BCA Green Mark

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Squire Mech Pte Ltd

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Miniwiz Co Ltd

Er. Tony Tay Chye Teck
WSP Consultancy Pte Ltd
BCA GREEN MARK CHAMPION AWARD
Land Transport Authority (LTA) 55

BCA GREEN MARK PEARL AWARD
Republic Plaza Tower 1 57
Marina Bay Financial Centre Tower 3 58
## BCA GREEN MARK AWARD FOR BUILDINGS

### GREEN MARK FOR SUPER LOW ENERGY (SLE) BUILDINGS

<table>
<thead>
<tr>
<th>Building</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Home Team Academy</td>
<td>61</td>
</tr>
<tr>
<td>Kranji Camp III for OES</td>
<td>62</td>
</tr>
<tr>
<td>NTU Administration Building</td>
<td>63</td>
</tr>
<tr>
<td>NTU Block N1.1</td>
<td>64</td>
</tr>
<tr>
<td>NTU Block N3</td>
<td>65</td>
</tr>
<tr>
<td>NTU Nanyang Auditorium</td>
<td>66</td>
</tr>
<tr>
<td>NTU Nanyang House</td>
<td>67</td>
</tr>
<tr>
<td>NTU SHSS</td>
<td>68</td>
</tr>
<tr>
<td>NTU The Wave</td>
<td>69</td>
</tr>
</tbody>
</table>
BCA GREEN MARK AWARD FOR BUILDINGS

GREEN MARK FOR SUPER LOW ENERGY (SLE) BUILDINGS

NTU WKWSCI
NUS Block EA
NUS SDE 1 & 3
NUS SDE 4
Samwoh Smart Hub
Block 1337 Seletar Camp
Surbana Jurong Campus
Tahir Foundation Connexion
Content Page

BCA GREEN MARK AWARD FOR BUILDINGS

NON-RESIDENTIAL BUILDINGS

1 North Coast 78
158 Cecil Street 234
51 Cuppage Road 234
71 Robinson Road 234
88 International Road 243
A&A to Existing Bus Zone of Tuas Checkpoint 79
AIA Tower 243
Akzonobel House 234
Alexandra Point 91
<table>
<thead>
<tr>
<th>Building Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Allium Care Suite</td>
<td>80</td>
</tr>
<tr>
<td>Amara Sanctuary Resort Sentosa</td>
<td>92</td>
</tr>
<tr>
<td>Amara Singapore and 100AM Mall</td>
<td>154</td>
</tr>
<tr>
<td>Angel Singapore Headquarters</td>
<td>151</td>
</tr>
<tr>
<td>Animal Breeding Facility at 9 Perahu Road</td>
<td>234</td>
</tr>
<tr>
<td>Aperia</td>
<td>93</td>
</tr>
<tr>
<td>Ascent</td>
<td>94</td>
</tr>
<tr>
<td>Beauty World Centre</td>
<td>234</td>
</tr>
<tr>
<td>Bideford Hills</td>
<td>81</td>
</tr>
</tbody>
</table>
BCA GREEN MARK AWARD FOR BUILDINGS

NON-RESIDENTIAL BUILDINGS

- Block E1A, Block E2, NUS IT and CELC in NUS: 155
- Blue Hub: 82
- Capital Square: 156
- CapitaSpring: 83
- Chinatown Point: 243
- Cintech I: 157
- Cintech II: 158
- Cintech III: 159
- Cintech IV: 160
## BCA GREEN MARK AWARD FOR BUILDINGS

### NON-RESIDENTIAL BUILDINGS

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>City Gateway</td>
<td>84</td>
</tr>
<tr>
<td>City House</td>
<td>95</td>
</tr>
<tr>
<td>Cleantech One</td>
<td>96</td>
</tr>
<tr>
<td>Concorde Hotel Singapore</td>
<td>243</td>
</tr>
<tr>
<td>Concorde Shopping Centre</td>
<td>161</td>
</tr>
<tr>
<td>Copthorne King’s Hotel Singapore</td>
<td>97</td>
</tr>
<tr>
<td>CSC @ Changi Clubhouse</td>
<td>234</td>
</tr>
<tr>
<td>Defence Science &amp; Technology Agency Tower A</td>
<td>98</td>
</tr>
<tr>
<td>Defence Technology Tower B</td>
<td>99</td>
</tr>
</tbody>
</table>
## BCA GREEN MARK AWARD FOR BUILDINGS

### NON-RESIDENTIAL BUILDINGS

<table>
<thead>
<tr>
<th>Building</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DNV GL Laboratory</td>
<td>235</td>
</tr>
<tr>
<td>DSTA Annex</td>
<td>100</td>
</tr>
<tr>
<td>Eastpoint Mall</td>
<td>101</td>
</tr>
<tr>
<td>EM@Redhill</td>
<td>235</td>
</tr>
<tr>
<td>Expansion of Yio Chu Kang Bus Interchange</td>
<td>152</td>
</tr>
<tr>
<td>FoodAxis @ Senoko</td>
<td>235</td>
</tr>
<tr>
<td>Fortune Centre (MCST 1001)</td>
<td>235</td>
</tr>
<tr>
<td>Galaxis</td>
<td>102</td>
</tr>
<tr>
<td>Gek Poh Shopping Centre</td>
<td>103</td>
</tr>
</tbody>
</table>
## Content Page

### BCA GREEN MARK AWARD FOR BUILDINGS

**NON-RESIDENTIAL BUILDINGS**

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grand Copthorne Waterfront Hotel Singapore</td>
<td>104</td>
</tr>
<tr>
<td>Grundfos Singapore</td>
<td>235</td>
</tr>
<tr>
<td>HDB Mall – 888 Plaza</td>
<td>235</td>
</tr>
<tr>
<td>HDB Mall – Elias Mall</td>
<td>235</td>
</tr>
<tr>
<td>HDB Mall – Pioneer Mall</td>
<td>235</td>
</tr>
<tr>
<td>HDB Mall – Woodlands Mart</td>
<td>235</td>
</tr>
<tr>
<td>HDB Mall – Yew Tee Square</td>
<td>235</td>
</tr>
<tr>
<td>Holiday Inn Express Singapore Orchard Road</td>
<td>105</td>
</tr>
<tr>
<td>Homes @ Hong San</td>
<td>162</td>
</tr>
</tbody>
</table>
## BCA GREEN MARK AWARD FOR BUILDINGS

### NON-RESIDENTIAL BUILDINGS

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hotel Miramar Singapore</td>
<td>235</td>
</tr>
<tr>
<td>Hotel Re!</td>
<td>243</td>
</tr>
<tr>
<td>HSBC Building</td>
<td>243</td>
</tr>
<tr>
<td>HSL Waterfront@Penjuru</td>
<td>236</td>
</tr>
<tr>
<td>Hyflux Innovation Centre</td>
<td>236</td>
</tr>
<tr>
<td>Icon @ IBP</td>
<td>163</td>
</tr>
<tr>
<td>Ikea Alexandra</td>
<td>106</td>
</tr>
<tr>
<td>ISEAS – Yusof Ishak Institute</td>
<td>107</td>
</tr>
<tr>
<td>JEM™</td>
<td>108</td>
</tr>
<tr>
<td>Building</td>
<td>Page</td>
</tr>
<tr>
<td>-----------------------------------------------</td>
<td>------</td>
</tr>
<tr>
<td>JTC Summit</td>
<td>109</td>
</tr>
<tr>
<td>Jurong Fire Station</td>
<td>234</td>
</tr>
<tr>
<td>Jurong Police Division Headquarters</td>
<td>110</td>
</tr>
<tr>
<td>KA Centre</td>
<td>243</td>
</tr>
<tr>
<td>KA Place</td>
<td>243</td>
</tr>
<tr>
<td>Keppel Bay Tower</td>
<td>111</td>
</tr>
<tr>
<td>Keppel Distripark Block 511</td>
<td>236</td>
</tr>
<tr>
<td>Kitchener Complex</td>
<td>236</td>
</tr>
<tr>
<td>LASALLE College of the Arts</td>
<td>236</td>
</tr>
</tbody>
</table>
## BCA Green Mark Award for Buildings

### Non-Residential Buildings

<table>
<thead>
<tr>
<th>Building</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Liat Towers</td>
<td>236</td>
</tr>
<tr>
<td>Lifelong Learning Institute</td>
<td>112</td>
</tr>
<tr>
<td>LOGOS Food21</td>
<td>85</td>
</tr>
<tr>
<td>Lucky Plaza Shopping Centre</td>
<td>113</td>
</tr>
<tr>
<td>Mandai MRT Depot and Mandai Bus Depot</td>
<td>234</td>
</tr>
<tr>
<td>Marina Bay Cruise Centre Singapore</td>
<td>236</td>
</tr>
<tr>
<td>Marina Bay Financial Centre Tower 3</td>
<td>114</td>
</tr>
<tr>
<td>MAX Atria @ Singapore EXPO</td>
<td>115</td>
</tr>
<tr>
<td>Micron Fab 10A</td>
<td>86</td>
</tr>
</tbody>
</table>
BCA GREEN MARK AWARD FOR BUILDINGS

NON-RESIDENTIAL BUILDINGS

Ministry of Manpower Services Centre
Nanyang Executive Centre
National Parks Board (Headquarters)
National University Hospital (NUH) – Kent Ridge Wing (KRW)
National University of Singapore – Faculty of Engineering Block E8
Neuros & Immunos
New Bridge Centre
Nexus @ One- North
Ngee Ann City
BCA GREEN MARK AWARD FOR BUILDINGS

NON-RESIDENTIAL BUILDINGS

Nordic European Centre 166
NUHS Tower Block 167
Ocean Financial Centre 121
ONE@Changi City 168
Orchard Building 236
OUE Bayfront 237
OUE Downtown 1&2 237
P&G Singapore Innovation Center 237
Paragon 243
BCA GREEN MARK AWARD FOR BUILDINGS

NON-RESIDENTIAL BUILDINGS

Parkway Parade 122
Pasir Panjang Terminal Building 237
Peninsula Plaza 237
Plaza 8 @ CBP 237
Raffles Girl's School (Secondary) 87
Ramada Singapore at Zhongshan Park 237
Research Techno Plaza 123
Robert Bosch SEA HQ 124
Robinson 77 237
BCA GREEN MARK AWARD FOR BUILDINGS

NON-RESIDENTIAL BUILDINGS

Sandcrawler 125
School of Art, Design and Media 126
Sembawang Mart 169
Sembcorp Marine Corporate Office 234
Sentosa Family Entertainment Centre 127
Sentosa Golf Club 128
Shophouse 170
Sim Lim Tower 171
Singapore Aviation Academy 129
Content Page

BCA GREEN MARK AWARD FOR BUILDINGS

NON-RESIDENTIAL BUILDINGS

Singapore Expo 172
Singapore Management University – City Campus 130
Singapore Polytechnic Workshop 5A 173
Singapore SportsHub 174
Singapore University of Technology and Design (SUTD) Academic Facilities and Sports Complex 131
SMU Administration Building 132
SMU Prinsep Street Residences 133
Solaris Building 134
South Academic Complex (Main South Spine, Block S1,S2,S2.1,S2,S3,S3.1,S3.2,S4) 135
BCA GREEN MARK AWARD FOR BUILDINGS

NON-RESIDENTIAL BUILDINGS

Tampines 1 175
Tanah Merah 1 176
Tanah Merah 2 177
Teletech Park 178
Temasek Polytechnic Sports & Arts Centre (Blk 26A) 88
Temasek Tourism Academy (Blk 29A) 89
The Alpha 179
The Capricorn 180
The Clementi Mall 237

Content Page
## BCA GREEN MARK AWARD FOR BUILDINGS

### NON-RESIDENTIAL BUILDINGS

<table>
<thead>
<tr>
<th>Building</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>The Concourse</td>
<td>136</td>
</tr>
<tr>
<td>The Galen</td>
<td>137</td>
</tr>
<tr>
<td>The Riverwalk</td>
<td>243</td>
</tr>
<tr>
<td>The Rutherford &amp; Oasis</td>
<td>243</td>
</tr>
<tr>
<td>The SAF Warrant Officers and Specialists Club (The Chevrons)</td>
<td>181</td>
</tr>
<tr>
<td>The Siemens Centre</td>
<td>182</td>
</tr>
<tr>
<td>Tiong Bahru Plaza &amp; Central Plaza</td>
<td>138</td>
</tr>
<tr>
<td>Tourism Court</td>
<td>139</td>
</tr>
<tr>
<td>Tuas Desalination Plant</td>
<td>234</td>
</tr>
</tbody>
</table>
## BCA GREEN MARK AWARD FOR BUILDINGS

### NON-RESIDENTIAL BUILDINGS

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Score</th>
</tr>
</thead>
<tbody>
<tr>
<td>Veolia Singapore Office @ TVC</td>
<td>90</td>
</tr>
<tr>
<td>Village Hotel Albert Court</td>
<td>140</td>
</tr>
<tr>
<td>West Mall</td>
<td>237</td>
</tr>
<tr>
<td>Whitesands Shopping Centre</td>
<td>141</td>
</tr>
<tr>
<td>Woodleigh Village Hawker Centre</td>
<td>153</td>
</tr>
<tr>
<td>Yale-NUS College</td>
<td>142</td>
</tr>
<tr>
<td>yo:HA Commercial @ Tampines</td>
<td>238</td>
</tr>
</tbody>
</table>
Content Page

BCA GREEN MARK AWARD FOR BUILDINGS

RESIDENTIAL BUILDINGS

Admiralty Flora
Alkaff Oasis (Contract 6)
Alkaff Oasis (Contract 7)
Amber Park
Anchorvale Plains
ARTRA
Bedok Beacon
Bedok North Vale
Bedok North Woods

23
183
184
185
238
238
186
238
187
BCA GREEN MARK AWARD FOR BUILDINGS

RESIDENTIAL BUILDINGS

Bedok South Horizon 238
Boulevard 88 188
Buangkok Square 189
Buangkok Woods 238
City Vue @ Henderson 238
Clementi Crest 238
Clementi Gateway 190
Clementi NorthArc 238
Clementi Peaks 239
BCA GREEN MARK AWARD FOR BUILDINGS

RESIDENTIAL BUILDINGS

Crescent and Pioneer Hall (Hall of Residence 17 and 18) 144
Daintree Residence 239
Dakota Breeze 191
Eastcreek@Canberra 239
Fernvale Woods 239
Forest Spring @ Yishun 239
Ghim Moh Edge 192
Golden Lavender 239
HDB Clementi N8C1 193
BCA GREEN MARK AWARD FOR BUILDINGS

RESIDENTIAL BUILDINGS

HDB Sengkang N4C41
Integrated Development at Sengkang Central/ Compassvale Bow (Residential)
Jurong East Vista
Martin Modern
Matilda Sundeck
Meadow Spring @ Yishun
Melody Spring @ Yishun
Northshore Cove
Northshore Residences I & II
Content Page

BCA GREEN MARK AWARD FOR BUILDINGS

RESIDENTIAL BUILDINGS

Northshore Straitsview 201
Northshore Trio 202
Parc Riviera 203
Piermont Grand 143
Proposed Residential Development at Pearl Bank 204
Senja Ridges 205
Senja Valley 239
Sky Vista @ Bukit Batok 206
Sun Breeze 207
### BCA GREEN MARK AWARD FOR BUILDINGS

#### RESIDENTIAL BUILDINGS

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sun Natura</td>
<td>239</td>
</tr>
<tr>
<td>Tampines Green Foliage</td>
<td>208</td>
</tr>
<tr>
<td>Tampines GreenBloom</td>
<td>240</td>
</tr>
<tr>
<td>Tampines GreenEdge</td>
<td>240</td>
</tr>
<tr>
<td>Tampines GreenFlora</td>
<td>240</td>
</tr>
<tr>
<td>Tampines GreenVerge</td>
<td>209</td>
</tr>
<tr>
<td>Tampines GreenView</td>
<td>210</td>
</tr>
<tr>
<td>Tampines Greenvines</td>
<td>211</td>
</tr>
<tr>
<td>Tampines GreenWeave</td>
<td>212</td>
</tr>
</tbody>
</table>
BCA GREEN MARK AWARD FOR BUILDINGS

RESIDENTIAL BUILDINGS

Teck Whye View
The Crest
The Garden Residences
The Poiz Residences & The Poiz Centre
TWIN VEW
Valley Spring @ Yishun
Waterfront I & II @ Northshore
Waterway Sunrise I
Waterway Sunrise II

240
240
213
214
215
216
217
218
219
## BCA Green Mark Award for Buildings

### Residential Buildings

<table>
<thead>
<tr>
<th>Building Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>West Edge @ Bukit Batok</td>
<td>240</td>
</tr>
<tr>
<td>West Plains @ Bukit Batok</td>
<td>240</td>
</tr>
<tr>
<td>West Quarry</td>
<td>240</td>
</tr>
<tr>
<td>West Scape @ Bukit Batok</td>
<td>240</td>
</tr>
<tr>
<td>Whistler Grand</td>
<td>220</td>
</tr>
<tr>
<td>Woodleigh Village</td>
<td>221</td>
</tr>
<tr>
<td>Yishun N6 C17-18 Ferngrove</td>
<td>240</td>
</tr>
</tbody>
</table>
BCA GREEN MARK AWARD FOR BUILDINGS

LANDED HOUSES

44 Springleaf Rise
Luxus Hill (Phase 16)
BCA GREEN MARK AWARD FOR BUILDINGS

SCHOOLS

Admiralty Primary School 240
Anchor Green Primary School 222
Anderson Secondary School 241
Broadrick Secondary School 241
Bukit Panjang Government High School 241
Canberra Primary School 223
Canberra Secondary School 241
Clementi Town Secondary School 241
Edgefield Secondary School 224
BCA GREEN MARK AWARD FOR BUILDINGS

SCHOOLS

Eunos Primary School 241
Evergreen Secondary School 241
Fuhua Primary School 225
Fuhua Secondary School 241
Greenwood Primary School 226
Henry Park Primary School 241
Hillgrove Secondary School 227
Junyuan Primary School 241
Marsiling Secondary School 150
## BCA GREEN MARK AWARD FOR BUILDINGS

### SCHOOLS

<table>
<thead>
<tr>
<th>School</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mee Toh School</td>
<td>228</td>
</tr>
<tr>
<td>Meridian Primary School</td>
<td>229</td>
</tr>
<tr>
<td>Naval Base Secondary School</td>
<td>241</td>
</tr>
<tr>
<td>North Vista Primary School</td>
<td>242</td>
</tr>
<tr>
<td>Pei Hwa Secondary School</td>
<td>230</td>
</tr>
<tr>
<td>Qifa Primary School</td>
<td>242</td>
</tr>
<tr>
<td>Rivervale Primary School</td>
<td>242</td>
</tr>
<tr>
<td>Seng Kang Secondary School</td>
<td>242</td>
</tr>
<tr>
<td>Springfield Secondary School</td>
<td>242</td>
</tr>
</tbody>
</table>
Content Page

BCA GREEN MARK AWARD FOR BUILDINGS

SCHOOLS
Yangzheng Primary School  242
Yuhua Primary School  242
Yuhua Secondary School  231
BCA GREEN MARK AWARD FOR BUILDINGS

HEALTHCARE FACILITIES

Kallang Polyclinic and Long Term Care Facility 145
National Cancer Centre Singapore 146
Polyclinic and Senior Care Centre at Chin Cheng Avenue 147
TTSH Integrated Care Hub 148
Yishun Community Hospital (YCH) & Geriatric Education & Research Institute (GERI) 149
BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

HEALTHIER WORKPLACES

Arup Singapore Pte Ltd 246
C&W Services (S) Pte Ltd 247
Camfil Singapore Pte Ltd 259
City Development Limited (Republic Plaza Level 10-12) 248
City Development Limited (Republic Plaza Level 36) 249
DBS Asia Central 250
DBS Asia Hub 251
Facility Link Pte Ltd 252
Hongkong Land (Singapore) Pte Ltd 253
BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

HEALTHIER WORKPLACES

Keppel Capital International Pte Ltd
Keppel Corporation Ltd
Keppel Land
Prudential Singapore
Raffles Quay Asset Management Pte Ltd

254
255
256
257
258
Content Page

BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

OFFICE INTERIOR

Anderson Mori & Tomotsune (Singapore) LLP 272
Axis Bank Limited, Singapore Branch 272
Bank of China 272
Bank of Singapore Limited 270
Bright Ruby Resources Pte Ltd 272
Bryan Cave Leighton Paisner LLP 272
Capital Tower - Tenant Service Center 261
CDL Properties Limited 272
Child Protective Service, Ministry of Social and Family Development 270
BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

OFFICE INTERIOR

China Construction Bank Corporation Singapore Branch 272
City Serviced Offices 272
Clearstream Banking S.A 272
CPG Consultants Pte Ltd Office @ Westgate Tower 266
Cyber Security Agency of Singapore 270
DBS Asia Gateway 267
DBS Asia X 270
Distrii Singapore Pte Ltd 272
EC World Asset Management Pte Ltd 272
Content Page

BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

OFFICE INTERIOR

Genesys Telecommunications Laboratories Asia Pte Ltd 273
Government Technology Agency (GovTech Hive 9) 270
Government Technology Agency of Singapore 270
ICICI Bank Limited 273
ING Bank N.V., Singapore Branch 262
Jeppesen Asia/Pacific Pte Ltd 273
K&L Gates Straits Law LLC 273
KBC Bank NV Singapore Branch 270
Latham & Watkins LLP 273
## BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

### OFFICE INTERIOR

<table>
<thead>
<tr>
<th>Project Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 3 Office @ Infineon Technologies Asia Pacific Pte Ltd</td>
<td>270</td>
</tr>
<tr>
<td>Lloyds Bank Corporate Market plc, Singapore Branch</td>
<td>273</td>
</tr>
<tr>
<td>Lombard Odier (Singapore) Ltd</td>
<td>270</td>
</tr>
<tr>
<td>Ministry of Communication and Information (MCI)</td>
<td>263</td>
</tr>
<tr>
<td>Ministry of Education (MOE Prefab Office at 51 Grange Road)</td>
<td>270</td>
</tr>
<tr>
<td>Mitsubishi UFJ Financial Group</td>
<td>271</td>
</tr>
<tr>
<td>Murex Southeast Asia Pte Ltd</td>
<td>267</td>
</tr>
<tr>
<td>National Bank of Kuwait S.A.K.P., Singapore Branch</td>
<td>273</td>
</tr>
<tr>
<td>Network Architects Pte Ltd</td>
<td>273</td>
</tr>
</tbody>
</table>
BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

OFFICE INTERIOR

POSB Newton Office
Reed Smith Pte Ltd
Rhodium Resources Pte Ltd
Tokyo Gas Asia Pte Ltd
Vinda Singapore Pte Ltd
Visa Worldwide Pte Ltd

273
268
273
273
269
264
## BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

### SUPERMARKET

<table>
<thead>
<tr>
<th>Supermarket Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>FairPrice Finest Supermarket at Serangoon Garden myVillage</td>
<td>277</td>
</tr>
<tr>
<td>FairPrice Finest Supermarket at Zhongshan Mall</td>
<td>275</td>
</tr>
<tr>
<td>FairPrice Supermarket at Ang Mo Kio Blk 712</td>
<td>277</td>
</tr>
<tr>
<td>FairPrice Supermarket at Kampung Admiralty</td>
<td>276</td>
</tr>
<tr>
<td>FairPrice Supermarket at Punggol Oasis</td>
<td>276</td>
</tr>
<tr>
<td>FairPrice Supermarket at Toa Payoh A</td>
<td>276</td>
</tr>
</tbody>
</table>
## BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

### RETAIL

<table>
<thead>
<tr>
<th>Branch</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>DBS Ang Mo Kio Central Branch</td>
<td>286</td>
</tr>
<tr>
<td>DBS Asia Treasures Lounge at Singapore Changi Airport Terminal 2</td>
<td>287</td>
</tr>
<tr>
<td>DBS Asia Treasures Lounge at Singapore Changi Airport Terminal 3</td>
<td>301</td>
</tr>
<tr>
<td>DBS Bedok Branch</td>
<td>288</td>
</tr>
<tr>
<td>DBS Hougang Branch</td>
<td>289</td>
</tr>
<tr>
<td>DBS NUS Remix Branch</td>
<td>290</td>
</tr>
<tr>
<td>DBS Raffles Link Branch</td>
<td>291</td>
</tr>
<tr>
<td>DBS Treasures at Gleneagles</td>
<td>301</td>
</tr>
<tr>
<td>DBS Treasures at Serangoon Garden and DBS Serangoon Garden Branch</td>
<td>292</td>
</tr>
</tbody>
</table>
Content Page

BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

RETAIL

DBS Treasures Exclusive Safekeeping Centre and DBS Treasures at Siglap 292
DBS Treasures Suntec City and DBS Suntec City Branch 279
POSB Clementi Central Branch 293
POSB ITE College Central Branch 280
POSB Jurong East Central Branch 294
POSB Jurong Point Branch 295
POSB Kampung Admiralty Branch 296
POSB Ngee Ann City Branch 281
POSB Pasir Ris East Branch 297
BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

RETAIL

POSB Paya Lebar Branch
POSB Seletar Mall Branch
POSB Tampines Central Branch
POSB Tanjong Pagar Branch
POSB Woodlands West Branch

282
283
298
284
299
# Content Page

## BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

### DATA CENTRES

- Digital Realty
- Equinix SG1 Data Centre
- Equinix SG3 Data Centre
- Global Switch Singapore Woodlands
- PCS Security – T9 Data Centre
- Singapore Tourism Board Data Centre
- STT Defu 2

<table>
<thead>
<tr>
<th>Data Centre</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital Realty</td>
<td>302</td>
</tr>
<tr>
<td>Equinix SG1 Data Centre</td>
<td>307</td>
</tr>
<tr>
<td>Equinix SG3 Data Centre</td>
<td>305</td>
</tr>
<tr>
<td>Global Switch Singapore Woodlands</td>
<td>303</td>
</tr>
<tr>
<td>PCS Security – T9 Data Centre</td>
<td>306</td>
</tr>
<tr>
<td>Singapore Tourism Board Data Centre</td>
<td>306</td>
</tr>
<tr>
<td>STT Defu 2</td>
<td>304</td>
</tr>
</tbody>
</table>
BCA GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES

RESTAURANTS
PastaMania 309
Tower Club 309
Content Page

BCA GREEN MARK AWARD FOR BUILDINGS (OVERSEAS PROJECTS)

Chengdu Century Park (Residential) 331
Citadines Millenium Ortigas Manila 331
EcoNest 331
EcoSky (Commercial) 317
Exchange Square Phnom Penh 318
Exchange Tower 315
Gongyuan Yihao Guangchang 331
Graha CIMB Niaga 313
Capitamall Westgate at Qiaokou District, Hubei (Gutian Integrated Development) 319
<table>
<thead>
<tr>
<th>Project Description</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>International Financial Centre Tower 2, Jakarta</td>
<td>311</td>
</tr>
<tr>
<td>Residensi Vogue 1</td>
<td>321</td>
</tr>
<tr>
<td>M-City</td>
<td>331</td>
</tr>
<tr>
<td>MENARA KEN TTDI</td>
<td>312</td>
</tr>
<tr>
<td>Palm Residence</td>
<td>327</td>
</tr>
<tr>
<td>PT. WIK Far East Batam (Phase 1 &amp; 2)</td>
<td>320</td>
</tr>
<tr>
<td>Saigon Centre Phase 2 &amp; 3 – Commercial Tower</td>
<td>322</td>
</tr>
<tr>
<td>Saigon Centre Phase 2 &amp; 3 – Retail Podium</td>
<td>323</td>
</tr>
<tr>
<td>Seasons Avenue</td>
<td>331</td>
</tr>
</tbody>
</table>
### BCA GREEN MARK AWARD FOR BUILDINGS (OVERSEAS PROJECTS)

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sinarmas Land Plaza BSD</td>
<td>324</td>
</tr>
<tr>
<td>Sinarmas Land Plaza, Menara 2</td>
<td>316</td>
</tr>
<tr>
<td>Sinarmas Land Plaza, Menara 3</td>
<td>325</td>
</tr>
<tr>
<td>Southbay Plaza</td>
<td>326</td>
</tr>
<tr>
<td>Vista Verde</td>
<td>331</td>
</tr>
<tr>
<td>Waterfront Residence</td>
<td>327</td>
</tr>
<tr>
<td>World Trade Centre 3</td>
<td>328</td>
</tr>
</tbody>
</table>
Content Page

BCA GREEN MARK AWARD FOR NON-BUILDINGS (OVERSEAS PROJECTS)

Eco Sanctuary 331
Proposed Construction of Pulau Muara Bridge, Road and Utilities 331
Green Office Park 330
KEN HOLDINGS BHD & CommonGround @ MENARA KEN TTDI 314
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.

In 2016, BCA introduced a new sub-category called BCA Green Mark PlatinumSTAR Champion in recognition of the efforts of those who have achieved 50 or more building projects with Green Mark Platinum rating.

There are two categories for this award:

- BCA Green Mark Champion
- BCA Green Mark Platinum Champion
  - BCA Green Mark PlatinumSTAR Champion
  - BCA Green Mark Platinum Champion

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

<table>
<thead>
<tr>
<th>Total no. of buildings rated</th>
<th>BCA Green Mark Champion</th>
<th>BCA Green Mark Platinum Champion</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Platinum Champion</td>
</tr>
<tr>
<td>Green Mark Gold &amp; above</td>
<td>At least 10</td>
<td>At least 50</td>
</tr>
<tr>
<td>Green Mark GoldPLUS &amp; above</td>
<td>At least 6</td>
<td>At least 30</td>
</tr>
<tr>
<td>Green Mark Platinum</td>
<td>At least 3</td>
<td>At least 15</td>
</tr>
</tbody>
</table>
The Land Transport Authority (LTA) is a statutory board under the Ministry of Transport which spearheads land transport developments in Singapore. LTA is responsible for planning, designing, building and maintaining a land transport infrastructure and system that is connected and sustainable, and meets diverse transport needs. It explores and develops new technologies and innovative solutions to cater to the varied transport needs and lifestyles of commuters. LTA also supports the economic development of Singapore by providing a reliable and connected transport network, and promotes a safe, gracious and inclusive transport system. LTA also aims to provide a greener public transport system.

The Kim Chuan Depot Extension (KCDE) adopts design strategies to ensure energy efficiency and the usage of sustainable products certified under the Singapore Green Labelled Scheme. The KCDE, which will expand the capacity of Kim Chuan Depot when the Circle Line 6 is completed, received the BCA Green Mark Platinum Award for its environmentally sustainable design that leads to at least 30% in energy savings.

The East Coast Integrated Depot (Rail Depot) also received the BCA Green Mark Platinum Award for its energy and water saving features. The depot has an energy efficient water-cooled chilled plant, a solar absorption chiller, and an energy efficient lighting system that improves the lighting power budget by 40%. The depot’s other features include the use of a rooftop solar photovoltaic system, MERV 14 air filter and UV light for air handling units, recycling and reusing of train wash water, and buildings designed with natural ventilation spaces.

LTA is honoured to be recognised with the Green Mark Champion Award, which is a validation that we have carefully considered the environmental impact of our work, and put in various measures to promote environmental sustainability.
The BCA Green Mark (GM) Pearl Award is a prestigious Award that recognises the strong commitment of building owners/landlords and tenant organisations of the same project or building working in tandem to achieve greater environmental sustainability.

Held annually, the Award is given to landlords who have helped their tenants to secure Green Mark certification for their tenanted premises. To be eligible for this Award, one of the key requirements is for at least 50% of the tenanted space within the building to be Green Mark Certified, within a base building which is GM GoldPLUS or higher. There are two tiers of the Award namely:

- **Green Mark Pearl Award**
- **Green Mark Pearl Prestige Award**

The Awards are given out for the following three building types:

i. Commercial offices  
ii. Retail malls  
iii. Business park developments
In line with its ethos of ‘Conserving as We Construct’, for over two decades, Asia’s leading eco-developer CDL has remodelled its operations around a triple bottom line strategy focusing 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.

CDL’s flagship building, Republic Plaza Tower 1, a recipient of this year’s Green Mark Pearl Award, was recertified Green Mark Platinum in 2018. Completed in 1996, Republic Plaza, one of Singapore’s tallest skyscrapers, is a Grade A office development located in the heart of Singapore’s Central Business District.

Republic Plaza is directly connected to the Raffles Place MRT station via a pedestrian tunnel and a three to five minutes’ walk from Telok Ayer MRT Station. Republic Plaza comprises a 66-storey office building and an annexed 20-storey podium block.

One of the major retrofitting works that Republic Plaza underwent involved the replacement of its 15-year-old chiller system which was no longer operating at its optimal level. Two existing chiller plants were combined into a smaller but more efficient system which is expected to help save close to 4,000,000 kWh of energy, translating to an annual savings of approximately $870,000.

As at 1 January 2018, under CDL’s Green Lease Partnership programme, 100% of the tenants at Republic Plaza have committed to adopting green practices within their premises. For example, Distrii Singapore Pte Ltd, adopted the use of 100% LED lightings and achieved more than 50% improvement in their lighting power density. Bank of Singapore Limited, implemented proper zoning and scheduling control with toggle switches to minimise energy consumption during after-office hours for their air conditioning and lightings. A mini gym, ergonomics monitor stands, healthier snack choices and weekly fruits’ day are also provided to enhance staff well-being.

To encourage greater energy conservation amongst tenants, CDL also introduced a 1% electricity rebate for those who attain 2% savings over the previous quarter’s bill.

Distrii, Bank of Singapore Limited, Latham & Watkins LLP, Clearstream Banking S.A, China Construction Bank Corporation, Singapore Branch and 17 other office tenants have achieved Green Mark certification.

Landlord/Owner: City Developments Limited (CDL)
MARINA BAY FINANCIAL CENTRE TOWER 3

BCA GREEN MARK PEARL AWARD

Marina Bay Financial Centre (MBFC) Tower 3 is a 46-storey Grade A office building with a total GFA of approximately 151,000 square metres. It obtained TOP and CSC on 21st March 2012 and 18th September 2012 respectively, and is owned by DBS, Keppel REIT and Hongkong Land through Central Boulevard Development Pte Ltd.

MBFC Tower 3 which is managed by Raffles Quay Asset Management (RQAM) is part of the larger MBFC development which comprises three premium office towers, a subterranean retail mall that connects all three office towers, and a luxury residential building that was jointly developed by CK Asset Holdings Limited, Hongkong Land and Keppel Land.

From architecture blueprint to ongoing building operations, MBFC Tower 3’s design, facilities and operations prioritise safety, security, occupant comfort, environmental impact and sustainability. The building’s green features include an outdoor weather station that measures external temperatures to be used as set-point for indoor air conditioning; a system to collect condensate water for general purpose cleaning; and green building monitors that publish energy and water consumption.

RQAM adopts green leases and green fit-out guides, and works collaboratively with tenants to ensure that they fit-out and operate in accordance with the agreed standards. To supplement its green efforts, RQAM actively engages stakeholders through various channels, from regular meetups to leveraging digital platforms to regularly disseminate energy and water conservation tips.

Fostering a green community within the properties it manages is one of RQAM’s key objectives. Hence, the asset manager strongly supports green initiatives and is relentless in promoting awareness and adoption of green practices. RQAM’s sustained efforts have enabled MBFC Tower 3 to be awarded the BCA Green Mark Pearl Award for the second time.
The BCA Green Mark scheme was launched in 2005 as a key strategic programme to raise the awareness of sustainable and environmentally friendly buildings. It evaluates buildings for their environmental impact and performance. The benefits of Green Mark Buildings include cost savings resulting from efficient use of key resources such as energy and water, leading to lower operational and maintenance costs. Other less tangible benefits include enhanced occupant productivity and health due to good indoor environmental quality.

Buildings are assessed under the following criteria:
- Energy Efficiency
- Water Efficiency
- Environment Protection
- Indoor Environmental Quality
- Other Green Features

The Awards will be given out for the following build types:
1. Non-Residential Buildings (New & Existing)
2. Residential Buildings (New & Existing)
3. Schools
4. Landed Houses
5. Healthcare Facilities
BCA introduced the BCA Green Mark for Super Low Energy (GM SLE) Buildings during International Green Building Conference 2018 (IGBC 2018) on 5 September 2018. This voluntary certification framework targets new and existing non-residential buildings such as offices, commercial/retail, industrial, institutions and schools, including demonstration projects from Research & Innovation efforts. The new scheme aims to encourage industry to push boundaries on energy efficiency to achieve best-in-class building energy performance in a cost effective manner. It is applicable for new and existing non-residential buildings including commercial, industrial and institutional buildings as well as schools.

Green Mark Gold rating is the minimum requirement for SLE and ZE buildings in order to meet the holistic environmental sustainability indicators, such as greenery, indoor environmental quality and other non-energy aspects. This ensures the overall environmental sustainability performance indicators are being looked at holistically, while pushing the boundaries in terms of building energy performance.

Under BCA Green Mark for SLE, there are two building categories: (a) Super Low Energy buildings and (b) Zero Energy Buildings (refer to Table 1)

<table>
<thead>
<tr>
<th>SLE/ZE certification</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Super Low Energy</td>
<td>To achieve at least 60% energy savings through adopting energy efficient measures and onsite renewable energy based on 2005 building code level.</td>
</tr>
<tr>
<td>Zero Energy</td>
<td>Use of onsite and off-site renewable energy to generate more than 100% of energy needed for building operation including plug load.</td>
</tr>
</tbody>
</table>
HOME TEAM ACADEMY
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (SUPER LOW ENERGY)

- Estimated energy savings: 3,179,331.67 kWh/yr
- Water-cooled Chiller System efficiency less than 0.62 kW/RT
- Building with 100% of LED lighting
- Daylighting and Natural Ventilation of Carpark, Stairs

Client/Developer: Ministry of Home Affairs
ESD Consultant: SAC Energy Pte Ltd
Facility Management: C&W Services (S) Pte Ltd
KRANJI CAMP III FOR OES
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

- Estimated energy savings: 112,784.33 kWh/yr;
- Estimated water savings: 4,496.54 m³; ETTV: 28.42 W/m²
- Use of energy efficiency air-conditioning system with design system efficiency of 0.68 kW/RT
- Efficient lighting with the use of LED
- All water fittings are rated excellent under WELS
- Extensive usage of sustainable products and low VOC paints
- CFD simulations are conducted to ensure good ventilation
- Installation of 220kWp PV system that generate sufficient energy greater than the building energy consumption of 245,000kWh/yr.

Client/Developer: Defence Science & Technology Agency (DSTA)
Architect: ID Architects Pte Ltd
M&E Engineer: PDC Consultant Engineers
Structural Engineer: E2000 Pte Ltd
Main Contractor: Quek Hock Seng Construction Pte Ltd
ESD / Green Consultant: GreenA Consultants Pte Ltd
NANYANG TECHNOLOGICAL UNIVERSITY – ADMINISTRATION BUILDING
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

- Efficient water-cooled air-conditioning system with operating system efficiency
- Variable speed drives for pumps and cooling towers
- Energy efficient LED lighting for all areas and task lighting for working area
- Attained PUB Water Efficient Building certification
- Provision of solar photovoltaic panels that offsets 100% of total building energy consumption
- Use of motion sensors for toilets and staircases
- Intelligence energy management system to manage building energy consumption and smart ACMV optimization
- Water leakage detection system
- Passive Displacement Cooling system

Building Owner: Nanyang Technological University
Facility Management: SWM Pte Ltd
ESCO: -
ESD / Green Consultant: SWM Pte Ltd
NANYANG TECHNOLOGICAL UNIVERSITY – BLOCK N1.1

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

- Efficient water-cooled air-conditioning system with operating system efficiency
- Variable speed drives for pumps and cooling towers
- Energy efficient LED lighting for all areas and task lighting for working area
- Attained PUB Water Efficient Building certification
- Provision of solar photovoltaic panels that offsets 100% of total building energy consumption
- Use of motion sensors for toilets and staircases
- Intelligence energy management system to manage building energy consumption and smart ACMV optimization
- Water leakage detection system
- Passive Displacement Cooling system

Building Owner: Nanyang Technological University
Facility Management: SMN Pte Ltd
ESCO: SMN Pte Ltd
ESD / Green Consultant: SMN Pte Ltd
NANYANG TECHNOLOGICAL UNIVERSITY – BLOCK N3

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (SUPER LOW ENERGY)

- Efficient water-cooled air-conditioning system with operating system efficiency
- Variable speed drives for pumps and cooling towers
- Energy efficient LED lighting for all areas and task lighting for working area
- Attained PUB Water Efficient Building certification
- Provision of solar photovoltaic panels that offsets 100% of total building energy consumption
- Use of motion sensors for toilets and staircases
- Intelligence energy management system to manage building energy consumption and smart ACMV optimization
- Water leakage detection system
- Passive Displacement Cooling system

Building Owner: Nanyang Technological University
Facility Management: SMM Pte Ltd
ESCO: -
ESD / Green Consultant: SMM Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

- High Water-cooled chilled water system with efficiency of 0.642 kW/RT
- High Efficient LED Lighting
- Provision of PV system with generation of 700,000 kWh electricity per year
- Obtain PUB water efficient building certification

Building Owner: Nanyang Auditorium
Facility Management: SWM Pte Ltd (A member of Surbana Jurong)
ESD / Green Consultant: SWM Pte Ltd (A member of Surbana Jurong)
NANYANG TECHNOLOGICAL UNIVERSITY
- NANYANG HOUSE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

- Energy efficient LED lighting for all areas and task lighting for working area
- Attained PUB Water Efficient Building certification
- Provision of solar photovoltaic panels that offsets about 100% of total building energy consumption
- Use of motion sensors for toilets and staircases
- Intelligence energy management system to track and manage building energy consumption

<table>
<thead>
<tr>
<th>Building Owner</th>
<th>Nanyang Technological University</th>
</tr>
</thead>
<tbody>
<tr>
<td>Facility Management</td>
<td>SWM Pte Ltd</td>
</tr>
<tr>
<td>ESCO</td>
<td>-</td>
</tr>
<tr>
<td>ESD / Green Consultant</td>
<td>SWM Pte Ltd</td>
</tr>
</tbody>
</table>
GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

- Efficient water-cooled air-conditioning system with operating system efficiency
- Variable speed drives for pumps and cooling towers
- Energy efficient LED lighting for all areas and task lighting for working area
- Attained PUB Water Efficient Building certification
- Provision of solar photovoltaic panels that offsets about 100% of total building energy consumption
- Use of motion sensors for toilets and staircases
- Intelligence energy management system to track building energy consumption
- Water leakage detection system
- Passive Displacement Cooling system

Building Owner: Nanyang Technological University
Facility Management: SWM Pte Ltd
ESCO: -
ESD / Green Consultant: SWM Pte Ltd
NANYANG TECHNOLOGICAL UNIVERSITY
- THE WAVE
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

- Passive Displacement Cooling System (Induction Air Distribution System)
- Sustainable construction using Engineered Wood System for whole building minimizing heat gain and improving work productivity
- Energy efficient Chiller Plant System
- Extensive use of LED lights and energy efficient lighting system
- Operable façade design for maximum natural ventilation and sunlight effect.
- Waste heat recovery for hot water shower
- Extensive use of photo and motion sensor for lighting control
- Water efficiency building awarded by PUB and extensive use WELS “excellent” water fittings.

Building Owner: Nanyang Technological University
Facility Management: SMMPte Ltd
ESCO: -
ESD / Green Consultant: SMMPte Ltd
GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

- Efficient water-cooled air-conditioning system with operating system efficiency of 0.642 kW/RT
- Use of variable speed drives for pumps and cooling towers
- Use of energy efficient LED lighting for all areas and task lighting for working area
- Attained PUB Water Efficient Building certification
- Provision of solar photovoltaic panels that offsets about 100% of total building energy consumption
- Use of intelligence energy management system to track building energy consumption
- Provision of water leakage detection system
- Use of Passive Displacement Cooling system
NATIONAL UNIVERSITY OF SINGAPORE, FACULTY OF ENGINEERING BLOCK EA

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (SUPER LOW ENERGY)

• Estimated energy savings: 699,395kWh/yr;
• Highly efficient chiller plant system with efficiency of 0.57 kW/RT
• Energy-efficient air distribution system achieving 41% improvement over baselines, with CO₂ sensors available to regulate fresh air intake to AHUs.
• Smart water sub-meters are installed for remote monitoring of water consumption at laboratories & toilets.
• Use of water fittings rated “Excellent” under the PUB, Water Efficiency Labelling Scheme (WELS)
• Extensive use of environmental-friendly products certified by SGBC & SGLS for A&A works.
• Power meters installed for monitoring of energy consumption by individual AHUs, FCUs & MV fans.
GREEN MARK AWARD FOR BUILDINGS | PLATINUM (SUPER LOW ENERGY)

- Estimated energy savings: 605,596.61 kWh/yr;
  Estimated water savings: 1,550.4 m³, ETTV: 39.06 W/m²
- Use of extensive sun shading with double glazing attribute to an ETTV of 39.06 W/sqm
- Highly efficient chiller plant system with efficiency of 0.57 kW/RT
- Use of 100% LED lighting
- Hybrid ventilation system to provide tempered air with elevated air speed.
- Motion sensors for staircases and toilets
- Use of water fittings rated “Excellent” under the PUB, Water Efficiency Labelling Scheme (WELS)

Client/Developer: National University of Singapore
Architect: CPG Consultants Pte Ltd
M&E Engineer: WSP Consultancy Pte Ltd
Project Manager: NUS Office of Estate Development
Facility Manager: NUS Office of Facilities Management
ESD / Green Consultant: WSP Consultancy Pte Ltd & IEN Consultants
NATIONAL UNIVERSITY OF SINGAPORE, SCHOOL OF
DESIGN AND ENVIRONMENT, SDE 4
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

Client/Developer
National University of Singapore

Architect
Surbana Jurong Consultants Pte. Ltd.

M&E Engineer
Surbana Jurong Consultants Pte. Ltd.

Structural Engineer
Surbana Jurong Consultants Pte. Ltd.

Main Contractor
Kajima Overseas Asia Pte. Ltd.

Landscape Consultant
Surbana Jurong Consultants Pte. Ltd.

Project Manager
NUS Office of Estate Development

ESD/ Green Consultant
Surbana Jurong Consultants Pte. Ltd.

• Estimated energy savings: 292,900kWh/yr;
  Estimated water savings: 6,607m³; ETTV: 39.6W/m²
• First Institute of Higher Learning net-zero energy building in Singapore
• Hybrid ventilation system to provide pre-conditioned air with elevated air speed
• Highly efficient chiller plant system with efficiency of 0.57kW/RT
• With daylight utilisation maximised through architectural design, energy savings are further enhanced through a network of photocell and occupancy sensors
• Extensive roof top coverage of solar PV array allows SDE 4 to generate all its energy requirement within the building footprint
• Water saving features including rainwater harvesting, condensate water recycling, and greywater recycling
• Harvesting of rainwater for use in toilet flushing and irrigation
SAMWOH SMART HUB
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (POSITIVE ENERGY)

- Estimated energy savings: 879,275.8 kWh/yr;
- Estimated water savings: 1,434.45 m³, ETTV: 35.01 W/m²
- Glazing is minimized in the East and West facing facade
- FM operations enhanced through adoption of 6D BIM
- State-of-the-art Chiller come with integrated DC/AC inverter for direct electrical feed by Solar Panels.
- Smart DC-motor fan coil units with programmable AI controller to ensure efficient operation.
- DC motor cooling tower with low drift loss.
- Solar driven pump for domestic water.
- Energy efficient measures has been adopted in the building to achieve an overall energy savings of 47.55% from baseline.
- Solar PV used to replace at least 110% of total building energy consumption
- EMS/iBMS system is enhanced with smart AI features that will ensure building performs optimally to corresponding demand.

Client/Developer
AC Consortium Pte Ltd
BELMACS Pte Ltd
AC Design Associates
Engineers Alliance Pte Ltd
E S Tang Consultants
ZEB Technology Pte Ltd
Hua Siah Construction Pte Ltd

Architect
AC Consortium Pte Ltd
BELMACS Pte Ltd
A.C. Design Associates
Engineers Alliance Pte Ltd
E S Tang Consultants
ZEB Technology Pte Ltd
Hua Siah Construction Pte Ltd

M&E Engineer
BELMACS Pte Ltd
Engineers Alliance Pte Ltd

Structural Engineer
Engineers Alliance Pte Ltd

Interior Designer
AC Design Associates

BIM Manager
ZEB Technology Pte Ltd

Main Contractor
Hua Siah Construction Pte Ltd

Quantity Surveyor

ESD Consultant
ZEB Technology Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS (ZERO ENERGY)

- Predominantly designed with natural ventilation
- 240 kWp solar panels for harnessing renewable energy
- 4-ticks air-cooled air-conditioning system with 0.81 kW/ton
- Use of Excellent rating water fittings

Client/Developer: Defence Science & Technology Agency
Facility Manager: DSTA FM / CMB Pte Ltd
ESD / Green Consultant: Rankine & Hill (Singapore) Pte Ltd
SURBANA JURONG CAMPUS
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (SUPER LOW ENERGY)

- Estimated energy savings: 4,831,720kWh/yr;
  Estimated water savings: 36,508m³, ETTV: 35W/m²
- Super Low Energy Building (>40% improvement in Energy Efficiency)
- High efficiency Air conditioning system (0.55kW/RT) with use of
  Under Floor Air Distribution system (0.15kW/RT) with a resultant total
  system efficiency of 0.7kW/RT
- Onsite renewable energy generation of 430MWh/year – equivalent
to 4% of total building consumption
- Smart and integrated building management system
- Optimised building massing for biophilic design, quality views, access
to daylight and self shading
- Live energy and water monitoring dashboard

Client/Developer
Surbana Jurong Capital (JID) Pte Ltd

Architect
Surbana Jurong Consultants Pte Ltd

Principal Design Consultant
Safdie Architects

Landscape Architect
Surbana Jurong Consultants Pte Ltd

ESD Consultant
Surbana Jurong Consultants Pte Ltd

M&E Engineer
Surbana Jurong Consultants Pte Ltd

Structural Engineer
KTP Consultants Pte Ltd
(a member of Surbana Jurong)

Quantity Surveyor
Three Sixty Cost Management Pte Ltd
(a member of Surbana Jurong)

Main Contractor
Boustead Projects E&C Pte Ltd
TAHIR FOUNDATION CONNEXION

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (ZERO ENERGY)

<table>
<thead>
<tr>
<th>Client/Developer</th>
<th>Singapore Management University</th>
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</thead>
<tbody>
<tr>
<td>Architect</td>
<td>MKPL Architects Pte Ltd</td>
</tr>
<tr>
<td>M&amp;E Engineer</td>
<td>Meinhardt (Singapore) Pte Ltd</td>
</tr>
<tr>
<td>Structural Engineer</td>
<td>Meinhardt (Singapore) Pte Ltd</td>
</tr>
<tr>
<td>Quantity Surveyor</td>
<td>Rider Levett Bucknall LLP</td>
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<tr>
<td>Main Contractor</td>
<td>Lian Ho Lee Construction Pte Ltd</td>
</tr>
<tr>
<td>Landscape Consultant</td>
<td>Salad Dressing</td>
</tr>
<tr>
<td>ESD Consultant</td>
<td>Web Earth Pte Ltd</td>
</tr>
</tbody>
</table>

- On-site net-zero energy building with Energy Usage Index (EUI) of 58.5 kWh/m²/year.
- Self shading building form, shading devices, insulated building envelope with low-E double glazing resulting in an ETTV of 25.6 W/m².
- Optimized lighting design with daylight utilisation, dimming control, photocell & occupancy sensor and LED lighting.
- Highly efficient Chiller plant system with efficiency of 0.53 kW/RT.
- Innovative Enhanced Passive Displacement Cooling (EPDC) System; saving 92% of air distribution energy.
- SMART building control system controls lighting, chilled water, fresh air, plug loads, and AV equipment at each zone of the building.
- Mass Engineered Timber (MET) structure reduces embodied carbon of the building.
1 NORTH COAST
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- High performing building envelope with an ETTV of 27.63 W/m²
- Energy efficient water-cooled chilled water plant with design system efficiency of 0.58kW/RT
- 100% LED lighting fixtures resulting to energy savings of 50.7%
- Adequate ventilation for collaboration spaces demonstrated through computational fluid dynamics
- Water efficient use through 100% “Excellent” WELS rated water fittings
- Courtyard integrated with rain garden for rainwater attenuation and harvesting
- Sustainable materials resourcing through extensive use of environmental friendly products

Client/Developer: JTC Corporation
Architect: Aedas Pte Ltd
M&E Engineer: WSP Consultancy Pte Ltd
Structural Engineer & ESD Consultant: Arup Singapore Pte Ltd
Quantity Surveyor: Rider Levett Bucknall LLP
Main Contractor: Lum Chang Building Contractors Pte Ltd
**A&A TO EXISTING BUS ZONE OF TUAS CHECKPOINT**

**New Non-Residential Building**

**GREEN MARK AWARD FOR BUILDINGS | PLATINUM**

- Energy-efficient chilled water plant – 0.622 kW/RT (kilowatt/Refrigeration Ton)
- Variable Frequency Drives (VFD) for Pumps & Cooling tower fans
- Extensive use of Green Concrete with recycled aggregates (Recycled Concrete Aggregates [RCA] & Washed Copper Slag [WCS])
- Use of Excellent Water Efficiency Labelling Scheme (WELS) rated water fittings
- Extensive use of locally certified environmentally friendly products for the building

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**Client/Developer**
Immigration & Checkpoints Authority

**Architect**
Design International Architects LLP

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

**Structural Engineer**
ATC Consulting Pte Ltd

**Quantity Surveyor**
OTN Building Cost Consultants Pte Ltd

**Main Contractor**
Union Contractors Pte Ltd

**Project Manager**
CESMA International Pte Ltd
ALLIUM CARE SUITE
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 528,676kWh/yr;
  Estimated water savings: 11,666m³, ETTV: 32.65W/m²
- Energy efficient VRV air conditioning system Total System Efficiency of 0.79kW/RT (0.67kW/RT + 0.12kW/RT_{Air})
- Onsite renewable energy generation of 29,184kWh/year – equivalent to 3% of total building consumption
- Care suites designed to allow for either natural ventilation or air conditioning – smart control system automatically shuts off AC when windows are opened
- Lush and verdant integrated landscape to promote health and wellbeing

Client/Developer: Allium Healthcare (Singapore) Pte Ltd
Architect: Metaphor Design + Architecture Pte Ltd
M&E Engineer: Elead Associates Pte Ltd
Structural Engineer: AA Engineering Consultants
Main Contractor: Tokyu Construction Co. Ltd
ESD Consultant: Earth-ImWind Private Limited
**BIDEFORD HILLS**

New Non-Residential Building

**GREEN MARK AWARD FOR BUILDINGS | PLATINUM**

- Spectrally selective glazing with low heat gain and higher daylight penetration.
- Optimized façade with Extensive shading, with ETTV of 33.84 W/m².
- Use of 100% LED lighting for entire development.
- Extensive use of sustainable green products and water efficient fittings.
- 99.5% of total demolition Waste diverted from landfill, during demolition of existing building.
- Solar Hot water for 100% Service Apartment Hot water requirements.

**Client/Developer**  
SC Aetas Holdings Pte. Ltd.

**Architect**  
RSP Architects Planner & Engineers (Pte) Ltd.

**M&E Engineer**  
Squire Mech Pte. Ltd.

**Structural Engineer**  
RSP Architects Planner & Engineers (Pte) Ltd.

**Main Contractor**  
Dragages Singapore Pte Ltd

**ESD Consultant**  
Atelier Ten (Asia) Pte. Ltd.

**Landscape Consultant**  
Nikken Sekkei Ltd

**Lighting Designer**  
Nipek Pte Ltd

**Quantity Surveyor**  
ThreeSixty Cost Management Pte. Ltd.
BLUE HUB

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

• Efficient chiller plant system with performance of 0.576 kW/RT
• High Efficient LED Lighting for warehouse
• Smart Building Management System with fault detection and diagnostics sensors
• Use of Excellent WELS rated water efficient fittings
• Collection and storage of recyclable waste, food waste and horticulture waste for recycling
• Use of SGBC-certified green concrete and sustainable products
• Lifts with VVVF & regenerative drive and sleep mode features

Client/Developer: Bollore Logistics Singapore Pte Ltd
Architect: HA Architects Pte Ltd
ESD Consultant: IGnesis Consultants Pte Ltd
Main Contractor: Boustead Project E&C Pte Ltd
Green Oasis features four-storeys of lush greenery and trees for rejuvenation and active living. Extensive greenery throughout the development with GnPR > 14.

Car-lite facilities to promote a healthy lifestyle through the provision of cycling path, bicycle lots and end-of-trip facilities.

Laminated DGU and external shading device to reduce façade solar heat gain.

Water cooled chilled water plant with efficiency of 0.58kW/RT.

Extensive use of energy efficient LED lighting for front of house and back of house.

Smart building analytical system to optimize building operations in areas including energy and water usage, maintenance and security.

Construction innovations that include prefabrication, digital construction, BIM flythrough and use of drones for site monitoring, to ensure environmental sustainability while optimizing productivity, construction quality and cost.

Use of skylight in serviced residence spaces to introduce daylighting to indoor spaces.
CITY GATEWAY
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Provision of greenery to enhance biodiversity and visual spectacle to visitors, with Green Plot Ratio of 6.
- Reservation of existing lattice structure which provided great shading effect.
- Use of 100% LED lighting for entire development.
- Extensive use of sustainable green products and water efficient fittings.
- High efficient irrigation system with link of weather station and moisture sensors.

Client/Developer
Jardine Matheson

Architect
JGP Architecture Pte Ltd

M&E Engineer
PDC Consulting Engineers

Structural Engineer
TW-Asia Consultants Pte Ltd

Main Contractor
Prelim Construction Pte Ltd

ESD Consultant
Meinhardt (Singapore) Pte Ltd

Gardens by the Bay
LOGOS FOOD21
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Reduced Solar Heat Gain through good orientation and high performance facade system with ETTV of 33.58 W/m²
- Efficient ACMV system with Design System Efficiency of 0.77 kW/RT
- Energy efficient lighting system to achieve 61% energy savings by using 100% LED and motion sensors
- Renewable energy generation on site through Solar PV system
- 46% water savings achieved through usage of efficient water fittings, more than 50% of landscape plant species are drought tolerant and native to Singapore
- Usage of green concrete, environmental friendly construction materials and products
- Biophilic design (sky gardens, terrace garden) for well-being, healing, and positive environment

Client/Developer
Logos SE Asia Pte Ltd

Architect
Thymn Pte Ltd

M&E Engineer
Aurecon Singapore Pte Ltd

Structural Engineer
Engineers 2002 Pte Ltd

Quantity Surveyor
BKG Consultants Pte Ltd

ESD Consultant
GreenA Consultants

Main Contractor
Precise Development Pte Ltd
MICRON FAB 10A
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Client/Developer: Micron Semiconductor Asia Pte Ltd
Architect: ID Architects Pte Ltd
M&E Engineer: C2D Solutions Pte Ltd
Structural Engineer: Rankine & Hill (Singapore) Pte Ltd
Quantity Surveyor: Currie & Brown (Singapore) Pte Ltd
Main Contractor: Exyte Group
ESD Consultant: ZEB Technology Pte Ltd

- Facade ETTV= 33.19W/m²
- All motors are IE3 rated or better
- All water fittings are excellent rated
- Process water is recycled to reduce total building water consumption
- Internal shuttle bus is provided to promote green transportation
RAFFLES GIRL’S SCHOOL (SECONDARY)

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 932,650kWh/yr; Estimated water savings: 4,834m³, ETTV: 30.6W/m²
- Energy efficient water cooled chilled water air conditioning system Total system efficiency of 0.74kW/RT (0.56kW/RT + 0.18kW/RT_Air)
- Passive design strategies for thermal comfort of the classrooms and naturally ventilated areas with wind driven rain simulations to minimise the impact of rain within these spaces.
- Extensive landscape areas and preservation of most of the existing trees to enhance biodiversity and provide visual relief to the students
- Provision of LED light fittings throughout the school

Client/Developer
Raffles Girls’ School (Secondary)

Architect
DP Architects Pte Ltd

M&E Engineer
Meinhardt (Singapore) Pte Ltd

Structural Engineer
Meinhardt (Singapore) Pte Ltd

Quantity Surveyor
Faithful + Gould Pte Ltd

Main Contractor
Sunray Woodcraft Construction Pte Ltd
TEMASEK POLYTECHNIC SPORTS & ARTS CENTRE (BLK 26A)

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 332,749 kWh/yr; Estimated water savings: 3300 m³
- Water cooled chiller plant system with operating efficiency of 0.60 kW/RT,
- Good building envelope design with ETTV of 24.84 W/m² with optimal window to wall ratio
- Provision of CO₂ sensor control for fresh air modulation of AHUs
- Extensive use of environmentally friendly products and recycled materials for construction
- Provision of excellent WELS rating water efficient fittings
- Energy efficient lighting and motion sensors for common areas like staircase and toilets.

Client/Developer: Temasek Polytechnic
Architect: Forum Architects Pte Ltd
M&E Engineer: T.Y Lin International Pte Ltd
Structural Engineer: RSP Architects Planner & Engineers Pte Ltd
Quantity Surveyor: Faithful+Gould Pte Ltd
Main Contractor: Logistics Construction Pte Ltd
Project Manager: Arcadis Project Management Pte Ltd
ESD Consultant: ZEB Technology Pte Ltd
TEMASEK TOURISM ACADEMY (BLK 29A)
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

• Estimated energy savings: 267,494kWh/yr;
  Estimated water savings: 30,066m³, ETTV: 36.65W/m²

• Water cooled system with operating efficiency of 0.62kW/RT

• Provision of energy efficient features such as motion sensors for staircases and toilet, photo sensors for lift lobbies and atrium

• High adoption of Sustainable Construction

• Extensive use of environmentally friendly products

Client/Developer: Temasek Polytechnic
Architect: Forum Architects Pte Ltd
M&E Engineer: T.Y.Lin International Pte Ltd
Structural Engineer: RSP Architects Planners & Engineers Pte Ltd
Quantity Surveyor: Faithful+Gould Pte Limited
Main Contractor: Incorporated Builders Pte Ltd
ESD Consultant: ZEB Technology Pte Ltd
VEOLIA SINGAPORE OFFICE @ TVC

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Energy Efficiency LED&T5 Lighting System
- Eco restrooms with “excellent” fittings under PUB’s Water Efficiency Labeling Scheme (WELS)
- Low VOC Paints and Environmentally Friendly Adhesive certified by SGLS/SGBC
- NEWater for toilet flush
- Use of Environment Friendly Products

Client/Developer: Veolia ES Singapore Ind. Pte Ltd
Architect: ID Architect Pte Ltd
ESD Consultant: IGnesis Consultants Pte Ltd
Main Contractor: Boustead Project E&C Pte Ltd
ALEXANDRA POINT
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Client/Developer: Frasers Property Alexandra Point Pte Ltd
Facility Manager: Frasers Property Alexandra Point Pte Ltd
ESD / Green Consultant: G-Energy Global Pte Ltd
ESCO: G-Energy Global Pte Ltd

- Chiller system efficiency of 0.59 kw/ton by the use of VSD for chillers, pumps and cooling tower and through efficient maintenance and monitoring
- Real-time display for continuous remote monitoring of building’s chiller plant performance
- Use of LED lightings in common areas such as lift lobbies and staircases with addition of motion sensors for toilets, staircases and carparks
- Use of Excellent rating water fittings
- Waterless urinal system and smart water metering connected to BMS for effective monitoring of water consumption
AMARA SANCTUARY RESORT SENTOSA
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 1,654,754 kWh/yr;
- High Water-cooled chilled water system with efficiency of 0.564 kW/RT
- Energy Efficient LED Lighting
- Extensive greenery
- Attained PUB Water Efficient Building Certification
- Use of sustainable products certified by SGLS

Building Owner: Amara Sentosa Investments Pte Ltd
ESCO: Comfort Management Pte Ltd
ESD/Green Consultant: Comfort Management Pte Ltd & Building System & Diagnostics Pte Ltd
APERIA
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Highly efficient water-cooled air-conditioning systems with operating system efficiencies for various plants ranging from 0.555 to 0.589 kW/RT
- Low Envelope Thermal Transfer Value (ETTV) of 35W/m² incorporating shading devices and low-e glazing
- Use of UVC-emitters for AHUs and passive wrap around dehumidification heat pipes in PAHUs
- Extensive use of LED lightings
- Provision of extensive greeneries and sky gardens at courtyards
- Provision of daylighting with skylight at retail atrium
- Use of rainwater harvesting for irrigation and condensate recovery for cooling tower

Building Owner
HSBC Institutional Trust Services (Singapore) Limited
As Trustee of Ascendas Real Estate Investment Trust

Facility Management
Ascendas Services Pte Ltd

ESCO
-

ESD / Green Consultant
C&W Services (S) Pte Ltd
ASCENT
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Highly efficient water-cooled air-conditioning system with operating system efficiency of 0.589 kW/RT
- Adoption of Green Lease to increase tenants’ awareness to go green and protect the environment
- 24,700 kWh is generated annually through the installation of Building Integrated Photovoltaic (BIPV) on the Eastern Façade
- Extensive use of thermal diffusers to replace AHU VAV system for improved thermal comfort, energy savings and maintainability
- Extensive use of T5 and LED lightings which helps to achieve 48% savings
- Use of water efficient fittings with WELS rating
- Collection of AHU condensate for cooling tower make-up

Building Owner
Ascendas Land (Singapore) Private Limited

Facility Management
Ascendas Services Pte Ltd

ESCO
-

ESD / Green Consultant
Building System & Diagnostics Pte Ltd
CITY HOUSE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

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

- Efficient central chiller plant with system efficiency of 0.58 kW/ton
- LED lightings for common areas and washrooms.
- Use of motion sensors linked to lightings for toilets and staircases half-landings.
- Natural ventilation for staircases
- Provision of drought tolerant plants and rooftop garden
CLEANTECH ONE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Use of passive design strategies to minimize solar heat gain to building and to facilitate cross ventilation and thermal comfort in naturally ventilated spaces.
- Provision of photovoltaic panels with system capacity of 230 kWp.
- Provision of rainwater harvesting system to minimize potable water use for irrigation.
- Extensive provision of greeneries to reduce heat gain for the building.
- All lightings served within the buildings are LEDs for energy efficiency.
- Provision of greywater recycling system for the building.
- Eco corner & signage for educational purposes.

Building Owner: JTC Corporation
Facility Management: SMM Pte Ltd
ESD Consultant: Johnson Controls (S) Pte Ltd
COPTHORNE KING’S HOTEL SINGAPORE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Building Owner
DBS Trustee Limited

Facility Management
Millennium & Copthorne International

ESCO

ESD / Green Consultant
G-Energy Global Pte Ltd

• Highly efficient water-cooled air-conditioning system with operating system efficiency of 0.566 kW/RT

• Use of variable speed drives for chilled water pumps, condenser water pumps, cooling towers and AHUs

• Extensive use of energy efficient lightings

• Use of efficient heat pump for hot water generation

• Use of auto condenser tube cleaning system to improve heat transfer efficiency in the chillers
DEFENCE SCIENCE & TECHNOLOGY AGENCY  
TOWER A
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Highly efficient water-cooled air-conditioning system with operating system efficiency of 0.586 kW/RT
- Use of VAV thermal diffusers
- Use of food waste digester in Canteen
- 39.2% energy savings from efficient air-conditioning airside design
- Use of CO₂ sensors to regulate AHU fresh air supply
- Use of CO sensors for carpark mechanical ventilation
- 46.5% improvement in lighting consumption by the use of LED for majority of lighting
- Use of non-potable water for cooling tower make-up water
- Use of sustainable materials and products for architectural finishes
- Wide use of water efficient fittings
- Waste management programme which encourages recycling through emails
- Wide use of Green Label products
DEFENCE TECHNOLOGY TOWER B
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | Platinum

- Estimated energy savings: 1,474,555 kWh/yr;
  Estimated water savings: 3,065 m³/yr.
- Use of Guaranteed Performance Contracting with the guaranteed chiller plant efficiency at 0.58 kW/RT (day and night).
- Operating chiller plant efficiency of 0.521 kW/RT and air side efficiency of 0.15 kW/RT.
- Implemented automatic tube cleaning system and vacuum degassing system to improve the heat exchange properties within the chilled water network and prolong the life span of the chilled water pipes.
- More than 70% of the AHUs’ condensate water were recovered to allow top up into the cooling tower basins via gravity feed.
- Provision of energy savings LED lightings for all major office spaces.
- Use of energy efficient lifts with AC VVVF and sleep mode features.
- Use of motion sensors in carpark to regulate the use of artificial lightings during non-peak working hour period.

Client/Developer: Defence Science and Technology Agency/MINDEF
Architect: 
M&E Engineer: 
Structural Engineer: 
ESD Consultant: G-Energy Global Pte Ltd
Main Contractor: D-Team Engineering Pte Ltd
DSTA ANNEX
Existing Non-Residential Building
GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Highly efficiency Chiller plant system
- Chiller Plant Automation system, Heat Balancing and Measurement & Verification
- Chilled beam for offices
- Displacement Ventilation for the lobby
- Energy efficient LED lightings for offices, meeting room and canteen.

Client/Developer
- Defence Science & Technology Agency

Facility Management
- C&W Services Pte Ltd

ESCO
- Building System & Diagnostics Pte Ltd

ESD / Green Consultant
- G-Energy Global Pte Ltd
EASTPOINT MALL
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Certified Water Efficient Building
- M&V System equipped with heat balance feature and VSD
- Lift & Escalators installed with VVF Mode
- Waste recycling program is ongoing for East Point Mall
- East Point Mall is under the Chiller Efficiency Smart Portal by BCA
- Green lease are in place for tenants

Client/Developer
NTUC Income Insurance Co-Operative Ltd

Architect
LT&T Avid Architects Pte Ltd

M&E Engineer
Acetech Design Pte Ltd, Ms Fok

Structural Engineer
Mega Consult

Quantity Surveyor
Rodney Chng

Main Contractor
Vigcon Construction Pte Ltd
GALAXIS
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient chiller plant with system efficiency of 0.598 kW/RT.
- Heat Pipe Recovery Unit to recover the cool air from toilet exhaust for the pre-cool AHU unit on the roof top.
- Remote monitoring dashboard with fault detection and diagnostic analytic function.
- The lighting system in the common toilets and staircases are controlled by motion sensors.
- Extensive greenery located at roof terrace serve as green communal spaces for building occupants and provides environmental and ecological benefits.

Building Owner
Ascendas Fusion S Pte Ltd

Facility Management
Ascendas Services Pte Ltd

ESD / Green Consultant
Ascendas Services Pte Ltd
GEK POH SHOPPING CENTRE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | Platinum

- Highly efficient water-cooled air-conditioning system with operating system efficiency of 0.644 kW/RT.
- Natural ventilation design for multi-storey carpark, lift lobbies and staircases.
- Green publicity efforts such as Green Corner, Energy-Saving Challenge, health promotion roadshow to create awareness for tenants and shoppers.
- Green lease for tenants.
- Extensive use of energy-efficient LED lightings and water fittings with excellent WELS rating at common areas.
- Use of environmentally friendly products for facilities management.

Building Owner: Housing & Development Board
Facility Management: CPG Facilities Management Pte Ltd
ESCO: C&W Services (S) Pte Ltd
ESD / Green Consultant: C&W Services (S) Pte Ltd
GRAND COPTHORNE WATERFRONT HOTEL
SINGAPORE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient water-cooled chilled water system with efficiency of 0.61 kW/RT
- Efficient LED/T5 Lighting
- Use of efficient heat pump system
- Use of eco-digester to convert food waste to water

Building Owner: DBS Trustee Limited
Facility Management: Millennium & Copthorne International
ESCO: G-Energy Global Pte Ltd
HOLIDAY INN EXPRESS SINGAPORE ORCHARD ROAD

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient chiller plant system with operating system efficiency of 0.533 kW/RT.
- Efficient LED lighting are installed at common areas and hotel guest rooms.
- Provision of vertical greenery and rooftop greenery.
- Recycling of FCU condensate water to cooling tower’s make up water.

Building Owner: Valeside Pte Ltd
Facility Management: Swee Cheng Management Pte Ltd
ESCO: C&W Services (S) Pte Ltd
ESD/Green Consultant: C&W Services (S) Pte Ltd
IKEA ALEXANDRA
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 2,126,916kWh/yr;
  Estimated water savings: 10,846m³
- Chilled water system with operating efficiency of 0.61kW/RT
- Use of absorption chiller to complement with the chilled water system
- Extensive use of LED lights throughout the building
- Innovative waste management and recycling programme

Client/Developer: Ikano Pte Ltd
ESD / Green Consultant: W2square Consultancy Pte Ltd
ISEAS – YUSOF ISHAK INSTITUTE

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- New efficient chiller plant with system efficiency of 0.653 kW/RT.
- Guaranteed Energy Savings Performance contract with committed combined efficiency of 0.97 kW/RT for chiller plant and air distribution system, including 5 years comprehensive maintenance.
- Heat Recovery Unit and Heat Pipes in AHUs for Special Rooms with library materials.
- Chiller Plant and AHU measured data are remotely monitored via Remote Operation Centre owned by the GESP consultant.
- Biophilic features such as koi ponds and greenery.
- Low carbon footprint through natural ventilation in common areas, extensive recycling practices, and use of motion sensors, LED lightings, and Singapore Green Building Council certified products.

Building Owner: ISEAS – Yusof Ishak Institute
Facility Management: ISEAS – Yusof Ishak Institute
ESCO: C&W Services (S) Pte Ltd
JEM

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- The air-conditioning system operates with a system efficiency of 0.544 kW/RT with a high efficiency “multi-tier” chilled water plant
- Innovative 2-stages fresh air treatment and infiltration controls
- Demand responsive airside and mechanical ventilation system
- Extensive use of LED lighting technology
- Light sensor to enhance the daylighting within the building
- Green Lease and Green Mark Certification for retailers
- Landscaped terrace and green wall

Client/Developer: Lendlease Commercial Investments Pte Ltd
Lendlease Retail Investments 3 Pte Ltd

Facility Manager: Lendlease Retail Investments 3 Pte Ltd

ESD Consultant: Kaer Pte Ltd
JTC SUMMIT

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | Platinum

Client/Developer: JTC Corporation

- Efficient chiller plant design
- Use of smart power sockets
- Efficient water fittings used
- AHUs with UV emitters
- Test beddings items such as Chilled Ceiling & Passive Displacement Ventilation
- Solar film on building facades

Architect

M&E Engineer

Structural Engineer

Quantity Surveyor

Main Contractor
JURONG POLICE DIVISION HEADQUARTERS

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Replaced existing air-cooled chiller plant with water-cooled chiller plant with targeting system efficiency of 0.600 kW/RT
- Using LED light for building lighting retrofit
- Over 20% of roof top greenery accessible for occupants
- Obtained PUB Water Efficient Building certificate
- Retrofitting existing AHUs to improve indoor environment

Client/Developer: Singapore Police Force
Facility Manager: Cushman & Wakefield Facilities & Engineering (S) Ltd
ESCO: Kaer Pte Ltd
ESD/Green Consultants: Kaer Pte Ltd
KEPPEL BAY TOWER
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Chiller plant system efficiency of 0.65 kW/RT and better
- Provision of permanent instrumentation to monitor the chiller plant operating system efficiency
- Use of WELS-certified fittings and awarded as Water Efficient Building
- LED lightings for car park and staircases and Motion Sensors control of lighting at staircases and toilets
- All AHUs are equipped with high efficiency MERV 14 air filter
- Auto tube cleaning system for the chiller plant
- Collection and recycling of used lights fittings and printer cartridges
LIFELONG LEARNING INSTITUTE

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- High Water-cooled chilled water system with efficiency of 0.65 kW/RT
- High Efficient LED Lighting
- Ductless jet fan system for basement car park ventilation
- Use of WELS rated “Excellent” water efficient fittings

Building Owner: Lifelong Learning Institute Pte Ltd
Facility Management: SMM Pte Ltd (A member of Surbana Jurong)
ESD/Green Consultant: SMM Pte Ltd (A member of Surbana Jurong)
LUCKY PLAZA SHOPPING CENTRE

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- High Water-cooled chilled water system with efficiency of 0.6 kW/RT
- High Efficient LED Lighting for common area
- Provision of UVC emitter for all AHU
- Collection and recycling of used fluorescent tubes

Building Owner: MCST Plan No. 651
Facility Management: MCST Plan No. 651
ESCO: Johnson Controls (S) Pte Ltd
ESD/Green Consultant: Johnson Controls (S) Pte Ltd
MARINA BAY FINANCIAL CENTRE TOWER 3
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 8,394,100 kWh/year;
- Estimated water savings: 6,384 m$^3$/year
- Low-E coating for glass façade
- Efficient air distribution system with VSDs and VAV boxes
- Extensive use of LED lightings with motion sensors and photocell sensors
- Motion sensor control of the carpark LED lightings.
- Certified PUB Water Efficient Building.
- Weather station in use to adjust AHU set point in accordance with climate.
- Progressively bring up the office space temperature from 24 deg.C to 25 deg.C, half of the space have been completed.
- Committed in Green Advocacy such as the annual participation of Earth Hour, iLight Marina Bay Festival and PUB Singapore World Water Day.
MAX ATRIA @ SINGAPORE EXPO
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Energy Efficient Water-Cooled Chilled Water Plant Air Conditioning System
- Automatic tube cleaning system for chiller
- Energy Efficient LED Lighting System
- Lifts and escalators are equipped with ACVVF drives and sleep mode feature
- Water sub-meters are available to measure potable and NEWater use
- NEWater is used for cooling tower make-up supply
- A refrigerant leak detection system is available at both plant rooms
- Core area provides natural daylighting

Building Owner: Singapore Tourism Board
Facility Management: SingEx Venues Pte Ltd
ESD Consultant: C&W Services (S) Pte Ltd
MINISTRY OF MANPOWER SERVICES CENTRE
Existing Non-Residential Building
GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Client/Developer: Ministry of Manpower
Facility Manager: ST Synthesis Pte Ltd
ESD / Green Consultant: AeX Consulting & Training Pte Ltd
ESCO: 6-Sigma Automation Pte Ltd

• Energy efficient chiller plant system (0.545 kW/RT) with thermal energy storage
• LED lightings for most functional spaces
• Use of high performance air filter (MERV 14)
• Solar Photovoltaic System (35 kWp) at rooftop
• Extensive greenery with drip irrigation system
NANYANG EXECUTIVE CENTRE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient chiller plant system of less than 0.65 kW/ton
- Measurement and verification system and heat balancing to monitor chiller plant efficiency
- Variable speed drives for pumps and cooling towers
- Energy efficient LED lighting for all areas

Client/Developer: Nanyang Technological University
ESD Consultant: SMM Pte Ltd
Facility Management: SMM Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 764,443 kWh/yr; Estimated water savings: 3,255 m3/yr.
- Use of Energy Dashboard & Reporting Tool (EDART) program to monitor water usage, electricity consumption and cooling load of the building.
- New air distribution system that achieves 29% savings over baseline requirements.
- Dedicated power meters on each level to monitor energy usage for air-conditioning system, lightings and receptacle loads.
- Extensive LED lightings with 35% improvement from code requirements.

Building Owner: National University of Singapore
Project Management: NUS Office of Estate Development
Facility Management: NUS Office of Facilities Management
Architect: CPG Consultants Pte Ltd
M&E Engineer: WSP Consultancy Pte Ltd
ESD / Green Consultant: Afogreen Build Pte Ltd
NEXUS @ ONE-NORTH
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Highly efficient water-cooled air-conditioning system with operating system efficiency of 0.627 kW/RT
- Low Envelope Thermal Transfer Value (ETTV) of 38.61 W/m² with Window-to-Wall ratio of 0.455
- Provision of solar photovoltaic panels with 50 kW peak
- Use of water efficient fittings with 3 ticks “Excellent” WELS rating
- Lushful greenery with Green Plot Ratio of 1.93
- 100% auto irrigation for all landscape areas and use of rainwater harvesting system to reduce potable water usage for irrigation purposes
- Provision of openings at basement carpark to promote ventilation and daylighting

Building Owner: HSBC Institutional Trust Services (Singapore) Limited
As Trustee of Ascendas Real Estate Investment Trust

Facility Management: Ascendas Services Pte Ltd
ESCQ: -
ESD / Green Consultant: Building System & Diagnostics Pte Ltd
NGEE ANN CITY
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

• Highly efficient water-cooled air-conditioning system with operating system efficiency of 0.602 kW/RT
• Use of variable speed drives for chilled water pumps and condenser water pumps
• Performance monitoring of AHUs and use of podium AHU cooling coils and efficient blowers for better air side efficiency
• Attained PUB Water Efficient Building certification
• Extensive use of NEWater for approximately 33% of total building usage
• Recycling program in place to track, reduce and recycle out-going waste
• Allocation of car park lots for Hybrid / Electric Vehicles

Building Owner
The Management Corporation Strata Title Plan No. 2929

Facility Management
Ngee Ann Property Management Pte Ltd

ESCO
Comfort Management Pte Ltd

ESD / Green Consultant
Comfort Management Pte Ltd

NGEE ANN CITY
OCEAN FINANCIAL CENTRE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Building Owner
Ocean Properties LLP

Property Management
Keppel REIT Property Management Pte Ltd

ESCO
G-Energy Global Pte Ltd

ESD / Green Consultant
G-Energy Global Pte Ltd

- Efficient chiller plant with system efficiency of 0.595 kW/RT.
- Provision of 75 kWp solar panels installed on the roof.
- Regenerative Drive System coupled with VVVF features for lifts and escalators are installed with Motion Sensors.
- Heat Recovery for hot water and heat recovery wheel for pre-cool fresh air.
- Extensive Green Wall and Roof Terraces.
- Paper Recycling Chute System.
PARKWAY PARADE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 1,953,617 kWh/yr; Estimated water savings: 65,105 m³;
- Chiller plant system with operating efficiency of 0.66 kW/RT
- High Efficient LED Lighting
- Extensive use of motion sensors, photocell sensors and CO sensors
- Rainwater harvesting
- Greenlots charging station for electric vehicles
- Carpark guidance system

Building Owner
Management Corporation Strata Title No. 1008

Facility Management
Lend Lease Retail Pte Ltd

ESD / Green Consultant
C&W Services (S) Pte Ltd
RESEARCH TECHNO PLAZA

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient water-cooled air-conditioning system with operating system efficiency
- Variable speed drives for pumps and cooling towers
- Energy efficient LED lighting for all areas and task lighting for working area
- Attained PUB Water Efficient Building certification
- Use of motion sensors for toilets and staircases
- Intelligence energy management system to manage building energy consumption and smart ACMV optimization
- Water leakage detection system
- Passive Displacement Cooling system

Building Owner: Nanyang Technological University
Facility Management: SMM Pte Ltd
ESD / Green Consultant: SMM Pte Ltd
ROBERT BOSCH (SEA) HQ
Existing Non-Residential Building
GREEN MARK AWARD FOR BUILDINGS | PLATINUM

• Estimated energy savings: 779,202 kWh/yr; Estimated water savings: 3,605 m$^3$/yr; EETV: 41. 87W/m$^2$
• Water-Cooled Chiller system with operating efficiency of 0.59kW/ton and Variable Speed Drive (VSD) controls
• Extensive use of T5 for all fluorescent lighting and motion sensors at toilets and staircases
• Roof of building fully covered with solar panels to harvest renewable energy and test-bed for photovoltaic research
• Use of automated external blinds, double-glazed and single-glazed low emission glass lowers building cooling load
• Electric/hybrid vehicle charging station and priority parking lots
• Siphonic rainwater discharge system

Building Owner
Robert Bosch S.E.A Pte Ltd

Facility Management
Robert Bosch S.E.A Pte Ltd

ESD Consultant
GreenA Consultants
SANDCRAWLER
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient air distribution system with efficiency of 0.23 kW/RT
- High Efficient LED Lighting for common area
- Provision of PV system with generation of 200,000 kWh per year
- Extensive greenery

Building Owner
Lucas Real Estate (S) Pte Ltd
Facility Management
Lucas Real Estate (S) Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient chiller plant system of 0.65 kW/ton
- Measurement and verification system and heat balancing to monitor chiller plant efficiency
- Variable speed drives for pumps and cooling towers
- Energy efficient LED lighting for all areas

Client/Developer: Nanyang Technological University
ESD Consultant: SMM Pte Ltd
Facility Management: SMM Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | Platinum

- Highly efficient chiller plant with system efficiency
- Extensive use of LED lighting
- All water fittings in the development rated WELS ‘Excellent’
- Extensive use of SGLS certified products
- Provision of intensive and extensive green roof
- Use of harvested rainwater for irrigation
- Green educational corners and eco-trail to showcase green features within the development

Client/Developer: Sentosa Development Corporation
M&E Service Provider: Midas Engineering & Services Pte Ltd
ESD / Green Consultant: G-Energy Global Pte Ltd
SENTOSA GOLF CLUB

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Provision of efficient VRF cooling system
- High Efficient LED Lighting
- Efficient heat pump for hot water system
- Extensive greenery

Building Owner: Sentosa Golf Club
Facility Management: Sentosa Golf Club
ESD / Green Consultant: C&W Services (S) Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- 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 GnPR of 0.7
- PUB Water Efficient Building Certified with water saving fittings installed throughout the building
- All classrooms is integrated with Intelligent Classroom System for monitoring and control of the indoor lighting and air-conditioning system
SINGAPORE MANAGEMENT UNIVERSITY
- CITY CAMPUS
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Building Owner: Singapore Management University
Facilities Management: Office of Campus Infrastructure and Services
ESD Consultant: Johnson Controls (S) Pte Ltd

- Chiller plant system efficiency of 0.53 kW/RT
- High efficiency T5 & LED lightings with electronic ballast
- All AHUs are designed with the implementation of electronic air cleaner
- Motion sensors control the cooled air supply to study rooms, meeting rooms, staff lounges and faculty offices
- Use of WELS-certified fittings and awarded as Water Efficient Building
- CO2 sensors are used to regulate outdoor air flow rate
- Priority green lots for Hybrid/CNG/Electrical vehicles
SINGAPORE UNIVERSITY OF TECHNOLOGY AND DESIGN (SUTD)  
ACADEMIC FACILITIES AND SPORTS COMPLEX  
Existing Non-Residential Building  

GREEN MARK AWARD FOR BUILDINGS | PLATINUM  

<table>
<thead>
<tr>
<th>Client/Developer</th>
<th>Singapore University of Technology and Design (SUTD)</th>
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<tbody>
<tr>
<td>ESD Consultant</td>
<td>ENGIIE South East Asia Pte Ltd</td>
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<tr>
<td>Facility Management</td>
<td>ENGIIE Services Singapore</td>
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</tbody>
</table>

- Low Urban Heat Island effect through generous Landscaping and Green Roof.  
- Generous Comfortable Outdoor Naturally Ventilated Study Areas  
- Ideal Building Orientation to Lower Solar Heat Gain  
- Good Thermal Performance to Building Envelope
SMU ADMINISTRATION BUILDING
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- The façade is cladded with double & low E glazing, which effectively reduce solar heat gains to the building
- Chiller plant system efficiency of 0.56 kW/RT
- Use of WELS-certified fittings and awarded as Water Efficient Building
- High efficiency T5 & LED lightings with electronic ballast
- All AHUs are designed with the implementation of electronic air cleaner
- Auto tube cleaning system for the chiller plant
- Priority green lots for Hybrid/CNG/Electrical vehicles

Building Owner
Singapore Management University

Facilities Management
Office of Campus Infrastructure and Services

ESD Consultant
Johnson Controls (S) Pte Ltd
SMU PRINSEP STREET RESIDENCES
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 274,824 kWh/yr;
- New chiller plant with system efficiency of 0.6 kW/RT.
- Efficient Passive Displacement Cooling (PDC) for cooled air distribution.
- Energy Smart Integrated System for controlling, monitoring, tracking the operations of all building services, e.g. PDC, lights, fans, plug loads and power meters.
- Efficient Dimmable LED Lighting System.
- Extensive use of sustainable products certified by SGBC and SGLS.
- Lightings in staircases are controlled based on motion detection.
SOLARIS BUILDING
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

• Naturally ventilated and day lit grand atrium
• Solar shaft to provide daylight to the building
• High Efficient LED/T5 Lighting for common area
• Continuous perimeter landscape ramp
• Roof garden and corner sky terrace
• Climate Responsive Facade
• Pocket Park / Plaza
• Extensive Sun-Sharing Louvers
• Eco-cell

Building Owner: Soilbuild Business Space REIT
Facility Management: SB Property Services Pte Ltd
ESD/Green Consultant: Building System & Diagnostics Pte Ltd
SOUTH ACADEMIC COMPLEX (MAIN SOUTH SPINE, BLOCK S1, S2, S2.1, S2.2, S3, S3.1, S3.2, S4)
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient chiller plant system of 0.65 kW/ton
- Measurement and verification system and heat balancing to monitor chiller plant efficiency
- Variable speed drives for pumps and cooling towers
- Energy efficient LED lighting for all areas

Client/Developer: Nanyang Technological University
ESD Consultant: SMM Pte Ltd
Facility Management: SMM Pte Ltd
THE CONCOURSE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Efficient chiller plant with system efficiency of 0.646 kW/RT.
- Energy and water monitoring with Intelligent Building management System
- Motion sensors control of lightings at common corridors, staircase and toilets
- Auto tube condenser cleaning system for chillers
- Energy efficient LED lightings and T5 lightings with electronic ballast
- Priority green car park lots for hybrid / CNG / electric vehicles
THE GALEN
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Air Conditioning plant system efficiency: 0.562kW/RT.
- PUB WEB certified
- Lushly landscaped grounds that create an ideal green ambience that motivate innovation and creativity.
- Integration of critical building operation data to Central Operation Centre for utilities monitoring, data analytics and fault detection diagnostic.
- Waste segregation and monitoring of recyclable waste
- Activities that promote healthy lifestyle and environmental sustainability awareness

Building Owner: HSBC Institutional Trust Services as Trustee of AREIT
Facility Management: Ascendas Services Pte Ltd
ESD Consultant: Building System & Diagnostics Pte Ltd
TIONG BAHRU PLAZA & CENTRAL PLAZA
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Chiller system efficiency of 0.61 kw/ton with VSDs for pumps and cooling towers
- Use of efficient LED lightings in common areas
- UV lamps in all AHUs to improve Indoor Air Quality and energy savings by improved cooling coil surface heat transfer
- Conversion of existing AHU to EC motor driven AHU to conserve energy
- Use of WELS excellent rating water fittings

Client/Developer: The Management Corporation - Strata Title Plan No. 2634
Facility Manager: The Management Corporation - Strata Title Plan No. 2634
ESD / Green Consultant: Barghest Building Performance
TOURISM COURT
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (RE-CERT)

- Chiller plant system efficiency of 0.65 kW/RT or better
- Provision of permanent instrumentation to monitor the chiller plant operating system efficiency
- Variable Speed Drives for all Chilled & Condenser water pumps, Cooling Tower fans, and AHU fans
- 95% of lighting used T5 with electronic ballast, PLC & LED lightings
- New AHUs which are designed with the implementation of Merv 14 rating air filters
- Use of WELS-certified fittings and awarded as Water Efficient Building
- Motion sensors control lightings at all toilets, and staircases
- Lighting sensors (based on lux levels) at common areas such as corridors
- Priority green lots for Hybrid/CNG/Electrical vehicles
- Installation of double tier bicycle racks
VILLAGE HOTEL ALBERT COURT

Existing Non-Residential Buildings

GREEN MARK AWARD FOR BUILDINGS | PLATINUM (RE-CERT)

Building Owner
DBS Trustee Limited (as Trustee of Far East Hospitality Real Estate Investment Trust)

Facility Management
Village Hotel Albert Court

ESCO / ESD Consultant
G-Energy Global Pte Ltd

- Highly efficient chiller plant performing at an efficiency of 0.60 kW/RT
- Provision of recycling practices to collect and monitor recyclable waste
- Provision of automatic tube cleaning system
- Provision of heat pump
WHITESANDS SHOPPING CENTRE

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Highly efficient water-cooled air-conditioning system with operating system efficiency of 0.617 kW/RT
- Energy Management System in place to control and monitor the chiller plant performance with remote monitoring features
- Use of LED lightings for common areas and continuous improvement to energy efficient lighting system
- Carpark ventilation system in place with CO sensor and fans with variable speed drive (VSD)
- All escalators and lifts fitted with variable voltage frequency (VVVF) & sleep mode features
- Use of water efficient fittings with 3-ticks “Excellent” WELS rating
- VSD drives for chillers and pumps are certified under the Singapore Green Building Product certification scheme
YALE-NUS COLLEGE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- ETTV: 33.2 W/m²
- Use of energy efficient lightings such as LED and T5 fluorescent to achieve 38.9% improvement over the baseline
- Occupancy sensors such as motion sensors are used for the offices, toilets and staircase half landings
- Photocell sensors to modulate lighting levels at the perimeter of classrooms
- Use of water efficient “Very Good” and “Excellent” WELs rated water fittings

Building Owner: Yale-NUS College
Facility Management: Yale-NUS College
M&E Term Consultant: TW International Counsel Pte Ltd
ESD/Green Consultant: Beca Carter Hollings & Ferner (S.E Asia) Pte Ltd
PIERMONT GRAND
New Residential Building

GOLD MARK AWARD FOR BUILDINGS | PLATINUM

- Good building orientation which allows for good natural ventilation in the common areas and dwelling units
- Building façade designed with high performance glazing to lower solar heat gain
- Smart water monitoring system with leak detection algorithm
- Water harvested from rainwater used for landscape irrigation
- Efficient lighting design by use of LED with motion sensors and NEA 5 ticks energy efficient air conditioning system for all the units
- Use of native plant species for extensive yet sustainable landscaping
- Smart home with smart community system for occupant comfort and convenience

Client/Developer: Pavo Properties Pte Ltd (Joint venture between City Developments Limited & TID Pte Ltd)
Architect: P&T Consultants Pte Ltd
M&E Engineer: Belmacs Pte Ltd
Structural Engineer: P&T Consultants Pte Ltd
Quantity Surveyor: Davis Langdon KPK (S) Pte Ltd
Landscape Consultant: TinderBox Pte Ltd
ESD/ Green Consultant: DP Sustainable Design Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Use of double Glazing for all units – Good Residential Thermal Transfer Value (RETV) of 14.50 W/m²
- State-of-the-art double louvre system to promote room ventilation
- Extensive use of precast elements and hollow core slab
- ABC storm water management system in place
- Use of solar water heater plus heat pump for showers
- Provision of solar photovoltaic panels on the roof with 188.70 kW peak
- Use of dual refuse chute
- Electric charging station for parking lots

Building Owner: Nanyang Technological University
Managing Agent / Maintenance Contractor: SMM Pte Ltd
Facility Management: Office of Development & Facilities Management
KALLANG POLYCLINIC AND LONG TERM CARE FACILITY
Healthcare Facility

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Client/Developer: Ministry of Health
Architect: RDC Architects Pte Ltd
M&E Engineer: WSP Consultancy Pte Ltd
Structural Engineer: Arup Singapore Pte Ltd
Main Contractor: Tiong Seng Contractors Pte Ltd
ESD Consultant: WSP Consultancy Pte Ltd

- Integrated design approach
- Use of building performance simulation to improve design for NV wards
- Use of 100% LED lighting for entire development
- High Energy Efficient air conditioning system
- Demolition protocol
- Extensive use of PPVC
NATIONAL CANCER CENTRE
Healthcare Facility

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Client/Developer: Ministry of Health (MOH), MOH Holdings Pte Ltd (MOHH)
Operator: National Cancer Centre Singapore
Project Management: AECOM Cost Consulting and Project Management (S) Pte Ltd
Architect: CIAP Architects Pte Ltd
M&E Engineer: Aecom Singapore Pte Ltd
Structural Engineer: Arup Singapore Pte Ltd
Quantity Surveyor: Arcadis Singapore Pte Ltd
Main Contractor: Shimizu Corporation
ESD Consultant: ZEB-Technology Pte Ltd

- Chiller Plant System High Operating Efficiency of 0.549kW/RT
- Air Distribution System High Operating Efficiency of 0.13kW/RT
- Extensive use of alternative water sources for replacement of potable water for major water uses
- Excellent Envelope Thermal Transfer Value of 26.83W/m²
**POLYCLINIC AND SENIOR CARE CENTRE AT CHIN CHENG AVENUE**

Healthcare Facility

**GREEN MARK AWARD FOR BUILDINGS | PLATINUM**

- Insulated façade with low-E laminated glazing, ETTV of 24.90 W/m²
- Efficient water-cooled chiller plant with efficiency of 0.512 kW/RT
- LED light fittings in the entire development
- Water efficient development using WELS 3 tick fittings
- Renewable energy generation – Rooftop photovoltaic (PV) system
- Sustainable materials and construction
- Dedicated Sub-metering for each energy end use
- Energy efficient features include Regenerative Lift, Auto Tube Brushing System for chiller

<table>
<thead>
<tr>
<th>Client/Developer</th>
<th>Ministry of Health</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Manager</td>
<td>LMO &amp; Associates Pte Ltd</td>
</tr>
<tr>
<td>Architect</td>
<td>Forum Architects Pte Ltd</td>
</tr>
<tr>
<td>M&amp;E Engineer</td>
<td>Beca Carter Hollings &amp; Ferner (S.E. Asia) Pte Ltd</td>
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<tr>
<td>Structural Engineer</td>
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<tr>
<td>Quantity Surveyor</td>
<td>CPG Consultants Pte Ltd</td>
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<td>CMC Construction Pte Ltd</td>
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<tr>
<td>Landscape Consultant</td>
<td>Coen Design International Pte Ltd</td>
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<tr>
<td>ESD Consultant</td>
<td>Web Earth Pte Ltd</td>
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</tbody>
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TTSH INTEGRATED CARE HUB (TTSH-ICH)

Healthcare Facility

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Chiller plant system high operating efficiency of 0.524kW/RT
- Extensive use of alternative water sources for replacement of potable water for major water uses
- 100% Use of WELS “Excellent” rated water fittings
- Excellent envelope thermal transfer value of 37.52W/m²
- Provision of photovoltaic system with a system capacity of 97.44 kWp

Client/Developer
Ministry of Health (MOH), MOH Holdings Pte Ltd (MOHH)

Operator
Tan Tock Seng Hospital (TTSH)

Project Management
Arcadis Pte Ltd

Architect
CIAP Architects Pte Ltd

M&E Engineer
CPG Consultants Pte Ltd

Structural Engineer
Meinhardt (Singapore) Pte Ltd

Quantity Surveyor
Arcadis Singapore Pte Ltd

Main Contractor
Kajima Overseas Asia (Singapore) Pte Ltd

ESD Consultant
ZEB Technology Pte Ltd
YISHUN COMMUNITY HOSPITAL (YCH) & GERIATRIC EDUCATION & RESEARCH INSTITUTE (GERI)
Healthcare Facility

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

• Building envelope to achieve ETTV of 38 W/m² while harnessing daylight and providing a glare free environment.

• Optimized ward layout and façade design through simulation support to enhance natural ventilation for user comfort.

• The actual operating chiller plant efficiency is 0.590 kW/RT during daytime, and 0.577 kW/RT during nighttime.

• Meticulous facade design though wind-driven rain (WDR) analysis for naturally ventilated wards and corridors to minimize impact from rain.

• Extensive greenery through provision of meditative/rehabilitative gardens, green spaces for horticultural therapy, staff gardens and rooftop greenery achieving a green plot ratio greater than 5.0.

• 100% hot-water system to address hot-water demand of wards and kitchen with heat-pump back-up system

• Pre-cooled AHU with IAQ improvement (TiO₂ coating and UVC emitters) for enhanced indoor air quality.

Building Owner
Yishun Health Campus

Facilities Management
Yishun Community Hospital Pte Ltd

ESD Consultant
ZEB-Technology Pte Ltd
MARSILING SECONDARY SCHOOL
Existing School

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- All classroom lights has been changed to LED fittings to improve efficiency of lighting systems and reduce the energy consumption.
- There is a 6m vertical farm that is used for lessons in science and national education.
- Environment advocates are appointed to ensure that green practices are carried out in the school and to influence their peers to adopt environmentally friendly habits. They also work hand in hand with the school’s environmental policy.
- Provision of a green corner, the Environmental Education Hub, is equipped with adequate learning materials on environmental sustainability for both students and staff.
- Has strong emphasis on environmental education, with a conceptualised sustainable Environmental Education Programme framework. The framework offers a robust interdisciplinary curriculum for students to engage in inquiry and research and exposes the environmental education to the students through the provision of environment modules that focuses on science, technology, engineering, and mathematics in real time to real situations.

Client/Developer: Ministry of Education
ANGEL SINGAPORE HEADQUARTERS

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Good ETTV value of 31.49 w/m²
- Fully installed with LED light fittings
- Chilled water plant efficiency of 0.582kW/RT
- Extensive use of sustainable green products and water efficient fittings.

Client/Developer: ANGEL SINGAPORE PTE. LTD.
Architect: RSP Architects Planners & Engineers (Pte) Ltd
M&E Engineer: Squire Mech Pte Ltd
Structural Engineer: RSP Architects Planners & Engineers (Pte) Ltd
Main Contractor: Obayashi Singapore Private Limited
EXPANSION OF YIO CHU KANG BUS INTERCHANGE

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Green roof with water efficient irrigation, rainwater sensors and drought tolerant plants
- 152 sheltered bicycle lots with CCTV coverage
- Structural system is mainly comprised of a steel frame structure that lowers the Concrete Usage Index to 0.16 m³/m²
- 100% use of high efficient LED lighting, achieving a 67% improvement in Lighting Power Budget compared with local code requirements
- Unitary Air Conditioning system achieving a 32.8% improvement over baseline requirements
- Extensive use of water efficient water fittings with 3-tick WELs rating

Client/Developer: Land Transport Authority
Architect: Shing Design Atelier Pte Ltd
M&E Engineer: Elead Associates Pte Ltd
Structural Engineer: ST Chew & Assoc Pte Ltd
Quantity Surveyor: CPC Construction Pte Ltd
Main Contractor: CPC Construction Pte Ltd
ESD Consultant: GreenA Consultants Pte Ltd
WOODLEIGH VILLAGE HAWKER CENTRE

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Creating a unique dining experience amongst verdant greenery, right next to a Heritage Walk.
- Efficient planning to facilitate separation of back-of-house activities from dining experience resulting in a more hygienic and comfortable environment for all.
- Food Centre is designed to be naturally ventilated, with optimized orientation to capitalize on local prevailing wind.
- Environmental Deck above the Food Centre reduces solar heat gain.
- Use of sustainable products during construction of the Food Centre.
- Pneumatic waste collection system improves overall hygiene and odour compared to conventional waste collection.
- Kitchen exhaust systems fitted with air cleaners and filters remove odour before air is exhausted.

Client/Developer
National Environment Agency

Architect
MKPL Architects Pte Ltd

M&E Engineer
Alpha Consulting Engineers Pte Ltd

Structural Engineer
KTP Consultants Pte Ltd

Quantity Surveyor
Rider Levett Bucknall LLP

Main Contractor
China Construction (South Pacific) Development Co Pte Ltd
AMARA SINGAPORE AND 100AM MALL

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

• Chiller plant system efficiency of 0.625 kW/ton
• Variable speed drives on existing chilled water pumps, condenser water pumps and cooling towers.
• Use of energy efficient tubes and LED lighting
• Rooftop and Vertical Greenery
• Usage of Water Sub-Meters for Cooling Tower and Swimming Pool

Client/Developer: Amara Hotel and Properties Pte Ltd
Facility Manager: Amara Singapore and 100AM Mall
ESD Consultant: G-Energy Global Pte Ltd
BLOCK E1A, BLOCK E2, NUS IT AND CELC IN NUS

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

• Energy efficient chiller plant with operating efficiency of 0.57 kW/RT
• Energy efficient LED lighting
• VVF and sleep mode lifts
• PUB certified water efficient building
• Energy / Water / BTU consumption monitoring dashboard

Building Owner
National University of Singapore

Facility Management
Office of Facility Management (OFM), NUS
CAPITAL SQUARE
Existing Non-Residential Building
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

Client/Developer
ARA Asset Management Ltd

Facility Manager
CBRE Pte Ltd

ESD Consultant
CBRE Pte Ltd

- Use of efficient central chiller plant system: at least 0.68 kW/RT
- Use of variable speed drives for MVAC system to optimize part load condition
- Demand ventilation using CO sensors for car park
- Installation of water sub-meters to monitor CT, domestic, etc water usage.
- Recycling program to track, reduce and recycle outgoing waste
CINTECH I
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Efficient chiller plant with system efficiency of 0.614 kW/RT.
- Adopted Energy Performance Contract for chiller plant maintenance with guaranteed chilled water system efficiency.
- Extensive LED lightings for common areas.
- The BMS is connected to the Ascendas Operations Centre at HQ for utilities monitoring, data analysis and advance fault detection diagnostic.
- CO₂ sensors – integrated demand control ventilation for office AHU to reduce fresh air intake when human occupancy is low hence reduce cooling load demand.

Building Owner
HSBC Institutional Trust Services (Singapore) Limited
As Trustee of Ascendas Real Estate Investment Trust

Facility Manager
Ascendas Services Pte Ltd

ESD / Green Consultant
Building System & Diagnostics Pte Ltd
CINTECH II
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Efficient chiller plant with system efficiency of 0.614 kW/RT.
- Adopted Energy Performance Contract for chiller plant maintenance with guaranteed chilled water system efficiency.
- Extensive LED lightings for common areas.
- The BMS is connected to the Ascendas Operations Centre at HQ for utilities monitoring, data analysis and advance fault detection diagnostic.
- Natural Ventilation - Natural ventilation in car parks, toilets and staircases

Building Owner
HSBC Institutional Trust Services (Singapore) Limited
As Trustee of Ascendas Real Estate Investment Trust

Facility Manager
Ascendas Services Pte Ltd

ESD / Green Consultant
Building System & Diagnostics Pte Ltd
CINTECH III
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Chilled water system with operating efficiency of 0.61 kW/RT
- Chiller plant system efficiency is guaranteed under a performance guarantee maintenance contract for 10 years
- Extensive use of LED lightings in common area
- Provision of electrical sub-metering at the AHU units and they are connected to the BMS system for energy monitoring

Client/Developer: HSBC Institutional Trust Services (Singapore) Limited As Trustee of Ascendas Real Estate Investment Trust
Facility Manager: Ascendas Services Pte Ltd
ESD / Green Consultant: Building System & Diagnostics Pte Ltd
Chilled water system with operating efficiency of 0.61 kW/RT

Chiller plant system efficiency is guaranteed under a performance guarantee maintenance contract for 10 years

Extensive use of LED lightings in common area

Provision of electrical sub-metering at the AHU units and they are connected to the BMS system for energy monitoring

BMS is connected to the Ascendas Operations Centre system at HQ, and will alert the facility manager and building owner to be alerted of any faulty sensors or equipment
CONCORDE SHOPPING CENTRE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- High efficiency chiller plant system with efficiency of 0.55 kW/ton
- Variable speed drives on new chilled water pumps, condenser water pumps and cooling towers.
- Provision of permanent instrumentation to monitor the chiller plant system operating efficiency
- Motion sensors are installed at all staircases and carpark

Client/Developer
The MCST Plan No. 1143

Facility Manager
Savills Property Management Pte Ltd

ESCO
Johnson Controls (S) Pte Ltd
HOMES @ HONG SAN
Existing Non-Residential Buildings

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Energy efficient air-conditioning system.
- High efficient LED lighting system.
- Water Efficient Devices.
- Photovoltaic system.
- Rainwater harvesting system.

Client/Developer: Ministry of Social and Family Development
Facility Management: C&W Services (S) Pte Ltd
Green Mark Consultant: C&W Services (S) Pte Ltd
ICON @ IBP
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Air-conditioning plant system efficiency: 0.686 kW/RT.
- Use of VSD for chillers, pumps and cooling tower
- Collection and monitoring of recyclable waste
- Passive design is incorporated through the use of double glazing, daylit atrium, and naturally ventilated carpark to minimize energy demand
- Extensive use of LED light fittings

Building Owner
Ascendas (Tuas) Pte Ltd

Facility Management
Ascendas Services Pte Ltd

ESD Consultant
G-Energy Global Pte Ltd
NATIONAL PARKS BOARD (HEADQUARTERS)
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Naturally ventilated common areas including carparks, corridors, and lift lobbies
- Chiller system efficiency of 0.72 kw/ton with VSDs for pumps and cooling towers
- Predominant use of LED lightings
- PUB Water Efficient Building certificate
- Provision of CO₂ sensors and UV lamps at all AHUs.

Client/Developer: National Parks Board
Facility Manager: National Parks Board
ESD / Green Consultant: G-Energy Global Pte Ltd
NATIONAL UNIVERSITY HOSPITAL (NUH) - KENT RIDGE WING (KRW)
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

Client/Developer: National University Hospital (Singapore) Pte Ltd
Facility Manager: Synergy FMI Pte Ltd
ESCO: C&W Services (S) Pte Ltd
ESD/Green Consultant: C&W Services (S) Pte Ltd

• Commitment to achieve chiller plant system efficiency of 0.68 kW/RT or better via optimisation & retrofitting measures.
• PUB Water Efficient Building certification has been achieved. NEWater is in use for the cooling towers’ make-up. Cooling tower water treatment system is achieving ≥7 cycles of concentration
• Environmental-friendly practices for energy and water conservation & waste recycling, are encouraged among the building occupants using Green Guide. SGLS-certified paper towel & toilet paper, and compost recycled from horticultural waste are in use
• Rooftop greenery at Level 5. Kent Ridge MRT station is in close proximity, connected via sheltered walkways
• AHUs are equipped with MERV14 air filters. Low-VOC paints and adhesives certified by SGBC are also in use
NORDIC EUROPEAN CENTRE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 96596 kWh/yr; Estimated water savings: 510 m³
- High efficiency water-cooled chilled water plant - Optimized chilled water plant with design system efficiency of 0.574 kW/Rt at operating load condition.
- Use of energy efficient LED light fitting for Common Areas
- Auto-tube condenser cleaning system to prolong lifespan of chillers and maintain chiller efficiency.

Client/Developer: HSBC Institutional Trust Services (Singapore) Ltd as Trustee of Ascendas Real Estate Investment Trust
ESD Consultant: Building System & Diagnostics Pte Ltd
Facility Management: Ascendas Services Pte Ltd
NUHS TOWER BLOCK
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- High efficient chiller plant with system efficiency of 0.66kW/ton.
- Motion and photocell sensors for all toilets, staircases and office corridor.
- Usage of NEWater for irrigation and cooling tower make-up.
- Provision of rooftop garden and vertical greenery.
- Extensive usage of sustainable products for all office levels.

Building Owner: National University Hospital (S) Pte Ltd
Facility Management: Synergy FMi Pte Ltd
ESD Consultant: G-Energy Global Pte Ltd
ONE@CHANGI CITY
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

Building Owner: HSBC Institutional Trust Services (S) Ltd as a trustee of Ascendas Real Estate Investment Trust
Facility Management: Ascendas Services Pte Ltd
ESD/Green Consultant: G-Energy Global Pte Ltd

- High efficient chiller plant with system efficiency of 0.581 kW/RT
- High Efficient LED Lighting
- Provision of AHU condensate for cooling tower make up water
- Provision UVC emitters at all AHU
- Integration of critical building operation data to Central Operation Centre for utilities monitoring, data analytics and fault detection diagnostic.
SEMAWANG MART
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- All common areas, corridors and staircases are naturally ventilated
- Extensive use of natural daylighting in building
- Attained PUB Water Efficient Building certification
- Waste recycling in place for plastic, paper and metal
- Use of cleaning products certified under the Singapore Green Labelling Scheme (SGLS)

Building Owner
Housing Development Board

Facility Management
Bintai Kindenko Pte Ltd

ESCO
-

ESD / Green Consultant
Johnson Controls (S) Pte Ltd
SHOPHOUSE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 140,300 kWh/yr;
  Water savings: 809 m³/yr
- Natural ventilated atrium
- Provision of efficient VRF cooling system
- Efficiency LED Lighting
- Motion sensor controlled lighting in common areas
- Extensive outdoor and indoor greenery with efficient automated irrigation system
- Excellent WELS rater water fittings & sustainable finishes & fittings

Building Owner
Facility/Management: Temasek Trustees Pte. Ltd. (as trustee of Temasek Trust)

ESD/Green Consultant Architect: Surbana Jurong Consultants Pte Ltd

M&E Engineers
C&S Engineers: KTP International Pte Ltd

Interior Design Architect: Asylum Creative Pte Ltd

Landscape Architect: Greenology Pte Ltd
SIM LIM TOWER
Existing Non-Residential Buildings

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- High efficiency central chilled water plant system of 0.594KW/RT or better
- Sub-metering for building systems to track energy consumption of major building uses and individual equipment
- Adopted the usage of Energy Savings tubes and LED lights at common facilities
- Awarded PUB Water Efficient Building certificate
- Auto tube cleaning system and refrigeration leak detection system
- Implementation of recycling program, recycling bins and usage of sustainable products
- Performance based Maintenance Contract and continuous energy efficiency monitoring system
- Auto tube cleaning system and refrigeration leak detection system
SINGAPORE EXPO
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Energy Efficient Water-Cooled Chilled Water Plant Air Conditioning System
- Energy Efficient LED Lighting System
- Lighting Demand Control using Motion Sensor at Staircases and Toilets
- PUB Water-Efficient Building Certificate with “Excellent” rated fittings
- Use of Low VOC Paints and Environmentally Friendly Adhesive

Building Owner: Singapore Tourism Board
Facility Management: SingEx Venues Pte Ltd
M&E Engineer: Squire Mech Pte Ltd
Architect: RSP Architects Planners & Engineers (Pte) Ltd
ESD Consultant: Ignessis Consultants Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Estimated energy savings: 258,209 kWh/yr;
  Estimated water savings: 290.6 m³/yr.
- Energy Efficient Air-conditioning
- Water Efficient Fittings
- Vertical Greenery

Client/Developer: Singapore Polytechnic
Architect: Context Architects Pte Ltd
M&E Engineer: Kunda Consulting Engineers
Structural Engineer: JIB Specialist Consultants Pte Ltd
Quantity Surveyor: Infield Projects Pte Ltd
Main Contractor: QXY Resources Pte Ltd
SINGAPORE SPORTSHUB

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Efficient chilled water system
- Extensive use of energy efficient lightings & sensors
- 707kWp Solar PV Generation with measure Solar Energy output of 892MWh per year
- Use of NEWater for Cooling Towers
- Energy-saving lifts and escalators
- Extensive smart sub-metering to monitor individual venues water consumption through IBMS
- Rainwater harvesting for irrigation complimented with advanced pitch soil sensors
- Hot water using chiller’s heat recovery system

Client/Developer: Sportshub Pte Ltd
Architect: DP Architects Pte Ltd
M&E Engineer: Squire Mech Pte Ltd
Structural Engineer: Arup Singapore Pte Ltd
Main Contractor: Dragages Singapore Pte Ltd
ESCO/Green Consultant: C&W Services (S) Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Measured chiller plant system efficiency of 0.67 kW/RT with EPC contract to maintain at this performance for 5 years.
- Provision of motion sensors for the lightings in the staircases and toilets.
- Provision of CO₂ sensor display on each floor.
- Provision of recycling bins and programme to collect and monitor recyclable wastes.
- Achieved PUB Water Efficient Building certification
TANAH MERAH 1
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Estimated energy savings: 61,456 kWh/yr and estimated water savings: 953 m3/yr
- Energy efficient unitary air-conditioning system with target efficiency of 0.797 kW/ton
- Use of water efficient fittings and PUB Water Efficient Building (Gold)
- Green guides are disseminated amongst users to create environmental awareness as well as to promote and encourage waste minimization and recycling among users
- MERV 13 filter ready mechanical ventilation to maintain good indoor air quality

Client/Developer: Singapore Prison Service
Facility Manager: CBM Pte Ltd
ESD / Green Consultant: Building System & Diagnostics Pte Ltd
TANAH MERAH 2
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 24,967 kWh/yr.
- Energy Efficient Unitary Air-conditioning with target efficiency of 0.85 kW/Rt
- Use of Water Efficient Fittings and PUB Water Efficient Building (Gold)
- Green guides are disseminated amongst users to create environmental awareness as well as to promote and encourage waste minimization and recycling among users.

Client/Developer: Singapore Prison Service
Architect: -
M&E Engineer: -
Structural Engineer: -
Quantity Surveyor: -
Main Contractor: -
TELETECH PARK

Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

• High efficient chiller plant with system efficiency of 0.56kW/RT
• Motion sensor for staircases and toilets
• Green guide and green lease in place for sustainable operation
• Energy efficient LEDs are used in the premises of the building
• Waste segregation and monitoring of recyclable waste
• Use of SGLS certified products (tissue paper, garbage bag)
• Activities that promote staff well being and environmental sustainability awareness

Client/Developer
Teletech Park Pte Ltd

Facility Management
Ascendas Services Pte Ltd

ESD Consultant
Johnson Controls (S) Pte Ltd
THE ALPHA
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

• Estimated energy savings: 12,617.32kWh/yr
• Chiller plant system with operating efficiency of 0.63kW/RT
• High Efficient LED Lighting
• Green guide and green lease in place
• Ongoing waste recycling program

Building Owner
HSBC institutional Trust Services (S) Ltd as Trustee of Ascendas Real Estate Investment Trust

Facility Management
Ascendas Services Pte Ltd

ESCO
Johnson Controls (S) Pte Ltd

ESD/Green Consultant
Johnson Controls (S) Pte Ltd
THE CAPRICORN
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- High efficient chiller plant with system efficiency of 0.573 kW/RT
- Integration of critical building operation data to Central Operation Centre for utilities monitoring, data analytics and fault detection diagnostic.
- Natural ventilated foyer at 1st floor
- Priority green lots for Hybrid / Electrical vehicles

Building Owner: HSBC Institutional Trust Services (S) Ltd as Trustee of Ascendas Real Estate Investment Trust
Facility Management: Ascendas Services Pte Ltd
ESD/Green Consultant: Johnson Controls (S) Pte Ltd
THE SAF WARRANT OFFICERS AND SPECIALISTS CLUB (THE CHEVRONS)
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 199,972 kWh/yr;
  Water savings: 441 m³/yr
- Provision of efficiency VRF cooling system
- Efficient LED Lighting in common area
- Natural ventilated atrium, corridors and lift lobbies

Building Owner: Defense Science & Technology Agency
Facility Management: The SAF Warrant Officers And Specialists Club
ESD/Green Consultant: Surbana Jurong Consultants Pte Ltd
THE SIEMENS CENTRE
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 1,091,607kWh/yr
- Chilled water system with operating efficiency of 0.61kW/RT
- Chiller plant system efficiency is guaranteed under a performance guarantee maintenance contract for 10 years
- Extensive use of LED lightings in common area
- Provision of electrical sub-metering at the AHU units and they are connected to the BMS system for energy monitoring
- BMS is connected to the Ascendas Operations Centre system at HQ, and will alert the facility manager and building owner to be alerted of any faulty sensors or equipment
ALKAFF OASIS (CONTRACT 6)
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

Client/Developer: Housing Development Board
Architect: Surbana Jurong International Consultants Pte Ltd
M&E Engineer: Surbana Jurong International Consultants Pte Ltd
Structural Engineer: Surbana Jurong International Consultants Pte Ltd
Quantity Surveyor: Surbana Jurong International Consultants Pte Ltd
Main Contractor: Chip Eng Seng Corporation Pte Ltd

- Estimated energy savings: 862,108.69 kWh/yr;
  Estimated water savings: 901,303.2 m³, RETV: 17.35 W/m²
- Motion controlled energy efficient lighting at staircases to reduce energy consumption.
- Regenerative lifts to reduce energy consumption
- Separate chutes for recyclable waste.
- Use of sustainable and recycled products in development.
- Bicycle stands to encourage cycling as an environmentally friendly form of transport.
ALKAFF OASIS (CONTRACT 7)
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Estimated energy savings: 1288845.76 kWh/yr;
  Estimated water savings: 113768.64 m³, RETV: 18.35 W/m²
- Motion controlled energy efficient lighting at staircases to reduce energy consumption.
- Regenerative lifts to reduce energy consumption.
- Use of sustainable and recycled products in development.
- Separate chutes for recyclable waste.
- Bicycle stands to encourage cycling as an environmentally friendly form of transport.

Client/Developer: Surbana Jurong International Consultants Pte Ltd
Architect: Surbana Jurong International Consultants Pte Ltd
M&E Engineer: Surbana Jurong International Consultants Pte Ltd
Structural Engineer: Surbana Jurong International Consultants Pte Ltd
Quantity Surveyor: Surbana Jurong International Consultants Pte Ltd
Main Contractor: Chip Eng Seng Corporation Pte Ltd
AMBER PARK
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 3,460,557.23 kWh/yr;
  Estimated water savings: 116,720.9 m³/yr; RETV: 21.35W/m².
- Optimal building orientations are designed to minimize heat gain and
  improve RETV. Sun shadings and performance glazing are provided to
  achieve maximum comfort.
- Efficient Air Conditioning System with the provision of 5-tick air
  conditioners.
- Use of Water Efficiency Labeling Scheme (WELS)-Certified fittings with
  a minimum of two ticks.
- Use of Energy Efficient lightings e.g. LED & T5 and Occupancy
  Sensors for Staircases & Toilets. Energy saving strategy to meet
  58.41% improvement from baseline.
- Singapore Green Label products are used extensively in this
  development.

Client/Developer: Aquarius Properties Pte Ltd (Joint venture between
City Developments Limited and Hong Realty Pte Ltd)
Architect: SCDA Architects Pte Ltd
M&E Engineer: Squire Mech Pte Ltd
Structural Engineer: LSW Consulting Engineers Pte Ltd
Quantity Surveyor: Rider Levett Bucknall LLP
Landscape Consultant: SCDA Architects Pte Ltd
ESD/ Green Consultant: DP Sustainable Design Pte Ltd
BEDOK BEACON
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 81,213kWh/yr;
  Estimated water savings: 5,906m³, RETV: 15.62W/m²
- Use of energy efficient features such as LED lights and energy efficient lift
- High adoption of sustainable construction
- Extensive greenery
- Extensive use of environmentally friendly products

Client/Developer | Housing & Development Board
Architect | MKPL Architects Pte Ltd
M&E Engineer | J Roger Preston(s) Pte Ltd
Structural Engineer | KTP Consultants Pte Ltd
Quantity Surveyor | Rider Levitt Bucknall LLP
Main Contractor | Chiu Teng Construction Co Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 285,758.2 kWh/yr; Estimated water savings: 217,532.7 m$^3$, RETV: 16.26 W/m$^2$
- Good North - South orientation of the units within the precinct to reduce thermal transfer to internal spaces
- Provision of LED lighting to common areas, reducing energy consumption. Staircases mid-landings LED lights come with motion sensors, to reduce wastage of electricity
- All lifts are energy saving, with sleep mode and energy recovery features

Client/Developer: Housing & Development Board
Architect: ADDP Architects LLP
M&E Engineer: United Project Consultants Pte Ltd
Structural Engineer: KTP Consultants Pte Ltd
Quantity Surveyor: WT Partnership (S) Pte Ltd
Main Contractor: Welltech Construction Pte Ltd
**BOULEVARD 88**

New Residential Building

**GREEN MARK AWARD FOR BUILDINGS | GOLD**

<table>
<thead>
<tr>
<th>Client/Developer</th>
<th>City Developments Limited / Hong Leong Holdings Limited / Lea Investments Pte Ltd</th>
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<tbody>
<tr>
<td>Architect</td>
<td>DP Architects Pte Ltd</td>
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<td>M&amp;E Engineer</td>
<td>Squire Mech Pte Ltd</td>
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<td>Structural Engineer</td>
<td>Meinhardt (Singapore) Pte Ltd</td>
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<td>Arcadis Singapore Pte Ltd</td>
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<td>Landscape Consultant</td>
<td>STX Landscape Architects</td>
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<tr>
<td>ESD Consultant</td>
<td>DP Sustainable Design Pte Ltd</td>
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- The residential development offers lush green landscaped areas
- Effective lighting design by use of LED and the provision of motion sensors
- The provision of energy efficient air-conditioning system for all units contributes in energy savings for the development
- Extensive use of environmental friendly and sustainable materials certified by Singapore Green Labelling Scheme
- Provision of effective sun-shading for windows
BUANGKOK SQUARE

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Extensive use of passive design strategies including good building orientation
- Extensive use of energy efficient features and water-saving sanitary fittings
- Extensive use of sustainable products

Client/Developer: Housing & Development Board
Architect/Project Manager: Surbana Jurong Consultants Pte Ltd
M&E Engineer: Surbana Jurong Consultants Pte Ltd
Structural Engineer: Surbana Jurong Consultants Pte Ltd
Quantity Surveyor: Surbana Jurong Consultants Pte Ltd
Main Contractor: Expand Construction Pte Ltd
CLEMENTI GATEWAY
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Estimated energy savings: 1,117,430 kWh/yr;
  Estimated water savings: 9,995 m³,
  RETV: 16.28 W/m²
- Use of energy efficient features such as LED lights, energy efficient lift and sun pipes
- Extensive use of water efficient fittings
- Extensive greenery
- Extensive use of environmentally friendly products
DAKOTA BREEZE (HDB GEYLANG C15)

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Motion sensor lighting control, regenerative lifts for all residential blocks & fuel cell system for lifts for all residential blocks
- Use of approved sustainable products & recycled products
- Eco-pedestal to all Bath/WC of flats
- Provision of double refuse chute to separate recyclable from non-recyclable waste; Centralised Chute for Recyclables (CCR) for all residential blocks
- Provision of compost bins to recycle organic waste

Client/Developer: Housing and Development Board
Architect: ADDP Architects LLP
M&E Engineer: United Project Consultants Pte Ltd
Structural Engineer: KTP Consultants Pte Ltd
Quantity Surveyor: Arcadis Singapore Pte Ltd
Main Contractor: Progressive Builders Pte Ltd
Landscape Consultant: Earthscape Concepts Pte Ltd
GHIM MOH EDGE
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 2,849,896 kWh/yr; Estimated water savings: 42,388 m³;
  RETV: 17.35 W/m²
- Use of energy efficient features such as LED lights and energy efficient lift
- Extensive greenery
- Extensive use of environmentally friendly products

Client/Developer
Housing & Development Board

Architect
Ong & Ong Pte Ltd

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

Structural Engineer
Rankine & Hill (Singapore) Pte Ltd

Quantity Surveyor
Davis Langdon KPK (Singapore) Pte Ltd

Main Contractor
Kay Lim Construction & Trading Pte Ltd
HDB CLEMENTI N8C1

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 464,708.51 kWh/yr;
  Estimated water savings: 38,496.37 m³,
  RETV: 17.22 W/m²

- Motion controlled energy efficient lighting at staircases to reduce energy consumption.

- Regenerative lifts to reduce energy consumption.

- Use of sustainable and recycled products in development.

- Separate chutes for recyclable waste.

- Covered bicycle stands to encourage cycling as an environmentally friendly form of transport.

Client/Developer: Housing and Development Board
Architect: ADDP ARCHITECTS LLP
M&E Engineer: United Project Consultants Pte Ltd
Structural Engineer: KTP Consultants Pte Ltd
Quantity Surveyor: WT Partnership (S) Pte Ltd
Main Contractor: Greatearth Corporation Pte Ltd
HDB SENGKANG N4C41
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Motion sensor lighting control, regenerative lifts for all residential blocks & fuel cell system for lifts for all residential blocks
- Use of approved sustainable products & recycled products
- Eco-pedestal to all Bath/ WC of flats
- Provision of double refuse chute to separate recyclable from non-recyclable waste; Centralised Chute for Recyclables (CCR) for all residential blocks
- Provision of compost bins to recycle organic waste

Client/Developer
Architect
M&E Engineer
Structural Engineer
Quantity Surveyor
Main Contractor
Landscape Consultant

Housing and Development Board
ADDP ARCHITECTS LLP
United Project Consultants Pte Ltd
KTP Consultants Pte Ltd
WT Partnership (S) Pte Ltd
Hock Guan Cheong Builder Pte Ltd
Len-Til Pte Ltd
INTEGRATED DEVELOPMENT AT SENGKANG CENTRAL / COMPASSVALE BOW (RESIDENTIAL)
New Residential Buildings

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- All residential units use energy efficient (5-ticks) air-conditioning systems.
- Optimized building orientation to reduce the solar heat gain and efficient building façade for a low RETV of 19.69 W/m².
- The public realm is interweaved with green features to achieve a high GnP of 5.49.
- Sustainable construction by means of Prefabricated Prefinished Volumetric Construction (PPVC) technology.
- Waste disposal for all Residential Units by means of a double chute PWCS (Pneumatic Waste Conveyance System), with separate chutes for recyclables and non-recyclables.

Client/Developer
Siena Residential Development Pte. Ltd.
[A Joint Venture between Capitaland Limited and City Developments Limited]

Project Architect
SAA Architects Pte Ltd

Design Architect
MKPL Architects Pte Ltd

M&E Engineer
BELMACS Pte Ltd

Structural Engineer
Mott MacDonald Singapore Pte Ltd

Quantity Surveyor
Threesixty Cost Management Pte Ltd

ESD/Green Mark Consultant
Atelier Ten (Asia) Pte Ltd
JURONG EAST VISTA
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 371,138.45kWh/yr;
  Estimated water savings: 17,123.06m$^3$/yr;
  RETV: 16.46W/m$^2$

- Most of the Residential units are having North/South orientation, having plenty of daylight to the units as well as public areas.

- Regenerative lifts are used to reduce energy consumption.

- Bicycle stands are provided to encourage cycling as an environmentally friendly form of transport.

- Pneumatic Waste Collection System centralize refuse for convenient refuse collection.
GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

• Estimated energy savings: 9,574,774.47 kWh/yr; Estimated water savings: 43,785,769 m³, RETV: 21.06 W/m²

• Use of energy efficient features such as motion sensors, energy efficient lift and ventilation systems etc.

• Use of water fittings that are certified under WELS with mostly excellent and very good rating

• Extensive greenery with green plot ratio of 6.0

Client/Developer: Martin Modern Pte Ltd
Architect: ADDP Architects LLP
M&E Engineer: United Project Consultants Pte Ltd
Structural Engineer: KCL Consultants Pte Ltd
Quantity Surveyor: Arcadis Singapore Pte Ltd
Main Contractor: Lian Beng Construction (1988) Pte Ltd
MATILDA SUNDECK

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

Client/Developer: Housing & Development Board
Project Manager: P&T Consultants Pte Ltd
Architect: P&T Consultants Pte Ltd
M&E Engineer: United Project Consultants Pte Ltd
Structural Engineer: P&T Consultants Pte Ltd
Quantity Surveyor: W.T Partnership (S) Pte Ltd
Main Contractor: China Construction Realty Co Pte Ltd
Landscape Consultant: Site Concepts International Pte Ltd

- Estimated energy savings: 458742.59kWh/yr;
Estimated water savings: 64028.3m³/yr; RETV: 15.01W/m²
- Most of the Residential units are having North/South orientation, having plenty of daylight to the units as well as public areas.
- Motion sensor controlled energy efficient lighting is installed at common staircases to reduce energy consumption.
- Regenerative lifts are used to reduce energy consumption.
- Bicycle stands are provided to encourage cycling as an environmentally friendly form of transport.
- Provision of recyclable refuse chute allow convenient disposal of refuse for residents.
NORTHSHORE COVE
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

• Estimated energy savings: 283,808.31 kWh/yr;
  Estimated water savings: 172,513.69 m³, ETTV: 19.34 W/m²
• High Efficient VVVF motor system regenerative lift
• High Efficient LED Lighting and motion detector
• Extensive use of environmentally friendly products
• High Efficient glass for façade
• High Efficient CO sensor at basement carpark
• High Efficient rainwater harvesting system for irrigation and non-portable uses
• High Efficient water irrigation system for landscape deck and sky terraces
• High Innovative pneumatic waste collection system

Client/Developer
Architect
M&E Engineer
Structural Engineer
Quantity Surveyor
Main Contractor
Housing and Development Board
Kyoob Architects Pte Ltd
Bescon Consulting Engineering Pte Ltd
LSW Consulting Engineers Pte Ltd
WT Partnership Quantity Surveyors & Construction Cost Co
Right Construction Pte Ltd
NORTHSHORE RESIDENCES I & II
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

• Estimated energy savings: 2024000kWh/yr;
  Estimated water savings: 90930m³/yr; RETV: 19.53W/m²
• Regenerative Lifts to reduce energy consumption
• Rainwater harvesting system to store rainwater for common area washing
• ABC water design features to clean rainwater and beautify the landscape
• Separate Chutes for recyclable waste
• Eco-pedestals in bathrooms to encourage water conservation
• Provision of pneumatic waste collection system

Client/Developer
Housing & Development Board

Project Manager
SIPM Consultants Pte Ltd

Architect
Building Research Institute (HDB)

M&E Engineer
Building Research Institute (HDB)

Structural Engineer
Building Research Institute (HDB)

Quantity Surveyor
WT Partnership (S) Pte Ltd

Main Contractor
KEN-PAL (S) Pte Ltd

Landscape Consultant
Building Research Institute (HDB)
NORTHSHORE STRAITSVIEW

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 512983.78kWh/yr;
  Estimated water savings: 55663.44m³/yr; RETV: 17.78W/m²
- Separate chutes for recycle waste
- Eco-pedestals in bathrooms to encourage water conservation
- Bicycle stands to encourage cycling as an environmentally friendly form of transport
- Rainwater harvesting system to store rainwater for washing of common areas
- Regenerative lifts to reduce energy consumption

Client/Developer
Housing & Development Board

Project Manager
SIPM Consultants Pte Ltd

Architect
CESMA International Pte Ltd

M&E Engineer
Surbana Jurong Pte Ltd

Structural Engineer
Surbana Jurong Pte Ltd

Quantity Surveyor
Surbana Jurong Pte Ltd

Main Contractor
Rich Construction Company Pte Ltd

Landscape Consultant
Surbana Jurong Pte Ltd
NORTHSHORE TRIO
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 279,490kWh/yr;
  Estimated water savings: 22139.6m$^3$,
  RETV: 16.15W/m$^2$
- Extensive use of natural landscaping throughout the site encourages greenery usage to reduce heat island effect
- Extensive use of higher tier SGBC sustainable/recycled products within the development helps to promote sustainability and stay environment-friendly
- Use of energy efficient equipment such as energy efficient lightings in common areas helps to minimize energy consumption

Client/Developer | Housing & Development Board
Architect | Design Link Architects
M&E Engineer | United Project Consultants Pte Ltd
Structural Engineer | KTP Consultants Pte Ltd
Quantity Surveyor | WT Partnership (S) Pte Ltd
Main Contractor | BHCC Construction Pte Ltd
PARC RIVIERA
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 1,067,100 kWh/yr;
  Estimated water savings: 43,335.72 m³;
  RETV: 21.99 W/m²
- Blocks are orientated to take advantage of prevailing winds and
  minimise solar heat gain.
- Use of energy efficient features such as motion sensors, ventilation
  systems etc.
- Use of water fittings that are certified under WELS including water
  efficient washing machine.
- Energy re-generative lift provision to reduce power consumption for all
  lifts.
- Eco-friendly materials for dry wall panels, ceiling panels and paintings
  are used to minimize environmental impact.

Client/Developer: EL Development (West Coast) Pte. Ltd.
Architect: ADDP Architects LLP
M&E Engineer: Conteem Engineers Pte Ltd
Structural Engineer: KCL Consultants Pte Ltd
Main Contractor: Evan Lim & Co Pte Ltd
Landscape Consultant: Salad Dressing
Interior Design Consultant: Design Inck Pte Ltd
PROPOSED RESIDENTIAL DEVELOPMENT AT PEARL BANK

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 3371759.75kWh/yr; Estimated water savings: 144229.75m³/yr; RETV: 20.87W/m²
- Extensive landscape with Green Plot Ratio (GnPR) of 13.
- Landscape has been designed to achieve NParks Landscape Excellence Framework (LEAF) and PUB Active, Beautiful, Clean (ABC) Water Programme Certification.
- LED lighting and efficient lighting design has been implemented to achieve 40% energy savings in common area lighting.
- Regenerative lifts are installed for all lifts.
- Building has been designed to incorporate passive design strategies such as staggering blocks, void decks at ground and mid-floor sky terraces to promote airflow.
SENJA RIDGES
New Residential Building
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 232,917.5kWh/yr;
- Estimated water savings: 48,984m³/yr;
- RETV: 16.53W/m²

- Provision of centralized dual refuse chutes to separate recyclable from non-recyclable waste
- Provision of lifts with Variable Voltage Variable Frequency (VVVF) drives and regenerative component
- Use of water efficient fittings and integrated basin/cistern pedestal water closet
- Motion sensors are introduced at staircases to provide on-demand lighting

Client/Developer
Architect
M&E Engineer
Structural Engineer
Quantity Surveyor
Main Contractor
Landscape Consultant

Housing and Development Board
CSYA Pte Ltd
Beca Carter Hollings & Ferner (S.E.Asia) Pte Ltd
WEB Structures Pte Ltd
Faithful+Gould Pte Ltd
Greatearth Corporation Pte Ltd
COEN Design International Pte Ltd

SENJA RIDGES
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

New Residential Building

Beca Carter Hollings & Ferner (S.E.Asia) Pte Ltd
WEB Structures Pte Ltd
Faithful+Gould Pte Ltd
Greatearth Corporation Pte Ltd
COEN Design International Pte Ltd

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Estimated water savings: 48,984m³/yr;
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Provision of lifts with Variable Voltage Variable Frequency (VVVF) drives and regenerative component
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SENJA RIDGES
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

New Residential Building

Beca Carter Hollings & Ferner (S.E.Asia) Pte Ltd
WEB Structures Pte Ltd
Faithful+Gould Pte Ltd
Greatearth Corporation Pte Ltd
COEN Design International Pte Ltd

Estimated energy savings: 232,917.5kWh/yr;
Estimated water savings: 48,984m³/yr;
RETV: 16.53W/m²

Provision of centralized dual refuse chutes to separate recyclable from non-recyclable waste
Provision of lifts with Variable Voltage Variable Frequency (VVVF) drives and regenerative component
Use of water efficient fittings and integrated basin/cistern pedestal water closet
Motion sensors are introduced at staircases to provide on-demand lighting
SKY VISTA @ BUKIT BATOK
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

**Client/Developer**
- Housing and Development Board

**Architect**
- P&T Consultants Pte Ltd
- United Project Consultants Pte. Ltd
- WT Partnership (S) Pte Ltd
- Greatearth Construction Pte Ltd
- Len-Til Pte Ltd

**M&E Engineer**
- P&T Consultants Pte Ltd

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

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

**Main Contractor**
- Greatearth Construction Pte Ltd

**Landscape Consultant**
- Len-Til Pte Ltd

- Building orientation is predominantly North-South (RETV: 18.14W/m²).
- Use of LED lights for common areas.
- Use of Integrated wash basin WC.
- Provision of extensive green roofs.
- Provision of dual refuse chutes with separated recyclable chute.
SUN BREEZE
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Extensive mscp landscape greenery
- Led lighting for common areas
- Installation of Precast Bathroom Units
- Extensive use of sustainable products

Client/Developer
Housing and Development Board

Architect
Ong&Ong Pte Ltd

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

Structural Engineer
Rankine & Hill (Singapore) Pte Ltd

Quantity Surveyor
WT Partnership

Main Contractor
LC&T Builder Pte Ltd
TAMPINES GREEN FOLIAGE

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 544,544,376 kWh/yr;
- Estimated water savings: 19,486 m³/yr; RETV: 17.23 W/m²
- Pneumatic Waste Collection System
- Motion Sensors in Staircase landing
- Double Refuse Chute
- Integrated Basin Cistern Pedestal System
- Pre-cast Toilets

Client/Developer
Housing & Development Board

Architect
Ong&Ong Pte Ltd

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

Structural Engineer
Rankine & Hill (Singapore) Pte Ltd

Quantity Surveyor
WT Partnership (S) Pte Ltd

Main Contractor
Ho Lee Construction Pte Ltd

Landscape Consultant
Ong&Ong Pte Ltd
TAMPINES GREENVERGE

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Good building facade design and orientation (RETV=16.27 W/m²; with minimum direct west facing facade)
- Generous greenery provision on landscaped deck
- Use of water efficient fittings (with PUB approved WELS rating) and adequate water submetering provision at common areas
- Use of energy efficient lifts with sleep mode
- Motion sensor lights are installed at common staircases to reduce energy consumption

Client/Developer
Housing and Development Board

Architect
Surbana Jurong Consultants Pte. Ltd.

M&E Engineer
Surbana Jurong Consultants Pte. Ltd.

Structural Engineer
Surbana Jurong Consultants Pte. Ltd.

Quantity Surveyor
Surbana Jurong Consultants Pte. Ltd.

Main Contractor
Kay Lim Construction & Trading Pte Ltd

Landscape Consultant
Surbana Jurong Consultants Pte. Ltd.
TAMPINES GREENVIEW
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 386,268.55kWh/yr;
  Estimated water savings: 87,315.84m³; RETV: 18.04W/m²
- Motion sensor controlled energy efficient lighting is installed at staircase to reduce energy consumption.
- Regenerative lifts are used to reduce energy consumption.
- Eco-pedestals are used in bathrooms to encourage water conservation.
- Bicycle stands to encourage cycling as an environmentally friendly form of transport
- Pneumatic Waste Conveyance System to provide cleaner waste disposal

Client/Developer: Housing and Development Board
Architect: Surbana Jurong Consultants Pte. Ltd.
M&E Engineer: Surbana Jurong Consultants Pte. Ltd.
Structural Engineer: Surbana Jurong Consultants Pte. Ltd.
Quantity Surveyor: Surbana Jurong Consultants Pte. Ltd.
Main Contractor: Ho Lee Construction Pte Ltd
Landscape Consultant: Surbana Jurong Consultants Pte. Ltd.
TAMPINES GREENVINES

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 1,354,000 kWh/year;
  Estimated water savings: 108,000 m³/yr; RETV: 20.99W/m²
- Extensive provision of Greenery around the development.
- Use of Regenerative Lifts with VVVF Drives.
- Use of Smart Lighting Control System for LED lights with motion sensors.
- The building orientation, mostly facing North-East and South-West, minimises direct East and West facing units to reduce solar heat gain into the dwelling units.
TAMPINES GREENWEAVE
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Building blocks are designed to minimise heat gain through walls and windows
- Building design encourages the use of daylighting to reduce energy use for artificial lightings
- Provision of extensive greenery with high Green Plot Ratio
- Extensive use of environment friendly products
- Use of Pneumatic Waste Collection and Disposal System
THE GARDEN RESIDENCES

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 1084061.23kWh/yr; Estimated water savings: 179097m³/yr; RETV: 20.11W/m²
- Use of energy efficient air-conditioning units that are rated with 5 ticks.
- Rain water harvesting and drip irrigation system. WELS water fittings result in 23% savings.
- Use of cool paint for the entire east and west facades.
- Extensive greenery with GnP of 5.90 with facilities and nature integrated into the design greatly focusing on the occupants’ wellbeing.
- 100% use of LED light fittings. Lighting at staircase and common toilets are controlled by motion sensors.

Client/Developer: Gardens Development Pte Ltd
Project Manager: Keppel Land (Singapore) Pte Ltd
Architect: ADDP Architects LLP
M&E Engineer: WSP Consultancy Pte Ltd
Structural Engineer: TW-Asia Consultants Pte Ltd
Quantity Surveyor: Arcadis Singapore Pte Ltd
Main Contractor: Dragages Singapore Pte Ltd
Landscape Consultant: COEN Design International Pte Ltd
ESD Consultant: ZEB-Technology Pte Ltd
Interior Designer: Index Design Pte Ltd
THE POIZ RESIDENCES & THE POIZ CENTRE

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 521,117 kWh/yr;
  Estimated water savings: 52,113 m³, RETV: 20.28 W/m²
- Use of energy efficient features such as motion sensors, energy efficient lift and ventilation systems.
- Extensive use of water efficient fittings
- Extensive greenery
- Extensive use of environmentally friendly products

Client/Developer: MCC Land (Potong Pasir) Pte Ltd
Architect: ADDP Architects LLP
M&E Engineer: DP Engineers Pte Ltd
Structural Engineer: DP Engineers Pte Ltd
Quantity Surveyor: Arcadis Singapore Pte Ltd
Main Contractor: China Jingye Engineering Corporation Limited (Singapore Branch)
TWIN VEW
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Estimated energy savings: 432638kWh/yr;
  Estimated water savings: 163m³/yr; RETV: 21.39W/m²
- Provision of Energy Efficient air-conditioners, Energy Efficient lifts, Energy Efficient light fittings at communal facilities and the use of motion sensors at staircases
- Extensive Greenery
- Provision of Water Efficient Products
- Provision of Facilities for Storage and Composting of Horticultural Waste at Common Area
- Low Volatile Organic Compound (VOC) paint.

Client/Developer: CSC LAND GROUP (SINGAPORE) PTE LTD
Architect: P&T Consultants Pte Ltd
M&E Engineer: United Project Consultants Pte Ltd
Structural Engineer: TW-Asia Consultants Pte Ltd
Quantity Surveyor: Surbana Jurong Consultants Pte Ltd
Main Contractor: China Construction (South Pacific) Development Co Pte Ltd
Landscape Consultant: Ecoplan Asia Pte Ltd
Interior Designer: Index Design Pte Ltd
**VALLEY SPRING @ YISHUN**

New Residential Building

**GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS**

<table>
<thead>
<tr>
<th>Client/Developer</th>
<th>Housing &amp; Development Board</th>
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<tbody>
<tr>
<td>Architect</td>
<td>P&amp;T Consultants Pte Ltd</td>
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<tr>
<td>M&amp;E Engineer</td>
<td>Rankine &amp; Hill (Singapore) Pte Ltd</td>
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<tr>
<td>Structural Engineer</td>
<td>P&amp;T Consultants Pte Ltd</td>
</tr>
<tr>
<td>Quantity Surveyor</td>
<td>Surbana Jurong Consultant Pte Ltd</td>
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<tr>
<td>Main Contractor</td>
<td>Teambuild Engineering &amp; Construction Pte Ltd</td>
</tr>
</tbody>
</table>

- Pneumatic Waste Conveyance System with double refuse chutes at each residential blocks are provided for separating recyclable from non-recyclable waste
- Motion sensor-controlled energy efficient lighting at staircases to reduce energy consumption
- Use of regenerative lifts to reduce energy consumption
- Provision of eco-pedestals in bathroom to encourage water conservation
- Provision of bicycle stands to encourage cycling as an environmentally friendly form of transport
WATERFRONT I & II @ NORTHSORE

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 2,982,440.59kWh/yr; Estimated water savings: 207760m³/yr; RETV: 19.69W/m²
- Lush greenery and roof gardens throughout the site helps to minimize ambient temperature and cools environment as well as reduces heat island effect
- Use of energy efficient equipment such as energy efficient lightings in common areas helps to minimize energy consumption
- Use of efficient fittings for common areas and residential units ensures minimal water wastages
- Use of green and recycled products within the development helps to promote sustainability and stay environmentally friendly
- Good access to amenities like bus stop and comprehensive network of covered link ways promotes use of public transport and facilitates pedestrian connectivity within the development

Client/Developer
Housing & Development Board
Project Manager
Tan Ee Ping Consultants
Architect
Building Research Institute (HDB)
M&E Engineer
Building Research Institute (HDB)
Structural Engineer
Building Research Institute (HDB)
Quantity Surveyor
Arcadis Singapore Pte Ltd
Main Contractor
China Construction (South Pacific) Development Co Pte Ltd
Landscape Consultant
Building Research Institute (HDB)
WATERWAY SUNRISE I
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 6,817,675.62kWh/yr;
  Estimated water savings: 143,331.84m³; RETV: 16.44W/m²
- Excellent Natural Day-lighting Within Residential Units and Common Area
- Provision of Energy Efficient Lifts for all Residential Blocks
- Automatic Irrigation System for more than 50% of all Landscape Area
- Provision of Lush Greenery and Landscape at Environmental Deck and Roof Gardens

Client/Developer
Housing and Development Board

Architect
Surbana Jurong Consultants Pte. Ltd.

M&E Engineer
Surbana Jurong Consultants Pte. Ltd.

Structural Engineer
Surbana Jurong Consultants Pte. Ltd.

Quantity Surveyor
Surbana Jurong Consultants Pte. Ltd.

Main Contractor
Rich-Link Construction Pte Ltd

Landscape Consultant
Surbana Jurong Consultants Pte. Ltd.
WATERWAY SUNRISE II
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Building blocks are designed to minimise heat gain through walls and windows, with a low RETV Value of 18W/m².
- Building design encourages the use of daylighting within residential units and common areas.
- Use of energy efficient lifts for all residential blocks.
- Use of automatic irrigation system for >75% of all landscape areas.
- Provision of lush greenery and landscape at environmental deck and roof gardens.

Client/Developer: Housing & Development Board
Architect: Surbana Jurong Consultants Pte. Ltd.
M&E Engineer: Surbana Jurong Consultants Pte. Ltd.
Structural Engineer: Surbana Jurong Consultants Pte. Ltd.
Quantity Surveyor: Surbana Jurong Consultants Pte. Ltd.
Main Contractor: Lian Ho Lee Construction (Private) Limited
WHISTLER GRAND
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 274,590,63kWh/yr;
  Estimated water savings: 18,684,9m³/yr;
  RETV: 20.39W/m²

- Use of >80% 5 ticks air con for all dwelling units

- Use of 100% LED Lighting

- Use of VVVF and sleep mode lifts. Regenerative lifts are installed for all lifts.

- Integrated within a lush landscape of nature and water to encourage the desired lifestyle living.

- Smart home solutions have been implemented to promote a smarter and more efficient living habits

Client/Developer: CDL Pegasus Pte Ltd
Architect: ADDP Architects LLP
M&E Engineer: United Project Consultants Pte Ltd
Structural Engineer: TW-Asia Consultants Pte Ltd
Quantity Surveyor: Arcadis Singapore Pte Ltd
Main Contractor: Woh Hup Pte Ltd
Landscape Consultant: COEN Design International Pte Ltd
ESD Consultant: Building System & Diagnostics Pte Ltd
WOODLEIGH VILLAGE

New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLD\textsuperscript{PLUS}

- Green plot ratio of 6.58
- Good access to Woodleigh MRT station and Bus Interchange
- Adoption of daylighting for more than 80% of corridors and lobbies
- Use of low VOC paint for at least 90% of internal wall areas
- Adoption of pneumatic waste collection system
- Provision of double refuse chutes to separate recyclable from non-recyclable waste
- Provision of lifts with regenerative drive

Client/Developer: Housing & Development Board
Architect/Project Manager: MKPL Architects Pte Ltd
M&E Engineer: Alpha Consulting Engineers Pte Ltd
Structural Engineer: KTP Consultants Pte Ltd
Quantity Surveyor: Rider Levett Bucknail LLP
ESD Consultant: Building System & Diagnostics Pte Ltd
Landscape Consultant: Sitetectonix Pte Ltd
Main Contractor: China Construction (South Pacific) Development Co Pte Ltd
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Provision of an educational, fun and engaging green hub (i.e. eco garden with water filtration system, EE gallery, Anchor Glade) equipped with adequate learning materials on environmental sustainability for both students and staff.
- Provision of recycling bins at strategic locations within the school (e.g. canteen, general office) and recycling do’s and don’ts poster to educate users to recycle correctly.
- Vertical greenery wall as part of school’s efforts to expand the greenery in the school.
- Green Ambassadors are appointed to ensure that green practices are carried out in the school and to influence their peers to adopt environmentally friendly habits.
- LAN Rooms’ temperature is set at the optimal temperature of 24 °C.
- Air sterilizers are installed in the HOD and staff rooms.
- A schedule for air-conditioning is formulated to reduce unnecessary usage of AC system.
- The school is built with minimal west and east facing facades and adequate provision of effective sun shading devices on the aforementioned facades to minimize heat gain within the building.
- Energy and water usage are monitored and documented with reasons for high and low consumption. These trends of energy and water utilization are communicated to both staff and students to encourage them to reduce consumption.
- Environmental Sustainability topics are integrated into the school’s education framework and activities, including environment and green procurement policies.
• Green Ambassadors are appointed to ensure that green practices are carried out in the school and to influence their peers to adopt environmentally friendly habits.

• A range of native plants lines the walkway of the school. Labels displaying information of each plant are placed next to each plant to provide students with knowledge on these native plants.

• Provision of an educational, fun and engaging green hub equipped with adequate learning materials on environmental sustainability for both students and staff.

• Provision of recycling bins at strategic locations within the school (e.g. Canteen) and posters recycling Do’s and Don’ts posters to educate users to recycle correctly.
Green Ambassadors and Student Advocates are appointed to ensure that green practices are carried out in the school and to influence their peers to adopt environmentally friendly habits.

The school is built with minimal west and east facing facades and adequate provision of effective sun shading devices on the aforementioned facades to minimize heat gain within the building.

The school’s LAN Rooms’ are set at the optimal temperature of 24°C.

Provision of an educational, fun and engaging green environment equipped with adequate learning materials on environmental sustainability for both students and staff.

Provision of recycling bins at strategic locations within the school (e.g. Canteen, Green Corner) and recycling do’s and don’ts poster to educate users to recycle correctly.

Energy and water usage are monitored and documented with reasons for high and low consumption. These information on trends of energy and water utilization are communicated to both staff and students to encourage them to reduce consumption if necessary.
FUHUA PRIMARY SCHOOL

Existing Schools

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Fuhua Primary School offers a wide spectrum of well structured & comprehensive environmental programmes for staff & students alike.

- A list of air-conditioning inventory list and documentations were completed to identify less efficient air-conditioning units. The average system efficiency of the air conditioning system is 0.90kW/RT.

- Environmental champions are appointed to ensure that green practices are carried out in the school and to influence their peers to adopt environmentally friendly habits.

- Recycling efforts include the provision of recycling bins at strategic locations within the school and recycling posters with do’s and don’ts poster to educate users on recycling. The recyclables collected are then placed in the Makers Studio for students to construct their makers projects.

- The school is built with minimal west and east facing facades and adequate provision of effective sun shading devices on the aforementioned facades to minimise heat gain within the building.

- Energy and water usage are monitored and documented with reasons for high and low consumption. These information on trends of energy and water utilisation are communicated to both staff and students to encourage them to reduce consumption if necessary.
GREENWOOD PRIMARY SCHOOL
Existing Schools
GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Provision of educational, fun and engaging green hub equipped with adequate learning materials on environmental sustainability for both students and teachers.
- Provision of twin bins in classrooms to encourage recycling among students.
- Provision of recycling bins at strategic location within the school (e.g. canteen) and recycling do’s and don’ts poster to educate users on recycling.
- A range of native plants are planted in the school and labels are display on the information of each plant to provide student with knowledge on these native plants.
- Green Ambassadors are appointed to ensure that green practices are carried out in the school and to influence their peers to adapt environmentally friendly habits.
- Energy and water usage are monitored and documented with reasons for high and low consumption. These trends on energy and water utilization are communicated to both staff and students to encourage them to reduce consumption.
- The school is built with minimal west and east facing facades and adequate provision of effective sun shading devices on the aforementioned facades to minimize of heat gain within the building.

Client/Developer: Ministry of Education
Architect: -
M&E Engineer: -
Structural Engineer: -
Quantity Surveyor: -
Main Contractor: -
• Implemented a collaborative project, Soak Away Rain Garden, with the Public Utilities Board (PUB) which provides authentic learning opportunities for students to learn about the importance of having a clean and safe water.

• Collaborated with the National Environmental Agency (NEA) to install a food waste recycling setup to convert discarded food into compost, which is used to fertilise soil on the school grounds.

• Together with the students, created a green fence using recycled bottles, and is in the process of setting up a herbs garden.

• Installed a Water Wall and Environmental Wall to showcase the importance of water and the 4 national taps, climate change and its impact to Singapore, as well as waste minimisation and energy conservation.

• Implemented the Green@Hillgrove. This program, which started in 2010, has been reaching out to the residents in Bukit Gombak Constituency about the importance of conservation and 4Rs (Reduce, Reuse, Recycle and Refuse).
• Environment Champions and Captain Rs are appointed to ensure that green practices are carried out in the school and to influence their peers to adopt environmentally friendly habits.

• A rainwater harvesting tank is also located outside the General Office to collect rainwater and use it for irrigation purposes.

• LED lightings are installed at the first level of Block A (e.g. General Office, Library).

• Provision of an educational, fun and engaging green corners equipped with adequate learning materials on environmental sustainability for both students and staff.

• The school has a range of native plants at the eco-garden of the school. There are also labels displaying information of each plant are placed next to each plant to provide students with knowledge on these native plants.
MERIDIAN PRIMARY SCHOOL

Existing Schools

GREEN MARK AWARD FOR BUILDINGS | GOLD PLUS

- Built with east and west facing facades which are occupied by staircase and corridors
- Monitoring of energy and water consumption. Trending information are communicated to both staff and students to encourage sustainable behaviour
- Provision of recycling bins at strategic locations within the schools such as canteen, classroom, 3R corner and staff room
- Provision of high volume low speed fan in the hall
- Winner of Vanda Miss Joaquim Award in 2018

Client/Developer: Ministry of Education
Facility Manager: CPG Facilities Management Pte Ltd
Green Ambassadors are appointed to ensure that green practices are carried out in the school and to influence their peers to adopt environmentally friendly habits.

Recycling efforts include the provision of recycling bins at strategic location within the school and recycling posters to educate the school on recycling.

Energy and water usage are monitored, and these trends are communicated to both staff and students to encourage them to reduce consumption if necessary.

The school is built with minimal west and east facing facades and adequate provision of effective sun shading devices on the aforementioned facades to minimize heat gain within the building.

Schedule for air-conditioning is formulated to reduce unnecessary usage of AC system.

LAN Rooms’ temperature is set to optimal temperature of 24 degrees Celsius.
YUHUA SECONDARY SCHOOL

Existing Schools

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

• Provision of an educational, fun and engaging green hub equipped with adequate learning materials on environmental sustainability for both students and staff.

• Provision of recycling bins at strategic locations within the school (e.g. canteen) and recycling do’s and don’ts poster to educate users to recycle correctly.

• Provision of twin bins in classrooms to encourage recycling amongst students.

• A range of native plants lines the walkway of the school. Labels displaying information of each plant are placed next to each plant to provide students with knowledge on these native plants.

• Green Ambassadors are appointed to ensure that green practices are carried out in the school and to influence their peers to adopt environmentally friendly habits.

• Energy and water usage are monitored and documented with reasons for high and low consumption. These information on trends of energy and water utilization are communicated to both staff and students to encourage them to reduce consumption if necessary.

• The school is built with minimal west and east facing facades and adequate provision of effective sun shading devices on the aforementioned facades to minimize heat gain within the building.

Client/Developer
Ministry of Education

Architect

M&E Engineer

Structural Engineer

Quantity Surveyor

Main Contractor

231
44 SPRINGLEAF RISE
New Landed House

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

Owner
Mr Von Lee

Architect
A D Lab Pte Ltd

M&E Engineer
CCA Partners Pte Ltd

Structural Engineer
CNP Consultants Pte Ltd

Quantity Surveyor
-

Main Contractor
Expand Construction Pte Ltd

- Estimated energy savings: 69,638kWh/yr;
  Estimated water savings: 195m³
- Use of double glazed Low-E glass panels
- Use of energy efficient LED lighting
- 15.37KWp Solar PV system at Roof
- Provision of Solar water heater with Energy saving heat pump
- Extensive use of environmentally friendly products
- Extensive landscape green area with rain-water harvesting and auto-irrigation
- Creative design for cross and natural ventilation
LUXUS HILLS (PHASE 16)
New Residential Building

GREEN MARK AWARD FOR BUILDINGS | GOLDPLUS

- Estimated energy savings: 236,322.25kWh/yr; Estimated water savings: 3513.13m³/yr
- Provide PV Panels to collect solar energy to offset electrical consumption
- Provide clothes drying facilities to discourage use of dryer
- Use of heat recovery system for water heaters
- Use of home lift with >95% of the parts recyclable and with energy class A rating (VDI 4707)
- Underground Rainwater Harvesting Tank collects rainwater for irrigation

Client/Developer: Bukit Sembawang Estates Limited
Architect: RSP Architects Planners & Engineers (Pte) Ltd
M&E Engineer: Squire Mech Pte Ltd
Structural Engineer: RSP Architects Planners & Engineers (Pte) Ltd
Quantity Surveyor: Arcadis Singapore (Pte) Ltd
Main Contractor: Seah Construction Pte Ltd
<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>CATEGORY</th>
<th>CLIENT/DEVELOPER/BUILDING OWNER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jurong Fire Station</td>
<td>New Non-Residential Building</td>
<td>Singapore Civil Defence Force</td>
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<tr>
<td>Mandai MRT Depot and Mandai Bus Depot</td>
<td>New Non-Residential Building</td>
<td>Land Transport Authority</td>
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<tr>
<td>Sembcorp Marine Corporate Office</td>
<td>New Non-Residential Building</td>
<td>Jurong Shipyard Pte Ltd</td>
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<tr>
<td>Tuas Desalination Plant</td>
<td>New Non-Residential Building</td>
<td>Public Utilities Board</td>
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<td>158 Cecil Street (2nd Re-Certification)</td>
<td>Existing Non-Residential Building</td>
<td>Jurong Shipyard Pte Ltd</td>
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<tr>
<td>51 Cuppage Road (2nd Re-Certification)</td>
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<td>ISKM Investment Pte Ltd</td>
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<tr>
<td>71 Robinson Road (3rd Re-Certification)</td>
<td>Existing Non-Residential Building</td>
<td>Frasers Property Cuppge Pte Ltd</td>
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<tr>
<td>Akzonobel House (2nd Re-Certification)</td>
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<td>CR-71 ROBINSON ROAD SINGAPORE PTE LTD</td>
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<tr>
<td>Animal Breeding Facility at 9 Perahu Road</td>
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<td>HSBC Institutional Trust Services (Singapore) Ltd as Trustee of Ascendas Real Estate Investment Trust</td>
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<tr>
<td>Beauty World Centre</td>
<td>Existing Non-Residential Building</td>
<td>InVivos Pte Ltd</td>
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<tr>
<td>CSC @ Changi Clubhouse</td>
<td>Existing Non-Residential Building</td>
<td>The Management Corporation Strata Title Plan No. 2121</td>
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<td>Civil Service Club</td>
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# GREEN MARK FOR BUILDINGS AWARD | GOLD

## PROJECT NAME

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<thead>
<tr>
<th>Building/Name</th>
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<tbody>
<tr>
<td>DNV GL LABORATORY</td>
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<tr>
<td>EM@Redhill</td>
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<tr>
<td>FoodAxis @ Senoko</td>
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<tr>
<td>Fortune Centre (MCST1001)</td>
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<tr>
<td>Grundfos Singapore</td>
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<tr>
<td>HDB Mall - 88 Plaza</td>
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<tr>
<td>HDB Mall - Elias Mall</td>
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<tr>
<td>HDB Mall - Pioneer Mall</td>
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<tr>
<td>HDB Mall - Woodlands Mart</td>
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<tr>
<td>HDB Mall - Yew Tee Square</td>
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<tr>
<td>Hotel Miramar Singapore</td>
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## CATEGORY

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## CLIENT/DEVELOPER/BUILDING OWNER

<table>
<thead>
<tr>
<th>Client/Developer/Building Owner</th>
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<tbody>
<tr>
<td>DNV GL Singapore Pte Ltd</td>
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<tr>
<td>EM Services Pte Ltd</td>
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<tr>
<td>HSBC Institutional Trust Services (S) Ltd as trustee of Ascendas Real Estate Investment Trust</td>
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<tr>
<td>Management Corporation Strata Title Plan No. 1001</td>
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<tr>
<td>Grundfos (Singapore) Pte Ltd</td>
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<td>Housing &amp; Development Board</td>
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<td>Housing &amp; Development Board</td>
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<td>Housing &amp; Development Board</td>
</tr>
<tr>
<td>Hotel Miramar Singapore Limited</td>
</tr>
</tbody>
</table>
## GREEN MARK FOR BUILDINGS AWARD | GOLD

### PROJECT NAME
- HSL Waterfront@Penjuru
- Hyflux Innovation Centre
- Keppel Distripark Block 511
- Kitchener Complex
- LASALLE College of the Arts
- Liat Towers
- Marina Bay Cruise Centre Singapore
- Neuros & Immunos
- New Bridge Centre
- Orchard Building

### CATEGORY
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings

### CLIENT/DEVELOPER/BUILDING OWNER
- Verdeland Pte Ltd
- HSBC Institutional Trust Services (S) Ltd as a trustee of Ascendas Real Estate Investment Trust
- PSA Corporation Ltd
- Housing & Development Board (HDB)
- LASALLE College of the Arts Limited
- Goldvein Pte Ltd
- Singapore Tourism Board
- HSBC Institutional Trust Services (Singapore) Ltd as Trustee of AREIT
- Housing & Development Board
- All Island Pte Ltd
GREEN MARK FOR BUILDINGS AWARD | GOLD

**PROJECT NAME**

- OUE Bayfront
- OUE Downtown 1&2
- P&G Singapore Innovation Center
- Pasir Panjang Terminal Building
- Peninsula Plaza
- Plaza 8 @ CBP
- Ramada Singapore At Zhongshan Park
- Robinson 77
- Tampines Mall
- The Clementi Mall
- West Mall

**CATEGORY**

- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
- Existing Non-Residential Buildings
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- Existing Non-Residential Buildings
- Existing Non-Residential Buildings

**CLIENT/DEVELOPER/BUILDING OWNER**

- DBS Trustee Limited as Trustee of OUE Commercial Real Estate Investment Trust
- Alkas Realty Pte Ltd c/o Jones Lang LaSalle Property Consultants Pte Ltd
- Procter & Gamble International Operations SA Singapore Branch
- PSA Corporation Limited
- The Management Corporation - Strata Title Plan No. 1031
- HSBC Institutional Trust Services (Singapore) Ltd as Trustee of Ascendas Real Estate Investment Trust
- HH Properties Pte Ltd
- 77R Investments Pte. Ltd.
- HSBC Institutional Trust Services (Singapore) Limited as Trustee of Capitaland Mall Trust
- SPH Retail Property Management Services Pte Ltd
- Alprop Pte. Ltd.
<table>
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<th>CATEGORY</th>
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<tbody>
<tr>
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<td>Existing Non-Residential Buildings</td>
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<tr>
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<tr>
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<tr>
<td>Clementi NorthArc</td>
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## Green Mark for Buildings Award | Gold

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<tr>
<th>Project Name</th>
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<tr>
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<td>The Crest</td>
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<td>West Plains @ Bukit Batok</td>
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<td>West Quarry</td>
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<td>West Scape @ Bukit Batok</td>
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<tr>
<td>Tampines GreenEdge</td>
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### Green Mark for Buildings Award | Gold

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## GREEN MARK FOR BUILDINGS AWARD | CERTIFIED

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<td>The RiverWalk</td>
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<td>Paragon</td>
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<tr>
<td>Chinatown Point</td>
<td>Existing Non-Residential Buildings</td>
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<tr>
<td>HSBC Building</td>
<td>Existing Non-Residential Buildings</td>
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<tr>
<td>Hotel Re!</td>
<td>Existing Non-Residential Buildings</td>
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</tbody>
</table>
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-HPB Green Mark for Healthier Workplaces
ii. BCA Green Mark Award for Office Interiors
iii. BCA Green Mark Award for Supermarkets
iv. BCA Green Mark Award for Retail
v. BCA-IMDA Green Mark Award for Data Centres
vi. BCA Green Mark Award for Laboratories
vii. BCA Green Mark Award for Restaurants
The health and well-being of building occupants is increasingly becoming a major value proposition for the adoption of green buildings and interior spaces. This awareness is echoed by business leaders and companies that place growing emphasis on employee health and well-being to differentiate themselves as the employer of choice. In line with global trend and increasing demand for green and healthy buildings, the BCA Green Mark has been placing greater emphasis on the quality of indoor environments as well as the health, comfort and well-being of the users and occupants.

To strengthen the business case for energy-efficient, resource efficient and healthier interior spaces, BCA collaborated with the Health Promotion Board (HPB) to develop the new BCA-HPB Green Mark for Healthier Workplaces scheme (GM HW: 2018).

With international studies indicating that 90% of the business operating costs are related to human capital costs, staff’s productivity would be of paramount interest and concern to any company. The new GM HW would appeal to companies that place emphasis on both health and well-being in addition to environmental sustainability in the office. GM HW aims to provide a clearer and stronger business case for office sustainability by placing occupants health, well-being and comfort at the forefront of office design and daily operations. It also seeks to create a supportive environment through the establishment of workplace health structures, policies and programmes. With the inclusion of criteria that also looks at the health and well-being, we hope that this will make the value proposition for green interior more compelling and personal from the users angle.
• Flexible open office design for Activity Based Working (ABW) environment
• Encourage physical mobility through internal staircase connection, sit-to-stand desks and ergonomic office furniture
• Support health and well-being of staff with provision of multiple water points, library, wellness room, nursing room and multi-faith room.
• Optimize dimmable lighting system integrated with motion sensors and daylight harvesting capabilities
• Enhance thermal comfort and indoor air quality through the use of swirl diffuser and fabric duct
• Reduce greenhouse gas emission from business travel and digitalized internal communication
• Internal Building Management System (BMS) to monitor energy usage, water usage and indoor air quality
C&W SERVICES (S) PTE LTD

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

- Environmental dashboard for performance and indoor air quality monitoring
- Energy efficient LED lightings resulting in 32% improvement / better than baseline
- Lighting controls for optimized usage (timer, motion sensors, mobile application)
- Staff engagement programs (social bonding events, health, safety, fitness and sustainability)
- Biophilic features (indoor and wall greenery and geometric furniture)
- Energy Star office equipment, extensive use of SGLS certified products and facilities for collection of common recyclables

Tenant  C&W Services (S) Pte Ltd
Energy Services Company (ESCO)  C&W Services (S) Pte Ltd
Green Mark Consultant  C&W Services (S) Pte Ltd
**GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM**

- Internal staircase connects staff across 3 floors through easy accessibility, promotes interaction, better communication and encourage more exercise through walking.
- Green walls that creates alluring and inviting environment bringing occupants close to nature, improving air quality and reduces noise level.
- Multiple touch down areas for hot-desking staff, impromptu discussion, ad-hoc meetings, private workspace and encourages staff collaboration.
- Follow-me-print with secured scan-fax-copying functions allowing reduction of missing or uncollected copies anywhere in the office.
- Multi-function interactive board with annotation functions, enables document to be sent during meeting and with up to 4 wireless sharing.
- Writable walls (from floor to ceiling) gives you unlimited, boundless space to brainstorm and share your ideas with one another.
- Ergonomic chairs that reduces backache for prolonged sittings with adjustable height, base, armrest, lumbar support and in-turn improves productivity.

<table>
<thead>
<tr>
<th>Tenant/Owner</th>
<th>City Developments Limited</th>
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<tr>
<td>Renovation Consultant/Contractor</td>
<td>Facility Link Pte Ltd</td>
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<tr>
<td>M&amp;E Consultant</td>
<td>Squire Mech Pte Ltd</td>
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<tr>
<td>ID Consultant</td>
<td>SCA Design Pte Ltd</td>
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<tr>
<td>Quantity Surveyor</td>
<td>Arcadis Singapore Pte Ltd</td>
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</tbody>
</table>
CITY DEVELOPMENTS LIMITED (#36-01 REPUBLIC PLAZA)

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

- Maximise use of workspace to increase number of staff from 32 (before renovation) to 52 (after renovation)
- Planter boxes among workdesks to create alluring and inviting environment bringing occupants close to nature, improving air quality and reduces noise level
- Multiple touch down areas for hot-desking staff, impromptu discussion, adhoc meetings, chill-out, private workspace and encourages staff collaboration
- Follow-me-print with secured scan-fax-copying functions allowing reduction of missing or uncollected copies anywhere in the office.
- Multi-function interactive board with annotation functions, enables document to be sent during meeting and with up to 4 wireless sharing.
- Ergonomic chairs that reduces backache for prolonged sittings with adjustable height, base, armrest, lumbar support and in-turn improves productivity
- Sound proofing meeting rooms to give users privacy to focus during discussions through elimination of exterior noise.

Tenant/Owner
City Developments Limited

Renovation Consultant/
Contractor
db & b Pte Ltd

Facility Manager Company
CDL Properties Ltd

Acoustic Consultant
Avup Singapore Pte Ltd
DBS ASIA CENTRAL

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

- Extensive health and green activities conducted yearly.
- Extensive direct and indirect nature experience.
- Energy Efficient LED Lighting provision with timer control and zones in office spaces.
- Extensive waste recycling practice with provision of recycling bins on every floor.
- Office is located in a Green Mark Platinum base building.
- Office previously achieved GM Platinum under the Green Mark for Office Interiors scheme.
- Open plan office concept with access to daylight, provision of collaborative spaces and biophilic design for offices.

Client/Developer: DBS Bank Ltd.
Facility Manager Company: Jones Lang LaSalle Property Consultants Pte Ltd
Green Mark Consultant: C&W Services(s) Pte Ltd
DBS ASIA HUB

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

- Extensive health and green activities conducted yearly.
- Extensive direct and indirect nature experience.
- Energy Efficient LED Lighting provision in office and common areas.
- Extensive waste recycling practice with provision of recycling bins on every floor.
- Base building is Green Mark “Platinum” rating.
- Solar panels installed on-site and generated energy for building usage.
- Open plan office concept with height adjustable desks and uses environmentally sustainable materials for office premises.

Client/Developer: DBS Bank Ltd.
Facility Manager Company: Jones Lang LaSalle Property Consultants Pte Ltd
Green Mark Consultant: C&W Services(s) Pte Ltd
• Extensive usage of photocell sensors, motion sensors and toggling arrangement to reduce energy wastage
• Adequate operable glare controls and matt wall finishes are provided for occupant comfort
• Up to 97% of the IT equipment is energy star certified
• Nursing room with assistive provision, catered for expectant mothers in the office
• Up to 83% of the pantry snacks and beverages are healthier choice certified
• Extensive indoor greenery provision constituting up to 2% of the office area
• Periodic health screening, workout sessions and smoking cessation supports are provided for all staff to promote on healthier lifestyle
HONGKONG LAND (SINGAPORE) PTE LTD

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

- Use of high energy efficient LED lights and better lighting control systems.
- Use of SGBC certified products for fit outs and use back existing ceiling, tables and chairs etc. for better sustainability.
- Usage of daylight sensors for better lighting control.
- Use of Motion sensors at meeting rooms .
- Better air distribution by zoning and temperature control for better thermal comfort.
- Implemented Workplace Health and well being programs
- Promote mental well being – participation in Jardine Mindset program

Tenant/Owner: Hongkong Land (Singapore) Private Limited
Renovation Consultant/Contractor: ISG Asia (Singapore) Pte Ltd
Facility Manager Company: Hongkong Land (Singapore) Private Limited
M&E Consultant: AT Advanced Technologies Asia Pacific Pte Ltd
Architect/ID Consultant: Aplusi Asia Pte Ltd
ESD Consultant: BWG Green Technology Pte Ltd
Lighting Consultant: KLD Klaasen Lighting Design
KEPPEL CAPITAL INTERNATIONAL PTE LTD

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

• Energy efficiency index (EEI) < 50 kWh/m²/yr;
• 100% powered by off-site solar energy
• Occupancy based smart LED lighting system, Lighting power density < 5 W/m²
• Agile, open, flexible workplace with sit-stand desks
• IAQ display for monitoring and trending
• Provision of healthier food options such as fruits, filtered water, etc.
• Comprehensive waste recycling program including secure printing, paper recycling

Tenant/ Owner
Keppel Capital International Pte Ltd

Renovation Consultant/
Contractor
Tarkus Interiors Pte Ltd

Facility Manager Company
Engie Services Singapore

M&E Consultant
VHA Consultants Pte Ltd

Managing Agent/
Maintenance Contractor
-

ID Consultant
Woods Bagot

Project Manager
Jones Lang LaSalle Property Consultants Pte Ltd
KEPPEL CORPORATION LTD

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

Energy efficiency index (EEI) < 50 kWh/m²/yr;
100% powered by off-site solar energy
Occupancy based smart LED lighting system, Lighting power density < 5 W/m²
Agile, open, flexible workplace with sit-stand desks
IAQ display for monitoring and trending
Provision of healthier food options such as fruits, filtered water, etc.
Comprehensive waste recycling program including secure printing, paper recycling

Tenant/ Owner
Keppel Corporation Ltd

Renovation Consultant/ Contractor
Tarkus Interiors Pte Ltd

Facility Manager Company
Engie Services Singapore

M&E Consultant
VHA Consultants Pte Ltd

Managing Agent/ Maintenance Contractor -

ID Consultant
Woods Bagot

Project Manager
Jones Lang LaSalle Property Consultants Pte Ltd
KEPPEL LAND LTD

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

- Energy efficiency index (EEI) < 50 kWh/m²/yr;
- 100% powered by off-site solar energy
- Occupancy based smart LED lighting system, Lighting power density < 5 W/m²
- Agile, open, flexible workplace with sit-stand desks
- IAQ display for monitoring and trending
- Provision of healthier food options such as fruits, filtered water, etc.
- Indoor urban farming

Tenant/Owner
Keppel Land

Renovation Consultant/Contractor
Tarkus Interiors Pte Ltd

Facility Manager Company
Engie Services Singapore

M&E Consultant
VHA Consultants Pte Ltd

Managing Agent/Maintenance Contractor
-

ID Consultant
Woods Bagot

Project Manager
Jones Lang LaSalle Property Consultants Pte Ltd
• Green wall with motion sensors triggering nature sounds on level 6 as well as a water feature tunnel on level 7 that leads to a Zen garden helps improve spatial awareness of occupants
• In-house and external subsidized fitness programs, employee assistance program with 24-hr help hotline, health and mental talks as the allocation of quiet relaxation zones helps improve the mental and physical wellness of employees
• Food and drinks menus designed by a nutritionist, well stocked pantry with unsweetened/fruit infused drinks and fresh fruits and visual reminders on tips for healthier eating habits
• Active Workplace Design with multi functional spaces and activity based workstations as well as strategically placed internal stairs to encourage collaboration and movement
• Environmental programmes such as recycling campaigns and provision of personal electronic waste collection bins. Environment Policy and guidelines to improve energy, water and waste reduction.
• Lighting with zoning controls, timer controls, use of LED and T5 lighting, as well as a separate monitoring system for lighting and plug loads ensure energy efficiency optimization
• Use of sustainable materials for interior walls, ceiling and flooring
RAFFLES QUAY ASSET MANAGEMENT

Green Mark Award for Healthier Workplaces | Platinum

Healthier Workplace

Client/Developer: Raffles Quay Asset Management Pte Ltd
Architect: Wolf Studio Pte Ltd
M&E Engineer: WSP Consultancy Pte Ltd
ESD / Green Consultant: C&W Services (S) Pte Ltd
Quantity Surveyor: Wolf Studio Pte Ltd
Main Contractor: Facility Link Pte Ltd

- Energy-efficient LED lightings with majority motion sensor control
- Open office layout enabling daylight provision, with enclosed rooms located away from windows
- Extensive use of environmentally-friendly products certified by SGBC & SGLS for renovation fit-out & office operations
- Waste minimisation through use of non-disposable utensils & cups, digitalised HR processes & email circulars for info dissemination
- Committed in Green Advocacy such as the annual participation of Earth Hour, iLight Marina Bay Festival and PUB Singapore World Water Day
- Green & Wellness Workplace Committee to organize activities covering active living, mental well-being & active living
- Height-adjustable sit-stand desks provided for all staff to encourage active lifestyle at workplace
CAMFIL SINGAPORE PTE LTD

Healthier Workplaces

GREEN MARK AWARD FOR NON-BUILDINGS | GOLD PLUS

- Usage of energy efficient tubes and LED light
- Extensive use of environmentally friendly products
- Use natural daylight for rooms with windows
- Greenery is inside the office
- Provision of twin bins in office to promote recycling

Tenant/Owner
Camfil Singapore Pte Ltd

ESD Consultant
BMG Green Technology Pte Ltd
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
Client/Developer: Capitaland Commercial
Architect: N.A.
M&E Engineer: N.A.
Structural Engineer: N.A.
Quantity Surveyor: N.A.
Main Contractor: Comms Square Creative Pte Ltd

- Tenant Service Centre of area 132m²
- Lighting power budget: 5.64W/m²
- Occupant density: 11m²/Pax
- High Efficient LED Lighting used
- Extensive use of environmentally friendly products
- Open office layout and hot desking with minimal partitions, flexible spaces with operable walls used for meeting rooms
- More than half of office furniture recycled
- Over 1% of floor area with greenery
ING BANK N.V., SINGAPORE BRANCH

Office Interior

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

- 44.4% savings from baseline for artificial lighting
- Motion sensor controlled light fittings within the open office space
- Internal staircase that connects the office and reduces the reliance on lifts
- Annual sustainability reporting
- Extensive use of sustainable materials and products certified by SGLS/SGBC
- Good indoor air quality achieved based on NEA guidelines
- 1.7% of office space covered with potted plant to improve IAQ

Tenant
ING Bank N.V., Singapore Branch

Interior Designer
Siren Design Group (Singapore) Pte Ltd

M&E Consultant
Hurley Palmer Flatt Ltd

ESD Consultant
G-Energy Global Pte Ltd

Main Contractor
Facility Link Pte Ltd
MINISTRY OF COMMUNICATIONS AND INFORMATION (MCI)
Office Interior

GREEN MARK AWARD FOR NON-BUILDINGS | PLATINUM

• Usage of energy efficient lighting fixture which contributes to a high energy saving of 43.03% for lighting.
• Provision of motion sensors to reduce energy wastage
• Usage of timer socket for cold and hot water to reduce energy waste after office hour
• 96% of the IT equipment are energy star certified
• Provision of teleconferencing facilities to reduce on MCI carbon footprint

Tenant/Owner
Renovation Contractor
Facility & Project Manager Company
M&E Consultant
Managing Agent/Maintenance Contractor
ESD Consultant

Ministry of Communications and Information
Perform Industries Pte Ltd
ENGIE Property Services
CCA & Partners Pte Ltd
ENGIE Property Services
Building System & Diagnostics Pte Ltd
Daylight sensors in the atrium and motion sensors throughout the office to minimise energy usage

High efficient lighting design giving a low lighting power budget of less than 10 W/m²

Greenery coverage of more than 1% 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 for after-hours usage with timer set for two hours when toggle switch is pressed

Office desk equipped with height adjustable feature to provide people-oriented work environment
CPG Consultants Pte Ltd Office @ Westgate Tower

Office Interior

GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES | GOLD PLUS

• Extensive use of T5 & LED lighting along with the use of Power over Ethernet (PoE) technology
• Energy efficient office equipment
• UV lights installed in AHU to reduce viable bacterial, so that enhance air quality and staff health
• Individual power & water meter at each levels
DBS ASIA GATEWAY

Office Interior

GREEN MARK AWARD FOR NON-BUILDINGS | GOLD PLUS

- Energy efficient air-conditioning and lighting system with zoning and timer controls
- 95% of office equipment rated “Energy Star”
- Water savings features such as WELS Excellent rated water fittings and water leak detection system
- Open office plan with sustainable materials
- Courtyard with trees and plants for occupants well-being

Tenant/Owner: DBS Bank Ltd.
Facility Management Company: Jones Lang LaSalle
ESD Consultant: Aurecon Group Singapore
MUREX SOUTHEAST ASIA PTE LTD

Office Interior

GREEN MARK AWARD FOR NON-BUILDINGS | GOLDPLUS

- Provision of teleconferencing facilities for each meeting room to reduce operational carbon footprint
- Provision of toggle switches and motion sensors to reduce energy wastage
- 94% of the IT equipment are Energy Star certified
- Provision of aesthetically pleasing moss walls in breakout areas to promote nature connectivity
- Provision of innovative user operable walls for adaptability of office spaces

Tenant/Owner: Murex Southeast Asia Pte Ltd
Renovation Consultant/Contractor: Tarkus Interior Pte Ltd
M&E Consultant: J Roger Preston (S) Pte Ltd
Project Manager: Jones Lang LaSalle Property Consultants Pte Ltd
ID Consultant: Sennex Consultants Pte Ltd
ESD Consultant: Building System & Diagnostics Pte Ltd
REED SMITH PTE LTD

Office Interior

GREEN MARK AWARD FOR NON-BUILDINGS | GOLD PLUS

- Extensive use of energy efficient office equipment
- Secured printing as a waste management strategy
- Extensive use of SGBCC/SGLS certified products during construction and operations
- Provision of WELS 3 tick excellent water fittings
- Vertical greenery at reception

Tenant/Owner
Reed Smith Pte Ltd

Renovation Consultant/Contractor
Jones Lang LaSalle Property Consultants Pte Ltd

ESD Consultant
Earth-InWind Pte Ltd
VINDA SINGAPORE PTE LTD
Office Interior

GREEN MARK AWARD FOR NON-BUILDINGS | GOLDPLUS

• Low EEI : 44.85 kWh/m²/yr
• Project is in Green Mark Platinum building
• 51% savings from energy efficient lighting
• Poster for education/raise awareness at strategic locations
• Sustainability report is issued annually

Tenant/Owner
Vinda Singapore Pte Ltd

Renovation Consultant/Contractor
CD Plus A Pte Ltd
ENCY Green Solutions LLP

Others
GREEN MARK FOR OFFICE INTERIOR | GOLD

### PROJECT NAME

- Bank of Singapore Limited
- BURBERRY (S) DISTRIBUTION CO. PTE LTD
- Child Protective Service, Ministry of Social and Family Development
- Cyber Security Agency of Singapore
- DBS Asia X
- Government Technology Agency (GovTech Hive 9)
- Government Technology Agency of Singapore
- KBC Bank NV Singapore Branch
- Level 3 Office @ Infineon Technologies Asia Pacific Pte Ltd
- Lombard Odier (Singapore) Ltd
- Ministry of Education (MOE Prefab Office at 51 Grange Road)

### CLIENT/DEVELOPER/BUILDING OWNER

- Bank of Singapore Limited
- Burberry
- Child Protective Service
- Ministry of Communications and Information (Cyber Security Agency)
- DBS
- Infocomm Development Authority (IDA)
- Government Technology Agency of Singapore
- KBC Bank NV Singapore Branch
- Infineon Technologies Asia Pacific Pte Ltd
- Lombard Odier (Singapore) Ltd
- Ministry of Education
GREEN MARK FOR OFFICE INTERIOR | GOLD

PROJECT NAME
Mitsubishi UFJ Financial Group

CLIENT/DEVELOPER/BUILDING OWNER
The Bank of Tokyo-Mitsubishi, UFJ, Ltd., Singapore Branch
<table>
<thead>
<tr>
<th>PROJECT NAME</th>
<th>CLIENT/DEVELOPER/BUILDING OWNER</th>
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<tbody>
<tr>
<td>Anderson Mori &amp; Tomotsune (Singapore) LLP</td>
<td>Anderson Mori &amp; Tomotsune (Singapore) LLP</td>
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<td>Axis Bank Limited, Singapore Branch</td>
<td>Axis Bank Limited, Singapore Branch</td>
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<td>CDL Properties Limited</td>
<td>CDL Properties Limited</td>
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<td>China Construction Bank Corporation Singapore Branch</td>
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<td>City Serviced Offices</td>
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<td>DISTRII SINGAPORE PTE. LTD.</td>
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<td>EC World Asset Management Pte Ltd</td>
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GREEN MARK FOR OFFICE INTERIOR | CERTIFIED

PROJECT NAME

Genesys Telecommunications Laboratories Asia Pte. Ltd.
ICICI Bank Limited
Jeppesen Asia/Pacific Pte Ltd
K&L Gates Straits Law LLC
Latham & Watkins LLP
Lloyds Bank Corporate Markets plc, Singapore Branch
National Bank of Kuwait S.A.K.P., Singapore Branch
Network Architects Pte Ltd
POSB Newton Office
Rhodium Resources Pte Ltd
Tokyo Gas Asia Pte Ltd

CLIENT/DEVELOPER/BUILDING OWNER

Genesys Telecommunications Laboratories Asia Pte. Ltd.
ICICI Bank Limited
Jeppesen Office
Straits Law Practice LLC
Latham & Watkins LLP
Lloyds Merchant Bank Asia Ltd
National Bank of Kuwait S.A.K.P., Singapore Branch
Network Architects Pte Ltd
DBS Bank Ltd.
Rhodium Resources Pte Ltd
Tokyo Gas Asia Pte Ltd
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. It 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.

There are about 300 supermarkets in Singapore, and each outlet’s floor area can range from 90 m$^2$ to 4,500 m$^2$. 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%. Thus, supermarket operators have a significant impact on the total building energy consumption. 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 FINEST AT ZHONGSHAN MALL

Supermarket

GREEN MARK AWARD FOR SUPERMARKET | PLATINUM

- Energy-efficient refrigeration system using Variable Speed Compressors, EC fan motor & Electronic Expansion valves.
- CO₂ refrigerant with a GWP of 1 being used for freezer system.
- More than 75% of the refrigeration showcases are fitted with doors to conserve energy.
- 100% LED lighting with zonal control & occupancy sensors are installed at low traffic areas.
- Extensive use of environmentally-friendly building material & water-efficient fittings.
- Dedicated area for Organic/Wellness product.

Client/Developer: NTUC Fairprice Cooperative Ltd
Refrigeration System Specialist: Epta Asia Pte Ltd
GREEN MARK FOR SUPERMARKETS | GOLD

PROJECT NAME
FairPrice Supermarket at Kampung Admiralty
FairPrice Supermarket at Punggol Oasis
FairPrice Supermarket at Toa Payoh A

CLIENT/DEVELOPER/BUILDING OWNER
NTUC Fairprice Co-operative Ltd
NTUC Fairprice Co-operative Ltd
NTUC Fairprice Co-operative Ltd
GREEN MARK FOR SUPERMARKETS | CERTIFIED

PROJECT NAME

FairPrice Supermarket at Ang Mo Kio Blk 712
FairPrice Finest Supermarket at Serangoon Garden myVillage

CLIENT/DEVELOPER/BUILDING OWNER

NTUC Fairprice Co-operative Ltd
NTUC Fairprice Co-operative Ltd
The **BCA Green Mark for Retail** was launched in 2012 to recognise the sustainable efforts of individual retail tenants. It provides recognition of retailers’ commitment to reduce their environmental impact.

The retail sector is one of the highest consumers of energy per floor area. Data collected from retail buildings assessed under the Green Mark for Buildings showed that approximately 50% of the total building energy is consumed by the retail tenants.

The tenant loads within such buildings also lead to high air-conditioning load within the retail mall.

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

The scheme assesses retail tenants under the following five criteria:

i. **Energy Efficiency**

ii. **Water Efficiency**

iii. **Sustainable Awareness and Operation**

iv. **Indoor Environmental Quality**

v. **Other Green Features**
DBS TREASURES AT SUNTEC CITY AND DBS SUNTEC CITY BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | PLATINUM

- High-efficiency lighting with 60% improvement over baseline lighting power budget
- 89% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring
- Provide SGLS certified dishwashing liquid and paper towel as part of DBS’ green procurement policy
- Sensible Air-conditioning zoning with automatic scheduling control

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Design Base Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: CCA & Partners Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Tarkus Interiors Pte Ltd
POSBIITE COLLEGE CENTRAL BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | PLATINUM

- High-efficiency lighting with 70% improvement over baseline lighting power budget
- 89% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring
- Provide SGLS certified dishwashing liquid and paper towel as part of DBS' green procurement policy
- Sensible Air-conditioning zoning with automatic scheduling control

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Spacelogic Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Contractor: Wong Huat Engineering Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
POSBI NGEE ANN CITY BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | PLATINUM

• High-efficiency lighting with 60% improvement over baseline lighting power budget
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• Provide SGLS certified dishwashing liquid and paper towel as part of DBS’ green procurement policy
• Sensible Air-conditioning zoning with automatic scheduling control

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Design Base Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: Team Design Consultants
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
POSB PAYA LEBAR BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | PLATINUM

• High-efficiency lighting with 56% improvement over baseline lighting power budget
• 85% of office equipment used (by rated power) in the branch is Energy Star certified product
• Provide potted plants within the main banking hall
• Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
• Provision of water meter for water usage monitoring
• Provide SGLS certified dishwashing liquid and paper towel as part of DBS’ green procurement policy
• Sensible Air-conditioning zoning with automatic scheduling control

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Milan Decoration & Construction Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: Alpha Consulting Engineers Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
POSBI SELETAR MALL BRANCH

GREEN MARK AWARD FOR RETAIL | PLATINUM

- High-efficiency lighting with 60% improvement over baseline lighting power budget
- 89% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring
- Provide SGLS certified dishwashing liquid and paper towel as part of DBS’ green procurement policy
- Sensible Air-conditioning zoning with automatic scheduling control

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Design Base Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: CCA & Partners Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Tarkus Interiors Pte Ltd
POS<ref>TANJONG PAGAR BRANCH</ref>

Retail

GREEN MARK AWARD FOR RETAIL | PLATINUM

- High-efficiency lighting with 50% improvement over baseline lighting power budget
- 91% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring
- Provide SGLS certified dishwashing liquid and paper towel as part of DBS’ green procurement policy
- Sensible Air-conditioning zoning with automatic scheduling control

Client/Developer: DBS Bank Ltd.
Renovation Consultant: AI Associates
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: CCA & Partners Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Milan Decoration & Construction Pte Ltd
DBS ANG MO KIO CENTRAL BRANCH

GREEN MARK AWARD FOR RETAIL | GOLD\textsuperscript{PLUS}

- High-efficiency lighting with 53% improvement over baseline lighting power budget
- 94% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: DE Exclusive ID Group Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: CCA & Partners Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Mastron Pte Ltd
DBS ASIA TREASURES LOUNGE AT SINGAPORE CHANGI AIRPORT TERMINAL 2 BRANCH

Green Mark Award for Retail | GoldPlus

- High-efficiency lighting with 25% improvement over baseline lighting power budget
- 90% of office equipment used (by rated power) in the branch is Energy Star certified product
- Taken tenancy within a base building with Green Mark Gold certification
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: PDM International
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: CCA & Partners Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Mastron Pte Ltd
DBS BEDOK BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | GOLD PLUS

- High-efficiency lighting with 56% improvement over baseline lighting power budget
- 88% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Design Base Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: CCA & Partners Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Mastron Pte Ltd
GREEN MARK AWARD FOR RETAIL | GOLDPLUS

Client/Developer: DBS Bank Ltd.
Renovation Consultant: DNA Solution(s) Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: Alpha Consulting Engineers Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd

- High-efficiency lighting with 62% improvement over baseline lighting power budget
- 94% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring
GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 49% improvement over baseline lighting power budget
- 90% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: AD Incorporation Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: Chee Choon & Associates Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Comm Interior Pte Ltd
DBS RAFFLES LINK BRANCH

GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 52% improvement over baseline lighting power budget
- 93% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Spacelogic Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
DBS TREASURES AT SERANGGOON GARDEN AND DBS SERANGGOON GARDENS BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 47% improvement over baseline lighting power budget
- 93% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer  DBS Bank Ltd.
Renovation Consultant  Design Base Pte Ltd
Facility Manager  Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant  Alpha Consulting Engineers Pte Ltd
Green Mark Consultant  Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor  Yongway Contract & Construction Pte Ltd
DBS TREASURES EXCLUSIVE SAFEKEEPING CENTRE AND
DBS TREASURES AT SIGLAP BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 69% improvement over baseline lighting power budget
- 92% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Steven Leach + Associates Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: Chee Choon & Associates Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Kingsmen Projects Pte Ltd
GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 63% improvement over baseline lighting power budget
- 91% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Kingsmen Design Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: Belmacs Consulting Engineers Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 26% improvement over baseline lighting power budget
- 90% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Design Base Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: CCA & Partners Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
POSBJURONG POINT BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 26% improvement over baseline lighting power budget
- 90% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Design Base Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: Bescon Consulting Engineers Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
Main Contractor: Mastron Pte Ltd
POSB KAMPUNG ADMIRALTY BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 62% improvement over baseline lighting power budget
- 88% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring
GREEN MARK AWARD FOR RETAIL | GOLDPLUS

• High-efficiency lighting with 42% improvement over baseline lighting power budget
• 83% of office equipment used (by rated power) in the branch is Energy Star certified product
• Provide potted plants within the main banking hall
• Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
• Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Contractor: Tarkus Interiors Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: J. Roger Preston (S) Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 56% improvement over baseline lighting power budget
- 98% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Kingsmen Design Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
Electrical Contractor: Highlight Electrical Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
POSB WOODLANDS WEST BRANCH

Retail

GREEN MARK AWARD FOR RETAIL | GOLDPLUS

- High-efficiency lighting with 66% improvement over baseline lighting power budget
- 87% of office equipment used (by rated power) in the branch is Energy Star certified product
- Provide potted plants within the main banking hall
- Green Branch Operations Guide and regular workshops to facilitate responsible operations and behaviors
- Provision of water meter for water usage monitoring

Client/Developer: DBS Bank Ltd.
Renovation Consultant: Kingsmen Design Pte Ltd
Facility Manager: Jones Lang LaSalle Property Consultants Pte Ltd
M&E Consultant: Belmacs Pte Ltd
Green Mark Consultant: Jones Lang LaSalle Property Consultants Pte Ltd
GREEN MARK FOR RETAIL | GOLD

PROJECT NAME

DBS Asia Treasures Lounge at Singapore Changi Airport Terminal 3

DBS Treasures at Gleneagles

CLIENT/DEVELOPER/BUILDING OWNER

DBS Bank Ltd.

DBS Bank Ltd.
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
DIGITAL REALTY

New Data Centre

GREEN MARK AWARD FOR DATA CENTRE | PLATINUM

- Chiller Plant System with Efficiency of 0.634kW/Rton
- Dynamic Rotary UPS with efficiency greater than 95%
- Individual Battery Monitoring System
- Static Pressure Control for CRAH operations
- Humidity Control, Side Stream Filtration
- Continuous Energy Improvement works – LED Lights Installation, Cold Isle Containment, Blanking Panels.
- Achieved below full load design PUE at 40% partial load.

Client/Developer: Digital Singapore Jurong East Pte Ltd
Consultant/Contractor Facility Manager Consultant: Digital Singapore Jurong East Pte Ltd
M&E Consultant: LSW Consulting Engineers Pte Ltd
Managing Agent/Maintenance Contractor: NA
ESD/ Green Mark Consultant: Building System and Diagnostics Pte Ltd Measurement & Verification Pte Ltd
GLOBAL SWITCH SINGAPORE WOODLANDS

New Data Centre

GREEN MARK AWARD FOR DATA CENTRE | PLATINUM

- Modular and scalable design for optimum energy efficiency
- High efficiency cooling systems 0.53 kW/RT at 100% IT Load
- Smart control lighting system at data halls
- Use of DRUPS
- Reduce of construction waste with using Prefabricated MEP systems
- Use of MERV 14 filtration media
- Provision of treated Fresh Air with CO₂ sensors demand control

Client/Developer
Global Switch (Property) Singapore Pte. Limited

Architect
AWP Pte. Ltd

M&E Engineer
Aurecon Singapore Pte. Ltd

ESD Consultant
Kaer Pte. Ltd

Main Contractor
Gammon Pte Ltd
STT DEFU 2
New Data Centre

GREEN MARK AWARD FOR DATA CENTRE | PLATINUM

- High efficiency water cooled chillers with elevated chilled water temperatures to minimise energy consumption.
- A chiller management system dynamically adjusts the mechanical system setpoints to optimise the performance of the chillers, cooling towers and pumps.
- Dedicated PAHU for latent removal and pressurization of data hall, fed from a high efficiency low temperature circuit that is separate to the circuit feeding the IT load.
- Dual coil CRAC units with EC fans. Control system minimizes energy by matching air flow to load.
- Highly efficient DRUPs and modular static UPS during conditioning mode.
- Enlarged pipework to ensure minimal pumping energy.
- Extensive power meter monitoring using DCIM system.
- Extensive use of motion sensor friendly products.
- Dedicated operational team managing the facility 24/7 to minimise energy consumption while ensuring the highest resilience.

Client/Developer
STT Defu 2 Pte Ltd

Client’s PM and Engineers
Hurley Palmer Flatt Pte Ltd

D&B Contractor
Acme Associates Pte Ltd

D&B Contractors Architectural QP
BK Consulting Engineers Pte Ltd

D&B Contractors Structural QP
BK Consulting Engineers Pte Ltd

D&B Contractors M&E QP
Plan-One Engineering Services

ESD Consultant
Building System & Diagnostics Pte Ltd
EQUINIX SG3 DATA CENTRE

Existing Data Centre

GREEN MARK AWARD FOR DATA CENTRE | PLATINUM

Tenant / Owner
Equinix Pte Ltd/ DBS Trustee Ltd (as Trustee of Mapletree Industrial Trust)

Consultant/Contractor
LJ Energy Pte Ltd

M&E Consultant
NA

Managing Agent/Maintenance Contractor
NA

Others : Other specialist Consultant/Contractor
NA

- Permanent measurement and verification, policies and SS 564 certification for operational performance.
- VSD chiller plant at 0.567 kWRT with permanent measurement and verification instrumentation for the monitoring of chilled water plant efficiency.
- Photovoltaic panels generating about 301,000 kWh/year, motion sensors, rack-level LED, and real-time energy display.
- 95% potable water savings using NEWater and >7 COC for cooling tower make-up water. Rainwater harvesting for landscape water usage and WELS excellent fittings.
- Operational PUE of 1.64.
- Monitoring and trending of performance metrics such as PUE, Utilization, IT loading, Chiller Plant and Air Management.
- Novec fire suppression system.
- Air distribution fan power limitation is 22% better than baseline.
GREEN MARK FOR DATA CENTRES | GOLD

PROJECT NAME

PCS Security - T9 Data Centre

Singapore Tourism Board Data Centre

CLIENT/DEVELOPER/BUILDING OWNER

PCS Security Pte Ltd

Singapore Tourism Board
GREEN MARK FOR DATA CENTRES| CERTIFIED

PROJECT NAME
Equinix SG1 Data Center

CLIENT/DEVELOPER/BUILDING OWNER
Equinix Singapore Pte Ltd
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
GREEN MARK FOR RESTAURANTS| CERTIFIED

PROJECT NAME

PastaMania
Tower Club

CLIENT/DEVELOPER/BUILDING OWNER

Commonwealth Retail Concepts Pte. Ltd.
Republic Plaza City Club (S) Pte Ltd.
BCA International Pte Ltd is a wholly-owned subsidiary of BCA. It provides a multitude of services to help develop excellent built environments worldwide. The Green Mark certification is among one of the most popular services offered by BCA International.

The Success Of Green Mark Overseas

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

More developers are using Green Mark to provide meaningful differentiation of their buildings.

Benefits of a Green Mark building include:
- Reduction in water and energy bills
- Improvement in indoor environmental quality
- Reduction in potential environment impact
**INTERNATIONAL FINANCIAL CENTRE TOWER 2, JAKARTA**

**New Non-Residential Building**

**GREEN MARK AWARD FOR BUILDINGS | PLATINUM**

<table>
<thead>
<tr>
<th>Role</th>
<th>Company/Consultant</th>
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<tbody>
<tr>
<td>Client/Developer</td>
<td>PT Kepland Investama</td>
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<tr>
<td>Design Architect</td>
<td>NBBJ LP</td>
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<tr>
<td>Project Architect</td>
<td>PT Pandega Desain Weharima</td>
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<tr>
<td>M&amp;E Engineer</td>
<td>T.Y. Lin International Pte. Ltd</td>
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<tr>
<td>Structural Engineer</td>
<td>T.Y. Lin International Pte. Ltd</td>
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<tr>
<td>Quantity Surveyor</td>
<td>Langdon &amp; Seah Indonesia pt.</td>
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<tr>
<td>Main Contractor</td>
<td>Samsung C&amp;T Corporation</td>
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<tr>
<td>Landscape Consultant</td>
<td>PT. Citrapesona Hijau</td>
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<tr>
<td>Lighting Consultant</td>
<td>PT. Hadi Komara &amp; Associates</td>
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<tr>
<td>Façade Consultant</td>
<td>Meinhardt Façade Technology (S) Pte Ltd</td>
</tr>
<tr>
<td>ESD Consultant</td>
<td>Kaer Pte Ltd / Afogreen Build Pte Ltd</td>
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</tbody>
</table>

- Estimated energy savings: 2,815,262 kWh/yr;
  Estimated water savings: 62,482.8 m³;
  ETTV: 39.1 W/m²
- Chiller plant system efficiency of 0.605 kW/RT
- Instrumentation for monitoring and verification (using heat balance substantiating test) of central chilled-water plant efficiency
- Regenerative lifts & destination control system
- Zero run off system with infiltration trenches, green wall and skygarden rainwater runoff capture & drought tolerant plants
- Lighting Power Density 54.53% savings
- High performance self-cleaning façade
- LCD live display and trending of building energy & water consumption breakdown
MENARA KEN TTDI
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS | PLATINUM

- Estimated energy savings: 2,113,862 kWh/yr;
  Estimated water savings: 15,867 m³/yr,
  ETTV: 39.85 W/m²
- Thermal Energy Storage system with capacity of 3,000 RTon Hours
- Efficient Water-cooled chilled water system with efficiency of 0.55 kW/RT
- Substantial rainwater harvesting via a 75 m³ tank installed below the roof slab
- Use of regenerative, gearless driven, ACVVF lift and VSD driven escalator coupled with sleep mode feature
- Condensate recovery to be reused for cooling tower make up

Client/Developer
Ken TTDI Sdn Bhd

Architect
SA Architects Sdn Bhd

M&E Engineer
EMD Consult Sdn Bhd

Structural Engineer
Pakatan Runding Raja Anna Sdn Bhd

Main Contractor
Ken Grouting Sdn Bhd

ESD Consultant
BSD Consultancy Sdn Bhd
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.

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.
KEN HOLDINGS BHD & CommonGround
@ MENARA KEN TTDI
Office Interior

GREEN MARK AWARD FOR OCCUPANT-CENTRIC SCHEMES (OVERSEAS) | PLATINUM

- Located in a LEED (USA) Platinum/ GreenRE (Malaysia) Platinum/ BCA Green Mark (Singapore) Platinum Base Building.
- Renewable Energy Generation from PV Panel.
- Open and flexible layout with minimum enclosed space.
- Use of sustainable and environmental-friendly products.
- Furniture reuse.
- Sky and Roof Garden as recreation areas.
- Near bus-stop and have bicycle parking facilities.

Client/Developer
Ken Holdings Bhd & Common Ground TTDI Sdn Bhd

Renovation Consultant/
Contractor
Ken Grouting Sdn Bhd

ESD Consultant
BSD Consultancy Sdn Bhd

Facility Manager Company
Ken TTDI Sdn Bhd

ACMW Consultant
Measurement & Verification Sdn Bhd

Managing
Agent/Maintenance
Contractors
Ken TTDI Sdn Bhd

BAS Consultant
Optergy Sdn Bhd
EXCHANGE TOWER
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLDPLUS

- Chiller plant system achieve an overall plant efficiency of 0.737 kW/RT.
- Use of LEDs at basement carpark and passenger lift lobbies.
- Use of CO sensors for carpark mechanical ventilation system.
- Use of motion sensors at common toilets
- Use of CO$_2$ sensors to regulate fresh air intake at AHUs.

Building Owner
Exchange Tower Limited

Facility Management
CBM Facilities & Security Management (Thailand) Co. Ltd

ESCO
CBM Solutions Pte Ltd
Measured chiller plant system efficiency of 0.652 kW/RT

Provision of permanent measuring & verification instrumentations in chiller plant room and linked to Building Management System.

Provision of CO$_2$ sensor to regulate fresh air in Air Handling Units.

Provision of CO sensor to regulate ventilation fans in basement carparks.

Lifts have Variable Voltage and Variable Frequency (VVVF) motor drive and sleep mode features.

Energy efficient LED lights for lift lobbies, corridors, toilets, pantry and staircases.

Provision of motion sensors for the lightings in the staircases.

Increase in recycled water capacity by 80 m$^3$ per day to supply for flushing requirement of toilets.
ECOSKY (Commercial)
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

- Water savings through high efficient water fittings
- Use of rainwater harvesting system for landscape irrigation
- Low concrete usage index
- Compost bin is used to produce compost recycled from horticulture waste

Client/Developer: Eco World Development S/B
Architect: Asima Architects Sdn Bhd
M&E Engineer: SSP (E&M) Sdn Bhd
Structural Engineer: Jurutera Perunding Tekamoju S/B
Quantity Surveyor: Unitech QS Consultancy Sdn Bhd
Landscape Consultant: Praxcis Design Sdn Bhd; Bgreen Design Sdn Bhd; GreenA Consultants
EXCHANGE SQUARE PHNOM PENH

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

• Estimated energy savings: 11,962,379 kWh/yr; Estimated water savings: 24,002 m³; ETTV: 44.03 W/m²
• Water-cooled chiller system with operating efficiency of 0.664 kW/RT
• Extensive use of LED lighting system for whole development

Client/Developer
Hongkong Land Holdings Ltd

Architect
Aedas (Cambodia) Ltd

M&E Engineer
Ove Arup & Partners Ltd
(Hong Kong)

Structural Engineer
Ove Arup & Partners Ltd
(Hong Kong)

Quantity Surveyor
WT Partnership (HK) Ltd

Main Contractor
Posco Engineering & Construction Co Ltd
CAPITAMALL WESTGATE AT QIAOKOU DISTRICT, HUBEI

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

- Chiller plant system with efficiency of 0.786 kW/ton
- Daylighting
- Extensive use of LED lighting in the common areas
- Use of Non-portable or Recycled Water
- Use of Environment Friendly Products

Client/Developer: CapitaLand Retail
Architect: The Buchan Group
M&E Engineer: Central Institute of Architecture Design and Research Co., Ltd
Main Contractor: China Construction Third Engineering Bureau Co., Ltd
Quantity Surveyor: Rider Levett Bucknall Ltd
PT WIK FAR EAST BATAM PHASE 2
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

- Estimated energy savings: 1,761,282 kWh/yr; Estimated water savings: 8,809.48 m³/yr, ETTV: 37.31 W/m²
- Water-cooled chiller system with operating efficiency of 0.696 kW/RT
- Extensive use of LED lighting system for whole development

Client/Developer: PT WIK Far East Batam
Architect: Advanced Engineering (Asia) Pte Ltd
M&E Engineer: Advanced Engineering (Asia) Pte Ltd
Structural Engineer: Advanced Engineering (Asia) Pte Ltd
Main Contractor: PT Harapan Jaya Sentosa
ESD Consultant: GreenA Consultants Pte Ltd
RESIDENSI VOGUE 1
New Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

- Estimated energy savings: 1,868,644 kwh/year;
  Estimated water savings: 5,737 m3/year,
  RETV: 19.92W/m²
- Use of energy efficient features such as air-conditioning system, lighting and energy efficient lift
- 40KWp Solar PV system
- Extensive greenery
- Extensive use of environmentally friendly products
- Rain harvesting for irrigation and provision of Electrical Vehicle Charging stations
SAIGON CENTRE PHASE 2 & 3
- COMMERCIAL TOWER
New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

Client/Developer: Keppel Land Watco II & III Co., Ltd
M&E Engineer: J. Roger Preston (S) Pte Ltd & J. Roger Preston (VN) Co Ltd
Structural Engineer: AECOM Singapore Pte Ltd & AECOM Vietnam
Quantity Surveyor: Davis Longdon & Seah Vietnam Co., Ltd
Main Contractor: Hoa Binh Construction Real Estate Corporation
ESD Consultant: Building System & Diagnostics Pte Ltd

- Well insulated façade with low E double glazed glass. Highly energy efficient chiller plant, air distribution system and lighting, lifts and escalators. Use of refrigerants leak detection system, heat recovery wheel and recycling of AHU condensate
- Permanent measurement and verification of chiller plant system using Building Management System (BMS). Monitor energy and water consumption via BMS
- Use of WELS 3 ticks "excellent" water fittings; environmental friendly and certified construction products
SAIGON CENTRE PHASE 2 & 3 – RETAIL PODIUM

New Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

- Well insulated façade with low E double glazed glass. Highly energy efficient chiller plant, air distribution system and lighting, lifts and escalators. Use of refrigerants leak detection system, heat recovery wheel and recycling of AHU condensate
- Permanent measurement and verification of chiller plant system using Building Management System (BMS). Monitor energy and water consumption via BMS
- Use of WELS 3 ticks “excellent” water fittings; environmental friendly and certified construction products
SINARMAS LAND PLAZA BSD
Existing Non-Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS)| GOLD

- Atrium and lift lobbies are naturally ventilated.
- Provision of CO\textsubscript{2} sensor to regulate fresh air in Air Handling Units.
- Provision of CO sensor to regulate ventilation fans in basement carparks.
- Lifts have Variable Voltage and Variable Frequency (VVVF) motor drive and sleep mode features.

Building Owner
PT. Bumi Serpong Damai, Tbk.

Architect
AEDAS Pte Ltd, Singapore

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

ESD / Green Consultant
G-Energy Global Pte Ltd

Main Contractor
PT. Total Bangun Persada

Facility Management
PT. Bumi Serpong Damai, Tbk.
Building Owner: P.T. Royal Oriental
Facility Management: P.T. Royal Oriental
ESD / Green Consultant: G-Energy Global Pte Ltd
ESCO: G-Energy Global Pte Ltd

- Measured chiller plant system efficiency of 0.656 kW/RT
- Provision of permanent measuring & verification instrumentations in chiller plant room and linked to Building Management System.
- Provision of CO₂ sensor to regulate fresh air in Air Handling Units.
- Lifts have Variable Voltage and Variable Frequency (VVVF) motor drive and sleep mode features.
- Energy efficient LED lights for lift lobbies, corridors, toilets, pantry and staircases.
- Provision of motion sensors for the lightings in the staircases.
SOUTHBAY PLAZA

New Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

- Estimated energy savings: 1,285,000 kWh/yr;
  Estimated water savings: 31,000 m³/yr,
  RETV: 20.88 W/m²

- Unitary air-conditioning system for all residential units with operating weighted COP more than 3.72

- Extensive use of energy efficient products such as LED lamps, regenerative lifts and water heaters

Client/Developer
Architect
- Arkitek H Sun
Design Architect
- OI Design
Landscape Architect
M&E Engineer
- I-Consultancy
Structural Engineer
- Perunding KAA Sdn. Bhd.
ESD Consultant
- BSD Consultancy Sdn. Bhd.
Quantity Surveyor
Land Surveyor
- Jurukur Pinang
Main Contractor
WATERFRONT RESIDENCE
New Residential Building

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

- Estimated energy savings: 91,939 kWh/yr;
  Estimated water savings: 63,656 m³
- Designed with good building orientation which facilitate true cross ventilation for all dwelling units
- High performance double glazed glass with low emissivity coating for all dwelling units
- Use of greywater for toilet flushing for all dwelling units
- Provision of energy efficient air conditioning system in clubhouse and show units
- Provision of radiant floor heating for show units
- Use of non potable water for irrigation
- Extensive use of environmentally friendly products that are green labelled.
WORLD TRADE CENTRE 3
New Non-Residential Building (Overseas)

GREEN MARK AWARD FOR BUILDINGS | GOLD

<table>
<thead>
<tr>
<th>Role</th>
<th>Company Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Client/Developer</td>
<td>PT Jakarta Land (jointly owned by CCM and Hongkong Land)</td>
</tr>
<tr>
<td>Architect</td>
<td>Aedas Pte Ltd</td>
</tr>
<tr>
<td>M&amp;E Engineer</td>
<td>Beeca Engineering NZ Ltd and PT BimateknoKaryatama Konsultan</td>
</tr>
<tr>
<td>Structural Engineer</td>
<td>PT Davy Sukamta Konsultan</td>
</tr>
<tr>
<td>Quantity Surveyor</td>
<td>WT Partnership and PT WolferstanTrower Indonesia</td>
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<td>Main Contractor</td>
<td>PT Balfour Beatty Sakti Indonesia</td>
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<tr>
<td>Landscape Consultant</td>
<td>Sheils Flynn Asia</td>
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<tr>
<td>Façade Consultant</td>
<td>Meinhardt Façade Technology (S) Pte Ltd</td>
</tr>
<tr>
<td>Lighting Consultant</td>
<td>PT Klaasen Lighting Design</td>
</tr>
</tbody>
</table>

- High performance facade with ETTV of 37.6W/m²
- Extensive use of environmental friendly products
- Provision of water efficient fittings with 'Excellent' and 'Very Good' WELS ratings
PALM RESIDENCE
Landed Houses

GREEN MARK AWARD FOR BUILDINGS (OVERSEAS) | GOLD

- Solar photovoltaic system
- Use of drip irrigation for landscape areas
- Extensive usage of construction materials with high solar reflectance index value

Client/Developer: South Rach Chiec City Limited Liability Company
Architect / M&E Engineer / Structural Engineer: International Construction & Investment Consultancy Co. Ltd
Project Manager: Flemington Investments Pte Ltd
Main Contractor: Mechanical work and construction investment joint stock company No. 9
Quantity Surveyor: FPS Vietnam Company Limited
Landscape Consultant: Land Sculptor Studio Vietnam Co. Ltd
ESD Consultant: Earth-In-Mind Private Limited
GREEN OFFICE PARK

DISTRICT

GREEN MARK AWARD FOR DISTRICT (OVERSEAS) | GOLD

• Good connectivity within the District and easy to reach facilities
• Energy Efficient LED for all street lighting within the district
• Large green-open landscape spaces between buildings and green roofs on most buildings to reduce heat island effect
• Use Non-potable water for irrigation and PV for street Lighting

Client/Developer
PT. Bumi Serpong Damai, Tbk

Architect
AEDAS Pte Ltd, Singapore

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

ESD Consultant
G-Energy Indonesia

Facility Management
PT. Bumi Serpong Damai, Tbk

Main Contractor
PT. Total Bangun Persada
<table>
<thead>
<tr>
<th>PROJECT NAME</th>
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</tr>
</thead>
<tbody>
<tr>
<td>Chengdu Century Park (Residential)</td>
<td>New Non-Residential Buildings</td>
<td>Chengdu Hong Hu Zhan Real Estate Co., Ltd</td>
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<tr>
<td>Citadines Millennium Ortigas Manila</td>
<td>New Non-Residential Buildings</td>
<td>CDC Holdings Inc</td>
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<td>Eco Sanctuary</td>
<td>District</td>
<td>Eco Sanctuary Sdn Bhd</td>
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<td>EcoNest</td>
<td>New Non-Residential Buildings</td>
<td>Eco Botanic Development Sdn Bhd</td>
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<td>New Non-Residential Buildings</td>
<td>Shenzhen Municipal Golden Property Development Ltd</td>
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<td>New Non-Residential Buildings</td>
<td>Mah Sing Group Berhad</td>
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<td>Pulau Muara Besar Bridge, Road and Utilities</td>
<td>Infrastructure</td>
<td>The Brunei Economic Development Board (Changed to Darussalam Enterprise)</td>
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<td>Seasons Avenue</td>
<td>New Residential Buildings</td>
<td>CapitaLand · Hoang Thanh Investment Co Ltd</td>
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<tr>
<td>Vista Verde</td>
<td>New Non-Residential Buildings</td>
<td>CapitaLand · Thien Duc Co Ltd</td>
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