yr; estimated water savings: 360 m³/yr; ETTV: 38 W/m²
- Chilled water plant efficiency of 0.63 kW/ton
- Variable speed controls for chilled-water pumps
- Run-around coil for relative humidity control
- Use of LED and T5 lighting, with 21% improvement in lighting power budget from code
- Lifts with variable voltage variable frequency motor drive and sleep mode features
- Automatic water efficient landscape irrigation system with rain sensor
- Extensive use of sustainable products in construction

JTC Medtech One @ MedTech Hub

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	JTC Corporation
Project Manager	JTC Corporation
Architect	Jurong Consultants Pte Ltd
M&E Engineer	Jurong Consultants Pte Ltd
Structural Engineer	Jurong Consultants Pte Ltd
Quantity Surveyor	Jurong Consultants Pte Ltd
Main Contractor	Newcon Builders Pte Ltd
Landscape Consultant	Flora Landscape Pte Ltd

Key Features

- Estimated energy savings: 4,197,297kWh/yr; estimated water savings: 9363 m³/yr; ETTV: 27.8 W/m²
- Optimum orientation, low window-to-wall ratio of 0.21 and provision of green wall and green roof to help reduce solar heat gain into the building
- Chiller plant operating efficiency of 0.60 kW/ton
- 39.5% improvement in lighting power budget over code
- Naturally ventilated carpark
- Use of recycled concrete aggregates and green cement in construction

KWE Singapore Logistics Centre

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	Tech-Link Storage Engineering Pte Ltd
Project Manager	Figtree Projects Pte Ltd
Architect	ADDP Architects LLP
M&E Engineer	J.M.Pang & Seah Pte Ltd
Structural Engineer	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Quantity Surveyor	Oliver Ho & Associates
Main Contractor	Figtree Projects Pte Ltd

Key Features

- Estimated energy savings: 2,101,863 kWh/yr; estimated water savings: 683 m³/yr; ETTV: 19.17 W/m²
- Excellent passive building design with no direct west facing façade, with use of autoclaved aerated concrete for the façade.
- Use of energy efficient T5 lighting with 57% improvement in lighting power budget over code
- All water fittings in the development are rated WELS 'Excellent'
- Use of green cement and recycled concrete aggregates in construction
- Extensive use of environmentally friendly locally certified sustainable products in construction

Proposed Mixed Development at 15 Cairnhill Road (Hotel Component)

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	CapitaLand Limited
Project Manager	CapitaLand Residential Singapore
Architect	RSP Architects Planners & Engineers (Pte) Ltd
M&E Engineer	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Structural Engineer	AECOM Singapore Pte Ltd
Quantity Surveyor	Langdon & Seah Singapore Pte Ltd
ESD Consultant	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Landscape Consultant	COEN Design International Pte Ltd
Lighting Consultant	WSP Ng Pte Ltd

Key Features

- Estimated energy savings: 2,125,355 kWh/yr; estimated water savings: 33,365 m³/yr; ETTV: 41 W/m²
- Design plant system efficiency of 0.65 kW/ton
- Outdoor air system heat recovery with heat pipe to recover energy from guestroom toilets' exhaust air to PAHU
- Air to water heat pump with COP of 3.5 to meet hot water demand of guestrooms, gym and restaurant
- LED lightings for car parks and circulation areas, with 32% savings in lighting power budget from code
- Auto condenser tube cleaning system

PWD-BCA Club

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	PWD-BCA Club
Project Manager	B19 Technologies Pte Ltd
Architect	A.J.'s Ingenieurs
M&E Engineer	A.J.'s Ingenieurs
Structural Engineer	A.J.'s Ingenieurs
Main Contractor	B19 Technologies Pte Ltd
Interior Design	Ai Associates Pte Ltd
ESD Consultant	Meinhardt Façade Technology (S) Pte Ltd

Key Features

- Estimated energy savings: 22,754 kWh/yr (excluding PV); estimated water savings: 508 m³/yr; ETTV 41.80 W/m²
- VRF air-conditioning system with targeted part load efficiency of 0.56 kW/ton
- Use of energy efficient T5 and LED lighting
- Installation of 3.8 kWp photovoltaic panels on roof to offset electricity taken from grid
- Low concrete usage index of 0.27 m³/m²
- Extensive use of sustainable products in construction

Resorts World Sentosa - Crockfords Tower

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	Resorts World Sentosa Pte Ltd
Architect	DP Architects Pte Ltd
M&E Engineer	Meinhardt (Singapore) Pte Ltd Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Structural Engineer	AECOM Singapore Pte Ltd
Quantity Surveyor	DLS/ KPK IR Pte Ltd
Main Contractor	Kajima-Tiong Seng JV
Landscape Consultant	ICN Design International Pte Ltd
ESD Consultant	G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 2,351,876 kWh/yr; estimated water savings: 67,079 m³/yr; ETTV: 41.84 W/m²
- Provision of permanent instrumentation for the monitoring of the operations of the secondary chilled water loop
- Provision of variable speed drives for secondary chilled water pumps, PAUs and AHUs
- Extensive usage of LED light fittings for Front-of-House areas such as guest rooms and corridors
- Extensive use of sustainable products in construction
- Pneumatic waste collection system

Resorts World Sentosa – Hotel Michael

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	Resorts World Sentosa Pte Ltd
Architect	DP Architects Pte Ltd
M&E Engineer	Meinhardt (Singapore) Pte Ltd Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Structural Engineer	AECOM Singapore Pte Ltd
Quantity Surveyor	DLS/ KPK IR Pte Ltd
Main Contractor	Kajima-Tiong Seng JV
Landscape Consultant	ICN Design International Pte Ltd
ESD Consultant	G-Energy Global Pte Ltd

Key Features

- Estimated energy savings: 4,364,980 kWh/yr; estimated water savings: 111,470 m³/yr; ETTV: 36.17 W/m²
- Extensive usage of double-glazed, low e glass with SC value of 0.24 and U value of 1.6
- Provision of permanent instrumentation for the monitoring of the operations of the secondary chilled water loop
- Provision of variable speed drives for secondary chilled water pumps, PAUs and AHUs
- Extensive usage of LED light fittings for Front-of-House areas such as guest rooms and corridors

Second Development for Menlo Logistic Hub New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	Second Development Pte Ltd
Project Manager	Figtree Projects Pte Ltd
Architect	Co-Design Architects LLP
M&E Engineer	J.M. Pang & Seah Pte Ltd
Structural Engineer	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Quantity Surveyor	Oliver Ho & Associates
Main Contractor	Figtree Projects Pte Ltd

Key Features

- Estimated energy savings: 975,707 kWh/yr; estimated water savings: 17,956 m³/yr; ETTV: 30.98 W/m²
- Primarily naturally ventilated building with minimal west facing facades and windows
- All units have windows facing the prevailing north and south wind directions
- Use of T5 florescent high bay lighting, with 55.6% improvement in lighting power budget over code
- All water fittings in development are rated WELS 'Excellent'
- Extensive use of green cements, recycled concrete aggregates and washed copper slag in construction

SIM Phase 2 Building

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	Singapore Institute of Management
Project Manager	Rider Levett Bucknall LLP
Architect	Architects 61 Pte Ltd, Francis-Jones Morehen Thorp Pty Ltd
M&E Engineer	Meinhardt (Singapore) Pte Ltd
Structural Engineer	Meinhardt (Singapore) Pte Ltd
Quantity Surveyor	Davis Langdon KPK (Singapore) Pte Ltd
Main Contractor	Tiong Seng Contractors (Pte) Ltd
Landscape Consultant	COEN Design International Pte Ltd
Façade / ESD Consultant	Meinhardt Façade Technology (S) Pte Ltd

Key Features

- Estimated energy savings: 2,046,796 kWh/yr; estimated water savings: 16,372 m³/yr; ETTV: 35.14 W/m²
- Chiller plant system with targeted part load efficiency of 0.63 kW/ton
- Daylighting for staircases and lift lobbies
- All water fittings in the development rated WELS 'Excellent'
- Harvesting of rainwater for landscape irrigation and use of NEWater for cooling tower make up water tank
- Automatic cleaning system for condenser tube

The Leo

New Non-Residential Buildings

GOLD^{PLUS}



Client / Developer	Kaki Bukit Developments Pte Ltd
Project Manager	Surbana International 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	Chang Hua Construction Pte Ltd

Key Features

- Estimated energy savings: 187,989 kWh/yr; estimated water savings: 144,804 m³/yr
- Passive building design with good building orientation and no direct west facing façade
- Naturally ventilated carpark, staircases, lift lobbies, corridors and toilets
- 19.6% improvement in lighting power budget from code
- Majority of water fittings in the hostel rated WELS 'Excellent'
- Efficient structural design with low concrete usage index of 0.34 m³/m²
- Extensive use of environmentally friendly products for building components
- Adoption of demolition protocol to recover demolition materials for recycling

396 Alexandra Road (UOB Tower Block)

Existing Non-Residential Buildings

GOLD^{PLUS}



Key Features

- Estimated energy savings: 1,015,337 kWh/yr; estimated water savings: 3,272 m³/yr
- Efficient chiller plant system of 0.59 kW/ton
- High efficiency air handling units complete with variable speed drives, carbon dioxide sensors and MERV 13 air filters
- Energy efficient LED lighting for office, basement carpark and common areas
- PUB Water Efficient Building
- Remote energy monitoring system for live updates on energy consumption of building

Building Owner

United Overseas Bank Ltd

Facility Management

United Overseas Bank Ltd

ESCO

G-Energy Pte Ltd

ESD Consultant

G-Energy Pte Ltd

M&E Consultant

Belmacs Pte Ltd

Golden Shoe Carpark

Existing Non-Residential Buildings

GOLD^{PLUS}



Key Features

- Estimated energy savings: 460,394 kWh/yr; estimated water savings: 1,944 m³/yr
- Plant retrofit with targeted plant efficiency of 0.647 kW/ton, with variable speed drive controls
- Use of energy efficient T5 and LED lighting resulting in 70% improvement in lighting power budget from code
- Motion sensors for toilets and chiller plant room
- Naturally ventilated staircases, toilets and lift lobbies
- PUB Water Efficient Building

Developer/ Client/ Owner CapitaCommercial Trust
Facility Management CapitaLand Commercial Management Pte Ltd

Panasonic Factory Solutions Asia Pacific

Existing Non-Residential Buildings

GOLD^{PLUS}



Key Features

- Estimated energy savings: 670,496 kWh/yr; estimated water savings: 6,305 m³/yr
- Use of high COP VRV air-conditioning system
- Use of energy efficient LED and T5 lighting, resulting in 54% improvement from code lighting power budget
- PUB Water Efficient Building
- Use of cool paint on all building external walls
- Eco educational corner with posters and LCD screen highlighting green sustainability efforts by Panasonic

Building Owner

Panasonic Factory Solutions Asia Pacific

Facility Management

CPG Facility Management Pte Ltd

Prudential Tower

Existing Non-Residential Buildings

GOLD^{PLUS}



Key Features

- Estimated energy savings: 552,386 kWh/yr
- Committed retrofitted chiller plant efficiency of 0.65 kW/ton with variable speed drive controls and permanent measuring instruments for monitoring of plant efficiency and heat balance
- LED lighting used at staircases and carparks, with savings of 40.92% from code
- Occupancy sensors used for toilets and staircases
- Automatic condenser tube cleaning system for chillers
- Gel-air technology for AHU

Building Owner

Management Corporation Strata Title Plan No. 2340

Facility Management

Keppel Land International Ltd

ESCO

G-Energy Global Pte Ltd

ESD Consultant

G-Energy Global Pte Ltd

One Raffles Link

Existing Non-Residential Buildings

GOLD^{PLUS}



Key Features

- Estimated energy savings: 149,000 kWh/yr; estimated water savings: 600 m³/yr
- Chiller plant efficiency of 0.676 kW/ton
- Lifts and escalators with VVVF and sleep mode functions
- Use of energy efficient heat recovery systems, motion and photocell sensors
- All water fittings rated WELS 'Excellent'
- Storm water collection for irrigation system and water landscape

Building Owner	HKL (Esplanade) Pte Ltd
Facility Management	CPG Facility Management Pte Ltd
ESCO	LJ Energy Pte Ltd
ESD / Green Consultant	LJ Energy Pte Ltd

Tampines One

Existing Non-Residential Buildings

GOLD^{PLUS}



Key Features

- Estimated energy savings: 513,789 kWh/yr; estimated water savings: 45,463 m³/yr
- Committed to attain target chiller plant efficiency of 0.68 kW/ton, and to provide permanent measuring instruments for monitoring of plant efficiency and heat balance
- PUB Water Efficient Building
- Own compost produced from waste materials such as leaves, discarded food waste and shreds of newspaper for use as landscape fertiliser
- Recycling of used cooking oil from F&B outlets
- Provision of vertical greenery

Building Owner	ARMFII (Tampines) Pte Ltd
Facility Management	AsiaMalls Management Pte Ltd
ESCO	Johnson Controls (S) Pte Ltd
ESD Consultant	Johnson Controls (S) Pte Ltd

3 Orchard By-The-Park

New Residential Buildings

GOLD^{PLUS}



Client / Developer	YTL Westwood Properties Pte Ltd
Architect	Antonio Citterio Patricia Viel and Partners, DP Architects Pte Ltd
M&E Engineer	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Structural Engineer	Arup Singapore Pte Ltd
Quantity Surveyor	Rider Levett Bucknall LLP
Main Contractor	YTL Construction (S) Pte Ltd
Landscape Consultant	ICN Design International Pte Ltd
ESD Consultant	Arup Singapore Pte Ltd
Façade Consultant	HCCH Consulting Pte Ltd
Lighting Consultant	Light Cibles Pte Ltd

Key Features

- Estimated energy savings: 965,765 kWh/yr; estimated water savings: 6,966 m³/yr; RETV: 17.33 W/m²
- Energy efficient lighting design resulting in more than 40% energy savings in lighting
- Application of cool paints for external east and west façades to reduce solar heat gain
- WELS rated water efficient washing machines and energy efficient refrigerators for all units
- Extensive greenery with green plot ratio of 6.5 with effort taken to retain 18 existing trees on site
- Electric car charging stations and bicycle lots available for residents to encourage green transportation

Citylife @ Tampines

New Residential Buildings

GOLD^{PLUS}



Key Features

- Estimated energy savings: 5,381,488 kWh/yr; estimated water savings: 42,762 m³/yr; RETV: 19.95 W/m²
- 100% of units with windows facing North and South
- Provision of gas water heater for at least 90% of the units
- Provision of LED lights for common staircases
- Provision of re-generative lifts
- Extensive use of sustainable products in construction

Client / Developer	Tampines EC Pte Ltd
Architect	Surbana International Consultants Pte Ltd
M&E Engineer	KTP International Pte Ltd
Structural Engineer	KTP International Pte Ltd
Quantity Surveyor	Langdon And Seah Pte Ltd
Main Contractor	Jia Yi Construction Pte Ltd
Landscape Consultant	COEN Design International Pte Ltd

Clermont Residence

New Residential Buildings

GOLD^{PLUS}



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
Main Contractor	Samsung C&T Corporation
Landscape Consultant	Cicada Pte Ltd
Façade Consultant	Arup Singapore Pte Ltd
ESD Consultant	Arup Singapore Pte Ltd

Key Features

- Estimated energy savings: 1,004,816 kWh/yr; estimated water savings: 24,224 m³/yr; RETV: 13 W/m²
- Provision of energy efficient air-conditioning system for units and LED/ T5 lighting for common areas
- Live energy meter monitoring system for all units
- Provision of water efficient washing machines
- Provision of double refuse chutes to separate recyclable from non-recyclable waste
- Installation of pneumatic waste system

eCO

New Residential Buildings

GOLD^{PLUS}



Client / Developer	eCO Properties Pte Ltd
Architect	DP Architects Pte Ltd
M&E Engineer	DP Engineers Pte Ltd
Structural Engineer	DP Engineers Pte Ltd
Quantity Surveyor	Davis Langdon KPK (Singapore) Pte Ltd
Main Contractor	China Construction (South Pacific) Development Co. Pte Ltd
Landscape Consultant	ICN Design International Pte Ltd
ESD Consultant	DP Sustainable Design Pte Ltd

Key Features

- Estimated energy savings: 1,353,644 kWh/yr; estimated water savings: 179,741m³/yr; RETV: 18.74 W/m²
- Rain water harvested for irrigation and car park washing
- Extensive use of sustainable products in construction
- Better shading design and lower façade heat gain
- Lush green spaces with vertical greenery
- Heat recovery from clubhouse VRV system

Fernvale Rivergrove (Sengkang N4 C26) New Residential Buildings

GOLD^{PLUS}



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	Penta-Ocean Construction Co., Ltd
Landscape Consultant	Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 652,139 kWh/yr; estimated water savings: 57,284 m³/yr; RETV: 16.62 W/m²
- Extensive greenery with high green plot ratio of 5.29
- Heat reflective paint for external walls and low VOC paint for internal walls of all blocks
- Provision of internal and external clothes drying rack
- Provision of bicycle racks and recycling bins at every block

Fernvale Rivergrove (Sengkang N4 C27 & CG) New Residential Buildings

GOLD^{PLUS}



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	Surbana International Consultants Pte Ltd
Landscape Consultant	Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,636,919 kWh/yr; estimated water savings: 125,168 m³/yr; RETV: 17.51 W/m²
- Electrical switchboards in dwelling units
- Extensive use of sustainable products in construction
- Provision of bicycle parking lots
- Use of compost recycled from horticultural waste

Flo Residence

New Residential Buildings

GOLD^{PLUS}



Client / Developer	Publique Realty Pte Ltd
Architect	ADDP Architects LLP
M&E Engineer	Gims & Associates Pte Ltd
Structural Engineer	Engineers Partnership LLP
Quantity Surveyor	Ian Chng Cost Consultants Pte Ltd
Main Contractor	Eng Seng Lee Construction Co Pte Ltd
Landscape Consultant	Mace Studio Pte Ltd

Key Features

- Estimated energy savings: 1,122,993 kWh/yr; estimated water savings: 79,788 m³/yr; RETV: 20.77 W/m²
- Provision of gas heaters and '4 ticks' air-conditioners for all residential units
- Use of sun pipes to harness natural daylight
- Use of integrated basin/ cistern pedestal system to enable reduced water use
- Provision of electric vehicle charging stations within the development
- Extensive greenery throughout the development, with green plot ratio of 6.45

Highline Residences

New Residential Buildings

GOLD^{PLUS}



Client / Developer	Keppel Land International Ltd
Project Manager	Keppel Land International Ltd
Architect	W Architects Pte Ltd
M&E Engineer	Arup Singapore Pte Ltd
Structural Engineer	KTP Consultants Pte Ltd
Quantity Surveyor	Rider Levett Bucknall LLP
Landscape Consultant	COEN Design International Pte Ltd
ESD Consultant	Arup Singapore Pte Ltd

Key Features

- Estimated energy savings: 4,274,473 kWh/yr; estimated water savings: 30,990 m³/yr; RETV: 21.64 W/m²
- Majority of the units with North and South facing windows, allowing for optimal natural ventilation
- Use of energy efficient lighting with 58.7% improvement in lighting power budget from code
- Extensive greenery coverage with green roof on street blocks, and green plot ratio of 7.67
- Provision of communal farm for residents to cultivate their own vegetation, promoting a green lifestyle

Kallang Riverside New Residential Buildings

GOLD^{PLUS}



Client / Developer	Singapore – Johore Express (Pte) Ltd
Project Manager	Singapore – Johore Express (Pte) Ltd
Architect	ID Architects Pte Ltd
M&E Engineer	Bescon Consulting Engineers Pte
Structural Engineer	Rankine & Hill (S) Pte Ltd
Quantity Surveyor	Rider Levett Bucknall LLP
Landscape Consultant	Earthscape Concepts Pte Ltd

Key Features

- Estimated energy savings: 486,244 kWh/yr; estimated water savings: 53,889 m³/yr; RETV: 20.72 W/m²
- CFD simulated 68% of dwelling units to have good natural ventilation
- Use of LED lighting for all common areas
- Provision of '4 ticks' air-conditioners for all dwelling units and commercial area
- Provision of photovoltaic panels to replace 2% of electricity consumption of common facilities
- Provision of electric vehicle charging station to promote green transport

Kallang Trivista New Residential Buildings

GOLD^{PLUS}



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	Singapore Piling & Civil Engineering Pte Ltd
Landscape Consultant	Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,183,952 kWh/yr; estimated water savings: 5,034,822 m³/yr; RETV: 19.61 W/m²
- 93.9% of units with windows facing North and South
- Use of energy efficient LED lighting
- Provision of greenery at ground and rooftop
- Implementing precast construction as a more efficient and sustainable construction method to help to reduce wastage of materials.
- Extensive use of sustainable products in construction

Parc Centros New Residential Buildings

GOLD^{PLUS}



Client / Developer	Wee Hur (Punggol Central) Pte Ltd
Architect	P&T Consultants Pte Ltd
M&E Engineer	Rankine & Hill (Singapore) Pte Ltd
Structural Engineer	LSW Consulting Engineers Pte Ltd
Quantity Surveyor	Wee Hur (Punggol Central) Pte Ltd
Main Contractor	Wee Hur Construction Pte Ltd
Landscape Consultant	Ecoplan Asia Pte Ltd

Key Features

- Estimated energy savings: 50,211 kWh/yr; estimated water savings: 374,449 m³/yr; RETV: 17.81 W/m²
- Provision of air-conditioners **rated '4 ticks' for all units**
- 59.76 % improvement in lighting power budget
- Rainwater collection system for irrigation
- Extensive use of recycled concrete aggregates and washed copper slag in construction
- Extensive use of building components made from sustainable materials in construction

Punggol Edge New Residential Buildings

GOLD^{PLUS}



Client / Developer	Housing & Development Board
Project Manager	SIPM Consultants Pte Ltd
Architect	Housing & Development Board
M&E Engineer	Housing & Development Board
Structural Engineer	Housing & Development Board
Quantity Surveyor	Housing & Development Board
Main Contractor	Expand Construction Pte Ltd
Landscape Consultant	Housing & Development Board

Key Features

- Estimated energy savings: 1,363,865 kWh/yr; estimated water savings: 51,299 m³/yr; RETV: 20.93 W/m²
- Use of LED light fittings for common areas and staircase half landings
- Provision of solar photovoltaic panels to generate power for common services for the residential blocks
- Provision of regenerative lifts
- Rainwater harvesting system to collect rain water for plant irrigation and common area washing
- Centralised chutes for recyclables

Punggol Watertown (Residential) New Residential Buildings

GOLD^{PLUS}



Client / Developer	Emerald Star Pte Ltd and FC Retail Trustee Pte Ltd (as Trustee of Sapphire Star Trust)
Architect	RSP Architects Planners and Engineers (Pte) Ltd
M&E Engineer	Meinhardt (Singapore) Pte Ltd
Structural Engineer	Meinhardt (Singapore) Pte Ltd
Quantity Surveyor	Davis Langdon KPK (Singapore) Pte Ltd
Main Contractor	Hyundai Engineering & Construction Co Ltd
Landscape Consultant	Sitetectonix Pte Ltd
ESD Consultant	Aurecon Singapore (Pte.) Ltd

Key Features

- Estimated energy savings: 2,913,243 kWh/yr; estimated water savings: 18,541 m³/yr; RETV: 16.73 W/m²
- Provision of energy efficient home appliances such as gas water heaters for up to 73% of the units and '4 ticks' air-conditioners for all units
- Use of regenerative lifts with variable voltage variable frequency motor drive and sleep mode features
- Provision of WELS rated water efficient fittings and washing machine for all units
- Extensive greenery reducing the urban heat island effect
- Application of cool paints for external east and west facades to reduce solar heat gain

River Isles

New Residential Buildings

GOLD^{PLUS}



Client / Developer	Qingjian Realty (Punggol Central) Pte Ltd
Architect	ADDP Architects LLP
M&E Engineer	United Project Consultants Pte Ltd
Structural Engineer	KCL Consultants Pte Ltd
Quantity Surveyor	Qingjian International (South Pacific) Group Development Co. Pte Ltd
Main Contractor	Qingjian International (South Pacific) Group Development Co. Pte Ltd
Landscape Consultant	Ong & Ong Pte Ltd

Key Features

- Estimated energy savings: 1,117,133 kWh/yr; estimated water savings: 205,951 m³/yr; RETV: 21.67 W/m²
- 48.5% improvement in lighting power budget from code
- Provision of energy efficient gas water heaters for all units
- Extensive greenery with green plot ratio of 6
- Extensive use of eco-friendly locally certified sustainable construction materials
- Provision of electric vehicle charging stations and bicycle lots to encourage green transportation

Sky Vue New Residential Buildings



Client / Developer	CapitaLand Singapore Mitsubishi Estate Asia Pte Ltd
Architect	DCA Architects Pte Ltd
M&E Engineer	BELMACS Pte Ltd
Structural Engineer	T.Y. Lin International Pte Ltd, Tham & Wong LLP
Quantity Surveyor	Rider Levett Bucknall LLP
Main Contractor	Dragages Singapore Pte Ltd
Landscape Consultant	COEN Design International Pte Ltd
ESD Consultant	BELMACS Pte Ltd

Key Features

- Estimated energy savings: 3,092,025 kWh/yr; estimated water savings: 88,173 m³/yr; RETV: 19.70 W/m²
- Provision of energy efficient air-conditioning system for units and LED/T5 lighting for common areas
- Provision of regenerative features for lift to recover the waste energy during lift operation
- Use of cool paints on east and west facing facade wall to reduce heat build-up on wall surfaces
- Provision of stormwater management system
- Provision of pneumatic waste collection system

Skyline I @ Bukit Batok

New Residential Buildings

GOLD^{PLUS}



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	Chip Eng Seng Contractors (1988) Pte Ltd
Landscape Consultant	Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 648,987 kWh/yr; estimated water savings: 64,499 m³/yr; RETV: 17.97 W/m²
- Passive cooling strategies with windows of all units designed to face north and south prevailing windflow directions
- Naturally ventilated and daylit carpark, lift lobbies, staircases and corridors
- 87% improvement in lighting power budget from code
- Extensive greenery and sky gardens, with high green plot ratio of 5.35
- Substantial use of sustainable products in construction

Skyline II @ Bukit Batok

New Residential Buildings

GOLD^{PLUS}



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	Chip Eng Seng Contractors (1988) Pte Ltd
Landscape Consultant	Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 1,076,274 kWh/yr; estimated water savings: 99,697,680 m³/yr; RETV: 19.91 W/m²
- Passive cooling strategies with windows of all units designed to face north and south prevailing windflow directions
- Naturally ventilated and daylit carpark, lift lobbies, staircases and corridors
- Extensive greenery and sky gardens, with high green plot ratio of 5.05
- Substantial use of sustainable products in construction

The Glades

New Residential Buildings

GOLD^{PLUS}



Client / Developer	Sherwood Development Pte Ltd
Project Manager	Keppel Land International Ltd
Architect	P&T Consultants Pte Ltd
M&E Engineer	Beca Carter Hollings & Ferner (S.E. Asia) Pte Ltd
Structural Engineer	KTP Consultants Pte Ltd
Quantity Surveyor	Davis Langdon KPK (Singapore) Pte Ltd
Landscape Consultant	Peridian Asia Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 3,467,348 kWh/yr; estimated water savings: 168,990 m³/yr; RETV: 20.52 W/m²
- Use of air-conditioning rated '4 Ticks' for all residential units
- Provision of energy efficient features such as motion sensors, sun pipes and gearless lifts
- Use of green cements and locally certified sustainable products in construction
- Provision of WELS rated water efficient washing machines
- Provision of electric vehicle charging points

The Topiary New Residential Buildings

GOLD^{PLUS}



Client / Developer	Peak Living Pte Ltd
Architect	DP Architects Pte Ltd
M&E Engineer	United Project Consultants Pte Ltd
Structural Engineer	KCL Consultants Pte Ltd
Quantity Surveyor	Rider Levett Bucknall LLP
Main Contractor	Qingjian International (South Pacific) Group Development Co. Pte Ltd
Landscape Consultant	Wirtz International, DP Green Pte Ltd
ESD Consultant	DP Sustainable Design Pte Ltd

Key Features

- Estimated energy savings: 1,992,316 kWh/yr; estimated water savings: 227,139 m³/yr; RETV: 19.26 W/m²
- Optimized building configuration and site orientation to promote natural ventilation and daylighting
- Use of energy efficient LED and T5 lighting, with 59.6% improvement in lighting power budget from code
- Provision of energy efficient air-conditioners rated '4 ticks' for all units
- Extensive use of locally certified sustainable materials in construction
- Lush green landscape areas and landscaped common sky terraces

Waterway Ridges New Residential Buildings

GOLD^{PLUS}



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
ABC Water Design Consultant	Atelier Dreiseitl Asia Pte Ltd

Key Features

- Estimated energy savings: 942,747 kWh/yr; estimated water savings: 40,061 m³/yr; RETV: 19.73 W/m²
- Extensive use of energy efficient LED lighting
- Rainwater harvesting for cleaning of common areas for all residential blocks
- Provision of stormwater management system
- Abundant greenery provision with high green plot ratio of 4.95
- Dedicated dual refuse chutes for recyclable waste for all residential blocks

Waterway Sunbeam New Residential Buildings

GOLD^{PLUS}



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	Kay Lim Construction & Trading Pte Ltd
Landscape Consultant	Surbana International Consultants Pte Ltd
ABC Water Design Consultant	Surbana International Consultants Pte Ltd

Key Features

- Estimated energy savings: 592,009 kWh/yr; estimated water savings: 87,516 m³/yr; RETV: 16.65 W/m²
- Extensive usage of LED lighting
- Provision of re-generative lifts
- Rainwater harvesting tanks located at all residential blocks
- Provision of stormwater management system
- Provision of dual chutes

Waterway SunDew New Residential Buildings

GOLD^{PLUS}



Client / Developer	Housing & Development Board
Project Manager	P&T Consultants Pte 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	Sunhuan Construction Pte Ltd
Landscape Consultant	Ecoplan Asia Pte Ltd

Key Features

- Estimated energy savings: 14,625 kWh/yr; estimated water savings: 31,162 m³/yr; RETV: 20.48 W/m²
- 70% of units demonstrated to have good natural ventilation using ventilation simulation analysis
- Provision of gearless and re-generative lifts
- Rainwater harvesting system for landscape irrigation and washing of common corridors and staircases
- Provision of PUB ABC Waters Design for treatment of stormwater runoff
- Provision of dual refuse chutes

BCA GREEN MARK AWARD FOR BUILDINGS

GOLD

Project Name	Category	Client/ Developer/ Building Owner
Bedok Hawker Centre	<i>New Non-Residential Buildings</i>	Housing & Development Board
CWT Jurong East Logistics Centre	<i>New Non-Residential Buildings</i>	CWT Logistics (Singapore) Pte Ltd
DNV GL Laboratory	<i>New Non-Residential Buildings</i>	DNV GL
GEMS World Academy Singapore (Phase 1)	<i>New Non-Residential Buildings</i>	GEMS World Academy (Singapore) Pte Ltd
Henry Park Primary School (Block B)	<i>New Non-Residential Buildings</i>	Ministry of Education
Institute of Mental Health New Administration Building	<i>New Non-Residential Buildings</i>	Institute of Health
Kerry Logistics Hub	<i>New Non-Residential Buildings</i>	Boustead Projects Pte Ltd
Kulicke & Soffa Corporate Headquarters	<i>New Non-Residential Buildings</i>	DBS Trustee Ltd as Trustee of Mapletree Industrial Trust
Lam Soon @ Marsiling	<i>New Non-Residential Buildings</i>	Lam Soon Cannery Pte Ltd
M1 (Annex) at 9 IBP	<i>New Non-Residential Buildings</i>	M1 Limited
NTUC Income - Prinsep House	<i>New Non-Residential Buildings</i>	NTUC Income Insurance Co-operative Ltd
Office Block 20 at Alexandra Hospital	<i>New Non-Residential Buildings</i>	Jurong Health Services Pte Ltd

BCA GREEN MARK AWARD FOR BUILDINGS

GOLD

Project Name	Category	Client/ Developer/ Building Owner
P&G Singapore Innovation Center	<i>New Non-Residential Buildings</i>	Procter and Gamble International Operations Pte Ltd
Pixel Red	<i>New Non-Residential Buildings</i>	Teckwah Industrial Corporation Ltd
PW Manufacturing Singapore	<i>New Non-Residential Buildings</i>	P&W NGPF Manufacturing Company Singapore Pte Ltd
SATAIR	<i>New Non-Residential Buildings</i>	Airnest Singapore Pte Ltd
Satay By The Bay	<i>New Non-Residential Buildings</i>	Planar One & Associates Pte Ltd
SCM Lodge @ Tuas	<i>New Non-Residential Buildings</i>	Sembcorp Marine Ltd
SingHealth Polyclinics - Tampines	<i>New Non-Residential Buildings</i>	SingHealth Polyclinics
Standard Chartered Bank at Changi Business Park Phase 2	<i>New Non-Residential Buildings</i>	Ascendas (Tuas) Pte Ltd
Swee Hong @ Kranji	<i>New Non-Residential Buildings</i>	Swee Hong Limited
The Seletar Mall	<i>New Non-Residential Buildings</i>	The Seletar Mall Pte Ltd
138 Depot Road	<i>Existing Non-Residential Buildings</i>	HSBC Institutional Trust Services (S) Limited as Trustee of AREIT
Changi Airport Passenger Terminal 2 North East Pier	<i>Existing Non-Residential Buildings</i>	Changi Airport Group (Singapore) Pte Ltd

BCA GREEN MARK AWARD FOR BUILDINGS

GOLD

Project Name	Category	Client/ Developer/ Building Owner
Changi Airport Passenger Terminal 2 South East Pier	<i>Existing Non-Residential Buildings</i>	Changi Airport Group (Singapore) Pte Ltd
Changi Airport Terminal 1	<i>Existing Non-Residential Buildings</i>	Changi Airport Group (Singapore) Pte Ltd
Changi Airport Terminal 1 (Finger Pier C)	<i>Existing Non-Residential Buildings</i>	Changi Airport Group (Singapore) Pte Ltd
Changi Airport Terminal 1 (Finger Pier D)	<i>Existing Non-Residential Buildings</i>	Changi Airport Group (Singapore) Pte Ltd
Golden Mile Towers	<i>Existing Non-Residential Buildings</i>	Management Corporation Strata Title Plan No. 677
Keppel Distripark Block 511	<i>Existing Non-Residential Buildings</i>	PSA Corporation Limited
Limbang Shopping Centre	<i>Existing Non-Residential Buildings</i>	Housing and Development Board
Marina Bay Financial Centre (Phase 1)	<i>Existing Non-Residential Buildings</i>	BFC Development LLP
Merrill Lynch HarbourFront	<i>Existing Non-Residential Buildings</i>	DBS Trustee Ltd as Trustee of Mapletree Commercial Trust
National University of Singapore - Yong Loo Lin School of Medicine Block MD7	<i>Existing Non-Residential Buildings</i>	National University of Singapore
New Supreme Court Building	<i>Existing Non-Residential Buildings</i>	Supreme Court of Singapore
North Bridge Centre	<i>Existing Non-Residential Buildings</i>	Management Corporation Strata Title Plan No. 3329

BCA GREEN MARK AWARD FOR BUILDINGS

GOLD

Project Name	Category	Client/ Developer/ Building Owner
OCBC Bank Thomson Branch	<i>Existing Non-Residential Buildings</i>	Oversea-Chinese Banking Corporation Limited
OCBC Tampines Centre One	<i>Existing Non-Residential Buildings</i>	Oversea-Chinese Banking Corporation Limited
OCBC Tampines Centre Two	<i>Existing Non-Residential Buildings</i>	Oversea-Chinese Banking Corporation Limited
Orchard Parade Hotel	<i>Existing Non-Residential Buildings</i>	Far East Orchard Limited
PCI Building	<i>Existing Non-Residential Buildings</i>	PCI Limited
Raffles City Singapore	<i>Existing Non-Residential Buildings</i>	CapitaCommercial Trust and CapitaMall Trust
Robinson Point	<i>Existing Non-Residential Buildings</i>	39 Robinson Road Pte Ltd
Taman Jurong Shopping Centre	<i>Existing Non-Residential Buildings</i>	Housing and Development Board
Tampines Central Community Complex	<i>Existing Non-Residential Buildings</i>	Housing and Development Board
Tampines Mall	<i>Existing Non-Residential Buildings</i>	CapitaMalls Asia
West Mall	<i>Existing Non-Residential Buildings</i>	United Industrial Corporation Limited
Wheelock Place	<i>Existing Non-Residential Buildings</i>	Everbilt Developers Pte Ltd

BCA GREEN MARK AWARD FOR BUILDINGS

GOLD

Project Name	Category	Client/ Developer/ Building Owner
Woodlands MRT Station	<i>Existing Non-Residential Buildings</i>	SMRT Trains Ltd
18 Woodsville	<i>New Residential Buildings</i>	S P Setia International (S) Pte Ltd
1919	<i>New Residential Buildings</i>	Aurum Land Pte Ltd (subsidiary of Woh Hup Holdings)
Bartley Ridge	<i>New Residential Buildings</i>	Mount V Development Pte Ltd
Compassvale Ancilla (Sengkang Neighbourhood 2 Contract 40)	<i>New Residential Buildings</i>	Housing & Development Board
Heron Bay	<i>New Residential Buildings</i>	Serangoon EC Pte Ltd
McNair Tower	<i>New Residential Buildings</i>	Housing & Development Board
Montreal Dale	<i>New Residential Buildings</i>	Housing & Development Board
Riverbank @ Fernvale	<i>New Residential Buildings</i>	UOL Development (Sengkang) Pte Ltd
Riversound Residence	<i>New Residential Buildings</i>	Qingjian Realty (Sengkang) Pte Ltd
Blk 101(MSCP), 101A-D, 102A-D, 103A-C, 104A-B, 105(MSCP), 105A-D Punggol Field/ Edgefield Plains	<i>Existing Residential Buildings</i>	Housing & Development Board
Blk 173A-D, 174(MSCP), 174A-D, 175(MSCP), 175A-D, 176A-D Edgedale/ Edgefield Plains/ Punggol Field	<i>Existing Residential Buildings</i>	Housing & Development Board

BCA GREEN MARK AWARD FOR BUILDINGS

CERTIFIED

Project Name	Category	Client/ Developer/ Building Owner
Blk 196 (MSCP), 196A-D, 197A-B, 199(MSCP), 199A-D Punggol Field	<i>Existing Residential Buildings</i>	Housing & Development Board
Becton Dickinson - Annex Extension	<i>New Non-Residential Buildings</i>	Becton Dickinson Medical (S) Pte Ltd
PacificLight Power Plant	<i>New Non-Residential Buildings</i>	PacificLight Power Pte Ltd
Proposed Factory & Dormitory @ 5 Neythal Road	<i>New Non-Residential Buildings</i>	Eng Lee Engineering Pte Ltd
The Singapore Island Country Club	<i>New Non-Residential Buildings</i>	The Singapore Island Country Club
1 Serangoon North	<i>Existing Non-Residential Buildings</i>	Singapore Telecommunications Limited (SingTel)
22 Woodlands Link	<i>Existing Non-Residential Buildings</i>	JTC Corporation
Empire Complex	<i>Existing Non-Residential Buildings</i>	PSA Corporation Limited
HSBC Building	<i>Existing Non-Residential Buildings</i>	CapitaCommercial Trust
PSA Vista	<i>Existing Non-Residential Buildings</i>	Mapletree Investments Pte Ltd

The Award

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

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.

Districts are assessed under the following 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.

Defu Industrial Park (Southern)

CERTIFIED



Client / Developer

Housing & Development Board

Architect

ZARCH Collaboratives Pte Ltd

Landscape Consultant

Base6 Pte Ltd

ESD Consultant

Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 353,184 kWh/yr
- Use of energy efficient LED fittings for street and landscape lighting as well as public amenities
- Landscape planting strategies to increase local species diversity
- Extensive public consultations and dialogue sessions with key stakeholders conducted

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.

Gardens by the Bay (Bay South)

PLATINUM



Owner	Gardens by the Bay
Park Manager	Gardens by the Bay
Architect	CPG Consultants Pte Ltd
M&E Engineer	CPG Consultants Pte Ltd
Landscape Consultant	Grant Associates
ESD Consultant	CPGreen - CPG Consultants Pte Ltd

Key Features

- Use of environmentally-friendly products and recycled materials during construction
- Transplanting of mature trees for the Gardens
- Use of energy efficient outdoor lights equipped with motion and photo sensors
- Integration of passive energy systems in the design of the toilets, corridors and sheltered car park to maximize the use of natural lighting and ventilation
- Wildlife mitigation plans during early construction phases to promote a self-sustainable ecosystem within the Gardens
- Extensive greenery within the cooled conservatories, external gardens as well as on the Supertrees
- Fully automated water efficient plant irrigation system throughout the Gardens
- Extensive plant and structural diversities to attract dragonflies, birds and butterflies as part of the Gardens' habitat enhancement efforts for bio-diversity
- Use of water fittings rated WELS 'Excellent' in all external toilets

The Award

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 winners for Occupant-Centric schemes are grouped into the following categories:

- BCA-IDA Green Mark Award for Data Centres
- BCA Green Mark Award for Office Interior
- BCA Green Mark Award for Restaurants
- BCA Green Mark Award for Retail

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

Keppel Data Centres, Keppel Datahub 2

PLATINUM



Client / Developer	Keppel Datahub 2 Pte Ltd
Architect	BK Consulting Engineers Pte Ltd
M&E Engineer	Plan-One Engineering Services
Structural Engineer	BK Consulting Engineers Pte Ltd
Main Contractor	Acme Associates Pte Ltd
Green Mark Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 15,326,774 kWh/yr; estimated water savings: 3001 m³/yr
- Modular approach to IT capacity expansion through phase expansion
- Chilled water system efficiency of 0.6 kW/ton
- Siphonic rainwater discharge
- Motion sensors and zoning control for data centre area
- Extensive use of green cement and sustainable products
- Flywheel-powered Dynamic Rotary UPS System for data centre
- Cold air-hot air containment for server racks
- Directional perforated floor tiles to direct cool air into racks

BCA-IDA GREEN MARK AWARD FOR DATA CENTRES

GOLD

Project Name

AWAN Data Centre

Client/ Developer/ Building Owner

AWAN Data Centre Pte Ltd

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

BP Singapore Pte Ltd

Located at #03-01, Keppel Bay Tower

PLATINUM



Tenant/Owner	BP Singapore Pte Ltd
Contractor	DLE M&E Pte Ltd
Facility Manager	Johnson Controls Global WorkPlace Solutions
M&E Consultant	CD Engineers Pte Ltd
Other Specialist Consultant/ Contractor	Global Facility Management Pte Ltd
Interior Design	Merge O+R Pte Ltd
ESD Consultant	Kaer Pte Ltd

Key Features

- EEI of 40 kWh/m²/yr (excluding air-conditioning and after-hours usage)
- Perimeter daylight sensors and motion sensors throughout the office
- Dimmable task lights with inbuilt occupancy sensor for all staff as well as low lighting power budget of 9.1 W/m²
- Real-time monitoring of energy consumption, temperature, relative humidity and carbon dioxide levels and analysis through the energy management system
- Greenery covering over 3.5% of office floor area, with semi-private green sky terrace accessible to staff
- Green procurement and purchasing policy in place with extensive use of sustainable office stationery and cleaning products
- Comprehensive green educational activities such as the TravelSmart program, green outing trips and 'No Print' days

Credit Suisse AG

Located at #01-101, ONE@Changi City

PLATINUM



Tenant/owner	Credit Suisse AG
Architect	HASELL
Contractor	Shimizu Corporation
Facility Manager	Confluence Project Management Pte Ltd
M&E Consultant	Bescon Consulting Engineers Pte
Landscape Consultant	Ecoflora (S) Pte Ltd
Lighting Consultant	iLab Pte Ltd
ESD Consultant	Kaer Pte Ltd

Key Features

- Use of energy efficient LED lighting, resulting in an excellent lighting power budget of 8.2 W/m² and more than 40% savings from code
- Motion sensors applied throughout the office and task lights provided for individual lighting level control
- Procurement of Energy Star office equipment as well as energy efficient thin clients, resulting in significant energy savings
- Real time monitoring and live display of consumption figures for items such as water, lighting and workstations, available for individual user download and tracking
- Hotdesking concept implemented office wide, with flexible smart working electronic desk search system
- Open stairs to increase inter-level interaction and reduce usage of lifts
- Extensive office greenery with accessible green corridor surrounding office perimeter

Mapletree Investments Pte Ltd

Located at #13-01, Mapletree Business City

PLATINUM



Tenant/Owner	Mapletree Investments Pte Ltd
Contractor	DB&B Pte Ltd, D'Perception Singapore Pte Ltd
Facility Manager	Mapletree Investments Pte Ltd
M&E Consultant	T.Y. Lin International Pte Ltd

Key Features

- Implementation of air-conditioning control strategies such as automatic setback in unoccupied spaces
- Use of energy efficient LED and T5 lighting, resulting in 40.3% savings from code lighting power budget
- Use of efficient Energy Star office equipment
- Use of sustainable construction materials and office products
- Adoption of a comprehensive waste recycling program including recycling of toner cartridges and light fittings
- Internal staircase to discourage use of lifts
- Procurement policy containing an environmental sustainability clause

Olswang Asia LLP

Located at #05-01, Ocean Financial Centre

PLATINUM



Key Features

- Extensive use of T5 and LED lighting, resulting in 44% savings from code
- Motion sensors for all individual rooms and photocell sensors at perimeter of open office area
- Task lights for individual work desks, allowing for greater user controllability of the lighting system
- All office equipment bear the Energy Star Label
- Extensive use of sustainable fit-out materials and office products
- Greenery provision for more than 2% of the office area
- Secure printing setting to reduce printing waste

Tenant/Owner	Olswang Asia LLP
Contractor	Facility Link Private Limited
M&E Consultant	JAG Engineering (S) Pte Ltd
Project Manger	Savills (Singapore) Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

Visa Worldwide Pte Ltd

Located at Level 11, Singapore Post Centre

PLATINUM



Key Features

- Extensive VAV zoning in office, with FCUs for after-office cooling needs fitted with toggle switches for local override
- Use of energy efficient LED and T5 lighting, 34% improvement in lighting power budget from code
- 92% of the office equipment rated Energy Star, with timers provided for common printers and scanners
- Provision of 30 numbers of hot desks
- Extensive greenery constituting 2.47% of office floor area, with potted plants and green wall in office interior and green garden accessible to staff
- Provision of paper recycling bins for every two desks in the office and paper recycling bin utility area
- Green Committee to create environmental awareness for Visa staff at corporate level

Tenant/Owner	Visa Worldwide Pte Ltd
Main Contractor	Facility Link Pte Ltd
Sub Contractor	A-Power Pte Ltd
M&E Consultant	DSCO Group Pte Ltd
Project Manager	CBRE Pte Ltd
ESD Consultant	Kaer Pte Ltd

Bank J. Safra Sarasin Ltd, Singapore Branch

Located at #25-01, Asia Square Tower 1

GOLD^{PLUS}



Key Features

- Energy efficient LED and T5 lighting for office with motion sensors for meeting rooms
- Implementation of lighting improvement plans resulting in thousands of dollars saved annually
- Energy efficient office equipment with Energy Star label
- Extensive use of sustainable products in fit-out
- Sustainable procurement policy in place with extensive use of environmentally friendly office products

Tenant/ Owner	Bank J. Safra Sarasin Ltd, Singapore Branch
Renovation Consultant/ Contractor	Orb Associates Pte Ltd
Main Contractor	Falkcon Interior Pte Ltd
ESD Consultant	Building System & Diagnostics Pte Ltd

BCA GREEN MARK AWARD FOR OFFICE INTERIOR

BG Asia Pacific Pte Ltd

Located at #11-03, Asia Square Tower 1

GOLD^{PLUS}



Key Features

- Auxiliary air-con provided to open office area for after office-hour extension, with timer for hourly reset
- All office equipment except projectors are Energy Star rated
- Extensive use of energy efficient T5 and LED lighting and use of motion sensors for meeting rooms
- Open office layout to maximise the use of natural lighting and allow for at least 20% reduction in T5 lighting consumption by turning off 107 tubes
- Extensive use of video-conferencing facilities for communication with global branches to reduce cost of travelling and carbon footprint

Tenant/Owner

BG Asia Pacific Pte Ltd

Renovation Consultant/Contractor

M Moser Associates

Facility Manager Company

Jones Lang LaSalle

Managing Agent/ Maintenance

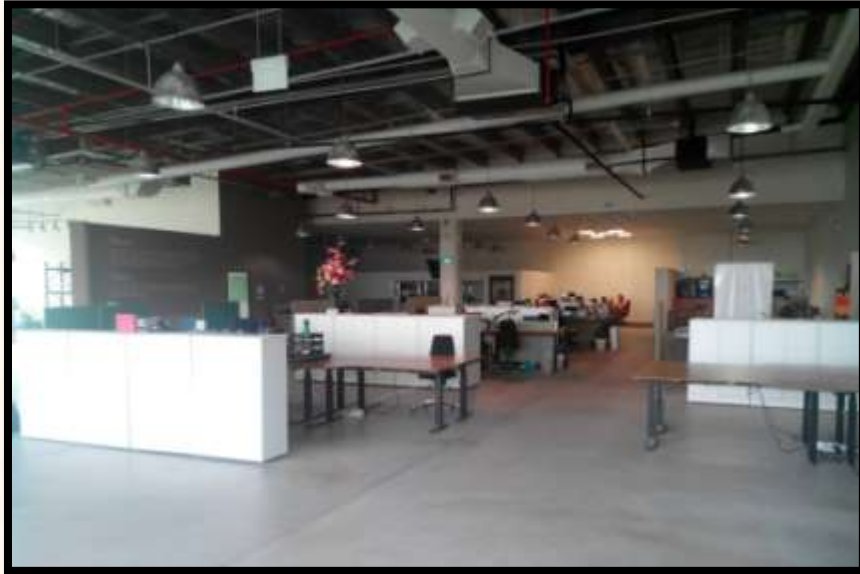
Asia Square Management

Contractor

Greenpac (S) Pte Ltd

Located at #04-01, Greenhub

GOLD^{PLUS}



Key Features

- Zero energy office, with use of renewable solar energy to power the entire office
- Integration of office with gardens and open-air kitchen to create a unique eco-friendly and relaxing environment for staff with an urban farming concept
- Rain water harvesting system with Rain Bird Sensor technology to automatically shut off sprinkler when it rains
- Minimum renovation to retain more than 50% of original raw floor, wall and ceiling
- Open office concept to maximize use of natural daylight and ventilation

Tenant/Owner

Greenpac (S) Pte Ltd

Renovation Consultant/Contractor

Boustead Projects Pte Ltd

Facility Manager Company

Boustead Projects Pte Ltd

M&E Consultant

Tai Lee Hang Electrical Engineering Pte Ltd

Managing Agent/ Maintenance Contractor

Boustead Projects Pte Ltd

Novartis Asia Pacific Pharmaceuticals Pte Ltd

Located at #11-25/26, Mapletree Business City

GOLD^{PLUS}



Key Features

- Photo-cell sensors along the internal office perimeter to optimise daylighting usage
- Presence detectors in meeting rooms
- Extensive indoor greenery with planted areas spanning over 2% of total office space
- Internal staircase leading to main office at Level 10 to reduce reliance on lifts
- Green committee to coordinate green office operations and educational activities

Tenant/Owner

Novartis Asia Pacific Pharmaceuticals Pte Ltd

Renovation Consultant/Contractor

Jones Lang LaSalle Property Consultants Pte Ltd

M&E Consultant

T.Y. Lin International Pte Ltd

Interior Design

SCA Design Ptd Ltd

Samsung Asia Pte Ltd

Located at Levels 16 and 17, Mapletree Business City

GOLD^{PLUS}



Key Features

- Energy efficient LED and T5 fluorescent light fittings, with motion sensors for meeting rooms and toilets, as well as photocell sensors for office façade perimeters
- Planters and potted plants with a coverage of 3.4% of office area and use of organic fertilizer
- Extensive use of sustainable products in fit-out
- Sustainable procurement policy in place with use of numerous certified sustainable office products
- Incorporating digital signature for all formal and informal documents to reduce paper printing

Tenant/Owner

Samsung Asia Pte Ltd

Renovation Consultant/Contractor

DB&B Pte Ltd

M&E Consultant

T.Y.Lin International Pte Ltd

Interior Design

T.Y.Lin International Pte Ltd

Squire Mech Pte Ltd

Located at #01-16/17 Block B, Jackson Square

GOLD^{PLUS}



Key Features

- Energy metering for equipment, lighting, data centre and air conditioning with cloud monitoring through internet, to ease setting of targets to reduce office energy consumption
- Extensive use of energy efficient LED and T5 lighting, achieving savings of more than 40% from code
- Extensive indoor greenery covering 2% of the office area to create a more conducive indoor environment
- Secure printing and recycling tray for double-sided printing at plotters and printers to reduce paper consumption
- Environmental and green procurement policies in place to encourage green practices in the office

Tenant/ Owner

Squire Mech Pte Ltd

Renovation Consultant

Squire Mech Pte Ltd

M&E Consultant

Squire Mech Pte Ltd

BCA GREEN MARK AWARD FOR OFFICE INTERIOR

GOLD

Project Name	Client/ Developer/ Building Owner
BCA Academy of the Built Environment <i>(Located at Block B, BCA Academy)</i>	BCA Academy of the Built Environment
Centre for Liveable Cities <i>(Located at #07-01, URA Centre)</i>	Centre For Liveable Cities
CMA CGM & ANL (Singapore) Pte Ltd <i>(Located at #03-01, The Metropolis Tower 1)</i>	CMA CGM & ANL (Singapore) Pte Ltd
Geyer Environments Pte Ltd <i>(Located at #02-59, China Square Central)</i>	Geyer Environments Pte Ltd
Institute of Bioengineering and Nanotechnology <i>(Located at Levels 4 to 9, The Nanos)</i>	Institute of Bioengineering and Nanotechnology
IX Architects Pte Ltd <i>(Located at #13-13, Trivex)</i>	IX Architects Pte Ltd
Mundipharma Pte Ltd <i>(Located at #22-01, Asia Square Tower 2)</i>	Mundipharma Pte Ltd
Narada Asia Pacific Pte Ltd <i>(Located at #02-10, Eunost Technolink)</i>	Narada Asia Pacific Pte Ltd
Reed Smith Pte Ltd <i>(Located at #06-01 to #06-06, Ocean Financial Centre)</i>	ReedSmith Pte Ltd
Rio Tinto Singapore Holdings Pte Ltd <i>(Located at #20-01 and #21-03/04, Marina Bay Financial Centre Tower 3)</i>	Rio Tinto Singapore Holdings Pte Ltd
Singapore Tourism Board <i>(Located at Levels 7 to 13, Tourism Court)</i>	Singapore Tourism Board

BCA GREEN MARK AWARD FOR OFFICE INTERIOR

CERTIFIED

Project Name

Client/ Developer/ Building Owner

CRH Group Services Limited (Singapore Branch) *(Located at #17-06, 6 Battery Road)*

CRH Group Services Limited (Singapore Branch)

Crown Construction Pte Ltd *(Located at 55 Loyang Way)*

Crown Construction Pte Ltd

DBS Bank Ltd *(Located at Levels 4 and 5, 10 Toh Guan Road)*

DBS Bank Ltd

Novartis Asia Pacific Pharmaceuticals Pte Ltd *(Located at #11-03, PSA Building)*

Novartis Asia Pacific Pharmaceuticals Pte Ltd

My Tree House

Located at #B1-01, National Library Building

PLATINUM



Tenant / Owner	City Developments Limited National Library Board Singapore
Interior Designer	ADDP Architects LLP
M&E Consultant	United Project Consultants Pte Ltd
Structural Consultant	KTP Consultants Pte Ltd
Quantity Surveyor	Rider Levett Bucknall LLP
Multimedia Consultant	Multimedia People Pte Ltd

Key Features

- Nature themed interior design concept
- Projected exhibit coined *Dendrochronology* with real-time weather data on display to educate children on environmental markers in Singapore
- Interactive *Shadow Play Wall* with projected images and questions about sustainability, and monthly educational programmes to promote environmental awareness among children
- All light fittings are LED
- Recycled plastic bottles used for Tree House light features
- Environmental friendly materials used for carpet flooring, partition walls, ceiling board and furniture
- E-reading set up with 179 titles from Tumble Books accessible offline
- Bookcross bin at the entrance to promote recycling of used books, which are to be distributed to organizations, schools and members of the public

The Award

As restaurants utilise high levels of energy and water resources on a daily basis, this provided a good opportunity to introduce the Green Mark for Restaurants in 2011, specially tailored for restaurants to promote corporate responsibility as well as to recognise environmentally friendly and sustainable practices in restaurants, taking sustainability beyond commercial and residential infrastructure.

Restaurants are evaluated under the following criteria:

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

McDonald's Restaurants Pte Ltd

Located at #01-11, Safra Yishun Country Club

PLATINUM



Client / Developer

McDonald's Restaurants Pte Ltd

Architect

Archideas Design Inc

Main Contractor

Megabuilders & Development Pte Ltd

M&E Engineer

Alpha Consulting Engineers Pte Ltd

ESD Consultant

Metropolitan Green Design & Technology

Project Engineer

Engineers Incorporated

Key Features

- Use of Low Oil Volume fryer
- Energy efficient Halton capture jet hood technology
- Use of energy efficient big ass fans for mechanical ventilation
- Large floor-to-ceiling glazed windows with low-e value allowing natural daylight harvesting yet minimizing fenestration heat transfer
- First outlet to utilize 100% LED lighting
- Heat recovery of more than 13% of annual energy consumption
- CO₂ monitoring of kitchen area to detect leakage of CO₂ cylinders used in making carbonated drinks
- Recycling of waste oil to be made into soap products

McDonald's Restaurants Pte Ltd

Located at #01-63 and #02-55, JEM

GOLD^{PLUS}



Key Features

- Heat recovery system with free generation of hot water for dishwashing
- Use of Low Oil Volume fryer
- Energy efficient Halton capture jet hood technology
- Energy efficient T5 and LED lighting for store lighting and signage
- Positive and negative pressurization systems in place to maintain the indoor air quality within dining areas
- Use of electronic air cleaner system

Client / Developer

McDonald's Restaurants Pte Ltd

Renovation Consultant / Contractor

Huason Construction Pte Ltd

M&E Engineer

Tyelin & Associates Consulting Engineers

ESD Consultant

Metropolitan Green Design and Technology

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

BCA GREEN MARK AWARD FOR RETAIL

CERTIFIED

Project Name

Watches of Switzerland (Located at #01-12, City Square Mall)

Client/ Developer/ Building Owner

Watches of Switzerland Pte Ltd

The Award

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 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.

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



Amarin Wickham, Malaysia

New Residential Buildings

GOLD^{PLUS}



Client / Developer	Amarin Wickham Sdn Bhd
Architect	Ngiom Partnership
M&E Engineer	Arup Jururunding Sdn Bhd
Structural Engineer	Arup Jururunding Sdn Bhd
Quantity Surveyor	Jurukur Bahan Bersatu
Landscape Consultant	Taju LandArt
ESD Consultant	IEN Consultants Sdn Bhd

Key Features

- Estimated energy savings: 286,827 kWh/yr; estimated water savings: 4289 m³/yr; RETV: 18.9 W/m²
- 48% improvement in lighting power budget from code
- Light pipe to bring daylight to car park with air wells for natural ventilation
- Use of lifts with variable voltage variable frequency motor drive and sleep mode features
- 42.9 kWp solar photovoltaic system
- Water efficient fittings rated WELS 'Good' and 'Very Good'
- Extensive use of environmental friendly materials
- Extensive greenery with green plot ratio of 9.02 and provision of green roof

IKEA Bangna, Thailand

New Non-Residential Buildings

GOLD



Client / Developer	IKANO (Thailand) Ltd
Project Manager	IKANO (Thailand) Ltd
Architect	TJ Ong Architect in association with Hassell
M&E Engineer	Aurecon Consulting (Thailand) Co Ltd
Structural Engineer	Aurecon Consulting (Thailand) Co Ltd
Quantity Surveyor	RHLB (Siam) Ltd
Main Contractor	Italian-Thai Development PCL
Landscape Consultant	URBANiS Company Limited
ESD Consultant	Aurecon Singapore (Pte) Ltd

Key Features

- Estimated energy savings: 4,311,429 kWh/yr; estimated water savings: 24,178 m³/yr
- High efficiency T5 and LED lighting
- Use of solar water heater
- 244 kWp of solar photovoltaic panels
- Use of heat recovery wheel
- Waste water and sewage treatment plant

Menara Binjai, Malaysia

New Non-Residential Buildings

GOLD



Client / Developer	Khor Joo Saik Sdn Bhd
Architect	Veritas Architects Sdn Bhd
M&E Engineer	Ranhill Consulting Sdn Bhd
Structural Engineer	Web Structures (M) Sdn Bhd
Landscape Consultant	Veritas Architects Sdn Bhd
Quantity Surveyor	CKP Nizaruddin Jurukur Bahan Sdn
Facade Consultant	Pintar Jaya (M) Sdn Bhd
ESD Consultant	G-Energy Global Pte Ltd
Main Contractor	Crest Builder Sdn Bhd

Key Features

- Estimated energy savings: 525,043 kWh/yr; estimated water savings: 52,520 m³/yr
- Air-conditioning plant system efficiency 0.65 kW/ton as well as use of heat pipe technology
- 24.3% improvement in lighting power budget from code
- Use of regenerative lifts with variable voltage variable frequency motor drive and sleep mode features
- Recycling of more than 75% of AHU condensate

Setia City Mall, Malaysia

New Non-Residential Buildings

GOLD



Client / Developer	Greenhill Resources Sdn Bhd
Project Manager	Lendlease Projects (M) Sdn Bhd
Architect	ArchiCentre Sdn Bhd
M&E Engineer	KTA Tenaga Sdn Bhd
Structural Engineer	T&T Konsult Sdn Bhd
Quantity Surveyor	KPK Quantity Surveyor Sdn Bhd
Main Contractor	Lendlease Projects (M) Sdn Bhd
Landscape Consultant	Sitetectonix Pte Ltd
ESD Consultant	IEN Consultants Sdn Bhd

Key Features

- Estimated energy savings: 87,700 kWh/yr
- Chiller plant efficiency of 0.71 kW/ton
- Use of lifts with variable voltage variable frequency motor drive and sleep mode features, as well as escalators with motion sensors
- Provision of 35 numbers of bicycle lots
- Extensive use of sustainable products in construction
- AHU condensate recycling for cooling tower makeup water

World Trade Center II, Indonesia

New Non-Residential Buildings

GOLD



Client / Developer	P.T. Jakarta Land
Project Manager	P.T. Jakarta Land
Architect	Aedas Pte Ltd / P.T. Prada Tata International
M&E Engineer	P.T. Skemanusa Consultama Teknik
Structural Engineer	P.T. Meinhardt Indonesia
Quantity Surveyor	P.T. Wolferstan Trower Indonesia
Main Contractor	P.T. Balfour Beatty Sakti Indonesia
Façade Consultant	Meinhardt Façade Technology (S) Pte Ltd
Lighting Consultant	P.T. Litac Konsultan

Key Features

- Estimated energy savings: 3,467,935 kWh/yr; ETTV: 38.54 W/m²
- Chiller plant efficiency of 0.75 kW/ton
- Provision of water fittings rated WELS 'Good' and 'Very Good'
- Provision of motion sensors and sleep mode features for escalators and lifts respectively
- Ductless fan for basement ventilation
- Use of heat recovery wheel

GTower, Malaysia

New Non-Residential Buildings

GOLD



Building Owner	G Tower Sdn Bhd
Facility Management	G Tower Sdn Bhd
ESCO	G-Energy Global Pte Ltd
ESD Consultant	G Energy (M) Sdn Bhd

Key Features

- Estimated energy savings: 301,805 kWh/yr; ETTV: 39.1 W/m²
- Use of energy efficient T5 and LED lighting, with 46% improvement in lighting power budget over Singapore code
- Heat pumps used to replace boilers resulting in 0.6% savings in building energy consumption
- Collection of AHU condensate for cooling tower makeup
- Extensive green roof area of 1317 m²

CapitaMall Wusheng and Somerset Wusheng, Wuhan, China

New Residential Buildings

GOLD



Client / Developer	CapitaMalls Asia
Project Manager	CapitaMalls Asia
Architect	ONG&ONG (Chengdu) Consultants Pte Ltd
M&E Engineer	Squire Mech (Shanghai) Co Ltd
Structural Engineer	Beijing Qiao Yuan Architectural Design & Consulting Co Ltd
Quantity Surveyor	Levett & Bailey Chartered Quantity Surveyors Ltd
Main Contractor	China Construction Third Engineering Joint-Stock Co. Ltd.
Landscape Consultant	SPARCH
ESD / Green Consultant	Building System & Diagnostics Pte Ltd

Key Features

- Estimated energy savings: 7,395,699 kWh/yr; estimated water savings: 2,619 m³/yr
- Chiller plant efficiency of 0.71 kW/ton for retail mall and efficient VRV systems for apartments
- 18% improvement in lighting power budget over code
- Use of lifts with variable voltage variable frequency motor drive and sleep mode features
- Mechanical car parking area with CO sensors to regulate the demand
- Extensive roof garden at podium area

Central Park City Plot C1, China

New Residential Buildings

GOLD



Client / Developer	Keppel Land International Ltd
Project Manager	Keppel Land International 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
ESD Consultant	Earth-in-Mind Pte Ltd

Key Features

- Estimated energy savings: 320,511 kWh/yr; estimated water savings: 5700 m³/yr.
- Use of insulated aluminium alloy windows for all dwelling units to reduce heat transfer through fenestration
- Installation of 36 kWp solar photovoltaic panels
- Construction of light wells to reduce usage of artificial lighting and mechanical ventilation in basement carpark
- Extensive greenery in the development to reduce heat island effect
- Charging station for electric bicycles

Stamford City Block 5, China

New Residential Buildings

GOLD



Key Features

- Estimated energy savings: 229,349 kWh/yr; estimated water savings: 2817 m³/yr
- Light pipes for basement carpark
- Basement carpark is mechanically ventilated with CO sensors to regulate demand
- Use of regenerative lifts with variable voltage variable frequency motor drive and sleep mode feature
- Green plot ratio of 3.4
- Extensive use of sustainable products in construction

Client / Developer	Keppel Land International Ltd
Project Manager	Keppel Land International Ltd
Architect	New Space Architects Pte Ltd
M&E Engineer	Wuxi Architectural Design & Research Institute Liability Co. Ltd
Structural Engineer	Wuxi Architectural Design & Research Institute Liability Co. Ltd
Quantity Surveyor	KPK Quantity Surveyors (China) Ltd
Landscape Consultant	EDAW (Shanghai) Limited
ESD Consultant	Building System & Diagnostics Pte Ltd

BCA GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)

CERTIFIED

Project Name	Category	Client/ Developer/ Building Owner
Ken Rimba Commercial Centre, Malaysia	<i>New Non-Residential Buildings</i>	Ken Holdings Bhd
Nanhai Business City (Phase 1A), China	<i>New Non-Residential Buildings</i>	Mapletree Investments Pte Ltd
Stamford City Block 1, 2, 3-1, 3-2, China	<i>New Residential Buildings</i>	Keppel Land International Ltd
The Loft, China	<i>New Residential Buildings</i>	CapitaLand China