DESIGN REFERENCE GUIDE

EXISTING HEALTHCARE FACILITIES

Version 1.0, February 2026

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1. About GreenRE

GreenRE Sdn Bhd is a wholly owned subsidiary of the Real Estate and Housing Development Association (REHDA). The GreenRE rating tool has been developed for the purposes as mentioned herein and may be subject to updating and/or modification in the future.

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2. Introduction

The GreenRE assessment scheme was established in 2013 and is a recognised green building rating system tailored for the tropical climate. GreenRE sets parameters and establishes indicators to guide the design, construction and operation of buildings towards increased energy effectiveness and enhanced environmental performance.

The intent of this Design Reference Guide for Existing Healthcare Facilities (referred to as "this Guideline") is to establish environmentally friendly practices for the planning, design, and construction of hospitals, which would help to mitigate their environmental impact.

This Guideline is not intended to abridge safety, health, environmental or related requirements contained in other applicable laws, codes or policies administered by relevant authorities. Where there is a conflict between a requirement of this Guideline and such other regulations affecting the design, construction and operation of the project, the building regulations shall take precedence.

3. Revision Log

Revision	Description	Date Effective
1.0	Launched for Implementation	February 2026

4. GreenRE Existing Healthcare Facilities Rating System

OVERVIEW:

The GreenRE Existing Healthcare Facilities rating system is applicable to buildings that meet the following criteria:

- The building has been in completed for more than one (1) year; and
- The building maintains and occupancy rate of at least 60%.

These conditions ensure that sufficient operational data is available to support a meaningful assessment of the building's performance under the rating system.

This rating system is divided into six (6) sections as follows:

Part 1 – Energy Efficiency: This category focuses on the approach that can be used in the building design and system selection to optimise the energy efficiency of buildings.

Part 2 – Water Efficiency: This category focuses on the selection of fittings and strategies enabling water use efficiency during construction and building operation.

Part 3 – Environmental Protection: This category focuses on the design, practices and selection of materials and resources that would reduce the environmental impacts of built structures.

Part 4 – Indoor Environmental Quality: This category focuses on the design strategies that would enhance the indoor environmental quality which include air quality, thermal comfort, acoustic control, and daylighting.

Part 5 – Sustainable Practices and Green Innovation: This category focuses on the adoption of green operation and maintenance practices and new technologies that are innovative and have potential environmental benefits.

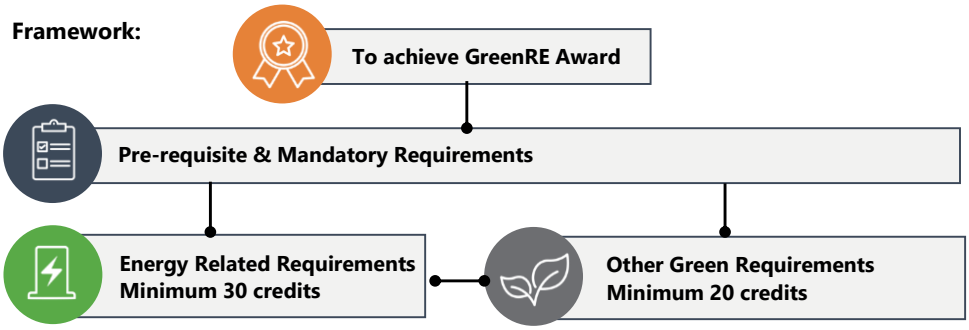
Part 6 – Carbon Emission of Development: This category focuses on the use of carbon calculator to calculate the carbon emission of the development.

These environment impact categories are broadly classified under two main groups namely (I) Energy Related Requirements and (II) Other Green Requirements.

Energy Related Requirements consist of Part 1- Energy Efficiency where credits are allocated for the various energy efficient designs, practices and features used. A minimum of 30 credits must be obtained from this group to be eligible for certification.

Other Green Requirements consist of Part 2 - Water Efficiency; Part 3 - Environmental Protection; Part 4 - Indoor Environmental Quality; Part 5 - Sustainable Practices and Green Innovation and Part 6 - Carbon Emission of Development. Credits are allocated for the water efficient features, environmentally friendly design practices, innovative green features used and carbon emission of development. A minimum of 20 credits must be obtained from this group to be eligible for certification.

Framework:



Elective Requirement for Energy Improvement
(Combination of the following items to meet 30 credits)

PART 1 - ENERGY EFFICIENCY

EHC 1-1 Thermal Performance of Building Envelope - OTTV
EHC 1-2 Air-Conditioning System
EHC 1-3 Building Envelope – Design/Thermal Parameters
EHC 1-4 Natural Ventilation
EHC 1-5 Electrical Services
EHC 1-6 Artificial Lighting
EHC 1-7 Ventilation in Carparks
EHC 1-8 Lifts and Escalators
EHC 1-9 Energy Efficient Practices & Features
EHC 1-10 Energy Policy and Management
EHC 1-11 Renewable Energy

Elective Requirement for Other Areas
(Combination of the following items to meet 20 credits)

PART 2 - WATER EFFICIENCY

EHC 2-1 Water Efficient Fittings
EHC 2-2 Water Usage and Leak Detection
EHC 2-3 Irrigation System and Landscaping
EHC 2-4 Water Efficiency Improvement Plans

PART 3 – ENVIRONMENTAL PROTECTION

EHC 3-1 Building Operation & Maintenance
EHC 3-2 Sustainable Products
EHC 3-3 Airborne Contaminant Prevention
EHC 3-4 Greenery Provision and Healing Environment
EHC 3-5 Post Occupancy Evaluation
EHC 3-6 Waste Management
EHC 3-7 Green Transport

PART 4 - INDOOR ENVIRONMENTAL QUALITY

EHC 4-1 Thermal Comfort and Control for A/C Spaces
EHC 4-2 Thermal Comfort for N/V Spaces
EHC 4-3 Noise Level
EHC 4-4 Indoor Air Pollutants
EHC 4-5 Indoor Air Quality
EHC 4-6 High Frequency Ballasts & PBT-reduced lamps
EHC 4-7 Daylighting and Glare
EHC 4-8 View out & Access to Indoor Places of Respite

PART 5 – SUSTAINABLE PRACTICES AND GREEN INNOVATION

EHC 5-1 Environmental Management Practice
EHC 5-2 Conservation of Existing Structures and Adoption of Demolition Protocol
EHC 5-3 Other Green Practices and Innovative Features

PART 6 – CARBON EMISSION OF DEVELOPMENT

EHC 6-1 Carbon Footprint of Development

CREDIT ALLOCATION:

	Category	Credits Allocations
	(I) Energy Related Requirements	
Minimum 30 credits	**Part 1: Energy Efficiency**	
	EHC 1-1 Thermal Performance of Building Envelope - OTTV	12
	EHC 1-2 Air-Conditioning System	33
	Sub-Total (A) – EHC 1-1 to 1-2	**45**
	EHC 1-3 Building Envelope – Design/Thermal Parameters	35
	EHC 1-4 Natural Ventilation	20
	Sub-Total (B) – EHC 1-3 to 1-4	**55**
	EHC 1-5 Electrical Services	7
	EHC 1-6 Artificial Lighting	12
	EHC 1-7 Ventilation in Carparks	4
	EHC 1-8 Lifts and Escalators	2
	EHC 1-9 Energy Efficient Practices & Features	12
	EHC 1-10 Energy Policy and Management	1
	EHC 1-11 Renewable Energy	20
	Sub-Total (C) – EHC 1-5 to 1-11	**58**
	Category Score for Part 1 – Energy Efficiency: Prorate (A) + Prorate (B) + (C)	**158**
	(II) Other Green Requirements	
Minimum 20 credits (Part 2 to 6)	**Part 2: Water Efficiency**	
	EHC 2-1 Water Efficient Fittings	6
	EHC 2-2 Water Usage and Leak Detection	4
	EHC 2-3 Irrigation System and Landscaping	3
	EHC 2-4 Water Efficiency Improvement Plans	1
	Category Score for Part 2 – Water Efficiency	**14**
	Part 3: Environmental Protection	
	EHC 3-1 Building Operation & Maintenance	5
	EHC 3-2 Sustainable Products	6
	EHC 3-3 Airborne Contaminant Prevention	3
	EHC 3-4 Greenery Provision and Healing Environment	5
	EHC 3-5 Post Occupancy Evaluation	3
	EHC 3-6 Waste Management	7
	EHC 3-7 Green Transport	4
	Category Score for Part 3 – Environmental Protection	**33**
	Part 4: Indoor Environmental Quality	
	EHC 4-1 Thermal Comfort and Control for A/C Spaces	3
	EHC 4-2 Thermal Comfort for N/V Spaces	2
	EHC 4-3 Noise Level	1
	EHC 4-4 Indoor Air Pollutants	2
	EHC 4-5 Indoor Air Quality	7
	EHC 4-6 High Frequency Ballasts PBT-reduced Lamps	2
	EHC 4-7 Daylighting and Glare	3
	EHC 4-8 View out & Access to Indoor Places of Respite	2
	Category Score for Part 4: Indoor Environmental Quality	**22**
	Part 5: Sustainable Practices and Green Innovation	
	EHC 5-1 Environmental Management Practice	8
	EHC 5-2 Conservation of Existing Structures and Adoption of Demolition Protocol	4
	EHC 5-3 Other Green Practices and Innovative Features	3
	Category Score for Part 5: Other Green Features	**15**
	Part 6: Carbon Emission of Development	
	NHR 6-1 Carbon Footprint of Development	2
	Category Score for Part 6 – Carbon Emission of Development	**2**
	Category Score for Part 2 to Part 6 – Other Green Requirements	**86**
	GreenRE New Healthcare Facilities Score:	**244 (Max)**

5. GreenRE Existing Healthcare Facilities Rating System Scoring

GreenRE Platinum	GreenRE Gold	GreenRE Silver	GreenRE Bronze
			
Score: 91 and above	Score: 86 to < 90	Score: 76 to < 85	Score: 50 to < 75

6. GreenRE Existing Healthcare Facilities Rating System Criteria

PRE-REQUISITE

GENERAL

- For GreenRE Platinum Rating - Provision of energy-recovery device for healthcare ventilation systems with no-recirculation (i.e. 100% of the room air to be exhausted). The energy transfer efficiency of energy-recovery device shall meet the requirement set in the criteria.
- For GreenRE Platinum Rating - Use of local energy generation from renewable sources or waterside energy recovery for healthcare facilities with centralised hot water heating system. The performance of service hot water system shall meet the efficiencies described in the criteria. Computation of service hot water demand is required to capture the actual service water heat load for healthcare facilities for domestic and service hot water demand and steam sterilisation.
- For GreenRE Platinum Rating - Control of indoor thermal environment by re-heating the air is achieved by means of site-recovered energy (including condenser heat) or site solar energy. (Air-conditioned building only)
- For GreenRE Gold and Platinum Rating - Use of Persistent Bio-cumulative Toxins (PBT) – reduced or free luminaries in at least 90% of all applicable areas.
- Provision of Building User Guide and Sustainable Operation Management Guide.
- Building Energy Intensity (BEI) calculation, proper submetering is essential. Projects must ensure that energy consumption is accurately tracked through dedicated submeters.

MINIMUM SYSTEMS EFFICIENCY

Air-conditioned Buildings

Minimum Design System Efficiency/Operating System Efficiency (DSE/OSE)

- For buildings using Water Cooled Chilled-Water Plant:

GreenRE Rating	Building Cooling Load (RT)	
	< 500	≥ 500
	Efficiency (kW/RT)	
Bronze	0.85	0.75
Silver	0.80	0.70
Gold	0.75	0.68
Platinum	0.70	0.65

- For buildings using Air Cooled Chilled-Water Plant or Unitary Air-Conditioners:

GreenRE Rating	Building Cooling Load (RT)	
	< 500	≥ 500
	Efficiency (kW/RT)	
Bronze	1.1	1.0
Silver	1.0	1.0
Gold	0.85	Case by case(i)
Platinum	0.78	

For building with building cooling load of more than 500RT, the use of air cooled central chilled water plant or other unitary air-conditioners are not encouraged for Gold and Platinum ratings. In general, the system efficiency of the air cooled central chilled-water plant and other unitary air-conditioners are to be comparable with the stipulated efficiency for water-cooled central chilled-water plant. Buildings that are designed with air cooled systems and seeking Gold / Platinum GreenRE rating will be assessed on a case-by-case basis.

ENERGY EFFICIENCY COMPLIANCE

Projects shall demonstrate the stipulated performance through either option listed below (Gold and Platinum projects with air-conditioning system only):

Option 1: Energy Saving

- To demonstrate the stipulated energy savings over its reference model using an energy modelling framework set out. Details and submission requirements on energy modelling can be found in Appendix A Energy Modelling Guideline.

Type of AC System	Energy Saving Required (%)	
	Gold	Platinum
Centralized Air Conditioning system / Unitary system	25	30

Option 2 – Building Energy Intensity (BEI) Benchmarking

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

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

The building shall demonstrate compliance to the Building Energy Intensity (BEI) stated in the table below through 12-months measured data with a requirement of minimum occupancy of 80% for the period of measurement (projection of energy consumption necessary for lower occupancy based on prescribed BEI formula):

BEI is derived using the following equation:

BEI = [(TBEC – CPEC) / (GFA excluding carpark - GLA x FVR) x (NF/OH)]

Where:

TBEC = Total building energy consumption excluding renewable energy replacement (kWh/year)
CPEC = Car Park Energy Consumption in (kWh/year)
GFA = Gross Floor Area (exclude car park area) (m2)
GLA = Gross Lettable Area (m2)
FVR = Floor Vacancy Rate (NLA) (m2)
NF = Normalizing factor based on a typical weekly operating hour that is 52 Hrs/week [only for office category]
OH = Weighted weekly operating hours (hrs/week) [only for office category]

Note:

- Design BEI is based on 100% occupancy rate for consistency.
- All major active equipment to be included in the estimation of TBEC.
- During verification stage, if the occupancy rate is low, e.g., only 20% occupancy rate, it needs to be projected to 80% to get the BEI which reflects the actual operation situation

Building Type	Bronze (kWh/m²/year)	Silver (kWh/m²/year)	Gold (kWh/m²/year)	Platinum (kWh/m²/year)
Hospital (Private & General)	580	510	375	340
Community Hospitals	360	315	230	210
Polyclinics	230	205	150	135
Nursing / Youth Homes	135	120	90	80

Table 1: Building Energy Intensity (BEI) Benchmarking

Building Type	Bronze (kWh/m²/year)	Silver (kWh/m²/year)	Gold (kWh/m²/year)	Platinum (kWh/m²/year)
Hospital (Private & General)	370	330	245	230
Community Hospitals	230	210	150	140
Polyclinics	150	130	95	90
Nursing / Youth Homes	90	75	55	55

Table 2: Building Energy Intensity (BEI) Benchmarking - District Cooling System (DCS)

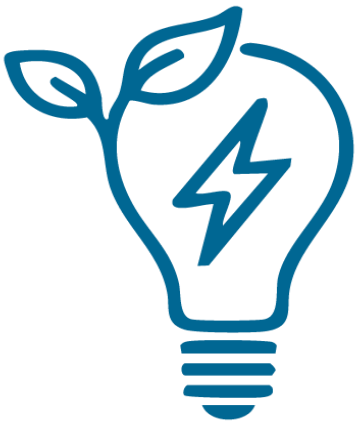
M&V SYSREM REQUIREMENTS (FOR CENTRALIZED AC SYSTEMS ONLY)

Provision of permanent measuring instruments for monitoring of water-cooled chilled-water system and air-cooled chilled water system operating system efficiency. The installed instrumentation shall have the capability to calculate resultant plant operating system efficiency (i.e. kW/RT) within 5% of its true value and in accordance with ASHRAE Guide 22 and AHRI 550/590. Heat balance test for water-cooled chilled water system is required for verification of the accuracy of the Measurement and Verification (M&V) instrumentation.

Part 4 – Indoor Environmental Quality

A formal IAQ management plan must be established and implemented to ensure a healthy indoor environment for all occupants. The policy should outline procedures for maintaining acceptable indoor air quality, including ventilation, pollutant source control, and regular maintenance of HVAC systems. The policy should contain at least the following:

- **Ventilation Management:** Ensure adequate ventilation rates in accordance with recognized standards (e.g., ASHRAE 62.1 or local equivalents) to dilute indoor pollutants and maintain fresh air supply.
- **Pollutant Source Control:** Identify and minimize sources of indoor air contaminants, including volatile organic compounds (VOCs), particulate matter, and biological pollutants. This includes the selection of low-emission materials and proper storage of chemicals.
- **HVAC System Maintenance:** Establish a routine inspection and maintenance schedule for HVAC systems to ensure optimal performance, cleanliness, and efficiency. Filters should be replaced regularly, and air ducts cleaned as needed.
- **Monitoring and Response:** Implement procedures for periodic IAQ monitoring and establish a response procedure for occupant complaints or IAQ-related incidents.
- **Occupant Awareness:** Promote awareness and education among building users regarding IAQ practices, including the importance of reporting issues and maintaining cleanliness.



Part 1

Energy Efficiency

Part 1 – Energy Efficiency

(I) ENERGY RELATED REQUIREMENTS

(A) Applicable to Air-Conditioned Building Area (with an aggregate air-conditioned area ≥ 1000m2)

EHC 1-1 THERMAL PERFORMANCE OF BUILDING ENVELOPE - OTTV	GREENRE CREDITS
Enhance overall thermal performance of building envelope to minimise heat gain thus reducing the overall cooling load requirement. Note: Max. permissible OTTV = 50W/m^2 *Prerequisite Requirement:* *GreenRE Gold - OTTV of 42 W/m^2 or lower* *GreenRE Platinum - OTTV of 40 W/m^2 or lower*	With reference to the maximum permissible OTTV value of 50 W/m^2 as a baseline. Credits scored = 1.2 x [50 - (OTTV)] where OTTV ≤ 50 W/m^2 (Maximum 12 credits)

EHC 1-2 AIR-CONDITIONING SYSTEM	GREENRE CREDITS
Encourage the use of better energy efficient air-conditioning equipment to minimise energy consumption.	
a. Water-Cooled Chilled-Water Plant: • Water-Cooled Chiller • Chilled water pump • Condenser water pump • Cooling tower	a. Water-Cooled Chilled-Water Plant:

Baseline	Peak Building Cooling Load	
	≥ 500 RT	< 500 RT
Prerequisite Requirements Minimum Design System Efficiency (DSE) for central chilled-water plant	0.75 kW/RT	0.75 kW/RT

Peak building cooling load ≥ 500 RT

15 credits for meeting the prescribed chilled-water plant efficiency of 0.75 kW/ton

0.25 credit for every percentage improvement in the chilled-water plant efficiency over the baseline

Credit scored = 0.25 x (% improvement)

Pre-requisite requirements for higher:

GreenRE ratings: GreenRE Gold & Platinum: Minimum Design System (DSE) of 0.65 kW/RT for peak building cooling load ≥ 500 RT and 0.7 kW/RT for peak building cooling load < 500 RT

Peak building cooling load < 500 RT

12 credits for meeting the prescribed chilled-water plant efficiency of 0.85 kW/ton

0.45 credit for every percentage improvement in the chilled-water plant efficiency over the baseline

Credit scored = 0.45 x (% improvement)

(Up to 20 credits can be scored for EHC 1-2(a))

b. Air Cooled Chilled-Water Plant / Unitary Air-Conditioners:

Air cooled Chilled-Water Plant:
- Air-Cooled Chiller
- Chilled Water Pump

Unitary Air-Conditioners:
- Variable Refrigerant Flow (VRF) System
- Single-Split Unit
- Multi-Split Unit

Baseline	Peak Building Cooling Load	
	≥ 500 RT	< 500 RT
Prerequisite Requirements Minimum Design System Efficiency (DSE) for air-cooled chilled-water plant or unitary air-conditioners	1.0 kW/RT	1.1 kW/RT

Note (1): Where there is a combination of central chilled water plant with unitary conditioners, the credits scored will only be based on the air-conditioner system with a larger aggregate capacity.

b. Air Cooled Chilled-Water Plant / Unitary Air-Conditioners:

Peak building cooling load ≥ 500 RT

12 credits for meeting the prescribed air-conditioning system efficiency of 1.0 kW/RT

1.3 credits for every percentage improvement in the air-conditioning system efficiency over the baseline of 1.0 kW/RT

Credit scored = 1.3 x (% improvement)

Peak building cooling load < 500 RT

10 credits for meeting the prescribed air-conditioning system efficiency of 1.1 kW/RT

0.6 credits for every percentage improvement in the air-conditioning system efficiency over the baseline of 1.1 kW/RT

Credit scored = 0.6 x (% improvement)

(Up to 20 credits can be scored for EHC 1-2(b))

c. Air Distribution system:
- Air Handling units (AHUs)
- Fan Coil Units (FCUs)

c. Air Distribution system:

0.2 credits for every percentage improvement in the air distribution system efficiency over the baseline as indicated in the tables for **Option 1** or **Option 2**

Credits scored = 0.2 x (% improvement)

(Up to 6 credits can be scored for EHC 1-2(c))

Option 1 – Fan System Motor Nameplate Power

Baseline Air Distribution System Type	Allowable Fan System Input Power	
	(kW/m³/s)	(W/CMH)
AHUs / FCUs ≥ 4kW (Constant Volume)	1.7	0.47
AHUs ≥ 4kW (Variable Volume)	2.4	0.67
Fan systems with nameplate motor power < 4kW	No baseline	

Option 2 – Fan System Motor Nameplate Power

Baseline Air Distribution System Type	Allowable Fan System Input Power	
	(kW/m³/s)	(W/CMH)
AHUs / FCUs ≥ 4kW (Constant Volume)	1.5	0.42
AHUs ≥ 4kW (Variable Volume)	2.1	0.58
Fan systems with nameplate motor power < 4kW	0.6	0.17

Applicable pressure drop adjustments can be considered based on ASHRAE 90.1 Table 6.5.3.1B and are subject to GreenRE' s evaluation

Note: For buildings with cooling provision from a licensed District Cooling System (DCS) supplier where the plant efficiency data is not available, the credits scored for EHC 1-2 (a) and (b) will be prorated based on the air distribution system efficiency under EHC 1-2 (c).

d. Pre-requisite requirements: Provision of permanent measuring instruments for monitoring of water-cooled chilled water plant and air-cooled chilled water plant efficiency. The installed instrumentation shall have the capability to calculate resultant plant efficiency (i.e. kW/RT) within 5% of its true value and in accordance with ASHRAE Guide 22 and AHRI 550/590. Compliance of the following instrumentation and installation is also required. • Location and installation of the measuring devices to meet the manufacturer's and engineer's recommendation. • Data acquisition system to have a minimum resolution of 16 bit. • All data logging capable of trending at a sampling interval of 1 min. • Flow meters are to be provided for chilled-water and condenser water loop and shall be of ultrasonic/full bore magnetic type or equivalent. • Temperature sensors are to be provided for chilled water and condenser water loop and shall have an end-to-end measurement uncertainty not exceeding ±0.05°C over the entire measurement or calibration range. All thermo-wells shall be installed in a manner that ensures that the sensors can be in direct contact with fluid flow. Provisions shall be made for each temperature measurement location to have two spare thermo- wells located at both sides of the temperature sensor for verification of reading accuracy. • Dedicated power meters are to be provided for each of the following groups of equipment: chillers, chilled water pumps, condenser water pumps and cooling towers.	2 credits Applicable only to buildings with provision of water-cooled chilled water plants
e. Verification of central water-cooled chilled-water pump instrumentation. For heat balance, substantiating test for water-cooled chilled-water pump is to be computed in accordance with AHRI 550/590	1 credit
f. Provision of variable speed controls for chiller plant equipment such as chilled-water pumps and cooling tower fans to ensure better part-load plant efficiency.	1 credit

g. Sensors or similar automatic control devices are used to regulate outdoor air flow rate to maintain the concentration of CO2. Indoor CO2 acceptable range ≤ 700ppm above outdoor concentration.	1 credit
SUB-TOTAL (A): EHC 1-1 to 1-2	Sum of GreenRE credits obtained from EHC 1-1 to EHC 1-2

(B) Applicable to non-air-conditioned building areas (with aggregate non-air-conditioned areas ≥10%of total floor area excluding carparks and common areas)

EHC 1-3 BUILDING ENVELOPE – DESIGN/THERMAL PARAMETERS	GREENRE CREDITS
Enhance the overall thermal performance of building envelope to minimize heat gain that will improve indoor thermal comfort and encourage the use of natural or mechanical ventilation. a. Minimum direct west facing façade through building design orientation. Note: Orientation of façade that falls within the range of 22.5°N of W and 22.5°S of W will be defined as west facing façade. Core walls for lifts or staircases and toilets that are located within this range are exempted in computation.	Credits scored = 15 – 0.3 x (% of west facing façade areas over total façade areas) (Up to 15 credits for EHC 1-3 (a)) Where there is no west facing façade, the total credits scored for (a) will be 30 credits and the following (b) to (d) will not be applicable for scoring.
b. i. Minimum west facing window openings.	Credits scored = 10 – 0.1 x (% of west facing window areas over total west facing facade areas)
ii. Effective sun shading provision for windows on the west façade with minimum shading of 30%.	Credits scored = 0.1 x (% of west facing window areas with sun shading devices over total west facing façade areas) (Up to 10 credits for EHC 1-3 (b))
c. Better thermal transmittance (U-value) of external west facing walls, which should be equal or less than 2 W/m^{2}K.	Credits scored = 0.05 x (% of the external west facing wall areas with U-value of 2 W/m2K or less over total west facing façade areas) (Up to 5 credits for EHC 1-3 (c))
d. Better thermal transmittance (U-value) of roof Baseline: U-value for roof as stated below, which depends on the weight range of roof structure. Exception: For existing buildings EHC 1-3 (a) may be excluded in computation, the total score obtained under EHC 1-3 (b), (c) and (d) will be prorated accordingly.	Credits scored = 1 credit for every 0.1 W/m2K reduction from baseline roof U-value (Up to 5 credits for EHC 1-3 (d))

Roof Weight Group (kg/m^2)	Maximum U-value (W/m2K)
Light (Under 50)	0.4
Heavy (Over 50)	0.6

EHC 1-4 NATURAL VENTILATION	GREENRE CREDITS
a. Natural Ventilation – prescriptive approach i. In **Occupied Spaces** where building design facilitates *optimum* natural ventilation through proper design of building layout that utilizes prevailing wind conditions to achieve adequate cross ventilation; ii. In Transient Spaces such as: - • lift lobbies and atrium • toilets iii. In Circulation Areas such as: • Staircases (including BOMBA staircase) and corridors where reverse airflow in transient and circulation areas is unlikely to affect the immediate adjacent rooms or department with controlled ventilation.	1 credit for every 10% of NV areas with window openings facing north and south directions and cross ventilation Credits scored = 1 x (% units/10) (Up to 5 credits) 1.5 credits for each area in (ii) and (iii) (Up to 5 credits for (ii) and (iii)) Extent of coverage: at least 90% of each applicable area
b. Natural Ventilation – performance approach i. Use of CFD modelling or wind tunnel testing to optimize the effective building layout that maximizes natural ventilation in the occupied spaces *Pre-requisite requirement for GreenRE Platinum ratings*	5 credits
ii. In conjunction with Wind-driven rain (WDR) simulation that minimizes that impact of wind-driven rain into naturally-ventilated occupied spaces.	5 credits
SUB-TOTAL (B): EHC 1-3 to 1-4	Sum of GreenRE credits obtained from EHC 1-3 to EHC 1-4

(C) GENERAL

EHC 1-5 ELECTRICAL SERVICES	GREENRE CREDITS
Encourage the provision of better energy efficient service transformers, UPS and related controls of energy monitoring	
a. Energy Use and Sub-metering Promote energy use monitoring with sub-metering to facilitate building operations, and to allow engagement of building occupants. i. Separately meter either • Substantial energy uses such as space cooling, domestic hot water, ventilation, lighting and plug loads **OR** • High energy load and tenancy areas such as OT, Radiography, Pathology, Dialysis, Medical Physics, Mortuary, CSSD, Pharmacy, Labs, Data Centers, IT Closet and Process areas (e.g. kitchen, laundries) ii. And link all energy sub-meters to BMS, EMS or other automated system	2 credits
b. Provision of low-loss service transformers Efficiency of service transformers to meet the requirements of MS1525.	2 credits

c. Provision of energy-efficient UPS (uninterrupted power supply)

All UPS operating in the following systems must meet the minimum efficiency: -

i. Double conversion on-line mode

	UPS Range (kVA)				
	≥5 to <10	10 to <20	20 - <40	40 - <200	≥200
25% load	82.5%	86.5%	87.5%	89.0%	90.0%
50% load	85.0%	91.0%	91.5%	92.0%	92.5%
75% load	87.0%	92.0%	92.5%	93.0%	93.5%
100% load	87.0%	92.0%	92.5%	93.0%	93.5%

ii. Line interactive or ECO mode

	UPS Range (kVA)				
	≥5 to <10	10 to <20	20 - <40	40 - <200	≥200
25% load	85.5%	90.0%	91.0%	91.5%	93.0%
50% load	91.5%	93.0%	93.5%	94.0%	95.5%
75% load	92.5%	93.5%	94.0%	94.5%	96.0%
100% load	92.5%	93.5%	94.0%	94.5%	96.0%

iii. Stand-by mode

	UPS Range (kVA)				
	≥5 to <10	10 to <20	20 - <40	40 - <200	≥200
25% load	90.0%	94.0%	94.5%	95.0%	95.5%
50% load	93.0%	96.0%	96.5%	97.0%	97.5%
75% load	94.0%	96.5%	97.0%	97.5%	98.0%
100% load	94.0%	96.5%	97.0%	97.5%	98.0%

The credits awarded will be based on the aggregated kVA meeting the minimum efficiency as a proportion to the total installed kVA for UPS rated ≥ 5 kVA

(Up to 3 credits for EHC 1-5 (c))

EHC 1-6 ARTIFICIAL LIGHTING	GREENRE CREDITS
Encourage the use of energy efficient lighting to minimise energy consumption from lighting usage while maintaining proper lighting level.	With reference to the maximum lighting power budget (LPB) stated in MS1525:2019 as a baseline: Credits scored = 0.25 x (% improvement) *To be pro-rated based on areas – excluding tenant areas if lighting not provided. (Up to 12 credits pro-rated by area)

EHC 1-7 VENTILATION IN CARPARKS	GREENRE CREDITS
Encourage the use energy efficient design and control of ventilation systems on carparks.	
a. Carparks are designed with natural ventilation	4 credits
b. CO Sensors are used to regulate the demand for mechanical ventilation (MV)	
• Fume extract	2.5 credits
• MV with or without supply	2 credits Note: Where there is a combination of different ventilation modes adopted for carpark design, the credits obtained under EHC 1-7 will be prorated accordingly (Up to 4 credits for EHC 1-7)

EHC 1-8 LIFTS AND ESCALATORS	GREENRE CREDITS
	Extent of Coverage: All lifts and/or escalators
a. Encourage the use of lift with energy efficient features such as sleep mode or regenerative features and motorless lift.	1 credit
b. Escalators with energy efficient features such as motion sensors.	1 credit

EHC 1-9 ENERGY EFFICIENT PRACTICES & FEATURES	GREENRE CREDITS
Encourage the use of energy efficient practices and features which are innovative and/or have positive environmental impact	
a. Computation of energy consumption based on design load in the form of Building Energy Intensity (BEI).	1 credit
b. Use of energy efficiency product that are certified by approved local certification body	0.5 credit for each equipment type (Up to 2 credits)
c. Use of energy efficient features Example: • Re-generative lift • Heat recovery devices • Motion sensors • Sun pipes • Light shelves • Photocell sensors to maximise the use of daylight • Heat pumps	2 credits for every 1% energy saving over the total building energy consumption (Up to 9 credits)

EHC 1-10 ENERGY POLICY AND MANAGEMENT	GREENRE CREDITS
a. Energy policy, energy targets, and regular review with top management's commitment as part of an environmental strategy.	0.5 credit
b. To show intent, measures and implementation strategies of energy efficiency improvement plans to achieve energy target set over the next three years. Committed energy savings accrued from proposed measures should be quantified.	0.5 credit

EHC 1-11 RENEWABLE ENERGY	GREENRE CREDITS
Encourage the application of renewable energy sources in buildings	5 credits for every 1% replacement of electricity (based on total electricity consumption) by renewable energy OR 3 credits for every 10% of roof area used for solar panels. OR 1 credit for the solar ready roof. Note: The credit scored for renewable energy provision shall not result in a double grade jump in GreenRE rating (i.e. from GreenRE Bronze or Silver to Gold or Platinum) (Up to 20 credits)
Sub-total (C): EHC 1-5 to 1-11	Sum of GreenRE credits obtained from EHC 1-5 to EHC 1-11
PART 1 – ENERGY EFFICIENCY CATEGORY SCORE: Subtotal (A) x $\frac{\text{Air-conditioned Floor Area}}{\text{Total Floor Area}}$ + Subtotal (B) x $\frac{\text{Non Air-conditioned Floor Area}}{\text{Total Floor Area}}$ + Subtotal (C)	Sum of GreenRE credits obtained from EHC 1-1 to 1-11

Part 2

Water Efficiency

Part 2 – Water Efficiency

(II) OTHER GREEN REQUIREMENTS

EHC 2-1 WATER EFFICIENCY FITTINGS	GREENRE CREDITS
Encourage the use of water efficient fittings that are certified under the Water Efficiency Products Labelling Scheme (WEPLS). a. Basin taps and mixers b. Flushing cistern c. Shower taps and mixers or showerheads d. Sink/bib taps and mixers e. Urinals and urinal flush valve	Credits can be scored based on the number and water efficiency rating of the fitting type used. (Up to 6 credits)

Weightage Based on Wa Labelling Sche	
Efficient*	Eff
2 credits	**4**

EHC 2-2 WATER USAGE AND LEAK DETECTION	GREENRE CREDITS
Promote the use of sub-metering and leak detection system for better control and monitoring	
a. To monitor the water consumption on monthly basis.	1 credit
b. Provision of sub-meters for major water uses (e.g., cooling tower, water features, irrigation, swimming pools, tenants' usage, and the non portable water replacement system).	1 credit
c. Provision of automated / smart metering for monitoring and leaking detection.	2 credits

EHC 2-3 IRRIGATION SYSTEM AND LANDSCAPING	GREENRE CREDITS
Provide suitable systems that utilise rainwater or recycled water and use of plants that require minimal irrigation to reduce potable water consumption.	
a. Use of non-potable water including rainwater for landscape irrigation with provision of submetering for monitoring during the operation.	1 credit
b. Use of water efficient irrigation system with rain sensor.	1 credit Extent of Coverage: At least 50% of the landscape areas are served by the system
c. Use of drought tolerant plants that require minimal irrigation.	1 credit Extent of Coverage: At least 50% of the landscape areas

EHC 2-4 WATER EFFICIENCY IMPROVEMENT PLANS	GREENRE CREDITS
Targets to improve building water performance against own building water performance baseline 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.	1 credit
PART 2 – WATER EFFICIENCY CATEGORY SCORE:	Sum of GreenRE credits obtained from EHC 2-1 to EHC 2-4

Part 3

Environmental Protection

Part 3 – Environmental Protection

EHC 3-1 BUILDING OPERATION & MAINTENANCE	GREENRE CREDITS
a. The environmental policy that reflects the sustainability goals set.	1 credit
b. Provision of a Building User Guide	1 credit
c. In-house building management team comprises one certified GreenRE Accredited Professional (GREAP) / Green Mark Manager	1 credit
d. Project team comprises one certified GreenRE Accredited Professional (GREAP) / Green Mark Manager	1 credit
e. The environmental management system of the building is ISO 14000 or ISO 50001 certified	1 credit

EHC 3-2 SUSTAINABLE PRODUCTS	GREENRE CREDITS
Encourage the use of products that are environmentally friendly and sustainable as follow: • Eco Label products • Wood products certified by the Forest Stewardship council (FSC) or the Malaysia Certification Council (MTCC) • Agreement of the manufacturer or suppliers for the buyback programmes within the life cycle or at the end of materials life for recycling reuse purpose *Prerequisite Requirement:* *Minimum score under EHC 3-2:* *GreenRE Gold ≥ 3 credits* *GreenRE Platinum ≥ 5 credits*	Credits scored will be based on the extent of use of environmentally friendly product. (Up to 6 credits)

Extent of use of environmentally friendl product
Low Impact
Medium impact
High Impact

EHC 3-3 AIRBORNE CONTAMINANT PREVENTION	GREENRE CREDITS
Prevent air-borne contaminant releases and NOx emissions from fuel burning processes. The emission limits of Carbon Monoxide (CO), Oxides of Nitrogen (NOx) and Particulate Matters (PM) from fuel burning process shall comply with environmental requirements of NREA. In addition,	
a. Generator sets powered by engines up to 560kWm to meet hot water service demand shall meet emission levels as below:	2 credits

Genset Power (kWm)	Oxides of Nitrogen (NOx) (g/kWhr)	Hydrocarbon (HC) (g/kWhr)	Carbon Monoxide (CO) (g/kWhr)
18-36	8.0	1.5	5.5
37-55	7.0	1.3	5.0
56-74	7.0	1.3	5.0
75-129	6.0	1.0	5.0
130-560	6.0	1.0	3.5

OR

b. Generator sets powered by engines up to 560kWm to meet hot water service demand shall meet emission levels as below: -

Genset Power (kWm)	Oxides of Nitrogen (NOx) (g/kWhr)	Hydrocarbon (HC) (g/kWhr)	Carbon Monoxide (CO) (g/kWhr)
18-36	7.5		5.5
37-55	4.7		5.0
56-74	4.7		5.0
75-129	4.0		5.0
130-560	4.0		3.5

3 credits

(Up to 3 credits for EHC 3-3)

Note:

For generator sets ≥750kWm, it shall be installed, operated and maintained in calibration a NOx Continuous Emission System (CEMS) with data gathering and retrieval capability

<table>
<tr><th>EHC 3-4 GREENERY PROVISION AND HEALING ENVIRONMENT</th><th>GREENRE CREDITS</th></tr>
<tr><td>Encourage greater use of greenery, restoration of trees to reduce heat island effect, as well as provide places of respite.</td><td></td></tr>
<tr><td>a. Green Plot Ratio (GnPR) is calculated by considering the 3D volume covered by plants using the prescribed Leaf Area Index (LAI).</td><td><table><tr><th>GnPR</th><th>Credits Allocation</th></tr><tr><td>1.0 to < 3.0</td><td>1 credit</td></tr><tr><td>≥3.0</td><td>3 credits</td></tr></table></td></tr>
<tr><td>b. Provision of outdoor places of respite as follows:
i. Healing gardens / Meditative gardens / Restorative, Rehabilitative and Enabling gardens serving at least one floor of patient ward
OR
ii. Green roof and roof top gardens
• for more than 50% of the roof areas (1 credit)
• for at least 25% of the roof areas (0.5 credit)</td><td>1 credit</td></tr>
<tr><td>iii. Staff gardens with sitting areas / a quiet green space with benches</td><td>0.5 credit</td></tr>
<tr><td>iv. Space for programs such as horticultural therapy, group, and physical therapy</td><td>0.5 credit</td></tr>
<tr><th>EHC 3-5 POST OCCUPANCY EVALUATION</th><th>GREENRE CREDITS</th></tr>
<tr><td>a. Conduct post occupancy survey for occupant's satisfaction on energy and environmental performance.
Required number of people surveyed shall be:
• 10% of total occupancy and up to 100 maximums
• Minimum 5 people shall be surveyed if total occupancy is less than 50</td><td>2 credits</td></tr>
</table>

b. List of corrective actions taken following the post occupancy evaluation, if any.	1 credit
EHC 3-6 WASTE MANAGEMENT	**GREENRE CREDITS**
a. Provision of facilities or recycling bins for collection and storage of different recyclable waste such as paper, glass, plastic, food waste, etc.	2 credits
b. Promote and encourage waste minimization and recycling among occupants, tenants, and visitors through various avenues.	2 credits
c. Provide the proper storage area for the recyclable waste.	1 credit
d. To quantify and monitor the recycling programme for continuous improvement.	2 credits
EHC 3-7 GREEN TRANSPORT	**GREENRE CREDITS**
Promote environmentally friendly transport options and facilities to reduce pollution from individual car use.	
a. Good access (< 800m walking distance) to public transport networks such as MRT/LRT/BRT stations or bus stops.	1 credit
b. Provision of infrastructure for electric charging stations to at least 10% of available parking spaces.	1 credit

c. Provision of hybrid / electric vehicle charging stations and priority parking lots within the development.	1 credit Extent of coverage: Minimum 1 number priority parking bays for every 100 carpark lots. EV charges – 1 for every 200 parking bays (Cap at 3)
d. Provision of covered / sheltered bicycles parking lots (i.e. with rack / bar) and adequate shower and changing facilities.	1 credit Extent of Coverage: Minimum 10 number and maximum 50 numbers of bicycle parking lots
PART 3 – ENVIRONMENTAL PROTECTION CATEGORY SCORE:	Sum of GreenRE credits obtained from EHC 3-1 to EHC 3-7:

Part 4

Indoor Environmental Quality

Part 4 – Indoor Environmental Quality

EHC 4-1 THERMAL COMFORT AND CONTROL FOR A/C SPACES	GREENRE CREDITS
Air-conditioning system is designed to ensure consistent indoor thermal comfort such that	
a. Public areas The indoor operative temperature should be maintained between 23°C to 26°C, with relative humidity between 50 – 70%.	0.5 credit
b. Patient and General Clinical Areas The indoor operative temperature should be maintained at 23+2°C, with relative humidity <65% or in accordance with ASHRAE guidelines.	0.5 credit
c. Clinical areas with Specialized Ventilation Systems The indoor operative temperature and relative humidity should be maintained according to HTM 03-01, Appendix 2 / Ministry of Health Malaysia (MOH) guidelines whichever is more stringent or equivalent international healthcare standards.	0.5 credit
d. Operating Theatre and Surgery The indoor operative temperature should be maintained between 18°C to 24°C with relative humidity ranging from 50% to 60% or according to HTM 03-01 Appendix 2. / Ministry of Health Malaysia (MOH) guidelines whichever is more stringent.	0.5 credit
Control of indoor thermal environment by re-heating the air is achieved by means of site-recovered energy (including condenser heat) or site solar energy *Pre-requisite requirement for GreenRE Platinum ratings*	1 credit

EHC 4-2 THERMAL COMFORT FOR N/V SPACES	GREENRE CREDITS
Mixed-mode or assisted form of natural ventilation to achieve thermal comfort for naturally ventilated occupied spaces, while maximizing natural ventilation effects.	
a. Conduct post-occupancy thermal comfort survey six months after operation	1 credit
b. Implement corrective measures to improve thermal comfort of staff and patients following the post-occupancy survey.	1 credit

EHC 4-3 NOISE LEVEL	GREENRE CREDITS
Occupied spaces in healthcare facilities are designed to meet the acoustic performance of the appropriate standards a. <u>Public Spaces</u> • 55dB (6am – 10pm) L_{Aeq} • 45dB (10pm – 6am) L_{Aeq} **AND** b. <u>Patient Wards and Clinical Areas</u> • The values of noise intrusion from external sources do not exceed thresholds set out in HTM 08-01, Table 1 / Ministry of Health Malaysia (MOH) guidelines whichever is more stringent. • The values for internal noise from mechanical and electrical services do not exceed thresholds set out in HTM 08-01, Table 2 / Ministry of Health Malaysia (MOH) guidelines whichever is more stringent. • The sounds levels and impact noise within noise-sensitive rooms meet the specified requirement set out in HTM 08- 01 / Ministry of Health Malaysia (MOH) guidelines whichever is more stringent.	1 credit for compliance with both (a) and (b)

EHC 4-4 INDOOR AIR POLLUTANTS	GREENRE CREDITS
Minimize airborne contaminants, mainly from inside sources to promote a healthy indoor environment.	
a. Use of (a) low volatile organic compounds (VOCs) paints, primers, varnishes, and coating materials and (b) environmentally friendly adhesives certified by approved local certification	1 credit
b. Use of low-emission flooring materials, carpets, wall panels, and large surface products certified by approved local certification bodies	1 credit

EHC 4-5 INDOOR AIR QUALITY	GREENRE CREDITS
Indoor mechanically-ventilated spaces are designed to achieve good indoor air quality performance to ensure comfort and well-being of the staff and patients.	
a. Provision of filtration media and pressure monitoring and/or fault-indicator alarms in Air Handling Units (AHUs) for:	
• Public areas at least MERV 13 filters.	0.5 credit
• Patient and General Clinical Areas according to HTM 03-01, Clause 4.130, 4.131 and 4.145	0.5 credit
• Clinical areas with specialized ventilation systems to be fitted with HEPA filters, which include Operating Theatre, Airborne Infection Isolation Rooms, Intensive Care Units (ICU), High Dependency Units (HDU), Pharmacy and Central Sterile and Supply Department (CSSD)	0.5 credit
b. Maintaining pressure differentials between various zones within the building to minimize unwanted movement of contaminants between zones such as through	

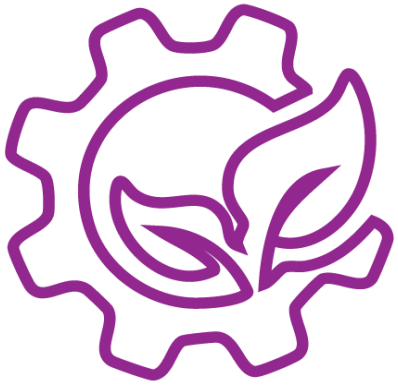
• provision of Airflow Control Devices for clinical areas that require maintaining pressure differences with adjacent areas and interfacing the airflow control with Facility's BMS for control and monitoring	1 credit
• the building envelope is designed to minimize the introduction of pollutants due to air leakage in accordance with MS 1525:2019.	0.5 credit
c. Provision of Infection Control Measures in ventilation systems and interior contact surfaces such as: • install Ultraviolet Germicidal Irradiation (UVGI) in AHUs • apply germicidal coating in ventilation systems and interior contact surfaces or • apply self-cleaning Titanium Dioxide for interior contact surfaces	1 credit
d. Conduct IAQ audit for air-conditioned occupied spaces where the minimum sampling points shall follow DOSH Industry Code of Practice on Indoor Air Quality 2010 for: • A minimum of 10 rooms, including patient ward and all waiting and sub-waiting areas shall be selected for air sampling for each air system. • Additional sampling shall be conducted from clinical areas with specialized ventilation systems and operating theatres and surgery. • The tests shall be carried out by an accredited laboratory for procedures related to the analysis of indoor air quality parameters under DOSH requirements and certified by a competent person as stated in the Industry Code of Practice on Indoor Air Quality 2010. • Carry out half-yearly IAQ audit and monitoring using portable IAQ monitoring equipment which is capable of measuring temperature, RH, CO, CO2, particles, TVOC, O3, and 40 parameters pertaining to identification of molds and pollen.	2 credits for compliance with EHC 4-5 (d) (i, ii, iii, iv)

e. Implement effective IAQ management plan to ensure that building ventilation systems are clean and free from residuals left over from construction activities. Internal surface condition testing for ACMV systems is to be included.	1 credit

EHC 4-6 HIGH FREQUENCY BALLASTS & PBT-REDUCED LAMPS	GREENRE CREDITS
Careful selection of lamps to reduce flickering and minimize persistent bio-cumulative toxins to ensure staffs and patients' health and well-being.	
a. Use of high frequency ballasts in the fluorescent luminaires and/or low flicker LED drivers to at least 90% of all applicable areas.	1 credit
b. Use of PBT-reduced or free luminaires in at least 90% of all applicable areas *Pre-requisite requirements for GreenRE Platinum rating.*	1 credit

EHC 4-7 DAYLIGHTING AND GLARE	GREENRE CREDITS
Encourage design that optimizes the use of effective daylighting to reduce energy use for artificial lighting in occupied spaces. Use of daylighting and glare simulation analysis to verify the adequacy of ambient lighting levels in meeting the luminance and acceptable glare levels specified in MS 1525:2019.	Credits scored based on the extent of perimeter daylight zones: **Distance from Façade Perimeters (m) / Credits allocation** ≥ 3.0 — 1 4.0 – 5.0 — 2 > 5.0 — 3 Extent of coverage: At least 50% of occupied spaces (excluding specialized zones such as OT, radiography rooms, mortuary etc.) with daylighting provisions meeting the illuminance level and are within the acceptable glare exposure levels calculated / simulated using the Unified Glare Probability (UGP) formula. Glare control measures to be implemented where necessary. (up to 3 credits)

EHC 4-8 VIEW OUT & ACCESS TO INDOOR PLACES OF RESPITE	GREENRE CREDITS
Introduce connections to the outdoors through views out into regularly occupied areas. Provision of indoor places of respite such as:	
a. <u>Internal courtyard</u> • Interior atria and greenhouse gardens • Wide corridors that offer seating with views of nature. • Places to pause with seating adjacent to destination • Display areas of flora and fauna	1 credit
b. <u>Interaction and recreation areas</u> • Family consultation spaces with views • Meditation spaces, religious or grieving rooms • Resource areas and libraries with seating • Exercise and therapy spaces	1 credit
PART 4 – INDOOR ENVIRONMENTAL QUALITY CATEGORY SCORE:	Sum of GreenRE credits obtained from EHC 4-1 to EHC 4-8



Part 5

Sustainable Practices and Green Innovation

Part 5 – Sustainable Practices and Green Innovation

EHC 5-1 ENVIRONMENTAL MANAGEMENT PRACTICE	GREENRE CREDITS
Encourage the adoption of environmentally friendly practices during construction and building operation.	
a. Implement effective environmentally friendly programmes including monitoring and setting targets to minimize energy use, water use, and construction waste during construction.	1 credit
b. Main builder has good track record in the adoption of sustainable, environmentally friendly, and considerate practices during construction.	1 credit
c. Building quality is assessed under the Quality Assessment System in Construction (QLASSIC) or Construction Quality Assessment System (CONQUAS).	1 credit
d. To performs IBS content scoring based on CIDB IBS scoring scheme.	1 credit
e. Developer, main builder, M&E consultant and architect are ISO 14000 certified.	0.25 credit for each firm (Up to 1 credit)
f. Project team comprises one Certified GreenRE Accredited Professional (GREAP)/Green Mark Manager (GM)	1 credit for certified GREAP/GMM
g. Provision of facilities or recycling bins for collection and storage of different recyclable waste such as paper, glass, plastic etc.	0.5 credit
h. Energy policy, energy targets and regular review with top management's commitment as part of an environmental strategy	0.5 credit

Commented [MA1]: Repeated in 3-1

Commented [MA2]: Repeated in 3-6

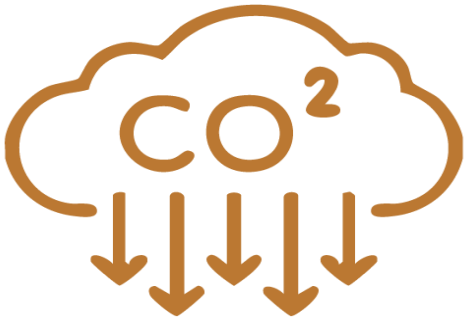
Commented [MA3]: Repeated in 1-10

i. Targets to improve building water performance against own building water performance baseline 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.	0.5 credit
j. Green procurement policy – Adoption of sustainable and environmental-friendly procurement and purchasing policy in the operation and maintenance of the building.	0.5 credit

Commented [MA4]: Repeated in 2-4

EHC 5-2 CONSERVATION OF EXISTING STRUCTURES AND ADOPTION OF DEMOLITION PROTOCOL	GREENRE CREDITS
Encourage conservation of existing building structures and adoption of demolition protocol to maximize resource recovery.	
a. Conservation of existing building structure or building envelopes (by area)	
• conserving >50% of the existing structure or building envelope	2 credit
• conserving at least 25% of the existing structure or building envelope	1 credit (Up to 2 credits for (a))
b. Adoption of demolition protocol to maximize resource recovery of demolition materials for reuse or recycling	
• recovery rate of >35% crushed concrete waste to be sent to the approved recyclers with proper facilities	2 credit
• recovery rate of at least 20% crushed concrete waste to be sent to the approved recyclers with proper facilities.	1 credit (Up to 2 credits for (b))

EHC 5-3 OTHER GREEN PRACTICES AND INNOVATIVE FEATURES	GREENRE CREDITS
Encourage the use of green features which are innovative and have positive environmental impact. Examples: • Pneumatic waste collection system • Dual chute system • Self-cleaning façade system • Infiltration trenches • Integrated storm water retention/treatment into landscaping • Etc.	0.5 credits for each item in the green and innovative features (up to 3 credits for EHC 5-3)
PART 5 – OTHER GREEN FEATURES CATEGORY SCORE:	Sum of GreenRE credits obtained from EHC 5-1 to EHC 5-3



Part 6

Carbon Emission of Development

Part 6 – Carbon Emission of Development

EHC 6-1 CARBON FOOTPRINT OF DEVELOPMENT	GREENRE CREDITS
a. Recognise the carbon emission based on operational carbon footprint computation of the building comprising energy [B6] and water consumption [B7].	1 credit
b. Calculation of product stage embodied carbon based on following building materials [A1-A3]: • concrete • steel • bricks • cement • metal / aluminium	1 credit
Part 6 – CARBON EMISSION OF DEVELOPMENT CATEGORY SCORE:	Sum of GreenRE credits obtained from EHC 6-1

GreenRE Score (Existing Healthcare Facilities)

GreenRE Score (Existing Healthcare Facilities) = ∑Category score [(Part 1-Energy Efficiency) +
(Part 2-Water Efficiency) +
(Part 3-Environmental Protection) +
(Part 4-Indoor Environmental Quality) +
(Part 5-Sustainable Practices and Green Innovation) +
(Part 6-Carbon Emission of Development)]

Where:

Category Score for Part 1≥ 30 credits and
∑Category score for Part 2, 3, 4, 5 & 6 ≥ 20 credits