SINGAPORE GREEN LABELLING SCHEME CERTIFICATION GUIDE

[Category 45: **LED Lights**]

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The Singapore Green Labelling Scheme (SGLS) was launched in May 1992 by the Ministry of the Environment. It was handed over to the Singapore Environment Council (SEC) on 5 June 1999 and is currently fully owned by the SEC.

The Green Label aims to help the public identify environment-friendly products that meet certain eco-standards specified by the scheme and seeks to encourage the level of eco-consumerism in Singapore as well as to identify the growing demand for greener products in the market. The scheme hopes to create a backlash effect, encouraging manufacturers to design and manufacture with the environment in mind.

SEC is recognized as a member of the Global Ecolabelling Network (GEN), an association of third-party, environmental performance recognition, certification and labelling organizations to improve, promote, and develop the "ecolabelling" of products and services. The SGLS has been successfully audited by the GEN as meeting ISO 14024 and ISO Guide 65 standards for the GENICES accreditation in October 2011.

Green Label offers certification of a range of products in conformance with its standards. For additional information on the SGLS or any of the SEC's programmes, contact:

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I. SCOPE

This category establishes criteria for a range of Light Emitting Diode ("LED lighting"), which is used by directly connecting to a commercial power source. This criterion includes integral LED lamp intended to replace incandescent lamps, decorative lamps, fluorescent lamps, halogen lamps, street lighting lamps and others. This scope applies for LED general lighting purposes and excludes LED aesthetic lighting.

II. RATIONALE

In recent years, with the dramatic improvements in their performances and significant cost reduction, LEDs can be found in a variety of lighting applications. Increasingly, they are being used as low-energy indicators, but also for replacement of traditional light sources in general lighting and automotive lighting applications. While LEDs have many advantages over traditional light sources (e.g. incandescent and fluorescent light products) including lower energy consumption, longer lifetime, improved robustness, smaller size and faster switching, LEDs are relatively expensive and require more precise current and heat management than traditional light sources.

The primary purpose of this category is to define environmental product criteria for the most harmful environmental and health hazards of LED lights, promote improved technical life-span of lamps, to promote energy saving lights and to use these criteria as indicators of general environmental performance of the product. Criteria have also been included in this document for waste management and energy management. These have been included to address environmental issues across the life-cycle of the products.

III. DEFINITIONS

ANSI	Refers to the American National Standards Institute
ASSIST	Refers to the Alliance for Solid State Illumination Systems and Technologies
CIE	Refers to the Commission Internationale de l'Eclairage (translated International Commission on Illumination).
Colour Rendition	The effect the spectral characteristic of the light emitted by the LED has on the color appearance of the objects illuminated by it is called color rendition. The color rendering index (CRI) is defined in terms of a comparison of the spectral tri-stimulus values of the objects under test illumination and standard illumination according to the recommendations of CIE Publication No.13.3-1995.
Integral LED Lamp	An integrated assembly comprised of LED packages (components) or LED arrays (modules), LED driver, ANSI standard base and other optical, thermal, mechanical, and electrical components. The device is intended to connect directly to the branch circuit through a corresponding ANSI standard lamp-holder (socket).
IEC	Refers to the International Electrotechnical Commission.
IESNA	Refers to the Illuminating Engineering Society of North America.
Label	Refers to the Singapore Green Label.
LED	Refers to light emitting diode, which is a pn junction semiconductor device that emits incoherent optical radiation when biased in the forward direction. The output is a function of its physical construction, material used, and exciting current and may be in the ultraviolet, the visible or in the infrared regions of the spectrum.
LED Luminaire	A complete lighting unit consisting of LED-based light emitting elements and a matched driver together with parts to distribute light, to position and protect the light emitting elements, and to connect the unit to a branch circuit. The LED-based light emitting elements may take the form of LED packages (components), LED arrays (modules), LED Light Engine, or LED lamps. The LED luminaire is intended to connect directly to a branch circuit.
Lumen Maintenance	The luminous flux at a given time in the life of the LED and expressed as a percentage of the initial luminous flux. L70 – L90 is the length of time declared by the manufacturer at which at least 70% lumen maintenance of any large sample of LEDs is reached.

	This should be measured on the basis of hot lumens to simulate real operating environments.
Luminaire Efficacy	The ratio of total luminous flux (in lumens, lm) to power input (in watts, W)
Material Safety Data Sheet (MSDS)	A document that indicates the physical and chemical properties of a substance or product informing the reader of its intended use and safety precautions to be undertaken when using it.
Waste Management Program	A programme to achieve and sustain efficient and effective minimisation and disposal of waste including policies, practices, planning activities, responsibilities and resources that affect the organisation's performance for achieving the objectives and targets of the Waste Policy.
UL	Refers to Underwriters Laboratories.

IV. GREEN LABEL CERTIFICATION CHECKLIST

A. General product performance requirement		
CRITERIA	**SUPPORTING DOCUMENTS**	
1. Fit for Use As a prerequisite to apply for the Green Label, the product must first be shown to be of a minimum quality and able to perform its intended purpose. It is recommended but not required that the product meets the performance requirements of relevant standards. • LED Lamps - ANSI/UL 1993 – 2009 • LED Luminaries - ANSI/UL 1598-2008 • Portable Electric Luminaries - ANSI/UL 153-2002 • General Safety - IEC 60968 The above list is non-exhaustive.	All relevant third party laboratory test reports	☐
2. Colour Rendition The average Colour Rending Index should attain at least, Ra of 80 for Lamps and luminaries.	All relevant third party laboratory test reports Suggested Tests: ▪ ANSI C78.377-2008 ▪ CIE 13.3-1995 ▪ IESNA LM-58-94 ▪ IESNA LM-79-2008	☐

B. Health and environment criteria		
CRITERIA	**SUPPORTING DOCUMENTS**	
3. Environmental and Occupational Safety, Health and Quality management guidelines • The company is required to have ISO (or equivalent) environmental, occupational safety and health and quality management systems in place • Emissions to the air and water during the production process shall be controlled within the environment regulation limits set by the NEA in the Code of Practice on Pollution Control (2000) or local country equivalent.	Copy of valid ISO 14001, OHSAS 18001 and ISO9001 (or equivalent) management certifications, **<u>or</u>** Environmental management guidelines and a declaration that the company is in the process of obtaining the relevant certifications	☐

• Overseas or local manufacturing facilities producing the products seeking endorsement under the Singapore Green Labelling Scheme shall comply with the relevant local legislation.	**and** Documentation on the manufacturing process describing production methods and materials	☐
4. Restriction and control of Hazardous Substances (RoHS): ▪ Mercury, lead, cadmium, chromium VI, polybrominated biphenyl (PBB) and polybrominated diphenyl ether (PBDE) shall not be used as constituent parts of product. ▪ Short-chain chlorinated paraffins (C=10 to 13) with 50% chlorine or above shall not be used in products. ▪ Synthetic resin components used in the housing of the LED weighing over 25g shall not contain halogen compound. Exemption for organic fluorine additive (e.g. anti-dripping agent) with weighing ≤0.5%.	RoHS compliance certificate **or** Local Material Safety Data Sheets **and** List of critical components	☐ ☐
5. Minimum Luminaire Efficacy: The minimum luminaire efficacy of the LED shall meet the requirements of its respective category (refer to ANSI C79.1-2002 categories): i. OMNI-DIRECTIONAL LAMPS Applicable to LED lamps intended to replace A, BT, G, P, PS, S and T types lamp in according to ANSI C79.1-2002 ▪ For LED lamp power <10W, minimum luminaire efficacy should reach 50 lm/W ▪ For LED lamp power ≥10W, minimum luminaire efficacy should reach 55 lm/W ii. DECORATIVE LAMPS Applicable to LED lamps intended to replace B, BA, C, CA, DC, F and G types lamp in according to ANSI C79.1-2002 ▪ Minimum luminaire efficacy should reach 40 lm/W	All relevant third party laboratory test reports Suggested Tests: ▪ IESNA LM-79-2008 ▪ ANSI C82.2-2002 **and** Supporting documents about what is the common ANSI bulb type used	☐ ☐

iii. DIRECTIONAL LAMPS Applicable to LED lamps intended to replace BR, ER, K, MR, PAR and R types lamp in according to ANSI C79.1-2002 ▪ For LED lamp diameter ≤ 20/8 inch, minimum luminaire efficacy should reach 40 lm/W ▪ For LED lamp diameter ≥ 20/8 inch, minimum luminaire efficacy should reach 45 lm/W iv. NON-STANDARD LAMPS Applicable to LED lamps of non-standard lamp type or form, intended to replace lamps other than those listed from 5(i) - (iii) ▪ LED lamp power <10W 50 lm/W ▪ LED lamp power ≥10W 55 lm/W v. LUMINARIES LED luminaries not designed for direct replacement of past technologies are to first, identify the common ANSI bulb type used for their current application (e.g. T8 used for Cove Mount lighting), and secondly, refer to 5 (i) – (iii) meet the standards for an LED lamp required to replace the common bulb type		☐
6. Product Life & Durability: ▪ Lamps shall deliver at least 70% of initial lumens for at least 35,000 hours (Lumen Maintenance, L70). ▪ The durability of switching operation in a product shall be ≥ 50,000.	All relevant third party laboratory test reports Suggested Tests: ▪ IESNA LM-80-2008 ▪ ASSIST Supporting documentation and a declaration from the executive officers or relevant authorized personnel of the company	☐ ☐
7. Recycled Content Products will need to have at least 20% recycled content (by weight) to gain or maintain endorsement under the SGLS.	Supporting documentation and a declaration from the executive officers or relevant authorized personnel of the company	☐

C. Life cycle considerations		
CRITERIA	**SUPPORTING DOCUMENTS**	
8. Storage of Raw Materials The LED light manufacturer must have policies and procedure covering appropriate storage and handling of hazardous raw materials. The policies and procedure should ensure the hazardous substance is located and managed to prevent contamination of surface water or land.	Statement by the company and signed by executive officers or authorized representative about conformance of the policies and procedure.	☐
9. Waste Management The LED light manufacturer must have effective waste management policies and procedure and/or a waste management programs covering manufacturing operations.	Statement by the company and signed by executive officers or authorized representative about conformance of the policies and procedure.	☐
10. Product Take-back The product manufacturer must develop a product take-back program at the end of life of the product. This is to ensure that the product is appropriately considered for further reuse or recycling and if deemed unrecyclable, then proper disposable or energy recovery is executed.	Statement by the company and signed by executive officers or authorized representative about conformance of the policies and procedure.	☐

D. Labelling & Packaging requirements		
CRITERIA	**SUPPORTING DOCUMENTS**	
11. Labelling The label on the product should include the following information, specific to the product or product type such as: 1. Product Information a. Product Model Name & Type (e.g. non-standard, decoration) b. Total luminous flux (rated initial hot luminous flux) c. Power consumption d. Light-source colour e. Average colour rendering index f. Rated input voltage g. Rated lamp power h. Luminance efficiency 2. User Instructions a. Place of use (availability or not of devices with dimmer, closed-type devices, devices with insulator, and other devices; recommended temperature) b. Warnings (not to be dismantled; not to look straight at the bulb lump for a long time) 3. Manufacturer & Supplier Information a. Country of Origin b. Consultation contact information - telephone number (required); website address (recommended).	A sample of the product packaging	☐

E. Use of the green label		
CRITERIA	**SUPPORTING DOCUMENTS**	
12. Rules governing display of the Green Label The Green Label Certification Mark may appear on the product, packaging, secondary documents, and promotional materials, only in conjunction with the certified product. The Green Label Certification Mark shall not be used in conjunction with any modifying terms, phrases, or graphic images that might mislead consumers as to the extent or nature of the certification.	A sample of the product packaging	☐

F. Application Considerations		
CRITERIA	**SUPPORTING DOCUMENTS**	
13. Products of Identical Construction When filing for products of identical construction, test exemptions or additional proofs are to be applied as detailed in Table 1 in the Appendix.	Identification of the base unit and listing of modifications in the base product for products of identical construction	☐

V. REFERENCES

- *Eco Mark (Japan Environment Association): Category No. 150 - "LED Bulb Lamp (Type A) Version 1.0" Certification Criteria*
- *ENERGY STAR® Program Requirements for Integral LED Lamps Eligibility Criteria -Version 1.4*
- *ENERGY STAR® Program Requirements Product Specification for Luminaires (Light Fixtures) Eligibility Criteria - Version 1.2*
- *EU Ecolabel: 2011/331/EU - Commission Decision of 6 June 2011 on establishing the ecological criteria for the award of the EU Ecolabel for light sources*
- *Hong Kong Green Label Scheme: GL-007-010 Revision 1.1 – LED Lamps*
- *The Korean Ecolabeling Program: EL209-2008/2/2012-36 - General Purpose LED Lamps*
- *The Korean Ecolabeling Program: EL210-2010/2/2012-36 - LED Fixture*
- *The Korean Ecolabeling Program: EL211-2013/1/2013-23 - LED Light Source Package and Module*

VI. APPENDIX

LAMP TYPES (ANSI C79.1-2002 - American National Standard for Nomenclature for Glass Bulbs Intended for Use with Electric Lamps)

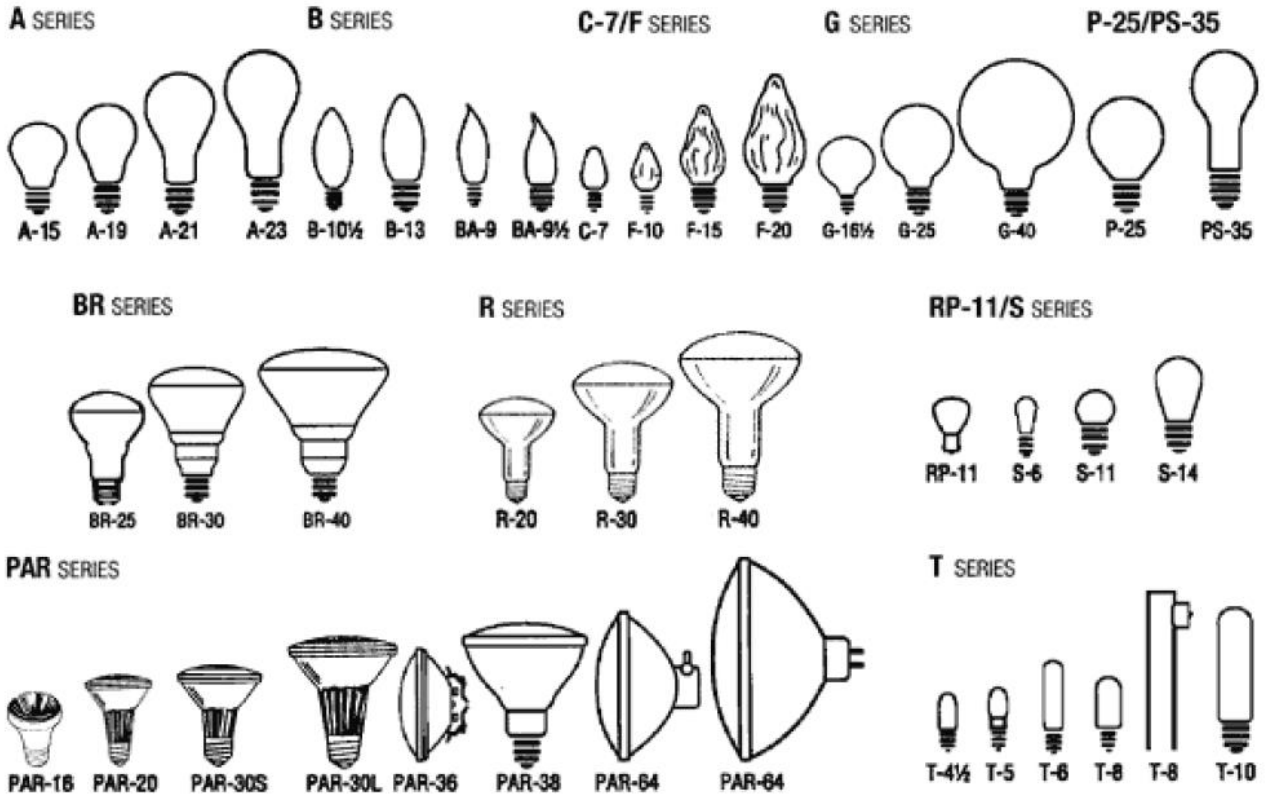

Table 1: Allowable Variations Within Product Families	
Housing / Chassis	Allowed so long as the light source or lampholder, ballast or driver, and heat sink (as applicable) are integrated into housing / chassis variations in such a way that the thermal performance of the luminaire is not degraded by changes to the housing / chassis. Thermal measurements of each variation may be required (e.g. ballast case temperature, TMPLED, or TMPC).
Heat Sink / Thermal Management Components	Not allowed.
Finish	Allowed.
Mounting	Allowed, so long as the bill of materials for each luminaire type/lamp is identical except for mounting hardware
Electrical Connection	Allowed
Reflector / Trim	Allowed so long as luminaire light output is not reduced.
Shade / Diffuser	Allowed so long as neither luminaire light output nor air flow are reduced.
Light Source (e.g. LED Die)	Allowed so long as variations will not negatively impact

Note: refers to the make and/or model of the source; also review CCT below	luminaire's compliance with any performance criteria in this specification.
Correlated Color Temperature (CCT) Note: also review Light Source above	Allowed so long as the lamp series or LED package/module/array series (and associated drive current), ballast or driver, and thermal management components are identical, and so long as variations will not negatively impact luminaire's compliance with any performance criteria in this specification. The representative model shall be the version within the product family with the lowest CCT. Applicant shall use different luminaire model numbers to distinguish between models shipped with light sources of varying CCTs.
Ballast / Driver	Allowed so long as variations will not negatively impact luminaire's compliance with any performance criteria in this specification. Thermal measurements of each variation may be required (e.g. ballast case temperature or TMPC).

	Eco Shop		Applicant to fill all fields	*Documents Submission*	100% Applicant's Self-Rating	Auditor Confirmation	100% Auditor score	SEC's Findings or Comments
A.		**Description**						
A.1		Location/situation of outlet :	*Choose from the drop down list*	-	N.A.	-	N.A.	N.A
A.2		Total area of the establishment (sq.m):		*Include all sections of the establishment*	N.A.	-	N.A.	N.A
A.3		Type/Description of retail outlet:	***Services***		N.A.	-	N.A.	N.A
A.4		Total number of full time staff?		*Please provide the necessary details*	N.A.	-	N.A.	N.A
A.5		Does the company rent or own the shop space ?	*Choose from the drop down list*		N.A.	-	N.A.	N.A
A.6		Opening hours / week ?		-	N.A.	-	N.A.	N.A
B.		**Environmental Commitment**						
B.1		Does your shop have a green champion?	*YES*	*Please provide register of committee members*	1	Accepted	1	Comments
B.2		Does your shop have an environmental policy?	*YES*	*Please provide policies, goals or targets and signed or endorsed by management*	1	Accepted	1	Comments
B.3		Are new and existing staff made aware of your shop''s environmental goals and plans?	*YES*	*Please provide the communication circulation of environmental goals and plans*	1	Accepted	1	Comments
B.4	Operations and systems	Does your shop make use of a digital ordering system?	*YES*	*Please provide documentation*	1	Accepted	1	Comments
B.5		Is printing of receipts made optional?	*YES*	-	1	Accepted	1	Comments
B.6	Sustainable Furnishing and products	Do you take into consideration sustainable materials in your shop fit out?	*YES*	*Please provide the necessary details*	1	Accepted	1	Comments
B.7		Does the shop support environmentally friendly packaging?	*YES*	*Please provide the necessary details*	1	Accepted	1	Comments
C.		**Indoor Environment and Air Quality**						
C.1	Green products	Are walls painted with low-VOC emission paint?	*YES*	*Please provide name and brand of paint*	1	Accepted	1	Comments
C.2		Are cleaning materials used environmentally friendly or approved under any eco certification such as the Singapore Green Label?	*YES*	*Please provide a list of products under the Green Label used*	1	Accepted	1	Comments
C.3		Does the store include the sale of eco-friendly or green products under its product line?	*YES*	*Please provide the necessary details*	1	Accepted	1	Comments
C.4		Number of standing potted plants:		-	N.A	-	N.A	-
C.5		Number of desk/small potted plants:		-	N.A	-	N.A	-
D.		**Resource Recovery and Recycling**						
D.1		Do you manage cardbox packaging wastage?	*YES*	*Please provide details*	1	Accepted	1	Comments
D.2	Good Practices	Does your shop incentivize employees when they bring their own takeaway containers for lunch?"	*YES*	*Please provide details*	1	Accepted	1	Comments
D.3		Does your shop encourage staff to use their own pesonal mugs to reduce disposable waste?	*YES*	*Please provide details*	1	Accepted	1	Comments
D.4	Shopping with earth in mind	Do you have a green return policy?	*YES*	*Please provide details and policy guidelines*	1	Accepted	1	Comments
D.5		Do you make the provision of shopping bags optional?	*YES*	-	1	Accepted	1	Comments
D.6	On Site Office	Does your shop use recycled paper for printing?	*YES*	-	1	Accepted	1	Comments

D.7	On Site Office	Does your shop promote double sided printing?	*YES*	-	1	Accepted	1	Comments

E.	**Energy Conservation**							
Level 1								
E.1	Energy Monitoring	Do you manage your own electricity bills?	*YES*	-	-	-	-	-
E.2		How much electricity does your shop consume in a year?		In Kwh	-	-	-	-
E.3	Appliances (Hot Water Dispenser, Microwave, Vacuum Cleaner)	How many ticks (out of maximum 4 ticks) under the National Environment Agency (NEA) Energy Efficiency Rating Label does your appliances meet?	*4 ticks*	-	3	Accepted	3	Comments
E.4	Air-Conditioning	Is the premise naturally ventilated or air-conditioned?	Choose from the drop down list	-	-	Choose from the drop down list	-	-
E.5		Is the air-conditioning centralized?	*Choose from the drop down list*	-	N.A	-	N.A	-
-		*If air-conditioning is centralized, please select the option N.A for questions E.8 and E.9						
E.6		How many (out of maximum 4 ticks) under the National Environment Agency (NEA) Energy Efficiency Rating Label is your air-conditioning rated at?	*Choose from the drop down list*	-	-	Accepted	-	-
E.7		Is air-conditioning set at 25 degrees or higher?	*Choose from the drop down list*	-	-	Accepted	-	-
	Common Area Appliances and Fittings							
E.8	Lighting and Displays	Do you use energy saving lightbulbs?	*YES*	*Please provide necessary proof*	1	Accepted	1	Comments
E.9		Do you use electrical signages?	*YES*		-	Accepted	-	-
E.10		Are you using LED signage?	*N.A*	-	N.A	-	N.A	-
	Others							
E11	On Site Offices	Are the computers and cashiering systems (NETS, Credit Card Machines) switched off after business hours?	*YES*	-	1	Accepted	1	Comments
E.12		Are active screensavers removed from the computers/ laptops?	*YES*	-	1	Accepted	1	Comments
E.13		Are computers and laptops switched off/ put to energy conservation mode after 5 minutes of inactivity?	*YES*	-	1	Accepted	1	Comments
E.14	Energy Management System	Do you have an energy management policy?	*YES*	*Please provide the necessary details*	1	Accepted	1	Comments
E.15		Are there auto timers/dimmers for lights?	*YES*	*Please provide the necessary details*	1	Accepted	1	Comments
Level 2								
E.16		Are there auto sensors for equipment?	Choose from the drop down list	-	-	Choose from the drop down list	-	-
E.17		Do you practise shop floor area management-e.g only opening up half of shop floor for operation during non-peak hours?	Choose from the drop down list	-	-	Choose from the drop down list	-	-

F.		**Water Conservation**						
F.1		Is there a tap point in the shop?	*NO*	-	N.A	-	N.A	-
F.2			*N.A*	-	N.A	-	N.A	-
F.3			*N.A*	-	N.A	-	N.A	-
F.4		How much water does your shop use in a year?		*in Cu.M*	N.A	N.A	N.A	-

G.		**Exemplary Performance**						

G.1		Are there emergency plans in place to deal with pollution and emergency situations?	*Choose from the drop down list*	-	-	Choose from the drop down list	-	-
G.2		Is there any appropriate storage area for chemicals and/or hazardous materials?	*Choose from the drop down list*	-	-	Choose from the drop down list	-	-
G.3		Does the shop have a staggered working hours scheme in place?	*Choose from the drop down list*	-	-	Choose from the drop down list	-	-
G.4		Are there showering facilities available near/in the office or other incentives (e.g. providing lockers) to promote cycling to work?	*Choose from the drop down list*	-	-	Choose from the drop down list	-	-
G.5		Does the organisation have any paperless process option (e-registry, e-biz, sharepoint, etc.)?	*Choose from the drop down list*	-	-	Choose from the drop down list	-	-
G.6		Does the organisation support any environmentally friendly causes?	*Choose from the drop down list*	-	-	Choose from the drop down list	-	-
G.7		Does the shop have an online shopping portal?	*Choose from the drop down list*	-	-	Choose from the drop down list	-	-
G.8		Does the shop have an e-waste collector?	*Choose from the drop down list*	-	-	Choose from the drop down list	-	-

Bonus: Does your company any other environmental contributions that you would like to share?								
1. Not more than 300 words 2. Please provide evidence								
						Choose from the drop down list	-	-

		Applicant to fill all shaded fields	*Documents Submission*	Applicant's Self-Rating	Auditor Confirmation	Auditor score	SEC's Findings or Comments
A.	**Description**						
A.1	Location of the office :	*Choose from the drop down list*	-	N.A.	-	N.A.	
A.2	Total office compound area (sq.m):		*Include all sections of the establishment*	N.A.	-	N.A.	
A.3	Type/Description of business:	*Choose from the drop down list*	-	N.A.	-	N.A.	
A.4	Total number of full time office staff?		*Please provide the necessary details*	N.A.	-	N.A.	
A.5	Does the organisation rent or own the office ?	*Choose from the drop down list*	-	N.A.	-	N.A.	-
A.6	Opening hours / week ?		-	N.A.	-	N.A.	
B.	**Environmental Commitment**						
B.1	Does your office have a green committee ?	*Choose from the drop down list*	-	-	-	-	-
B.2	Does your office have an environmental policy ?	*Choose from the drop down list*	-	-	-	-	-
B.3	Are environmental topics part of the office meetings?	*Choose from the drop down list*	-	-	-	-	-
B.4	Are new and existing staff made aware of your office's environmental goals and plans?	*Choose from the drop down list*	-	-	-	-	-
B.5	Does your office have an Environmental Management System (EMS) in place (i.e.ISO14001)?	*Choose from the drop down list*	-	-	-	-	-
B.6	Does your office have environmental procedure and guidelines clearly displayed, disseminated and made available for all employees and the visiting guests?	*Choose from the drop down list*	-	-	-	-	-
B.7	Has your organisation breached any environmental regulations or citations?	*Choose from the drop down list*	-	-	-	-	-
B.8	Has your organisation conducted any training that addresses environmental issues or advocates on environmental awareness?	*Choose from the drop down list*	-	-	-	-	-
B.9	Has your organisation supported any environmental organisations or movements in the past one year?	*Choose from the drop down list*	-	-	-	-	-
B.10	How many environmental programmes or activities has your office conducted in the past one year ?	*Choose from the drop down list*	-	-	-	-	-
B.11	Please provide the name(s) and description of the activity(ies)		-	-	-	-	-
B.12	Is there public transport near the office? E.g. MRT, bus	*NO*	-	0	-	-	-
B.13	Do you have a carpool programme?	*Choose from the drop down list*	-	-	-	-	-
B.14	Does your office have shuttle / bus services for inaccessible office location(s) ?	*Choose from the drop down list*	-	-	-	-	-
C.	**Purchasing**						
C.1	Does your office conduct procurement for its own office supplies and equipment?	*YES*	-	-	-	-	-
C.2	Does your office consider the environmentally preferred criteria when purchasing office supplies and equipment?	*Choose from the drop down list*	-	-	-	-	-
C.3	Does your office use any products certified under Singapore Green Labelling Scheme (SGLS)?	*Choose from the drop down list*	-	-	-	-	-
C.4	Does your organisation purchase paper obtained through sustainable sources (i.e; FSC, PEFC or Singapore Green Labelling Scheme (SGLS), etc?	*Choose from the drop down list*	-	-	-	-	-
C.5	Yearly paper consumption (reams/year)		-	-	-	-	-
C.6	Are used ink cartridges collected for recycling ?	*Choose from the drop down list*	-	-	-	-	-
C.7	Do you reuse used envelopes or files / folders ?	*Choose from the drop down list*	-	-	-	-	-

D.	**Waste Management**						
D.1	Does your office have any guidelines for waste management?	*Choose from the drop down list*	-	-	-	-	-
D.2	Does your office have any recycling bins for paper / metal / plastic?	*Choose from the drop down list*	-	-	-	-	-
D.3	Does your office keep track and monitor its waste management and make use of the information to set environmental goals (i.e. type of waste, amount of waste recycled)?	*Choose from the drop down list*	-	-	-	-	-
D.4	Are notice boards, meetings, emails, voicemail messages used instead of paper memos for information dissemination?	*Choose from the drop down list*	-	-	-	-	-
D.5	Does your office encourage staff to use their own cutlery, crockery and personal mugs to reduce disposable waste?	*Choose from the drop down list*	-	-	-	-	-
D.6	Does your office engage a recycling contractor or send its waste to a recycling facility?	*Choose from the drop down list*	-	-	-	-	-
D.7	Does your office promote double-sided printing and photocopying?	*Choose from the drop down list*	-	-	-	-	-
D.8	Does the office have any disposable cups / cutleries?	*Choose from the drop down list*	-	-	-	-	-
D.9	Are printing options placed default to duplex and grayscale to reduce wastage?	*Choose from the drop down list*	-	-	-	-	-
E.	**Energy Conservation**						
E.1	Does your office manage its own electricity bills?	*Choose from the drop down list*	-	-	-	-	-
E.2	How much electricity does your office use in one year?		*in Kwh*	-	-	-	-
E.3	Is there a set of energy conservation guidelines in place?	*Choose from the drop down list*	-	-	-	-	-
E.4	Are lights switched off when not in use?	*Choose from the drop down list*	-	-	-	-	-
E.5	Please indicate the areas where lights are switched off when not in use		*e.g. meeting rooms, pantry*	-	-	-	-
E.6	Are lights switched off in areas/rooms with sufficient natural lighting?	*Choose from the drop down list*	-	-	-	-	-
E.7	What percentage of the lights is energy saving?	*Choose from the drop down list*	-	-	-	-	-
E.8	Are energy saving features enabled on all equipment within the office?	*Choose from the drop down list*	-	-	-	-	-
E.9	Does the office use fans instead of air-conditioning in some areas?	*Choose from the drop down list*	-	-	-	-	-
E.10	Is your air-conditioning temperature set to 25°C or higher?	*Choose from the drop down list*	-	-	-	-	-
E.11	How many staff use the following when travelling to and from work:		-	2	Accepted	2	-
	Carpooling / Public transport (bus/MRT)	***3***	*43%*	-		-	
	Individual Car / Taxi	***1***	*14%*	-		-	
	Walking / Cycling	***3***	*43%*	-		-	
	Scooter / Motorcycle	***0***	*0%*	-		-	
	Others	***0***	*0%*	-		-	
E.12	How many staff participated in the survey for Item E.11?	***7***	-	-	-	-	-
E.13	Are all the computers switched off after office hours?	*Choose from the drop down list*	-	-	-	-	-
F.	**Water Conservation**						
F.1	Is there a set of water conservation guidelines in place?	*Choose from the drop down list*	-	-	-	-	-
F.2	How much water does your office use in one year?		*In Cu. M*	-	-	-	-
F.3	Does your office provide potable water supply for your staff to discourage the purchase of bottled water?	*Choose from the drop down list*	-	-	-	-	-
G.	**Air Quality & Landscape**						
G.1	Is there a designated eating area within the office?	*Choose from the drop down list*	-	-	-	-	-
G.2	Do you have any visible mould on walls and ceillings?	*Choose from the drop down list*	-	-	-	-	-
G.3	Number of standing potted plants:		-	-	-	-	-
G.4	Number of desk potted plants:		-	-	-	-	-

H.	Exemplary Performance						
H.1	Are there emergency plans in place to deal with pollution and emergency situations?	*Choose from the drop down list*	-	-	-	-	-
H.2	Is there any appropriate storage area for chemicals and/or hazardous materials?	*Choose from the drop down list*	-	-	-	-	-
H.3	Does the office have renewable energy sources installed on site (i.e. solar panels, wind turbines etc.)?	*Choose from the drop down list*	-	-	-	-	-
H.4	Are there any bicycle parking lots or storage provided within the facility?	*Choose from the drop down list*	-	-	-	-	-
H.5	Does the office have a staggered working hour scheme in place?	*Choose from the drop down list*	-	-	-	-	-
H.6	Are there showering facilities available near/in the office or other incentives (e.g. providing lockers) to promote cycling to work?	*Choose from the drop down list*	-	-	-	-	-
H.7	Does the organisation have any paperless process option (e.g. e-registry, e-biz, sharepoint, etc.)?	*Choose from the drop down list*	-	-	-	-	-
H.8	Does the organisation have an e-waste collector?	*Choose from the drop down list*	-	-	-	-	-
H.9	Does the office have timer switcher equipment (non-network)?	*Choose from the drop down list*	-	-	-	-	-
H.10	Are active screensavers removed from your computers and laptops?	*Choose from the drop down list*	-	-	-	-	-
H.11	Do your laptops and computers switch to standby mode after 5 minutes of inactivity?	*Choose from the drop down list*	-	-	-	-	-
				4%		**4%**	

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	Eco Food		Applicant to fill all shaded fields	*Documents Submission*	111% Applicant's Self-Rating	Auditor Confirmation	0% Auditor score	SEC's Findings or Comments
A.		**Description**						
A.1		Location/situation of food establishment :	*Choose from the drop down list*	-	N.A.	-	N.A.	-
A.2		Total area of the establishment (sq.m):		*Include all sections of the establishment*	N.A.	-	N.A.	-
A.3		Type/Description of Food Establishment:	*Choose from the drop down list*	-	N.A.	-	N.A.	-
A.4		Total number of full time staff?		*Please provide the necessary details*	N.A.	-	N.A.	-
A.5		Does the food establishment sublet tenants?	*Choose from the drop down list*	-	N.A.	-	N.A.	-
A.6		Opening hours/ week?		-	N.A	-	N.A	-
B.		**Environmental Commitment**						
B.1		Does your food establishment have a green champion?	*YES*	*Please provide register of committee members*	1	Choose from the drop down list	-	-
B.2		Does your food establishment have an environmental policy?	*YES*	*Please provide policies, goals or targets and signed or endorsed by management*	1	Choose from the drop down list	-	-
B.3	Accesibility and reducing carbon footprint	Are there public transportation near your food establishment?	*YES*	*Please provide details (location and distance from food establishment*	1	Choose from the drop down list	-	-
C.		**Purchasing**						
C.1	Packaging	Is packaging and cutlery for takeaway made from sustainable material?	*YES*	-	1	Choose from the drop down list	-	-
C.2		Is styrofoam used?	*NO*	-	1	Choose from the drop down list	-	-
C.3		Are paper and paper products (napkins) made from post-consumer content/natural material?	*YES*	-	1	Choose from the drop down list	-	-
C.4	Air Quality and Landscape	Are cleaning products environmentally friendly or approved under any eco certification such as the Green Label?	*YES*	*Please provide the list of products under the respective eco labels*	1	Choose from the drop down list	-	-
C.5		Are walls painted with low-VOC emission paint?	*YES*	*Please provide name and brand of paint used*	1	Choose from the drop down list	-	-
C.6		No. of standing potted plants		-	N.A	-	N.A	-
C.7		No. of desk/small potted plants		-	N.A	-	N.A	-
D.		**Water Conservation**						
D.1	Water Consumption Monitoring	Do you manage your own water consumption?	*YES*	*Please provide documentation (utility bills/records)*	1	Choose from the drop down list	-	-
D.2		How much water does your food establishement consume in a year?		*in litre*	N.A	-	N.A	-
D.3		Are the washing of plates and utensils done by hand or by using a dishwasher?	By hand	*Please provide the guidelines*	1	Choose from the drop down list	-	-
D.4		How many ratings (out of a maximum of 3 ticks) does the water fittingshave under the PUB Water Efficiency Labelling Scheme (WELS) requirement?	*3 out of 3 ticks*	*Please provide water fitting documentation*	2	Choose from the drop down list	-	-
D.5	Water Conservation Efforts	Are there posters/ visuals put up to remind users on water conservation?	*YES*	*Please provide posters, communication materials*	1	Choose from the drop down list	-	-

D.6		Are motion sensor or pushed taps installed ?	*YES*	-	1	Choose from the drop down list	-	-

E.	**Energy Conservation**							
E.1	Energy Consumption Monitoring	How much electricity does your food estalishment consume in one year?		*in kWh*	N.A	-	N.A	-
	Wet Area Appliances and Fittings							
E.2	Freezing/ Refrigeration	How many ticks (out of maximum 4 ticks) under the National Environment Agency (NEA) Energy Efficiency Rating Label does your appliance meet?	*3-4 ticks*	-	2	Choose from the drop down list	-	-
	Common Area Appliances and Fittings							
E.3	Lighting	Is the establishment using energy saving lightbulbs?	*YES*	*Please provide documentation*	1	Choose from the drop down list	-	-
E.4		Lighting switched off in unoccupied areas/ times?	*YES*	-	1	Choose from the drop down list	-	-
E.5	Displays	Do you use electrical signages?	*NO*	-	N.A	-	N.A	-
E.6			*N.A*	-	N.A	-	N.A	-
E.7	Air-conditioning	Is the premise naturally ventilated or air-conditioned?	*Natural*	-	1	Choose from the drop down list	-	-
E.8			*N.A*	-	N.A	N.A	N.A	-

F.	**Hygiene and Sanitary**							
F.1		Please indicate the grading of your food place according to the Grading system for Food Establishments and Food Stalls set up by the National Environment Agency (NEA)?	*Grade A*	-	2	Choose from the drop down list	-	-
F.2		Are floors cleaned using a high water pressure hose or by using a pail and damp mop?	*Damp Mop*	-	1	Choose from the drop down list	-	-

G.	**Resource Recovery and Recycling**							
G.1	Waste Management	Are aluminium cans/plastics recycled?	*YES*	*Please provide photos of recycling bins and state location of the bins*	1	Choose from the drop down list	-	-
G.2		Are cardboard boxes and packaging recycled?	*YES*	*Please provide photos of recycling bins and state location of the bins*	1	Choose from the drop down list	-	-
G.3	Common Areas	Are there any green materials used in the fit out?	*YES*	*Please provide necessary details*	1	Choose from the drop down list	-	-

H.	**Exemplary Performance**							
H.1		Is there any appropriate storage area for chemicals and/or hazardous materials?	*YES*	*Please provide the necessary details*	0.5	Choose from the drop down list	-	-
H.2	Food Culture	Does the food establishment have a food donation drive in place as opposed to discarding food out at the end of the business day?	*YES*	*Please provide the necessary details*	0.5	Choose from the drop down list	-	-
H.3		Does the food establishment encourage customers to pack home unfinished food?	*YES*	-	0.5	Choose from the drop down list	-	-
H.4		Does the food establishment has reward program for customers who bring their own containers to pack unfinished food home?	*YES*	-	0.5	Choose from the drop down list	-	-
H.5		Does your food establishment advise customers on portion control ordering so as to avoid over-ordering?	*YES*	*Please provide the necessary details*	0.5	Choose from the drop down list	-	-

H.6		Does the organisation have an e-waste collector?	*YES*	*Please provide the necessary details*	0.5	Choose from the drop down list	-	-
H.7	Initiative	Does your company support any environmental organisation or movement in the past one year?	*YES*	*Please provide the necessary training details*	0.5	Choose from the drop down list	-	-
H,8	Green Diet	Are vegetarian options made available?	*YES*	*Please provide the necessary details*	0.5	Choose from the drop down list	-	-
H.9	Green Landscaping	Is green landscaping part of your food establishment's design layout?	*YES*	*Please provide the necessary details*	0.5	Choose from the drop down list	-	-

	Eco Food		Applicant to fill all shaded fields	*Documents Submission*	113% Applicant's Self-Rating	Auditor Confirmation	113% Auditor score	SEC's Findings or Comments
A.		**Description**						
A.1		Location/situation of food establishment :	*Choose from the drop down list*	-	N.A.		N.A.	
A.2		Total area of the establishment (sq.m):		*Include all sections of the establishment*	N.A.	-	N.A.	
A.3		Type/Description of Food Establishement:	***Choose from the drop down list***		N.A.	-	N.A.	
A.4		Total number of full time staff?		*Please provide the necessary details*	N.A.	-	N.A.	
A.5		Does the food establishment sublet tenants?	*Choose from the drop down list*		N.A.	-	N.A.	
A.6		Opening hours/ week?			N.A		N.A	
B.		**Environmental Commitment**						
B.1		Does your food establishment have a green champion?	*YES*	*Please provide register committee members*	1	Accepted	1	Comments
B.2		Does your food establishment have an environmental policy?	*YES*	*Please provide policies, goals or targets and signed or endorsed by management*	1	Accepted	1	Comments
B.3		Are new and existing staff made aware of your company's environmental goals and plans?	*YES*	*Please provide list of goals, communication materials*	1	Accepted	1	Comments
B.4		Are the printing of receipts made optional?	*YES*	-	1	Accepted	1	Comments
B.5		Does your food establishment make use of a digital ordering system?	*YES*	-	1	Accepted	1	Comments
B.6	Green Diet	Are vegetarian options made available?	*YES*	*Please provide details*	1	Accepted	1	Comments
B.7		No. of standing potted plants:		-	N.A	-	N.A	-
B.8		No. of desk/small potted plants:		-	N.A	-	N.A	-
B.9	Initiative	Does your company support any environmental organisation or movement in the past one year ?	*YES*	*Please provide the training material*	1	Accepted	1	Comments
B.10	Accesibility and reducing carbon footprint	Are there public transportation near your food establishment ?	*YES*	*Please provide details (location and distance from food establishment*	2	Accepted	2	Comments
C.		**Purchasing**						
C.1	Packaging	Is packaging and cutlery for takeaway made from sustainable material?	*YES*	*Please provide details and necessary documents*	1	Accepted	1	Comments
C.2		is styrofoam used?	*NO*	-	1	Accepted	1	Comments
C.3		Are paper and paper products (napkins) made from post-consumer content/natural material?	*YES*	*Please provide details and necessary documents*	1	Accepted	1	Comments
C.4	Air Quality and Landscape	Are cleaning products environmentally friendly or approved under any eco certification such as the Green Label?	*YES*	*Please provide the list of products under the Green Label*	1	Accepted	1	Comments
C.5		Are walls painted with low-VOC emission paint?	*YES*	*Please provide name and brand of paint used*	1	Accepted	1	Comments

D.	**Water Conservation**							
D.1	Water Consumption Monitoring	Do you manage your own water consumption?	*YES*	*Please provide documentation (utility bills/records)*	N.A	-	N.A	-
D.2		How much water does your food establishment consume in a year?		*in m3*	N.A	-	N.A	-
D.3		Are the washing of plates and utensils done by hand or by using a dishwasher?	By hand	-	1	Accepted	1	Comments
D.4		How many ratings (out of a maximum of 3 ticks) does the water fittingshave under the PUB Water Efficiency Labelling Scheme (WELS) requirement?	*3 out of 3 ticks*	-	2	Accepted	2	Comments
D.5	Water Conservation Efforts	Are there posters/ visuals put up to remind users on water conservation?	*YES*	*Please provide posters, communication materials*	1	Accepted	1	Comments
D.6		Are motion sensor or pushed taps installed ?	*YES*	-	1	Accepted	1	Comments

E.	**Energy Conservation**							
	Wet Area Appliances and Fittings							
E.1	Energy Monitoring	Do you manage your own elctricity bills?	*Choose from the drop down list*	-	N.A	-	N.A	-

E.2	Energy Monitoring	How much elctricity does your food establishment consume in a year?		in Kwh	N.A	-	N.A	-
E.3	Freezing/ Refriedgeration	How many ticks (out of maximum 4 ticks) under the National Environment Agency (NEA) Energy Efficiency Rating Label does your appliance meet?	*Mostly 3-4 ticks*	*Please provide documentation*	2	Accepted	2	Comments
	Common Area Appliances and Fittings							
E.4	Lighting	Does the establishment use energy saving lightbulbs?	*YES*	*Please provide documentation*	1	Accepted	1	Comments
E.5		Is lighting switched off in unoccupied areas/ times?	*YES*	-	1	Accepted	1	Comments
E.6		Are Auto timers and motion sensors installed?	*YES*	*Please state location of equipment*	1	Accepted	1	Comments
E.7	Vending and Entertainment Machines	Are vending Machines Switched off during non operational hours?	*YES*	-	1	Accepted	1	Comments
E.8		Are entertainment machines (arcade items) switched off during non operational hours?	*YES*	-	1	Accepted	1	Comments
	Others							
E.9	Air- Conditioning	Is the premise naturally ventilated or air-conditioned?	Natural	-	3	Natural	3	Comments
E.10			*N.A*	-	N.A	-	N.A	-
		*If air-conditioning is centralized, please select the option N.A for questions E.13, E.14 and E.15						
E.11			*N.A*	-	N.A	-	N.A	-
E.12			*N.A*	-	N.A	-	N.A	-
E.13			*N.A*	-	N.A	-	N.A	-

F.	**Hygiene and Sanitary**							
F.1	Individual Stalls	According to the Grading Systems for Food Establishments and Food Stalls set up by NEA, what are the grade(s) that the restaurant/various stalls have attained?	*100% A*	-	3	Accepted	3	Comments
F.2		Are floors cleaned using a high water pressure hose or by using a pail and damp mop?	*Damp Mop*	-	1	Accepted	1	Comments
F.3		Does your food establishment prioritise tap water for drinking (if it is safe) rather than the disposable plastic bottled water?	*YES*	-	1	Accepted	1	

G.	**Resource Recovery and Recycling**							
G.1	Waste Management	Are aluminium cans/plastics recycled?	*YES*	*Please provide photos of recycling bins and state location of the bins*	1	Accepted	1	Comments
G.2		Are cardboard boxes and packaging recycled?	*YES*	*Please provide photos of recycling bins and state location of the bins*	1	Accepted	1	Comments
G.3	Common Areas	Are there any green materials used in the fit out?	*YES*	*Please provide guidelines*	1	Accepted	1	Comments

H.	**Exemplary Performance**							
H.1		Are there emergency plans in place to deal with pollution and emergency situations?	*YES*	*Please provide the necessary details*	0.5	Accepted, with 0.5pt	0.5	Comments
H.2		Is there any appropriate storage area for chemicals and/or hazardous materials?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments
H.3		Does the food establishment have renewable energy sources installed on site (i.e. solar panels, wind turbines etc.)?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments
H.4		Are there any bicycle parking lots or storage provided within the facility?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments

H.5	Food Culture in Singapore	Does the food establishment have a food donation drive in place as opposed to discarding food out at the end of the business day?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments
H.6		Does the food establishment encourage customers to pack home unfinished food?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments
H.7		Does the food establishment has reward program for customers who bring their own containers to pack unfinished food home?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments
H.8		Does your food establishment advise customers on portion control ordering so as to avoid over-ordering?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments
H.9		Does your food establishment have buffet services?	*YES*	*Please provide the necessary details*	-	-	-	-
H.10		If yes, are there policies in place to discourage food wastage? If no, please pick the option N.A under the drop down list.	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments
H.11		Are there showering facilities available near/in the office or other incentives (e.g. providing lockers) to promote cycling to work?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments
H.12		Does the organisation have an e-waste collector?	*YES*	*Please provide the necessary details*	0.5	Accepted	0.5	Comments

Green Building Standards and User-centric Green Mark Scheme To support Sustainable Urban Living in Singapore

Presented by Lee Sui Fung
Technology Development Division
Building and Construction Authority

Greening Singapore's Built Environment

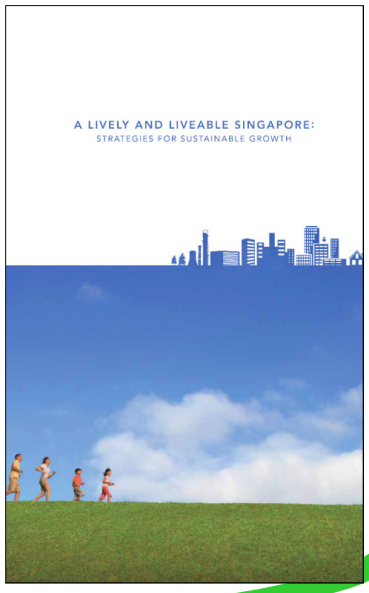
- Singapore's Built Environment
- BCA Green Mark Scheme
- BCA Green Building Master Plans
- User-centric Green Mark Schemes

We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.

Building and Construction Authority

""Singapore does not have viable sources of renewable energy. We will therefore have to focus on raising efficiency, aiming for a 35% improvement in energy efficiency from 2005 levels by 2030"

Source: Report of The Inter-Ministerial Committee on Sustainable Development, 2009



BCA

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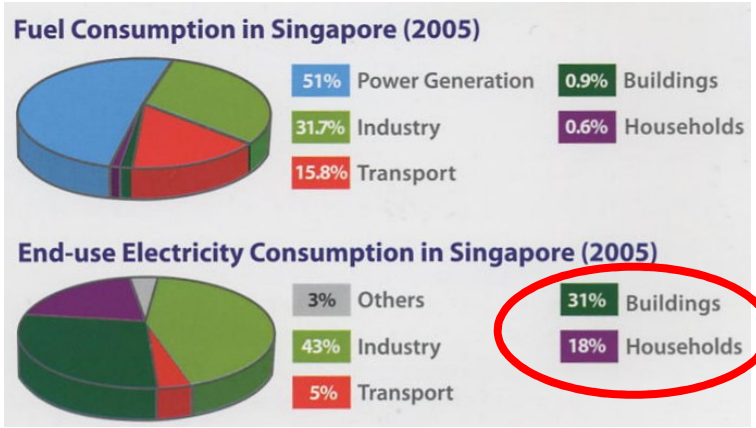
BCA GREEN MARK

Singapore's Built Environment



Source: National Environment Agency, NEA

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BCA GREEN MARK

Singapore BCA Green Mark Scheme

BCA GREEN MARK

- A green rating tool / system
- To evaluate buildings
- For its environmental impact and performance

Launched in Jan 2005 – a rating system for the tropics

Green Building Rating Systems Around the World

BCA's Green Mark Scheme recognised as one of the International Green Building Rating Systems by the World Green Building Council

We shape a safe, high quality, sustainable and friendly built environment.

BCA Green Mark Scheme

BCA GREEN MARK

5 Key Assessment Criteria

1. ENERGY EFFICIENCY
2. WATER EFFICIENCY
3. ENVIRONMENTAL PROTECTION
4. INDOOR ENV. QUALITY
5. OTHER GREEN FEATURES

Green Mark	Try Again	Certified	Gold	GoldPlus	Platinum
Score	0 – 49	50 – 74	75 – 84	85 – 89	90 – 100
Estimated Energy Savings		10% to 15%	15% to 25%	> 25%	> 30%

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BCA GREEN MARK

Singapore Green Building Roadmap

Building and Construction Authority

Envelop Thermal Transfer Value (ETTV)

CP24:1999 EE Standard for Bldg Services and equipment

80's – 2005 (Energy conservation)

BCA GREEN MARK

2005 (green buildings)

1st GREEN BUILDING MASTERPLAN

2006

- Offered $20 million cash incentives
- $50 million R&D funds
- Govt to take lead in green buildings
- Legislation
- Comprehensive industry training
- Public outreach

2nd GREEN BUILDING MASTERPLAN

2009

- Offered $100million cash incentives
- Govt to take stronger leaderships
- Offered bonus Gross Floor Area
- Higher energy standard
- Singapore – Green hub in region

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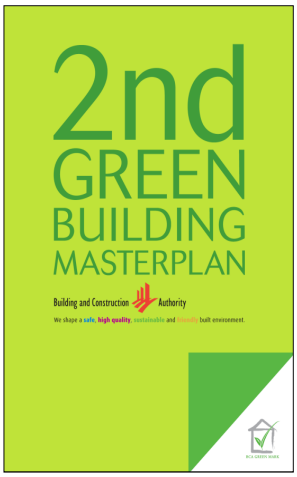
Building and Construction Authority

Green Building Master Plan at a Glance



Govt. to take stronger leadership	- New Developments to achieve GM Platinum - Existing Buildings to achieve GM GoldPLus
$100million cash incentives	For Existing Buildings Up to 50% Co-fund
GM Bonus GFA Scheme	For new developments Up to 2% Bonus GFA
Building Industry Capability	GMFM/ GMM/ GMP/ Chiller plant M&V

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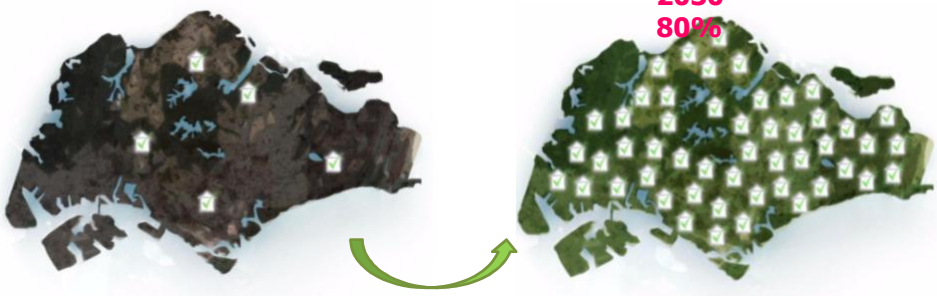
Inter-Ministerial Committee on Sustainable Development

2010 – 8%

2030 – 80%



208 million square meter of building stock

$2 Billion industry!

18,000 Green Collar Jobs

BCA

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BCA GREEN MARK

Four-Phased Approach to Green our Building Stock

Phase 1

Legislation – New Bdgs (April 08)

Minimum EE Standards for New Building and Existing Buildings undergoing major retrofitting (GFA of >2000m²)

Phase 2

Incentive Scheme (April 09)

GMIS (GFA & EB) schemes. EB Incentive co-fund upgrading for energy improvement. Building owners to declare energy data

Phase 3

Energy Data Submission

Yearly **submission** on **energy consumption** to BCA.
Building owners to submit **energy related building information**.

Phase 4

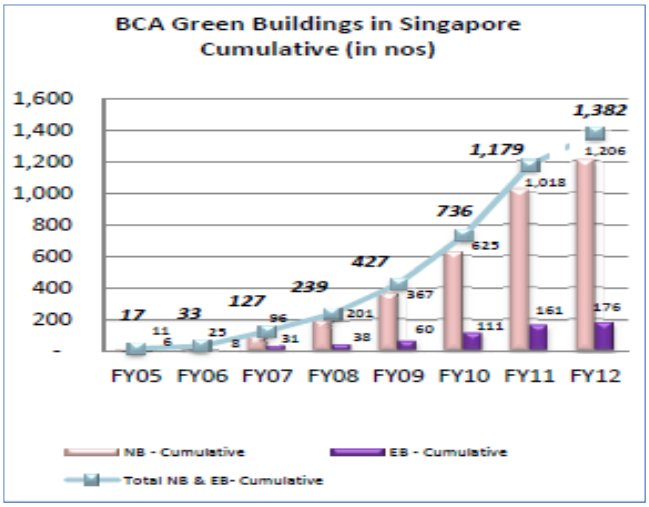
Legislation – Existing Buildings

Minimum EE standards for Existing Buildings and meet GM Certified

New and retrofitted existing buildings – **3 yearly system efficiency audit**

Jan 2013

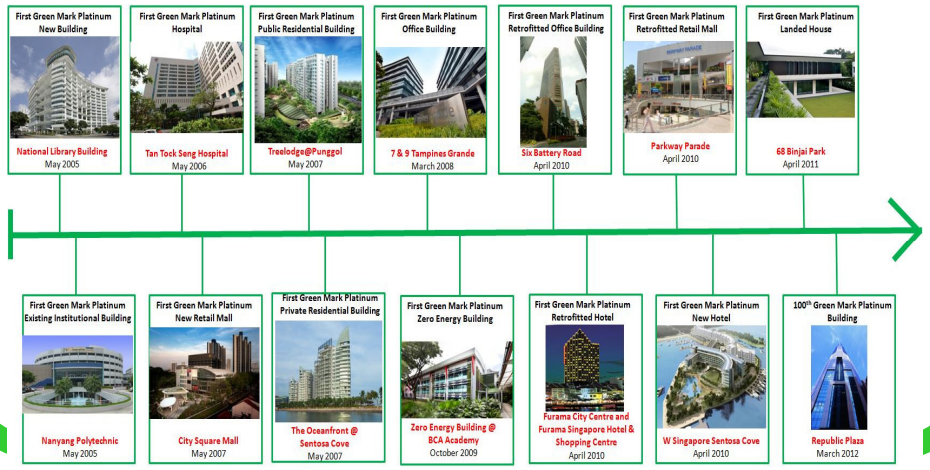
Where we are today



Updated as of 01 Mar 2013

We shape a **safe**, **high quality**, **sustainable** and **friendly** built environment.

New milestone–100th Green Mark Platinum buildings in March 2012



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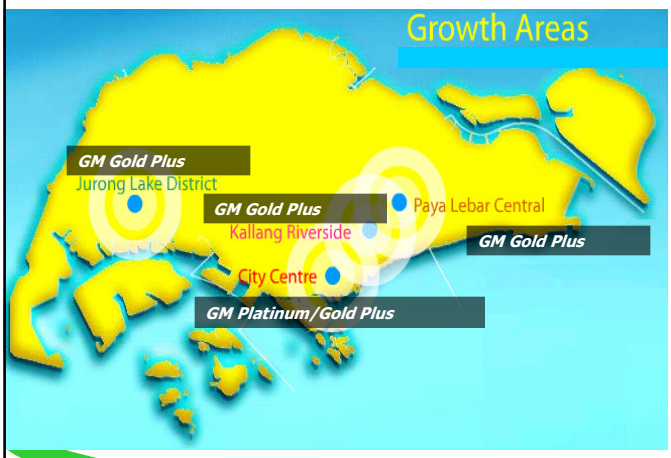
BCA GREEN MARK

Govt Taking The Lead

High Green Mark ratings (Platinum and GoldPlus) for government land sales sites in key growth areas



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BCA GREEN MARK

Building and Construction Authority

Incentive for Existing Buildings

Incentives for private sector to retrofit to Improve energy efficiency

S$100 Million

Co-fund cost of equipment for energy retrofits

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Incentivising Private Sector

GM GFA Incentive Scheme

Building and Construction Authority

URBAN REDEVELOPMENT AUTHORITY

Green Mark Platinum	• Up to 2% additional Gross Floor Area (GFA) • beyond MP GPR • (subject to cap of 5,000sqm)
Green Mark Gold^{Plus}	• Up to 1% additional Gross Floor Area (GFA) • beyond MP GPR • (subject to cap of 2,500sqm)

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BCA GREEN MARK

User centric **GREEN MARK Schemes**

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Objectives

User-centric Green Mark Schemes

- **Energy**
- **Water**
- **Materials/Land**
- **Indoor Environment Quality**
  - Health
  - Comfort
  - Productivity

BCA Green Mark Scheme for Buildings

BCA Green Mark Schemes for New Buildings

- Green Mark for New Non-Residential Buildings
- Green Mark for New Residential Buildings
- Green Mark for Landed Houses
- Green Mark for Transit Stations

BCA Green Mark Schemes for Existing Buildings

- Green Mark for Non-Residential Buildings
- Green Mark for Residential Buildings
- Green Mark for Existing Schools

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BCA Green Mark Scheme covers a broader scope of the built environment

BCA Green Mark Schemes – Beyond Buildings

- Green Mark for Existing/New Parks
- Green Mark for Districts
- Green Mark for Infrastructures
- Green Mark for Rapid Transit System
- Green Mark for Office Interior
- Green Mark for Restaurants
- Green Mark for Retail
- Green Mark for Supermarkets
- Green Mark for Data Centres

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Green Mark Schemes to engage users of Green Buildings

- Green Mark for Office Interior
- Green Mark for Restaurants
- Green Mark for Retail
- Green Mark for Supermarkets
- Green Mark for Data Centres

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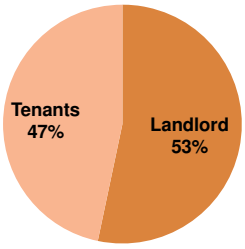
Building and Construction Authority

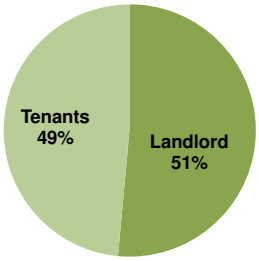
Tenants : Our next challenge

Tenants can influence the energy consumption of a building.

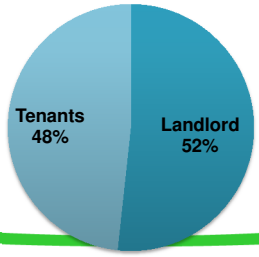
Office Buildings



Retail Malls



Mixed Buildings



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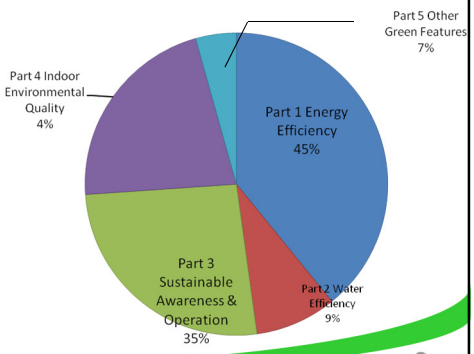
Green Mark for Office Interior

- Launched in May 2008
- Criteria aims to encourage environmentally friendly and sustainable practices in offices
- Emphasis will be the Energy Efficiency of the air-conditioning, lightings and energy efficient equipment; and sustainable fit-out, operation and waste management.

Green Mark Points Distribution



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BCA GREEN MARK

Building and Construction Authority

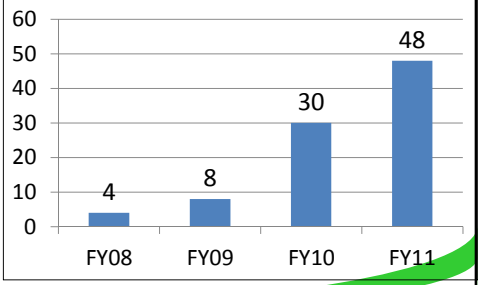
Green Mark for Office Interior

- **To encourage environmentally friendly and sustainable practices in offices**

Some of companies with offices certified under GM Office Interior

HSBC · CapitaLand · Credit Suisse · mapletree · American Express · Unilever · Lend Lease · JURONG International

Cumulative Number of Office Interior Projects



Launched in May 2008

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Green Features for Office

- Use of energy efficient office equipment such as computer, monitor , fax machine, printer, photocopier with Energy Star etc

- Use of better efficient lighting such as LED lights

- Use of water efficient fittings covered under PUB's Water Efficiency Labelling Scheme (WELS)

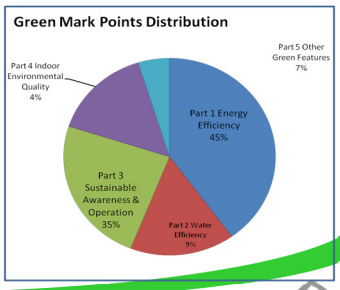
Green Features for Office

- Use of sustainable products in renovation such as :
  - Environmental friendly products such as low-VOC paint, recycled carpet that are certified by approved certification body such as Singapore Environmental Council or Singapore Green Building Council

Building and Construction Authority

Green Mark for Restaurants

- Launched in Sep 2011
- **To encourage environmentally friendly and sustainable practices in restaurants**
- Emphasis on both energy efficiency and water efficiency; and sustainable fit-out, operation and waste management.
- High energy and water usage on daily basis



Green Features for Restaurants

- Use of energy efficient lightings such as LED lights and kitchen equipments.

LED Lighting

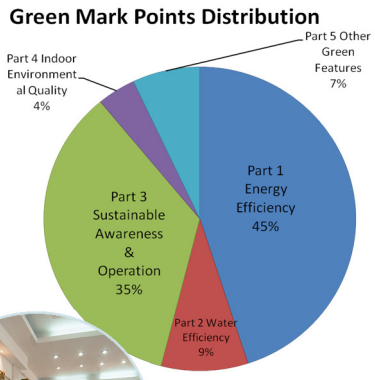
- Use of heat exchanger to recycle waste heat and use of motions sensors for areas with un-frequent usage
- Use of sustainable products in renovation such as :
  - Environmental friendly products such as low-VOC paint, recycled carpet that are certified by approved certification body such as Singapore Environmental Council or Singapore Green Building Council

Green Features for Restaurants

- To install water sub-meters to monitor kitchen and toilet usage where possible.
- Use of water efficient fittings. Use water fittings with PUB's WELS
- Implement water efficient practices such as
  - using pre-rinse spray valve (< 6 L/ min);
  - placing frozen food in the refrigerator the night before using it for thawing purposes;

Green Mark for Retail

- Launch in Oct 2012
- Criteria aims to *raise the energy efficiency of tenants in a retail mall, which typically consumes about 50% of total building energy*
- Emphasis will be the Energy Efficiency of the air-conditioning, lightings and energy efficient equipment; and sustainable fit-out, operation and waste management.



Green Features for Retail

•Recycled materials used

•Efficient lighting systems, e.g LED
•Zoning for lighting

•Recycling efforts

•Daylighting

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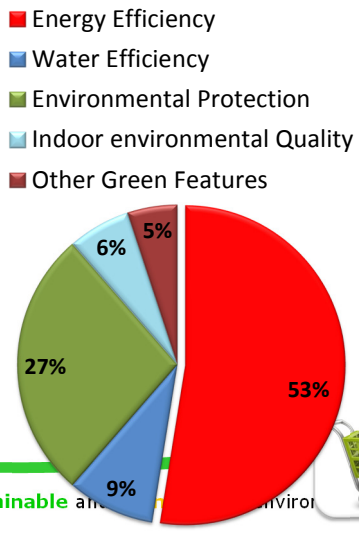
Green Mark for Supermarket

- Launch in Oct 2012
- Initiative from FairPrice and DairFarm Group.
- Criteria aims to *guide supermarket operators towards best practices in refrigeration , lighting , air-con system design and other green practices*

Assessment Criteria Emphasis & Points Allocation



We shape a **safe**, **high quality**, **sustainable** an

Green Features for Supermarket

Refrigeration System

Display Cabinets with LED Lighting

Fitted Doors

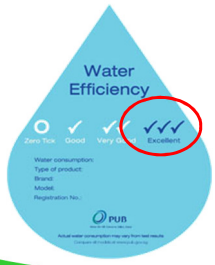
Anti Sweat Control for freezers

EC Fans

Electronic Expansion Valves

Green Features for Supermarket

- To install water sub-meters to monitor major usage
- Use of water efficient fittings. Use water fittings with PUB's WELS
- Implement water efficient practices such as
  - using pre-rinse spray valve (< 6 L/ min);



PRIVATE WATER METERS

Green Features for Supermarket

- Sustainable Product –
  - Low VOC pain, SGLC Product
- Recycling Bins
- 10 cents off for bringing your own bags
- 3R – Reduce, Reuse and Recycle

BRING YOUR OWN BAG (BYOB) REBATE

RECYCLING BINS

SINGAPORE GREEN BUILDING PRODUCT

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BCA GREEN MARK

Green Mark for Data Center

- Energy usage for Data Centers is one of the highest in the IT industry
- In Singapore, the *10 largest data centres consume energy equivalent to 130,000 households*. In addition, the commercial data centre capacity *is projected to increase by 50% from 2010 to 2015* with a corresponding increase in energy consumption

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Green Features for Data Centres

•Use of ICT Equipment that is Energy Star rated

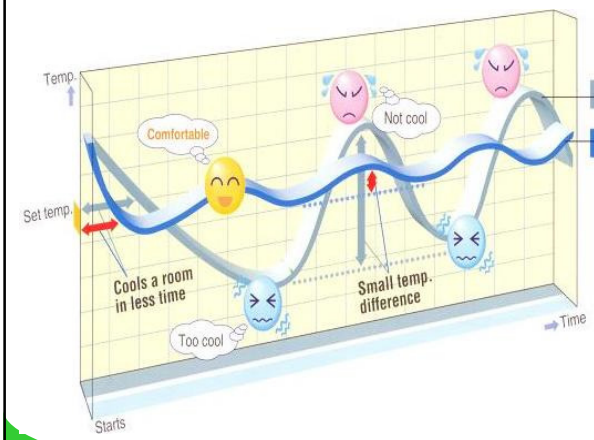
•Data Centre is equipped with energy metering to provide total facility power and energy usage and total IT equipment power

•Bi-level lightings for lighting sensor control at each row of server racks

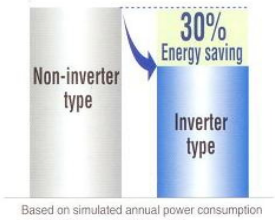
•Facility for collection and storage of different recyclable waste as IT, Plastic, Metal and paper waste.

Green Building Features – Air-Conditioning

Singapore Energy Labelling Scheme



Comparison of power consumption



Based on simulated annual power consumption of Daikin 2.5 and 3.5 kW models.

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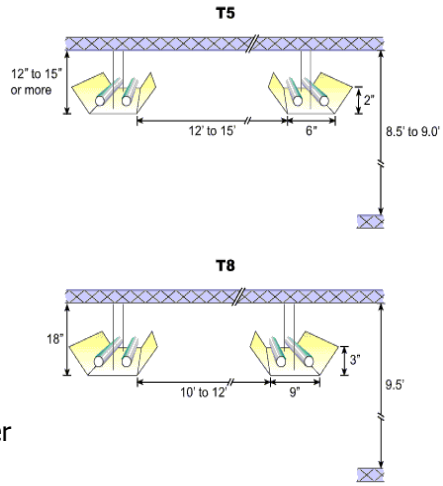
BCA GREEN MARK

Green Building Features – Lightings



Energy efficient lightings (T5) or LED over conventional lightings (T8) lightings:

- Higher intensity
- Smaller size
- Space further apart
- Use in rooms with lower ceilings

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Green Building Features – Water Fittings

PUB Water Efficiency Labeling Scheme (WELS)

Shower Taps and Mixers

Filter by Brand Name | Rating | Water Consumption | Supplier | Filter

Click on heading to sort

Model	Brand Name	Rating	Water Consumption	Supplier
32210000-0 MANDATORY	Grohe	○	N.A.	Grohe Pacific Pte Ltd
32210000-1 MANDATORY	Grohe	✓	7.78 litres/min	Grohe Pacific Pte Ltd
32211000-0 MANDATORY	Grohe	○	N.A.	Grohe Pacific Pte Ltd
32211000-1 MANDATORY	Grohe	✓✓	6.92 litres/min	Grohe Pacific Pte Ltd
32222000-1 MANDATORY	Grohe	✓	7.40 litres/min	Grohe Pacific Pte Ltd
32306000-0 MANDATORY	Grohe	○	N.A.	Grohe Pacific Pte Ltd
32307000-0 MANDATORY	Grohe	○	N.A.	Grohe Pacific Pte Ltd
32433 MANDATORY	Atrix	✓✓✓	2.80 litres/min	Adamas Bathroom Pte Ltd
32637000-1 MANDATORY	Grohe	✓	7.20 litres/min	Grohe Pacific Pte Ltd
32638000-1 MANDATORY	Grohe	✓	7.20 litres/min	Grohe Pacific Pte Ltd

Showing 91-100 of 835 | < Previous 10 Next 10 >

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Green Building Features – Greenery

Conservation of Trees

Extensive Greenery

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Green Building Features – Environmentally Friendly Products

Carpet

Playground Equipment & Rubber Mat

Recycled Concrete

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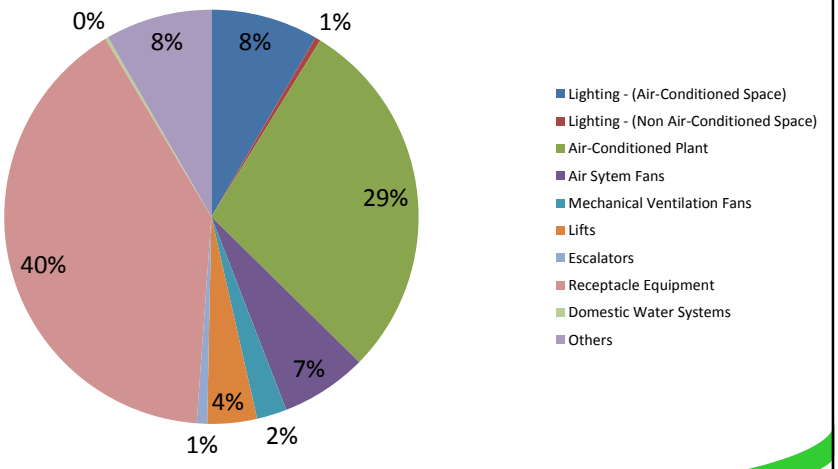
Distribution of energy consumption of proposed buildings (based on Platinum and Gold+ buildings)



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Building and Construction Authority

Towards
A GREEN FUTURE

Thank You

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BCA Green Mark for Restaurants

Point Allocations - BCA Green Mark for Restaurants

Category			Point Allocations
(I)	**Energy Related Requirements**		
	Minimum 20 points	**Part 1 : Energy Efficiency**	
		1-1 Energy Efficiency	5
		1-2 Electricity Usage	2
		1-3 Air-conditioning	10
		1-4 Lighting	16
		1-5 Kitchen Equipment	10
		1-6 Energy Efficient Features	7
		Category Score for Part 1 – Energy Efficiency	**50**
(II)	**Other Green Requirements**		
		Part 2 : Water Efficiency	
		2-1 Water Efficient Fittings	11
		2-2 Water Usage	2
		2-3 Water Efficient Practices	4
		2-3 Water Efficiency Improvement Plans	3
		Category Score for Part 2 – Water Efficiency	**20**
		Part 3 : Sustainable Management & Operation	
		3-1 Sustainable Consumable Materials	6
		3-2 Sustainable Material Selection	5
		3-3 F&B Operation & Maintenance	6
		3-4 Post Occupancy Evaluation	4
		3-5 Waste Management	5
		3-6 Greenery	2
		3-7 Public Transport Accessibility	2
		Category Score for Part 3 – Sustainable Management & Operation	**30**
		Part 4 : Indoor Environmental Quality	
		4-1 IAQ Performance	6
		4-2 Indoor Air Pollutants	5
		4-3 Lighting Quality	4
		4-4 Thermal Comfort	4
		Category Score for Part 4 – Indoor Environmental Quality	**19**
		Part 5 : Other Green Features	
		5-1 Green Features & Innovations	6
		Category Score for Part 5 – Other Green Features	**6**
		Total Points Allocated :	**125**

BCA Green Mark Award Rating

Green Mark Points	Green Mark Rating
95 and above	Green Mark Platinum
85 to < 95	Green Mark Gold^{Plus}
75 to < 85	Green Mark Gold
50 to < 75	Green Mark Certified

Elective Requirements

Part 1 - Energy Efficiency	Green Mark Points
1-1 Energy Efficiency (a) Encourage selection of energy efficient base building Option A Building demonstrate 30% energy savings over last three years Or Option B Calculating the restaurant's Energy Efficient Index (EEI) If the restaurant's EEI (exclude kitchen equipments) are 330 kWh/m^2/year or better (b) Encourage restaurants with energy efficiency improvement plan Setting target to improve outlet energy performance. To show intent, measures and implementation strategies of energy efficiency improvement plans over the next three years. Committed energy savings accrued from proposed measures should be quantified.	Option A 3 points Or Option B 1 point 2 points 2 points
1-2 Electricity Usage Encourage the design of system that monitor and manage electricity consumption Provision of sub-meter to monitor electricity use of different services such as air-conditioning, lighting, kitchen equipment, etc. Monitoring of electricity consumption.	1 point 1 point
1-3 Air-conditioning Encourage the use of better efficient air-conditioning to minimize energy consumption (a) A/C system efficiency Use of air-conditioning system which meet the	

efficiency requirement of the air-conditioning system stated in SS 530	1point
(b) Zoning and controls (i) Encourage the use of air-conditioning design practices that offer greater flexibility and making it earlier to serve area with different usage efficiently, such as the following • Zoning of air-conditioning system to serve areas with different usage/ occupancies needs • Scheduling control to switch on and/or off the air-conditioning with some localized override control where air-conditioning is needed beyond the scheduled period	(Up to 5 points)
(ii) If sensors or similar automatic control devices are used to regulate outdoor air flow rate to maintain the concentration of carban dioxide (CO_2) inside the restaurant not more than 700ppm above the outdoor CO_2	2 points
(iii) Positive pressurization of dinning areas to prevent infiltration of hot humid air and pollutants from outside	2 points
1-4 Lighting Encourage the use of better efficient lighting to minimise energy consumption from lighting usage while maintaining proper lighting level. (a) Lighting power budget Baseline = Maximum lighting power budget stated in SS530	0.3 point for every percentage improvement above the baseline Points awarded = 0.3 x (% improvement) (up to 12 points)
(b) Lighting controls Encourage the use of lighting control circuits to minimize energy usage, such as provision of the following control strategies (i) Zoning of lighting for different usage/ location	(Up to 4 points)

(ii) Scheduling control to switch on and/or off the lightings with some localized override control where lighting is needed beyond the scheduled period (iii) Controllability of lighting system to suit staff need where applicable	
1-5 Kitchen Equipment Encourage the use of energy efficient kitchen equipment to save energy. Use of energy efficient kitchen equipment such as • Deep Fryers • Grills • Ovens • Freezers • Cold rooms	Points awarded based on the number and energy efficiency rating of the equipment use (up to 10 points)
1-6 Energy Efficient Features Encourage the use of energy efficient features which are innovative and/or have positive environmental impact. Examples : ▪ Use of heat exchanger ▪ Use of motion sensors for areas with un-frequent usage	2 points for high impact item 1 point for medium impact item 0.5 point for low impact item (Up to 7 points)
PART 1 – ENERGY EFFICIENCY CATEGORY SCORE :	

Part 2 – Water Efficiency	Green Mark Points
2-1 Water Efficient Fittings Encourage the use of water efficient fittings covered under the Water Efficiency Labelling Scheme (WELS) or adopt equivalent water efficient flow rates for water fittings (a) Basin Taps and Mixers (b) Flushing Cistern (c) Showers (d) Sink/Bib Taps and Mixers (e) Urinals (f) All other water fittings *Note:* *A PUB Water Efficient Building would be entitled to 4 points* Use of Water Efficient Equipment such as:- • Pre-rinse spray valve (< 6 L/ min) • Dishwasher • Air-cooled ice-making machine	Rating based on Water Efficiency Labelling Scheme (WELS) Very Good – 4 points Excellent – 6 points Points awarded based on the number and water efficiency rating of the fitting type used (up to 5 points)
2-2 Water Usage Provide the use of private-metering and leak detection system for better control and monitoring (a) Provision of private meters for major water uses (e.g. pre-rinse spray valve, dishwasher, kitchen and common toilets) (b) To keep track of water consumption	1 point 1 point
2-3 Water Efficient Practices Adopt water efficient practices such as:- • Placing frozen food in the refrigerator the night before using it for thawing purposes; • Displaying water conservation posters in the premises; • Involvement of patrons by displaying water conservation cards that inform patrons that water will only be served on request.	(up to 4 points)

2-4 Water Efficiency Improvement Plans Targets to improve restaurant's water performance should be set. 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. Complete and submit Water Efficient Management Plan to PUB. The plan shall include targets to improve restaurant's water performance baseline, a breakdown of the current water use, list of water saving measures and an implementation timeline for the measures over the next 3 years.	1 point 2 points
PART 2 – WATER EFFICIENCY **CATEGORY SCORE :**	

Part 3 – Sustainable Management & Operation	Green Mark Points
3-1 Sustainable Consumable Materials Encourage the selection of consumable materials that is environmentally friendly and sustainable, such as the use of those materials which are recyclable/ recycled / non-disposable • Food wrappers • Food containers • Carry out bags • Cups • Plates • Serving utensils • Toilet rolls • Napkins/servettes	(up to 6 points)
3-2 Sustainable Material Selection Encourage the adoption of materials that are environmentally friendly and sustainable. (a) Maintain at least 50% (by volume) of the existing furniture or equipment (b) Use of sustainable products in renovation such as : • Environmental friendly products that are certified under local certification body • Products with at least 30% recycled content by weight or volume	2 points 1 point for high impact item 0.5 point for low impact item (Up to 3 points)
3-3 F&B Operation & Management Commitment from tenant – environmental policy A green guide for the restaurant staff should be disseminated. Best practices to reduce energy use, water use and maintain a good indoor environment should be documented in this green guide. To demonstrate evidences of restaurant staff involvement in environmental sustainability. Food safety management – according to NEA's grading system	1 point 2 points Graded A - 3 points

3-4 Post Occupancy Evaluation Conduct yearly post occupancy evaluation to assess staff's satisfaction with the indoor environmental conditions. Provide customer feedback survey form in obvious location to facilitate customer to give feedback on services, environment, etc List of corrective actions taken following the staff and customer feedback.	2 points 1 point 1 point
3-5 Waste Management Encourage recycling facilities within the restaurant to reduce wastage. Provision of recycling facilities for • Food waste • Used frying oil Waste collecting and monitoring Waste management improvement plan	(up to 3 points) 1 point 1 point
3-6 Greenery Encourage greater use of greenery to create a more conducive office environment such as planter or potted plants	Extent of Coverage : At least 1% of the F&B area 1 point Extent of Coverage : At least 2% of the F&B area 2 points
3-7 Public Transport Accessibility Promote the use of public transport or bicycles to reduce pollution from individual car use. (a) Good access to nearest MRT/LRT or bus stops. (b) Adequate bicycles parking lots.	1 point 1 point
PART 3 – ENVIRONMENTAL PROTECTION CATEGORY SCORE :	

Part 4 – Indoor Environmental Quality	Green Mark Points
4-1 IAQ Performance Encourage and recognize good indoor air quality (IAQ) to ensure the comfort and wellbeing of office occupants (a) SOP to ensure good indoor environment through proper cleaning practice and schedule and hygiene practice (b) Prevent migration of odours and other pollutants from the kitchen to the dinning areas by implementing effective kitchen exhaust. (c) Provision of odour removal system for toilets and dinning areas	 2 points 2 points 2 points
4-2 Indoor Air Pollutants Minimise airborne contaminants, mainly from inside sources to promote a healthy indoor environment. Use and purchase of environmental- friendly products such as • cleaning products recognised under local certification body • Soap for customers Setting of environmental-friendly procurement and purchasing policy	 (Up to 4 points) 1 point
4-3 Lighting Quality To encourage good workplace lighting quality to promote safety and productivity and comfort of kitchen staff Lighting level for kitchen – 300lux To encourage and recognize designs that provides good level of day lighting for dinning customers	 2 points 2 points
4-4 Thermal Comfort Ensure thermal comfort of office occupants (a) Comfort level Comply with SS 553	

(b) Controllability of temperature	2 points 2 points
PART 4 – INDOOR ENVIRONMENTAL QUALITY CATEGORY SCORE :	

Part 5 – Other Green Features	**Green Mark Points**
5-1 Green Features and Innovations Encourage the use of other green features which are innovative and/or have positive environmental impact. Examples : ▪ CO2 monitoring of kitchen area to detect leakage of CO2 from CO2 cylinders used in making carbonated drinks ▪ Air sterilization system to limit the level of bacteria, mould and other bio-contaminants ▪ Treatment of kitchen exhaust with green technologies such as UVC emitters, electronic air filtration, etc ▪ Green wall ▪ etc	2 points for high impact item 1 point for medium impact item 0.5 point for low impact item (Up to 6 points)
PART 5 – OTHER GREEN FEATURES CATEGORY SCORE :	

Green Mark Score

Green Mark Score = ∑Category Score [(Part 1 – Energy Efficiency) +
(Part 2 – Water Efficiency) +
(Part 3 – Sustainable Management & Operation) +
(Part 4 – Indoor Environmental Quality) +
(Part 5 – Other Green Features)]

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Singapore 598292
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Website: www.mcdonalds.com.sg

Active Partner

MEDIA FACT SHEET

McDonald's Green Initiatives

BCA 'Platinum' Green Mark for Restaurants

As of 12 September 2011, McDonald's Jurong Central Park (JCP) became one of McDonald's first "Green" certified restaurants in Asia and the first restaurant in Singapore to be awarded the Building and Construction Authority (BCA) 'Platinum' Green Mark Award in the Restaurant category. Conceptualised as a Green building from the very beginning, the restaurant contains a number of innovative energy and water saving features incorporated into its design.

Location: Jurong Central Park, 291 Boon Lay Way S (649849)

Two other McDonald's restaurants (Springleaf Tower and Bishan Park) were awarded the BCA 'Gold' Green Mark Award while a third restaurant at City Square has been Green Mark 'Certified'.

Key Green Features at Jurong Central Park

1. Green Roof • Reduces solar heat load and improves thermal performance • Improves aesthetics allowing the building to blend in with park surroundings	
2. Rain Water Harvesting System • Collects rain water for use in plant irrigation • Moisture sensor to initiate watering	
3. Heat Recovery • Heat pump recovers heat generated by the air conditioning system • Used to heat water for dishwashing	

McDonald's Restaurants Pte Ltd
McDonald's Place 11 King Albert Park
Singapore 598292
Tel: 6462 0800 Fax: 6462 1211
Website: www.mcdonalds.com.sg

Active Partner

4. LED Technology • Photovoltaic lamp posts that consume less energy and have longer lives • Helps to reduce energy consumption for lighting and signages	
5. Low Oil Volume Fryer (LOV) • Improves cooking efficiency, simplifies filtering and cleaning • Reduces wastage by using 40% less oil	

Other Green Features

- **Kitchen Pressurisation and Extraction system**
  - Prevents ingress of odours from the kitchen into the dining areas
  - Prevents infiltration of hot humid air and pollutants from outside
- **Smart thermostat**
  - Time-based temperature set- points conserves energy
  - Prevents over-cooling
- **Sustainable building materials**
  - Recycled materials used for ceiling boards, road foundation and drains
- **Advanced Indoor Air Quality (IAQ) technologies**
  - Removes odour and ultraviolet emitters control bacteria and viruses

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McDonald's Singapore and Global Green Efforts

McDonald's 3R* Measures in Singapore

- Collects 20,000kg of used oil per month in Singapore to recycle and produce soap
- Reduced thickness in paperboard materials used for suppliers' delivery of fries by more than 10% since 1996
- Introducing condiments bar reduced unnecessary packaging used for individual sauce sachets (25,000 kg of foil packaging is reduced every year)
- Usage of recycled paper in napkins, paper bags used for McDelivery services, sandwich containers and other restaurant items such as brown cartons
- Usage of recyclable plastic material in serving trays
- Recognised at the 3R Packaging 2010 Awards for redesigning McFlurry spoon to reduce its length and weight leading to a reduction of plastic packaging waste by 8 tons per year and an annual savings of $57,000.

**3R = Reduce, Reuse, Recycle*

McDonald's Global Green Strategy

McDonald's Global Green strategy focuses on energy efficiency, sustainable packaging and waste management, and green restaurant design.

Energy Efficiency

- A Global Energy Leadership Board was set up in 2010 to look into ways to reduce energy consumption and track energy efficiency.
- McDonald's USA was named an ENERGY STAR Partner of the Year in 2007 by the U.S. Environmental Protection Agency for its energy reduction efforts

Sustainable packaging and waste management

- Consumer package recycling, reduction of packaging and use of recycled materials is practised where able, e.g. McDonald´s France introduced a frappe cup and lid made out of 40% recycled plastic in 2009, reducing need for virgin resin.

Green restaurant design

- In Europe, green buildings and energy use are promoted with the installation of solar panels, use of windmills, heat recovery systems and recyclable building materials.
- In Australia, our water-conservation technologies used include low-flow spray nozzles, dual-flush toilets, extensive native landscaping and smart irrigation practices.

BCA Green Mark for Retail

Version 1.0

Point Allocations – BCA Green Mark for Retail

Category	Points Allocations
Energy Related Requirements	
Part 1 : Energy Efficiency	
1-1 Air-Conditioning	14
1-2 Lighting System Efficiency	44
1-3 Energy Efficient Equipment	5
1-4 Energy Efficient Features	7
Subtotal (Part 1)	**70**
OTHER GREEN REQUIREMENTS	
Part 2 - Water Efficiency	
2-1 Water Efficient Fittings	9
2-2 Water Usage	4
2-3 Water Efficiency Management Plan	2
Subtotal (Part 2)	**15**
Part 3 - Sustainable Awareness & Operation	
3-1 Sustainable Retail Design	10
3-2 Sustainable Fit-out	20
3-3 Sustainable Operation	4
3-4 Sustainable Business Activities	8
3-5 Waste Management	6
Subtotal (Part 3)	**48**
Part 4 - Indoor Environmental Quality	
4-1 Lighting Quality	2
4-2 Thermal Comfort	4
Subtotal (Part 4)	**6**
Part 5 – Other Green Features	
5-1 Green Features	10
Subtotal (Part 5)	**10**
Total Points Allocated:	**149**

*For retail tenants operating with no provision of water or toilets, Part 2 – Water Efficiency may be excluded in the computation. The score for other parts will be pro-rated accordingly. Eg. Total points = (Summation of points from Part 1, 3, 4 & 5) X 1.1

Green Mark Award Rating

Green Mark Points	Green Mark Rating
95 and above	Green Mark Platinum
85 to < 95	Green Mark Gold^{Plus}
75 to < 85	Green Mark Gold
50 to < 75	Green Mark Certified

Retail type	Description
Fashion	Clothing, Shoes, Apparel, Inner wear, etc
Specialty	Jewelry, Watch, Electrical, IT and Optical
General	7-11, Hairdresser, Chemist, Book and media (DVD, Music) shops, Medical Suites, Bank, and News-agents etc

Note:

* Restaurants are covered under "BCA Green Mark Scheme for Restaurants"
* Supermarkets are covered under "BCA Green Mark Scheme for Supermarkets"
* Anchor tenants and other mixed traders will be assessed on the basis of the majority trading type

Pre-Requisite Requirements

1) Lighting System Efficiency

Retail type	Platinum	Gold^{Plus}	Gold	Certified
Fashion	≤ 25 W/m^2	≤ 29 W/m^2	≤ 32.5 W/m^2	≤ 36 W/m^2
Specialty	≤ 35 W/m^2	≤ 40 W/m^2	≤ 45 W/m^2	≤ 50 W/m^2
General	≤ 17.5 W/m^2	≤ 20 W/m^2	≤ 22.5 W/m^2	≤ 25 W/m^2

For Gold^{Plus} and Platinum – no incandescent lightings or magnetic ballasts to be used

2) Sustainable Fit-out

For Gold^{Plus} and Platinum – use of low VOC paint and low VOC adhesive glue for renovation works (to comply with 3-2 (d) & (e))

3) Sustainable Operation

For Platinum – participation in green promotional activities annually (to comply with 3-4 (b))

4) Waste Management

For Platinum – dedicated containers for recycling and to set up recycling programme (to comply with 3-5 (a) & (b))

Energy Related Requirements

<table>
<tr><th>Part 1 - Energy Efficiency (Total Points: 70)</th><th>Green Mark Points</th></tr>
<tr><td>

1-1 Air-Conditioning (14 points)

Encourage the use of better efficient air-conditioning to minimize energy consumption

(a) A/C system efficiency

Encourage the use of better efficiency air-conditioned equipment to minimize the energy consumption. (System efficiency in kW/ton)

(b) Zoning and controls

Encourage the use of air-conditioning design practices that offer greater flexibility and making it easier to serve area with different usage efficiently, such as

(i) Zoning of air-conditioning system to serve areas with different usage / occupancies needs

(ii) Scheduling control to switch on and/or off the air-conditioning with some localized overwrite control where air-conditioning is needed beyond the scheduled period

(iii) Areas with specialty occupancies having control capable of sensing space use and respond to space demand (Demand controlled ventilation)

</td><td>

(i) For tenants in building using Water Cooled Chilled-Water Plant

<table>
<tr><th colspan="2">Peak Building Cooling Load (RT)</th><th rowspan="2">Points Awarded</th></tr>
<tr><th>< 500</th><th>≥ 500</th></tr>
<tr><th colspan="2">Efficiency (kW/RT)</th></tr>
<tr><td></td><td>>0.70 to 0.75</td><td>2</td></tr>
<tr><td>>0.75 to 0.85</td><td>>0.68 to 0.70</td><td>4</td></tr>
<tr><td>>0.70 to 0.75</td><td>>0.65 to 0.68</td><td>6</td></tr>
<tr><td>≤0.70</td><td>≤0.65</td><td>8</td></tr>
</table>

(ii) For tenants in building using Air Cooled Chilled-Water Plant or Unitary Air-Conditioners

<table>
<tr><th colspan="2">Peak Building Cooling Load (RT)</th><th rowspan="2">Points Awarded</th></tr>
<tr><th>< 500</th><th>≥ 500</th></tr>
<tr><th colspan="2">Efficiency (kW/RT)</th></tr>
<tr><td>>1.0 to 1.1</td><td>≤1.0</td><td>2</td></tr>
<tr><td>>0.85 to 1.0</td><td>-</td><td>4</td></tr>
<tr><td>>0.78 to 0.85</td><td>-</td><td>6</td></tr>
<tr><td>≤0.78</td><td>-</td><td>8</td></tr>
</table>

(Up to 8 points)

2 points each
(Up to 6 points)

</td></tr>
<tr><td>

1-2 Lighting System Efficiency (44 points)

To encourage optimization of lighting system efficiency

(a) Lighting power budget baseline

<table>
<tr><th>Retail type</th><th>Baseline</th></tr>
<tr><td>Fashion</td><td>≤ 36.0 W/m^2</td></tr>
<tr><td>Specialty</td><td>≤ 50.0 W/m^2</td></tr>
<tr><td>General</td><td>≤ 25.0 W/m^2</td></tr>
</table>

</td><td>

1 point for every percentage improvement above the baseline

Points awarded = 1 X (% improvement)

(Up to 35 points)

</td></tr>
</table>

(b) Photo/Motion sensors for non-retail area (eg. Store, fitting rooms, etc.)	3 points
(c) Controllability of lighting system Encourage the use of lighting control circuits to minimize energy usage, such as provision of the following control strategies (i) Zoning of lighting for different usage/ Location (ii) Dual circuit shop front (1 circuit with high intensity lights with a separate circuit for partial lighting of shop front after hours) or Timer switches on shop front lighting. (iii) Lighting control on general shop lighting (eg controls balancing lighting with ambient lighting levels.)	2 points each (Up to 6 points)
1-3 Energy Efficient Equipment (5 points) Encourage the use of energy efficient equipment such as ▪ Computers & monitors ▪ Laptops ▪ Fax machine ▪ Printers & copiers ▪ Inverter based refrigeration ▪ LED, LCD television or AV display ▪ Audio equipment ▪ Other energy efficient features	Points awarded based on numbers of energy efficient equipment (e.g. Energy Star) (Up to 5 points)
1-4 Energy Efficient Features (7 points) (a) Computation of energy consumption in the form of energy efficiency index EEI (total energy bills in a year divided by tenant area) (b) Encourage and recognize designs that provide good level of day lighting into retail areas. All daylit spaces should be integrated with automatic electric lighting control systems e.g. photocells (c) Use of on-site renewable energy system to offset operating costs.	2 points 2 points Points scored based on % replacement of tenant's electricity by renewable energy source <10% replacement - 1 point >10% and <30% replacement – 2 points >30% replacement – 3 points

Other Green Requirements

Part 2 - Water Efficiency (Total Points: 15) ***for tenants with no water usage, please see notes at pg. 1***	**Green Mark Points**
2-1 Water Efficient Fittings (9 points) Encourage the use of water efficient fittings under Water Efficiency Labeling Scheme (WELS) or adopt equivalent water efficient flow-rate/flush volumes for water fittings. ▪ Basin taps and mixers ▪ Showers ▪ Sink/Bib taps and mixers ▪ Urinals	<u>Rating based on Water Efficiency Labeling Scheme (WELS)</u> Good – 3 points Very Good – 6 points Excellent – 9 points Points awarded based on the number and water efficiency rating of the fitting type used (Up to 9 points)
2-2 Water Usage (4 points) Encourage the design of system that monitor and manage water consumption (a) Provision of meter to monitor the water usage (b) Monitoring of water consumption	 2 points 2 points
2-3 Water Efficiency Management Plan (2 points) Establish baseline water consumption performance and targets for improvements over the baseline. 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. (PUB water efficiency management plan is acceptable as evidence)	2 points
Part 3 - Sustainable Awareness & Operation (Total Points: 48)	**Green Mark Points**
3-1 Sustainable Retail Design (10 points) Encourage the selection of more sustainable base building and the adoption of retail designs and materials that is environmentally friendly and sustainable. (a) Building is awarded with Green Mark certified or higher award. (b) Renovation consists of retaining at least 50% (by area) of the existing finishing for walls, flooring and ceilings. For heritage or renovation refit works.	 Green Mark Certified award – 1 point Green Mark Gold award – 3 point Green Mark Gold^{plus} award – 5 point Green Mark Platinum award – 7 point (up to 7 points) 3 points

3-2 Sustainable Fit-out (20 points)	
(a) Use of sustainable and environmental-friendly products with at least 30% recycled content by weight or volume OR use of products that are certified under the Singapore Green Label Scheme (SGLS) for renovation materials.	Points awarded per feature item 2 point for high impact item 1 point for low impact item (Up to 6 points)
(b) Green procurement policy Adoption of sustainable and environmental-friendly procurement and purchasing policy in the operation. (Eg. Reducing transport distances, packaging, or controlling packaging types by preselecting aware wholesale sources of supply.)	2 points
(c) Sustainable consumable materials Selection of consumable materials that is environmentally friendly and sustainable such as the use of those materials which are recyclable/ recycled / non-disposable or readily degradable nature (Eg. Packaging, food wrappers, cups, utensils, napkins, etc)	2 points awarded per feature item (up to 6 points)
(d) Use of low VOC paints for renovation works	2 points
(e) Use of low VOC adhesives glue for renovation works	2 points
(f) Supply extra exhaust capacity and makeup air for areas where hazardous gases or chemicals may be present or used (e.g. nail salons, hair salons, etc)	2 points
3-3 Sustainable Operation (4 points)	
(a) Operational Excellence: Produce a manual detailing shop opening, daily running and shut down procedures that minimize energy consumption. Policies regarding store supplied packaging and recycling procedures and policy	2 points
(b) The plans and manual must be disseminated, actively implemented and regularly reviewed.	2 points
3-4 Sustainable Business Activities (8 points)	
(a) Sustainable Marketing: Use of recycled collaterals or incorporating sustainability values in marketing strategies.	2 points
(b) Sustainability promotional activities - committed to Earth Hour Day or World Environment Day activities in the mall, or another publicity activity of similar kind, would not include just turning off lights on earth hour day.	2 points
(c) Include environmentally friendly products as part of sales product lineup	2 points

(d) Privileges for customers who bring their own shopping bags	2 points
3-5 Waste Management (6 points) (a) Installation of a dedicated container readily accessible by staff and customers to facilitate recycling. (b) Promote and encourage waste minimization and recycling among staff and customers through various avenues including regular briefings, meetings, putting up waste minimization and recycling posters at strategic locations. Needs to set up comprehensive recycling and reuse programe with proper documentation of efforts. (c) In store packaging management – Giving customers the options of no packaging or supplying packaging from recycled product	2 points 2 points 2 points
Part 4 – Indoor Environmental Quality (Total Points: 6)	**Green Mark Points**
4-1 Lighting Quality (2 points) To encourage good workplace lighting quality to promote productivity and comfort Use of High frequency ballast	All applicable areas in the entire retail area that are served by fluorescent luminaries > 60% - 1 point > 90% - 2 point (Up to 2 points)
4-2 Thermal Comfort (4 points) (a) Indoor dry-bulb temperature should be within 23 to 25 degrees celsius (b) Measures and reminders to maintain air-conditioning set-point to 24 Degrees Celsius or higher for all air-conditioned areas	2 points 2 points
Part 5 – Other Green Features (Total Points: 10)	**Green Mark Points**
5-1 Green Features and Innovations To encourage the use of other green features which are innovative or/and have positive environmental impact. Examples : • Use of greenery to create a more conducive environment. • Innovations with demonstrable carbon or energy reducing outcomes. • Innovation encapsulating social sustainability values. • Educational corners / Green Corners	Points awarded for each item: 2 points for high impact item 1 point for medium impact item 0.5 point for low impact item (Up to 10 Bonus Points)

BCA Green Mark for Supermarket

Point Allocations - BCA Green Mark for Supermarket

Category		Point Allocations
(I)	**Energy Related Requirements**	
Minimum 30 Points	**Part 1 : Energy Efficiency**	
	1-1 Refrigeration System	34
	1-2 Air-conditioning	14
	1-3 Artificial Lighting	19
	1-4 Energy Management Programme	4
	1-5 Escalators and Travelling Walkways	2
	1-6 Energy Efficient Features	10
	Category Score for Part 1 – Energy Efficiency	**83**
(II)	**Other Green Requirements**	
	Part 2 : Water Efficiency	
	2-1 Water Efficient Fittings	8
	2-2 Water Usage	2
	2-3 Water Efficiency Management Plans	2
	2-4 Water Consumption of Cooling Towers	2
	Category Score for Part 2 – Water Efficiency	**14**
	Part 3 : Environmental Protection	
	3-1 Sustainable Base Building	6
	3-2 Waste Management	9
	3-3 Sustainable Products	12
	3-4 Environmental Sustainability Practices	4
	3-5 Refrigerant Management	8
	3-6 Green Transport	4
	Category Score for Part 3 – Environmental Protection	**43**
	Part 4 : Indoor Environmental Quality	
	4-1 Thermal Comfort	2
	4-2 Noise Level	2
	4-3 Indoor Air Pollutants	4
	4-4 Lighting Quality	2
	Category Score for Part 4 – Indoor Environmental Quality	**10**
	Part 5 : Other Green Features	
	5-1 Green Features & Innovations	8
	Category Score for Part 5 – Other Green Features	**8**
	Total Points Allocated :	**158**

BCA Green Mark Award Rating

Green Mark Points	Green Mark Rating
90 and above	Green Mark Platinum
85 to < 90	Green Mark Gold^{Plus}
75 to < 85	Green Mark Gold
50 to < 75	Green Mark Certified

Pre-requisite Requirements

For Green Mark Certification:

Supermarket Air-conditioning System	Energy Efficiency Index (kWh/m^2/year)
Standalone air-conditioning system	< 1200
Air-conditioning by retail landlord	< 850

For Green Mark Gold^{Plus} and Platinum rating:

(1) The refrigeration system efficiency should be optimized by complying with the following requirements:

i) The compressor(s) of each refrigeration system to be installed with variable speed drives.
ii) Expansion valves of the refrigeration system to be of electronic type to achieve optimal regulation of refrigerant to the evaporator.

(2) ≥ 75% of remote refrigerated displacy cabinets/ showcases to be fitted with doors.

(3) The store standalone air-conditioning system efficiency should comply with the following requirements:

i) For Stores using Air-Cooled Unitary Systems:

Green Mark Rating	Minimum Air-conditioning System Efficiency (kW/RT)
Gold^{Plus}	≤ 0.85
Platinum	≤ 0.78

ii) For Stores using Water-Cooled Chilled-Water Plant:

Green Mark Rating	Minimum Air-conditioning System Efficiency (kW/RT)
Gold^{Plus}	≤ 0.70
Platinum	

(4) Energy Management/Monitoring System (EMS) to monitor the following major energy consumption:

i) Refrigeration
ii) Lighting
iii) Receptacle loads
iv) Air-conditioning*
*For supermarket with standalone air-conditioning system

(5)

Supermarket Air-conditioning System	Energy Efficiency Index (kWh/m^2/year)
	Green Mark Platinum
Standalone air-conditioning system	≤ 950
Air-conditioning by retail landlord	≤ 600

(6) To assign at least one dedicated 'Green' checkout lane to serve only consumers with their own recycle bags; sales of recycle bags can be an alternative to the consumers using the 'Green' lanes.

Elective Requirements

Part 1 - Energy Efficiency	Green Mark Points
1-1 Refrigeration System Encourage the use of energy efficient refrigeration system. (a) Optimise the efficiency of the refrigeration system condensing units with the following energy efficient design considerations: i) The compressor(s) of each refrigeration system to be installed with variable speed drives and ii) Expansion valves of the refrigeration system to be of electronic type to achieve optimal regulation of refrigerant to the evaporator. iii) For water-cooled refrigeration system, the fans of cooling tower to be installed with variable speed drives for water-cooled refrigeration system. or For air-cooled refrigeration system, the electronically commutated (EC) fans of the condensing units to be installed with variable speed drives. iv) The refrigerant saturated condensing temperature for water-cooled refrigeration system to be no higher than 36 ºC. or The refrigerant saturated condensing temperature for air-cooled refrigeration system to be no higher than 40 ºC basing on the assumption of 32 ºC outdoor ambient air temperature. For other outdoor ambient air temperatures specified, the ΔT – temperature difference between the condensing temperature and the ambient air is to be ≤ 8 ºC. v) The pressure transducers monitoring the evaporative and condensing temperature to be monitored remotely by the refrigeration system management/ monitoring system. vi) All suction pipes of the refrigeration system are to be insulated with rigid material of U-value ≤ 0.48 W/m^{2}K and clad with galvanized iron sheet.	6 points 2 points 2 points 2 points 2 points

(b) Optimise the efficiency of the refrigeration system evaporators through the following energy efficient design considerations:

i) Fin spacing of the evaporators in the freezer rooms to be no less than 7 mm. — 2 points

ii) Fin spacing of the evaporators in the chiller rooms to be no less than 4 mm. — 2 points

iii) All remote refrigerated display cabinets/ showcases to be fitted with anti-sweat controllers. — 2 points

iv) High efficient electronically commutated (EC) fans for all remote refrigerated display cabinets/ showcases. — 2 points

v) All remote refrigerated display cabinets/ showcases to be certified by independent certification body. — 2 points

vi) Remote refrigerated display cabinets/ showcases, to be fitted with doors.

Percent of remote refrigerated display cabinets fitted with doors	Points Allocation
≥ 25%	0.5
≥ 50%	2
≥ 75%	3

vii) All remote refrigerated display cabinets/ showcases to be fitted with LED lightings. — 2 points

viii) Hot gas defrosting system for low temperatures remote display cabinets/ showcases — 2 points

(c) Refrigerated display cabinets to be cooled remotely by central refrigeration plant with condensers installed outside the air-conditioned spaces.

Percent of remote refrigerated display cabinets	Points Allocation
≥ 70 %	0.5
≥ 80%	2
≥ 90%	3

1-2 Air-Conditioning System

Encourage the use of high efficiency air-conditioned equipment to minimize the energy consumption.

Supermarket installed with **standalone** air-conditioning system.

(a)(i)

- Water-cooled Central Chilled-Water Plant :
  - Water-Cooled Chiller
  - Chilled-water pump
  - Condenser water pump
  - Cooling tower

(4) For central chilled-water plant, the operating efficiency should be based on the most frequent occurring operating part-load condition of the central chilled-water plant full installed capacity (excluding standby).

If there are 2 most frequent occurring load conditions for the defined normal building operation hours, both the operating efficiency for the 2 specified load conditions should be 0.70 kW/ton or less; the points scored will be based on the poorer operating efficiency.

(a)(ii)

- Air-Cooled Central Chilled-Water Plant:
  - Air-Cooled Chiller
  - Chilled-water pump
- Unitary Air-Conditioners:
  - Variable Refrigerant Flow (VRF) system

(5)For variable refrigerant flow system (VRF), the efficiency should be based on normal design dry-bulb temperature of 24 ± 1℃ and RH ≤ 65%; Outdoor dry-bulb temperature of 35℃.

The operating efficiency of the VRF system is the COP of the outdoor condensing units (CU) basing on the most frequent occurring operating part-load point of the CU full installed capacity (excluding standby).

(a)(i) Water-cooled Central Chilled-Water Plant

Peak building cooling load ≥ 500 tons

The prescribed baseline chiller plant efficiency is 0.70 kW/ton

0.45 points for every percentage improvement in the chiller plant efficiency(4) over the baseline

Points awarded = 0.45 x (% improvement)

Baseline: (i) For peak building cooling load equal to or more than 500 tons, the minimum central chilled-water plant efficiency should be 0.70 kW/ton or less.

Peak building cooling load < 500 tons

The prescribed baseline chiller plant operating efficiency is 0.80 kW/ton

0.45 points for every percentage improvement in the chiller plant efficiency(4) over the baseline

Points awarded = 0.45 x (% improvement)

Baseline: (ii) For peak building cooling load of less than 500 tons, the minimum central chilled water plant efficiency should be 0.80 kW/ton or less.

(Up to 8 points)

(a)(ii) Air-Cooled Central Chilled-Water Plant and Other Unitary Air-Conditioners

Peak building cooling load ≥ 500 tons

The prescribed baseline air-conditioning system efficiency is 0.80 kW/ton.

1 point for every percentage improvement in the air-conditioning system efficiency(5) over the baseline

Points awarded = 1 x (% improvement)

Baseline: The minimum system efficiency of air-cooled chilled-water plant and other unitary air-conditioners should be 0.80 kW/ton or less.

	Peak building cooling load < 500 tons The prescribed baseline air-conditioning system efficiency of 0.90 kW/ton. 0.4 points for every percentage improvement in the air-conditioning system efficiency(5) over the baseline Points awarded = 0.4 x (% improvement) Baseline: The minimum system efficiency of air-cooled chilled-water plant and other unitary air-conditioners should be 0.90 kW/ton or less. (Up to 8 points)
(a)(iii) Air Distribution System : • Air Handling Units (AHUs) • Fan Coil Units (FCUs) Baseline : (iii) SS553:2009 Table 2 – Fan power limitation in air-conditioning systems (a)(iv) Sensors or similar automatic control devices are used to regulate outdoor air flow rate to maintain the concentration of carbon dioxide in accordance with Table 1 – Recommended IAQ Parameters of SS 554. Carbon dioxide acceptable range: ≤ 700 ppm above outdoor.	(a)(iii) Air Distribution System 0.2 point for every percentage improvement in the air distribution system efficiency over baseline standard. Points awarded = 0.2 x (% improvement) (Up to 4 points) 2 points
1-3 Artificial Lighting Encourage the use of high efficient lighting to minimise energy consumption from lighting usage while maintaining proper lighting level. (a) Lighting power budget Baseline = Maximum lighting power budget stated in SS530. Power wattage including general, accent and display lighting.	0.7 point for every percentage improvement above the baseline Points awarded = 0.7 x (% improvement) (up to 15 points)

(b) Lighting controls Encourage the use of lighting control circuits to minimize energy usage, such as provision of the following strategies: (i) Zoning of lighting for different usage/ location (ii) Use of occupancy sensors to control the lighting in the retail areas i.e. switch off or dim the lights during off-peak hours.	2 points 2 points
1-4 Energy Management Programme (a) To create, adopt and implement a comprehensive energy management programme which should include the following steps: • Step 1 - Make Commitment • Step 2 - Assess Performance • Step 3 - Set Goals • Step 4 - Create Action Plan • Step 5 - Implement Action Plan • Step 6 - Evaluate Progress • Step 4 –Recognize Achievements (b) Energy Management/Monitoring System (EMS) to monitor the following major energy consumption: a) Refrigeration b) Lighting c) Receptacle loads d) Air-conditioning* *For supermarket with standalone air-conditioning system	2 points 2 points
1-5 Escalators and Travelling Walkways Encourage the use of energy efficient transportation systems. Escalators and travelling walkways with AC variable voltage and variable frequency (VVVF) motor drive and sleep/ stand-by mode.	2 points

1-6 Energy Efficient Features Encourage the use of energy efficient practices and features which are innovative and/or have positive environmental impact. (a) Computation of energy efficiency index (EEI). **Calculation of EEI :** **EEI ={ [TEC*(112/OH)] + REC}/ GFA** *where:* TEC : Total supermarket store energy consumption excluding refrigeration energy consumption (kWh/year) REC : Refrigeration energy consumption (kWh/year) GFA : Gross floor area (m2) 112 : Typical weekly operating hours of supermarket in Singapore (hrs/week) OH : Actual weekly operating hours of the supermarket (hrs/week) (b) Use of energy efficient features : Examples : • Motion sensors for back-of-house stores or offices. • Effective daylighting design e.g. skylighting, for the retail spaces; all daylit spaces must be integrated with automatic electric lighting control systems e.g. photo cells.	2 points 3 points for every 1% energy saving over the total supermarket energy consumption (Up to 8 points)
PART 1 – ENERGY EFFICIENCY CATEGORY SCORE :	

Part 2 – Water Efficiency	Green Mark Points
2-1 Water Efficient Fittings Encourage the use of water efficient fittings covered under the Water Efficiency Labelling Scheme (WELS) or adopt equivalent water efficient flow rates for water fittings (a) Basin Taps and Mixers (b) Flushing Cistern (c) Showers (d) Sink/Bib Taps and Mixers (e) Urinals (f) All other water fittings Note: A PUB Water Efficient Building would be entitled to 4 points. Use of Water Efficient Equipment such as:- • Pre-rinse spray valve (< 6 L/ min) • Air-cooled ice-making machine	Rating based on Water Efficiency Labelling Scheme (WELS) Very Good – 1.5 point Excellent – 3 point Points awarded based on the number and water efficiency rating of the fitting type used 1 point 1 point (Up to 5 points)
2-2 Water Usage Provide the use of private-metering and leak detection system for better control and monitoring. Provision of private meters and keep track of major water uses (e.g. pre-rinse spray valve, kitchen/preparation area and toilets)	2 point
2-3 Water Efficiency Management Plans Encourage the adoption of PUB's Water Efficiency Management Plan to better manage and improve the supermarket's efficiency in water consumption and help reduce cost. Complete and submit Water Efficient Management Plan to PUB. The plan shall include targets to improve outlet's water performance baseline, a breakdown of the current water use, list of water saving measures and an implementation timeline for the measures over the next 3 years.	2 point

2-4 Water Consumption of Cooling Towers Reduce potable water use for cooling and/or refrigeration purposes.	
(a) Use of cooling tower water treatment system which can achieve at least 7 cycles of concentration at acceptable water quality.	1 point
(b) Use of NEWater or on-site recycled water from approved sources.	1 point
PART 2 – WATER EFFICIENCY **CATEGORY SCORE :**	

Part 3 – Environmental Protection	Green Mark Points
3-1 Sustainable Base Building Enhance the supermarket's green operation through high energy efficient and sustainable BCA Green Mark certified base building. Encourage supermarket to select buildings that employ best practices systems and employ strategies e.g. select a BCA Green Mark certified building.	Green Mark Gold – 1 point Green Mark Gold^{PLUS} – 4 points Green Mark Platinum – 6 points (up to 6 points)
3-2 Waste Management To recognize and encourage the provision of dedicated storage facilities for a supermarket's operational related recyclable waste streams, so that such waste is diverted from landfill or incineration. (a) A dedicated storage space to cater for the volume of recyclables materials generated by supermarket operator during operation. The dedicated space must cater for separation and storage of minimum of 3 different types of recyclable material, these may include: 1) Cardboards 2) Food/ products donation 3) Glass waste 4) Plastic bottles 5) Printer Cartridge 6) Waste paper 7) Others *Refer to the following website for the list of collectors and/or traders for common recyclables: http://app2.nea.gov.sg/topics_collectrade.aspx (b) Provision of organic waste composting system to facilitate the reduction in volume of compostable organic waste going directly to landfill.	(up to 6 points) 3 points
3-3 Sustainable Products Promote the use of environmentally friendly products certified by approved local certification body in the interior fit-out of the supermarket.	2 points for high impact item 1 point for medium impact item 0.5 point for low impact item (Up to 12 points)

3-4 Environmental Sustainability Practices Encourage and promote the adoption of environmental sustainability practices through green awareness programme. a) Dedicated checkout lane for customers who bring their own shopping bags b) Reward customers who bring their own shopping bags with discount on purchases.	 2 points 2 points
3-5 Refrigerant Management Reduce the contribution of commercial refrigeration & air-conditioning to global warming and ozone depletion. (a) Use of environmentally neutral refrigerant e.g. carbon dioxide (R7-44) for refrigeration system. (b) Use of refrigerant with ozone depletion potential (ODP) of zero or global warming potential (GWP) of less than 100 in air-conditioning and refrigeration systems. (c) Use of low-charge refrigeration system e.g. complete secondary loop multiplex system Refrigerating machinery room shall contain a detector, located in an area where refrigerant from a leak will concentrate, that actuates an alarm and mechanical ventilation.	 2 points 2 points 2 points 2 points
3-6 Green Transport Promote environmental friendly transport options and facilities to reduce pollution from individual car use. (a) Good access to nearest MRT/LRT or bus stops. (b) Provision of adequate bicycles parking lots.	 2 points 2 points
PART 3 – ENVIRONMENTAL PROTECTION CATEGORY SCORE :	

Part 4 – Indoor Environmental Quality	Green Mark Points
4-1 Thermal Comfort Indoor Thermal Environment and Outdoor Air Supply Requirements for comfort air-conditioning to comply with SS 553: 2009.	2 point
4-2 Noise Level Occupied spaces in buildings are designed with good ambient sound levels as recommended in SS 553 Table 8 – Recommended ambient sound level.	2 point
4-3 Indoor Air Pollutants To reduce the quantity of indoor air contaminants that are odorous, irritating, and/or harmful to the comfort and well being of installers, staffs and shoppers. (a) Use of low volatile organic compounds (VOC) paints/ surface coating certified by approved local certification body. (b) Use of adhesives/ sealants certified by local certification body.	2 points 2 points
4-4 Lighting Quality Improve workplace lighting quality by avoiding low frequency flicker associated with fluorescent lighting with the use of high frequency ballasts in fluorescent luminaries or equivalent.	2 points
PART 4 – INDOOR ENVIRONMENTAL QUALITY CATEGORY SCORE :	

Part 5 – Other Green Features	Green Mark Points
5-1 Green Features and Innovations Encourage the use of other green features which are innovative and/or have positive environmental impact. Examples : • Educational Corners e.g. promoting 3R (Reduce, Reuse and Recycle) • Use of evaporative-cooled condensers • Etc	2 points for high impact item 1 point for medium impact item 0.5 point for low impact item (Up to 8 points)
PART 5 – OTHER GREEN FEATURES CATEGORY SCORE :	

Green Mark Score

Green Mark Score = ∑Category Score [(Part 1 – Energy Efficiency) +
(Part 2 – Water Efficiency) +
(Part 3 –Environmental Protection) +
(Part 4 – Indoor Environmental Quality) +
(Part 5 – Other Green Features)]