



**NON-RESIDENTIAL EXISTING BUILDING
(NREB): HISTORIC BUILDING TOOL**

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INTRODUCTION

WHAT IS THE GREEN BUILDING INDEX?

The Green Building Index is an environmental rating system for buildings developed by PAM (Pertubuhan Akitek Malaysia / Malaysian Institute of Architects) and ACEM (Association of Consulting Engineers Malaysia). The Green Building Index is Malaysia's first comprehensive rating system for evaluating the environmental design and performance of Malaysian buildings based on the six (6) main criterias of Energy Efficiency, Indoor Environment Quality, Sustainable Site Planning & Management, Materials & Resources, Water Efficiency, and Innovation.

The Green Building Index is fundamentally derived from existing international rating tools, including the Singapore Green Mark and the Australian Green Star system, but extensively modified for relevance to the Malaysian tropical weather, environmental context, cultural and social needs.

This PAM-ACEM initiative aims to assist the building industry in its march towards sustainable development. The GBI environmental rating system is created to:

- **Define green building by establishing a common language and standard of measurement;**
- **Promote integrated, whole-building design;**
- **Recognise and reward environmental leadership;**
- **Transform the built environment to reduce the environmental impact of development; and**
- **Ensure new buildings remain relevant in the future and existing buildings are refurbished and thereafter sustained properly to remain relevant.**

WHO CAN USE THE GREEN BUILDING INDEX (NON-RESIDENTIAL)?

GBI encourage all members of Project Teams, Building Owners, Developers and other interested parties (including Contractors, Government and Design and Build Contractors) to use the Green Building Index to validate environmental initiatives of the design phase of new non-residential construction or base non-residential building refurbishment; or construction and procurement phase of non-residential buildings. Use of the Green Building Index is encouraged on all such projects to assess and improve their environmental attributes.

Use of the Green Building Index (Non-Residential) tool without formal certification by an independent accredited GBI Certifier does not entitle the user or any other party to promote the Green Building Index rating achieved. No fee is payable to GBI for such use, however formal recognition of the Green Building Index rating - and the right to promote the same - requires undertaking the formal certification process offered by GBI.

Whilst GBI-NREB is a generic rating tool for Non-Residential buildings, GBI-NREB: HISTORIC BUILDING is a bespoke rating tool developed for Non Residential buildings aged 50 years or more.

All Green Building Index rating tools are reviewed annually; please forward any feedback to info@greenbuildingindex.org

HOW TO USE THE GREEN BUILDING INDEX?

- Complete the Building Input worksheet as the building's type and location may affect the predicted rating.
- Complete the remaining worksheets by reviewing each credit in each category and entering the number of points you predict the building will achieve in the 'No. of Points Achieved' column. Calculators are provided for a number of the tool's credits.
- Enter any points that may be achieved but need to be confirmed in the 'Points to be Confirmed' column.
- Enter any comments required in the 'Comments' column.
- The predicted rating is shown in the Summary worksheet. More detail on point scores (both achieved and those to be confirmed) are shown in the Credit Summary and Graphical Summary worksheets at the end of the tool.

PROJECT INFORMATION

PROJECT NAME		
PROJECT REGISTRATION NO.		
PROJECT ADDRESS		
	POSTCODE	STATE
CONSTRUCTION TYPE		
TOTAL GROSS FLOOR AREA (GFA)		
LAND AREA (FOR LANDED PROPERTY)		
REGISTRATION FEE (EXCLUDING GST)		
TARGETTED RATING		
TOTAL POINTS CLAIM		
EXPECTED CONSTRUCTION DATE	COMMENCED	COMPLETION
DATE BUILDING COMPLETED (NREB/IEB ONLY)		
PROJECT DESCRIPTION & MAJOR DESIGN FEATURES		

CONSULTANTS INFORMATION

OWNER'S NAME			
COMPANY			
OWNER'S REPRESENTATIVE	NAME	DESIGNATION	

ARCHITECT	NAME	PROFESSIONAL REG. NO.	COMPANY
CIVIL ENGINEER	NAME	PROFESSIONAL REG. NO.	COMPANY
STRUCTURAL ENGINEER	NAME	PROFESSIONAL REG. NO.	COMPANY
MECHANICAL ENGINEER	NAME	PROFESSIONAL REG. NO.	COMPANY
ELECTRICAL ENGINEER	NAME	PROFESSIONAL REG. NO.	COMPANY
QUANTITY SURVEYOR	NAME	PROFESSIONAL REG. NO.	COMPANY
LAND SURVEYOR	NAME	PROFESSIONAL REG. NO.	COMPANY
LANDSCAPE ARCHITECT	NAME	PROFESSIONAL REG. NO.	COMPANY
COMMISSIONING SPECIALIST (CxS)	NAME	PROFESSIONAL REG. NO.	COMPANY
GBI FACILITATOR	NAME	PROFESSIONAL REG. NO.	COMPANY
OTHER SPECIALIST CONSULTANT(S)			
MAIN CONTRACTOR			
LOCAL AUTHORITY			

DETAIL ASSESSMENT CRITERIA SUMMARY OF FINAL SCORE

PART	ITEM	MAXIMUM POINTS	SCORE
1	Energy Efficiency (EE)	24	
2	Indoor Environmental Quality (EQ)	16	
3	Sustainable Conservation & Management (SC)	15	
4	Material & Resources (MR)	20	
5	Water Efficiency (WE)	11	
6	Innovation (IN)	14	
TOTAL SCORE		100	

GREEN BUILDING INDEX CLASSIFICATION

POINTS	GBI RATING
86 to 100 points	Platinum
76 to 85 points	Gold
66 to 75 points	Silver
50 to 65 points	Certified

DETAIL ASSESSMENT CRITERIA

SUMMARY OF CONTENTS

PART	CRITERIA	ITEM	POINTS	TOTAL
1	EE	ENERGY EFFICIENCY		24
	Design & Performance			
	EE1	Minimum EE Performance	2	
	EE2	Lighting Zoning & Control	1	
	EE3	Automated Lighting Control	2	
	EE4	Renewable Energy	5	
	EE5	Advanced EE Performance - BEI	8	
	Commissioning			
	EE6	Enhanced or Re-Commissioning	2	
	EE7	On-going Post Occupancy Commissioning	1	
	Monitoring, Improvement & Maintenance			
EE8	EE Monitoring & Improvement	1		
EE9	Sustainable Maintenance	2		
2	EQ	INDOOR ENVIRONMENTAL QUALITY		16
	Air Quality			
	EQ1	Minimum IAQ Performance	1	
	EQ2	Environmental Tobacco Smoke (ETS) Control	1	
	EQ3	Indoor Air Pollutants	2	
	EQ4	Mould Prevention	1	
	Thermal Comfort			
	EQ5	Thermal Comfort: Controllability of Systems	1	
	Lighting, Visual & Acoustic Comfort			
	EQ6	Daylighting	2	
	EQ7	Daylight Glare Control	1	
	EQ8	Electric Lighting Levels	1	
	EQ9	Visual Comfort	2	
EQ10	Acoustic Comfort	1		
Verification				
EQ11	IAQ Before/During Occupancy	2		
EQ12	Occupancy Comfort Survey: Verification	1		
3	SC	SUSTAINABLE CONSERVATION & MANAGEMENT		15
	Facility Management & Provision			
	SC1	GBI Rated Design & Construction	1	
	SC2	Building Exterior Management	1	
	SC3	Integrated Pest Management, Erosion Control & Landscape Management	1	
	SC4	Universal Access & Design Facilities	1	
	SC5	Historic Building Conservation Practices & Management	6	
	Reduce Heat Island Effect			
	SC6	Hardscape and Greenery Application	2	
	SC7	Roof Application	2	
Manual & Documentation				
SC8	Building User Manual	1		

DETAIL ASSESSMENT CRITERIA SUMMARY OF CONTENTS (CONTINUED)

PART	CRITERIA	ITEM	POINTS	TOTAL
4	MR	MATERIALS & RESOURCES		20
	Reused & Recycled Materials			
	MR1	Historic Material Reuse and Selection	11	
	MR2	Recycled Historic Building Materials & Objects	2	
	Sustainable Materials & Resources and Policy			
	MR3	Sustainable Timber	1	
	MR4	Sustainable Purchasing Policy	1	
	Waste Management			
	MR5	Storage, Collection & Disposal of recyclables	3	
Green Products				
	MR6	Refrigerants & Clean Agents	2	
5	WE	WATER EFFICIENCY		11
	Water Harvesting & Recycling			
	WE1	Rainwater Harvesting	3	
	WE2	Water Recycling	2	
	Increased Efficiency			
	WE3	Water Efficient - Irrigation/Landscaping	2	
WE4	Water Efficient Fittings	2		
WE5	Metering & Leak Detection System	2		
6	IN	INNOVATION		14
	IN1	Innovation & Environmental Initiatives	13	
	IN2	Green Building Index Facilitator	1	
			TOTAL POINTS	100

1

ENERGY EFFICIENCY (EE)

DESIGN & PERFORMANCE | COMMISSIONING | MONITORING, IMPROVEMENT & MAINTENANCE

24 POINTS

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
DESIGN & PERFORMANCE				
EE1	MINIMUM EE PERFORMANCE (MANDATORY)			
	Building envelope and installations to achieve minimum energy efficiency (EE) performance so as to reduce energy consumption in buildings, thus reducing CO2 emission to the atmosphere. Building Envelope to meet the following minimum EE requirements as stipulated in MS 1525:		2	
	a) OTTV ≤ 50; RTTV ≤ 25 and/or Roof-U value not to exceed 0.4 (Light Weight) and 0.6 (Heavy Weight). Submit calculations (use of BEIT software or other GBI approved software is acceptable); AND b) Install Energy Management Control System (where air-conditioned area exceeds 4,000 m ²)	2		
EE2	LIGHTING ZONING & CONTROL			
	Provide flexible lighting controls to optimise energy savings:-		1	
	All individual or enclosed spaces to be individually switched; and the maximum number of light fittings per circuit shall not exceed 10	1		
EE3	AUTOMATED LIGHTING CONTROL			
	Provide auto-sensor controlled lighting in conjunction with daylighting strategy for all perimeter zones and daylight areas.	1	2	
	Provide motion sensors or equivalent to complement lighting zoning for at least 25% NLA.	1		
EE4	RENEWABLE ENERGY			
	Encourage use of renewable energy:-		5	
	Where 0.25 % of the total electricity consumption is generated by renewable energy or 2 kWp RE is installed, whichever is the greater, OR	1		
	Where 0.5 % of the total electricity consumption is generated by renewable energy or 5 kWp RE is installed, whichever is the greater, OR	2		
	Where 1.0 % of the total electricity consumption is generated by renewable energy or 10 kWp RE is installed, whichever is the greater, OR	3		
	Where 1.5 % of the total electricity consumption is generated by renewable energy or 20 kWp RE is installed, whichever is the greater, OR	4		
	Where 2.0 % of the total electricity consumption is generated by renewable energy or 40 kWp RE is installed, whichever is the greater	5		
EE5	ADVANCED EE PERFORMANCE			
	Exceed Energy Efficiency (EE) performance better than the baseline minimum to reduce energy consumption in the building. Achieve Building Energy Intensity (BEI) ≤ 150 kWh/m ² .yr (Refer to GBI on requirement variance for applications other than Office Buildings). Use of BEIT Software or other GBI approved software to compute BEI is acceptable. Higher points with improving BEI as follows:		8	
	BEI ≤ 150	2		
	BEI ≤ 140	3		
	BEI ≤ 130	4		
	BEI ≤ 120	5		
	BEI ≤ 110	6		
	BEI ≤ 100	7		
	BEI ≤ 90	8		

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GREEN BUILDING INDEX ASSESSMENT CRITERIA FOR NREB: HISTORIC BUILDING TOOL

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
COMMISSIONING				
EE6	ENHANCED OR RE-COMMISSIONING			
	<p>Ensure building's energy related systems are properly commissioned so as to realise their full potential. Appoint a GBI recognised Commissioning Specialist (CxS) to perform the commissioning for all the building's energy related systems in accordance with ASHRAE Commissioning Guideline or other GBI approved equivalent standard by:-</p> <p>a) Implementing improvements to ensure building's major energy using systems are repaired, operated and maintained effectively to optimize energy performance.</p> <p>b) Developing a commissioning or ongoing commissioning plan for the building's major energy-using systems.</p> <p>c) Providing training for management staff to build awareness and skills in a broad range of sustainable building operations topics, including energy efficiency and building, equipment and systems operations and maintenance.</p> <p>d) Updating the building operating plan as necessary to reflect any changes in the occupancy schedule, equipment runtime schedule, design set points and lighting levels.</p>	2	2	
EE7	ON-GOING POST OCCUPANCY COMMISSIONING			
	<p>Carry out up-to-date on-going post occupancy commissioning for all tenancy areas after fit-out changes are completed.</p> <p>a) Professional Engineer shall review all tenancy fit-out plans to ensure original design intent is not compromised and sign off the completed works, AND</p> <p>b) Carry out re-commissioning of the building's energy related systems for the affected tenancy areas.</p>	1	1	
MONITORING, IMPROVEMENT & MAINTENANCE				
EE8	EE MONITORING & IMPROVEMENT			
	<p>a) Use Energy Management System (where mandated) to monitor and trend log building system performance especially for HVAC system efficiency including parameters for plant sequencing, etc., OR</p> <p>b) If EMS is not mandated, set up an Energy Management team to manually monitor and improve building system performance</p> <p><i>Compile, summarise and submit BEI, Fuel and Water Consumption of the building to GBI on an annual basis during the 3-years validity period or earlier whenever requested by GBI. Submissions shall include monthly energy and water bills.</i></p>	1	1	
EE9	SUSTAINABLE MAINTENANCE			
	<p>Ensure the building's energy related systems will continue to perform as intended with proper and sustainable maintenance:-</p> <p>a) At least 50% of permanent building maintenance team to participate in the commissioning of all building energy services, AND</p> <p>b) Provide for a designated building maintenance office that is fully equipped with facilities (including tools and instrumentation) and inventory storage,</p> <p>c) Provide evidence of documented plan for at least 3-year facility maintenance and preventive maintenance budget (inclusive of staffing and outsourced contracts).</p>	1	2	
		1		
EE SUB-TOTAL		24	24	

2

INDOOR ENVIRONMENTAL QUALITY (EQ)

AIR QUALITY | THERMAL COMFORT | LIGHTING, VISUAL & ACOUSTIC COMFORT | VERIFICATION

16 POINTS

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
AIR QUALITY				
EQ1	MINIMUM IAQ PERFORMANCE			
	Establish minimum indoor air quality (IAQ) performance to enhance indoor air quality in building, thus contributing to the comfort and well-being of the occupants:-		1	
	Meet the minimum requirements of ventilation rate in ASHRAE 62.1 or the local building code whichever is the more stringent.	1		
EQ2	ENVIRONMENTAL TOBACCO SMOKE (ETS) CONTROL			
	Minimize exposure of building occupants, indoor surfaces, and ventilation air distribution systems to Environmental Tobacco Smoke (ETS):-		1	
	Prohibit smoking in the building and locate any exterior designated smoking areas away from entries, outdoor air intakes and operable windows	1		
EQ3	INDOOR AIR POLLUTANTS			
	Reduce detrimental impact on occupant health from finishes that emit internal air pollutants:		2	
	Use low VOC paint and coating throughout the building. Paints and Coatings to comply with requirements specified in international labelling schemes recognized by GBI, AND	1		
	Use low VOC carpet or flooring throughout the building. Carpets to comply with requirements specified in international labelling schemes recognized by GBI. Other types of flooring to comply with requirements under FloorScore developed by Science Certification System or equivalent, AND			
	Use low VOC adhesive and sealant or no adhesive/sealant used.			
	Use products with no added urea formaldehyde. These include:	1		
	1) Composite wood and agrifiber products defined as: particleboard, medium density fiberboard (MDF), plywood, wheatboard, strawboard, panel substrates and door cores, AND			
	2) Laminating adhesives used to fabricate on-site and shop-applied composite wood and agrifiber assemblies, AND			
	3) Insulation foam, AND 4) Draperies			
EQ4	MOULD PREVENTION			
	Design system(s) which reduce the risk of mould growth and its associated detrimental impact on occupant health:		1	
	Where it is demonstrated that the mechanical air-conditioned ventilation system will maintain a positive indoor air pressure relative to the exterior and can actively control indoor air humidity to be no more than 70% RH without the use of active control that will consume additional energy.	1		
	Ensure that excessive moisture in building is controlled during the retrofit Design, Construction and Operation stages by the consideration and the control of the following:		1	
	1) Rainwater leakage through roof and walls			
	2) Infiltration of moist air			
	3) Diffusion of moisture through walls, roof and floors			
	4) Groundwater intrusion into basements and crawl spaces through walls and floors			
	5) Leaking or burst pipes			
	6) Indoor moisture sources			
	7) Construction moisture			
	OR			
	The building is fully naturally ventilated			

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GREEN BUILDING INDEX ASSESSMENT CRITERIA FOR NREB: HISTORIC BUILDING TOOL

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
THERMAL COMFORT				
EQ5	THERMAL COMFORT: CONTROLLABILITY OF SYSTEMS			
	<p>Provide a high level of thermal comfort system control by individual occupants or by specific groups in multi-occupant spaces to promote the productivity, comfort and well-being of building occupants:</p> <p>Provide individual comfort controls for > 50% of the building occupants to enable adjustments to suit individual task needs and preferences, AND Provide comfort system controls for all shared multi-occupant spaces to enable adjustments to suit group needs and preferences.</p> <p><i>Conditions for thermal comfort include the primary factors of air temperature, radiant temperature, air speed and humidity. Comfort system control for this purpose is defined as the provision of control over at least one of these primary factors in the occupants' local environment.</i></p> <p>Note: A totally non air-conditioned building will be deemed to comply with this criteria.</p>	1	1	
LIGHTING, VISUAL & ACOUSTIC COMFORT				
EQ6	DAYLIGHTING			
	Provide good levels of daylighting for building occupants:-			
	Demonstrate that ≥ 30% of the NLA has a daylight factor in the range of 1.0 – 3.5% as measured at the working plane, OR	1	2	
	Demonstrate that ≥ 50% of the NLA has a daylight factor in the range of 1.0 – 3.5% as measured at the working plane.	2		
	<i>(Refer to GBI on requirement variance for applications other than Office Buildings)</i>			
EQ7	DAYLIGHT GLARE CONTROL			
	<p>Reduce discomfort of glare from natural light. Where blinds or screens are fitted on all glazing and atrium as a base building, incorporate provisions to meet the following criteria;</p> <p>a) Eliminate glare from all direct sun penetration and keep horizontal workspace lux level below 2000; AND</p> <p>b) Eliminate glare from diffuse sky radiation for occupant workspace at viewing angles of 15° to 60° from the horizontal at eye level (typically 1.2m from floor level); AND</p> <p>c) Control with an automatic monitoring system (for atrium and windows with incident direct sun light only - not applicable for fixed blinds/screens); AND</p> <p>d) Equip with a manual override function accessible by occupants (not applicable for fixed blinds/screens)</p> <p><i>(Refer to GBI on requirement variance for applications other than Office Buildings)</i></p>	1	1	
EQ8	ELECTRIC LIGHTING LEVELS			
	Baseline building lighting not to be over designed:-		1	
	Demonstrate that lighting design maintains a luminance level of no more than specified in MS1525 for 90% of NLA as measured at the working plane	1		
EQ9	VISUAL COMFORT			
	Reduce eyestrain for building occupants by allowing long distance views and provision of visual connection to the outdoor.		2	
	Demonstrate that ≥ 60% of the NLA has a direct line of sight through vision glazing at a height of 1.2m from floor level.	1		
	Demonstrate that ≥ 75% of the NLA has a direct line of sight through vision glazing at a height of 1.2m from floor level.	2		
EQ10	ACOUSTIC COMFORT			
	<p>Maintain internal noise levels at an appropriate level. Demonstrate that 90% of the NLA do not exceed the following ambient internal noise levels:-</p> <p>Within the entire baseline building general office, space noise from the building services does not exceed 40 dBAeq. OR</p> <p>Within the baseline building office space, the sound level does not exceed 45dBAeq for open plan and not exceed 40 dBAeq for closed offices</p>	1	1	

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GREEN BUILDING INDEX ASSESSMENT CRITERIA FOR NREB: HISTORIC BUILDING TOOL

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
VERIFICATION				
EQ11	IAQ BEFORE/DURING OCCUPANCY			
	<p>Reduce indoor air quality problems resulting from the construction process (or inherent conditions) in order to improve and sustain the comfort and well-being of building occupants. Develop and implement an Indoor Air Quality (IAQ) Management Plan to effect this requirement as follows:-</p> <p>a) Perform a building flush out by supplying outdoor air to provide not less than 10 Air Changes per Hour (ACH) for at least 30 minutes operation and continuous minimum 1 ACH for the next 14 days</p> <p>OR</p> <p>b) If low VOC materials and low formaldehyde composite wood are used, then building flush out can be performed by supplying outdoor air to provide not less than 10 ACH for at least 15 minutes operation or not less than 6 ACH for at least 30 minutes operation and continuous 1ACH for the next 7 days</p> <p>OR</p> <p>c) Conduct IAQ testing to demonstrate maximum concentrations for pollutants are not exceeded according to the Indoor Air Quality Code of Malaysia.</p>	1	2	
	<p>Permanent Air Purging System: Where a permanent air flushing system of at least 10 ACH operation is installed and operated at least once a year during occupancy stage</p>	1		
EQ12	OCCUPANCY COMFORT SURVEY: VERIFICATION			
	<p>Provide for the assessment of comfort of the building occupants:-</p> <p>Conduct an occupancy comfort survey of building occupants. This survey should collect anonymous responses about thermal comfort, visual comfort and acoustic comfort in a building. It should include an assessment of overall satisfaction with thermal, visual and acoustic performance and identification of thermal-related, visual-related and acoustic-related problems,</p> <p>AND</p> <p>Develop a plan for corrective action if the survey results indicate that more than 20% of occupants are dissatisfied with the overall comfort in the building. This plan should include measurement of relevant environmental variables in problem areas. The relevant environmental variables include 1) Temperature, relative humidity, air speed and mean radiant temperature, 2) Lighting level and glare problem, 3) Background noise level, 4) Odour problem, CO2 level, VOCs, and particulate concentration</p>	1	1	
EQ SUB-TOTAL		16	16	

3

SUSTAINABLE CONSERVATION & MANAGEMENT (SC)

FACILITY MANAGEMENT & PROVISIONS | REDUCE HEAT ISLAND EFFECT | MANUAL & DOCUMENTATION

15 POINTS

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
FACILITY MANAGEMENT & PROVISIONS				
SC1	GBI RATED DESIGN & CONSTRUCTION			
	If the building has been previously GBI rated (or rated by other GBI-approved Green Rating) under any category, OR Within the last 12 months a comprehensive Energy Efficiency Audit has been conducted.	1	1	
SC2	BUILDING EXTERIOR MANAGEMENT			
	Employ environmentally sensitive building exterior management plan to reduce pollution; and conscious use of traditional materials, technologies and art forms when carrying out building management works. Use environmentally non-polluting methods and chemicals for cleaning of building exterior including maintenance equipment, chemicals, paint and sealants, OR Employ materials sensitive to the historic nature of the built fabric. Use traditional materials and technologies, locally sourced where possible, for cleaning of building exterior including maintenance equipment, paints and sealants. Where contemporary materials need to be used, ensure they are compatible with the historic materials.	1	1	
SC3	INTEGRATED PEST MANAGEMENT, EROSION CONTROL & LANDSCAPE MANAGEMENT			
	Employ environmentally sensitive management to preserve the site's natural components. Minimise harmful chemical use, energy waste, water waste, air pollution, solid waste and/or chemical runoff such as gasoline and oil. The following operational elements must be addressed: a) Use of least toxic chemical pesticides, minimum use of chemicals and use only in targeted locations and only for targeted species. Conduct routine inspection and monitoring, AND b) Erosion and sedimentation control for ongoing landscape operations including measures that prevent erosion and sedimentation, prevent air pollution from dust or particulate matter and restore eroded areas.	1	1	
SC4	UNIVERSAL ACCESS AND DESIGN FACILITIES			
	Provision of Universal Access and Design Facilities	1	1	
SC5	HISTORIC BUILDING CONSERVATION PRACTICES AND MANAGEMENT			
	Encourage best practices in conservation to promote regeneration historic buildings and sites, as a focus environmental sustainability.			
	1) Where the historic building is located in a "Conservation Zone".	1	6	
	2) Where the conservation of the historic building is in accordance to recognised best practices.	2		
	3) Where the conservation of the historic building is documented.	2		
	4) Where the conservation of the historic building has been recognised or awarded.	1		
REDUCE HEAT ISLAND EFFECT				
SC6	HARDSCAPE & GREENERY APPLICATION			
	1. Provide any combination of the following strategies for 50% of the site hardscape (including sidewalks, courtyards, plazas and parking lots): a. Shade (within 5 years of occupancy) b. Paving materials with a Solar Reflectance Index (SRI) of at least 29 c. Greenery and/or open grid pavement system	2	2	
SC7	ROOF APPLICATION			
	1) Use roofing material with a Solar Reflectance Index (SRI) equal to or greater than the value in the table below for a minimum of 75% of the roof surface; OR 2) Install a vegetated roof for at least 50% of the roof area; OR 3) Install high albedo and vegetated roof surfaces that, in combination, meet the following criteria: (Area of SRI Roof / 0.75) + (Area of vegetated roof / 0.5) > Total Roof Area Roof Type Slope SRI Low-Sloped Roof < 2:12 78 Steep-Sloped Roof > 2:12 29 OR 4) Where the conservation of the historic building in accordance to recognised best practices requires the use of a specific historic roofing materials.	2	2	

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GREEN BUILDING INDEX ASSESSMENT CRITERIA FOR NREB: HISTORIC BUILDING TOOL

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
MANUAL & DOCUMENTATION				
SC8	BUILDING USER MANUAL			
	Document Green building design features and strategies for user information and guide to sustain performance during occupancy:-		1	
	Provide (include updating) a Building User Manual which documents passive and active features that should not be downgraded.	1		
SM SUB-TOTAL		15	15	

4

MATERIALS & RESOURCES (MR)

REUSED & RECYCLED MATERIALS | SUSTAINABLE MATERIALS & RESOURCES AND POLICY | WASTE MANAGEMENT | GREEN PRODUCTS

20 POINTS

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
REUSED AND RECYCLED MATERIALS				
MR1	HISTORIC MATERIAL REUSE AND SELECTION			
	<p>Reuse historic building materials and products, not to only reduce demand for virgin materials and reduce creation of waste, but also to preserve the cultural social and historical values associated with them.</p> <p>This serves to reduce the environmental impact associated with extraction and processing of virgin resources.</p> <p>The employment of traditional craft skills and craft persons in the maintenance, restoration and upkeep of the historic built fabric serves to keep alive traditional trades and practices and protect intangible heritage. Integrate building design and its buildability with selection of reused building materials, taking into account their embodied energy, durability, carbon content and life cycle costs. The restoration and reuse of the original built fabric, which have high inherent embodied energy keeps alive both the values associated with the traditional technologies, the craftsmen practising these skills and the knowledge systems they represent.</p>		11	
	1. Where reused materials/products constitute more than:			
	a) 5% of the total reuse materials found on site.	2		
	b) 10% of the total reuse materials found on site.	3		
	2. Where traditional local craftsmen and knowledge systems are employed, OR Where training programs and capacity building are provided to train new tradesmen in traditional materials, skills, technologies and knowledge systems	1		
	3. Where reused materials/products constitute more than:			
	a) 10% of the total reuse materials sourced within 500km locally.	2		
	b) 20% of the total reuse materials sourced within 500km locally.	3		
	4. Encourage the reuse of historic objects, their preservation and safe guarding, as an important component of Heritage & Conservation. Where new interventions are necessary, especially in the case of adaptive reuse; then, increase demand for building products that incorporate recycled content materials in their production. (Recycled content shall be as defined in the ISO 14021)			
	Where the percentage (%) of conserved and reused (inclusive of objects salvaged from other sites) materials and objects in the heritage building (such as old photographs/ plans/ furniture/ etc.) exceeds:			
	a) 20%	2		
	b) 30%	3		
	5. Where conservation/ restoration process includes training and capacity building programs for the locals or site managers, to enable them to maintain the interior materials and objects.	1		
MR2	RECYCLED HISTORIC BUILDING MATERIALS & OBJECTS			
	Where use of materials with recycled content is such that the sum of post-consumer recycled plus one half of the pre consumer content constitutes:		2	
	a) ≥ 20%(based on cost) of projects total material cost value.	1		
	b) ≥ 30% (based on cost) of the total material cost value of the project.	2		
SUSTAINABLE MATERIALS & RESOURCES AND POLICY				
MR3	SUSTAINABLE TIMBER			
	Encourage environmentally responsible forest management:-		1	
	Where ≥ 75% of new wood-based materials and products used in the retrofit works are certified. These components include, but are not limited to, structural framing and general dimensional framing, flooring, sub-flooring, wood doors and finishes. Also includes wood materials permanently installed and temporarily purchased for the project. Compliant with Forest Stewardship Council OR Malaysian Timber Certification Council requirements.	1		
MR4	SUSTAINABLE PURCHASING POLICY			
	Develop a Sustainable Purchasing policy that must cover product purchases within the building and management's control.	1	1	

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GREEN BUILDING INDEX ASSESSMENT CRITERIA FOR NREB: HISTORIC BUILDING TOOL

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
WASTE MANAGEMENT				
MR5	STORAGE, COLLECTION & DISPOSAL OF RECYCLABLES			
	Facilitate reduction of waste generated during retrofit construction and during building occupancy that is hauled and disposed of in landfills:-		3	
	Provide recycling facilities/infrastructure for sorting and separate collection of recyclable waste for recycling (consumables - glass, paper, metal, equipment, addition & alteration construction wastes)	1		
	Promote and encourage waste minimization and recycling among occupants, tenants and visitors through various avenues	1		
	Promote waste sorting, collecting, quantifying, monitoring and recycling of a large range of waste generated in-house.	1		
GREEN PRODUCTS				
MR6	REFRIGERANTS & CLEAN AGENTS			
	Use environmentally-friendly Refrigerants and Clean Agents exceeding Malaysia's commitment to the Montreal & Kyoto protocols:-		2	
	Use zero Ozone Depleting Potential (ODP) products: non-CFC and non-HCFC refrigerants AND clean agents;	1		
	Use non-synthetic (natural) refrigerants AND clean agents with zero ODP and negligible Global Warming Potential.	1		
MR SUB-TOTAL		20	20	

5

WATER EFFICIENCY (WE)

WATER HARVESTING & RECYCLING | INCREASED EFFICIENCY

11 POINTS

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
WATER HARVESTING & RECYCLING				
WE1	RAINWATER HARVESTING			
	Encourage rainwater harvesting that will lead to reduction in potable water consumption:-		3	
	Rainwater harvesting that leads to ≥5% reduction in potable water consumption, OR	1		
	Rainwater harvesting that leads to ≥15% reduction in potable water consumption, OR	2		
	Rainwater harvesting that leads to ≥30% reduction in potable water consumption	3		
WE2	WATER RECYCLING			
	Encourage water recycling that will lead to reduction in potable water consumption:-		2	
	Treat and recycle ≥10% wastewater leading to reduction in potable water consumption, OR	1		
	Treat and recycle ≥30% wastewater leading to reduction in potable water consumption	2		
INCREASED EFFICIENCY				
WE3	WATER EFFICIENT - IRRIGATION/LANDSCAPING			
	Reduce potable water consumption for landscape irrigation by:		2	
	a) 50%	1		
	b) 100%	2		
WE4	WATER EFFICIENT FITTINGS			
	Encourage reduction in potable water consumption through use of efficient devices:-		2	
	With reference to Utility calculations:			
	a) Reduce annual potable water consumption by ≥20%.	1		
	b) Reduce annual potable water consumption by ≥50%.	2		
WE5	METERING & LEAK DETECTION SYSTEM			
	Encourage the design of systems that monitors and manages water consumption:-		2	
	Use of sub-meters to monitor and manage major water usage e.g. for cooling towers, irrigation, kitchens and tenancy use	1		
	Link all water sub-meters to EMS (where EMS is mandated) to facilitate early detection of water leakage; OR If EMS is not mandated, set up an Energy Management team to manually monitor and detect water leakage on a daily basis.	1		
WE SUB-TOTAL		11	11	

6

INNOVATION (IN)

INNOVATION & ENVIRONMENTAL INITIATIVES | GREEN BUILDING INDEX FACILITATOR

14 POINTS

ITEM	AREA OF ASSESSMENT	DETAIL POINTS ALLOCATED	MAX POINTS	SCORE
IN1	INNOVATION & ENVIRONMENTAL INITIATIVES			
	Provide Heritage Buildings the opportunity to be awarded points for exceptional performance above the requirements set by GBI rating system:-			
	1 point for each approved innovation and environmental initiative up to a maximum of 13 points, such as:- 1. Demonstrate significant vernacular environmental features 2. Demonstrate high level of Architectural significance of the era 3. Show significant Engineering advancement of the era 4. Seamless integration of new into old building 5. Condensate water recovery (accounting for at least 50% of total AHUs/FCUs) for use as cooling tower make-up water etc; 6. Recycling of fire sprinkler system water during regular testing; 7. Light pipes accounting for at least 1% of NLA ; 8. Central vacuum system (serving at least 50% of NLA); 9. QLASSIC compliance 10. Electric sub-meters for major energy uses to facilitate energy efficiency management Carbon Dioxide (CO2) monitoring and control system 11. Herbs Garden 12. IBS compliance 13. Composting 14. External Shading 15. Vertical Greenery 16. LED Façade lighting 17. Educational Green Display 18. Bicycle Facilities 19. Maximum Demand Limiting (MDL) programming	13	13	
IN2	GREEN BUILDING INDEX FACILITATOR			
	To support and encourage the integration required for Green Building Index rated buildings and to streamline the application and certification process:-			
	Engage the services of a Green Building Index Facilitator to assist in obtaining Green Building Index certification	1	1	
IN SUB-TOTAL		14	14	