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BCA Green Mark

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Contents

BCA GREEN MARK CHAMPION AWARD

Mapletree Investments Pte Ltd	22
-------------------------------	----

BCA GREEN MARK PEARL AWARD

City House: Pearl Prestige	24
DNV GL Technology Centre: Pearl	25
Manulife Centre: Pearl	26
Marina Bay Financial Centre Tower 3: Pearl	27
ONE @ Changi City: Pearl	28
Tampines Grande: Pearl	29

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

3 Pioneer Sector 3 (Block 2)	131
51 Cuppage Road	131
7 & 9 Tampines Grande (2 nd Re-Certification)	75
88 International Road	134
11 Tampines Concourse (2 nd Re-Certification)	97
321 Clementi	31
A Treasure Trove	115
Ang Mo Kio MRT Station (NS16)	131
Ascent	32
Asia Square Tower 1	51
Bedok Point	132
Belle waters	116
Bellewods	117
Blk 106A-D, 107(MSCP), 107A-D, 109(MSCP), 109A-D, 110A-D Punggol Field	133
Blk 115-119 Edgefield Plains, Blk 111, 112 & 114 Edgefield Plains	128

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Blk 126A-D, 126(MSCP), 128A-D, 128(MSCP) Edgedale Plains Punggol Field Walk	129
Blk 130, 131 (MSCP), 132, 133, 134, 135, 137(MSCP) 138 Edgedale Plains	133
Blk 643, 644(MSCP), 645, 646, 647 648, 649, 650(MSCP), 651, 652 Punggol Central	126
Bukit Timah Shopping Centre (MSCT1601)	132
Career Transicold	132
Changi Airport Terminal 4	86
Ci Yuan Community Club	33
Cinnamon & Tembusu Residential Colleges (CT) (Re-Certification)	52
City Square Mall (2 nd Re-Certification)	53
Downtown East Resort Main Block	131
Ecopolitan	118

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

EDIC Building	87
Education Resource Centre	54
Edward Boustead Centre	34
Environment Building	55
Experimental Power Grid Centre	98
Fancy Papers Supplier	88
Far East Plaza	99
Festive Hotel (Re-Certification)	100
Greenhub	89
Heavy Vehicle Storage Building with Ancillary Office	131
Hewlett Packard Graphics Solutions Business Building	132
Hotel 81 Star	102
Hotel Fort Canning	103

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Hotel Kăi	131
HSL Waterfront @ Penjuru	131
Ibis Singapore Novena	59
Institute of Mental Health IMH Block 3 and 6	104
International Building	105
JTC Aviation Two at Seletar Aerospace Park	35
JTC BioMed One	90
Jurong Town Hall Hotel	36
Kampung Admiralty (Non-Residential)	37
Katong 883	38
Keppel Tampines Logistics Hub	131
Kovan Regency	119
Landed Development at Cornation Road	134

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Lee Kong Chian Natural History Museum	131
Lee Kong Chian School Of Medicine (Yunnan)	39
Lucky Plaza	60
Lumileds Singapore	61
Luxus Hills (Phase 9)	84
Luxus Hills (Phase 8)	130
M Hotel Singapore	106
Marina Bay Sands	62
Marina Mandarin Singapore	40
MAS Building	62
MD2 at National University of Singapore	102
Me5 Project	131
Ministry of Manpower HQ Building	63
Ministry of Foreign Affairs Headquarters	132

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Mochtar Riady Building at National University of Singapore	132
Nanyang Executive Centre Nanyang Technological University	65
National Library Building (Re-Certification)	66
Nex Shopping Centre	132
Ngee Ann City	67
Ngee Ann Polytechnic Blk 22	41
NTU Faculty Housing	83
NTU SHSS (2 nd Re-Certification)	68
NTU South Spine	69
NTUC Trade Union House	132
NUHS Tower Block	108
OG Albert Complex	132
One George Street (3 rd Re-Certification)	109

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Parc Vera	132
Parliament House (Re-Certification)	70
Pasir Panjang Terminal Building 3 Pasir Panjang Terminal Phase III	131
Proposed Development of Sentosa Fire Station	42
PSA Building & Alexandra Retail Centre	111
Punggol Waterway Point & Punggol Town Plaza	91
Resort World Sentosa- Equarius Hotel	92
Resort World Senotsa- ESPA	93
Resort World Sentosa- Marine Life Park	94
Resort World Sentosa Beach Villas	95
SAFRA Club, Punggol	43
Samsung Hub	112
School of Art Design, Media	71
School of Business & Aero hub at Singapore Polytechnic	44

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Seagate Singapore Design Centre (The Shugart)	45
SEF SpaceHub	46
Sim Lim Tower	113
Singapore Aviation Academy	72
Singapore Changi Airport Terminal 2	132
Singapore Institute of Management – Block B	132
Six Battery Road	73
Solaris Building (Re-Certification)	74
SOHO Suites @ Pierce	133
Sports Hall, NTU	47
Stamford Detention Tank	131
Studio M Hotel Singapore	106
Sunray Building	134

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Tang Plaza	132
Technology Centre for Halliburton Completion Tools Manufacturing and Technology Plant	131
Tee Hai Full Gxp Facility	131
Temasek Club	48
The Amore Executive Condominium at Punggol Central	120
The Heeren (Re-Certification)	76
The Manor	121
The Panorama	132
The Tampines Trilliant	132
The Tembusu	133
The Terrace	122
Three 11	123
Tsao Residence	85

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Tuas Fire Station	134
Twenty Anson	77
UIC Building	96
University Sports Centre	49
UWCSEA	78
V on Shenton	124
Village Hotel Albert Court	79
Warehouse Development @ Bulim Ave	50
Waterview	132
Waterway Cascadia	125
White Sands	80
Winsland House II	114
Woodlands Civic Centre	81

Contents

BCA GREEN MARK AWARD FOR BUILDINGS

Workshops and Multi-Function Buildings at Sembmarine Integrated Yard @ Tuas	131
Yoo Lin School of Medicine Block MD 11	82

BCA GREEN MARK AWARD (OCCUPANT CENTRIC SCHEMES)

BCA GREEN MARK AWARD FOR SUPERMARKET

FairPrice Xtra Hypermarket at Kallang Wave Mall	144
---	-----

BCA-IDA GREEN MARK AWARD FOR DATA CENTRES

Digital Realty	174
Equinix SG 1 Data Centre	176
Equinix SG 3 Data Centre	172
Keppel Datahub	175
Pacnet SGS2	173

Contents

BCA GREEN MARK AWARD FOR OFFICE INTERIOR

American Express International Inc.	157
Arcadis Project Management Pte Ltd	170
Autodesk Asia Pte Ltd	147
Cambridge Associates Asia Pte Ltd	170
City Developments Limited	158
City Developments Limited	159
City Developments limited	170
City Serviced Offices Pte Ltd	170
City Serviced Offices Pte Ltd	170
DB&B Pte Ltd	170
Def Norske Veritas Pte Ltd	148
EMC Computer Systems (South Asia) Pte Ltd	161
Economic Development Board Singapore (Lvl 18, 20-23, 25-28 Raffles City Tower)	169
Elishan Investments Pte Ltd	170

Contents

BCA GREEN MARK AWARD FOR OFFICE INTERIOR

Energy Market Authority	169
Energy Research Institute @ NTU (ERI@N)	150
Expansion New Proposal Office Fit-Out for that McGraw-Hill Financial	162
Figtree Office @ Central Link	151
Fairsteps Properties Pte Ltd	170
First Capital Insurance, City House	170
General Motors International Singapore	169
Hitachi Asia Ltd. & Group Companies in Hitachi Square	164
Hong Leong Finance Limited	170
ING Bank N.V. (Singapore Branch)	169
Keppel Datahub	165
KPMG	169
Langdon & Seah Singapore Pte Ltd	170
Lend Lease Retail Pte Ltd	152
Lutron GI Limited	153

Contents

BCA GREEN MARK AWARD FOR OFFICE INTERIOR

Manulife Singapore	170
Manulife Singapore	170
National Australia Bank Fitout	154
Netapp Singapore Pte Ltd	166
Oon & Bazul LLP	170
Parexel International (Singapore) Pte Ltd	170
Ramdas & Wong	170
SDV Asia Pacific Corporation Pte Ltd	170
Singapore Green Building Council	155
SPRING Singapore	167
Sunray Woodcraft Construction Pte Ltd	168
Unilever Asia Private Limited	156
Verizon Office	169
Visa SP08 Office Expansion	157

Contents

BCA GREEN MARK AWARD (BEYOND BUILDINGS)

BCA GREEN MARK AWARD FOR DISTRICTS

Singapore Prison Service HQ, c/o Infrastructure Development Branch (Government Organisation under the Ministry of Home Affairs)	137
--	-----

BCA GREEN MARK AWARD FOR NEW PARKS

Compassvale Ancilla Park (Sengkang N2C40 Neighbourhood Park)	140
Kent Ridge Parks	140
Labrador Nature Reserve	139
Mount Faber Park	140
Rumah Tinggi Eco-Park	140
Springleaf Nature Park	140
Telok Blangah Hill Park	140

Contents

BCA GREEN MARK AWARD FOR NEW INFRASTRUCTURE

Jurong Port Green Berths J10 & J11	142
------------------------------------	-----

BCA GREEN MARK AWAY FOR BUILDINGS (OVERSEAS)

1500 Houses in Bukit Beruang (Brunei Darussalam)	190
Citadines St Geroges Terrace (Perth)	183
Graha CIMB Niaga Building	179
Menara CIMB	184
Menara LGB	185
Mulberry Lane	190
NHC Place Building	190
Platinum Sentral	180
Preston Oaks	186
Sino-Singapore Tianjin Eco-City Low Carbon Living Lab	181

Contents

The Manor	182
The Mines	187
The Springdale Plot 1 & 3	188
The Springdale Plot 2	189
BCA GREEN MARK AWARD FOR RESTAURANTS (OVERSEAS)	
KFC DriveThru Nilai Square	192

BCA Green Mark

CHAMPION 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:

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

Green Mark Champion Award

Mapletree is committed to environmentally sustainable practices. As a leading real estate developer, investor and capital manager, it recognizes the value and cost savings that sustainable design brings to its developments and their communities. To this end, Mapletree strives to integrate green building features in its properties.

For its Singapore-based projects, Mapletree seeks to achieve the Green Mark accreditation that is issued by Singapore's Building and Construction Authority (BCA). The annual energy savings of more than 53 million kWh from its Green Mark accredited properties are equivalent to meeting the electricity needs of over 9,500 Singapore households for one year. Mapletree's flagship development, Mapletree Business City (MBC), exemplifies the Group's focus on developing sustainable properties. It has clinched numerous accolades as a green and sustainable development that has incorporated a user-centric philosophy in its design, operations and maintenance. Another environmentally-friendly development is Mapletree Benoi Logistics Hub (MBLH). Recycled aggregates and green materials were used to build MBLH, while its roof has a skylight strip integrated with a photo sensor to reduce lighting consumption. A Green Mark Platinum rated property, MBLH is also the first naturally ventilated warehouse in Singapore to earn this accolade.

Mapletree also aims to adopt sustainable design at its overseas properties. At its Shanghai integrated office and retail development comprising MBC Shanghai and VivoCity Shanghai, green features include a green roof and an automated car park guidance system, as well as energy and water saving features. In addition, building materials for the development were primarily sourced from recycled or regional sources.

Key achievements:

To date, Mapletree has 12 Green Mark projects that are rated Gold and above (including 5 Platinum and 1 Gold Plus awards).



Harbourfront Centre



Mapletree Business City



Twenty Anson

BCA Green Mark

PEARL AWARD

The **BCA Green Mark (GM) Pearl Award** is launched in Sep 2014. This new prestigious award recognises the strong commitment of developers/ building owners/ landlords and tenants of the same project/ building working in tandem to achieve greater environmental sustainability for their project/ building. The Award is given to developers/ building owners/ landlords who have a substantial number of tenants who are GM certified under the GM occupant-centric schemes within a base building which is GM GoldPLUS or higher.

There will be two tiers of the Award

- **Green Mark Pearl Award** and **Green Mark Pearl Prestige Award**.

The Awards will be given out for the following three building types:

- i) Commercial offices
- ii) Retail malls
- iii) Business park developments

Green Mark Pearl Prestige Award

City House

As Asia's leading eco-developer, CDL has adopted a company ethos to 'Conserve as we Construct', remodelling its operations around a triple bottom line strategy focused on financial, environmental, and social performance.

Beyond pioneering visionary sustainable buildings with green design, CDL has raised its target to achieve a minimum of BCA Green Mark Gold^{Plus} for all existing buildings since 2011. Through various effective engagement initiatives such as Project: Eco-Office, "1°C Up Programme" and green fitting-out kits, CDL has encouraged and enabled its commercial tenants to play a more proactive role in Singapore's sustainable development agenda.

Since September 2014, CDL has also progressively implemented its Green Lease Partnership programme. As of April 2015, close to 80% of its commercial tenants have signed the CDL Green Lease Memorandum of Understanding, pledging to monitor and reduce energy consumption.

CDL's City House in the Central Business District, a Green Mark Platinum building, emerged as the sole winner of the Green Mark Pearl Prestige Award. City House has achieved annual energy savings of about 1.9 million kWh (equivalent to about S\$500,000* annually). Beyond retrofitting City House with a more energy efficient chiller plant, CDL has introduced a 1% electricity rebate for commercial tenants who attain 2% savings over the last quarter's bill. Tenants were also given kits with practical tips to green fit their premises and were encouraged to recycle.

With its strong and unwavering leadership commitment to sustainable development, CDL has distinguished itself as the most-awarded developer in the BCA Awards 2015 and largest winner of the inaugural Green Mark Pearl Award.



Green Mark Pearl Award



DNV GL Technology Centre

Ascendas is a leading provider of business space solutions with more than 30 years of experience. With a global clientele of over 2,400 customers in 26 cities across 10 countries, Ascendas focuses on refining our products and services to evolving market demands and to minimize environmental impact of our business activities.



Ascendas believes in playing an active role to ensure that our parks, buildings and business space are energy-efficient, green and environmentally-friendly, starting from design through to building maintenance and operations. We take a long term view of the real estate business and recognize the impact our business has on the environment. To-date, about 32 Ascendas buildings have attained BCA's Green Mark awards.

DNV GL Technology Centre is a seven-storey business park building in Singapore Science Park I. BCA Green Mark Pearl award for DNV GL Technology Centre is testament to Ascendas' unwavering commitment to deliver sustainable business space. It demonstrates Ascendas' partnership with customers towards creating a green and sustainable environment.



Green Mark Pearl Award

Manulife Centre

As Asia's leading eco-developer, for over two decades, CDL has adopted a company ethos to 'Conserve as we Construct', remodelling its operations around a triple bottom line strategy focused on financial, environmental, and social performance. From design, construction, procurement, maintenance and even stakeholder engagement, the entire life cycle of its buildings are aligned with environmental sustainability.

Manulife Centre, a Green Mark Platinum building along Bras Basah Road, was awarded the inaugural Green Mark Pearl Award. Some of the environmentally friendly features include efficient lighting at common areas, hybrid car park lots and water efficient shower facilities. Tenants were equipped with a digital monitoring portal that provides real-time half hourly updates of energy consumption. It is conveniently accessible via mobile devices, enabling them to better track and manage their electricity usage. As an incentive, CDL has introduced a 1% electricity rebate for tenants who attain 2% savings over the last quarter's bill. Tenants also received kits with practical tips to green fit their premises and were encouraged to recycle.

With its strong and unwavering leadership commitment to sustainable development, CDL has distinguished itself as the most-awarded developer in the BCA Awards 2015 and largest winner of the inaugural Green Mark Pearl Award.



Marina Bay Financial Centre Tower 3

Marina Bay Financial Centre (MBFC) stands on a 3.55 ha site in Marina Bay. Jointly developed by Cheung Kong (Holdings), Hongkong Land and Keppel Land, it offers three office towers with nearly 3 million sq ft of prime Grade A office space, two luxurious residential towers and a retail mall.

MBFC Tower 3 is conferred the BCA Green Mark Gold^{Plus} award. This accolade underscores the strong commitment and effort in maintaining high standards of sustainability and environmental protection. The building management has undertaken a myriad of sustainable approaches in achieving this, notably the tenant participations and joint environmental awareness programs which have been integral in the whole process leading to the achievement of the GM Pearl Award.

MBFC is managed by Raffles Quay Asset Management, which also manages One Raffles Quay. Both the premium developments are BCA Green Mark Gold and winners of the prestigious FIABCI Prix d'Excellence Awards. For more information, please refer to www.mbfcc.com.sg.



Green Mark Pearl Award

One@Changi City

A leading provider of business space solutions with more than 30 years of experience, Ascendas believes in playing an active role to ensure that our parks, buildings and business space are energy-efficient, green and environmentally-friendly, starting from design through to building maintenance and operations.

We take a long term view of the real estate business and recognize the impact our business has on the environment. More than 30 Ascendas buildings have attained BCA's Green Mark awards.

BCA Green Mark Pearl award for ONE@Changi City is testament to Ascendas' unwavering commitment to deliver sustainable business space. It demonstrates Ascendas' partnership with customers towards creating a green and sustainable environment.

ONE@Changi City, a joint venture development between Ascendas and Frasers Centrepoint Limited, is a nine-storey business park building in Changi Business Park.

Awarded the BCA Green Mark Gold Plus Award in 2011, the development achieved the BCA Green Mark Pearl award in 2015 through partnering tenants on green mark initiatives and active participation on the design and implementation of green features in the fit-out and operations of the tenant premises.



Green Mark Pearl Award

Tampines Grande

As Asia's leading eco-developer, for over two decades, CDL has adopted a company ethos to 'Conserve as we Construct', remodelling its operations around a triple bottom line strategy focused on financial, environmental, and social performance. From design, construction, procurement, maintenance and even stakeholder engagement, the entire life cycle of its buildings are aligned with environmental sustainability.

7 & 9 Tampines Grande, a Green Mark Platinum building, received the inaugural Green Mark Pearl Award. Some of the environmentally friendly features include the use of solar technology (one of the largest in a Singapore commercial property), photocell sensors for perimeter lights, hybrid car park lots and water efficient shower facilities, waterless urinals as well as extensive greenery and a rooftop garden. Tenants were equipped with a digital monitoring portal that provides real-time half hourly updates of energy consumption. It is conveniently accessible via mobile devices, enabling them to better track and manage their electricity usage. As an incentive, CDL has introduced a 1% electricity rebate for tenants who attain 2% savings over the last quarter's bill. Tenants also received kits with practical tips to green fit their premises and were encouraged to recycle.

With its strong and unwavering leadership commitment to sustainable development, CDL has distinguished itself as the most-awarded developer in the BCA Awards 2015 and largest winner of the inaugural Green Mark Pearl Award.



BCA Green Mark

FOR BUILDINGS

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 saving 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
- Environment Protection
- Indoor Environment Quality
- Other Green Features

The Awards will be given out for the following three building types:

- i. Non-Residential Buildings (New & Existing)
- ii. Residential Buildings (New & Existing)
- iii. Landed Houses

321 Clementi

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	Eng Wah Global Pte Ltd
Architect:	Aedas Pte Ltd
ESD/Green Consultant :	Web Earth Pte Ltd
Structural Engineer:	Web Structures Pte Ltd
Quantity Surveyor:	Rider Levett Bucknell Pte Ltd
Main Contractor:	Chong Tong Pte Ltd
Landscape Consultant:	Mace Studio Pte Ltd
M&E Engineer:	Chan Han Choong Pte Ltd

- Estimated energy savings: 986,913 kWh/yr; Estimated water savings: 1,886 m³/yr ; EETV: 35.5 W/m²
- Highly insulated façade with low-E double glazing.
- Magnetic Chillers plant with efficiency of < 0.65kW/ton.
- Focus on passive design for self-shading façade and naturally ventilated circulation spaces.
- Extensive LED sensor controlled lighting system.
- Water efficient development using 3 tick fittings.
- Extensive use of recycled cement and aggregates and recycling of demolition waste.

Ascent

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	Ascendas Land (Singapore) Pte Ltd
Project Manager :	Ascendas Services Pte Ltd
Architect:	SAA Architects Pte Ltd
ESD/Green Consultant :	Aecom Singapore Pte Ltd
Structural Engineer:	Aecom Singapore Pte Ltd
Quantity Surveyor:	WT Partnership (S) Pte Ltd
Main Contractor:	Nakano Singapore Pte Ltd
Landscape Consultant:	Earthscape Concepts Pte Ltd
ESD Consultant:	Building System & Diagnostics Pte Ltd

- Estimated energy savings: 4,245,006 kWh/yr; Estimated water savings: 12,357 m³/yr ; EETV: 33.72 W/m²
- Green Leasing is adopted to increase tenants' awareness to go green and protect the environment.
- Highly efficient chilled water plants are installed in this building with an operating design system efficiency of 0.58 kW/ton.
- Extensive use of T5 and LED lightings which helps to achieve 48% savings.
- Water is conserved through the use of PUB WELS water efficient fittings and collection of AHU Condensate for cooling tower make-up.
- Extensive used of environmentally- friendly construction materials such as Recycled Concrete Aggregates and Washed Copper Slag.
- 89% of the crush concrete waste is recycled into raw aggregates through the adoption of demolition protocol.
- 24,700kwh is generated annually through the installation of Building Integrated Photovoltaic (BIPV) on the Eastern Façade.

Ci Yuan Community Club

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	People's Association
Project Manager :	Interconsultants Pte Ltd
Architect:	3PA International
ESD/Green Consultant :	GreenA Consultants Pte Ltd
Structural Engineer:	LSW Consulting Engineers Pte Ltd
M&E Engineer:	Rankine & Hill Singapore Pte Ltd
Main Contractor:	Wan Chung Construction (SG) Pte Ltd
Landscape Consultant:	Tulin Design Pte Ltd

- Estimated energy savings: 816,415 kWh/yr; Estimated water savings: 8287 m³/yr; ETTV (w/m2):37.93.
- Efficient Air Conditioning System with efficiency of 0.71 kW/RT.
- Efficient Lighting with use of T5 and LED.
- All Water fittings are rated excellent under WELS.
- Harvesting of rain water and efficient irrigation system for landscaped areas.
- Extensive use of sustainable products in the project
- Provision of abundant greenery with a Green Plot Ratio of 4.
- Green Education Corner.

Edward Boustead Centre

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	BP-Ubi Industrial Pte Ltd
Project Manager :	Boustead Projects Pte Ltd
Architect:	HA Architects Pte Ltd
M&E Engineer:	DEG Builders Pte Ltd
Structural Engineer:	BC Koh & Partners Pte Ltd
Quantity Surveyor:	Boustead Projects Pte Ltd
Main Contractor:	Boustead Projects Pte Ltd
Landscape Consultant:	Earthscape
Others:	Wah Loon Plant & Instrumentation Pte Ltd / Tat Lee Sanitary & Plumbing Pte Ltd

- Estimated energy savings: 567,568 kWh/yr; Estimated water savings: 798 m³/yr ; ETTV: 35.39 W/m²
- Excellent chiller plant design system efficiency below 0.60kW/RT.
- Exceptional Buildability Score above 90 points with extensive usage of precast elements.
- Low CUI of below 0.35.
- Excellent human comfort with IAQ management plan and testing.
- Comprehensive Measurement & Verification plan with extensive sub-metering strategy.

JTC Aviation Two @ Seletar Aerospace Park

(New Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Client / Developer :	JTC Corporation
M&E Engineer:	Beca Carter Hollings & Ferner (S E Asia) Pte Ltd
Architect:	AWP Pte Ltd
ESD/Green Consultant :	Kaer Pte Ltd
Structural Engineer:	Beca Carter Hollings & Ferner (S E Asia) Pte Ltd
Quantity Surveyor:	WT Partnership Pte Ltd
Main Contractor:	SEMBCORP Design & Construction Pte Ltd

- Estimated energy savings: 1,776,510 (1,892,510) kWh/yr;
Estimated water savings: 55.6% ; ETV: 11.79 W/m²
- High efficiency chiller plant 0.549 kW/RT
- Extensive usage of LED lighting
- Excellent water efficient fittings
- Lighting system incorporated with motion sensors
- High performance façade with ETV of 11.79 W/sqm and no direct west facing façade
- Regenerative lift
- Fresh Air Provision integrated with CO2 sensors

Jurong Town Hall Hotel

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	Tamerton Pte Ltd
M&E Engineer :	DEG Builders Pte Ltd
Architect:	Team Design Architects Pte Ltd
Structural Engineer:	DP Engineers Pte Ltd
Quantity Surveyor:	Langdon & Seah Singapore Pte Ltd
Main Contractor:	Low Keng Huat Singapore Ltd
Landscape Consultant:	Tinderbox Pte Ltd
ESD Consultant:	DP Engineers Pte Ltd

- Estimated energy savings: 2,972,280 kWh/yr; Estimated water savings: 13,011.5 m³/yr ; ETTV: 27.26 W/m²
- Façade Design that achieved ETTV of 27.26W/m²
- Efficient Water-Cooled Air-Conditioning System with System Efficiency of 0.60kW/ton.
- Energy Efficient Air-Conditioning units to improve energy savings.
- Heat Pump for Hot water system.
- Use of non-potable water & automatic water efficient irrigation system.
- Recycling PAU, AHU Condensate for irrigation.
- Implementation of LED lightings.

Kampung Admiralty

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	Housing & Development Board
Project Manager :	ONG&ONG Pte Ltd
Architect:	WOHA Architects Pte Ltd
M&E Engineer :	AECOM Singapore Pte Ltd
Structural Engineer:	Ronnie & Koh Consultants Pte Ltd
Quantity Surveyor:	Davis Langdon KPS(S) Pte Ltd
Main Contractor:	Lum Chang Building Contractors Pte Ltd
Landscape Consultant:	Atelier Dreiseitl Asia Pte Ltd
ESD Consultant / Fire Safety Engineer:	AECOM Singapore Pte Ltd

- Estimated energy savings: 3,137,699kWh/yr; Estimated water savings: 4,672 m³/yr ; EETV: 38.67 W/m²
- Central chilled water plant system with target efficiency of 0.61kW/ton.
- Extensive use of LED lighting throughout the entire development.
- Photovoltaic PV panels on roof for energy generation.
- Harvested rainwater for irrigation.
- Extensive greenery with community farming garden and green roof.
- Pneumatic waste collection system with dual refuse collection separating recyclable and non-recyclable waste.
- Innovative underground bicycle storage system.

Katong Square

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



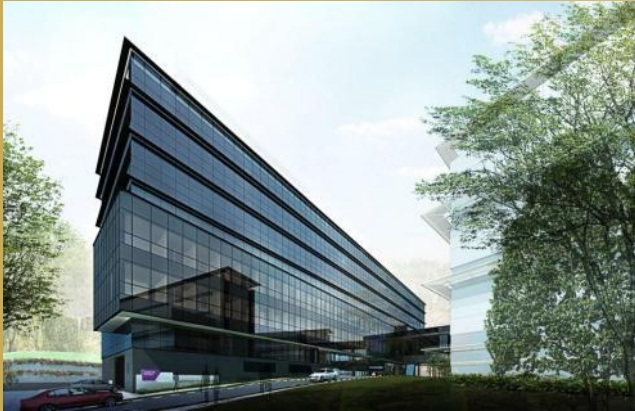
Client / Developer :	Katong Holdings Pte Ltd
Project Manager :	ONG&ONG Pte Ltd
Architect:	ONG&ONG Pte Ltd
M&E Engineer :	United Project Consultants Pte Ltd
Structural Engineer:	TW-Asia Consultants Pte Ltd
Quantity Surveyor:	Davis Langdon KPS(S) Pte Ltd
Main Contractor:	Master Contract Services Pte Ltd
Landscape Consultant:	Eco-ID Architects Pte Ltd
Others:	ONG&ONG Pte Ltd / Afrogreen Build Pte Ltd

- Estimated energy savings: 2,087,791.0kWh/yr; Estimated water savings: 431.20 m³/yr ; ETVV: 37.77W/m²
- Air conditioning system targeted efficiency of 0.63kW/RT.
- Air distribution system with fan system input power targeted with 40% improvement in the air distribution system efficiency over baseline
- Permanent measurement and verification instrumentation for the monitoring of chilled-water plant efficiency and heat balancing.
- Energy efficient T5 and LED lighting resulting in savings compare to code lighting power budget.
- Energy efficient features used such as heat recovery devices, motion sensors for staircases half landing, heat pumps and lifts with better energy efficient features.
- Building constructed using sustainable materials, recycled concrete aggregates (RCA) and washed copper.

Lee Kong Chian School Of Medicine (Yunnan)

(New Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Client / Developer :	Lee Kong Chian School of Medicine, NTU
Project Manager :	PM Link Pte Ltd
Architect:	DP Architects Pte Ltd
M&E Engineering:	Meinhardt (Singapore) Pte Ltd
Structural Engineer:	Beca Carter Hollings & Ferner (SE Asia) Pte Ltd
Quantity Surveyor:	Davis Langdon KPK (Singapore) Pte Ltd
Main Contractor:	Greatearth Construction Pte Ltd
Landscape Consultant:	DP Green Pte Ltd
ESD Consultant:	DP Sustainable Design Pte Ltd

- Estimated energy savings: 2,806,421 kWh/yr ; Estimated water savings: 6,468.6 m³/yr ; ETTV: 34.13W/m²
- Energy efficient air-conditioning system.
- Passive building design to reduce solar heat gain.
- Heat recovery using round around coil.
- Minimizing use of single pass AHUs in lab air distribution system.
- Under floor air distribution system in learning studio.
- Energy efficient lighting.
- Use of green concrete.

Marina One East Tower, Maina One West Tower

PLATINUM



(New Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	M+S Pte Ltd (MS Commercial Pte Ltd)
Project Manager :	Mapletree Project Management Pte Ltd/ Sunrise MS Pte Ltd
Architect:	Ingenhoven Architects / Architects 61 Pte Ltd
M&E Engineering:	Beca Carter Hollings & Ferner (SE Asia) Pte Ltd
Structural Engineer:	Beca Carter Hollings & Ferner (SE Asia) Pte Ltd
Quantity Surveyor:	Langdon & Seah Singapore Pte Ltd
Landscape Consultant:	Gustafson Porter Bowman Ltd/ ICN Design International Pte Ltd
ESD Consultant:	Beca Carter Hollings & Ferner (SE Asia) Pte Ltd

- Estimated energy savings: 12,965,159 kWh/yr; Estimated water savings: 186,075 m³/yr; ETTV: 38.12W/m²
- Provision of horizontal expanded mesh shading elements and high performance glazing to reduce the direct solar radiation.
- Heat Pipe for all PAHUs.
- NEWater for toilets flushing.
- Rainwater harvesting system.
- Lush Greenery serving as a Biodiversity Garden.
- Good access to public transport & provision of electric car charging stations.
- Provision of Green Chute & Pneumatic Chute system.

Ngee Ann Polytechnic Blk 22

PLATINUM



(New Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	Ngee Ann Polytechnic
Architect:	DP Architects Pte Ltd
M&E Engineering:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
Structural Engineer:	Meinhardt (S) Pte Ltd
Quantity Surveyor:	Langdon & Seah Singapore Pte Ltd
Main Contractor:	Conint Pte Ltd
Landscape Consultant:	DP Green Pte Ltd
ESD Consultant:	DP Sustainable Design Pte Ltd

- Estimated energy savings: 551,175 kWh/yr ; Estimated water savings: 17,321.44 m³/yr ; ETTV: 35.4W/m²
- High Performance Glass to achieve ETTV – 35.4 W/m².
- High Efficient Water-Cooled Air-Conditioning System with System Efficiency of 0.57kW/ton.
- Low face velocity Air-Conditioning units to improve energy savings.
- Solar Heat Recovery for Hot Water Heating.
- Large Implementation of LED & T5 fittings.
- Day lighting with Photocell Sensors.

Proposed Development of Sentosa Fire Station

(New Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Client / Developer :	SCDF
Project Manager :	PMLink Pte Ltd
Architect:	The Architects Circle Pte Ltd
M&E Engineering:	Mott Macdonald Pte Ltd
Structural Engineer:	Mott Macdonald Pte Ltd
Quantity Surveyor:	JIA Quantity Surveyor and Project Managers Pte Ltd

- Estimated energy savings: 144,432 kWh/yr; Estimated water savings: 818m³/yr ; ETTV: 23.72 W/m²
- No direct East & West Façade.
- First Fire-Station in Singapore to install Solar PV on rooftop.
- First Fire-Station in Singapore to install Solar Thermal Panels integrated with heat pump on rooftop.
- Cool paint on all external facade to reduce cooling load of the building.
- Energy efficient LED lighting for whole building.

SAFRA Club, Punggol

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	SAFRA National Service Association
Project Manager :	Surbana International Consultants Pte Ltd
Architect:	Surbana International Consultants Pte Ltd
M&E Engineering:	Surbana International Consultants Pte Ltd
Structural Engineer:	Surbana International Consultants Pte Ltd
Quantity Surveyor:	Surbana International Consultants Pte Ltd
Main Contractor:	Hytech Builders Pte Ltd
Landscape Consultant:	Surbana International Consultants Pte Ltd

- 1st SAFRA with Natural Ventilated Corridor & Atrium.
- 1st SAFRA with full LED lighting.
- 1st SAFRA with Green Lease.
- High Efficiency Air Condition System.
- High Efficiency Heat Pump.
- High Green Plot Ratio.

School of Business & Aero Hub @ Singapore Polytechnic

(New Non-Residential Building)

GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Client / Developer :	Singapore Polytechnic
Project Manager :	CPG Consultants Pte Ltd
Architect:	CPG Consultants Pte Ltd
M&E Engineering:	CPG Consultants Pte Ltd
Structural Engineer:	CPG Consultants Pte Ltd
Quantity Surveyor:	CPG Consultants Pte Ltd
Main Contractor:	CPG Consultants Pte Ltd
ESD Consultant:	CPG Consultants Pte Ltd

- Estimated energy savings: 764,935 kWh/yr; Estimated water savings: 311,960 m³/yr ; ETV: 38.37 W/m²
- High efficiency chilled water system with VSD chilled water pumps, condenser water pumps and cooling towers.
- Use of energy efficient T5 lighting for tutorial rooms.
- Use of Ground Granulated Blast Furnace Slag and recycled concrete aggregate for construction.
- Extensive use of SGLS labelled green products and excellent WELS rating products.

Seagate Singapore Design Centre – The Shugart

(New Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Client / Developer :	Seagate Singapore International Headquarters Pte Ltd
Project Manager :	Mr Bryan Tung Yew Mun
Architect:	HA Architects Pte Ltd
M&E Engineering:	DEG Builders Pte Ltd
Structural Engineer:	BC Koh & Partners LLP
Quantity Surveyor:	YSCA Consultancy Singapore Pte Ltd
Main Contractor:	Boustead Projects Pte Ltd
Landscape Consultant:	Chig Landscape Architectures

- Estimated energy savings: 5,339,678.5 kWh/yr; Estimated water savings: 3,380 m³/yr ; ETV: 33.95 W/m²
- State of the art FFUs selection for clean room with EC motor and PTFE filtration, and sleep mode feature control.
- Passive Displacement Ventilation (PDV) used for multi-purpose hall and gym spaces.
- Energy efficient lighting design with usage of fluorescent and LED technologies, high efficient reflectors, motion and photo sensors.
- Very efficient façade design with extensive shading and high performance materials.
- Greener process with VSD CDA system with energy efficient zero purge heated dryer.
- Very large PV panels installation (>150kWp), and solar heating for hot water requirements.

SEF Spacehub

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	SEF Construction Pte Ltd
Architect:	Atria Architects
M&E Engineering:	KJ Group Consultant
Structural Engineer:	P&T Consultants Pte Ltd
Main Contractor:	SEF Construction Pte Ltd
ESD Consultant:	Kaer Pte Ltd

- Estimated energy savings: 1,020,739.16kWh/yr; Estimated water savings: 5,061m³/yr; ETTV: 39.83 W/m²
- High efficient VRF system.
- Excellent energy savings from lighting system.
- Excellent water efficient fittings.
- Comfortable natural ventilation at habitable space.
- Grey water recycling system.
- Extensive usage of green products.

Sports Hall, NTU

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	Nanyang Technological University
Project Manager :	Nanyang Technological University
Architect:	Sembcorp Architects & Engineer Pte Ltd / Toyo Ito & Associates, Architects
M&E Engineering:	T.Y. Lin International Pte Ltd
Structural Engineer:	T.Y.Lin International Pte Ltd
Quantity Surveyor:	Sembcorp Architects & Engineer Pte Ltd
PDV System Consultant:	ME (TCS)
ESD Consultant:	Tuv Sud PSB Pte Ltd

- Estimated energy savings: 279,218kWh/yr; Estimated water savings: 139.43m³/yr; ETTV: 22.4 W/m²
- Energy Efficient Induction Air Distribution System which contributes about 7.3% of overall energy saving.
- Sustainable façade using Engineered Wood System for the whole building.
- Heat Recovery System for hot water which contributes 3.7% of overall energy saving.
- Daylight sensors in the common areas and motion sensors for all toilets.
- Energy Efficient Chiller Plant System.
- Extensive use of LED lights and Energy efficient lighting system.

Temasek Club

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	Temasek Club
Project Manager :	Defence Science And Technology Agency
Architect:	DP Architects Pte Ltd
M&E Engineering:	J Roger Preston (S) Pte Ltd
Structural Engineer:	CS Consulting Engineers Pte Ltd
Main Contractor:	Kienta Engineering Construction Pte Ltd
Landscape Consultant:	Toy Landscape Design Pte Ltd
ESD Consultant:	Kaer PTd Ltd

- Estimated energy savings: 1,366,279 kWh/yr; Estimated water savings: 4,183 m³/yr ; EETV: 39.77 w/m²
- High efficiency chiller plant with chiller plant efficiency of 0.58 kW/ton
- Smart design on the lighting.
- Lush greeneries.
- Intelligent control for the lighting.
- High performance façade.
- High efficiency hot water system.
- Demand control ACMV system.

University Sports Centre

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client / Developer :	National University of Singapore
Project Manager :	Office of Estate Development, NUS
Architect:	Forum Architects Pte Ltd
M&E Engineering:	Meinhardt (Singapore) Pte Ltd
Structural Engineer:	Meinhardt (Singapore) Pte Ltd
Quantity Surveyor:	Rider Level Bucknail LLP
Main Contractor:	Kim Seng Heng Engineering Construction (Pte) Ltd
Landscape Consultant:	Salad Dressing Pte Ltd
ESD Consultant:	Web Earth Pte Ltd

- Estimated energy savings: 472,861 kWh/yr; Estimated water savings: 2,265 m³/yr ; ETV: 36.75 W/m²
- Estimated energy savings of 32% and water savings of 39%.
- Dual cooling mode Sports Hall, optimized for naturally ventilation for normal use and air-conditioned during events.
- High performance building envelope achieving ETV of 36.75W/m²
- Efficient lighting design, with 43% improvement in lighting power budget over baseline requirements.
- Adoption of demolition protocol to maximize resource recovery and diversion from landfill.
- Use of green cements and recycled concrete aggregates to lower the building's embodied carbon footprint.
- Extensive use of certified sustainable products.

Warehouse Development @ Bulim Ave

(New Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Client / Developer :	Development 8 Pte Ltd
Project Manager :	Figtree Projects Pte Ltd
Architect:	3HP Architects Pte Ltd
M&E Engineering:	J.M Pang & Seah Pte Ltd
Structural Engineer:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
Quantity Surveyor:	CPG Consultants Pte Ltd
Main Contractor:	Figtree Projects Pte Ltd
ESD Consultant:	Building System & Diagnostics Pte Ltd

- Estimated energy savings: 2,633,627 kWh/yr ; Estimated water savings: 1,073.42 m3/yr ; ETVV: 19.69 W/m²
- Dynamic Energy Consumption Display for building user involvement and awareness.
- High performance facade system.
- Chiller plant system with efficiency of 0.59 kW/RTon.
- Skylight for introducing natural daylighting at the top floor of warehouse spaces with photocell sensor.
- Motion sensor at every warehouse aisles.
- 100% "excellent" WELS rating water efficient fittings in the building.
- Extensive sustainable products.

Asia Square Tower 1

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Facility Management : Jones Lang Laselle Property Management Pte Ltd

ESD / Green Consultant : Building System & Diagnostics Pte Ltd

- Estimated energy savings: 5,840,460 kWh/yr; Estimated water savings: 40,982 m³/yr
- High efficient water-cooled chiller plant achieving 0.64 kW/RT under optimal condition.
- Mechanical ventilation for the factory.
- Energy efficient lighting and extensive usage of photo sensors.
- Heat recovery wheel.
- Solar hot water system.
- NEWater replaces 97% of potable water for industrial process, irrigation, cooling tower and flushing cisterns application.

Cinnamon & Tembusu Residential Colleges

(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Building Owner : National University of Singapore
Facility Management: SMM Pte Ltd
ESD / Green Consultant: Building System and Diagnostics Pte Ltd
IAQ Auditor: TÜV SÜD PSB Pte Ltd

- Estimated energy savings: 153,674kWh/yr; Estimated water savings 2671m³/yr
- High volume low velocity fans installed at the dining hall and the multipurpose halls help to reduce energy consumption as this reduces the usage of air conditioning.
- Extensive use of energy efficiency lightings to achieve at least 39% energy savings as compared to the baseline.
- PUB certified water efficient building which signifies the installation of water efficient fittings and adopting water efficient flow rates/flush volumes.
- Extensive landscape greenery act as a natural air purifying system to improve the air quality and enhancing the life of the students staying in the college.
- Designated bicycle storage room, coupled with an extensive bicycle route, helps to encourage students to cycle and reduces carbon footprint.

City Square Mall

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	City Developments Limited
Facility Management:	City Developments Limited
ESD / Green Consultant:	G-Energy Global Pte Ltd
ESCO:	G-Energy Global Pte Ltd

- Estimated energy savings: 250,170 kWh/yr ; Estimated water savings: 1073m³/yr.
- ETTV of 42.17 W/m² with the use of double-glazed contains low-emissivity glass.
- Highly efficient chiller plant with VSDs for pumps and cooling towers.
- Motion sensors for staircases and toilets, dimmer system for lighting at B4 car park and daylight sensor at corridors.
- Provision of solar photovoltaic cells as renewable energy source.
- Provision of car park guidance system and electric/hybrid lots with charging station.
- Tenant green lease coupled with incentive schemes for continued Platinum performance.
- Rainwater harvesting with automatic irrigation system and rain sensors for landscape.

Educational Resource Centre

PLATINUM



(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS



Building Owner :	National University of Singapore
Facility Management:	SMM Pte Ltd
ESD / Green Consultant:	Building System & Diagnostics Pte Ltd
IAQ Auditor:	TUV SUD PSB Pte Ltd

- Estimated energy savings: 49,552 kWh/yr ; Estimated water savings: 1,127 m3/yr .
- Chilled ceiling system provides uniform cooling and minimizes draft in the room.
- Extensive use of energy efficiency lightings to achieve at least 26% energy savings as compared to the baseline.
- PUB certified water efficient building which signifies the installation of water efficient fittings and adopting water efficient flow rates/flush volumes.
- Extensive roof top greenery, which covers 87% of the roof, decreases the heat drawn into the rooms and reducing the amount of energy needed to cool the building.
- Installation of air sealing double vestibule doors to minimize leakage and reduce cooling load and energy consumption.

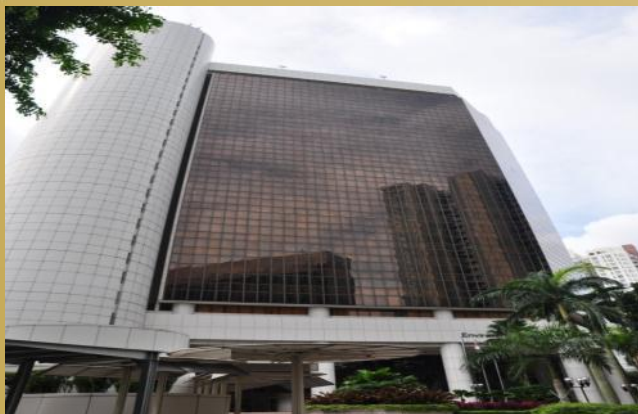
Environment Building

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Ministry of the Environment and Water Resources
Managing Agent:	DTZ Facilities & Engineering (S) Limited
ESD / Green Consultant:	G-Energy Global Pte Ltd
M&E Engineer:	Keppel FMO Pte Ltd
Landscape Consultant:	Kim Bock Contractor Pte Ltd

- Estimated energy savings: 28,017 kWh/yr ; Estimated water savings: 21,414 m³/yr.
- High efficient chiller plant with system efficiency of 0.52kW/RT.
- Motion and photocell sensors for all toilets, staircases and Carpark driveway.
- Usage of NEWater and harvested rainwater for irrigation, usage of automatic irrigation system with rain sensor for landscape.
- Extensive collection of recyclables including E-waste, Ink cartridges and cooking oil.
- Continuous usage of sustainable products upon replacement works and renovation.
- Provision of hybrid carpark lots with charging station.

German Centre

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	German Centre for Industry and Trade Pte Ltd
Facility Management:	German Centre for Industry and Trade Pte Ltd
ESD / Green Consultant:	LJ Energy Pte Ltd
ESCO:	LJ Energy Pte Ltd

- Estimated energy savings: 856,037 kWh/yr
- Chiller System efficiency is ≤ 0.61 kW/RT; variable speed drives (VSDs) for all pumps and cooling towers serving the chiller plant and upgraded permanent M&V system.
- Variable speed drives for all AHUs.
- Automatic controls to regulate the fresh air intake for all AHUs based on carbon dioxide (CO₂) level.
- Modulating valves for all FCUs to modulate the chilled water flow.
- High efficient LED tubes for entire building including tenants.
- Motions sensors for the toilets.

Graha CIMB Niaga Building

(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Building Owner : PT GrahaNiaga TataUtama
Facility Management: PT GrahaNiaga TataUtama
ESCO: G-Energy Pte Ltd

- Estimated energy savings: 1,361,250 kWh/yr; Estimated water savings: 1,042 m³/yr.
- Exhaust air is recycled via the rotary heat exchanger and ducted to provide better air circulation to the cooling tower areas.
- Storm water and AHU condensate water are recycled to reduce water consumption.
- Composting from organic waste to produce liquid and solid composts for the greenery.
- Improved chiller plant system efficiency from 0.87 kW/RT to 0.67 kW/RT.
- Extensive greeneries around the building, vertical greening, gardens at lower and upper roof.
- CO sensors linked to MV fans for ventilation system in basement carpark.

Grundfos Singapore

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner : Grundfos (Singapore) Pte Ltd
ESD / Green Consultant: Cofely South East Asia Pte Ltd
ESCO: Cofely South East Asia Pte Ltd

- High efficient water-cooled chiller plant achieving 0.64 kW/RT under optimal condition.
- Mechanical ventilation for the factory.
- Energy efficient lighting and extensive usage of photosensors.
- Heat recovery wheel.
- Solar hot water system.
- NEWater replaces 97% of potable water for industrial process, irrigation, cooling tower and flushing cisterns application.

ibis Singapore Novena

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Canopus II Pte Ltd
Facility Management:	Canopus II Pte Ltd
ESD / Green Consultant:	Comfort Management Pte Ltd
ESCO:	Comfort Management Pte Ltd

- Estimated energy savings: 848,985 kWh/yr
- Conversion of air cooled VRV system to centralized water cooled refrigeration system to achieve 0.67 kW/RT.
- Variable speed drives for condenser water pumps and cooling tower for better part load performance.
- Extensive lighting replacement including hotel rooms to achieve 42% better than reference lighting power budget.
- Hot water recovery system from centralized refrigeration system to isolate electric calorifiers totally.
- Water Efficient Building Certificate from PUB.
- Provision of recycling bins, storage area and engagement of recycling company.
- Planet 21 and ISO 14001 certified.

Lucky Plaza

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner : MCST Plan No. 651
Facility Management: MCST Plan No. 651
ESCO: Johnson Controls (S) Pte Ltd

- Chillers plantroom efficiency of 0.6 kW/RT with VSD for chillers, pumps, cooling tower.
- Use of energy efficient lightings such as T5 tubes and LED downlights for common areas.
- Use of MERV 13 filters and UVC emitters for all AHUs to improve indoor air quality.
- Auto condenser tube cleaning system.
- PUB Water Efficient Building Certificate.
- Collection and recycling of used lamps.
- Temperature and CO2 display at lift lobbies.

Lumileds Singapore

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner : Philips Singapore Pte Ltd
Facility Management: Philips Singapore Pte Ltd
ESD / Green Consultant: Barghest Building Performance Pte Ltd

- Estimated energy savings: 3,510,562 kWh/yr ; Estimated water savings: 290,026 m³/yr.
- Targeted chiller plant system efficiency of 0.641 kW/ton
- LED lights installed in production plant and office space achieved 40% improvement in Lighting Power budget compared to code.
- Introduction of Water Recycling Plant (recycling of AHU Condensate Water, Production Waste water & RO Reject water) resulted in water savings of 290,026 m³/year.
- Smart meters are installed to capture the daily water consumption and linked to BMS as well as to PUB for monitoring purposes.
- Recycling facilities are available to collect, monitor and control flow of various recyclable materials.
- Green guide and various awareness programs are conducted through EHS website, Training courses and notifications.

Marina Bay Sands

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Marina Bay Sands Pte Ltd
Facility Management:	Marina Bay Sands Pte Ltd
ESD / Green Consultant:	Building Systems & Diagnostics Pte Ltd
M&E Engineer:	Exp U.S. Services Inc.
Architect:	Aedas Pte Ltd

- Estimated energy savings: 47,830,000 kWh/yr ; Estimated water savings: 60,000 m³/yr
- Extensive use of high efficiency LED lamps with lower wattage.
- Comprehensive waste diversion tracking and management program for both guests and team members.
- Automatic scheduling of meeting space via CCMS using electronic booking management system (EBMS).
- Sands ECO360°Global Sustainability Program.
- Retro-commissioning and optimizing of existing ACMV systems by dedicated commissioning team.
- Green Lease guidelines and management plan for tenants.

MAS Building

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Monetary Authority of Singapore
Facility Management:	Monetary Authority of Singapore
ESD / Green Consultant:	Building Systems and Diagnostics Pte Ltd

- Estimated energy savings: 1,259,888 kWh/yr;
- Retrofit of chilled water plant to achieve operating system efficiency (OSE) of 0.63 kW/rton
- Replacement of VSD AHU with efficiency of 0.419 W/cmh
- Heat Recovery Devices to recover energy from toilet exhaust air.
- Recycling of condensate water for cooling coil at PAHU and cooling tower make-up water.
- Replacement of light fitting to LED & T5 fluorescent tubes, with motion sensor controlled.
- Smart lift system with regenerative function.
- PUB Water Efficiency Building.

Ministry of Manpower HQ Building

PLATINUM



(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Ministry of Manpower
Facility Management:	SMM Pte Ltd
ESD / Green Consultant:	Honeywell Pte Ltd/ Suntect Real Estate Consultants Pte Ltd
ESCO:	Honeywell Pte Ltd

- Estimated energy savings: 1,700,788 kWh/yr; Estimated water savings: 23,704 m³/yr.
- Targeted chiller plant system efficiency of 0.63kW/ton
- Pre-cooled fresh air AHU on rooftop.
- Motion sensor control incorporated for escalators.
- Regenerative and gearless driven elevators.
- Extensive usage of LED lightings for offices, toilets, lift lobbies & corridors, and staircases.
- New Water for Cooling Tower water make up. Up to 85% replacement of potable water consumption.
- CO sensor for car park fans and CO₂ for Air Handling Units.

Nanyang Executive Centre (NTU)

(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Building Owner :	Nanyang Technological University
Facility Management:	Nanyang Technological University
ESD / Green Consultant:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
ESCO:	Beca Carter Hollings & Ferner (SEA) Pte Ltd

- Estimated energy savings: 577,500 kWh/yr
- Efficient Water Cooled Chiller Plant with targeted chiller plant system efficiency of 0.63kW/ton
- Provision of energy efficient LED lighting lights.
- Certified PUB Water Efficient Building.
- Naturally ventilated carpark.
- Good access to public transport.
- Provision of priority parking lots for hybrid/electric car parking lots.
- ACVVVF and Sleep mode for all elevators.

National Library Building

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner : National Library Board
Facility Management: National Library Board
ESD / Green Consultant: CPG Consultants Pte Ltd

- Estimated energy savings: 192,636 kWh/yr
- Green Data Centre.
- Parking Guidance System.
- Motion Sensor for Escalator and staircase.
- HF ballast and LED lighting.
- Displacement Ventilation System at Drama Centre.
- NEWater for cooling towers.
- Provision of green guide and environmental policy.

Ngee Ann City

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :

The Management Corporation Strata
Title Plan No. 2929

Facility Management:

Ngee Ann Property Management Pte Ltd

ESD / Green Consultant:

Comfort Management Pte Ltd

ESCO:

Comfort Management Pte Ltd

- Estimated energy savings: 6,012,641 kWh/yr ; Estimated water savings: 5000 m³/yr ; ETV: 44/m²
- Air conditioning plant system efficiency of 0.62 kW/ton
- Installation of variable speed drives for all chilled water pumps, condenser water pumps, and cooling towers for better part load efficiency.
- Replacement of podium AHU cooling coils and blowers to lower pressure drop coils and more efficient blowers for better air side efficiency.
- Replacement of existing fluorescent, CFL, halogen & incandescent lights to energy efficient lights at common facilities.
- Lifts with energy re-generation capability and sleep mode function.
- Demand ventilation at car park using CO sensors & variable speed drives.
- Extensive use of NEWater of approximately 33% of total building usage.

GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Nanyang Technological University
Facility Management:	Nanyang Technological University
ESD / Green Consultant:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
M&E Consultant :	Beca Carter Hollings & Ferner (SEA) Pte Ltd

- Estimated energy savings: 343,500 kWh/yr
- Extensive use of LED lighting.
- Certified PUB Water Efficient Buildings.
- Carbon dioxide monitoring and fresh air control for all AHUs.
- Motion sensors at all toilets and staircase half landings.
- Water sub-metering linked to BMS for leak detection system.
- Lifts with AC VVVF and sleep mode.

NTU South Spine

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Nanyang Technological University
Facility Management:	Nanyang Technological University
ESD / Green Consultant:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
ESCO:	DTZ Facilities & Engineering (S) Limited
M&E Consultant:	Beca Carter Hollings & Ferner (SEA) Pte Ltd

- Estimated energy savings: 2,613,800 kWh/yr
- Efficient Water Cooled Chiller Plant.
- Extensive use of LED lighting.
- Certified PUB Water Efficient Buildings.
- Naturally ventilated car park.
- Motion sensors at all toilets and staircase half landings.
- Water sub-metering linked to BMS for leak detection system.
- Lifts with AC VVVF and sleep mode.

Parliament House

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Parliament of Singapore
Facility Management:	UE Management Solutions Singapore Pte Ltd
ESD / Green Consultant:	CNBA Group Ltd
ESCO:	Kaer Pte Ltd

- Estimated energy savings: 602,217 kWh/yr; Estimated water savings: 6500 m³/yr.
- New efficient chiller plant with efficiency of 0.64 kW/ton
- UVC emitters at AHUs for improved energy efficiency, reduced maintenance, reduced water usage, pandemic protection and IAQ improvement.
- Electronic air filtration system at AHUs to capture fine and ultra-fine particulates from outside air to 'haze-proof' Parliament House and enhance the indoor air quality.
- Rain sensor and weather programme to reduce cooling load demand on rainy days.
- Photocells and daylight harvesting for exterior and link-bridge lighting.
- Titanium dioxide treatment of sky light canopy to make them 'self-cleaning' and 'maintenance-free'.
- Cool paint application of roofing areas to reduce solar heat gain into the buildings through the roofs.

School of Art, Design and Media

PLATINUM



(Existing Non-Residential Building)

GREEN MARK AWARD FOR BUILDINGS



Building Owner : Nanyang Technological University
Facility Management: SMM Pte Ltd
ESD / Green Consultant: Nagarajan Balamurugun

- Estimated energy savings: 83,333 kWh/yr ; Estimated water savings: 25 m³/yr.
- Rain water and AHU condensate water collection.
- Extensive roof garden with Auto-irrigation system.
- High efficiency lighting.
- Energy efficient chilled water system with chiller plant system efficiency of 0.66 kW/ton
- Low-E glass.
- Weather based temperature control.

Singapore Aviation Academy

(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Building Owner : Civil Aviation Authority of Singapore
ESD / Green Consultant: Kaer Pte Ltd
ESCO: Kaer Pte Ltd

- Estimated energy savings: 148,048 kWh/yr ; Estimated water savings: 4,536 m³/yr.
- Efficiency of chiller plant system was designed to achieve 0.65 kW/RT under a GESP contract.
- The building uses energy efficient T5 and LED lightings for common lobbies, corridors and classrooms.
- All lifts are equipped with variable voltage variable frequency motor drive and sleep mode function.
- Adoption of day lighting in the main lobby, common corridors and link way.
- Greenery with green plot ratio of 0.7 with trees, palms and shrubs on level 1 around the compound and courtyard.
- PUB Water Efficient Building Certified with water savings fittings installed throughout the building.
- All classrooms will be integrated with Intelligent Classroom System for monitoring and control of the indoor lighting and air-conditioning system.

Six Battery Road

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	CapitaCommercial Trust
Facility Management:	CapitaLand Group
Project Manager:	CapitaLand Group
ESD / Green Consultant:	G-Energy Global 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:	Davis Langdon KPK (Singapore) Pte Ltd
Interior Design Consultant:	Eco-ID Architects Pte Ltd

- Estimated energy savings: 2,942,490 kWh/yr ; Estimated water savings: 4,643 m³/yr.
- Efficient Chiller Plantroom System – Use of Efficient Plantroom system, Thermal Storage Tank and Auto-Tube Cleaning System to achieve chiller plant system efficiency of 0.65 kW/ton
- Water Efficient Features – Use of 'Excellent' PUB WELS (Water Efficient Labeling Scheme) rating for all water fittings and use of rainwater harvesting tank to provide irrigation for Green Wall.
- Green Wall – Interior green wall located at main lobby. Automatic and effective irrigation system for the green wall is adopted.
- Occupancy Demand Features such as motion sensors, CO2 sensors, CO sensors to regulate the usage.
- Education – Educational corner with display of energy and water savings and green features to communicate the importance of water and energy conservation.

Solaris Building

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	SoilBuild Business Space REIT
Facility Management:	SB Property Services Pte Ltd
ESD / Green Consultant:	Building System & Diagnostics Pte Ltd
IAQ Auditor:	TUV SUD PSB Pte Ltd

- Estimated energy savings: 2,828,470 kWh/yr; Estimated water savings: 11,785m³/yr.
- Continuous Perimeter Landscape Ramp - An uninterrupted 1.5km long ecological armature connects the adjacent one-north Park at ground level and the basement Eco-cell with the cascading sequence of roof-gardens at the building's highest levels. The continuity of the landscaping is a key component of the project's ecological design concept as it allows for fluid movement of organisms and plant species between all vegetated areas within the building, enhancing biodiversity and contributing to the overall health of these ecosystems. The ramp with its deep overhang and large concentration of shade plants is also one element in a comprehensive strategy for the ambient cooling of the building facade.
- Solar Shaft - A public plaza between the two tower blocks provides a space for communal activities and creative performances. This naturally-ventilated ground floor operates as a mixed-mode (non-air conditioned) zone with an operable glass-louvered roof over the atrium providing protection from the elements while enabling full ventilation when needed.
- Naturally Ventilated and Day lit Grand Atrium - The solar shaft arranged diagonally juts out of the first tower block and allows sunlight to percolate into the interiors, reducing the need for artificial lights
- Pocket Park/Plaza – located at the Ground level landscaping, linking to the One-North Park across the street, allows for cross ventilation of the ground-floor plaza and provides a venue for social/interactive events.
- Rainwater & AHU condensate water harvesting - Rainwater and AHU condensate water is harvested for non-portable use, reducing the consumption of portable water.

Tampines Grande

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



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

- Estimated energy savings: 141,419 kWh/yr
- Use of Photovoltaic cells (100 kWp) and Building Integrated Photovoltaic at the west facade (7 kWp).
- Adopt natural lighting design at basement car park.
- Use of PAHU condensate.
- NEWater for toilet flushing.
- Use of Rainwater Harvesting System.
- Use of Heat recovery wheel and heat pipe for PAU.
- Use of motion sensors in staircases and toilets.

The Heeren

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	MCST 2713
Facility Management:	13 Engineering
ESD / Green Consultant:	DTZ Facilities and Engineering (S) Limited
ESCO:	DTZ Facilities and Engineering (S) Limited

- Estimated energy savings: 533,826 kWh/yr ; Estimated water savings: 290,026 m³/yr.
- High efficiency central water-cooled chiller plant and air distribution system.
- Use of carbon monoxide sensors control for basement car park.
- Use of energy efficient LEDs and landlord's common areas.
- Private water meters and smart metering to monitor water usages.
- Certified PUB Water Efficient Building.
- Provision of recycling bins and proper storage area.
- Provision of green guide and environmental policy.

Twenty Anson

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner : CapitaCommercial Trust
Facility Management: Capitaland Group
ESCO: G-Energy Pte Ltd

- Estimated energy savings: 83,613 kWh/yr; Estimated water savings: 13,888 m³/yr.
- Grey Water System.
- Light Shelves and Light sensors.
- Rainwater Harvesting System.
- Recycling Program for Tenants.
- Bicycle Parking Provision.
- Efficient chiller plant System – System efficiency at 0.602kW/RT.

GREEN MARK AWARD FOR BUILDINGS



Building Owner : United World College of South East Asia – East Campus

Facility Management: United World College of South East Asia – East Campus

- Estimated energy savings: 3,081,960 kwh/yr ; Estimated water savings: 83,481 m³/yr.
- Highly efficient air-conditioning system (operating at better than <0.58KW/T and airside on average < 0.2 KW/ton.).
- Motion sensor lighting at all private lift lobbies, changing rooms and common staircases. Daylighting sensors in classrooms.
- Rooftop garden, Building façades incorporate huge green walls to reduce the ambient temperature.
- Passive design and building layout to minimise heat gain and maximise natural ventilation.
- Depth of most classrooms is not more than 9.5m to allow for natural daylighting.
- Filtrated rainwater to water points for general washing and irrigation purposes.
- Water-efficient irrigation and landscaping are achieved from harvested rainwater and NEWater.

Village Hotel Albert Court

(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Building Owner :	First Choice Properties Pte Ltd
Facility Management:	Far East Hospitality Management
ESD / Green Consultant:	G-Energy Global Pte Ltd
ESCO:	G-Energy Global Pte Ltd

- Estimated energy savings: 713,485 kWh/yr
- Highly efficient chiller plant targeted to have efficiency of 0.67kW/RT.
- Replacement of current VRV to chilled water fan coils.
- Provision of automatic tube cleaning system.
- Provision of heat pump.
- Provision of recycling practices to collect and monitor recyclable waste.

White Sands

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	ARMF (Whitesands) Pte Ltd
Architect:	CGN Architects Pte Ltd
ESD / Green Consultant:	Kaer Pte Ltd
M&E Engineer:	Vincent Han & Associate

- Estimated energy savings: 2,802,437 kWh/yr ; Estimated water savings: 1,841m³/yr
- Chiller Plant Design System Efficiency at 0.62 kW/RT.
- Energy Management System for control and monitoring the chiller plant with remote monitoring feature.
- The use of efficient LEDs lighting in the common areas and continuous improvement to energy efficient lighting system.
- All Escalators within the development are modernized to have VVVF and Sleep mode features.
- Modernization of the carpark ventilation system to include CO sensors coupled to VFD fans to enhance energy savings through fan operation.
- All the water fittings within the development are chosen to have WELS 3 Ticks rating to enable substantial water consumption savings.
- UV Lamps in all AHUs to improve Indoor Air Quality and energy savings by improved cooling coil surface heat transfer.

Woodlands Civic Centre

(Existing Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Building Owner :	Housing & Development Board
Facility Management:	UE Managed Solutions Singapore Pte Ltd
ESD / Green Consultant:	Building Systems & Diagnostics Pte Ltd
IAQ Auditor:	Singapore Test Services Pte Ltd

- Estimated energy savings: 3,652,220 kWh/yr ; Estimated water savings: 2440 m³/yr.
- Extensive use of energy efficient lightings in the common area to achieve at least 63% energy savings as compared to the baseline.
- Energy efficient water cooled-chiller plant with an operating system efficiency of 0.627 kW/RT.
- PUB certified water efficient building which signifies the installation of water efficient fittings and adopting water efficient flow rates/flush volumes.
- Energy efficient air distribution system with an average efficiency of 0.35W/CMH
- Photovoltaic system with 50kWp design capacity.
- Sheltered secured bicycle lots with shower facility for intended users.
- Priority hybrid car parking lots.

Yong Loo Lin School of Medicine Blk MD11

(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS

PLATINUM



Building Owner : National University of Singapore
Facility Management: NUS, Office of Facilities Management
ESD / Green Consultant: Building Systems & Diagnostics Pte Ltd

- Estimated energy savings: 608,739 kWh/yr ; Estimated water savings: 55,566 m³/yr.
- ETTV of 29.92W/m²
- LED and T5 lighting.
- Motion sensors for all toilets and staircases, select laboratories and corridors.
- Excellent rated water fittings and water sub-meters at every floor.
- Comprehensive campus wide recycling program and Greenhouse gas inventory.
- Extensive sub-metering for lighting, power, and mechanical loads.
- NEWater for cooling towers.

NTU Faculty Housing

(New Residential Buildings)

Platinum



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	Nanyang Technological University
Architect:	MKPL Architects Pte Ltd
M&E Engineer:	Mott MacDonald Singapore Pte Ltd
Structural Engineer:	T.Y Lin International Pte Ltd
Main Contractor:	Sunhuan Construction Pte Ltd
Landscape Consultant:	ICN Design International Pte Ltd
Lighting Designer:	SWITCH Lighting Design LLP
CFD Consultant:	ARUP Singapore Pte Ltd

- Estimated Energy Savings: 364,614.69kWh/yr; Estimated Water Savings: 4456.66m³/yr; EETV: 19.76W/m²
- Extensive use of Passive External Shading on the facades.
- Use of Green Concrete and Green Concrete Panels.
- Extensive Greenery and Sky Gardens, GPR of 4.5.
- Use of meters for monitoring irrigation and water features.
- Naturally ventilated lobbies at all floors.
- Motion Sensors at all stairwells.
- Use of Good and Excellent WELS fixtures throughout.

Luxus Hills (Phase 9)

(Landed Houses)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client/ Developer :	Singapore United Estates (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:	Davis Langdon KPK (Singapore) Pte Ltd

- Estimated energy savings: 104,357.15 kWh/yr; Estimated water savings: 116.8m³/yr.
- Use of CFD to achieve good natural ventilation.
- Provide PV Panels to collect solar energy to offset electrical consumption.
- Use of heat recovery system for storage water heaters.
- Provide clothes drying facilities to discourage use of dryer.
- Use of LED light with micro-switch for walk-in wardrobes.
- Use of LED lights with motion sensors to Utility, Car Porch and Store
- Provide Electric Car Charging Points at Car Porch.

Tsao Residence

(Landed Houses)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS



Client/ Developer:	Darani Tsao
Architect:	Tsao & Mckown(Design) / Metaphor Design + Architecture Pte Ltd (Local)
ESD Consultant:	Green Architecture Asia / Web Earth Pte Ltd
M&E Engineer:	WSP Ng Pte Ltd
Structural Engineer:	Web Structures Pte Ltd
Main Contractor:	Daiya Engineering & Construction Pte Ltd
Landscape Consultant:	BHNA Pte Ltd

- Estimated energy savings: 62.8 kWh/yr; Estimated water savings: 1382.37m³/yr.
- Energy efficient air-conditioning system (high COP VRV) and ceiling fans for all habitable spaces.
- Target Zero Energy Operation: grid tied Solar Photovoltaic system of 23.5 kWp and provision of solar hot water.
- Sun path analysis and passive design strategies to minimize the energy consumption and optimize the thermal comfort.
- Rainwater harvesting system to offset the demand of all non-potable usages.
- Bio retention pond and swales for the treatment of the storm water.
- Non-chemical water treatment plant/ non-chemical water treatment system for swimming pool.
- Biodiversity Enhancement: Retention of existing greenery, usage of Birds/ butterfly attracting tropical plants, planting of trees in the neighbouring garden.

Changi Airport Terminal 4

(New Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client / Developer:	Changi Airport Group
Architect:	SAA Architects Pte Ltd
M&E Engineer:	Surbana International Consultants Pte Ltd
Structural Engineer:	RSP Architects Planners and Engineers Pte Ltd
Quantity Surveyor:	Langdon & Seah Singapore Pte Ltd
Main Contractor:	Takenaka Corporation
Landscape Consultant:	ICN International Design
ESD Consultant:	GreenA consultants Pte Ltd / Building Systems & Diagnostics Pte Ltd

- Estimated energy savings: 29,072,248 kWh/yr; Estimated water savings: 8,199,352 m³/yr ; ETV: 31.81 W/m²
- Chiller Plant System with efficiency of 0.6 kW/ton.
- Energy Efficient Light Fixtures with majority use of LED.
- Water Efficient Fittings all rated 2 ticks and above under WELS ratings.
- Use of lifts, escalators and moving walk with variable voltage variable frequency motor drive and sleep mode features.
- Extensive use of sustainable products in the construction and low VOC paints.

EDIC Building

(New Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client / Developer:	National University of Singapore
Architect:	AR43 Architects Pte Ltd
M&E Engineer:	AUP Consultants Pte Ltd
Structural Engineer:	AECOM Singapore Pte Ltd
Quantity Surveyor:	CPG Consultants Pte Ltd
Main Contractor:	Boon Guan Construction Pte Ltd
ESD Consultant:	CPG Consultants Pte Ltd (CPGreen)

- Estimated energy savings: 190,473.34 kWh/yr; Estimated water savings: 1,511.74 m³/yr ; ETVV : 33.98W/m²
- High efficiency VRV system.
- Energy efficient LED lighting for all areas except mechanical spaces which use T5 lighting.
- Vertical greenery and rooftop greenery.

Fancy Papers Supplier

(New Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client / Developer:	FP Holding Pte Ltd
Architect:	23.5 Degree G-Architect Pte Ltd
M&E Engineer:	PCA Consulting Engineers
Structural Engineer:	KCL Consultants Pte Ltd
Quantity Surveyor:	BHL Associates LLP
Main Contractor:	TMG Projects Pte Ltd
ESD Consultant:	ZEB-Technology Pte Ltd

- Estimated energy savings: 50,244 kWh/yr; Estimated water savings: 116 m³/yr ; ETTV: 15.08 W/m²
- VRF Air-conditioning system with Energy efficiency of 0.648kW/ton
- Energy efficient LED & T5 lighting with 25% saving over code.
- Extensive use of sustainable products in construction.
- Usage of Eco-green panels with 20% recycled concrete aggregate for non-structural wall elements.
- Photocell and motion sensors use for toilets and staircases.
- Passive design with use of Air-well to reduce impact of deep floor plate and all rooms to be.
- Provided with natural ventilation and daylight.

GREEN MARK AWARD FOR BUILDINGS



Client / Developer:	Greenpac(S) Pte Ltd
Project Manager:	Boustead Projects Pte Ltd
Architect:	HA Architect Pte Ltd
M&E Engineer:	Rilly Consult
Structural Engineer:	BCKOH & Partners LLP
Main Contractor:	Boustead Projects Pte Ltd
Landscape Consultant:	Earthscape Concepts Pte Ltd
ESD Consultant:	Chloros Solutions Pte Ltd

- Estimated energy savings: 916,637kWh/yr; Estimated water savings: 4,889 m³/yr ; ETTV : 35.56 W/m²
- Utilizing more thermally efficient façade and minimizing west facing windows to reduce heat load.
- Using high efficiency VRV inverter air conditioning system and energy efficient lighting.
- Using Pre-stress Flat slab system, CUI reduced to minimum ; CUI=0.39

JTC BioMed One

(New Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



- Estimated energy savings: 905860 kWh/yr; Estimated water savings: 3665 m³/yr ; ETVV: 37.96 W/m²
- Good Natural Ventilation.
- Energy efficient lighting systems.
- Use of green concrete and RCA.
- Minimum 2 ticks WELS water fittings for most fittings.
- Photocell and motion sensors for common areas.

Client / Developer:	JTC Corporation
Project Manager:	JTC Corporation
Architect:	DP Architects Pte Ltd
M&E Engineer:	Meinhardt Infrastructure Pte Ltd / Mott Macdonald Singapore Pte Ltd
C&S Engineer:	Beca Carter Hollings & Ferner (SEA) Pte Ltd/ Mott Macdonald Singapore Pte Ltd
ESD Consultant:	DP Architects Pte Ltd / Mott Macdonald Singapore Pte Ltd
Quantity Surveyor:	WT Partnership (S) Pte Ltd
D&B Contractor:	Kienta Engineering Construction Pte Ltd

Punggol Waterway Point & Punggol Town Plaza

(New Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



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

- Estimated energy savings: 6,311,282 kWh/yr; Estimated water savings: 31,978.94 m³/yr ; ETV: 34.21 W/m²
- Excellent choice of transportation infrastructure along with provision & incentive for green transportation facilities.
- Excellent Building Envelope that minimize heat gain into the building with the use of high performance glazing.
- Extensive greeneries that reduces heat island effect and provides soothing spaces for the users.
- All the lifts using regenerative drives to conserve energy.

ResortWorld Sentosa – Equarius Hotel

(New Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Client / Developer:	Resort World At Sentosa Pte Ltd
Architect:	DP Architect Pte Ltd
M&E Engineer:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
Structural Engineer:	AECOM Singapore Pte Ltd
Quantity Surveyor:	L&S /KPK Pte Ltd
Main Contractor:	Sembawang Engineers & Constructors Pte Ltd
Landscape Consultant:	Peridian Asia Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd
Lighting Consultant:	Meinhardt(s) Pte Ltd

- Estimated energy savings: 4,222,273 kWh/yr; Estimated water savings: 21,623m³/yr
- ETTV of 33.55 W/m² with extensive usage of double-glazed, low-emissivity glass.
- Use of energy efficient fixtures such as LED and T5 fluorescent for interior lighting (i.e. guest rooms, corridors, etc.).
- Extensive usage of SGLS certified products.
- Provision of Green Features:
 - a) Carpark guiding system
 - b) AHU condensate recovery system

ResortsWorld Sentosa- ESPA

(New Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Client / Developer:	Resorts World Sentosa Pte Ltd
Architect:	DP Architect Pte Ltd
M&E Engineer:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
Structural Engineer:	AECOM Singapore Pte Ltd
Quantity Surveyor:	DLS/KPK IR Pte Ltd
Main Contractor:	Sembawang Engineers & Constructors Pte Ltd
Landscape Consultant:	Peridian Asia Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd

- Estimated energy savings: 599,238kWh/yr; Estimated water savings: 8,384 m³/yr ; ETV : 36.91 W/m²
- Extensive usage of LED lightings at the front of house.
- All basin taps are rated Excellent from WELS.
- Rainwater harvesting and condensate collection from AHUs and FCUs for landscape irrigation.
- Provision of automatic irrigation system with rain sensor control for watering of plants.
- Extensive use of green label certified products and products with recycled contents such as green concrete.
- Provision of self-sustainable Ecopond for the cultivation of biodiversity.

ResortWorld Sentosa- Marine Life Park

(New Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Client / Developer:	Resorts World Sentosa Pte Ltd
Architect:	DP Architect Pte Ltd
M&E Engineer:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
Structural Engineer:	AECOM Singapore Pte Ltd
Quantity Surveyor:	L&S/KPK IR Pte Ltd
Main Contractor:	Sembawang Engineers & Constructors Pte Ltd
Landscape Consultant:	ICN Design International Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd
Lighting Consultant:	Light Cibles

- Estimated energy savings: 2,832,887 kWh/yr; Estimated water savings: 26,357 m³/yr ; ETV: 38.89 W/m²
- Low ETV of 38.89 W/m² with extensive usage of double-glazed low-emissivity glass.
- Use of energy efficient fixtures such as LED and T5 fluorescent for interior lightings (i.e. guest rooms, corridors, etc.).
- Extensive usage of SGLS certified products in the whole development.

ResortWorld Sentosa Beach Villas

(New Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Client / Developer:	Resorts World Sentosa Pte Ltd
Architect:	DP Architect Pte Ltd
M&E Engineer:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
Structural Engineer:	AECOM Singapore Pte Ltd
Quantity Surveyor:	DLS/KPK IR Pte Ltd
Main Contractor:	Sembawang Engineers & Constructors Pte Ltd
Landscape Consultant:	Peridian Asia Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd

- Estimated energy savings: 273,798.82 kWh/yr; Estimated water savings: 21,274 m³/yr ; ETV: 34.73 W/m²
- Low ETV of 34.73W/m² achieved through the use of double glazed low-E glass and sun shading devices like trellis.
- Rainwater harvesting and condensate collection from FCUs for landscape irrigation.
- Provision of automatic irrigation system with rain sensor control for watering of plants.

UIC Building (Office)

(New Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client / Developer:	UIC Investments (Properties) Pte Ltd
Architect:	Architects 61 Pte Ltd
M&E Engineer:	J Roger Preston (S) Pte Ltd
Structural Engineer:	DE Consultants (S) Pte Ltd
Quantity Surveyor:	YSCA Consultancy Singapore Pte Ltd
Main Contractor:	Davis Langdon KPK (SINGAPORE) Pte Ltd
Landscape Consultant:	COEN Design International Pte Ltd
ESD Consultant:	Aurecon Singapore Pte Ltd

- Estimated energy savings: 2,802,876 kWh/yr; Estimated water savings: 2,528.03 m³/yr ; ETTV : 38.51 W/m²
- Building enveloped designed with double glazed low emission glass achieving ETTV of 38.51W/m2.
- Energy Savings of 26.64%.
- Average Chiller Plant System Efficiency at 0.642 kW/ton
- Efficient Lighting with T5s/ LEDs and motion sensors.
- All the lifts using regenerative drives to conserve energy.

11 Tampines Concourse

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Glades Properties Pte Ltd
Facility Manager :	City Developments Limited
ESD Consultant:	CBM Solutions Pte Ltd
ESCO:	CBM Solutions Pte Ltd
Building Maintenance:	CBM Pte Ltd

- Use of pre-cool mechanical ventilation system – EcoCool System for office lobby and lift lobby at 26 degree Celsius.
- Adopt natural lighting design at atrium.
- Use of sun pipes at 3rd storey toilets.
- Waterless urinal – use of nano coating, titanium dioxide on urinals.
- Use of 'Very Good' and 'Excellent' WELS rating tap fittings.
- Use of motion sensors in staircases and toilets.
- Green lots for hybrid and electric vehicles.

Experimental Power Grid Centre

GOLDPLUS



(Existing Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS



Building Owner: Institute of Chemical & Engineering Sciences

ESD Consultant: Earth-In-Mind Pte Ltd

- Estimated Energy Savings: 14,209 kWh/yr
- Installation of the Intelligent Building Measurement, Monitoring and Control System.
- Combined Heat and Power (CHP) system.
- 60 kWp solar photovoltaic panel to generate electricity for building load.
- Passive design for building façade achieved 37.03 W/m².
- High efficiency mechanical ventilation system for test bay integrated with demand control.
- Use of "Excellent" Water Efficient Fittings.

Far East Plaza

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Management Corporation Strata Title
Plan No. 1259	
Facility Manager :	Maintenance Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd
ESCO:	G-Energy Global Pte Ltd

- Estimated Energy Savings: 3,270,629 kWh/yr; Estimated Water Savings: 13,005m³/yr
- Highly efficient chiller plant targeted to have efficiency of 0.61kW/ton.
- Provision of Automatic Tube Cleaning System.
- Lights in all the landlord area are LED Lights.
- Green Education Corner at Information Counter to showcase green features of Far East Plaza.

Festive Hotel

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Resorts World at Sentosa Pte Ltd
Facility Manager :	Resorts World at Sentosa Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd
ESCO:	G-Energy Global Pte Ltd

- Estimated Energy Savings: 528,791.44 kWh/yr;
- Rainwater supply for irrigation purposes.
- Heat recovery system.
- Extensive greenery.
- Carpark guidance system.
- Pneumatic waste system.
- Extensive use of energy efficient lightings such as LED and T5 fluorescent.

Hard Rock Hotel

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Resorts World Singapore Pte Ltd
Facility Manager :	Resorts World Singapore Pte Ltd
ESD Consultant:	Earth-In-Mind Pte Ltd
ESCO:	G-Energy Global Pte Ltd

- Estimated Energy Savings: 507,436.9 kWh/yr
- Rainwater supply for irrigation purposes.
- Heat recovery system.
- Extensive greenery with green roof.
- Carpark guidance system.
- Pneumatic waste system.
- Extensive use of energy efficient lightings such as LED and T5 fluorescent.

Hotel 81 Star

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Greensea Estates Pte Ltd
Facility Manager :	Hotel 81 Management Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd
ESCO:	G-Energy Global Pte Ltd

- Estimated Energy Savings: 721,996 kWh/yr
- Chiller plant system efficiency of 0.58kW/ton.
- Multi-compressor water-cooled chiller system is installed.
- Reliable permanent M&V instrumentation, which uses thermistors and agile logger, is installed in its chiller system and linked to the BMS.
- Extensive use of LED lightings.
- Natural ventilated car park.
- Lift equipped with VVVF and sleep mode.
- Autotube brush system to clean the refrigerant tubes regularly.

Hotel Fort Canning

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	The Legends Fort Canning Park Pte Ltd
Facility Manager :	The Legends Fort Canning Park Pte Ltd
ESD Consultant:	Beca Carter Hollings & Ferner (SEA) Pte Ltd
M&E Consultant:	Chan Han Choong Consulting Engineers

- Estimated Energy Savings: 786,602kWh/yr; Estimated Water Savings: 185 m³/yr
- Efficient Water Cooled Chiller Plant operating efficiency of 0.608kW/RT
- Provision of energy efficient lighting such as T5 and LED.
- Excellent greenery Provision with Green Plot Ratio (GnP) of 4.0.
- Provision of priority parking lots for hybrid/electric car and bicycle parking lots.

Institute of Mental Health

IMH BLK 3 and 6

(Existing Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Building Owner: Institute of Mental Health (IMH)
ESD Consultant: EMSI Singapore Pte Ltd

- Estimated Energy Savings: 441 66 kWh/yr
- There is more than 90% of the gross floor area with natural ventilation.
- Extensive greenery within development.
- A Certified PUB water efficient building.
- Lighting power budget that has obtained an improvement of 45% after installation of LED lights.
- Use of LED lightings with annual savings of 39,626.32 kWh/Year.
- Use of Photo sensors and motion sensors in toilets and staircases with annual saving of 4,539.6 kWh/Year.
- A very good monthly collection of recyclable waste practices.

International Building

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Yat Yuen Hong Company Limited
Facility Manager :	Yat Yuen Hong Company Limited
ESD Consultant:	Johnson Controls (S) Pte Ltd
ESCO:	Johnson Controls (S) Pte Ltd

- Estimated Energy Savings: 542,390 kWh/yr
- Energy efficient chiller plant system (0.650 kW/RT).
- LED lightings for common corridors, lift lobbies and toilets.
- Motion sensors at corridors, lift lobbies and toilets.
- Recycling bins provided at strategic locations.
- Priority parking lots for CNG/Hybrid/Electric vehicles.

M Hotel

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	MCIL
Facility Manager :	M Hotel Singapore, Engineering
ESD Consultant:	CBM Solutions Pte Ltd
ESCO:	CBM Solutions Pte Ltd
Others:	Kaer Pte Ltd Specialist for Chiller Plant Optimisation programme

- Estimated Energy Savings: 773,467 kWh/yr; Estimated Water Savings: 640 m³/yr
- Proposed optimisation of chiller plant system to achieve an overall plant efficiency of 0.65kW/RT or better.
- Use of LEDs at hotel's restaurants and bar, guest lift lobbies, hotel corridors/walkways and guest rooms and suites.
- Use of heat pump that provides thermodynamic heating in addition to operating as an active solar collector.
- 100% natural ventilated multi-storey car park.
- Waste management program involving recycling of cooking oil and paper products.

MD2 at National University of Singapore

(Existing Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Building Owner:	National University of Singapore
Facility Manager :	National University of Singapore c/o Office of Facilities Management
ESD Consultant:	Johnson Controls (S) Pte Ltd

- Estimated Energy Savings: 413,587 kWh/yr
- Direct expansion (DX) heat recovery for fresh air processing and water heating.
- High efficiency chiller plant room.
- High performance envelope glazing: Low U-value and good coefficient glass.
- ETV of 29.8 W/m².
- PUB Water Efficient building.

NUHS Tower Block

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	National University Health System
Facility Manager :	Keppel FMO Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd
ESCO:	G-Energy Global Pte Ltd
Landscape Contractor:	Mao Sheng Quanji Construction Pte Ltd

- Estimated Energy Savings: 7,240kWh/yr; Estimated Water Savings: 32,529m³/yr; ETTV:38.98W/m²
- High efficiency chiller plant with system efficiency of 0.65kW/ton.
- Extensive usage of sustainable products for all office levels.
- Provision of rooftop garden and vertical greenery.
- Provision of MERV 13 filters and CO2 sensors for all AHUs.

One George Street

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	CapitaCommercial Trust
Facility Manager :	CapitaLand Group
ESD Consultant:	G-Energy Global Pte Ltd
ESCO:	G-Energy Global Pte Ltd

- Estimated Energy Savings: 1,124,434 kWh/yr; Estimated Water Savings: 21,414 m³/yr
- High efficient chiller plant system efficiency of 0.71 kW/RT)
- Extensive landscape with roof gardens at 5th & 22nd storey and sky gardens at 12th & 15th storey. One George Street achieves a Greenery Provision of 7.3
- Siphonic rainwater discharge system.
- Double glazed low E glass with aluminium sun-shading louvers and wind tunnel effect at 1st level lobby.
- Measurement & verification system to monitor the chiller plant efficiency.
- Installation of VSDs for all pumps and cooling towers.
- Installation of chiller plant optimisation software.

Orchard Plaza

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:
Plano No. 628

The Management Corporation Strata Title

Facility Manager :

Sierra Asset Management Pte Ltd(Previous)
Chambers Property Management Services
Pte Ltd (Current)

ESD Consultant:

Comfort Management Pte Ltd

ESCO:

Comfort Management Pte Ltd

- Estimated Energy Savings: 1,789,514 kWh/yr; Estimated Water Savings: 640 m³/yr
- Chiller plant system efficiency of 0.62 kW/ton
- Replace of existing centralized air conditioning system with high efficiency centralized air conditioning system.
- Sub-metering for building systems to track energy consumption of major building uses and individual equipment including air handling units.
- Replace 36W fluorescent lights with energy saving tubes of 18W and changing PLC lights to LED PLC lights at common facilities.
- Building is awarded with PUB WEB certificate.
- Recycling program that requires involvement from tenants to track, reduce, recycle and/or reuse out-going waste.
- Auto tube cleaning system and refrigeration leak detection system.

PSA Building & Alexandra Retail Centre

GOLDPLUS



(Existing Non-Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS



Building Owner:	DBS Trustee Limited As Trustee of Mapletree Commercial Trust
Facility Manager :	Mapletree Commercial Property Management Pte Ltd
ESD Consultant:	DTZ Facilities & Engineering (S) Limited
ESCO:	DTZ Facilities & Engineering (S) Limited

- Estimated Energy Savings: 17,888 kWh/yr ; Estimated Water Savings: 68,015 m³/yr
- Syphonic drainage system.
- Automatic water efficient irrigation dripper system (with rain sensor).
- Solar cell converts solar energy to supply power to the irrigation controller.
- SGBC certified automatic tube cleaning systems.
- Non-chemical termite treatment system.

Samsung Hub

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	The Management Corporation Strata Title Plan No. 3129
Facility Manager :	CBRE Pte Ltd
ESD Consultant:	Comfort Management Pte Ltd
ESCO:	Comfort Management Pte Ltd

- Estimated Energy Savings: 1,962,895kWh/yr; Estimated Water Savings: 2,136 m³/yr
- Replacement of existing chillers with high efficiency chillers of 0.497 kW/ton.
- Chiller plant system efficiency of 0.62 kW/ton
- Installation of variable speed drives to existing chilled water pumps, condenser water pumps and cooling towers.
- Installation of CO₂ sensors to regulate outdoor air flow rate.

Sim Lim Tower

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	The Management Corporation Strata Title Plan No. 587
Facility Manager :	The Management Corporation Strata Title Plan No. 587
ESD Consultant:	Comfort Management Pte Ltd
ESCO:	Comfort Management Pte Ltd

- Estimated Energy Savings: 821,135 kWh/yr; Estimated Water Savings: 1615 m³/yr
- Chiller plant system efficiency of 0.62kW/ton
- Energy savings lights such as T5 and LED at common facilities.
- Performance based Energy Savings Contract and continuous energy efficiency monitoring system.
- Auto tube cleaning system and refrigeration leak detection system.

Winsland House II

(Existing Non-Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Winmax Investment Pte Ltd
Facility Manager :	Winmax Investment Pte Ltd
ESD Consultant:	G-Energy Global Pte Ltd
ESCO:	G-Energy Global Pte Ltd
M&E Consultant:	United Project Consultants Pte Ltd

- Estimated Energy Savings: 605,656kWh/yr; Estimated Water Savings: 2,294m³/yr
- Efficient chiller plant system of less than 0.65 kW/ton
- Measurement and verification system and heat balancing to monitor chiller plant efficiency.
- High efficiency air handling units complete with variable speed drives, carbon dioxide sensors, MERV 13 air filters and UVC emitters.
- Energy efficient LED lighting for lift lobbies, service corridors and basement carpark.
- SGBC-certified Auto Tube Cleaning System and switchboards.
- PUB Water Efficient Building.
- Remote monitoring system for live updates on energy consumption of building.

A Treasure Trove

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	Sim Lian JV (Punggol Central) Pte Ltd
Architect:	Design Link Architects Pte Ltd
M&E Engineer:	CD Associates
Structural Engineer:	OCC Consultants Pte Ltd
Main Contractor:	Sim Lian Construction Co Pte Ltd
Landscape Consultant:	Design link Architects Pte Ltd

- Estimated Energy Savings: 2667052 kWh/yr; Estimated Water Savings: 116, 065m³yr ; RETV: 20.35 W/m²
- Retention of a major part of the existing building envelope of conserved Maltida House Building.
- Good orientation of residential blocks to North/ South direction ensures efficient air flow/ good natural ventilation within dwelling units for better indoor comfort.
- Use of energy efficient equipment such as energy efficient lightings in common areas helps to minimize energy consumption from lighting usage substantially in common areas such as the e-deck & landscape areas.
- Use of drought tolerant planting for more than 80% of relevant landscape area for minimal irrigation to reduce potable water consumption.

Bellewaters

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	QingJian Realty (Anchorvale) Pte Ltd
Architect:	ADDP Architects LLP
M&E Engineer:	United Project Consultants Pte Ltd
Structural Engineer:	KCL Consultants Pte Ltd
Quantity Surveyor:	WT Partnership
Main Contractor:	QingJian International (South Pacific) Group Development Co Pte Ltd
Landscape Consultant:	Eco-plan Asia Pte Ltd

- Estimated energy savings: 572,258.40 kWh/yr ; Estimated water savings: 121,896.49 m³/yr ; RETV: 19.61 W/ m²
- Building envelope is oriented to North-South facing for optimum breeze, natural day lighting and through cross ventilation.
- Use of motion sensors for staircases and common toilets. Use of Ecoplug for easy monitoring of electrical consumption within units.
- Extensive Use of ECO friendly and sustainable materials with Singapore Green Label Certificate. (e.g. drywall, laminated flooring, plastering etc)
- Good provision of bicycle, electrical charging car park lots and recycling bins at basement car park.

Bellewoods

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	QingJian Realty (Woodlands) Pte Ltd
Architect:	ADDP Architects LLP
M&E Engineer:	KTP Consultants Pte Ltd
Structural Engineer:	Engineers Partnership LLP
Quantity Surveyor:	Qingdao Construction Group Corporation (Singapore Branch)
Main Contractor:	Qingdao Construction Group Corporation (Singapore Branch)
Landscape Consultant:	Ecoplan Asia Pte Ltd

- Estimated energy savings: 3,315,643.30 kWh/yr ; Estimated water savings: 37,053.34 m³/yr ; RETV: 19.52 w/m²
- Good window to wall ratio of 0.3924 with good RETV value of 19.52 W/m².
- 72.98% improvement in lighting power budget.
- Extensive greenery with green plot ratio of 5.06
- Use of motion sensors for lift lobbies, staircases and common toilets.

Ecopolitan

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	QingJian Realty Punggol Way Pte Ltd
Architect:	P&T Consultants Pte Ltd
M&E Engineer:	United Project Consultants Pte Ltd
Structural Engineer:	KCL Consultants Pte Ltd
Quantity Surveyor:	Langdon & Seah Singapore Pte Ltd
Main Contractor:	Qingdao Construction (Singapore) Pte Ltd
Landscape Consultant:	Ecoplan Asia Pte Ltd

- Estimated energy savings: 4,314,104.69 kWh/yr; Estimated water savings: 110,072 m³/yr ; RETV: 19.89W/m²
- The building blocks are 100% oriented north/south to minimize heat gain.
- Extensive greenery with high green plot ration of 6.3.
- High CUI of 4.0 points.
- Extensive use of locally certified sustainable products.
- Use of motion sensor for light fitting in escape staircases.

Kovan Regency

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	Hoi Hup Realty Pte Ltd
Project Manager:	Hoi Hup Kovam Department Pte Ltd
Architect:	Consortium 168 Architects Pte Ltd
M&E Engineer:	Rankine & Hill (Singapore) Pte Ltd
Structural Engineer:	BC Koh & Partners LLP
Main Contractor:	Straits Construction Singapore Pte Ltd
Landscape Consultant:	Sitetectonix Pte Ltd

- Estimated Energy Savings: 2639683.65 kWh/yr; Estimated Water Savings: 52920.00 m³yr ; RETV: 17.6 W/m²
- Passive ventilation and daylight with all units having north and south orientation.
- Use of air-conditioning rated "4 ticks" for residential units.
- Provision of WELS rated water efficient sanitary appliances.
- Use of cool paint on east and west facing façade wall to reduce heat gain.
- Use of Low-E glass on windows to reduce heat gain.
- Use of recycled concrete aggregates.

The Amore @ Punggol Central

(New Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Client/Developer:	MKH (Punggol) Pte Ltd
Architect:	DP Architects Pte Ltd
M&E Engineer:	United Project Consultants Pte Ltd
Structural Engineer:	TW-Asia Consultants Pte Ltd
Quantity Surveyor:	WT Partnership Pte Ltd
Main Contractor:	Woh Hup Pte Ltd
Landscape Consultant:	DP Green Pte Ltd
ESD Consultant:	DP Sustainable Design Pte Ltd

- Estimated energy savings: 2,861,970 kWh/yr ; Estimated water savings: 202,602m³/yr ; RETV: 18.07W/ m²
- This residential development offers lush Green landscape areas.
- Efficient lighting design by use of LED, T5 lighting and the provision of motion sensors in staircases.
- The provision of 4 ticks air conditioning system for all the units contributes in energy savings for the development.
- Extensive use of sustainable materials certified by Singapore Green labelling scheme.
- The building configuration and site orientation promotes natural ventilation.

The Manor

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	Multimedia Target Sdn Bhd
Project Manager:	Multimedia Target Sdn Bhd
Architect:	Arkitek LLA Sdn Bhd
M&E Engineer:	S.G.Wong Perunding Sdn Bhd
Structural Engineer:	Jurutera Perunding Utara Sdn Bhd
Main Contractor:	Pembinaan Perisai Hebat Sdn Bhd
Landscape Consultant:	Walker & Jansen Sdn Bhd
ESD Consultant:	BSD Consultancy Sdn Bhd

- Estimated Energy Savings: 41893.82kWh/yr; Estimated Water Savings: 1383.35m3/yr; EETV: 17.90W/m2
- Solar Water Heater.
- Energy Efficient Air Conditioners.
- Energy Efficient Refrigerator.
- Energy Saving Lightings.
- Low VOC Paint and Adhesives.
- Good Natural Ventilation and Daylighting.
- Recycling and Composting Facility.

The Terrace

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	Peak Square Pte Ltd
Architect:	DP Architects Pte Ltd
M&E Engineer:	DP Engineers Pte Ltd
Structural Engineer:	Engineers Partnership Pte Ltd
ESD Consultant:	DP Sustainable Design Pte Ltd
Main Contractor:	China Construction Realty Co Pte Ltd
Landscape Consultant:	SALD Pte Ltd
Interior Design Consultant:	Index Design Pte Ltd

- This residential development offers lush green landscape areas.
- Efficient lighting design by use of LED, T5 lighting and the provision of motion sensors.
- The provision of energy efficient air conditioning system for all the units contributes in energy savings for the development.
- Extensive use of environmental friendly and sustainable materials certified by Singapore green labelling scheme.
- The building configuration and site orientation promotes natural ventilation and day lighting.

Three 11

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	Aurun land Pte Ltd
Architect:	Park + Associates Pte Ltd
M&E Engineer:	Neam Solutions
Structural Engineer:	KTP Consultants Pte Ltd
Quantity Surveyor:	LCH Quantity Surveying Consultant
Main Contractor:	Woh Hup Pte Ltd
Landscape Consultant:	Ecoplan Asia Pte Ltd

- Estimated energy savings: 171,648 kWh/yr; Estimated water savings: 4742 m³/yr ; RETV: 19.07 W/m²
- 7.20% replacement of electricity by renewable energy.
- 61.67% improvement in lighting, power budget by using energy saving light fittings.
- Use of energy efficient Air-conditioning system certified by SELS(using 4-ticks AC system and environmental friendly 410 refrigerant).

V on Shenton

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	UIC Investments (Properties) Pte Ltd
Architect:	Architects 61 Pte Ltd
M&E Engineer:	J Roger Preston (S) Pte Ltd
Structural Engineer:	DE Consultants (S) Pte Ltd
Quantity Surveyor:	Davis Langdon KPK (Singapore) Pte Ltd
Main Contractor:	Samsung C&T Corporation
Landscape Consultant:	COEN Design International Pte Ltd
ESD Consultant:	Aurecon Singapore Pte Ltd

- Estimated energy savings: 851,855.50 kWh/yr ; Estimated water savings: 13,844.21 m³/yr ; RETV: 20.99 W/m²
- Excellent Building Envelope that minimizes heat gain into the building with the use of high performance glazing and cool paints achieving a RETV of 20.99 W/m².
- Efficient Lighting for all common areas with T5s/ LEDs and motion sensors.
- Naturally ventilated common areas.
- Extensive Greenery with Green Plot Ratio of more than 6.

Waterway Cascadia

(New Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/Developer:	Housing Development Board
Architect:	ADDP Architects LLP
M&E Engineer:	United Project Consultants Pte Ltd
Structural Engineer:	Rankine & Hill (Singapore) Pte Ltd
Quantity Surveyor:	WT Partnership (Singapore) Pte Ltd
Main Contractor:	Progressive Builders Pte Ltd
Landscape Consultant:	Martin Lee Designs

- Centralized refuse chutes for recyclable waste are provided to all residential blocks.
- Rainwater collection system is provided to collect and store rainwater for common corridor washing.
- The common corridors, staircases and deck are provided with LED lighting. The staircase mid-landings and refuse chute area are provided with motion sensors to reduce energy consumption.
- Energy efficient lifts with regenerative features save energy and converting it into electricity.
- Provision of bio-swale features at precinct landscape helps to clean storm water before discharge to public drain.

Blk 643, 644(MSCP), 645, 646, 647 648, 649, 650(MSCP), 651, 652 Punggol Central

(Existing Residential Buildings)
GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Building Owner:	Pasir Ris-Punggol Town Council
Facility Management:	EM Services Pte Ltd
Managing Agent /	
Maintenance Contractor:	EM Services Pte Ltd
Waste Contractor:	SembCorp Pte Ltd
Landscape Contractor:	BSG Landscape & Construction Pte Ltd
Cleaning Contractor:	Titan Facilities & Management Pte Ltd

- Solar panels with 362.1kWp power generation that can replace 73.2% energy consumption in the estate.
- Use of T5 lightings with high frequency ballast at all common areas.
- Use of regenerative lifts for all blocks.

Blk 106A-D, 107(MSCP), 107A-D, 109A-D, 110A-D Punggol Field (Existing Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Pasir Ris-Punggol Town Council
Facility Management:	EM Services Pte Ltd
Managing Agent /	
Maintenance Contractor:	EM Services Pte Ltd
Waste Contractor:	SembCorp Pte Ltd
Landscape Contractor:	BSG Landscape & Construction Pte Ltd
Cleaning Contractor:	Sergent Services Pte Ltd

- Solar panels with 776.3kWp power generation that can replace 79.1% energy consumption in the estate.
- Use of T5 lightings with high frequency ballast at all common areas.
- Use of regenerative lifts for all blocks.

Blk 111, 112, 114, 115-119 Edgefield Plains

(Existing Residential Buildings)

GREEN MARK AWARD FOR BUILDINGS

GOLDPLUS



Building Owner:	Pasir Ris-Punggol Town Council
Facility Management:	EM Services Pte Ltd
Managing Agent /	
Maintenance Contractor:	EM Services Pte Ltd
Waste Contractor:	SembCorp Pte Ltd
Landscape Contractor:	BSG Landscape & Construction Pte Ltd
Cleaning Contractor:	Sergent Services Pte Ltd

- Auto On/Off Switch for High Jet Water Spray.
- Recycling Bins at every block, collected every alternate day.
- Solar Photovoltaic Technology (PV System) at Roof Top of selected blocks.
- Solar Photovoltaic Technology (PV System), vertical panels at MSCP Blk 119.
- Roof Garden at Multi-Storey Carpark.

Blk 126A-D, 126(MSCP), 128A-D, 128 (MSCP) Edgefield Plains/Punggol Field (Existing Residential Buildings)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Building Owner:	Pasir Ris-Punggol Town Council
Facility Management:	EM Services Pte Ltd
Managing Agent /	
Maintenance Contractor:	EM Services Pte Ltd
Waste Contractor:	SembCorp Pte Ltd
Landscape Contractor:	BSG Landscape & Construction Pte Ltd
Cleaning Contractor:	Sergent Services Pte Ltd

- Solar panels with 159.6kWp power generation that can replace 24.8% energy consumption in the estate.
- Use of T5 lightings with high frequency ballast at all common areas.
- Use of regenerative lifts for all blocks.

Luxus Hills (Phase 8)

(Landed Houses)

GOLDPLUS



GREEN MARK AWARD FOR BUILDINGS



Client/ Developer :	Singapore United Estates (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:	Davis Langdon KPK (Singapore) Pte Ltd

- Estimated energy savings: 149,339.75 kWh/yr; Estimated water savings: 116.80m³/yr.
- Provide PV Panels to collect solar energy to offset electrical consumption.
- Use of heat recovery system for storage water heaters.
- Provide clothes drying facilities to discourage use of dryer.
- Use of LED light with micro-switch for walk-in wardrobes.
- Use of LED lights with motion sensors to Utility, Car Porch and Store.

Green Mark for Building Awards

GOLD



PROJECT NAME	CATEGORY	CLIENT/DEVELOPER/BUILDING OWNER
3 Pioneer Sector 3 (Block 2)	New Non-Residential Building	BC investor Services Trust Singapore Limited
Downtown East Resort Main Block	New Non-Residential Building	NTUC Club
Heavy Vehicle Storage Building with Ancillary Office	New Non-Residential Building	Defence Science & Technology Agency
Hotel Käl	New Non-Residential Building	Sines Investment Consultancy Pte Ltd
HSL Waterfront @ Penjuru	New Non-Residential Building	VERDELAND Pte Ltd
Keppel Tampines Logistics Hub	New Non-Residential Building	Keppel Logistics Pte Ltd
Lee Kong Chian Natural History Museum	New Non-Residential Building	National University Of Singapore
Me5 Project	New Non-Residential Building	Evnonik Methionnine Sea Ltd
Pasir panjang Terminal Building 3 Pasir Panjang Terminal Phase III	New Non-Residential Building	Psa Corporation Limited
Stamford Detention Tank	New Non-Residential Building	PUB
Technology Centre for Halliburton Completion Tools Manufacturing and Technology Plant	New Non-Residential Building	Halliburton Completion Tools Manufacturing Pte Ltd
Tee Hai Full Gxp Facility	New Non-Residential Building	Tee Hai Chem Pte Ltd
Workshops and Multi-function Buildings at Sembmarine Integrated Yard @ Tuas	New Non-Residential Building	Jurong Shipyard Pte Ltd
51 Cuppage Road	Existing Non-Residential Building	FCL Crystal Pte Ltd

Green Mark for Building Awards

GOLD



PROJECT NAME	CATEGORY	CLIENT/DEVELOPER/BUILDING OWNER
Ang Mo Kio MRT Station (NS16)	Existing Non-Residential Building	SMRT Trains Ltd
Bedok Point	Existing Non-Residential Building	HSBC International Trust Services (S) Limited
Bukit Timah Shopping Centre	Existing Non-Residential Building	MCST 1601, Bukit Timah Shopping Centre
Carrier Transicold	Existing Non-Residential Building	Carrier Transicold Pte Ltd
Marina Mandarin Singapore	Existing Non-Residential Building	Marina Centre Holding Pte Ltd
Ministry of Foreign Affairs Headquarters	Existing Non-Residential Building	Ministry of Foreign Affairs
Mochtar Riady Building at National University of Singapore	Existing Non-Residential Building	National University of Singapore
Nex Shopping Centre	Existing Non-Residential Building	Gold Ridge Pte Ltd
NTUC Trade Union of Singapore	Existing Non-Residential Building	National Trades Union Congress
OG Albert Complex	Existing Non-Residential Building	OG Private Limited
Singapore Changi Airport Terminal 2	Existing Non-Residential Building	Changi Airport Group
Singapore Institute of Management-Block B	Existing Non-Residential Building	Singapore Institute Of Management
Studio M Hotel Singapore	Existing Non-Residential Building	Republic Iconic Hotel Pte Ltd
Tang Plaza	Existing Non-Residential Building	Management Corporation Strata Title 1673
Parc Vera	New Residential Building	Sim Lian (Hougang) Pte Ltd
The Panorama	New Residential Building	Wheelock Properties (Singapore) Limited

GOLD

133

Certified

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BCA Green Mark

FOR BEYOND BUILDINGS

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

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

- i. BCA Green Mark Award for Districts
- ii. BCA-NParks Green Mark Award for New/Existing Parks
- iii. BCA Green Mark Award for Infrastructure

BCA Green Mark Award

FOR DISTRICT

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:

- i. Energy Efficiency
- ii. Water Efficiency
- iii. Material and Waste Management
- iv. Environmental Planning
- v. Green Buildings and Green Transport
- vi. 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 waster, carbon emissions, energy and water consumption.

BCA- NParks Green Mark Award

FOR PARKS

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:

- i. Material Resources
- ii. Water Efficiency
- iii. Energy Efficiency
- iv. Greenery and Urban Ecology
- v. Design for Ease of Maintenance and Accessibility
- vi. Parks Development and Construction Management
- vii. Other Green Initiatives

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

GOLD

139

BCA Green Mark Award

FOR INFRASTRUCTURE

The Award

The BCA Green Mark for Infrastructure Award is an initiative of the Building and Construction Authority to promote sustainable development in project planning and conceptualisation, design and specification, and construction of infrastructure projects. It promotes an integrated approach towards project delivery and recognises good standards of performance that go beyond the legal requirements and industry norms. The projects are evaluated based on the following six criteria:

- i. Landscape, ecology and land efficiency
- ii. Energy and renewable energy
- iii. Water Efficiency
- iv. Project Management
- v. Waste Management and Environmental Protection
- vi. Innovation

GOLD

142

BCA Green Mark

FOR SUPERMARKETS

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

Within commercial buildings, tenants - including supermarket operators - have a significant impact on the total building energy consumption. There are about 300 supermarkets in Singapore, and each outlet's floor area can range from 90 m² to 4,500 m². Refrigeration, required to keep the goods and produce fresh, accounts for up to 50% of the total supermarket energy consumption. The rest of the energy is consumed by lighting, plug loads and air-conditioning. By incorporating green features, supermarkets can reduce the total energy consumed by as much as 10%. The BCA Green Mark for Supermarkets aims to encourage supermarket operators to adopt energy efficient design, equipment and green practices at their outlets. Such measures can help supermarket operators reduce their energy consumption and utilities costs. Green supermarkets also have the power to educate and motivate supermarket patrons to be environmentally responsible.

The scheme assesses supermarkets based on the following five criteria:

- i. Energy Efficiency
- ii. Water Efficiency
- iii. Environmental Protection
- iv. Indoor Environmental Quality
- v. Other Green Features

Fairprice Xtra Hypermarket at Kallang Wave Mall

PLATINUM



(Office Interior)

GREEN MARK FOR OFFICE INTERIOR



Owner:	NTUC FairPrice Co-operative Ltd
M&E Consultant:	Tham & Wong LLP
M&E Contractor:	Victor Engineering & Trading Pte Ltd
Other Specialist Consultant/ Contractor:	VSD Engineering Enterprises Pte Ltd (Refrigeration Contractor) Build forms Construction Pte Ltd (Main Contractor)

- Centrally-controlled energy-efficient refrigeration showcases fitted with doors, electronic expansion valves, anti-sweat control and electronically commutated (EC) fans.
- 100% LED lighting, inclusive of display cabinets. Auto zonal lighting controls and occupancy sensors installed to conserve energy.
- Energy Management System with Remote Monitoring from HQ to monitor in-store refrigeration, lighting, receptacle and air-conditioning consumption.
- Sinks and basins are fitted with water-efficient taps of "Excellent"-rated flow rates except for mixer taps. Private water meters installed to monitor consumption and detect leakages.
- Collection of cardboards, paper, plastic and metal cans for recycling. Contributes to food donations.
- Numerous sustainable SGBC Green Products used for fit-out i.e. laminates, low VOC paints.
- Eco trail highlights green features with a display panel showing the accumulated amount of plastic bags moved.

BCA Green Mark

FOR OCCUPANT-CENTRIC SCHEMES

The BCA Green Mark 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 :

- i. BCA Green Mark Award for Office Interiors
- ii. BCA Green Mark Award for Data Centres
- iii. BCA Green Mark Award for Restaurants

BCA Green Mark

FOR OFFICE INTERIORS

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:

- i. Energy Efficiency
- ii. Water Efficiency
- iii. Sustainable Management and Operation
- iv. Indoor Environmental Quality
- v. Other Green Features

Autodesk Asia Pte Ltd

(Office Interior)

PLATINUM



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:	Autodesk Asia Pte Ltd
Renovation Consultant / Contractor:	OSS Technologies-A Pte Ltd
Facility Manager Company:	Autodesk Asia Pte Ltd
M&E Consultant:	CPG Consultants Pte Ltd

- Use of internal staircase to promote employee's interactions and reduce the need for lift travel between floors.
- High efficiency lighting with zoning and controls through the use of photo-cells, motion sensors and microwave sensors.
- Extensive use of materials endorsed by SGLS scheme including paint, vinyl flooring, carpet flooring, palm flooring and raised floor systems.
- 100% Energy Star office equipment.
- 100% WELS excellent water fittings.
- Building Management system which permits monitoring and management of lighting and air conditioning systems.
- High efficiency VAV system through the use of occupancy sensors linked to BMS.

Det Norske Veritas Pte Ltd

PLATINUM



(Office Interior)
GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:	Det Norske Veritas Pte Ltd
Renovation Consultant :	Aedas Interiors Pte Ltd
Renovation Contractor:	Ngai Chin Construction Pte Ltd
Facility Manager Company:	Det Norske Veritas Pte Ltd
M&E Consultant:	WSP Ng Pte Ltd
ESD Consultant:	WSP Ng Pte Ltd

- Light power density with ≤ 9 W/m²
- Task light with built-in occupancy sensor.
- Use of $\geq 90\%$ of office equipment certified with energy efficient label.
- View to outdoor @ working area.
- Provision of sky garden and extensive indoor greenery (including vertical green wall)
- Base building: design-to-suit.
- Provision of internal staircase to encourage pedestrian circulation between office floors.

Energy Research Institute @ NTU (ERI@N)

PLATINUM



(Office Interior)
GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:	Energy Research Institute @ NTU (ERI@N)
Renovation Consultant / Contractor:	PBT Engineering Pte Ltd Trans Equatorial Engineering Pte Ltd
Facility Manager Company:	Office of Development & Facility Management, NTU
M&E Consultant:	Office of Development & Facility Management, NTU
Managing Agent /	Kim Yew Electrical &
Maintenance Contractor:	Sanitary Pte Ltd

- Radiant chilled ceiling system.
- Automated wireless sensors cooling system.
- Motion sensors for lightings and timer switch for pantry equipment.
- Green campaign and staff awareness and training program.
- Collection and recycling e-waste program.
- Provision for teleconferences for meetings, Eco- IT initiative and Managed Print Services (MPS) adoption.
- Introduction of non-disposable cutlery and crockery as well as green labelled office stationery and cleaning products.

Figtree Office @ Central Link

(Office Interior)

PLATINUM



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:	Figtree Projects Pte Ltd
Renovation Consultant / Contractor:	Figtree Projects Pte Ltd
Project Manager :	Figtree Projects Pte Ltd
M&E Consultant:	Figtree Projects Pte Ltd
ESD / Green Consultant:	Building System & Diagnostics Pte Ltd

- Use of 100% IT Equipments with Energy Star Label.
- Use of 100% of sanitary fittings with 'EXCELLENT' WELS rating.
- Reused of 58% existing furniture in new office.
- Task lighting on individual work desks allow greater controllability of the lighting system and 100% LED light fittings.
- Integrated CO2 monitoring to automatically regulate fresh air intake.
- More than 2% of Greenery in the office.
- Use of solar film on window to minimize heat gain NEWater for cooling towers.

Lend Lease Retail Pte Ltd

(Office Interior)

PLATINUM



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:	Lend Lease Retail Pte Ltd
Renovation Consultant / Contractor:	DTZ Facilities & Engineering (S) Ltd
M&E Consultant:	DTZ Facilities & Engineering (S) Ltd
Other Specialist consultant /	
Contractor:	DTZ Facilities & Engineering (S) Ltd

- Electric sub-meter is installed for monthly monitoring of electric energy consumption.
- Use of centralized air-conditioning (by landlord). Zoning and controls of air-conditioning system using VAV boxes for different locations.
- Use of energy efficient LED lamps and tubes for the meeting rooms and offices. Dimmers, task lights and scheduled control are also used.
- Use of energy efficient office equipment such as computers, monitors, fax machines, printers, photocopiers and projector.
- Use of energy efficient features such as occupancy sensors, photocell sensors and computer management software for reduced lighting and office equipment energy usage.
- Use of water-efficient fittings and water sub-meter for monthly monitoring of water usage.
- Use of SGLS-certified carpets for the entire office.

Lutron GL Limited

(Office Interior)

PLATINUM



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:

Lutron GL Limited

M&E Consultant:

Building Systems & Diagnostics Pte Ltd

- Extensive occupancy sensors are used in entire office.
- High-end trim technology is used for all lightings.
- Personal dimming control of lightings.
- Plug load control to turn off loads after occupants leave a space.
- Reuse of more than 90% furniture in office.
- 100% of IT equipments with energy star label.
- More than 2% of greenery in office.

National Australia Bank Fitout

PLATINUM



(Office Interior)
GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:	National Australian Bank
Renovation Consultant / Contractor:	Falcon Interior
Facility Manager Company:	Asia Square
M&E Consultant:	J Roger Preston (S) Pte Ltd
Interior Design:	Designphase dba Pte Ltd
ESD / Green Consultant:	Aurecon Singapore Pte Ltd

- Green Mark Platinum certified and LEED 2009 (Core & Shell) Platinum certified Base Building.
- Lighting Management system.
- Strong Commitment to improve Energy, Water & Waste reduction.
- Strong Environmental friendly policies and guidelines.
- Care for Indoor environmental quality and occupant comforts by conducting annual occupant comfort survey & testing.
- Green Initiative drives for all staff to get involved.
- Use of solar film on window to minimize heat gain NEWater for cooling towers.

Singapore Green Building Council

PLATINUM



(Office Interior)

GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:	Singapore Green Building Council
Renovation Consultant / Contractor:	Skillplan Designer & Builder Pte Ltd
ID Concept Designer:	Architects 61 Pte Ltd
ESD Consultant:	Building Systems & Diagnostics Pte Ltd

- Extensive showcase of certified Singapore Green Building Product (SGBP) solutions.
- Lighting in entire office managed by occupancy sensors.
- Use of LED, T5 lighting and task lighting to optimise energy consumption.
- Use of portable fans instead of air-con after office hours.
- Reuse of more than 90% office furniture.
- Over 90% of IT equipment are Energy Star rated.
- Lush greenery coverage exceeding 2% of office area.

Unilever Asia Pte Ltd

(Office Interior)

PLATINUM



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:

Unilever Asia Pte Ltd

Facility Manager Company:

Johnson Controls Pte Ltd

ESD Consultant:

AECOM Singapore Pte Ltd

- Motion sensors in meeting rooms are able to sense space use and activate lights “on” accordingly.
- LED desk lights installed on each work desk allow individuals to have greater controllability of the lighting system.
- Water-saving faucets and fittings are WELS rated to reduce water consumption.
- Most products are environmental friendly products and/or SGLS certified, such as printing paper.
- Green walls and various varieties of potted plants help achieve the right blend of office workspace and indoor green space.
- The open space office layout encourages flexible and maximal space usage.
- The video conferencing system helps to reduce travel and carbon emission.

Visa SP08 Office Expansion

(Office Interior)

PLATINUM



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant / Owner:	Visa Worldwide Pte Ltd
Renovation Consultant / Contractor:	AD Incorporation Pte Ltd
Project Manager Company:	CBRE Pte Ltd
M&E Consultant:	J roger Preston (S) Pte Ltd
Other specialist Consultant /	
Contractor:	Faithful + Gould Pte Ltd

- Daylight sensors in the Atrium and motion sensors throughout the office.
- High efficient lighting design giving low lighting power budget of 8.8W/m²
- Greenery coverage of more than 4% of the office floor area with a sky garden accessible to all staff.
- Procurement of Energy Star office equipment.
- Sustainable procurement policy in place with extensive use of environmentally friendly office products.
- Auxiliary air-con provided to Atrium and open plan office for after office usage with timer set for 2 hours when toggle switched is pressed.
- Infra-red motion sensors are interlocked with fan coil units to reduce energy usage.

American Express International Inc.

(Office Interior)

GREEN MARK AWARD FOR OFFICE INTERIOR

GOLDPLUS



Tenant/Owner:

American Express
International Inc.

Facility Manager Company:

CBRE Pte Ltd

Other Specialist

Green Mark Consultant

Consultant/ Contractor:

Environment Market
Solutions Inc.
EMSI

- Energy efficient air conditioning system and lighting system with zoning and control.
- Flexible open office design with provision of hot desks.
- Provision of energy efficient IT equipment.
- Provision of staircase to promote movement from level to level without using lifts.
- Extensive use of environmentally friendly products to promote a healthy indoor environment.
- Extensive recycling facilities and good waste management.

City Developments Limited

(Office Interior)

GOLDPLUS



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant/Owner:	City Developments Limited
Maintenance Contractor:	CBM Pte Ltd
Other Specialist	
Consultant/ Contractor:	SETSCO Services Pte Ltd

- Energy efficient LED and T5 lighting for office with dimmer control at meeting rooms.
- Motion sensors at pantry, compactors and BMS areas.
- Energy efficient office equipment with Energy Star label.
- Sustainable procurement policy with extensive use of environmentally friendly office products.
- Timer control for air-conditioning and lights.

City Developments Limited

(Office Interior)

GOLDPLUS



GREEN MARK AWARD FOR OFFICE INTERIOR



Client / Developer:

City Developments Limited

- Extensive usage of energy efficient lights.
- Use of water efficient fittings covered under WELS.
- Use of sustainable office furniture which last many years.
- Extensive recycling facilities and waste management.
- Setting of ISO 14001 Targets and Environmental Programs.

City Developments Limited

(Office Interior)

GOLDPLUS



GREEN MARK AWARD FOR OFFICE INTERIOR



Client / Developer:

City Developments Limited

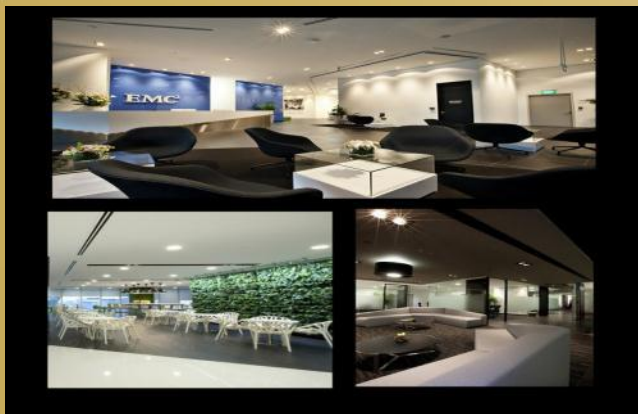
- Extensive usage of energy efficient lights.
- Use of water efficient fittings covered under WELS.
- Use of sustainable office furniture which last many years.
- Extensive recycling facilities and waste management.
- Setting of ISO 14001 Targets and Environmental Programs.

EMC Computer Systems (South Asia) Pte Ltd

(Office Interior)

GREEN MARK AWARD FOR OFFICE INTERIOR

GOLDPLUS



Tenant/Owner:	EMC Computer Systems (South Asia) Pte Ltd
Contractor:	Ngai Chin Pte Ltd
M&E Consultant:	Parsons Brinckerhoff (PB) Pte Ltd
Project Manager:	Cushman & Wakefield (C&W) Pte Ltd
ID Consultant:	SCA Design Pte Ltd
ESD Consultant:	Building Systems & Diagnostics Pte Ltd

- LED & T5 lighting give LPD 9.8W/m² and motion sensors and scheduled/zoned air conditioning provides local control for after hour extension.
- 82% EnergyStar rated equipment and sleep mode features for printers, scanners, monitors, projectors and TVs further reduce equipment energy consumption.
- WELS excellent fittings, NEWater and water sub-metering monitoring reduce potable water consumption.
- The 6m wide green wall and greenery coverage of 2.3% of the office area, yearly IAQ audit, UVC emitters, and SGLS finishes and products improve the IAQ.
- The open office layout, hot desks, space savers and reused furniture and finishes cut down the resource depletion and waste to landfill.

Expansion New Proposal Office Fit-Out for The McGraw-Hill Financial

(Office Interior)

GOLDPLUS



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant/Owner:	McGraw-Hill Asian Holdings (Singapore) Pte Ltd
Renovation Consultant/ Contractor:	Ngai Chin Construction Pte Ltd
Facility Manager Company:	CB Richard Ellis Pte Ltd
Project Management:	CB Richard Ellis Pte Ltd
ID Consultant:	BBFL Pte Ltd
ESD Consultant:	Kaer Pte Ltd
M&E Consultant:	Meinhardt (Singapore) Pte Ltd

- The open layout with zoned air-conditioning and lighting and use of laptops & docking stations allows for flexible seating and a low EEI.
- LED & T5 result in 10.6W/m² LPD and >29% savings, where motion sensors for over 90% of the GFA eliminate unnecessary energy consumption.
- More than 80% energy star equipment, 3 tick fridges, and master-switch and auto sleep mode features are applied to >90% of all equipment.
- WELS excellent water fittings, remote leak detection, and monitoring reduce potable water consumption and wastage.
- Extensive use of environmental friendly and reused products, finishes and furniture.

Hitachi Asia Ltd. & Group Companies in Hitachi Square

(Office Interior)
GREEN MARK AWARD FOR OFFICE INTERIOR

GOLDPLUS



Client / Developer:

Hitachi Asia Ltd

- T5 lighting, hence achieving lighting power budget of only 10.63W/m²
- Use of Tuas Cuscare Online portal to monitor energy consumption.
- Internal staircase linking level 7 and 8.
- Committed to energy improvement, water improvement, waste improvement and green procurement.
- Conducted IAQ tests, Lux and more measurements.

Keppel Datahub

(Office Interior)

GOLDPLUS



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant/Owner:	Keppel Datahub 2 Pte Ltd
Facility Manager Company:	Keppel Datahub 2 Pte Ltd
ESD Consultant:	Building Systems & Diagnostics Pte Ltd

- Management commitment for SS564 certification.
- Data Centre designed for modular expansion.
- Flywheel-powered DRUPS for Data Centre.

Netapp Singapore Pte Ltd

(Office Interior)

GOLDPLUS



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant/Owner:	Netapp Singapore Pte Ltd
Renovation Consultant/Contractor:	Jim & Hall's Pte Ltd
M&E Consultant:	DLE M&E Pte Ltd
ESD Consultant:	Building System & Diagnostics Pte Ltd

- Use of vacancy sensor for all meeting rooms and infrequent usage spaces.
- Achieve 35% of lighting power density saving.
- Use of solar film for all windows to reduce the heat gain and glare issue.
- Extensively use of construction materials with SGLS/SGBC certification.
- More than 2% of Greenery in the office.

SPRING Singapore

(Office Interior)

GOLDPLUS



GREEN MARK AWARD FOR OFFICE INTERIOR



Tenant/Owner:	SPRING Singapore
Facility Manager Company:	CBM Pte Ltd
ESD Consultant:	Afogreen Build Pte Ltd

- Air conditioning zoning, VAV control and timer.
- Energy efficient lighting (T5 and LED) with motion sensors and light sensor.
- Energy star IT equipment and sleep mode.
- Water efficient fitting, excellent WELS rating.
- Open office concept, flexible lay out and hot desking.

Sunray Woodcraft Construction Pte Ltd

(Office Interior)

GREEN MARK FOR BUILDINGS AWARD

GOLDPLUS



Tenant/Owner:
Pte Ltd

Sunray Woodcraft Construction

Renovation Consultant/ Contractor:
Pte Ltd

Sunray Woodcraft Construction

M&E Consultant:

Wah Loon Engineering Pte Ltd

ESD Consultant:

ZEB-Technology Pte Ltd

- Overall Lighting Power Budget of 7.22 W/m² achieved through use of energy efficient LED and T5 fluorescent light fittings.
- Provision of water fittings are PUB WELS (Water Efficient Labelling Scheme) 'Excellent' Rating to minimize water consumption.
- Engaging in recycling projects through the donation of recyclable items to charitable foundation.
- Indoor greenery with planted areas spanning 2% of total office space to create a more conducive office environment.
- Hot-desking concept implemented to encourage open, flexible and maximal space usage.

Verizon Office

(Office Interior)

GOLDPLUS



GREEN MARK FOR BUILDINGS AWARD



Renovation Consultant/Contractor: SCA Design

M&E Consultant: J Roger Preston

- Use of energy efficient lightings with mainly LED lights.
- Proper zoning of lightings with the usage of toggle switch after office hours.
- Provision of proper zoning and control for air-conditioning.
- The office is equipped with an internal Environmental Monitoring system.
- Welcomes temporary staff from all over the world to work in office by occupying the hot desks.



PROJECT NAME	CLIENT/DEVELOPER/BUILDING OWNER
American Express International Inc.	American Express International Inc.
City Developments Limited	City Developments Limited
City Developments Limited	City Developments Limited
Economic Development Board Singapore (Level 18, 20-23, 25-28 Raffles City Tower)	Economic Development Board
Energy Market Authority	Energy Market Authority
General Motors International Singapore	General Motors Singapore
ING Bank N.V (Singapore Branch)	City Developments Limited
KPMG	City Developments Limited

PROJECT NAME	CLIENT/DEVELOPER/BUILDING OWNER
Arcadis Project Management	City Developments Limited
Cambridge Associates Asia Pte Ltd	City Developments Limited
City Serviced Offices Pte Ltd	City Developments Limited
City Serviced Offices Pte Ltd	City Developments Limited
City Developments Limited	City Developments Limited
DB&B Pte Ltd	City Developments Limited
Elishan Investment Pte Ltd	City Developments Limited
First Capital Insurance, City House	City Developments Limited
Fairsteps Properties Pte Ltd	City Developments Limited
Hong Leong Finance Limited	City Developments Limited
Langdon & Seah Singapore Pte Ltd	City Developments Limited
Manulife Singapore	City Developments Limited
Manulife Singapore	City Developments Limited
Oon & Bazul LLP	City Developments Limited
Parexel International (Singapore) Pte Ltd	City Developments Limited
Ramdas & Wong	City Developments Limited
SDV Asia Pacific Corporation Pte Ltd	Bollere Group

BCA Green Mark

FOR DATA CENTRES

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:

- i. Energy Efficiency
- ii. Water Efficiency
- iii. Sustainable Construction/ Operation and Management
- iv. Indoor Environmental Quality
- v. Other Green Features

Equinix SG 3 Data Centre

(New Data Centre)

PLATINUM



BCA-IDA GREEN MARK AWARD FOR DATA CENTRES



Tenant/Owner:	Equinix Pte Ltd/ DBS Trustee Ltd (Trustee of Mapletree Industrial Trust)
Consultant/ Contractor:	Wah Loon Engineering Pte Ltd/ Tiong Seng Contractors Pte Ltd
M&E Consultant:	Hurley Palmer Platt Pte Ltd/ Bescon Consulting Engineerings Pte
Architect:	3HP Architects Pte Ltd/ Sweett Pte Ltd
ESD Consultant:	Kaer Pte Ltd
Structural Engineer:	Aecom Pte Ltd

- Estimated energy savings: 14,978,984 kWh/yr ; Estimated water savings: 53,737.344m³/yr
- Design PUE 1.35 (32.5% savings), permanent measurement and verification, policies and SS564 certification for operational performance.
- VSD chiller plant at 0.531kW/RT with innovative start-up control, auto maintenance and advanced failure control strategy maintain resiliency and efficiency.
- 99.6% potable water savings with NEWater, rainwater harvesting, over 7 COC, WELS excellent fittings and genset mist system.
- Airside design over 60% savings, with desiccant dehumidification, containment, temperature control strategy and air leakage prevention strategies.
- IT power chain over 89% efficiency and branch circuit power monitoring to maintain utilization.
- Photovoltaic panels of 331.55kWp, motion sensors, rack-level LED, and real-time energy display educational corner.

Pacnet SGC S2

(New Data Centre)

GOLDPLUS



BCA-IDA GREEN MARK AWARD FOR DATA CENTRES



- Estimated energy savings: 8,587,472 kWh/yr; Estimated water savings: 39.312m³/yr
- Water efficient cooling tower, condensate recycling system, and water fitting.
- Very efficient CRAH system.
- Vehicle charging system with photovoltaic panel.
- High efficiency transformer.
- Policies in energy, waste and green procurement.

Tenant/Owner:	Pacnet Services Global (S) Pte Ltd
Project Manager:	Confluence Project Management Pte Ltd
Architect:	AWP Pte Ltd
M&E Engineer:	I.EM Engineering Consultant
Data Centre Consultant:	Red Engineering Asia Pacific Pte Ltd
ESD Consultant:	Kaer Pte Ltd
Structural Engineer:	VB+E Civil and Structural Engineers
Quantity Surveyor:	WT Partnership (S) Pte Ltd
Main Contractor:	M+W Singapore Pte Ltd

Digital Realty

(Existing Data Centre)

PLATINUM



BCA-IDA GREEN MARK AWARD FOR DATA CENTRES



Tenant/Owner: Digital Investment Management Pte Ltd
Facility Manager: Digital Singapore Jurong East Pte Ltd

- Chiller plant system with efficiency of 0.73kW/ton
- Permanent measurement and verification instrumentation for the monitoring of chilled-water plant efficiency.
- Dynamic Rotary UPS with efficiency greater than 95%.
- Static Pressure Control for Data Centre Crah operations.
- Side Stream Filtration.
- KSEI – Energy Saver.
- Humidity Control.

Keppel Datahub

(Existing Data Centre)

GOLDPLUS



BCA-IDA GREEN MARK AWARD FOR DATA CENTRES



- Management commitment for SS564 certification.
- Data Centre designed for modular expansion.
- Flywheel-powered DRUPS for Data Centre.

Tenant/Owner:	Keppel Datahub 2 Pte Ltd
Facility Manager:	Keppel Datahub Pte Ltd
ESD Consultant:	Building Systems & Diagnostics Pte Ltd

Certified

[illegible]

BCA Green Mark

OVERSEAS

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

The Success Of Green Mark Overseas

As one of 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:

- i. Reduction in water and energy bills
- ii. Improvement in indoor environmental quality
- iii. Reduction in potential environment impact



Graha CIMB Niaga Building

(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)

PLATINUM



Building Owner : PT GrahaNiaga TataUtama
Facility Management: PT GrahaNiaga TataUtama
ESCO: G-Energy Pte Ltd

- Estimated energy savings: 1,361,250 kWh/yr ; Estimated water savings: 1,042 m³/yr.
- Exhaust air is recycled via the rotary heat exchanger and ducted to provide better air circulation to the cooling tower areas.
- Storm water and AHU condensate water are recycled to reduce water consumption.
- Composting from organic waste to produce liquid and solid composts for the greenery.
- Improved chiller plant system efficiency from 0.87 kW/RT to 0.67 kW/RT.
- Extensive greeneries around the building, vertical greening, gardens at lower and upper roof.
- CO sensors linked to MV fans for ventilation system in basement car park.

Platinum Sentral

(New Non-Residential Building)

PLATINUM



GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



- Estimated energy savings: 4,858,374 kWh/yr ; Estimated water savings: 31,144 m³/yr.
- Thermal Comfort Improvement in Atrium through Computational Fluid Dynamics Simulation.
- Solar Panel System.
- Extensive Lush Landscape (Roof Terraces and Green Wall).
- Pneumatic Waste Collection System.
- High Degree of Connectivity.

Owner/ Developer :	Kuala Lumpur Sentral Sdn Bhd
Architect:	COX Architects & Planners/ Perunding Alam Bina/ Kumpulan Senireka Sdn Bhd
Landscape Consultant:	Pentango Landscape Sdn Bhd
M&E Consultant:	Li-Zainal Sdn Bhd
Civil & Structural Consultant:	Meinhardt(Malaysia) Sdn Bhd
Facade Consultant:	Meinhardt Facade Technology (S) Pte Ltd
Quantity Surveyor:	ARH Jurukur Bahan Sdn Bhd
ESD/CFD Consultant:	G-Energy Global Pte Ltd/ZEB-Technology Pte Ltd
Main Contractor:	MRCB Engineering Sdn Bhd

Sino-Singapore Tianjin Eco-City Low Carbon Living Lab

(New Non-Residential Building)

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)

PLATINUM



Owner/ Developer :	Sino-Singapore Tianjin Eco-City Investment & Development Co Ltd
Architect:	Jurong Consultants Pte Ltd/ China Construction Engineering Design Group Co Ltd (LDI)
M&E Consultant:	Jurong Consultants Pte Ltd/ China Construction Engineering Design Group Co Ltd (LDI)
Structural Engineer:	Jurong Consultants Pte Ltd/ China Construction Engineering Design Group Co Ltd (LDI)
Quantity Surveyor:	Tianjin Jinjian Construction Cost Consulting Co., Ltd
Main Contractor:	Second Building Co. Ltd, China Construction first Building(Group)Co. Ltd
Landscape Consultant:	Tianjin Yalan Landscape Design Engineering Co., Ltd
ESD Consultant:	Jurong Consultants Pte Ltd

- Estimated energy savings: 367,387.34 kWh/yr ; Estimated water savings: 7723 m³/yr.
- Energy efficient/saving M&E equipment's and LED light fittings.
- Passive green building design features that maximizes natural lighting and ventilation.
- Various mode of renewable energy that generates 115.21 MWH/yr.
- Smart monitoring system (EMS) with mini weather station on the rooftop, provide better measurement and analysis in addition to standard BMS provision.
- Indoor garden and roof garden.
- Rain water harvesting system and recycle water adoption for irrigation and flushing.
- MERV13 filters in PAU for better IEQ.

The Manor

(New Residential Building)

GOLD^{PLUS}



GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



Client/Developer:	MultiMedia Target Sdn Bhd
Project Manager:	MultiMedia Target Sdn Bhd
Architect:	Arkitek LLA Sdn Bhd
M&E Engineer:	S.G.Wong Perunding Sdn Bhd
Structural Engineer:	Jurutera Perunding Utara Sdn Bhd
Quantity Surveyor:	Perunding Kos Bersatu Sdn Bhd
Main Contractor:	Pembinaan Perisai Hebat Sdn Bhd
Landscape Consultant:	Walker & Jansen Sdn Bhd
ESD Consultant:	BSD Consultancy Sdn Bhd

- Estimated energy savings: 41,893.82 kWh/yr ; Estimated water savings: 1,383.35 m³/yr ; RETV: 17.90 w/m²
- Solar Water Heater.
- Energy Efficient Air Conditioners.
- Energy Efficient Refrigerator.
- Energy Saving Lightings.
- Low VOC Paint and Adhesives.

Citadines St Georges Terrace Perth

GOLD



(Existing Non-Residential Building)
GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



Client/Developer:	The Ascott Limited
Facility Management:	The Ascott Limited
ESD Consultant:	Prospective Solutions Pty Ltd
Project Management:	Point Project Management

- Estimated energy savings: 115,879 kWh/yr ; Estimated water savings: 2,206 m³/yr.
- 4-tick inverter split air-conditioning systems.
- Energy efficient appliances (washers, dryers, fridges, TVs and DVD players).
- Extensive use of environmental friendly furniture and building products.

Menara CIMB

(New Non-Residential Building)

GOLD



GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



Client/Developer:	Kuala Lumpur Sentral Development
Project Manager:	En Kamarul Zaki Khalid
Architect:	Kumpulan Akitek Sdn Bhd
M&E Engineer:	Minconsult Sdn Bhd
Structural Engineer:	SMA Bersekutu Sdn Bhd
Quantity Surveyor:	Perunding NFL Sdn Bhd
Main Contractor:	MRCB Engineering Sdn Bhd
Landscape Consultant:	Kaha Asaruddin Consulting Sdn Bhd
ESD Consultant:	BSD Consultancy Sdn Bhd

- Estimated energy savings: 3,280,829 kWh/yr ; Estimated water savings: 172,652.3 m³/yr ; EETV: 37.25 w/m²
- Extensive use of environmentally friendly products for interior and exterior.
- Water-cooled chilled water plant and Variable Air Volume AHU for all office spaces.
- Naturally Ventilated car park with T5 lamps. Perimeter lamps are controlled by photo sensors.

Menara LGB

(New Non-Residential Building)

GOLD



GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



Client/Developer:	GSL Development Sdn Bhd
Project Manager:	Bellworth Sdn Bhd
Architect:	Hijjas Katsuri Associates Sdn
M&E Engineer:	SM Consulting Engineers Sdn Bhd
Structural Engineer:	Pakatan Cergas Sdn Bhd
Quantity Surveyor:	Perunding Kos T & K Sdn Bhd
Main Contractor:	LGB Engineering Sdn Bhd
Facade Consultant:	Meinhardt Facade Technology
ESD Consultant:	Surbana Technologies Pte Ltd

- Estimated energy savings: 5,724,355 kWh/yr ; Estimated water savings: 36.98 m³/yr ; ETTV: 36.98 w/m²
- Thermal Storage System.
- Low-e Double Glazed Glass.
- Rain Water Harvesting.

Preston Oaks

(New Residential Building)

GOLD



GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



Client/Developer:	Multimedia Target Sdn Bhd
Project Manager:	Multimedia Target Sdn Bhd
Architect:	Arkitek LLA Sdn Bhd
M&E Engineer:	S.G.Wong Perunding Sdn Bhd
Structural Engineer:	Jurutera Perunding Utara Sdn Bhd
Quantity Surveyor:	Perunding Kos Bersatu Sdn Bhd
Main Contractor:	Pembinaan Perisai Hebat Sdn Bhd
Landscape Consultant:	Walker & Jansen Sdn Bhd
ESD Consultant:	BSD Consultancy Sdn Bhd

- Estimated energy savings: 18,639.528 kWh/yr ; Estimated water savings: 11.68 m³/yr ; RETV: 21.03 w/m²
- Rainwater Harvesting System.
- Good Natural Ventilation and Day lighting.
- Recycling and Composting Facility.

The Mines

(Existing Non-Residential Building)

GOLD



GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



Client/Developer:	CapitaMalls Malaysia Trust
Facility Management:	Knight Frank Malaysia Sdn Bhd
ESD Consultant:	CapitaLand Group
Energy Audit Consultant:	LJ Energy Sdn Bhd

- Estimated energy savings: 1,287,045 kWh/yr ; Estimated water savings: 174,156 m³/yr.
- Use of carbon-activated filters and ultra-violet bacteria eradication lights for the exhaust system.
- Rainwater harvesting system.
- Use of WELS rated water-efficient fittings.

The Springdale Plot 1 & 3

(New Residential Building)

GOLD



GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



- Estimated energy savings: 2,391,315 kWh/yr
- The building orientation is north south oriented, minimizing the west facing facades and thus reducing building cooling load.
- Geo- Thermal Heat Recovery System to provide efficient cooling for clubhouse and hot water supply for the swimming pool and hot shower water during summer.
- Design for Effective Natural Ventilation and Day-lighting for all lift lobbies & staircases.

Client/Developer:	Shanghai Hongda Property Development Co Ltd
Project Manager:	Hu Qixin
Architect:	P&T Consultants/ SCADI
M&E Engineer:	SCADI
Structural Engineer:	SCADI
Quantity Surveyor:	Davis Langdon & Seah Consultancy Co Ltd
Main Contractor:	Longxin Group
Landscape Consultant:	Site Concept International
ESD Consultant:	Building System & Diagnostics Pte Ltd

The Springdale (Plot 2)

(New Residential Building)

GOLD



GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)



Client/Developer:	Shanghai Hongda Property Development Co Ltd
Architect:	P&T Consultants (Shanghai) Ltd
M&E Engineer:	Shanghai Chengxiang Architectural Design Inst. Co. Ltd
Structural Engineer:	Shanghai Chengxiang Architectural Design Inst. Co. Ltd
Quantity Surveyor:	Davis Langdon & Seah Consultancy Co Ltd
Landscape Consultant:	Site Concept International

- Estimated energy savings: 931,416.44 kWh/yr ; Estimated water savings: 3,281 m³/yr.
- The building orientation is north south oriented, minimizing the west facing facades. West facing facades are designed mainly as RC gable end walls.
- Geo-Thermal Heat Recovery system to provide cooling for clubhouse and hot water for the swimming pool and shower use during summer and provide heating during winter.
- Design for Effective Natural Ventilation and Day-lighting for all lift lobbies & staircases.

Certified

[illegible]

BCA Green Mark

FOR RESTAURANTS (OVERSEAS)

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:

- i. Energy Efficiency
- ii. Water Efficiency
- iii. Sustainable Management and Operation
- iv. Indoor Environment Quality
- v. Other Green Features

KFC Drive-Thru Nilai Square

(Restaurant)

PLATINUM



GREEN MARK AWARD FOR RESTAURANTS (OVERSEAS)



Tenant/Owner :	KFC (Peninsular Malaysia) Sdn Bhd
Renovation Consultant/	Azhar Design Consult
Contractor:	Ngai Thong Plumber & Construction S/B
M&E Engineer:	KBM Consult Sdn Bhd
ESD Consultant:	Metropolitan Green Design & Technology

- 100% LED lightings.
- Energy efficient solar thermal system.
- Halton Hood technology providing innovative and highly efficient heat load, cooking fumes and odour extraction in the kitchen.
- Natural daylight harvesting.
- Water efficiency with rainwater harvesting.
- Photoelectric and motion sensors are deployed at various zones to control lighting by adjusting to the existing situation.
- Integrated BMS.