MINISTRY OF DEVELOPMENT

Guidelines for BAGUS Certification for Green Buildings

2025

Prepared by:

Table of Contents

1.0. BAGUS Introduction

1.1 *What is BAGUS?*

BAGUS (Brunei Accredited Green Unified Seal) is a rating tool and certification scheme for Brunei Darussalam that can assess the sustainability of buildings. It evaluates buildings based on their environmental performance, focusing on energy efficiency, water conservation, indoor environmental quality, and the sustainable use of resources. Buildings that meet the BAGUS criteria are recognized for their sustainability efforts through 4 different levels of the BAGUS certification, from BAGUS Certified (lowest level), BAGUS Silver, BAGUS Gold to BAGUS Platinum (highest level). Use of this certification will help Brunei Darussalam reduce its carbon footprint and improve the quality of living in buildings while promoting environmentally responsible design and construction.

1.2 *Who can use BAGUS?*

Developers/clients through their architect and professional engineers are encouraged to use BAGUS to ensure their buildings are developed taking sustainability and green building practices into consideration.

1.3 *Why should you use BAGUS?*

BAGUS Certification is a local green building rating tool that can be used to assess and certify the overall environmental performance of buildings. BAGUS-Certified buildings will be able to create Market Differentiation as achieving a BAGUS-rated building may enhance marketability by demonstrating environmental responsibility, appealing to eco-conscious tenants and investors. There is potential Cost Savings in the long term as sustainable buildings typically lead to reduced operational costs through energy efficiency, water savings, and lower maintenance needs.

BAGUS also takes into consideration local building standards and requirements. It also complies with the objectives and performance requirements for Energy Efficiency under the Fifth Schedule of the Building Control Regulations whereby a building shall be designed and constructed with energy conservation measures to reduce —

(a) solar heat gain through the roof;
(b) solar heat gain through the building envelope;
(c) air leakage through doors, windows and other openings on the building envelope;
(d) energy consumption of lighting, air-conditioning and mechanical ventilation systems; and
(e) energy wastage through adequate provisions of switching means.

For developers/clients, incentives such as higher plot ratios may be given by the Department of Town and Country Planning (DTCP) under the Ministry of Development (MOD) depending on the targeted rating. For further details on incentives, developers/clients may refer directly to DTCP.

1.4 *When can BAGUS be used?*

The BAGUS criteria requirements should be taken into consideration at key stages throughout a building project to maximize its effectiveness. Early adoption of BAGUS during the *Planning and Design* phase helps set clear sustainability goals and ensures that the building's design incorporates the criteria from the outset.

Using BAGUS during the *Pre-Construction* phase also allows for careful selection of green materials, equipment, and builders/contractors who are experienced in sustainable building practices.

One aspect of BAGUS includes the *Construction* phase which can ensure that sustainable practices are implemented correctly.

The *Post-Construction* phase is also essential to determine that the building has met the criteria set at the beginning of the project, and for preparing the building for BAGUS certification. Data collected for 12 months post-completion will verify that the building operation is as per targeted rating.

1.5 *Where can BAGUS be used?*

As of 2025, the BAGUS Certification can be obtained for New Non-Residential buildings (e.g. commercial including offices and retails, industrial and educational facilities) only. Both private and Government building may obtain BAGUS Certification depending on their overall score.

Criteria assessments for i) New Residential buildings; ii) Existing Non-Residential buildings and iii) Existing Residential buildings will be developed in due course and may obtain BAGUS Certification then.

1.6 *How to obtain BAGUS?*

To obtain the BAGUS Certification, the developer/client must first appoint a 'BAGUS Facilitator' as part of their project team to advise on the green requirements.

A 'BAGUS Facilitator' is someone who demonstrates knowledge of the BAGUS green building rating criteria, and will be able to provide guidance to clients/developers. The BAGUS criteria will be used by the appointed BAGUS Facilitator to design, assess and verify the overall environmental performance of a building from design stage up to building operation.

The role of a BAGUS Facilitator is to demonstrate knowledge of the BAGUS green building rating criteria as well as being able to provide guidance to Client or Developer as well as other appointed professional consultants in meeting the desired green building requirements towards obtaining a BAGUS Certification.

For information, the minimum requirements to register as a BAGUS Facilitator are as follows:-

1. Professional / Highest Qualification

a. Registered Member under the Board of Architects, Professional Engineers and Quantity Surveyors (BAPEQS) OR,
b. Bachelor's Degree or equivalent in the field of Architecture / Engineering / Quantity Surveying or a related field OR
c. Higher National Diploma (HND) or equivalent in the field of Architecture / Engineering / Quantity Surveying or a related field.

AND

2. Green Building Course Certification

Have undergone a green course completion certificate organised by an organisation recognised by the World Green Building Council. Ref. 202 4/CTI/01 The BAGUS Facilitator Form can be downloaded from the ABCi website at https://www.abci.gov.bn under the tabs Info Industri > Borang Permohonan > Borang Permohonan Fasilitator Brunei Accredited Green Unified Seal 'BAGUS'. The completed form and required documents are to be submitted via e-mail to ids.abci@mod.gov.bn with subject title 'Permohonan Fasilitator BAGUS – Nama Penuh'.

Fees for the registration of BAGUS Facilitator are as follows:-

BAGUS Facilitator Fees	
Type of Process	**Processing Fee ($)**
New Application	$50.00
Renewal Application	$50.00
Issuance of Certification	$25.00
Change of Information	$25.00

The appointed 'BAGUS Facilitator' will submit an application for BAGUS Certification registration along with their intended target rating. There are 3 main stages in obtaining BAGUS certification as follows:-

STAGE 1 APPLICATION & REGISTRATION
STAGE 2 DESIGN ASSESSMENT
STAGE 3 VERIFICATION

The submission process for the 3 stages above, while independent from the Development submission process, will be in tandem.

Stage 1 (Application and Registration) must be submitted before obtaining Planning Permission from DTCP. A Processing fee of BND$50.00 must be submitted along with the application form (available to download from ABCi website) and the required supporting documents.

There is also a Registration Fee that must be paid upon submission of the application. Fee amount is calculated based on the Gross Floor Area as below:-

BAGUS Registration Fees	
GFA (m2)	**Assessment Fee ($)**
<4,000	$2,500.00
4,000 – 10,000	$3,250.00
10,000 – 30,000	$6,450.00
30,000 – 50,000	$10,350.00
50,000 – 100,000	$14,500.00
>100,000	*To be assessed case by case basis*

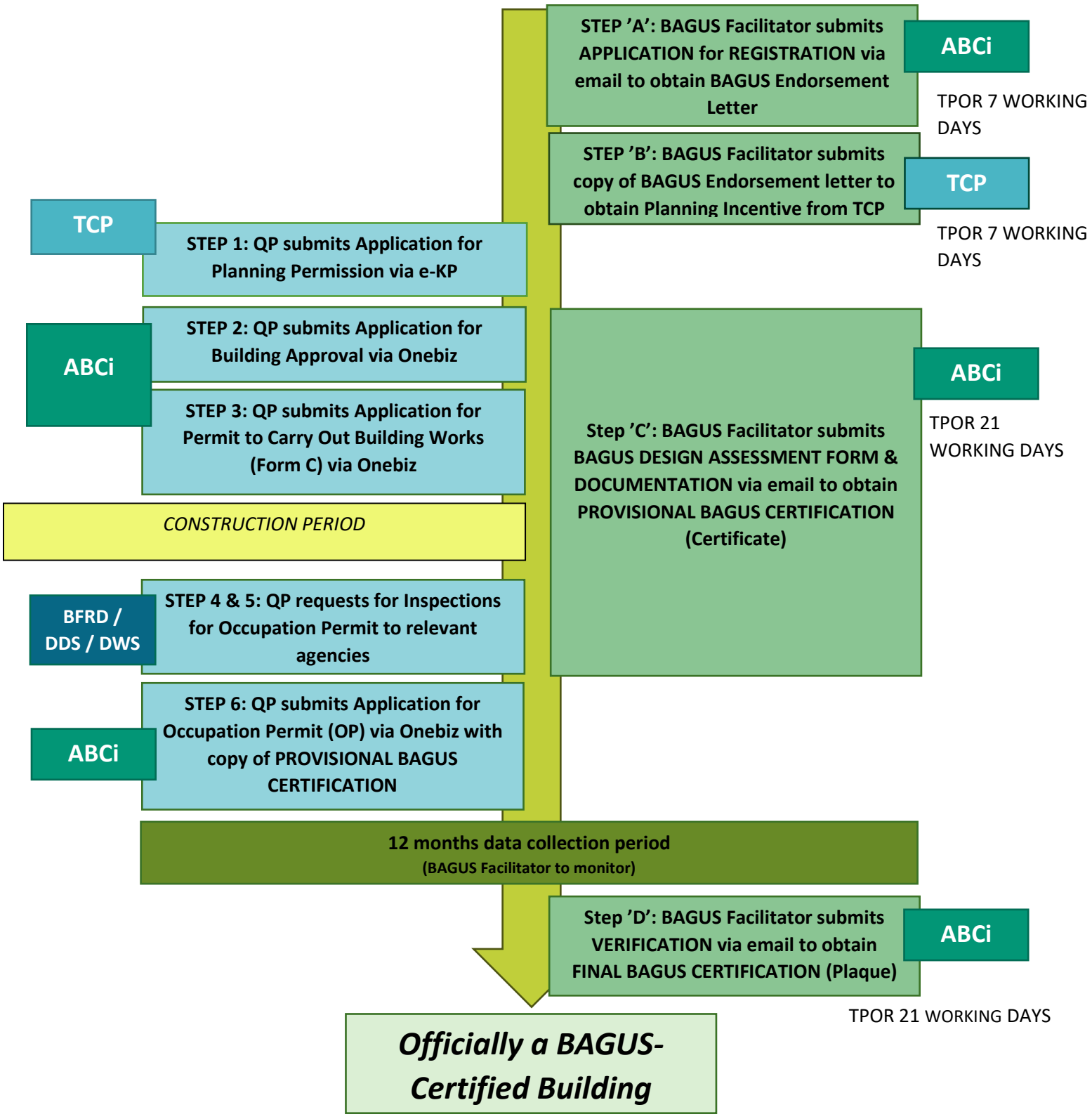
Stage 2 (Design Assessment) can be submitted via email for assessment concurrently while the Building Approval application is submitted via the Onebiz system.

Stage 3 (Verification) is the data collection period on the overall performance of the building which begins from issuance of the Occupation Permit for 12 months (starting when there is a minimum 50% occupancy).

Other fees to note are as follows:-

BAGUS Processing Fees	
Type of Process	**Processing Fee ($)**
New Application	$50.00
Renewal Application	$50.00
Changes of information (on Certification)	$50.00
Appeal	$50.00

SUBMISSION FLOWCHART
for DEVELOPMENT and BAGUS CERTIFICATION



2.0. BAGUS (New Non-Residential Building) – Criteria

The criteria covers 5 main elements such as:-

Part 1: Energy Efficiency and Conservation

Part 2: Water Efficiency and Conservation

Part 3: Site Environmental Protection and Management

Part 4: Indoor Environmental Quality

Part 5: Other Green Features

For New Non-Residential Building, there are **mandatory minimum requirements** that must be met in order to obtain BAGUS Certification as below:-

A: ENERGY RELATED CRITERIA REQUIREMENTS (MINIMUM 30 POINTS for Part 1 above)

+

B: OTHER CRITERIA REQUIREMENTS (MINIMUM 20 POINTS for Part 2 – 5 above)

Options for **ENERGY RELATED CRITERIA**
(Combination must total up to meet 30 points)

1.1 Building Envelope – Overall Thermal Transfer Value (OTTV)
1.2 Air-Conditioning System
1.3 Building Design and Thermal Parameters
1.4 Natural Ventilation/Mechanical Ventilation
1.5 Artificial Lighting
1.6 Ventilation in Carparks
1.7 Ventilation in Common Areas
1.8 Lifts and Escalators
1.9 Energy Efficient Practices
1.10 Renewable Energy

Options for **OTHER CRITERIA**
(Combination must total up to meet 20 points)

2.1 Water Efficient Fittings
2.2 Water Usage and Leak Detection
2.3 Rainwater Harvesting or Alternative Water Sources from Potable Water
3.1 Sustainable Construction
3.2 Greenery
3.3 Environmental Management Practices
3.4 Transportation
3.5 Refrigerants
4.1 Thermal Comfort
4.2 Lighting, Visual and Acoustic Comfort
4.3 Indoor Air Quality
5.1 Green Features and Innovation

Other Mandatory Requirements	Criteria
Provision of Energy Metering: Commercial buildings with an aggregate floor area of >500 sqm shall be installed or equipped with means to facilitate the collection of energy consumption data as required under the Building Control Regulations.	Part 1: Energy Efficiency and Conservation
Provision of Water Efficient Fittings from Department of Water Services (DWS): Use sanitaryware listed under Brunei Water Efficient Labelling Scheme (BWELS)	Part 2: Water Efficiency and Conservation
Restoration of Trees on Site from Brunei Darussalam National Climate Change Policy Brunei Climate Change Secretariat (BCCS): Under Protokol Hijau, clients and project developers are expected to follow the Guidelines Part 7.1 for 'Remove 1 : Plant 1'.	Part 3: Environmental Protection & Management
Provision of land space from Department of Town and Country Planning (DTCP): 10% of land area to be provided as green spaces as per DTCP Guidelines	
Selection of green building products recognized by the Authority on Building Control and Construction Industry (ABCi): Minimum of three (03) products listed/registered under the Sustainable Product Certification by ABCi.	

Part 1: Energy Efficiency and Conservation

1.1	**Overall Thermal Transfer Value (OTTV)**	
	Refer to "PBD 12 EEC: 2015" Part 5 Building Envelope	
	Enhance the overall thermal performance of building envelope to minimise heat gain thus reducing the overall cooling load requirement.	
a)	Baseline: Max. Permissible OTTV = 50 W/m^2	2 points for every reduction of 1 W/m2 in OTTV from the baseline. Points scored = 100 - [2 x (OTTV)] where OTTV $\leq$ 50 W/m^2 **(Up to 15 points)**

1.2	**Air Conditioning (AC) System**	
	Refer to "PBD 12 EEC: 2015" Part 7 Air-Conditioning Equipment **Refer to "PBD 12 EEC: 2015" Part 8 Air-Conditioning and Mechanical Ventilation (ACMV) System**	
	Encourage the use of efficient AC equipment to minimize energy consumption.	
	Baseline: Minimum efficiency requirement of the air-conditioning system as stated in "PBD 12 EEC: 2015". The systems to be considered are as follows: (a)(i) Air-Conditioned Plant: ▪ Chiller ▪ Chilled-water pump ▪ Condenser water pump ▪ Cooling water	1.45 points for every percentage improvement in the efficiency of chiller, chilled-water pump and condenser water pump. **Points scored = 1.45 x (% improvement)** 0.05 point for every percentage improvement in the performance required for cooling tower. **Points scored = 0.05 x (% improvement)** **(Up to 20 points)**
	(a)(ii) Air Distribution System ▪ Air Handling Units (AHU) ▪ Fan Coil Units (FCUs)	0.5 point for every percentage improvement in the air distribution system efficiency. **Points scored = 0.5 x (% improvement)** **(Up to 5 points)**
	OR	
	(b) Unitary Air-Conditioners / Condensing Units: ▪ Single-Split Units ▪ Multi-Split Units ▪ Variable Refrigerant Volume (VRV) System	1.5 points for every % (average) improvement in the efficiency of all unitary air conditioners/condensing units. **Points scored = 1.5 x (% improvement)** **(Up to 25 points)**
	Note: Where there is a combination of centralized air-conditioning systems with a unitary air-conditioned system, the computation for the points scored will only be based on the AC system with a larger aggregate capacity.	

	(c) Sensors or similar automatic control devices are used to regulate outdoor air flow rate to maintain the concentration of carbon dioxide below 1000ppm.	**2 points**
	Pre-requisite Requirements: Provision of permanent measuring instruments for monitoring of water-cooled chilled water plant efficiency. The installed instrumentation shall have the capability to calculate a resultant plant efficiency (i.e. kW/RT) within 5% of its true value and in accordance with ASHRAE Guide 22 and AHRI 550/590.	
	The following instrumentation and installation are also requirement to be complied with: (i) Location and installation the measuring devices to meet the manufacturer's recommendation. (ii) Data acquisition system to have a minimum resolution of 16bit. (iii) All data logging with capability to trend at 1-minute sampling time interval.	Applicable only to buildings with provision of water cooled chilled-water plant. **1 point**

1.3	**Building Design and Thermal Parameters**	
	Refer to "PBD 12 EEC: 2015" Part 4 Architectural and Passive Design Strategy	
a)	Minimum direct west facing façade through building design orientation. Note (3): Orientation of façade that falls within the range of 22.5º N of W and 22.5º 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.	**Points scored = 15 - 0.3 x (% of west facing façade areas over total façade areas)** **(Up to 10 points)** Where there is no west facing façade, the total points scored for this item will be **24 points**; the part 1.3 b(i), b(ii) and (c) as listed below will not be applicable.
b)	(i) Minimum west facing window openings (ii) Effective sun shading provision for windows on the west façade with minimum shading of 30%.	**Points scored = 10 - [0.1 x (% of west facing window areas over total west facing façade areas)]** **Points scored = 0.1 x (% of west facing window areas with sun shading devices over total west facing façade areas)** **(Up to 10 points for Part 1.3b(i) & b(ii))**
c)	Better thermal transmittance (U-value) of external west facing walls.	**Points scored = 0.04 x (% of the external west facing walls areas with U-value of 2 W/m^{2}K or less over total west facing facades areas)** **(Up to 4 points)**

d)	Better thermal transmittance (U-value) of roof. Baseline: U-value for roof stated below depending on the weight range of roof structure: **Roof Weight Group** / **Maximum U-value (W/m^2K)** Light (Under 50kg/m2) — 0.4 Heavy (Above 50kg/m2) — 0.6	2 points for every 0.1 W/m^2K reduction **(Up to 4 points)**

1.4	**Natural Ventilation / Mechanical Ventilation (excludes Carparks)**	
	Refer to "PBD 12 EEC: 2015" Part 4 Architectural and Passive Design Strategy	
	Enhance building design to achieve good natural ventilation.	
a)	Proper design of building layout that utilizes prevailing wind conditions to achieve adequate cross ventilation.	10 points for every 10% of units/rooms with window openings facing north and south directions. **Points scored = 1.0 x (% of units/10)** **(Up to 12 points)**
b)	Use of ventilation simulation software to identify the most effective building design and layout to achieve good natural ventilation.	Points can **only** be scored if the recommendations from ventilation simulations are implemented. **(4 points)**
c)	Use of fan systems Baseline: SS553:2009 Table 8 – Fan power limitation in mechanical ventilation systems: **Allowable nameplate motor power** Constant volume — Variable volume 1.7 $kW/m^3/s$ — 2.4 $kW/m^3/s$	0.6 point for every percentage improvement in their distribution system efficiency **Points scored = 0.6 x (% improvement)** **(Up to 15 points)** 1 point installation of readily accessible switch or other means for shut off or volume reduction when ventilation is not required. Examples of such devices would include timer switch control, thermostat control, duty cycle programming and CO/CO2 sensor control.

1.5	**Artificial Lighting**	
	Refer to "PBD 12 EEC: 2015" Part 6 Lighting	
	Encourage the use of efficient lighting to minimize energy consumption from lighting usage while maintaining proper lighting levels	
	Baseline: Maximum lighting power budget stated in PBD12:EEC2015	0.5 point for every percentage improvement lighting. **Points scored = 0.5 x (% improvement)** **(Up to 10 points)**

1.6	**Natural Ventilation in Carparks**	
	Refer to "PBD 12 EEC: 2015" Part 4 Architectural and Passive Design Strategy	
	Encourage the use of energy efficient design and control of ventilation systems in carparks.	
	Ventilation in Carparks: (a) Carparks designed with natural ventilation. (b) Carbon Monoxide (CO) sensors are used to regulate the demand for Mechanical Ventilation (MV). Note (4): Where there is a combination of different ventilation modes adopted for carpark design, the points obtained will be prorated accordingly.	Naturally ventilated car parks – 3 points Points scored based on the mode of mechanical ventilation provided Fume extract – 2 points MV with or without supply – 1 point **(Up to 3 points)**

1.7	**Ventilation in Common Areas**	
	Refer to "PBD 12 EEC: 2015" Part 4 Architectural and Passive Design Strategy	
	Encourage the use of energy efficient design and control of ventilation systems in the following common areas:	
	Ventilation in Common Areas: (a) Toilets (b) Staircases (c) Corridors (d) Lift Lobbies (e) Atrium	Extent of Coverage: At least 90% of each applicable area Points scored based on the mode of ventilation provided in the applicable areas Natural ventilation – 1.5 points for each area Mechanical ventilation – 0.5 point for each area **(Up to 5 points)**

1.8	**Lifts and Escalators**	
	Encourage the use of efficient lifts and escalators.	
a)	Lifts with the following energy efficient features: (i) Variable Voltage Variable Frequency (VVVF) Alternating Current (AC) motor drive or equivalent. (ii) Sleep mode features or equivalent.	Extent of Coverage: All lifts and escalators **1 point** **1 point**
b)	Escalators with energy efficient features such as motion sensors.	**1 point**

1.9	**Energy Efficient Practices and Features**	
	Encourage the use of energy efficient practices and features which are innovative and have positive environmental impact.	
a)	Computation of energy consumption based on design load in the form of Energy Efficiency Index (EEI). Baseline: EEI shall comply with benchmark set by the Department of Energy (DOE), Prime Minister's Office. EEI Benchmark (Entry Level) for Brunei Buildings: ▪ Government Buildings – 175kWh/m^2/year ▪ Commercial Buildings – 255 kWh/m^2/year	*Reference from the Department of Energy* EEI 255 = 1 point EEI 235 – 254 = 2 points EEI 215 – 234 = 3 points EEI 195 – 214 = 4 points EEI 175 – 194 = 5 points EEI 155 – 174 = 6 points EEI 135 – 154 = 7 points EEI 134 and below = 8 points **(Up to 8 points)**
b)	Use of energy efficient features such as: ▪ Motion sensors for stair landings ▪ Use of Energy Management System / Metering to monitor and analyse energy consumption	3 points for every 1% energy saving over the total building energy consumption. **(Up to 6 points)**

1.10	**Renewable Energy**	
	Encourage the application of renewable energy sources and low carbon technologies in buildings.	
	The minimum renewable energy percentage for each point threshold is as follows: Percentage replacement of Building Electricity Consumption by renewable energy 1% - 1 point 3% - 2 points 5% - 3 points 7% - 4 points 9% - 5 points 11% - 6 points 13% - 7 points	Utilization of on-site Energy Storage system – 1 point BIPV/Solar Roof Tiles – 2 points **(Up to 10 points)**

Part 2 : Water Efficiency and Conservation

<table>
<tr><td>2.1</td><td colspan="2">Water Efficient Fittings</td></tr>
<tr><td></td><td colspan="2">Encourage the use of water efficient fittings that are certified under the Brunei Water Efficient Products Labelling Scheme (BWELS)</td></tr>
<tr><td></td><td>Points scored based on the number and water efficiency rating of the fitting type used.</td><td>
<table>
<tr><th>WATER FITTING</th><th>GOOD</th><th>V. GOOD</th><th>EXCELLENT</th></tr>
<tr><td>Basin Taps</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Sink Taps</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Bib Taps</td><td>1</td><td>2</td><td>3</td></tr>
<tr><td>Water Closet (Flushing Cistern)</td><td>1</td><td>2</td><td>3</td></tr>
</table>
Points scored are based on the type of water fitting used. If there is more than one model of a type of water fitting, an average rating should be used.

(Up to 12 points)</td></tr>
</table>

<table>
<tr><td>2.2</td><td colspan="2">Water Usage and Leak Detection</td></tr>
<tr><td></td><td colspan="2">Promote the use of sub-metering and leak detection system for better control and monitoring.</td></tr>
<tr><td>a)</td><td>Provision of sub-meters for major water uses including automatic irrigation, cooling tower and fountains.</td><td>1 point</td></tr>
<tr><td>b)</td><td>Provision of flow controller or a pressure reducing valve to control the flow or water pressure in the building.</td><td>1 point</td></tr>
</table>

<table>
<tr><td>2.3</td><td colspan="2">Rainwater Harvesting or Alternative Water Sources</td></tr>
<tr><td></td><td colspan="2">Provision of suitable systems that utilise harvested rainwater or alternative sources of water to reduce treated water consumption for the following items:</td></tr>
<tr><td>a)</td><td>Landscape watering / gardening and outdoor cleaning activities through standpipes outside the building.</td><td>1 point</td></tr>
<tr><td>b)</td><td>Use of water efficient irrigation system.</td><td>Extent of Coverage: At least 50% of the landscape areas served by the system.
50% - 1 point
100% - 2 points

(Up to 2 points)</td></tr>
<tr><td>c)</td><td>Supply water to toilet flushing cisterns inside the building.</td><td>2 points</td></tr>
<tr><td>d)</td><td>Supply water to a cooling tower.</td><td>2 points</td></tr>
</table>

Part 3: Environmental Protection and Management

<table>
<tr><th>3.1</th><th colspan="2">Sustainable Construction</th></tr>
<tr><td></td><td colspan="2">Encourage the adoption of building designs, construction practices and materials that are environmentally friendly and sustainable.</td></tr>
<tr><td>a)</td><td>(i) Efficient concrete usage for building components.</td><td><table><tr><th>Project CUI (m^3/m^2)</th><th>Points Allocation</th></tr><tr><td>≤ 0.70</td><td>1 point</td></tr><tr><td>≤ 0.60</td><td>2 points</td></tr><tr><td>≤ 0.50</td><td>3 points</td></tr><tr><td>≤ 0.40</td><td>4 points</td></tr><tr><td>≤ 0.35</td><td>5 points</td></tr></table>(Up to 5 points)</td></tr>
<tr><td></td><td>(ii) Products certified by ABCi under raw materials (e.g. bricks, fine aggregates (sand), coarse aggregates, cement, steel rebars).</td><td>2 points for each product
(Up to 8 points)</td></tr>
<tr><td>b)</td><td>Use of sustainable materials and products in building construction such as:

(i) Products with at least 30% recycled content by weight or volume (applicable only to non-structural elements).</td><td>1 point for high impact item
0.5 point for low impact item

(Cap at 7 points)</td></tr>
<tr><td></td><td>(ii) Products listed/registered under Sustainable Product Certification with ABCi</td><td>2 points for each product
(Cap at 6 points)</td></tr>
<tr><td colspan="3">Note: Each product can only be scored under one category in Part 3.1 (b) if applicable to both</td></tr>
</table>

3.2	Greenery	
	Encourage greater use of greenery, restoration of trees to reduce heat island effect.	
a)	Green Space Calculation (as determined by DTCP Guidelines - Area of green space provided and retained out of total land area) Baseline: 10% is the mandatory minimum requirement	1 point = >11% - 14% 2 points = 15% - 19% 3 points = 20% - 24% 4 points = 25% - 29% 5 points = 30% - 31% 6 points = >35% **(Up to 6 points)**
b)	Restoration of trees on site, conserving or relocating of existing trees on site. *Minimum requirement for the removal of 1, 1 must be replanted	For 1 existing tree cut: Replant 4 trees – 2 points Replant 8 trees – 4 points Replant 16 trees – 6 points **(Up to 6 points)**
c)	Use of compost recycled from horticulture waste.	1 point

d)	Install a vegetated roof for at least 50% of the roof area.	1 point
e)	Vertical greenery on the east and/or west façade.	More than 30% of east and/or west façade areas – 2 points More than 15% of east and/or west façade areas – 1 point **(Up to 2 points)**
f)	Provision of water scape at development parameters.	1 point

3.3	**Environmental Management Practice**	
	Encourage the adoption of environmentally friendly practices during construction and building operation.	
a)	Implement effective environmentally- friendly programs (such as monitoring systems that may set targets to minimize energy use, water use and construction waste).	1 point
b)	Project team comprises of BAGUS Facilitator.	2 points
c)	Provision of Building User Guide (including details of the environmentally-friendly facilities and features within the building and their uses in achieving the intended environmental performance during building operation).	1 point
d)	Provision of facilities or recycling bins for collection and storage of different recyclable waste such as paper, glass, plastic etc (registered recycling vendors with MOD to be selected).	1 point
e)	Use of BIM (e.g. REVIT) for collaboration between various parties and through the use of clash detection software to help project run more smoothly.	1 point
f)	Use of integrative process worksheet (involvement of all parties and record of discussion from early stage of project in regards to the energy, water, green features to be implemented and appointment of consultants.	1 point

3.4	**Transportation**	
	Encourage to improve transportation with use of green vehicles and discourage overprovision of car parking capacity.	
a)	Transportation Impact Analysis.	1 point
b)	Provision of preferred parking for Electric Vehicles (Low Emitting & Fuel Efficient) charging stations within the development.	1 point
c)	Provision parking for Preferred Parking or carpools lots.	1 point
d)	Provision of covered pedestrian connectivity to surrounding developments or public transport.	1 point
e)	Provision of other modes of transportation such as bicycle lane or parking, shuttle bus, park and ride facilities and etc.	1 point
Note: Preferred Parking refers to the parking spots closest to the main entrance of the project (exclusive of spaces designated for handicapped or parking passes provided at a discounted price).		

3.5	**Refrigerants**	
	Reduce the potential damage to the ozone layer and the increase in global warming through the release of ozone depleting substances and greenhouse gases.	
	(a) Refrigerants with Ozone Depletion Potential (ODP) of zero or with global warming potential (GWP) of less than 100.	1 point
	(b) Use of refrigerant leak detection system at critical areas of plant rooms containing chillers and other equipment with refrigerants.	1 point

Part 4: Indoor Environmental Quality

4.1	**Thermal Comfort**	
	Encourage the adoption of building designs, construction practices and materials that are environmentally friendly and sustainable.	
a)	Air-conditioning system is designed to allow for cooling load variations due to fluctuations in ambient air temperature to ensure consistent indoor conditions for thermal comfort. Indoor temp between 23 to 25°C Relative Humidity < 70%	2 points

4.2	**Lighting, Visual and Acoustic Comfort**	
	Improve noise levels of occupied spaces.	
a)	Occupied spaces in buildings are designed with good ambient sound levels as recommended in Singapore Standard SS CP 13 (SS CP 13).	Sound Level Measurements Verification: 1 point **(Up to 2 points)**
b)	Improve workplace lighting quality by avoiding low frequency flicker associated with fluorescent lighting with use of high frequency ballasts in the fluorescent luminaries. Applicable to offices, classrooms and similar room areas must meet requirements as stated in "PBD 12 EEC: 2015"	Lighting Lux Measurements Verification: 1 point **(Up to 2 points)**
c)	Use of quality views to promote well-being through use of nature and greenery.	1 point

4.3	**Indoor Air Quality**	
	Minimise airborne contaminants, mainly from inside sources to promote a healthy indoor environment.	
a)	Use of products that have low Volatile Organic Compounds (VOC) which are certified under a recognized Green Label (e.g. Singapore Green Labelling Scheme) and registered under the Sustainable Product Certification at ABCi (applicable to at least 90% of area). i) Paints ii) Sealants	1 point each **(Up to 2 points)**

b)	Ensure Air Handling Units (AHUs) or dedicated outdoor air units are designed to accommodate fine dust filters of least a rating of Minimum Efficiency Reporting Value (MERV) 14 (ASHRAE 52.2: 2012) or F8 (EN779: 2012).	1 point
c)	Create Indoor Air Quality (IAQ) Management Plan (During Verification stage to conduct IAQ (Indoor Air Quality) Testing/Audit at least one year after occupancy).	1 point
d)	Prepare a Post Occupancy Survey to monitor Indoor Comfort of Building Users. (During Verification stage to conduct survey)	1 point

Part 5: Other Green Features and Innovations

5.1	Green Features and Innovations	
	Encourage the use of other green features which are innovative and have a positive environmental impact.	
a)	Examples (Reference from GreenMark and GBI): ▪ Central pneumatic waste collection system; ▪ Dual chute system; ▪ Self-cleaning façade system; ▪ Solar water heating technologies; ▪ Infiltration trenches; ▪ Integrated storm water retention/treatment into landscaping; ▪ Condensate water recovery (accounting for at least 50% of total AHUs/FCUs) for use as cooling tower make-up water etc; ▪ Co-generation / Tri-generation system ▪ Thermal / PCM / Thermal Mass storage system (accounting for at least 25% of total required capacity); ▪ Solar thermal technology / Solar Air conditioners (generating at least 10% of total required capacity); ▪ Heat recovery system (contributing to at least 10% of total required capacity); ▪ Light pipes; ▪ Auto-condenser tube cleaning system (fitted to plant equipment serving at least 50% of total capacity); ▪ Non-chemical water treatment system (serving at least 50% of total capacity); ▪ Mixed mode / low energy ventilation system; ▪ Advanced air filtration technology (serving at least 50% of the NLA); ▪ Central vacuum system (serving at least 50% of NLA); ▪ Electrochromic glazed façade; ▪ Refrigerant leakage detection and recycling facilities; ▪ Recycling of all fire system water during regular testing The BAGUS Facilitator is required to submit the details showing the positive environmental impacts, possible savings and benefits of the proposed features for assessment.	2 points for high impact item 1 point for medium impact item 0.5 point for low impact item **(Up to 5 points)**

BAGUS (New Non-Residential Building) Certification – **Scoring**

		Criteria		Point Allocation
	A) ENERGY RELATED REQUIREMENTS			
Minimum 30 Points	**Part 1: Energy Efficiency and Conservation**			
	1.1	Building Envelope – OTTV	*(A) Applicable to A/C Areas*	15
	1.2	Air-Conditioning (A/C) System		28
		Sub-Total Part 1(A): Max Points		**43**
	1.3	Building Design and Thermal Parameters	*(B) Applicable to Non-A/C Areas*	28
	1.4	Natural Ventilation/Mechanical Ventilation (Exc. Carparks)		32
		Sub-Total Part 1(B): Max Points		**60**
	1.5	Artificial Lighting	*(C) Applicable to All Areas - General*	10
	1.6	Ventilation in Carparks		3
	1.7	Ventilation in Common Areas		5
	1.8	Lifts and Escalators		3
	1.9	Energy Efficient Practices		14
	1.10	Renewable Energy		10
		Sub-Total Part 1 (C): Max Points		**45**
		Part 1: Max Points		**105**

The total **Part 1: Max Points** achieved is based from pro-rated A/C and Non-A/C floor areas as shown below:-

$$\frac{\text{Sub-Total (A) x A/C Floor Area}}{\text{Total Floor Area}} + \frac{\text{Sub-Total (B) x Non-A/C Floor Area}}{\text{Total Floor Area}} + \text{Sub-Total (C)}$$

**Note: if either Section (A)/(B) is not applicable, no prorating of areas is required for score computation.*

		Criteria	Point Allocation
	B) OTHER GREEN REQUIREMENTS		
Minimum 20 Points	**Part 2: Water Efficiency and Conservation**		
	2.1	Water Efficient Fittings	12
	2.2	Water Usage and Leak Detection	2
	2.3	Rainwater Harvesting or Alternative Water Source from Potable Water	7
		Part 2: Max Points	**21**
	Part 3: Site Environmental Protection and Management		
	3.1	Sustainable Construction	26
	3.2	Greenery	16
	3.3	Environmental Management Practices	7
	3.4	Transportation	5
	3.5	Refrigerants	2
		Part 3: Max Points	**57**
	Part 4: Indoor Environmental Quality		
	4.1	Thermal Comfort	2
	4.2	Lighting, Visual and Acoustic Comfort	5
	4.3	Indoor Air Quality	5
		Part 4: Max Points	**12**
	Part 5: Other Green Features		
	5.1	Green Features and Innovation	5
		Part 5: Max Points	**5**

BAGUS Certification: Scoring	**200**

BAGUS (New Non-Residential Building) Certification – **Rating**

BAGUS Score (points)	BAGUS Rating*
100 and above	BAGUS Platinum
85 to <100	BAGUS Gold
70 to <85	BAGUS Silver
50 to <70	BAGUS Certified

*NOTE:

ENERGY RELATED criteria (Part 1): Maximum achievable points 105 (with a minimum 30 points must be achieved in this part)

OTHER REQUIREMENTS criteria (Part 2 – 5): Maximum achievable points 95 (with a minimum 20 points must be achieved in this part)