

# GREEN MARK INTERNATIONAL



CERTIFICATION STANDARD



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(Above JEM)

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## Revision Log

Revision	Description	Effective Date
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## DEFINITIONS AND ABBREVIATIONS

### **Colour Rendering Index (CRI)**

A measurement from 1 to 100 that indicates how accurately an artificial light source, as compared with an incandescent light, displays hues. The higher the index, the more accurately the light is rendering colours (from U.S Energy Star).

### **District Cooling System (DCS)**

The supply of chilled water for cooling purpose from a central source to multiple buildings through a network of pipes. Individual users purchase chilled water from the district cooling system operator and do not need to install their own chiller plant other than air distribution system. This is different from buildings' in-house air-conditioning system, in part or in full, being maintained and operated by a third party.

### **Energy Efficiency (EE)**

Energy refers to the capacity for doing work. Energy Efficiency means using less energy to perform the same work, which is eliminating energy waste.

### **Energy Use Intensity (EUI)**

EUI is measured by the total electricity used within a building in a year, expressed as kilowatt hour (kWh), per gross floor area (m<sup>2</sup>). The total electricity refers to the total consumption by the Landlord and tenants in the building. As electricity is the main source of energy used in Singapore's buildings, other energy sources are typically excluded in the computation of energy use intensity.

### **Gross Floor Area (GFA)**

The total area of the covered floor space in a building based on the definition by the local authority. Vehicle parking related areas (e.g., car parking lots, driveways, etc.) on car park floors are excluded from GFA.

### **Super Low Energy (SLE)**

Best-in-class energy performing building that achieves at least 60% energy savings based on code of 2005, or 40% energy savings based on prevailing code.

### **Zero Energy (ZE)**

A super low energy (SLE) building with all energy consumption, including plug load, supplied from renewable energy sources.

### **Positive Energy (PE)**

A super low energy (SLE) building with 115% of all energy consumption, including plug load, supplied from renewable energy sources.

### **Operational Carbon**

The amount of carbon emissions associated with energy used to operate the building or in the operation of infrastructure (World Green Building Council).

### **Renewable Energy Certificate (REC)**

A market-based instrument representing the proof that a unit of electricity was generated from a renewable energy resource. Once the power provider has fed the energy into the grid, the REC received can then be sold on the open market as an energy commodity.

**Mt Framework (Maintainability Framework)**

The design appraisal tool used for demonstrating the design for maintainability (DfM) performance within Green Mark International Maintainability section.

## WHAT IS GREEN MARK INTERNATIONAL

The BCA Green Mark Scheme is green building rating system designed to evaluate a building's environmental impact and performance. Since launched, BCA Green Mark has received strong acceptance internationally, the rating system provides comprehensive framework for assessing the overall environmental performance buildings.

The Green Mark International is an extension of Green Mark 2021 to tailor for buildings in the tropics and sub-tropics, and has evolved from our previous Green Mark framework to become:

- **simple** – many pre-requisites have been removed, and the criteria have been restructured to two broad categories: (1) Energy Efficiency (the only prerequisite) and (2) Sustainability sections covering Intelligence, Health and Well-being, Whole life Carbon, Maintainability and Resilience.
- **sustainable** – the GM International criteria have been aligned to meet the United Nations Sustainable Development Goals (UN SDGs), pushing the energy efficiency envelope to mainstream Super Low Energy buildings, and recognising the future requirements from various sustainable finance taxonomies.
- **smart** – GM International keeps digitalisation efforts in mind to facilitate easy, seamless and secure certification processes.

In addition, GM International aims to be:

- **owner-friendly** – meeting building developers' and owners' needs for sustainable operations and environmental social and governance (ESG) reporting and demonstrating their leadership
- **cost-effective** – pushing the boundaries of sustainability with a value driven approach, including environmental value, social value and economic value based on a Life-Cycle Cost (LCC) approach
- **user-friendly** – a robust yet flexible framework, that brings all buildings into the same ecosystem of GM International.

## KEY ADVANCEMENTS IN GREEN MARK INTERNATIONAL

### #1 Aggressive Energy Efficiency (Operational Carbon) Standard

The energy efficiency standard in GM International has been calibrated and aggressively raised in tandem with the revised standards in the regulatory minimum in environmental sustainability for both new and existing buildings.

Parallel energy efficiency pathways have been developed to meet the aggressive energy efficiency standards set in GM International. They are:

Pathway 1: Energy Consumption based, using the Energy Use Intensity (EUI)

Pathway 2: Deemed-to-comply prescriptive performance, using fixed metrics

Pathway 3: Performance-based energy modelling

An artificial-intelligence (AI) enabled energy calculator is also being developed to facilitate data-driven contextualised simulation as well as demonstration of compliance. More information about the AI energy calculator could be found here at BCA's SLEB Smart Hub. <https://www.sleb.sg/AICalculator>.

All pathways are open for new and existing buildings to use. Each building type has a guide to which of the three pathways can be used for that typology of building (see table 2). To ensure robust efficiency standards are met, a stipulated Total System Efficiency (TSE) of air-conditioning system is required to be demonstrated. TSE measures the overall air-conditioning system efficiency covering the water- and air-side systems (or CU and air side) and provides greater flexibility for designers to optimise their building cooling system's performance.

### #2 Further Alignment with United Nations Sustainable Development Goals

GM International takes a holistic view of socio-environmental issues. It aligns with the United Nations (UN) Sustainable Development Goals (SDGs) and further translates and contextualises them for implementation within the built environment within Singapore and the urban tropics. Beyond the SDGs, it also takes reference to various developing sustainable finance taxonomies, including the European Union (EU) taxonomy and requirements within the Taskforce for Climate Related Financial Disclosures (TCFD).

Green Mark as a leading green building rating tool, is benchmarked to international tools, the World Green Building Council's Health and Wellbeing Framework and wider evidence-based global imperatives.

### #3 Introduction of GM International In-Operation

GM International In-Operation is designed to encourage buildings certified with Green Mark to continuously improve and maintain their environmental practices in operation. It is a streamlined certification process for certified projects not undergoing a retrofit, to maintain a valid Green Mark Certification with the submission of key performance indicators to ensure continued performance of the Green Mark project in energy efficiency, indoor environmental quality (IEQ) and smart operations, etc. Projects can maintain the previous Green Mark award rating or upgrade the ratings based on the energy efficiency performance.

### #4 SLE Residential

Expansion of SLE to cater for new and existing residential projects, emphasising a passive design for the dwelling units and common areas, high efficiency energy systems with smart management controls, and the requirement for adoption of onsite renewable energy to offset a proportion of the key facilities such as the swimming pools, gymnasiums and function rooms. Onsite renewable sources refer to renewable energy generated within the project boundary under the scope of Green Mark Assessment.

## #5 Other Key Changes

### **Enhancement on energy modelling and computer fluid dynamics frameworks**

The energy modelling and computational fluid dynamics (CFD) simulation have been enhanced to provide a more complete understanding of building performance through simulations to support the operation of energy efficient buildings, whilst recognising the advancement in simulation software and its use in practice.

- CFD has been enhanced to improve clarity of conditions for both residential and non-residential developments and the approach to wind-driven rain simulations.
- Standardised schedules in energy modelling have been incorporated to enable consistent comparison of annual energy savings of the designed building against reference building for energy savings. Projects using the EUI pathway should adopt the standardised schedules if operational schedules of the building are unavailable at the design stage.



## WHY GREEN MARK INTERNATIONAL

Green Mark provides a robust and leading method to assess and verify buildings for their environmental performance, assisting project teams and building owners to deliver and demonstrate high performing and sustainable buildings. Green Mark is built upon best practices, climate science, analysis of large building performance data sets and global thought leadership. GM International aims to further stretch outcomes of buildings to substantially reduce the environmental impacts – focusing on whole life carbon, health and wellbeing, resilience, intelligence, and maintainability. GM provides a nationally and globally recognised green building performance rating.

## TARGETED OUTCOME OF GREEN MARK INTERNATIONAL

GM International aims to drive energy efficiency and carbon reduction in mitigating the effects of climate change, as well as other sustainable aspects that deliver on addressing the key sustainability drivers.

### Key Sustainability Drivers

Globally, consensus is for Green Buildings to be defined through several key issues including:

- **climate action** (decarbonisation of the built environment)
- **health and well-being** (resilience, social equity, pollution mitigation, health, diversity)
- **resources and circularity** (regeneration of resources and natural systems)

Through Green Mark's co-creation we have identified the key aspects within these issues, which are relevant to our marketplace, and translate them into the delivery of the UN SDGs, in alignment with longer-term sustainable finance considerations. These have been contextualised into our criteria to define the sustainability sections.

These sections, in addition to energy, are Intelligence (smart buildings), Health and Wellbeing (the mental, physical and sociological aspects of buildings and their operation), Whole Life Carbon (which looks at the embodied carbon, construction, fit out and supports corporate plans to transition to zero carbon), Maintainability (the design for safe and effective maintenance) and Resilience (nature-based solutions and leadership).

Green Mark Sections mapped to UN SDGs

<div>EE</div> <div>Energy Efficiency (%)</div>	<div>In</div> <div>Intelligence</div>	<div>Hw</div> <div>Health &amp; Wellbeing</div>	<div>Cn</div> <div>Whole of Life Carbon</div>	<div>Mt</div> <div>Maintainability</div>	<div>Re</div> <div>Resilience</div>
<div>13 CLIMATE ACTION</div> <div>7 AFFORDABLE AND CLEAN ENERGY</div> <div>11 SUSTAINABLE CITIES AND COMMUNITIES</div>	<div>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</div> <div>8 DECENT WORK AND ECONOMIC GROWTH</div>	<div>3 GOOD HEALTH AND WELL-BEING</div> <div>8 DECENT WORK AND ECONOMIC GROWTH</div> <div>10 REDUCED INEQUALITIES</div>	<div>11 SUSTAINABLE CITIES AND COMMUNITIES</div> <div>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</div> <div>13 CLIMATE ACTION</div>	<div>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</div> <div>8 DECENT WORK AND ECONOMIC GROWTH</div> <div>9 INDUSTRY, INNOVATION AND INFRASTRUCTURE</div> <div>10 REDUCED INEQUALITIES</div>	<div>14 LIFE BELOW WATER</div> <div>15 LIFE ON LAND</div> <div>11 SUSTAINABLE CITIES AND COMMUNITIES</div> <div>13 CLIMATE ACTION</div>

The United Nations Sustainable Development Goals are the blueprint to achieve a better and more sustainable future for all. They address challenges of the global community, including those related to poverty, inequality, climate, environmental degradation, prosperity, and peace and justice. The Goals are integrated and indivisible, balancing the three dimensions of sustainability. <https://www.un.org/sustainabledevelopment/sustainable-development-goals/>

## GUIDELINES FOR APPLICATION AND SUBMISSION

### Eligibility

**GM International** is for newly designed buildings and existing buildings that have not been previously certified and applying for first Green Mark certification. Most of the building types are eligible for assessment, including office towers, retail buildings and hotels. However, GM International does not apply to office interiors, retail interiors or other interior fit-out projects.

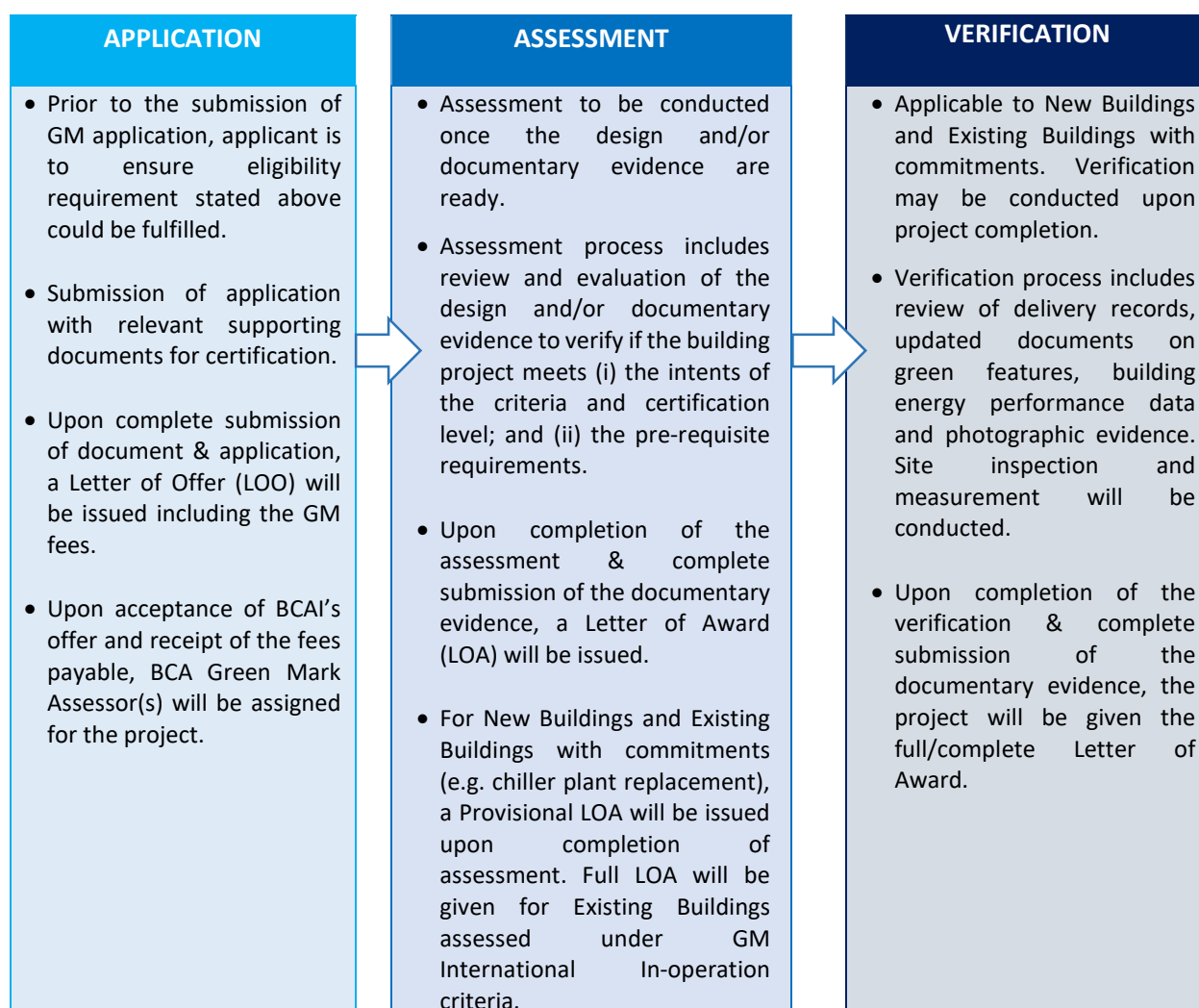
**GM International In-Operation** is for existing buildings which have achieved Green Mark certification previously and applying for a re-certification. In addition, there is also no change of major energy use (e.g. chiller replacement or installation) since the last certification. Existing buildings with previous certification and had change of major energy use, will be assessed under the full GM International criteria.

Except for GM International In-Operation certification, all projects are required to meet the requirements of the following before Green Mark certification could be conferred: -

1. New Buildings: Base Sustainability Requirements (ND) New Developments
2. Existing buildings: Base Sustainability Requirements (EB) Existing Buildings

### Submission for Certification

The BCA GM International certification process is as follows:



Detailed information on the application is available on the following website:

[BCA International Pte Ltd, Singapore \(BCAI\) - Green Mark Scheme](#)

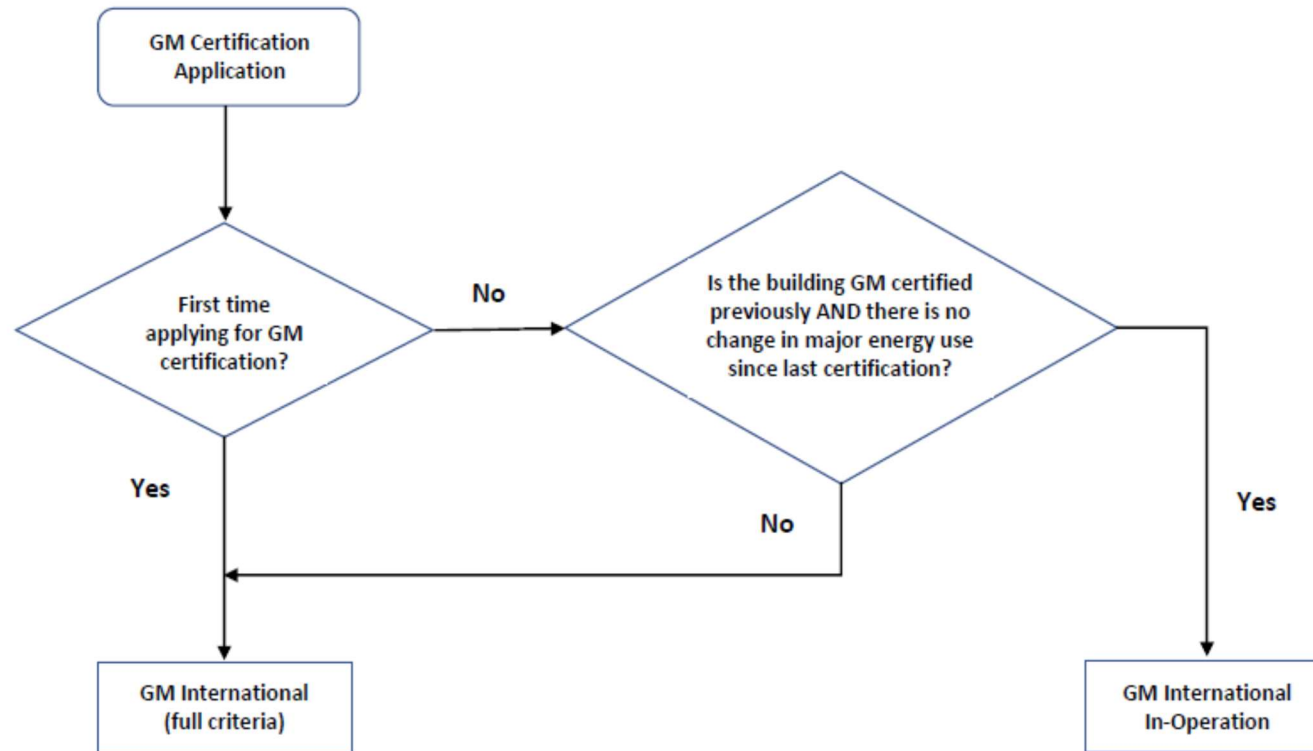
GM assessment will be carried out by BCA International Pte Ltd 's appointed assessors. To be awarded with Green Mark certification, all documents submitted for the GM assessment should be duly verified and signed by responsible person(s) stipulated in Table 1 and appropriate practitioners where applicable. The necessary documents are required to provide the evidence for the performance requirements being met. The project team only needs to provide the relevant information; the full project's documentation is not required for submission for Green Mark certification. The detailed documents required can be found in various technical guides of GM INTERNATIONAL.

**Table 1 Responsible Person (s) for Application Submission**

Description	Responsible Persons* for Application Submission
GM online submission	<p><b><u>For GM: 2021 Full Certification</u></b></p> <p>SGBC accredited GMAP or GMAAP*</p> <p><b><u>For GM: 2021 In-Operation:</u></b></p> <p>Either Registered Energy Auditors or SGBC's accredited GMAP/GMAAP*</p> <p><i>* Includes GM AP(FM) and GM AAP(FM)</i></p>
Energy Modelling	<p><b><u>Assessment Stage</u></b></p> <p>SGBC accredited GMAAP for co-endorsement on Energy Modelling (EM) form</p> <p><b><u>Verification Stage</u></b></p> <p>SGBC accredited GMAAP for endorsement on EM form</p> <p>Revised Energy Modelling Guide available <a href="#">here</a></p>
Computational Fluid Dynamics (CFD)	<p>SGBC accredited GMAAP for endorsement on CFD report</p> <p>Revised CFD Guide available <a href="#">here</a></p>
Energy audit or OSE report	Local PE (Mech) Or Registered Energy Auditor

**Explanation Notes:** Singapore Green Building Council (SGBC) certifies the Green Mark Professional Qualification Scheme. Green Mark professionals such as Green Mark Accredited Professional (GMAP) and Green Mark Advanced Accredited Professional (GMAAP).

## GREEN MARK: 2021 INTERNATIONAL APPLICATION PROCESS



## GREEN MARK INTERNATIONAL ASSESSMENT FRAMEWORK

Energy Efficiency and the Base Sustainability Requirements are the prerequisite in GM International, aimed at ensuring projects achieve the minimum sustainability standards, reduce their operational carbon and associated operating costs from the reduction in energy consumption.

The GM International certification framework covers:

- (1) New developments at the design and completion (as built) stage
- (2) Existing buildings which are currently in operation-with no previous Green Mark certification
- (3) Existing buildings which are currently in operation and has undergone major change in energy change use (e.g., installation and/or replacement of the building cooling systems)

GM International In-Operation is applicable to:

- (1) **Existing buildings which are currently in operation**, which held Green Mark certification previously and seeking Re-certification; **AND** with no major energy use change (e.g., no installation and/or replacement of the building cooling systems).

GM International In-Operation is a simplified version of GM International for project(s) that have previously been assessed and fully certified under Green Mark; and that have demonstrated their holistic environmental performance. GM International In-Operation tracks the key performance indicators, based on actual operational data to ensure the building is performing in its operation to the same GM International standard. Base Sustainability Requirements are not applicable to GM International In-Operation.

Base Sustainability Requirements are applicable to:-

1. **New Developments:** Base Sustainability Requirements (ND) for New Non-Residential buildings (NRB), New Residential buildings (RB).
2. **Existing Buildings:** Base Sustainability Requirements (EB) for Existing Buildings.

## GREEN MARK INTERNATIONAL RATINGS

GM International is positioned to recognise performance that is above the Base Sustainability Requirements that include robust levels of energy efficiency, indoor air quality, greenery provision, active mobility considerations, materials and waste management and water efficiency.

Green Mark SLE	Green Mark Certified/ Gold	Green Mark Gold <sup>PLUS</sup> / Platinum	Green Mark Gold <sup>PLUS</sup> /Platinum SLE
Energy Efficiency > 60%	Sustainability Sections Energy Efficiency 40-50%	Sustainability Sections Energy Efficiency 50-60%	Sustainability Sections Energy Efficiency > 60%
Base Sustainability Requirements	Base Sustainability Requirements	Base Sustainability Requirements	Base Sustainability Requirements
Indoor Air Quality	Indoor Air Quality	Indoor Air Quality	Indoor Air Quality
Greenery Provision	Greenery Provision	Greenery Provision	Greenery Provision
Active Mobility	Active Mobility	Active Mobility	Active Mobility
Materials and Waste	Materials and Waste	Materials and Waste	Materials and Waste
Water Efficiency	Water Efficiency	Water Efficiency	Water Efficiency
Top tier energy efficiency built on high environmental performance foundation <sup>[1]</sup>	High levels of holistic performance responding to climate change	Addressing climate change with best in class holistic environmental performance	The top tier energy efficiency and peak of green building performance

[1] Base Sustainability Requirements (ND) or Base Sustainability Requirements (EB) and Energy Efficiency are compulsory for all GM International.

GM International Series is applicable to New developments, Existing buildings with no previous Green Mark certification, and GM International In-Operation is applicable for Existing Buildings with previous Green Mark certification and coming in for re-certification and has no major change in energy use.

### Green Mark International Certification

Project teams can choose either one of the following certification.

GM International Series	GM International SLE Series (SLE, PE, ZE)
Certified	-
Gold	-
Gold <sup>PLUS</sup>	Gold <sup>PLUS</sup> SLE
Platinum	Platinum SLE
-	SLE, PE, ZE

*GM International Series is applicable to New developments, Existing buildings with no previous Green Mark certification, Existing buildings with major retrofit, and In Operation.*

### Green Mark International Badges

Where projects achieve at least 10 GM points in a sustainability section, the BCA GM International Certificate would have a special mention of the achievement via a 'badge' being awarded. The project team may use a combination of, or individually the associated logo or graphic along with the BCA Green Mark Logo and level of award in their marketing collaterals and materials related to the certified building, show casing their exemplary performance in an area of sustainability.

Table 1A: GM International - Full Certification

	Prerequisites Energy Savings + Base Sustainability Requirements						Intelligence	Health and Well-being	Whole Life Carbon	Maintainability	Resilience
	GM International						• 15 points for each sustainability section • ≥10 points in each section to qualify for a badge for exemplary performance				
	≥50%	≥50%	>50%	≥55%	≥60%	ZE					
A. Full GM International Certification											
SLE <sub>(incl ZE, PE)</sub>					✓	✓	N/A				
Platinum SLE <sub>(incl ZE, PE)</sub>					✓	✓	40 points				
Gold <sup>PLUS</sup> SLE <sub>(incl ZE, PE)</sub>					✓	✓	30 points				
Platinum				✓			40 points				
Gold <sup>PLUS</sup>			✓				30 points				
Gold		✓					20 points				
Certified	✓						15 points				

Table 1B: GM International - In-Operation

	Prerequisites -Energy Savings						Intelligence	Health and Well-being	Whole Life Carbon	Maintainability	Resilience
	GM International										
	≥40%	>40%	≥50%	≥55%	≥60%	ZE	Option to be assessed to qualify specific badges to demonstrate exemplary performance in operation				
B. GM International In-Operation											
SLE <sub>(incl ZE, PE)</sub>					✓	✓	N/A				
[Platinum/Gold PLUS]					✓	✓	<ul style="list-style-type: none"><li>• Energy &amp; Water consumption</li><li>• Energy and Water Improvement Plan</li><li>• Cooling Towers Cycles of Concentration</li><li>• Indoor environmental Quality (IAQ Audits, CO2 Controls, Luminance and Noise Level)</li><li>• Occupancy Evaluation</li><li>• Waste audits</li><li>• Tenants/Occupancy engagement</li></ul>				
SLE <sub>(incl ZE, PE)</sub>											
Platinum				✓							
Gold PLUS			✓								
Gold		✓									
Certified	✓										

**Notes:**

- Off-site REC procurement is only applicable for projects meeting energy saving  $\geq 60\%$ . The REC's need not to be generated from the same country of the project.
- GM International includes other Base Sustainable Requirement (ND)) New Buildings and Base Sustainable Requirement (EB) for existing buildings. Base Sustainability Requirements is compulsory for all projects in GM International before attempting the GM series.



# GREEN MARK INTERNATIONAL CERTIFICATION CRITERIA

## Energy Efficiency (Operational Carbon)

Energy efficiency (Operational Carbon) is required in the following:

1. New non-residential development
2. New residential development
3. Existing non-residential development

There are three pathways leading to greater energy efficiency, with each pathway describing the requirements to achieve an energy efficiency of 40%, 50%, 55% and 60%.

### Energy Efficiency Pathways

Energy Efficiency and the Base Sustainability Requirements are the prerequisite in GM International, aimed at ensuring projects achieve the minimum sustainability standards, reduce their operational carbon and associated operating costs from the reduction in energy consumption.

The three pathways are designed to facilitate different types of buildings in fulfilling their respective energy efficiency requirements:

The Green Mark Energy Pathways are:

- Data driven and flexible – aligned to real project performance with validated data. Flexible routes for projects to demonstrate their performance.
- Outcome based – full recognition of passive design strategies and renewable energy systems contribution to energy savings.
- Supportive of innovation, encourage the use of new technologies, approaches and solutions to energy performance.

#### Pathway 1 – EUI

Total Building annual energy consumption over the gross floor area of the building (kWh/m<sup>2</sup>/yr). Based on:

- Energy modelling (Design)
- Energy Calculation and measured data (Retrofit)
- Measurement – In operation

#### Pathway 2 – Fixed Metrics

A prescriptive pathway where projects must demonstrate high levels of performance in each of the key building energy systems.

- Key performance metrics (ingredients) that make an energy efficient project. All aspects must be met individually.
- Any shortfall in performance can be made up with the use of onsite renewables, subject to the building typology multiplication factor. Onsite renewable sources refer to renewable energy generated within the project boundary under the scope of Green Mark Assessment.

### Pathway 3 – Energy Savings

- Demonstrated energy savings following the Green Mark Energy Modelling guideline which looks at holistic energy performance against a reference model. Refer to Energy Modelling Guideline for details on how to complete the energy modelling simulation

All projects are required to comply with one of the energy efficiency pathways to demonstrate their energy efficiency levels.

Refer to the [Energy Efficiency Section Document](#) for details on the requirement for each pathway.

Refer to BCA's SLEB Smart Hub ([www.sleb.sg](http://www.sleb.sg)) for details on innovative EE solutions and services.

Off-site renewable energy, including those from purchased Renewable Energy Credits (REC), are applicable for projects going for Zero Energy Buildings (ZE). The REC's need not to be generated from the same country of the project. The length of time of REC commitment is minimally three years with commitment of re-certification.

Table 2 shows the applicability for the three pathways.

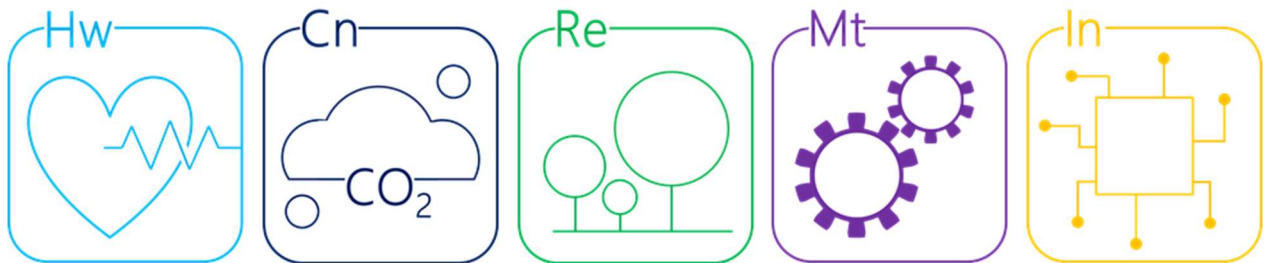
**Table 2 – Energy Efficiency (EE) Pathway (International)**

Building Type	PATHWAY 1 EUI	PATHWAY 2 Fixed Metrics	PATHWAY 3 Energy Savings
Commercial			
Office Buildings	•	•	•
Hotels	•	•	•
Retail Buildings	•	•	•
Educational			
Tertiary Institutions (University, and Polytechnics)	•	•	•
Schools and Colleges	•	•	•
Healthcare			
Hospitals (Private and General)	•	•	•
Community Hospitals	•	•	•
Polyclinics	•	•	•
Nursing Homes/ Youth Homes	•	•	•
Other Non-Residential			
Mixed Developments	<i>by GFA mix</i>		
Community Centres	•	•	•
Civic Buildings	•	•	•
Cultural Institutions	•	•	•
Sports and Recreation Centres	•	•	•
Religious/ Places of Worship		•	•
Industrial			
High Tech Industrial Buildings		•	•
Light Industrial Buildings		•	•
Warehouses, Workshops and Others		•	•
Residential			
Non-Landed Residential (condominiums, private apartments)		•	
Cluster Housing		•	
Landed Housing		•	
ALL OTHER BUILDING TYPES		Bespoke	•



## Sustainability Sections

There are five environmental sustainability sections under GM International Framework. These sections are developed with various industry stakeholders and fulfil the relevant UN Global Goals for SDGs. There are 15 points available in each section – a project scoring 10 points and above from each section qualifies to get a badge which represents their exceptional performance in that area.

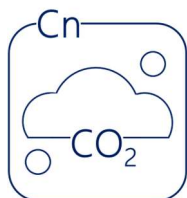


### Health and Well-being (Hw)



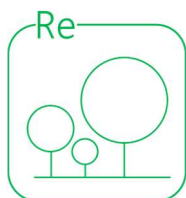
[The Health and Well-being section](#) will score buildings on how they are designed, retrofitted, constructed, and operated to facilitate the mental, physical, and social well-being of their occupants. This section has been developed jointly with the Ministry of Health Office for Healthcare Transformation (MOHT) and Centre for Liveable Cities (CLC).

### Whole Life Carbon (Cn)



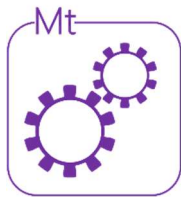
[The Whole Life Carbon section](#) will score buildings on their Whole Life Carbon performance based on international calculation methodologies, upfront (embodied) carbon (i.e. carbon footprint of the construction materials), use of sustainable construction methods, and the sustainable fitting-out of buildings. The section will also evaluate the plans, and delivery of those plans to transition the building towards zero carbon emissions.

### Resilience (Re)



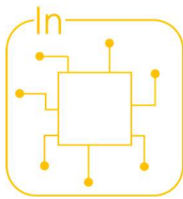
[The Resilience section](#) will evaluate buildings on their resilience and adaptation to climate change as well as the use of nature-based or natural climate solutions with actions to protect, sustainably manage, and restore natural or modified ecosystems.

## Maintainability (Mt)



[The Maintainability section](#) will score buildings on their Design for Maintainability (DfM), which refers to designing buildings for their safe and effective maintenance to optimise lifecycle performance of the asset. This section uses the Maintainability Framework (the DfM evaluation tool) and translates this into Green Mark points.

## Intelligence (In)



[The Intelligence section](#) will score buildings on the adoption of relevant smart technologies and systems, and data management environments within the building design, construction, retrofit and operation of the building, that enable fully integrated, automated, intelligent, and responsive buildings.



## BCA GREEN MARK LOGO and ENQUIRIES




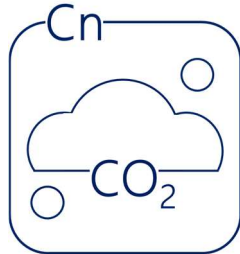
### The Green Mark Logo


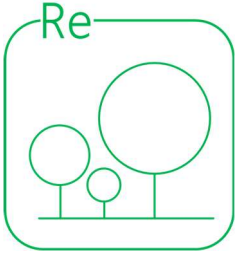

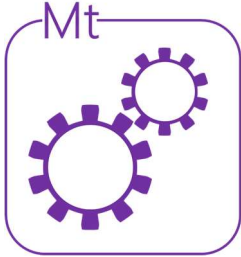

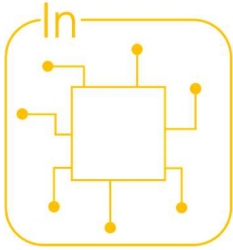


For enquires on the use of the Green Mark logo, go to: <https://www1.bca.gov.sg/docs/default-source/docs-corp-buildsg/sustainability/guidelines-for-usage-of-bca-green-mark-logo.pdf>

### The GM INTERNATIONAL BADGES

Where projects achieve a badge for exceptional performance in a sustainability section or sections, the project team may use a combination of, or individually the associated logo or graphic along with the BCA Green Mark Logo and level of award in their marketing collaterals and materials related to the certified building.

Section & Description of Use	Logo	Icon
Health and Wellbeing	<p>GREEN MARK 2021</p>  <p>Health &amp; Wellbeing</p>	
Whole Life Carbon	<p>GREEN MARK 2021</p>  <p>Whole Life Carbon</p>	

Resilience	<p>GREEN MARK 2021</p>  <p>Resilience</p>	
Maintainability	<p>GREEN MARK 2021</p>  <p>Maintainability</p>	
Intelligence	<p>GREEN MARK 2021</p>  <p>Intelligence</p>	

## Frequently Asked Questions (FAQ)

The FAQ section on the BCA website provide clear submission guidelines and additional technical assistance to project teams.

See: <https://www1.bca.gov.sg/buildsg/sustainability/green-mark-certification-scheme/green-mark-assessment-criteria-and-online-application>

## Green Mark Training Courses

The BCA Academy also provides training courses to provide the necessary knowledge required in Green Mark assessment.

Singapore Green Building Council (SGBC) certifies the Green Mark Professional Qualification Scheme. This scheme is to recognise professionals who have attained a good foundation and knowledge and have the professional knowledge and ability to undertake the design and operation of environmentally friendly buildings. Green Mark professionals such as Green Mark Accredited Professional (GMAP) and Green Mark Advanced Accredited Professional (GMAAP), are competent professionals who possess the knowledge and skills for Green Mark assessment and certification. To be a certified GMAP/GMAAP, please refer to SGBC website <https://gmap.sgbc.online/public/about>

For information on Green Mark courses, visit the BCA Academy: <https://www.bcaa.edu.sg/>