BCA Green Mark for Existing Schools

Version 2.0

Green Mark Rating & Pre-requisites

Green Mark Rating	Green Mark Points	Pre-requisite Point (Secondary Schools and above)	Pre-requisite Point (Primary Schools)
Green Mark Platinum	90 and above	68	67
Green Mark Gold^{Plus}	85 to < 90	56.5	55.5
Green Mark Gold	75 to < 85	35	34

System efficiency: Unitary air-conditioners/Air-cooled Chilled-Water Plant

Green Mark Rating	Efficiency (kW/Rt)	COP
Green Mark Platinum	≤ 0.78	≥ 4.51

Others Pre-requisite Requirement

To achieve the Green Mark Gold^{Plus} and Platinum rating, the project has to meet the following pre-requisite requirements:

For Green Mark Gold^{Plus} Rating

- Achieve minimum 4 points for Energy Efficiency (1-1)
- Achieve higher temperature for LAN room (in accordance with ASHRAE 2011 Thermal Guidelines for Data Centres, 24 degrees or above) (1-3c)
- Achieve minimum 24% saving for Lighting Power Budget (1-5a)
- Achieve 3 points in creating awareness amongst staff and students on environmental Sustainability (3-1a)
- Achieve 1.5 points in Provision of a Green Corner at a prominent area with adequate learning materials (3-1b)
- Appoint Environmental Envoys in each class (3-2b)
- Set up an Environmental Club as a Co-Curricular Activity (3-2c)
- Achieve minimum of 1 point from Staff Involvement (3-2d)
- Achieve 3 points in provision of environmental policy and commitment to review environmental policy and curriculum (3-3a)
- Achieve 2 points in Provision of Eco-Pond, Eco-Garden or equivalent with informational/educational facilities at the pond/garden area e.g. information on plant species, technology used, etc. (3-7d)

Additional requirements For Green Mark Platinum Rating

- Achieve minimum 5 points for Energy Efficiency (1-1)
- Achieve higher temperature for LAN room (in accordance with ASHRAE 2011 Thermal Guidelines for Data Centres, 24 degrees or above) (1-3c)
- Achieve minimum 32% saving for Lighting Power Budget (1-5a)
- Achieve 4 points in creating awareness amongst staff and students on environmental sustainability (3-1a)
- Achieve 2 points in Provision of a Green Corner at a prominent area with adequate learning materials (3-1b)
- Indicate how Green Corner or feature(s) are incorporated into curriculum (e.g. Outdoor Learning). (3-1c)
- Appoint Environmental Envoys in each class (3-2b)
- Set up an Environmental Club as a Co-Curricular Activity (3-2c)
- Achieve minimum of 1 point from Staff Involvement (3-2d)
- Achieve 2 points in partnership beyond school (3-2e)
- Achieve 3 points in provision of environmental policy and commitment to review environmental policy and curriculum (3-3a)
- Achieve 2 points in Provision of Eco-Pond, Eco-Garden or equivalent with informational/educational facilities at the pond/garden area e.g. information on plant species, technology used, etc. (3-7d)
- Conduct an Indoor Air Quality (IAQ) audit once every 3 years (4-1)

POINT ALLOCATION

ASSESSMENT CRITERIA	POINTS AVAILABLE	PRE-REQUISITES
ENERGY EFFICIENCY		
Part 1 – Energy Efficiency		
1-1 Energy Efficiency	10	2
1-2 Percentage of non-air-conditioned areas based on total GFA	5	3
1-3 Air-Conditioning System	14	3
1-4 Building Orientation	5	-
1-5 Lighting System	13	2
1-6 Ventilation in Car park	2	-
1-7 Ventilation in Common Areas	3	-
1-8 Energy Monitoring	6	3
1-9 Energy Commitment	3	-
1-10 Lifts	1	-
1-11 Office Equipment	5	-
1-12 Renewable Energy/Energy Efficient Features	10	-
Subtotal (Part 1)	**77**	**13**
OTHER GREEN REQUIREMENTS		
Part 2 - Water Efficiency		
2-1 Water Efficient Fittings	8	6
2-2 Water Monitoring and Water Efficiency Management	9	2
2-3 Water Efficiency Performance Communication & Awareness	2	2
2-4 Alternative Water Sources	2	-
2-5 Water Efficient Irrigation System for Landscape Areas	1	-
Subtotal (Part 2)	**22**	**10**
Part 3 - Sustainable Awareness & Management		
3-1 School Wide Sustainability Awareness & Education	14	2
3-2 Environment Envoys	10	-
3-3 Building Operation & Maintenance	5	-
3-4 Post Occupancy Evaluation	3	3
3-5 Waste Management	7	3
3-6 Environmental Protection	1	-
3-7 Greenery & Biodiversity	10	-
3-8 Public Transport Accessibility	3	-
Subtotal (Part 3)	**53**	**8**

Part 4 - Indoor Environmental Quality			
4-1 Indoor Air Quality Performance		3	-
4-2 Indoor Air Pollutants		1	-
4-3 Lighting Quality		2	1
4-4 Thermal Comfort		2	2
4-5 Outdoor Thermal Environment		2	-
	Subtotal (Part 4)	**10**	**3**
Part 5 – Other Green Features [BONUS]			
	Subtotal (Part 5)	**5**	**-**
GRAND TOTAL		**167**	**34**

Energy Related Requirements

Part 1 - Energy Efficiency (Total Points: 77)	Green Mark Points
1-1 Energy Efficiency (10 points) **To achieve increased building energy efficiency against similar building types to promote efficient use of energy.** **(a) Computation of Energy Utilisation Index (EUI) based on area (kWh/m²/year)** ***The Energy Utilisation Index (EUI) should be computed and submitted.** **(b) Computation of Energy Index (EI) based on occupants (kWh/person/year)** ***The Energy Index (EI) should be computed and submitted.**	**(a)** kWh/**m²**/year 	Points	Primary	Secondary	JC
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5	≤ 27.07	≤ 27.37	≤ 40.07
4	≤ 29.98	≤ 31.97	≤ 43.82
3	≤ 33.77	≤ 35.38	≤ 49.19
2	≤ 38.98	≤ 40.22	≤ 54.80
1	≤ 54.10	≤ 73.82	≤ 64.88 | (Up to 5 points) *Pre-requisite Requirement: 1 point from this section* **(b)** kWh/**person**/year | Points	Primary	Secondary	JC
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5	≤ 343	≤ 488	≤ 788.80
4	≤ 348	≤ 577	≤ 846.62
3	≤ 413	≤ 678	≤ 1001.89
2	≤ 459	≤ 1035	≤ 1041.14
1	≤ 1644	≤ 4371	≤ 1306.53	 (Up to 5 points) *Pre-requisite Requirement: 1 point from this section*
1-2 Percentage of non air-conditioned areas based on total GFA (5 points)	0.1 points for every percentage of non air-conditioned areas excluding car park areas (up to 5 points) *Pre-requisite Requirement: 3 points from this section*

1-3	**Air-conditioning system (14 points)**	
(a)	**AC Inventory List With Condensing Unit's model, age, area served and Coefficient Of Performance (COP). Include a schedule to reduce unnecessary usage of Air Conditioning**	**3 points** *Pre-requisite Requirement: 3 points from this section*
(b)	System Efficiency of A/C system Air Cooled Chilled-Water Plant / Unitary Air-Conditioners: Air cooled Chilled-Water Plant: • Air-Cooled Chiller • Chilled Water Pump Unitary Air-Conditioners: • Variable Refrigerant Flow (VRF) System • Water-Cooled Package Unit • Single-Split Unit • Multi-Split Unit	**i. For building cooling load ≥ 500RT** 4 points for achieving plant efficiency of 1.0 kW/ton 0.25 points for every percentage improvement in the chiller plant efficiency better than 1.0 kW/ton Point scored = 0.25 x (% improvement) **OR** **ii. For building cooling load < 500RT** 4 points for achieving plant efficiency of 1.1 kW/ton 0.2 points for every percentage improvement in the chiller plant efficiency better than 1.1 kW/ton Point scored = 0.2 x (% improvement) (Up to 10 points)

The following baseline table appears in cell (b):

Baseline	Building Cooling Load	
	< 500 RT	≥500 RT
Pre-requisite Requirements Minimum system efficiency of air cooled chilled water plant or unitary conditioners	1.1 kW/RT	1.0 kW/RT

Note: Where there is a combination of centralised air-con system with unitary air-conditioned system, the computation for the points scored will only be based on the air-conditioning system with a larger aggregate capacity.

(c)	Higher temperature for LAN room (in accordance to ASHRAE 2011 Thermal Guidelines for Data Centres , 24deg or above)	1 point

1-4	**Building Orientation (5 points)**	Full marks awarded for schools with <u>no west and east façade</u>.

1-4   Building Orientation (5 points)

Note: Orientation of façade that falls within the range of 22.5° N of W and 22.5° S of W will be defined as west facing facade. Core walls for lifts or staircases and toilets that are located within this range are exempted in computation.

Full marks awarded for schools with <u>no west and east façade</u>.

If the identified west and east <u>façades does not have windows</u>, 5 points will be awarded.

If both the identified west and east facades have windows but are <u>occupied by unusable areas</u> (e.g. corridors, staircase and toilets), 5 points will be awarded.

West and east facade with windows will award points based on the impact of mitigation measures used.
High Impact – Shading Device (e.g. overhang) (5 points)
Med Impact – Solar Films (2.5 points)
Low Impact – Curtain/Blinds (1 point)

Points Scored=
$[(A\times5)+(B\times5)+(C\times2.5)+(D\times1)+(E\times0)]/($Total Window Area$)$

whereby:
(a) A=Window Area of Non-Usable Areas
(b) B=Window Area with Sun Shading Device
(c) C=Window Area with Solar Film
(d) D=Window Area with Curtains or equivalent measures
(e) E=Window Area without Mitigation Measures

*Only for rooms or regularly occupied spaces (exclude non-usable areas e.g. corridors, staircase and toilets)

1-5	**Lighting System (13 points)**	
	To encourage optimization of lighting system efficiency	
(a)	**Lighting power budget**	0.25 points for every percentage improvement from lighting power budget.
	Please refer to the Annex A for the baselines of lighting power budget	Points awarded = 0.25 x (every % improvement better than LPB)
		(Up to 10 point)
		Pre-requisite Requirement: 2 points
(b)	Photo/Motion sensors for common areas	Extent of coverage : At least 90% of applicable areas
	Encourage the use of energy efficient design and control of lighting in the following areas:	Points awarded based on each applicable area – 0.5 points for each area
	(i) Toilets	
	(ii) Staircases	*Exclude Handicap toilets
		(Up to 1 point)
(c)	Controllability of lighting system	Occupants are able to adjust lighting conditions to suit their task needs and preferences
		Office Areas
		≥ 50% controlled by task lights - 1 point
		≥ 90% controlled by task lights - 2 points
		(Up to 2 points)
1-6	**Ventilation In Car Parks (2 points)**	Natural Ventilated - 2 points
		Mechanical Ventilated with CO sensors installed - 1 point
		For Car Parks with both mechanical and natural ventilation, 1 point will be awarded if CO sensors are installed in the mechanically ventilated area of car parks.

1-7	**Ventilation In Common Areas (3 points)**
	
	  a) Toilets
	  b) Staircase
	  c) Corridors
		Natural Ventilated - 1 point
		Mechanical Ventilated - 0.5 points
		
		Extent of coverage: At least 90% of applicable area
		
		<center>(Up to 3 points)</center>

1-8	**Energy Monitoring (6 points)**	
(a)	**To show monthly energy usage monitoring with reasons for increase and decrease in consumption documented. Show posters/email evidences/photos of assembly talks indicating communication of energy consumption trend to both staffs and students**	<center>**2 points** *Pre-requisite Requirement: 2 points*</center>

(b)	**Energy Sub-metering**
	Provide sub-metering to monitor energy consumption by:
	  i. **Tenants spaces (e.g. canteen,** Multi-Purpose Halls)
	  ii. Blocks
		<center>**1 point**
		
		Pre-requisite Requirement: 1 point
		
		Additional 1 point awarded if the area of provision extends beyond tenanted spaces.</center>

(c)	Monitoring of bulk meter (If yes, please indicate the name, designation, contact number of the person on duty)	<center>Daily – 2 points Weekly – 1 point</center>
1-9	**Energy Commitment (3 points)**	
(a)	Commitment to achieve at least 3 ticks under the revised NEA mandatory energy labelling scheme for A/C units during replacement exercise.	<center>2 points</center>
(b)	Commitment to specify energy efficient equipment during replacement exercise (e.g. Lighting, pumps, etc.)	<center>1 point</center>

1-10 Lifts (1 Point) VVVF and Sleep Mode	1 point will be awarded if the school have the stated type of lift. No marks will be awarded if stated type of lift is not installed in the school.

1-11   Office Equipment (5 Points)
 	
Encourage the use of energy efficient office equipment in general office and staff rooms. (Energy star, NEA Energy Labelling Scheme etc.)
 	
    • Computers/Laptops
    • Monitors
    • Printers
    • Photocopiers
    • TV
	*Schools which have achieved Green Mark for Office Interior certification will be entitled to 5 points
	
	For each type of office equipment with,
	
	More than 50% to 90% = 0.5points
	
	More than 90% = 1point
	
	(Up to 5 points)

1-12   Renewable Energy / Energy Efficient Features (10 Bonus Points)
 	
Encourage the application of renewable energy sources or energy efficient features in buildings.
 	
    • Solar energy and other renewable energy sources
    • Sun pipes
    • Heat recovery system
    • Re-generative lift
    • Light shelves
    • Heat pumps
    • Other energy efficient features
	3 points for every 1 % energy savings over the total energy building consumption
	(Up to 9 Bonus Points)
	
	Additional 1 point will be awarded if energy efficient features, such as solar panels, are also used for educational purposes.

Other Green Requirements

Part 2 - Water Efficiency (Total Points: 24)	Green Mark Points
2-1 Water Efficient Fittings (8 points) Encourage the use of water efficient fittings under Water Efficiency Labelling Scheme (WELS) or adopt equivalent water efficient flow-rate/flush volumes for water fittings. • Basin taps and mixers • Showers taps, mixers or showerheads • Sink/Bib taps and mixers • Urinals and urinal flush valves	<u>Rating based on Water Efficiency Labelling Scheme (WELS)</u> Very Good - 6 points Excellent - 8 points Points awarded based on the number and water efficiency rating of the fitting type used *A PUB Water-Efficient Building Certified would be entitled to: 6 points (Up to 8 points) ***Pre-requisite Requirement: 6 points***

2-2   Water Monitoring and water efficiency management (9 points)
 	
(a)   Water Sub-metering
Provide sub-metering to monitor water consumption by:
    i.   **Tenants spaces (e.g. canteen,** Multi-Purpose Halls)
    ii.   Blocks
	1 point
	
	Pre-requisite Requirement: 1 point
	
	Additional 1 point awarded if the area of provision extends beyond tenanted spaces.

(b) Water usage monitoring by tracking of water meter/s readings. Provision of water meter reading (at least monthly) tracking system. Monthly water bills and summary of water bills should be provided.	1 point
(c) Implementation of fault reporting system or posters to report leakages	**1 point** ***Pre-requisite Requirement: 1 point***

(d)	To achieve the following water efficiency indices: (i) Water Efficiency Index -WEI ≤ 7.5 l/p/d for Primary School -WEI ≤ 11 l/p/d for Secondary School -WEI ≤ 15 l/p/d for Junior College Or (ii) Water Efficiency Index -WEI ≤ 6.5 l/p/d for Primary School -WEI ≤ 9 l/p/d for Secondary School -WEI ≤ 11 l/p/d for Junior College	1 point Or 2 points
(e)	The water management plan should include targets to improve water performance. To show intent, measures and implementation strategies of water efficiency improvement plans over the next three years. Committed water savings accrued from proposed measures should be quantified. Completed Water Efficiency Management Plan submitted to PUB can be considered. Please refer to:http://www.pub.gov.sg/conserve/WEMP/Pages/default.aspx for the WEMP template .	1 points
(f)	Water efficiency management system compliant with SS 577: Water Efficiency Management System or equivalent	1 point
(g)	Attain Water Efficient Building Silver or Gold	1 point awarded for Silver 2points awarded for Gold
2-3	**Water Efficiency Performance Communication and Awareness (2 points)** **To show monthly water usage monitoring with reasons for increase and decrease in consumption documented. Show posters/email evidences/photos of assembly talks indicating communication of water consumption trends to students and staffs.**	**2 points** *Pre-requisite Requirement: 2 points*

2-4 Alternative Water Sources (2 points) Use of suitable systems that utilize alternative water sources for non-potable uses: irrigation, washing, water features, water to reduce use of potable water. Alternative sources can include rainwater, grey water, NEWater, AHU condensate and recycled water from approved sources. Provision of private meter for alternative water sources.	Points awarded based on % reduction in potable water usage of the applicable uses < 10% - 1 point ≥ 10% - 2 points
2-5 Water Efficient Irrigation System for Landscape areas (1 point) Provision of water efficient irrigation systems. For example utilization of rainwater or recycled water, use of drought tolerant resistant plants that require minimal irrigation, use of automatic water efficient irrigation system (e.g. drip irrigation with rain sensor, and etc.)	Extent of Coverage: At least 50% of the landscape areas are served by the system (Up to 1 point)

Part 3 - Sustainable Awareness & Management (Total Points: 53)	Green Mark Points
3-1 **School Wide Sustainability Awareness & Education (14 points)**	
(a) **Create awareness amongst staff and students on environmental sustainability**	
i. Framework for Environmental Sustainability Education (e.g. how environmental sustainability is tailored and taught to students of different levels)	2 points
ii. **Avenues adopted may include:** • Posters • Morning Prep Talks to remind, promote & encourage staff (cleaners/gardeners and etc.) • Courses • Competitions (e.g. Green Wave, Green Audit) • School Wide Awareness talks / Assembly talks to students on environmental sustainability topics • Environmental Programmes / Values in Action (VIA) Programme • Learning Journey (Please indicate frequency of events, external partners involved in programme, topics)	**1 points for each avenue (Up to 5 points)** **Pre-requisite Requirement: 2 points** Additional 1 point if at least 4 environmental avenues are held annually
(b) Provision of a Green Corner at a prominent area with adequate learning materials covering at least 3 of the following topics: i. Energy Conservation ii. Water Conservation iii. Environmental Protection iv. Waste Management v. Sustainable Transport vi. Climate Change	0.5 points for each topic (Up to 3 points) Additional 1 point if all materials explain the intent of each topic and how students would be able to contribute
(c) Indicate how green corner or feature(s) are incorporated into curriculum (e.g. Outdoor Learning).	2 points

3-2	**Environment Envoys (10 points)**	
(a)	**Student-led programmes or sharing sessions related to environmental sustainability (e.g. sharing session, competition)** **(Please indicate frequency of event, external partners involved in programme, topics)**	1 point *Pre-requisite Requirement for Secondary School and Above: 1 point*
(b)	Appointment of Environment Envoys within each class to promote and ensure green practices are carried out.	2 point
(c)	Environmental Club Co-curriculum Activity	1 point

(d)	Staff involvement
	
	  i. Staff sharing of sustainable practices beyond school (e.g. Cluster Sharing Session, etc)
	  ii. Staff learning journey
	  iii. Staff initiated/participation in environmental sustainability programmes/projects
		1 point for each aspect
		
		(Up to 2 points)

(e)	Partnership beyond the school
	
	  i. Partnership with external organisations with a focus on environmental sustainability
	  ii. Parents participating in the execution of the programme
	  iii. Environmental related programmes targeting parents
		
		2 point
		
		1 point
		
		1 point

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3-3	**Building Operation & Maintenance (5 points)**	

(a)	Provision, communication, and dissemination of environmental policy that covers:
	    i. Energy Targets/Management Plan
	    ii. Water Targets/Management Plan
	    iii. Waste Targets/Management Plan
	    iv. Commitment to review environmental policy and environmental curriculum.
		1 point for each aspect
		(Up to 4 points)

(b)	Green Procurement Policy for items that schools may be able to procure (e.g. refrigerators, event venues, low VOC paint)	1 point
3-4	**Post Occupancy Evaluation (3 points)**	
(a)	**Conduct post occupancy evaluation annually that should include technical performance, energy and environmental performance, cost-effectiveness and occupant's satisfaction.** **The minimum number of staff surveyed should be 30.** **The minimum number of students surveyed should be 50.** ***Note that the POE sample templates will be provided in technical guide.**	**POE for Staff – 1 point** **POE for Students – 1 point** *Pre-requisite Requirement: 2 points*
(b)	**List of corrective actions taken following the post occupancy evaluation, if any.**	**1 point** *Pre-requisite Requirement: 1 point*

3-5   Waste Management (7 points)

(a)	**Provision of recycling facilities to encourage segregation of waste(such as plastics, metals and paper) at strategic locations (such as canteens, sports hall, school hall and office)**	**Provision of Recycling Bins in common areas – 1 Point** Provision of Twin Bins in classrooms – additional 1 Point (Up to 2 points) *Pre-requisite Requirement: 1 point*
(b)	**Promote and encourage recycling among student, tenants, cleaners and visitors by displaying recycling posters at strategic locations - with information on what not to put into recycling bins (e.g. food/liquid waste)**	*1 point* *Pre-requisite Requirement: 1 point*
(c)	**Provision of a waste storage area to promote sorting, collecting, and recycling of a large range of waste generated in-house. Examples of types of waste recycled:** • **Plastic waste** • **Paper waste** • Metal waste (including drink cans) • Glass waste • Food waste • Printer Cartridges • Electronic wastes • Others	0.5 point awarded for the stated types of waste recycled (Up to 2 points) *Pre-requisite Requirement: 1 point*
(d)	Create a monitoring system to track the amount of waste and recyclables generated.	1 point
(e)	In-house composting of horticulture waste and use of compost produced within the school OR Recycling of horticulture waste through landscape contractors or other avenues	1 point

3-6	**Environmental Protection (1 point)**	
(a)	Refrigerants with ozone depletion potential (ODP) of zero or with global warming potential (GWP) of less than 100	Extent of Coverage :100% 1 point

3-7	**Greenery & Biodiversity (10 points)**	
(a)	Provide sufficient greenery. Greenery Provision (GnP) is calculated by considering the 3D volume covered by plants using the following Green Area Index (GAI) : Grass GAI = 1 ; Shrubs GAI = 3; Palms Trees GAI = 4; Trees GAI = 6	GnP = 0.5 to < 1.0　　- 1 point GnP = 1.0 to < 1.5　　- 2 point GnP = 1.5 to < 3.0　　- 3 points GnP ≥ 3.0　　　　　　 - 4 points (Up to 4 points)
(b)	Provision of:	
	i.　Vertical greening	≥10m² and <50m² of vertical green wall areas (1 point) ≥ 50m² of vertical green wall areas. (2 points)
	ii.　Green roof or rooftop garden	≥20% and <50% of useable roof areas **OR** < 300 m² (1 point) ≥ 50% of useable roof areas **OR** ≥ 300 m² (2 points)
	Usable area is deemed as available roof spaces (including sloping roofs) that are free from M&E equipment and able to support greenery on top, as opposed to the total roof footprint	(Up to 3 points)

(c)	Provision of a range of native plants. Refer to: https://florafaunaweb.nparks.gov.sg/ OR Commitment to source native plants from accredited nurseries Refer to: https://www.cuge.com.sg/landscapeservices/Nursery-Accreditation-Scheme for the list of accredited nurseries	1 point
(d)	Provision of Eco-Pond, Eco-Garden or equivalent with informational/educational facility at the pond/garden area (e.g. information on plant species, technology used, etc)	1 point Additional 1 point if adequate informational/educational facilities are provided prominently.

3-8   Public Transport Accessibility (3 points)

Promote the use of public transport or bicycles to reduce emissions from individual motor vehicles through provision of the following:

(a)	Good access to nearest MRT/LRT or bus stops	1 point
(b)	Provision of covered walkway to facilitate connectivity and use of public transport	1 point
(c)	Adequate bicycles parking lots with shower facilities	Extent of Coverage : Minimum 10 number of bicycle parking lots with provision of adequate shower facilities 1 point

Part 4 - Indoor Environmental Quality (Total Points: 10)	Green Mark Points
4-1 Indoor Air Quality Performance (3 points) To promote a healthy indoor environment To conduct an IAQ audit once in three years that complies with Guidelines for Good Indoor Air Quality in Office Premises or Singapore Standard Code of Practice for `Indoor air quality for air-conditioned buildings' (SS 554:2009) by SINGLAS accredited laboratories.	3 points
4-2 Indoor Air Pollutants (1 point) Minimize indoor airborne contaminants for the well-being and comfort of users. Use of low/no volatile organic compounds (VOC) paints certified by approved local certification. e.g. Singapore Green Building Council (SGBC), Singapore Green Label System (SGLS)	Extent of coverage : At least 90% of the total applicable internal wall areas 1 point
4-3 Lighting Quality (2 points) To encourage good workplace lighting quality to promote productivity and occupant comfort **(a) Lighting level to comply with the lux level requirement for various uses. (Refer to the rationale for the lux level requirement)** (b) High Frequency ballast	**1 point** *Pre-requisite Requirement: 1 point* All applicable areas in the entire building that are served by fluorescent luminaries > 60% - 0.5 points > 90% - 1 point

4-4 Thermal Comfort (2 points)	
(a) Comfort Level to meet temperature of 24°C (+1°C) and a relative humidity of 65% (+5%).	**1 point**
*Applicable to air-conditioned areas only.	***Pre-requisite Requirement: 1 point***
(b) Reminders to maintain air-conditioning set-point to 24 Degrees Celsius or higher for all air-conditioned rooms	**1 point** ***Pre-requisite Requirement: 1 point***
4-5 Outdoor Thermal Environment (2 points) Encourage to use any combination of following strategies to improve the outdoor thermal comfort and reduce heat island	
(a) Use of paving materials with Solar Reflectance Index > 29	1 point
(b) Use of heat reflective paints on walls	1 point

Part 5 – Other Green Features (Total Points: 5)	Green Mark Points
5-1 Green Features and Innovations To encourage the use of other green features which are innovative or/and alleviate environmental detriments. Non-exhaustive list of examples : • High Volume Low Speed (HVLS) Fans in large spaces • Positive Energy School • Energy Management System (EMS) to facilitate monitoring and trend logging of school's energy consumption. • Use of self-cleaning façade system • Use of grey water recycling system for toilet washing • Recycling of AHU condensate • Remote metering with automated tracking system • Use of non-chemical termite treatment system such as termite baiting system, anti-termite mesh • Titanium Dioxide solutions to remove odour in toilets • Ultraviolet light-C band (UV) emitters in all air handling units (AHUs) to improve indoor air quality	2 points for high impact item 1 point for medium impact item 0.5 points for low impact item (Up to 5 Bonus Points)

Annex A : Maximum Lighting Power Budget (including ballast loss)

Type Of Usage Area	Reference Lighting Power Budget (W/m²)
Office / Meeting Rooms	15
Hall	15
Canteen	15
Classrooms	15
Lobbies / Atriums / Concourse	10
Storage areas	10
Stairs / Corridors	10
Car parks	5