



**RESIDENTIAL NEW  
CONSTRUCTION  
(RNC)**

**DESIGN REFERENCE GUIDE  
AND SUBMISSION FORMAT**

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# CONTENTS

## RESIDENTIAL NEW CONSTRUCTION (RNC)

<b>2</b>	<b>ACKNOWLEDGEMENT AND COPYRIGHT</b>
<b>3</b>	<b>INTRODUCTION</b>
<b>5</b>	<b>PROCEDURES</b>
<b>9</b>	<b>PROJECT INFORMATION</b>
<b>10</b>	<b>CONSULTANTS INFORMATION</b>
	<b>CRITERIA CHECKLIST, SIGNATORIES AND SUBMISSION FORMAT</b>
<b>12</b>	MAXIMUM ACHIEVABLE POINTS
<b>12</b>	CATEGORIES OF GREEN BUILDING INDEX RATING
<b>12</b>	DEFINITIONS OF LANDED, LOW-RISE AND HIGH-RISE
<b>13</b>	SUMMARY OF ASSESSMENT CRITERIA AND POINTS
<b>15</b>	CRITERIA SIGNATORIES
<b>16</b>	SUBMISSION FORMAT
	<b>ASSESSMENT CRITERIA</b>
<b>18</b>	ENERGY EFFICIENCY (EE)
<b>30</b>	INDOOR ENVIRONMENTAL QUALITY (EQ)
<b>42</b>	SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)
<b>61</b>	MATERIALS & RESOURCES (MR)
<b>69</b>	WATER EFFICIENCY (WE)
<b>74</b>	INNOVATION (IN)
<b>78</b>	<b>ACKNOWLEDGEMENTS</b>

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# INTRODUCTION

The purpose of the Green Building Index Design Reference Guide is to establish a guidance document to assist project teams in understanding the criteria for each of the main components of the Green Building Index Rating Tool. The project team can use the document as a guide when submitting for the Green Building Index as it clearly identifies examples of how and what is required for completing the submission. Each of the main 6 criteria's are further divided into the corresponding sub-sections in obtaining the necessary credit points. This guide is indicative and not an exhaustive/definitive reference to the Green Building Index rating tool.

The basic framework of this document sets out for each subsection the intent, description, requirements, approach and implementation, and in some occasions calculations to achieve the ratingpoint for each sub-section. The Green Building Index Design Reference Guide further becomes the base curriculum for the training of facilitators on the Green Building Index Rating Tools.

To attain the Green Building Index classification, the procedures are as follows:

- STAGE 1            APPLICATION & REGISTRATION**
- STAGE 2            DESIGN ASSESSMENT**
- STAGE 3            COMPLETION & VERIFICATION ASSESSMENT**

A summary of the stages is described below:

## **STAGE 1 | APPLICATION & REGISTRATION**

Complete and Submit application form with Owner's information, project contact details, project information and any supporting documents to GreenbuildingIndex Sdn Bhd (GSB). Upon acceptance and approval of the application documentation, the registration fee will be confirmed dependent on the size of the project. On payment of fees, a GBI registration number will be given, and the terms and conditions duly signed between owner and GSB. A GBI Certifier will be appointed for the duration of the project.

GBI Registration Fees can be obtained from [www.greenbuildingindex.org](http://www.greenbuildingindex.org)

### **GBI Terms & Conditions**

An agreement selling out the terms and conditions between Project owner and Greenbuildingindex Sdn Bhd is to be duly signed at this stage.

## **STAGE 2 | DESIGN ASSESSMENT (DA)**

Appraisal conducted upon the submission by the Project Design team / Client (Architect/Engineer/Building Owner or Developer directly or through a GBI Facilitator) of comprehensive design and other necessary documents for Green Building Index Assessment. After acceptance of registration from GBI, the Project Design team and client should proceed to collect information for each of the 6 criteria completing the submittal requirements described under each detailed sub-section. It is recommended that the information submitted is based on preconstruction information (ie. tender documentation stage) when all parameters of the design have been finalised. A Provisional Design Assessment certificate is given at this stage. A summary Design Assessment (DA) checklist is provided to determine target point and rating.

### **STAGE 3 | COMPLETION & VERIFICATION ASSESSMENT (CVA)**

Appraisal conducted upon the issuance of Certificate of Practical Completion (CPC) of the project when all necessary documents are re-submitted according to as-built information and calculations by the Project Design team / Client (Architect/Engineer/Building Owner or Developer directly or through a GBI Facilitator). The Completion Assessment confirms that the targeted criteria have been properly implemented and achieved or otherwise, for the intended classification.

GBI verifies within 12 months of issuance of CPC or Certificate of Completion and Compliance (CCC) whichever is the later; or earlier, on the project classification. The verification process involves verifying the actual measured energy and water use, sustainable site measures, indoor comfort survey results and action plan, Building Manual and Sustainable Maintenance program. A full Certification is given at this stage. A summary Completion & Verification Assessment (CVA) checklist is provided to determine target scoring.

### **APPEAL PROCEDURES**

Appeal can be submitted (with fee paid) after receiving the Design Assessment results or after receiving the Verification Assessment results.

### **VALIDITY OF CERTIFICATION**

The certificate is valid for three years. This is to encourage sustainable building maintenance management throughout the life of the building.

### **CERTIFIERS AND FACILITATORS**

GBI Certifiers perform the detailed assessment and accrediting tasks of building projects submitted to the Accreditation panel for GBI Certification.

GBI Facilitator provide services to enable building projects to achieve GBI Accreditation. A GBI Facilitator is a registered person with GSB having completed the training and examinations conducted by GSB.

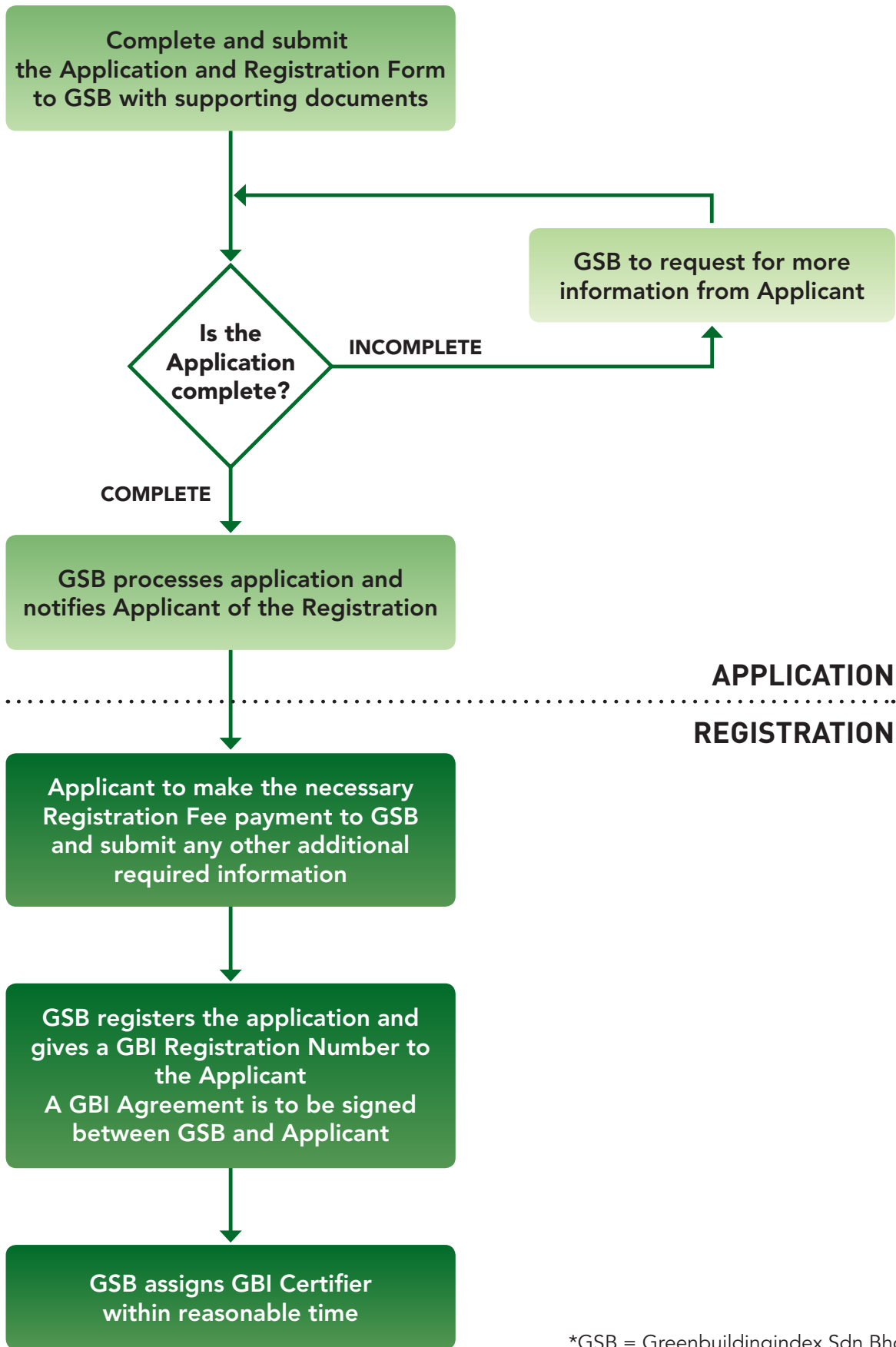
### **GBI TERMS AND CONDITIONS**

An agreement setting out the terms and conditions between the Project owner and GreenbuildingIndex Sdn Bhd.



**RESIDENTIAL NEW  
CONSTRUCTION (RNC)  
PROCEDURES**

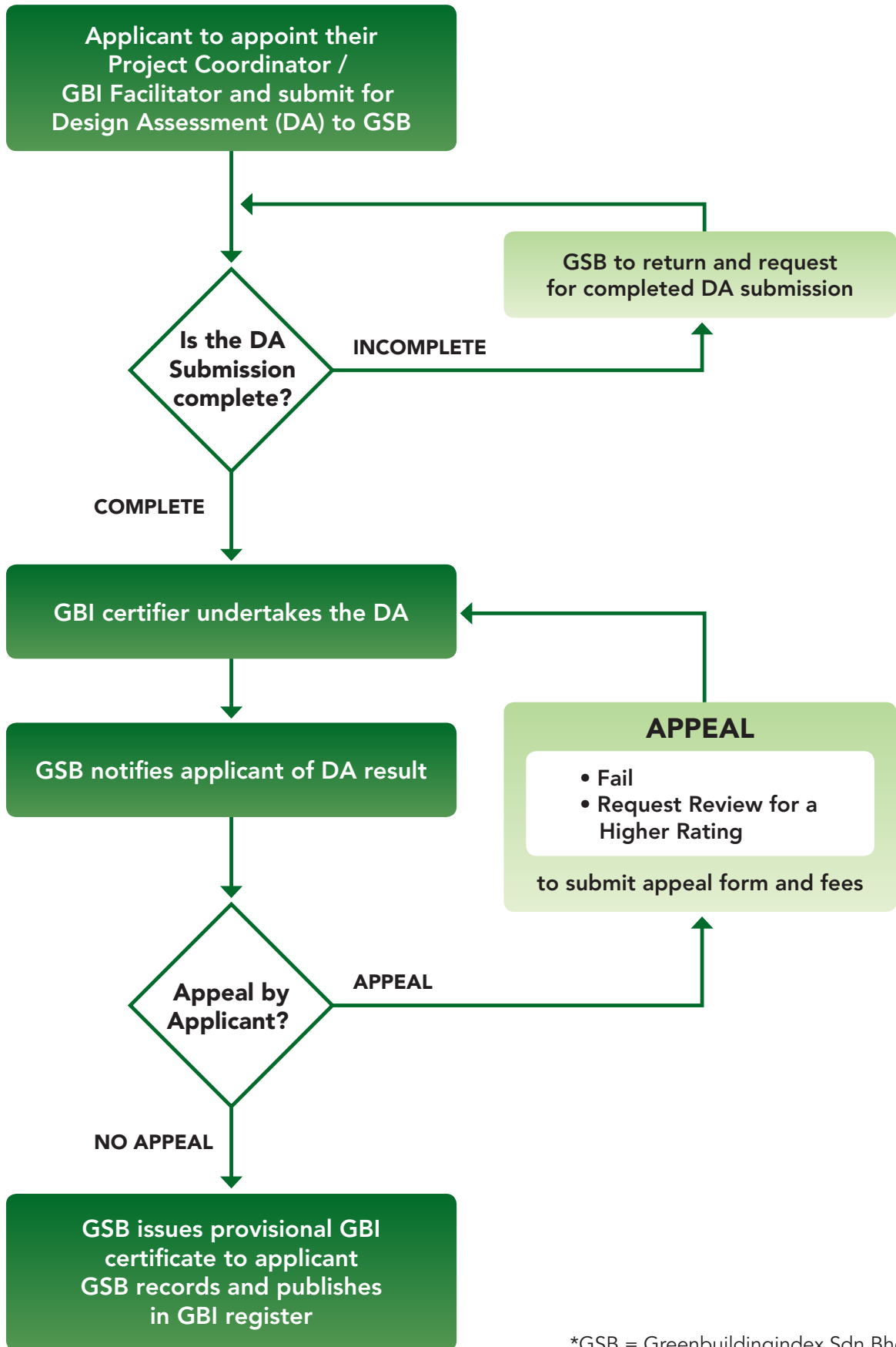
# STAGE 1 APPLICATION & REGISTRATION



**APPLICATION  
REGISTRATION**

\*GSB = Greenbuildingindex Sdn Bhd

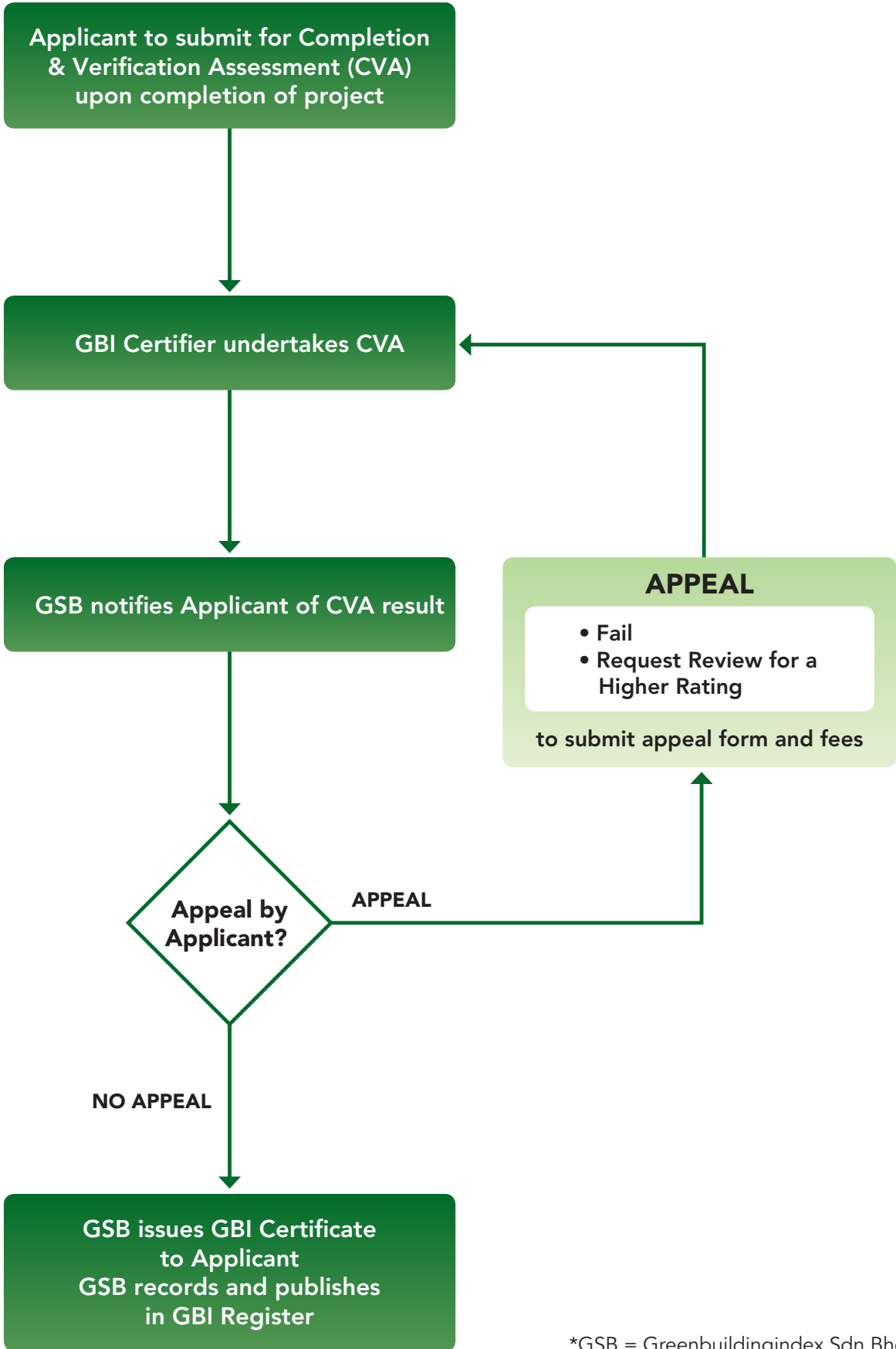
## STAGE 2 DESIGN ASSESSMENT (DA)



\*GSB = Greenbuildingindex Sdn Bhd



## STAGE 3 COMPLETION & VERIFICATION ASSESSMENT (CVA)



\*GSB = Greenbuildingindex Sdn Bhd

# PROJECT INFORMATION

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

## CONSULTANTS INFORMATION

<b>OWNER'S NAME</b>			
<b>COMPANY</b>			
<b>OWNER'S REPRESENTATIVE</b>	NAME	DESIGNATION	
<b>ARCHITECT</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>CIVIL ENGINEER</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>STRUCTURAL ENGINEER</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>MECHANICAL ENGINEER</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>ELECTRICAL ENGINEER</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>QUANTITY SURVEYOR</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>LAND SURVEYOR</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>LANDSCAPE ARCHITECT</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>COMMISSIONING SPECIALIST (CxS)</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>GBI FACILITATOR</b>	NAME	PROFESSIONAL REG. NO.	COMPANY
<b>OTHER SPECIALIST CONSULTANT(S)</b>			
<b>MAIN CONTRACTOR</b>			
<b>LOCAL AUTHORITY</b>			



**RESIDENTIAL NEW  
CONSTRUCTION (RNC)  
CRITERIA CHECKLIST, SIGNATORIES  
AND SUBMISSION FORMAT**

## MAXIMUM ACHIEVABLE POINTS

PART	ITEM	MAXIMUM POINTS	SCORE
1	Energy Efficiency (EE)	23	
2	Indoor Environmental Quality (EQ)	12	
3	Sustainable Site Planning & Management (SM)	33	
4	Material & Resources (MR)	12	
5	Water Efficiency (WE)	12	
6	Innovation (IN)	8	
<b>TOTAL SCORE</b>		<b>100</b>	

## CATEGORY OF GREEN BUILDING INDEX RATING

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

## DEFINATION OF LANDED, LOW-RISE AND HIGH-RISE

Landed: Single Owner (Townhouse is included in this category)

Low-rise: Strata Building in which the topmost floor is  $\leq$  18.3 meter above ground level

High-rise: Strata Building in which the topmost floor is  $>$  18.3 meter above ground level

# RESIDENTIAL NEW CONSTRUCTION (RNC) SUMMARY OF ASSESSMENT CRITERIA AND POINTS

PART	CRITERIA	ASSESSMENT CRITERIA	POINTS	TOTAL
1	<b>EE</b>	<b>ENERGY EFFICIENCY</b>		<b>23</b>
	<b>Design</b>			
	EE1	Minimum EE Performance (Mandatory Compliance)	1	
	EE2	Advanced EE Performance	12	
	EE3	Renewable Energy	5	
	<b>Energy Efficiency</b>			
	EE4	External Lighting and Control	2	
	EE5	Internet Connectivity	1	
2	<b>EQ</b>	<b>INDOOR ENVIRONMENTAL QUALITY</b>		<b>12</b>
	<b>Air Quality</b>			
	EQ1	Minimum Indoor Air Quality Performance	3	
	EQ2	Volatile Organic Compounds Minimisation	2	
	EQ3	Formaldehyde Minimisation	1	
	<b>Lighting, Visual and Acoustic Comfort</b>			
	EQ4	Daylighting	3	
	EQ5	External Views	1	
3	<b>SM</b>	<b>SUSTAINABLE SITE PLANNING &amp; MANAGEMENT</b>		<b>33</b>
	<b>Site Planning</b>			
	SM1	Site Selection and Planning	1	
	SM2	Re-habilitation of Brownfield Sites <b>OR</b> Re-development of Existing Buildings	1	
	SM3	Community Connectivity	4	
	<b>Construction Management</b>			
	SM4	Earthworks – Construction Activity Pollution Control	1	
	SM5	QLASSIC – Quality Assessment System For Building Construction Work	1	
3	<b>Transportation</b>			
	SM6	Workers' Site Amenities	1	
	SM7	IBS – Industrialised Building System	2	
	<b>Design</b>			
	SM8	Public Transportation Access	8	
	SM9	Dedicated Cycling Network	2	
	SM10	Stormwater Design – Quantity and Quality Control	3	
	SM11	Heat Island Effect – Greenscape and Water Bodies	5	
SM12	Heat Island Effect – Hardscape	2		
SM13	Heat Island Effect – Roof	1		
SM14	Composting	1		

**GREEN BUILDING INDEX DESIGN REFERENCE GUIDE AND SUBMISSION FORMAT**

PART	CRITERIA	ASSESSMENT CRITERIA	POINTS	TOTAL
4	<b>MR</b>	<b>MATERIALS &amp; RESOURCES</b>		<b>12</b>
	<b>Reused and Recycled Materials</b>			
	MR1	Materials Reuse and Selection	2	
	MR2	Recycled Content Materials	2	
	<b>Sustainable Resources</b>			
	MR3	Regional Materials	2	
	MR4	Sustainable Timber	2	
	<b>Waste Management</b>			
5	<b>WE</b>	<b>WATER EFFICIENCY</b>		<b>12</b>
	<b>Water Harvesting and Recycling</b>			
	WE1	Rainwater Harvesting	4	
	WE2	Waste Water Recycling	2	
	<b>Increased Efficiency</b>			
	WE3	Water Efficient Irrigation and Landscaping	2	
WE4	Water Efficient Fittings	4		
6	<b>IN</b>	<b>INNOVATION</b>		<b>8</b>
	IN1	Innovation in Design and Environmental Design Initiatives	7	
	IN2	Green Building Index Facilitator (GBIF)	1	
			<b>TOTAL POINTS</b>	<b>100</b>

## CRITERIA SIGNATORIES

The Reference guide has been formatted to form part of the basic criteria checklist for all documentation submissions for both the Design Assessment (DA) and Completion & Verification Assessment (CVA). The front cover sheet of the individual criteria will be attached with the documentation drawings, project narratives and technical submissions. The criteria checklist will be signed by the respective Lead Professional.

Enclosed the summary checklist together with the corresponding signatories required for each criteria.

PART	CRITERIA	ITEM	LEAD PROFESSIONAL SIGNATORIES
1	<b>EE</b>	<b>ENERGY EFFICIENCY</b>	
	EE1	Minimum EE Performance	Architect
	EE2	Advanced EE Performance	Architect
	EE3	Renewable Energy	GBIF / Architect
	EE4	External Lighting and Control	Electrical Engineer
	EE5	Internet Connectivity	Electrical Engineer
	EE6	Sustainable Maintenance and Building User Manual (BUM)	GBIF
2	<b>EQ</b>	<b>INDOOR ENVIRONMENTAL QUALITY</b>	
	EQ1	Minimum Indoor Air Quality (IAQ) Performance	Architect
	EQ2	Volatile Organic Compounds Minimisation	GBIF / Architect
	EQ3	Formaldehyde Minimisation	GBIF / Architect
	EQ4	Daylighting	GBIF / Architect
	EQ5	External Views	Architect
	EQ6	Sound Insulation	GBIF / Architect
EQ7	Post Occupancy Evaluation	GBIF	
3	<b>SM</b>	<b>SUSTAINABLE SITE PLANNING &amp; MANAGEMENT</b>	
	SM1	Site Selection and Planning	Architect
	SM2	Re-habilitation of Brownfield Sites OR Re-development of Existing Buildings	GBIF / Architect
	SM3	Community Connectivity	Architect
	SM4	Earthwork – Construction Activity Pollution Control	Civil Engineer
	SM5	QLASSIC – Quality Assessment System For Building Construction Works	Architect
	SM6	Worker’s Site Amenities	Architect
	SM7	IBS – Industrialised Building System	Architect
	SM8	Public Transportation Access	Architect
	SM9	Dedicated Cycling Network	Architect
	SM10	Stormwater Design – Quantity and Quality Control	Civil Engineer
	SM11	Heat Island Effect – Greenscape and Water Bodies	Architect
	SM12	Heat Island Effect – Hardscape	Architect
	SM13	Heat Island Effect – Roof	Architect
SM14	Composting	Architect	



<b>PART</b>	<b>CRITERIA</b>	<b>ITEM</b>	<b>LEAD PROFESSIONAL SIGNATORIES</b>
<b>4</b>	<b>MR</b>	<b>MATERIALS &amp; RESOURCES</b>	
	MR1	Materials Reuse and Selection	Architect
	MR2	Recycled Content Materials	Architect
	MR3	Regional Materials	Architect
	MR4	Sustainable Timber	Architect
	MR5	Storage & Collection of Recyclables	GBIF / Architect
	MR6	Construction Waste Management	GBIF / Architect
<b>5</b>	<b>WE</b>	<b>WATER EFFICIENCY</b>	
	WE1	Rainwater Harvesting	GBIF / Architect
	WE2	Waste Water Recycling	GBIF / Mechanical Engineer
	WE3	Water Efficient Irrigation and Landscaping	GBIF / Architect
	WE4	Water Efficient Fittings	Architect
<b>6</b>	<b>IN</b>	<b>INNOVATION</b>	
	IN1	Innovation in Design and Environmental Design Initiatives	GBIF
	IN2	Green Building Index Facilitator (GBIF)	GBIF

## SUBMISSION FORMAT

All submission information shall be attached to the cover criteria sheet along with the signatures for each of the criteria. The criteria checklist will be marked by the submitter and all project documentation as described under "Required Submission for Design Assessment (DA)" or "Required Submission for Completion & Verification Assessment (CVA)". All documents must be duly verified and signed as part of the submission requirements. GSB will return documents that are not submitted in full compliance for corrections.

The following is the recommended format of all documents that will form the Design Assessment (DA) and Completion & Verification Assessment (CVA) submissions:

1. All Drawings, Plans, Sections and Elevations to be formatted on A3 size paper, with their respective scales clearly indicated. Should the drawings be too small to be legible, provide a key plan with part plans for clarity of building information.
2. All Perspectives to fit into A3 size paper.
3. All Reports to be in A4 format. Signatures of qualified submitting professional should form part of the submission.
4. Clearly mark the Design Assessment Checklist or Completion & Verification Checklist on the submission of documentations together with a Design Submission form.

All submission to be saved in pdf format into a CDROM. 2 hard copies and three 3 soft copies in CDROM sare to be submitted to GSB.



**RESIDENTIAL NEW  
CONSTRUCTION (RNC)  
ASSESSMENT CRITERIA**

RESIDENTIAL NEW CONSTRUCTION (RNC)  
**ENERGY EFFICIENCY**  
**(EE)**

## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | ENERGY EFFICIENCY (EE)

EE1

### MINIMUM EE PERFORMANCE (MANDATORY COMPLIANCE)

1 POINT

#### INTENT

To create Energy Efficiency (EE) awareness, promote the use of MS 1525 and to provide a thermally comfortable environment to reduce the use of air-conditioning in residential building, thereby reducing CO<sub>2</sub> emission.

#### DESCRIPTION

Establish minimum EE performance to reduce energy consumption in buildings, thus reducing CO<sub>2</sub> emission to the atmosphere.

#### REQUIREMENTS

Meet the following EE requirement as stipulated in MS 1525.

1. OTTV  $\leq 50\text{W/m}^2$ . Submit calculations using manual calculation, BEIT software (if applicable) or other GBI approved software/s, **AND**
2. Lightweight Roof U-value  $\leq 0.4\text{ W/m}^2\text{K}$  / Heavyweight Roof U-value  $\leq 0.6\text{ W/m}^2\text{K}$ .

#### APPROACH & IMPLEMENTATION

Glazing should be optimally sized and the use of performance glazing such as low-e and/or spectrally selective glazing is encouraged.

Solar shading devices that block out direct sunlight through glazing have a critical effect on the OTTV value of a buildings and their sizing and selection using the solar shading coefficients from the graphs derived from Tables 5, 6 and 7 of MS 1525 will greatly assist in bringing down the OTTV.

Wall insulation can be made using autoclaved lightweight concretes, composite insulated walls, double brickwall and many other options.

Roof should be insulated with suitable insulation materials to prevent heat gain into internal spaces. Insulation in roofs is a basic requirement in order to comply with MS 1525 as the greatest amount of heat entering landed housing is through the roof.

#### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Plans and elevations marking out walls and apertures used for the calculation coloured blue and walls and apertures not used for calculation coloured red. Should the drawing be too small to be legible, provide a key plan with part plans for clarity of building information.	<input type="radio"/>	<input type="radio"/>
2. Description of wall and aperture materials specified.	<input type="radio"/>	<input type="radio"/>
3. Proposed glazing specifications on Shading Coefficient, U-value and Visible Light Transmission (VLT).	<input type="radio"/>	<input type="radio"/>
4. Calculations for each facing wall.	<input type="radio"/>	<input type="radio"/>
5. Calculation of U-values for roofs and walls for each building type and/or orientation.	<input type="radio"/>	<input type="radio"/>
6. Calculation of OTTV of each building type and/or orientation. Highest value of OTTV shall apply.	<input type="radio"/>	<input type="radio"/>

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | ENERGY EFFICIENCY (EE)**

<b>EE1</b>	<b>MINIMUM EE PERFORMANCE (MANDATORY COMPLIANCE)(CONTINUED)</b>	<b>1 POINT</b>
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<b>REQUIRED SUBMISSION FOR COMPLETION &amp; VERIFICATION ASSESSMENT (CVA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. As-built plans and elevations marking out walls and apertures used for the calculation coloured blue and walls and apertures not used for calculation coloured red. Should the drawing be too small to be legible, provide a key plan with part plans for clarity of building information.	<input type="radio"/>	<input type="radio"/>
2. Description and photographic evidence of wall, aperture materials and roof construction.	<input type="radio"/>	<input type="radio"/>
3. Manufacturer issued glazing specifications on shading coefficient, U-values and VLT.	<input type="radio"/>	<input type="radio"/>
4. Calculations for each facing wall.	<input type="radio"/>	<input type="radio"/>
5. Calculation of U-values for roof and walls for each building type and/or orientation.	<input type="radio"/>	<input type="radio"/>
6. Calculation of OTTV of each building type and/or orientation. Highest value of OTTV shall apply.	<input type="radio"/>	<input type="radio"/>
7. Minimum 3 days of measurements of temperature at location determined by GBIC. (Locations to be determined before the submission of the CVA report and to be verified during Site Inspection, if required). The result will be used for data collection purpose only.	<input type="radio"/>	<input type="radio"/>
8. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | ENERGY EFFICIENCY (EE)

**EE2****ADVANCED EE PERFORMANCE****12 POINTS****INTENT**

To encourage enhancement to building in providing a thermally comfortable environment to reduce the use of air-conditioning in residential building, thereby reducing CO<sub>2</sub> emission.

**DESCRIPTION**

Establish EE Performance to reduce dependence on energy to keep indoor environment at satisfactory comfort level. Computed OTTV and Roof U-value to show lower dependence on energy to maintain indoor thermal comfort.

**REQUIREMENTS**

Design the residential building to meet these conditions to obtain the allocated points.

<b>A) Landed</b>	
OTTV $\leq 46 \text{ W/m}^2$ , <b>OR</b>	1
OTTV $\leq 42 \text{ W/m}^2$ , <b>OR</b>	2
OTTV $\leq 38 \text{ W/m}^2$	3
Lightweight Roof U-value $\leq 0.35 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.50 \text{ W/m}^2\text{K}$ , <b>OR</b>	1
Lightweight Roof U-value $\leq 0.30 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.40 \text{ W/m}^2\text{K}$ , <b>OR</b>	2
Lightweight Roof U-value $\leq 0.25 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.30 \text{ W/m}^2\text{K}$ , <b>OR</b>	3
Lightweight Roof U-value $\leq 0.20 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.20 \text{ W/m}^2\text{K}$ , <b>OR</b>	6
Lightweight Roof U-value $\leq 0.15 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.15 \text{ W/m}^2\text{K}$ .	9
<b>B) Low-rise</b>	
OTTV $\leq 46 \text{ W/m}^2$ , <b>OR</b>	1
OTTV $\leq 42 \text{ W/m}^2$ , <b>OR</b>	2
OTTV $\leq 38 \text{ W/m}^2$ , <b>OR</b>	3
OTTV $\leq 34 \text{ W/m}^2$ , <b>OR</b>	4
OTTV $\leq 30 \text{ W/m}^2$	6
Lightweight Roof U-value $\leq 0.35 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.50 \text{ W/m}^2\text{K}$ , <b>OR</b>	1
Lightweight Roof U-value $\leq 0.30 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.40 \text{ W/m}^2\text{K}$ , <b>OR</b>	2
Lightweight Roof U-value $\leq 0.25 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.30 \text{ W/m}^2\text{K}$ , <b>OR</b>	3
Lightweight Roof U-value $\leq 0.20 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.20 \text{ W/m}^2\text{K}$ , <b>OR</b>	4
Lightweight Roof U-value $\leq 0.15 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.15 \text{ W/m}^2\text{K}$ .	6
<b>C) High-rise</b>	
OTTV $\leq 46 \text{ W/m}^2$ , <b>OR</b>	1
OTTV $\leq 42 \text{ W/m}^2$ , <b>OR</b>	2
OTTV $\leq 38 \text{ W/m}^2$ , <b>OR</b>	4
OTTV $\leq 34 \text{ W/m}^2$ , <b>OR</b>	6
OTTV $\leq 30 \text{ W/m}^2$	9
Lightweight Roof U-value $\leq 0.35 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.50 \text{ W/m}^2\text{K}$ , <b>OR</b>	1
Lightweight Roof U-value $\leq 0.30 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.40 \text{ W/m}^2\text{K}$ , <b>OR</b>	2
Lightweight Roof U-value $\leq 0.25 \text{ W/m}^2\text{K}$ / Heavyweight Roof U-value $\leq 0.30 \text{ W/m}^2\text{K}$ .	3

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | ENERGY EFFICIENCY (EE)**

<b>EE2</b>	<b>ADVANCED EE PERFORMANCE (CONTINUED)</b>	<b>12 POINTS</b>
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**APPROACH & IMPLEMENTATION**

Glazing should be optimally sized and the use of performance glazing such as low-e and/or spectrally selective glazing is encouraged. Wall insulation can be made using autoclaved lightweight concretes, composite insulated walls, double brickwall and many other options. For high-rise building, the introduction of sunscreen will reduce the solar radiation on the building envelop.

Roof should be insulated with suitable insulation materials to prevent heat gain into internal spaces. For landed and low-rise buildings, the typical roof receives from 50% to 85% of the total solar radiation due to its higher ratio of roof to building envelope area. Reducing the solar heat gain through the roof should therefore be the first priority for keeping the landed and low-rise home cool.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Plans and elevations marking out walls and apertures used for the calculation coloured blue and walls and apertures not used for calculation coloured red. Should the drawing be too small to be legible, provide a key plan with part plans for clarity of building information.	<input type="radio"/>	<input type="radio"/>
2. Description of wall and aperture materials specified.	<input type="radio"/>	<input type="radio"/>
3. Proposed glazing specifications on Shading Coefficient, U-value and Visible Light Transmission (VLT).	<input type="radio"/>	<input type="radio"/>
4. Calculations for each facing wall.	<input type="radio"/>	<input type="radio"/>
5. Calculation of U-values for roofs and walls for each building type and/or orientation.	<input type="radio"/>	<input type="radio"/>
6. Calculation of OTTV of each building type and/or orientation. The highest value of OTTV shall apply.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As-built plans and elevations marking out walls and apertures used for the calculation coloured blue and walls and apertures not used for calculation coloured red. Should the drawing be too small to be legible, provide a key plan with part plans for clarity of building information.	<input type="radio"/>	<input type="radio"/>
2. Description and photographic evidence of wall, aperture materials and roof construction.	<input type="radio"/>	<input type="radio"/>
3. Manufacturer issued glazing specifications on shading coefficient, U-values and VLT.	<input type="radio"/>	<input type="radio"/>
4. Calculations for each facing wall.	<input type="radio"/>	<input type="radio"/>
5. Calculation of U-values for roof and walls for each building type and/or orientation.	<input type="radio"/>	<input type="radio"/>
6. Calculation of OTTV of each building type and/or orientation. Highest value of OTTV shall apply.	<input type="radio"/>	<input type="radio"/>
7. Minimum 3 days of measurements of temperature at location determined by GBIC. (Locations to be determined before the submission of the CVA report and to be verified during Site Inspection, if required). The result will be used for data collection purpose only.	<input type="radio"/>	<input type="radio"/>
8. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | ENERGY EFFICIENCY (EE)

EE3

RENEWABLE ENERGY

5 POINTS

#### INTENT

To promote the use of renewable energy in residential buildings for self-supply in order to reduce environmental impact due to emission of CO<sub>2</sub>.

#### DESCRIPTION

The use of renewable energy systems is to offset energy cost and promote green energy use. For low-rise and high-rise buildings, Energy consumption shall be based on energy consumption of Common Areas only (excluding carpark) and shall not include energy consumption of the residential units.

#### REQUIREMENTS

<b>A) Landed</b>	
Where 1 kWp is generated by renewable energy (PV or equivalent), <b>OR</b>	1
Where 2 kWp or 40% of building energy consumption (whichever is the greater) is generated by renewable energy (PV or equivalent), <b>OR</b>	2
Where 3 kWp or 60% of building energy consumption (whichever is the greater) is generated by renewable energy (PV or equivalent), <b>OR</b>	3
Where 4 kWp or 80% of building energy consumption (whichever is the greater) is generated by renewable energy (PV or equivalent), <b>OR</b>	4
Where 5 kWp or 100% of building energy consumption (whichever is the greater) is generated by renewable energy. (PV or equivalent).	5
<b>B) Low-rise OR High-rise (Building Energy Consumption shall apply to energy consumption at common areas only; excluding Carparks)</b>	
Where 3 kWp is generated by renewable energy (PV or equivalent), <b>OR</b>	1
Where 6 kWp or 10% of building energy consumption (whichever is the greater) is generated by renewable energy (PV or equivalent), <b>OR</b>	2
Where 10 kWp or 15% of building energy consumption (whichever is the greater) is generated by renewable energy (PV or equivalent), <b>OR</b>	3
Where 20 kWp or 20% of building energy consumption (whichever is the greater) is generated by renewable energy (PV or equivalent), <b>OR</b>	4
Where 30 kWp or 25% of building energy consumption (whichever is the greater) is generated by renewable energy (PV or equivalent).	5

#### APPROACH & IMPLEMENTATION

Assess the project for renewable energy potential including solar, wind, geothermal, low-impact hydro, biomass and other similar technologies. Building Integrated Photovoltaic (BIPV) is highly recommended to be used to generate renewable electricity in residential building in Malaysian climate. The BIPV system can be grid integrated or stand-alone system with battery pack to store excess energy production. Solar hot water system may also be used to generate hot water for residential homes, the electrical energy offset by the solar hot water system will be considered as renewable energy.

#### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Scaled plans and elevations marking out areas used by renewable energy equipment.	<input type="radio"/>	<input type="radio"/>
2. Technology to be used.	<input type="radio"/>	<input type="radio"/>
3. Total areas of renewable energy equipment, total kWp and predicted annual generation in kWh.	<input type="radio"/>	<input type="radio"/>
4. Predicted total electricity consumption by the building/common area.	<input type="radio"/>	<input type="radio"/>
5. Calculation percentage of renewable energy over total electricity consumption.	<input type="radio"/>	<input type="radio"/>



**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | ENERGY EFFICIENCY (EE)**

<b>EE3</b>	<b>RENEWABLE ENERGY (CONTINUED)</b>	<b>5 POINTS</b>
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**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Scaled as-built plans and elevations marking out area used by the renewable energy equipment.	<input type="radio"/>	<input type="radio"/>
2. Photograph of completed installation.	<input type="radio"/>	<input type="radio"/>
3. Manufacturer issued specification on the renewable energy equipment.	<input type="radio"/>	<input type="radio"/>
4. Site measured kWp or equivalent renewable energy generated and proof of percentage of renewable energy over total electricity consumption for minimum 3 months.	<input type="radio"/>	<input type="radio"/>
5. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | ENERGY EFFICIENCY (EE)

**EE4****EXTENRAL LIGHTING AND CONTROL****2 POINTS****INTENT**

To provide energy efficiency lighting controls to optimise energy savings.

**DESCRIPTION**

Encourage and recognize lighting design and control strategies to optimize energy saving to external or common areas.

**REQUIREMENTS**

<b>A) Landed</b>	
1. Provide High Efficiency External Lighting to at least 90% of the total external areas (including Driveways, Porches and Gardens ) with lamp efficacy $\geq 80$ Lumens per Watt. <b>AND</b>	1
2. Maintain an overall luminance level of not more than what is specified in MS1525.	
Provide photo-sensors with motion detectors controlled lighting in conjunction with daylighting strategy for 90% of the total external areas (including Driveways, Porches and Gardens).	1
<b>B) Low-rise OR High-rise</b>	
1. Provide High Efficiency External Lighting to at least 90% of the common areas (including Lift Lobbies, Staircases, Carparks and Gardens) with lamp efficacy $\geq 80$ Lumens per Watt. <b>AND</b>	1
2. Maintain an overall luminance level of not more than what is specified in MS1525.	
Provide photo-sensors with motion detectors controlled lighting in conjunction with daylighting strategy for 90% of the common areas (including Lift Lobbies, Staircases, Carparks and Gardens).	1

**APPROACH & IMPLEMENTATION**

Reduce energy consumption and costs by lighting only those areas that are occupied or when required, by using high efficiency lighting together with photo-sensors in conjunction with motion detectors.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Scaled drawings of floor plans clearly showing the extent of external and common areas controlled by the automated photo-sensors in conjunction with motion detectors.	<input type="radio"/>	<input type="radio"/>
2. Description of the efficacy and luminance level of the light fittings used.	<input type="radio"/>	<input type="radio"/>
3. Calculate the percentage of coverage area and the overall luminance level.	<input type="radio"/>	<input type="radio"/>
4. Electrical schematic drawing showing the area controlled by the sensor and automated control sensing system.	<input type="radio"/>	<input type="radio"/>

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | ENERGY EFFICIENCY (EE)**

<b>EE4</b>	<b>EXTENRAL LIGHTING AND CONTROL (CONTINUED)</b>	<b>2 POINTS</b>
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**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Scaled as-built drawings of site and/or floor plans clearly showing the extent of external or common areas controlled by the automated photo-sensors in conjunction with motion detectors.	<input type="radio"/>	<input type="radio"/>
2. Manufacturer’s specifications for the efficacy and luminance level of the light fittings used.	<input type="radio"/>	<input type="radio"/>
3. Site measured luminance level.	<input type="radio"/>	<input type="radio"/>
4. As-built electrical schematic drawings showing the areas controlled by the automated photo-sensors in conjunction with motion detectors.	<input type="radio"/>	<input type="radio"/>
5. Manufacturer’s specifications for the automated photo-sensing in conjunction with motion detectors.	<input type="radio"/>	<input type="radio"/>
6. Photographic evidence of the lighting and sensor installations.	<input type="radio"/>	<input type="radio"/>
7. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
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**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | ENERGY EFFICIENCY (EE)**

<b>EE5</b>	<b>INTERNET CONNECTIVITY</b>	<b>1 POINT</b>
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**INTENT**

To encourage working from home via internet connection, thereby discouraging commuting and reducing CO<sub>2</sub> emission.

**REQUIREMENTS**

Provide infrastructure for internet connectivity to meet the speed capacity provided by the service providers.

**APPROACH & IMPLEMENTATION**

Provide high speed internet connection to homes.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Provide letter of support from Internet Service Provider or evidence that the locality has accessibility to internet service.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Official documentation from Internet Service Provider providing a connection to meet the speed capacity for the area.	<input type="radio"/>	<input type="radio"/>
2. Proof of the availability of Internet Service.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.		

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | ENERGY EFFICIENCY (EE)

EE6

## SUSTAINABLE MAINTENANCE AND BUILDING USER MANUAL

2 POINTS

### INTENT

Ensure the Green Building design features and energy efficient systems will continue to perform as intended. Document all features and strategies in Building User Manual (BUM) for user information and for the building maintenance team and in guiding them to sustain performance during occupancy.

### DESCRIPTION

A Building User Manual is intended to inform occupants about the active and passive design features that should be maintained throughout the lifespan of the building.

### REQUIREMENTS

A) Buildings Without Common Management	
Provide full set (hard and soft copy) of all Architectural, Structural and M&E Drawings and Maintenance Plan to every building owner.	1
Provide a Building User Manual (BUM) which documents both the passive and active green design features to every building owner.	1
B) Buildings With Common Management	
1. Provide a designated building maintenance office equipped with facilities (including tools and instrumentation) and inventory storage; <b>AND</b> 2. As least 50% of permanent building maintenance team to be on-board 3 months before practical completion and fully participate (to be specified in contract condition) in the Testing and Commissioning of all Green Building Design feature; <b>AND</b> 3. Provide full set (hard and soft copy) of all Architectural, Structural and M&E Drawings and Maintenance Plan to the Building maintenance team; <b>AND</b> 4. Provide evidence of documented plan for at least 3 year of facility maintenance and preventive maintenance budget.	1
Provide a Building User Manual (BUM) which documents both the passive and active green design feature to the building maintenance team and every unit owner if applicable.	1

### APPROACH & IMPLEMENTATION

Ensure the maintenance team fully participates in the testing and commissioning stage, understand the design intent and provide a 3 year sustainable maintenance program.

Provide a Building User Manual which documents all the passive and active features that are part of the building, and highlight all passive and active features that should not be downgraded.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Identify building maintenance room and facilities in the scaled floor plans.	<input type="radio"/>	<input type="radio"/>
2. Commitment to engage at least 50% of permanent building maintenance team before practical completion with proposed positions identified.	<input type="radio"/>	<input type="radio"/>
3. Commitment to provide full set of the building's architectural, structural and M&E Drawings and maintenance plan to the every building owners or the building's maintenance team.	<input type="radio"/>	<input type="radio"/>
4. Commitment to provide evidence of documented plan for at least 3-year facility maintenance and preventive maintenance budget inclusive of staffing and outsourced contracts.	<input type="radio"/>	<input type="radio"/>
5. Develop the Building User Manual framework of contents.	<input type="radio"/>	<input type="radio"/>

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | ENERGY EFFICIENCY (EE)**

<b>EE6</b>	<b>SUSTAINABLE MAINTENANCE AND BUILDING USER MANUAL (CONTINUED)</b>	<b>2 POINTS</b>
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REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)	SUBMITTER	GBI
1. Comprehensive list of maintenance tools and instrumentation, and inventory storage items including photographic evidence.	<input type="radio"/>	<input type="radio"/>
2. Documentary evidence of engagement of 50% of the maintenance team three months before practical completion who are then involved in the full testing and commissioning of the building energy related systems.	<input type="radio"/>	<input type="radio"/>
3. Documentary evidence of full set of the building’s architectural, structural and M&E Drawings and maintenance plan received by building owners or the building’s maintenance team.	<input type="radio"/>	<input type="radio"/>
4. Evidence of documented plan for at least 3-year of facility maintenance and preventive maintenance budget for facility maintenance inclusive of staffing and outsourced contracts.	<input type="radio"/>	<input type="radio"/>
5. A copy of the Building User Manual(BUM)	<input type="radio"/>	<input type="radio"/>
6. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

PROJECT NAME				DATE
SUBMITTING PROFESSIONAL	NAME	DESIGNATION	COMPANY	SIGNATURE
CLIENT	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

RESIDENTIAL NEW CONSTRUCTION (RNC)  
**INDOOR ENVIRONMENTAL QUALITY**  
**(EQ)**

## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)

**EQ1**

**MINIMUM IAQ PERFORMANCE**

**3 POINTS**

### INTENT

Establish minimum indoor air quality performance to enhance indoor air quality in building, thus contributing to the comfort and well-being of the occupants.

### DESCRIPTION

To ensure adequate fresh air supply to occupied spaces so as to maintain good air quality in building and to enhance indoor comfort through the provision of good natural ventilation design.

### REQUIREMENTS

<b>A) Landed</b>	
All habitable rooms to meet the minimum requirements of ventilation rate in the local building code.	1
≥75% of the total habitable rooms to be provided with cross and/or stack ventilation, <b>OR</b>	1
All habitable rooms to be provided with cross and/or stack ventilation.	2
<b>B) Low-rise OR High-rise</b>	
All habitable rooms to meet the minimum requirements of ventilation rate in the local building code.	1
≥75% of the total habitable rooms to be provided with cross and/or stack ventilation.	1
All public and circulation spaces to be naturally ventilated to meet the minimum requirements of ventilation rate in the local building code.	1

### APPROACH & IMPLEMENTATION

Provide adequate openings as required by the local building code.

Cross ventilation is obtainable by having opening in both sides of the room. The window size facing the outdoor environment must comply with the minimum requirements of the ventilation rate in the local building code **AND** the minimum size requirement of the window at the opposite wall is 1m<sup>2</sup>.

Stack ventilation refers to the flow of external air to an indoor space as a result of pressure or temperature differences, via buoyancy-driven ventilation. Compliance may meet either through calculation or simulation.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Description of the project ventilation design	<input type="radio"/>	<input type="radio"/>
2. Schematic to illustrate the project ventilation system design,	<input type="radio"/>	<input type="radio"/>
3. Calculations to show that the openings provided meet the local building code.	<input type="radio"/>	<input type="radio"/>
4. Calculations the percentage of habitable rooms that are provided with natural ventilation. (For Gold or Platinum, <b>AND/OR</b> High-rise must use simulation modeling to demonstrate the effective cross and/or stack ventilation design.)	<input type="radio"/>	<input type="radio"/>



**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)**

<b>EQ1</b>	<b>MINIMUM IAQ PERFORMANCE (CONTINUED)</b>	<b>3 POINTS</b>
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**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Description of the project ventilation design and how it has complied with local building code including information regarding the cross and/or stack ventilation design and any special conditions that affected the project ventilation design.	<input type="radio"/>	<input type="radio"/>
2. As-built drawings to illustrate the project ventilation system design	<input type="radio"/>	<input type="radio"/>
3. Calculations to show that the openings provided meet the local building code.	<input type="radio"/>	<input type="radio"/>
4. Calculation the percentage of habitable rooms that are provided with natural ventilation. (For Gold or Platinum, <b>AND/OR</b> High-rise must use simulation modeling to demonstrate the effective cross and/or stack ventilation design.)	<input type="radio"/>	<input type="radio"/>
5. Site measurements of the ventilation rate of rooms as determined by GBIC. (Rooms to be determined before the submission of the CVA report and to be verified during Site Inspection, if required). The results will be used for data collection purpose only.	<input type="radio"/>	<input type="radio"/>
6. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)

**EQ2**

### VOLATILE ORGANIC COMPOUNDS MINIMISATION

**2 POINTS****INTENT**

Reduce the detrimental impact on occupants' health from finishes that emit internal air pollutants.

**DESCRIPTION**

To encourage the use and specification of healthy materials and finishes which contain low volatile organic compounds to ensure the well-being of occupants. The maximum values for various coating is listed below.

**VOC limits for Paints and coatings.**

Product/Coating Type	VOC Limit (g/L lesswater)
Anti-Corrosive & Anti-Rust Paints	
Gloss, Semi Gloss, Flat	250
Clear Wood Finishes, Stains, Primers, Shellacs, Floor Coatings	
Bond Breakers	350
Clear Wood Finishes – Varnish, Sanding Sealer	350
Clear Wood Finishes –Lacquer	550
Clear brushing lacquer	680
Concrete curing compounds	350
Fire proofing exterior coatings	350
Fire retardant coatings – Clear	650
Fire retardant coatings –Pigmented	350
Floor Coatings	100
Graphic arts (sign) coatings	500
Industrial Maintenance (IM) coatings High Temperature IM coatings Zinc rich IM primers	100
Japans/faux finishing coatings	350
Magnesia cement coatings	450
Mastic coatings	300
Metallic pigmented coatings	500
Multicolour coatings	250
Pigmented lacquer	550
Pre-treatment wash primers	100
Primers, sealers, under coaters	200
Quick dry Enamels	50
Quick dry primers, sealers and under coaters	100
Recycled coatings	250
Roof coatings	50
Roof coatings - Aluminium	100
Roof primers, Bituminous	350
Shellac – Clear	730
Shellac – Pigmented	550
Specialty primer	100
Stains interior	250
Waterproofing sealers	250
Waterproofing concrete/masonry sealers	450
Wood-preservatives	350
Low solids coatings	120

## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)

EQ2

## VOLATILE ORGANIC COMPOUNDS MINIMISATION (CONTINUED)

2 POINTS

VOC limits for Adhesives and Sealants.

Architectural Application	VOC Limit (g/L lesswater)	Specialty Applications	VOC Limit (g/L lesswater)
Indoor carpet adhesives	50	PVC welding	510
Carpet pad adhesives	50	CPVC welding	490
Wood flooring adhesives	100	ABS welding	325
Rubber floor adhesives	60	Plastic cement welding	250
Subfloor adhesives	50	Adhesives primer for plastic	550
Ceramic tile adhesives	65	Contact adhesives	80
VCT and asphalt adhesives	50	Special purpose contact adhesives	250
Drywall and panel adhesives	50	Structural wood member adhesives	140
Cove base adhesives	50	Sheet applied rubber lining operations	850
Multipurpose construction adhesives	70	Top and trim adhesives	250
Structural glazing adhesives	100		
Substrate Specific Applications	VOC Limit (g/L lesswater)	Sealants	VOC Limit (g/L lesswater)
Metal to Metal	30	Architectural	250
Plastic foams	50	Non membrane roof	300
Porous materials (except wood)	50	Single-ply roof membrane	450
Wood	30	Others	420
Fiberglass	80		
Sealant Primers	VOC Limit (g/L lesswater)		
Architectural, nonporous	250		
Architectural, nonporous	775		
Other	750		

### REQUIREMENTS

1 point is awarded for any 2 of the following items, up to a maximum of 2 points:

1. Use low VOC paint and coating to walls (at least 90% of walls) **OR** no paint and coating used. Paints and Coatings to comply with requirements specified in international labeling schemes recognized by GBI,
2. Use low VOC paint and coating to ceiling (at least 90% of ceilings) **OR** no paint and coating used. Paints and Coatings to comply with requirements specified in international labeling schemes recognized by GBI,
3. Use low VOC carpet or flooring (at least 90% of flooring) **OR** no carpet or interior used. Carpets to comply with requirements specified in international labeling schemes recognized by GBI. Other types of flooring to comply with requirements under Floor Score developed by Science Certification System or equivalent,
4. Use low VOC adhesive and sealant (at least 90% of overall usage) **OR** no adhesive or sealant used. Adhesives and sealants to comply with requirements specified in international labeling schemes recognized by GBI.

### APPROACH & IMPLEMENTATION

The required points should be clearly stated in project specifications. Indicate what must be provided, e.g. cut-sheets, material safety data sheets, certificates and test reports. Submittal of the compliance documentation should be a pre-requisite for product approval.

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)**

<b>EQ2</b>	<b>VOLATILE ORGANIC COMPOUNDS MINIMISATION (CONTINUED)</b>	<b>2 POINTS</b>
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**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Summary, plans and report outlining the areas where the low VOC materials will be installed and how the required points is to be met.	<input type="radio"/>	<input type="radio"/>
2. Manufacturer’s information and green labeling certificates (if applicable) for the specified materials.	<input type="radio"/>	<input type="radio"/>
3. Table and calculations on the percentage of low VOC materials used for each of the surfaces of each rooms.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As-built drawings or as built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications.	<input type="radio"/>	<input type="radio"/>
2. List of products installed that meet the required points.	<input type="radio"/>	<input type="radio"/>
3. Manufacturer’s information including data sheets, certificates, test reports etc. to demonstrate point compliance.	<input type="radio"/>	<input type="radio"/>
4. Site measurements of the air quality of rooms as determined by GBIC. (Rooms to be determined before the submission of the CVA report and to be verified during Site Inspection, if required)	<input type="radio"/>	<input type="radio"/>
5. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)

EQ3

FORMALDEHYDE MINIMISATION

1 POINT

#### INTENT

Reduce the exposure of occupants to formaldehyde and promote good indoor air quality in the living space.

#### DESCRIPTION

Products with no formaldehyde or products which use glue in their manufacturing process, should comply to formaldehyde emissions ratings.

#### REQUIREMENTS

Use products with no formaldehyde **OR** use only products that comply to formaldehyde emission rating listed below or any other rating recognised by GBI, if glue is used in the manufacturing process.

- European test methodology based on the Perforator Test Method, which measures the formaldehyde levels inside the wood specimen.
  - E0: < 0.5mg of formaldehyde per 100g of dry broad – Acceptable
  - E1: > 0.5mg and < 9mg of formaldehyde per 100g of dry broad – Acceptable
  - E2: > 9mg and < 30mg of formaldehyde per 100g of dry broad – Not acceptable
  - E3: > 30mg of formaldehyde per 100g of dry broad – Not acceptable
- The Japanese Industrial Standards (JIS) and Japanese Agricultural Standards (JAS) departments, use the Desiccator Test Method which measures emissions released from the wood.
  - F4 or F\*\*\*\*: Average < 0.3mg/l, with max value of 0.4mg/l – Acceptable
  - F3 or F\*\*\* : Average < 0.5mg/l, with max value of 0.7mg/l – Not acceptable
  - F2 or F\*\* : Average < 1.5mg/l, with max value of 2.1mg/l – Not acceptable
  - F1 or F\* : Average < 5.0mg/l, with max value of 7.0mg/l – Not acceptable
- The rating system released by the California Air Regulatory Board (CARB) in the United States specifies emissions levels limit (based on ASTM E 1333-96) in the following wood composite products:
  - Particleboard (PB): 0.09ppm
  - Medium Density Fibreboard (MDF): 0.11ppm
  - Thin MDF (tMDF) (<8 mm thick): 0.13ppm
  - Hardwood plywood with a veneer core (HWPW-VC) or composite core (HWPW-CC): 0.05ppm

#### APPROACH & IMPLEMENTATION

Ensure that that required points are clearly stated in contract tender documents. Submittal of the compliance documentation should be a pre-requisite for product approval.

#### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Summary report outlining the strategies and procedures to be taken to meet the required points.	<input type="radio"/>	<input type="radio"/>
2. If glue is used, submit manufacturer's information and green labeling certificate (if applicable) for the specified materials to verify the volume and values used.	<input type="radio"/>	<input type="radio"/>

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)**

<b>EQ3</b>	<b>FORMALDEHYDE MINIMISATION (CONTINUED)</b>	<b>1 POINT</b>
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**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As-built drawings or as-built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications.	<input type="radio"/>	<input type="radio"/>
2. Report to outline the measures undertaken to ensure that required point is met.	<input type="radio"/>	<input type="radio"/>
3. Manufacturer’s information to verify GBI point compliance.	<input type="radio"/>	<input type="radio"/>
4. Site measurements of the air quality of rooms to be determined by GBIC. (Rooms to be determined before the submission of the CVA report and to be verified during Site Inspection, if required)	<input type="radio"/>	<input type="radio"/>
5. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)

<b>EQ4</b>	<b>DAYLIGHTING</b>	<b>3 POINTS</b>
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### INTENT

Encourage and recognize designs that provide good levels of daylighting for building occupants.

### DESCRIPTION

Demonstrate that a nominated percentage of the habitable rooms as defined under Uniform Building By Law (UBBL) has a Daylight Factor of minimum 0.5% as measured at floor level;

### REQUIREMENTS

<b>A) Landed</b>	
≥50% of habitable rooms, <b>OR</b>	1
≥75% of habitable rooms, <b>OR</b>	2
≥75% of all rooms.	3
<b>B) Low-rise OR High-rise</b>	
≥50% of habitable rooms, <b>OR</b>	1
≥75% of habitable rooms.	2
All public and circulation spaces being naturally lit.	1

### APPROACH & IMPLEMENTATION

Daylight systems for buildings include windows, façade shading/light deflecting devices (e.g. lightshelves), roof lights and atrium spaces. The daylight factor is the ratio of indoor light level measured on the floor to the outdoor light level during overcast conditions with no direct sun. For a daylight space, the lighting level should be fairly uniform with no great contrast for visual comfort.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Summary report of the design strategies that will be undertaken to meet the requirements.	<input type="radio"/>	<input type="radio"/>
2. Summary of daylight factor results of each rooms and calculate the percentage of rooms which meet the criteria. (For High-rise, must use daylight simulation modeling to demonstrate the daylighting design.)	<input type="radio"/>	<input type="radio"/>

### REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)

	SUBMITTER	GBI
1. As-built drawings and specifications to demonstrate that the daylighting system has been constructed according to design drawings/specifications.	<input type="radio"/>	<input type="radio"/>
2. Summary of daylight factor results of each rooms, and calculate the percentage of rooms which meet the criteria.	<input type="radio"/>	<input type="radio"/>
3. Site measurements of the daylight lux level of rooms as determined by GBIC. (Rooms to be determined before the submission of the CVA report and to be verified during Site Inspection, if required) The result will be used for data collection purpose only.	<input type="radio"/>	<input type="radio"/>
4. Manufacturer's details on the daylighting system used (if applicable)	<input type="radio"/>	<input type="radio"/>
5. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)**

<b>EQ5</b>	<b>EXTERNAL VIEWS</b>	<b>1 POINT</b>
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**INTENT**

Reduce eyestrain for building occupants by providing long distance views and provision of visual connection to the outdoor environment.

**DESCRIPTION**

Provision of views to the outdoor environment which include greenery and/or water bodies for inhabitants to achieve benefits if relaxation and connectivity with the outdoor environment.

**REQUIREMENTS**

Demonstrate that all the habitable rooms have a direct line of sight to the outdoor environment through vision glazing. If the views is toward the internal light well or courtyard, the size must be substantial bigger than the minimum size acceptable in the UBBL.

**APPROACH & IMPLEMENTATION**

Maintain the view for habitable rooms is the primary design objective.

<b>REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. Typical floor plans and sections to identify how external view for the rooms is achieved between 0.8 and 2.2m above the finish floor level for the required rooms.	<input type="radio"/>	<input type="radio"/>
2. Design strategy of the interior layout that will be recommended designed to maintain view to the outside	<input type="radio"/>	<input type="radio"/>

<b>REQUIRED SUBMISSION FOR COMPLETION &amp; VERIFICATION ASSESSMENT (CVA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. As-built plans and sections including recommended designed interior layout that there is direct line of sight to outside through vision glazing between 0.8 and 2.2m above the finish floor level for the required rooms.	<input type="radio"/>	<input type="radio"/>
2. Photographic evidence of views from habitable rooms.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)

<b>EQ6</b>	<b>SOUND INSULATION</b>	<b>1 POINT</b>
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### INTENT

Reduce noise pollution between spaces.

### DESCRIPTION

Encourage and recognize building's walls and floors are designed with adequate noise attenuation properties to maintain good acoustic insulation between dwellings. Sound Transmission Class (STC) values of the partitions shall be in accordance with ASTM E413, or equivalent.

### REQUIREMENTS

Ensure that the sound penetrations between dwellings are controlled within the following criteria;  
Sound Transmission Class (STC) value between dwelling unit >45.

### APPROACH & IMPLEMENTATION

STC is an integer rating of how well a building partition attenuates airborne sound. STC is calculated by taking the Transmission Loss (TL) values tested at 16 standard frequencies over the range of 125 Hz to 4000 Hz and plotted on a graph. Your curve (what you actually measured) is compared to standard STC reference curves. If your wall graph is closest to a standard STC 35 curve, your wall is said to have an STC of 35 (ASTM E413).

Provide party walls with heavy mass or sound insulation materials to reduce transmission of noise between walls. Consider floor underlay for floors above, to separate the floor's surface above from the ceiling down below. The separation point will serve to disconnect the rooms, decoupling the foot noise and other impact sounds that would otherwise work to vibrate energy through. A 150mm thick brick wall with cement render on both sides, with a density of 245 kg/m<sup>2</sup> is deemed to have STC value of 45.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. A summary report describing acoustical features to be provided for the building.	<input type="radio"/>	<input type="radio"/>
2. Typical layout with walls and floors with noise attenuation properties clearly marked. Provide legends to show STC of all relevant walls.	<input type="radio"/>	<input type="radio"/>

### REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)

	SUBMITTER	GBI
1. As-built drawings and specifications to demonstrate that the acoustical features has been constructed according to design drawings/specifications.	<input type="radio"/>	<input type="radio"/>
2. Typical layout with walls and floors with noise attenuation properties clearly marked. Provide legends STC and computation of STC level.	<input type="radio"/>	<input type="radio"/>
3. Site measurements of the acoustic test results between dwellings determined by GBIC. (Rooms to be determined before the submission of the CVA report and to be verified during Site Inspection, if required). The result will be used for data collection purpose only.	<input type="radio"/>	<input type="radio"/>
4. Manufacturer Information on the acoustical system used (if applicable)	<input type="radio"/>	<input type="radio"/>
5. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | INDOOR ENVIRONMENTAL QUALITY (EQ)**

<b>EQ7</b>	<b>POST OCCUPANCY COMFORT SURVEY</b>	<b>1 POINT</b>
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**INTENT**

Provide for the assessment of quality and comfort of the building occupants over time.

**DESCRIPTION**

To conduct post occupancy comfort survey of the building occupants.

**REQUIREMENTS**

Conduct a post-occupancy comfort survey of building occupants within 12 months after issuance of Certificate of Completion and Compliance (CCC). This survey should collect anonymous responses about air quality, thermal comfort, daylighting comfort, visual comfort and acoustic comfort in a building.

This should include a measurement and assessment of overall satisfaction with thermal, daylight, visual and acoustic performance and identification of thermal-related, daylight-related, visual-related and acoustic-related problems.

**APPROACH & IMPLEMENTATION**

Provide a systematic process and system for occupants to provide feedback on their indoor environmental comfort. The survey should collect responses from a significant and representative sample of occupants. The subjective survey should be accompanied with objective measurements of the relevant environmental variables.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Commitment to conduct post occupancy survey of the building occupants.	<input type="radio"/>	<input type="radio"/>
2. A Summary report of the strategies that will be undertaken to meet the credit compliance.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Survey questionnaire to be used to collect responses from the occupants.	<input type="radio"/>	<input type="radio"/>
2. Objective measurement plan illustrating the areas and measurements to be undertaken.	<input type="radio"/>	<input type="radio"/>
3. Analysis report of the results of the survey and measurements. The results will be used for data collection purpose only.	<input type="radio"/>	<input type="radio"/>
4. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

RESIDENTIAL NEW CONSTRUCTION (RNC)  
**SUSTAINABLE SITE PLANNING  
& MANAGEMENT**  
**(SM)**

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM1</b>	<b>SITE SELECTION &amp; PLANNING</b>	<b>1 POINT</b>
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**INTENT**

Avoid development of inappropriate sites and reduce the environmental impact from the location of a building on a site. Proposed development is appropriate for the site, complies with the Local Plan or Structure Plan for the area and does not overburden the available infrastructure.

**DESCRIPTION**

Minimize inappropriate developments that do not comply with the Local Plan or Structure Plan for the area or exceed the available or planned infrastructure.

**REQUIREMENTS**

1. Approved Layout plan that shows compliance with the Local Plan or Structure Plan of the area or Approved DO.
2. Support letters from all Infrastructure Providers of availability for all infrastructure.
3. The proposed buildings, hardscape, roads or parking on sites or part of sites that meet any one of the following criteria:
  - Prime agricultural land as defined by the Town and Country Planning Act;
  - Land that is specifically identified as habitat for any species threatened or endangered lists; and
  - Within 30m of any wetlands as defined by the Structure Plan of the area.

**OR** within setback distances from wetlands prescribed in state or local regulations, as defined by local or state rule or law, whichever is more stringent:

- Previously undeveloped land that is within 30m of a water body, defined as seas, lakes, rivers, streams and tributaries which support or could support fish, recreation or industrial use;
- Land which prior to acquisition for the project was public parkland, unless land of equal or greater value as parkland is accepted in trade by the public landowner; **AND**
- Land which is classified as Class IV (steeper than 30 degrees).

**APPROACH & IMPLEMENTATION**

1. Ensure the Layout plans for the project comply with the existing Structure Plan and Local Plan for the area where available.
2. Ensure Planned Development is supported by available or planned infrastructure including but not limited to Roads, Drains, Water supply, Sewerage Systems, Electricity Supply and Telecommunications systems.
3. During site selection process, give preference to sites that have low ecological value or are not environmentally sensitive.
4. If unavoidable, locate the building in a suitable location and with a minimal footprint so as to minimize disruption of environmentally sensitive areas.
5. Select sites that are stable and not prone to destructive natural events like flooding, erosion or landslides.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Submit approved Layout Plan and Planning approval letter with list of conditions where available.	<input type="radio"/>	<input type="radio"/>
2. If planning approval has not been obtained, Layout Plan and Structure Plan/Local Plan of the area must be submitted showing compliance.	<input type="radio"/>	<input type="radio"/>
3. Show through support letters or available infrastructure plans of adequate Roads, Drains, Water supply, Sewerage Systems, Electricity Supply and Telecommunications systems.	<input type="radio"/>	<input type="radio"/>
4. Survey plan and Site Plan showing footprint of building and its setback dimensions in relationship to existing natural features such as lakes, rivers, streams, tributaries, beaches, etc.	<input type="radio"/>	<input type="radio"/>

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM1</b>	<b>SITE SELECTION &amp; PLANNING (CONTINUED)</b>	<b>1 POINT</b>
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**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Compliance to Planning approval portion of CCC submission to Local Authorities or supporting letter from Planning Department for the CCC.	<input type="radio"/>	<input type="radio"/>
2. As built site plans showing footprint of building and dimensions in relationship to existing natural features such as lakes, rivers, streams, tributaries, beaches, etc.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM2</b>	<b>RE-HABILITATION OF BROWNFIELD SITES OR RE-DEVELOPMENT OF EXISTING BUILDINGS</b>	<b>1 POINT</b>
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**INTENT**

Reduce pressure on undeveloped land by rehabilitating damaged sites where development is complicated by environmental contamination or redeveloping existing buildings

**DESCRIPTION**

Greenfield sites are those that are not previously developed or graded and remain in a natural state. Existing developed sites are those that previously contained permanent buildings. Brownfield sites are used sites abandoned or contaminated, examples are old industrial sites, old rubbish dump sites, former mining land or former petrol station sites.

**REQUIREMENTS**

Reward rehabilitation of Brownfield site and development in existing building.

1. Rehabilitation of brownfield sites, **OR**
2. Re-use **OR** refurbishment of site with existing development to improve the quality of the development

**APPROACH & IMPLEMENTATION**

For site with existing development, retain, as much as practically possible, the existing structures.

For brownfield sites, conduct a soil condition test to determine the level of contamination.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. A brief historical report on the usage of the site/buildings and prepare a report certified by approved testing laboratory determining the level of contamination, if applicable.	<input type="radio"/>	<input type="radio"/>
2. Existing site photographs, showing existing condition of site/buildings	<input type="radio"/>	<input type="radio"/>
3. For rehabilitation of brownfield site, submit an EIA report containing the level of contamination and the proposed action to be taken, such as removal and replacement of soil, and other action deemed appropriate.	<input type="radio"/>	<input type="radio"/>
4. For re-use or refurbishment of site with existing development, submit Site Plan with proposal and summary report on re-sue/refurbishment strategies.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. For rehabilitation of brownfield site, submit report and photographs of works carried out during decontamination process.	<input type="radio"/>	<input type="radio"/>
2. For re-sue or refurbishment of site with existing development, submit As-Built site plan with completed project and summary report on re-sue/refurbishment of site.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)

SM3

COMMUNITY CONNECTIVITY

4 POINTS

#### INTENT

Encourage the selection of sites close to basic community amenities and the planning of new residential areas to encourage the provision of local amenities. This is to reduce the current and future heavy use of private transport, which is the greatest contributor to GHG emission.

#### DESCRIPTION

Community Facilities are for the convenience of residents.

#### REQUIREMENTS

Points are awarded according to proximity of the development to community amenities. For new housing areas, the provision of basic/essential amenities and enhancements is encouraged.

The community services and amenities are grouped in terms of priority into two categories. Scoring for each category is independent from one another. All amenities described under each category must fall within the specified distance to qualify for the points.

<p><b>Basic Amenities as listed below are to be provided or are available within 750m measured on plan from the furthest residential units:</b>  <i>(1 point for any 3 of the following Basic Amenities, up to a maximum of 2 points):</i></p> <ol style="list-style-type: none"> <li>1. Bank or ATM;</li> <li>2. Playground or Public Park;</li> <li>3. Religious Centre (Mosque, Surau, Temple, Church, Kuil);</li> <li>4. Restaurant or Coffee Shop;</li> <li>5. Supermarket or Grocery Store or Mini-market or Wet Market;</li> <li>6. University or College or School or Crèche or Kindergarten.</li> </ol>	2
<p><b>Other Amenities as listed below are to be provided or are available within 750m measured on plan from the furthest residential units:</b>  <i>(1 point for any 3 of the following other Amenities, up to maximum of 2 points):</i></p> <ol style="list-style-type: none"> <li>1. Community Center or Assembly Hall;</li> <li>2. Hair Saloon or Barber Shop;</li> <li>3. Hardware Store;</li> <li>4. Hospital or Medical Center or Clinic or Pharmacy;</li> <li>5. Laundry;</li> <li>6. Library or Book Store or Newsagent or StationeryShop;</li> <li>7. Police Station or Police Pondok;</li> <li>8. Post Office.</li> </ol>	2

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM3</b>	<b>COMMUNITY CONNECTIVITY (CONTINUED)</b>	<b>4 POINTS</b>
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**APPROACH & IMPLEMENTATION**

This point encourages the provision beyond the basic amenities or services for the benefit of homeowners. Describe any other steps taken to enhance the infrastructure and amenities.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Site Plan (Aerial Google map is acceptable) showing housing or individual residential location in connection to the above Basic Services and Other Amenities. Indicate distances and legend of covered walkways, pedestrian access and other connections like link bridges and underground links. Provide legend for the Amenities to achieve the design point.	<input type="radio"/>	<input type="radio"/>
2. Proximity is determined by drawing a 750m radius around the main furthest residential unit on a site map and indicate services found within that radius.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As-built Site plan showing locations of all existing services, covered walkways, pedestrian access and other connections like link bridges, underground links, etc	<input type="radio"/>	<input type="radio"/>
2. Legend on symbols or colours to differentiate the types of amenities.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM4</b>	<b>EARTHWORK – CONSTRUCTION ACTIVITY POLLUTION CONTROL</b>	<b>1 POINT</b>
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**INTENT**

Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation.

**DESCRIPTION**

Construction sites are usually responsible for significant environmental pollution. Encourage the introduction and implementation of a policy to achieve all 3 objectives of controlling soil erosion, sedimentation and surface run-off, and air pollution.

**REQUIREMENTS**

1. Reduce pollution from construction activities by controlling soil erosion, waterway sedimentation and airborne dust generation by creating and implementing an Erosion and Sedimentation Control (ESC) Plan for all construction activities associated with the project. The ESC Plan shall conform to the erosion and sedimentation requirements of the approved Earthworks Plans OR Local erosion and sedimentation control standards and codes, whichever is the more stringent.
2. The ESC plan shall describe the measures implemented to accomplish the following objectives:
  - Prevent loss of soil by storm water runoff and/or wind erosion during construction, including protecting topsoil by stockpiling for reuse.
  - Prevent sedimentation of storm sewer or receiving stream.
  - Prevent polluting the air with dust and particulate matter.

**APPROACH & IMPLEMENTATION**

A proper ESC Plan should be adopted and understood by all consultants and owner early during design stage and captured in the tender for the works.

This is followed by a strict implementation of the ESC Plan during construction.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Proposed ESC Plan.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. ESC report, complete with photographic evidence and site reports verified by qualified person.	<input type="radio"/>	<input type="radio"/>
2. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM5</b>	<b>QLASSIC – QUALITY ASSESSMENT SYSTEM FOR BUILDING CONSTRUCTION WORK</b>	<b>1 POINT</b>
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**INTENT**

Encourage and recognise good quality construction – do it first time right – that does not require re-work that wastes materials and labour.

**DESCRIPTION**

Reward for achieving good quality constructions for Building Construction Work (QLASSIC) with a minimum score of 70% using CIDB’s CIS7: Quality Assessment System for Construction Work (QLASSIC).

**REQUIREMENTS**

Subscribe to independent method to assess and evaluate quality of workmanship of building based on CIDB’s CIS7: Quality Assessment System for Building Construction Work (QLASSIC) or equivalent systems recognized by GBI. Project should achieve a minimum score of 70%.

**APPROACH & IMPLEMENTATION**

Refer to QLASSIC documents for details.

<b>REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. Letter of commitment from building owner confirming participation in QLASSIC or approved equivalent.	<input type="radio"/>	<input type="radio"/>
2. Letter of support from Architect to confirm standards listed in QLASSIC or approved equivalent will be applied to tender and contract specifications.	<input type="radio"/>	<input type="radio"/>
3. Project Quality Plan for the building construction.	<input type="radio"/>	<input type="radio"/>

<b>REQUIRED SUBMISSION FOR COMPLETION &amp; VERIFICATION ASSESSMENT (CVA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. QLASSIC or approved equivalent certification from CIDB with score > 70%.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM6</b>	<b>WORKERS' SITE AMENITIES</b>	<b>1 POINT</b>
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**INTENT**

Reduce pollution from construction activities by controlling pollution from waste and rubbish from workers.

**DESCRIPTION**

Controlling Pollution from waste and rubbish from workers is as vital as that from all other construction processes.

**REQUIREMENTS**

Create and implement a Site Amenities Plan for all construction workers associated with the project. The plan shall describe the measures to be implemented to accomplish the following objectives:

1. Proper accommodation for construction workers at the site or at temporary accommodation nearby.
2. Prevent pollution of storm sewer or receiving stream by having proper septic tank.
3. Prevent polluting the surrounding area from open burning and improper disposal of domestic waste.
4. Provide, at reasonable distance, adequate health and hygiene facilities for workers on site.

**APPROACH & IMPLEMENTATION**

Site Amenities Plan is intended to achieve the objective of ensuring adequate health and hygiene facilities are available for workers in order to minimize pollution caused by workers.

<b>REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. Scaled Temporary Building Plan, indicating the Site Amenities.	<input type="radio"/>	<input type="radio"/>
2. If toilets and cooking facilities are provided, describe the health and hygiene facilities provided.	<input type="radio"/>	<input type="radio"/>

<b>REQUIRED SUBMISSION FOR COMPLETION &amp; VERIFICATION ASSESSMENT (CVA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. Report, complete with photographic evidence and site reports verified by qualified person.	<input type="radio"/>	<input type="radio"/>
2. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM7</b>	<b>IBS – INDUSTRIALISED BUILDING SYSTEM</b>	<b>2 POINTS</b>
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**INTENT**

Encourage IBS and reduce on-site construction. Reduce material wastage and construction material and process.

**DESCRIPTION**

Construction sites are usually responsible for significant environmental pollution. Adoption of Industrialized Building System (IBS) can reduce the amount of construction activities and process on site.

**REQUIREMENTS**

CIDB IBS score ≥ 50%, <b>OR</b>	1
CIDB IBS score ≥ 70%.	2

**APPROACH & IMPLEMENTATION**

1. Ensure that a proper IBS Plan is adopted and understood by all consultants and owner early during design stage and captured in the tender for the works.
2. Ensure strict implementation of the IBS Plan during construction.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Proposed IBS Plan.	<input type="radio"/>	<input type="radio"/>
2. The CIDB IBS report and description of adopted IBS system.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. IBS report, complete with photographic evidence and site reports verified by qualified person.	<input type="radio"/>	<input type="radio"/>
2. CIDB IBS Certification and scoring summary sheet.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

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## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)

SM8

PUBLIC TRANSPORTATION ACCESS

8 POINTS

#### INTENT

Encourage the selection of sites close to transport Stops or Interchange or routes, and encourage the use of public transport in the planning of the new housing area. This is to reduce the current and future heavy dependence on private transport, the greatest contributor of Green House Gases (GHG).

#### DESCRIPTION

Reduce pollution and land development impacts from automobile use.

#### REQUIREMENTS

Points are awarded according to proximity from the furthest residential units, and quality of the pedestrian access, to the Public Transport Stops or Interchanges.

<b>Provision of Covered Waiting Area for <math>\geq</math> 2% of total residents, up to maximum of 20 persons. (50% of points if private shuttle service to Public Transport Stops or Interchanges are provided)</b>	
Public Transport Stop located within 500m with one transport Route only; <i>OR</i>	2
Public Transport Interchange with same Mode of Transport (eg Bus) located within 750m with more than one transport Route; <i>OR</i>	4
Public Transport Interchange with more than one Mode of Transport (eg Bus, Monorail, Train, Ferry, etc.) located within 1km.	6
<b>Quality of Pedestrian Dedicated Access</b>	
Dedicated walkway – Public <i>OR</i> Private walkway with provision for the physically handicapped, <i>OR</i>	1
Dedicated covered walkway – Dedicated Public <i>OR</i> Private walkway with provision for the physically handicapped and with man-made shades or natural shade-providing trees at regular spacings covering at least 70% of the pedestrian access.	2

#### APPROACH & IMPLEMENTATION

During concept design stage, plan the building in a manner whereby easy access is available for building users to commute using public transport. Provisions for dedicated walkways are encouraged in the approach to the planning of the project and connections to Public Transport Stops or Interchange.

In larger residential areas transport terminals or dedicated bus shuttle connections to community centres or shopping precincts are also encouraged.

#### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Site plan (Aerial Google Map is acceptable) showing the site and building, and highlight the locations of existing and planned public transport facilities. Mark the radius from the furthest residential units to transportation Stop or Interchange.	<input type="radio"/>	<input type="radio"/>
2. The design/existing of the dedicated walkway with provision for the physically handicapped.	<input type="radio"/>	<input type="radio"/>

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM8</b>	<b>PUBLIC TRANSPORTATION ACCESS (CONTINUED)</b>	<b>8 POINTS</b>
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**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As-built site plan with marked uptransportation system facilities, the Public Transport Stop or Interchange. If private shutter is provided, indicate the routes and stops.	<input type="radio"/>	<input type="radio"/>
2. Photographic verification of the Public Transport Stop or Interchange.	<input type="radio"/>	<input type="radio"/>
3. Photographic evidence of dedicated walkway with provision for the physically handicapped.	<input type="radio"/>	<input type="radio"/>
4. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM9</b>	<b>DEDICATED CYCLING NETWORK</b>	<b>2 POINTS</b>
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**INTENT**

To reduce travel by car by promoting cycling as an alternative transportation mode.

**DESCRIPTION**

Reduce pollution and land development impacts from automobile use.

**REQUIREMENTS**

<b>A) Landed</b>	
Provision of bicycle lanes with proper signage for safety that is accessible to at least 90% of the residential units and common areas, where applicable.	1
Dedicated cycling network with man-made shades or natural shade-providing trees at regular spacings covering at least 70% of the cycling network.	1
<b>B) Low-rise OR High-rise</b>	
Provision of bicycle lanes with proper signage for safety and provision of secured bicycle parking for ≥ 2% of total residents, up to maximum of 20 parking spaces.	1
Dedicated cycling network with man-made shades or natural shade-providing trees at regular spacings covering at least 70% of the cycling network.	1

**APPROACH & IMPLEMENTATION**

During concept design stage, plan cycle networks serving the development where the said cycle networks are dedicated lanes and with proper signage for safety.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Brief summary on the dedicated cycling network.	<input type="radio"/>	<input type="radio"/>
2. Scaled site plan showing building locations and orientation, and cycling routes for the development, complete with signage types and locations.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Scaled as-built site plan showing building locations and orientation, and cycling routes for the development, and signage types and locations.	<input type="radio"/>	<input type="radio"/>
2. Photographic evidence of the cycling lanes, signage and other facilities (if applicable).	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM10</b>	<b>STORM WATER DESIGN – QUALITY AND QUALITY CONTROL</b>	<b>3 POINTS</b>
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**INTENT**

Limit disruption of natural hydrology by reducing impervious cover, increasing on-site infiltration, eliminating sources of contaminants and managing storm water runoff.

**DESCRIPTION**

Manage surface water run-off from developments. Reduce or eliminate the pollution by reducing impervious cover, increasing onsite infiltration, eliminating sources of contaminants and removing pollutants from storm water runoff.

**REQUIREMENTS**

Control post-development peak flow of any ARI at the project outlet to less than or equal to the pre-development peak flow of the corresponding ARI ( $Q_{post} \leq Q_{pre}$ ) in compliance with Manual SaliranMesraAlam (MSMA) OR local equivalent minimum requirements, whichever is more stringent, <b>OR</b>	1
Reduce the above-mentioned post-development peak flow of any ARI at the project outlet by another 30%.	2
Provide permanent pollutant control facilities with minimum overall percentage removal efficiency as defined by MSMA OR to attain a Class II(b) water quality standard as defined by the Interim National Water Quality Standards for Malaysia during and after construction, whichever is more stringent.	1

For either Condition, implement a storm water management plan that reduces impervious cover, promotes infiltration, and captures and treats the storm water runoff from 90% of the average annual rainfall using acceptable best management practices (BMPs).

**APPROACH & IMPLEMENTATION**

1. During concept design stage, conduct a thorough site evaluation and prepare a study to reduce the risk of water contamination to nearby water bodies by controlling the quality and quantity of stormwater runoff from the building.
2. Implement a stormwater management strategy in conformance with and satisfy the objectives of MSMA OR Local equivalent minimum requirements.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Preliminary study report complying with MSMA OR Local equivalent minimum requirements and development target.	<input type="radio"/>	<input type="radio"/>
2. Report on proposed systems or method of stormwater management for the site.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Report, complete with photographic evidence and site reports signed off by qualified person on final storm water design and management.	<input type="radio"/>	<input type="radio"/>
2. As-built Site Plan of completed project to scale.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM11</b>	<b>HEAT ISLAND EFFECT – GREENSCAPE AND WATER BODIES</b>	<b>5 POINTS</b>
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**INTENT**

Reduce Heat Island Effect and to minimize negative impact on microclimate by conserving existing natural area or create larger soft landscaping areas.

**DESCRIPTION**

Reduce Heat Island Effect and lower ambient temperatures to the surrounding environment.  
 Encourage protection or restoration of the habitat and maximise the ecological diversity by introducing native or adaptive vegetation.

**REQUIREMENTS**

Maximize Open Space by providing a high ratio of open space to development footprint to promote biodiversity & reduce Heat Island Effect:

<b>A) Landed</b>	
1. Provide greenscape with native and adaptive plants (if applicable) and/or water body to ≥ 25% of land area, <b>OR</b>	1
2. Provide greenscape with native and adaptive plants (if applicable) and/or water body to ≥ 35% of land area, <b>OR</b>	2
3. Provide greenscape with native and adaptive plants (if applicable) and/or water body to ≥ 45% of land area, <b>OR</b>	3
4. Provide greenscape with native and adaptive plants (if applicable) and/or water body to ≥ 55% of land area, <b>OR</b>	4
5. Provide greenscape with native and adaptive plants (if applicable) and/or water body to ≥ 65% of land area.	5
<b>B) Low-rise OR High-rise</b>	
1. Provide greenscape with native & adaptive plants and/or water body to ≥ 15% of land area, <b>OR</b>	1
2. Provide greenscape with native & adaptive plants and/or water body to ≥ 25% of land area, <b>OR</b>	2
3. Provide greenscape with native & adaptive plants and/or water body to ≥ 35% of land area, <b>OR</b>	3
4. Provide greenscape with native & adaptive plants and/or water body to ≥ 45% of land area, <b>OR</b>	4
5. Provide greenscape with native & adaptive plants and/or water body to ≥ 55% of land area.	5

**APPROACH & IMPLEMENTATION**

For previously developed or graded sites, during concept design, for multi buildings development, ensure that the proposed buildings are located close to one another. This enables more land to be freed up for planting. For a single building development, minimise the footprint or plinth area for the same purpose.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Scaled site plan showing setback dimensions, outlines of building plinth, greenscape and water bodies areas. Indicate percentage of areas allocated for greenscape and water bodies, out of total site area	<input type="radio"/>	<input type="radio"/>
2. Scaled landscape plan showing the percentage area covered by native or adaptive vegetation.	<input type="radio"/>	<input type="radio"/>
3. Name list of plants and characteristics.	<input type="radio"/>	<input type="radio"/>

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM11</b>	<b>HEAT ISLAND EFFECT – GREENSCAPE AND WATER BODIES (CONTINUED)</b>	<b>5 POINTS</b>
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**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Scaled as-built coloured Site Plan with marked outlines of building plinth, softscape and water bodies areas. Indicate percentage of areas allocated for greenscape, out of total site area.	<input type="radio"/>	<input type="radio"/>
2. Scaled landscape as-built plans showing the percentage area covered by native and adaptive vegetation.	<input type="radio"/>	<input type="radio"/>
3. Submit photographic evidence of greenscape and water bodies areas.	<input type="radio"/>	<input type="radio"/>
4. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM12</b>	<b>HEAT ISLAND EFFECT – HARDSCAPE</b>	<b>2 POINTS</b>
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**INTENT**

Reduce Heat Island Effect and to minimize impact on microclimate through selection of hardscape material.

**DESCRIPTION**

Reduce Heat Island Effect and lower ambient temperatures to the surrounding environment.

**REQUIREMENTS**

Provide any combination of the following strategies for 50% of the site hardscape (including sidewalks, courtyards, plazas and parking lots):

- Shade (within 5 years of occupancy);
- Paving materials with a Solar Reflectance Index (SRI) of at least 29;
- Open grid pavement system;

**APPROACH & IMPLEMENTATION**

During concept design stage, ensure landscaping design is incorporated, and choice of materials with preferred SRI is considered.

1. ≥50 of the site’s hardscape areas, <i>OR</i>	1
1. ≥75 of the site’s hardscape areas.	2

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Scaled site plan showing the extent of proposed hardscape. Indicate the percentage of hardscape out of total site area.	<input type="radio"/>	<input type="radio"/>
2. List of materials used and their characteristics, including SRI values.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Scaled as-built plans. Indicate percentage of hardscape, out of total site area.	<input type="radio"/>	<input type="radio"/>
2. List of materials used and their characteristics, including SRI values.	<input type="radio"/>	<input type="radio"/>
3. Photographic evidence of hardscape areas.	<input type="radio"/>	<input type="radio"/>
4. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM13</b>	<b>HEAT ISLAND EFFECT – ROOF</b>	<b>1 POINT</b>
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**INTENT**

Reduce Heat Island Effect and to minimize negative impact on microclimate through selection of roof material.

**DESCRIPTION**

1. The use of greenery on rooftops can help alleviate urban Heat Island Effect through shading and evaporative cooling. It also enhances aesthetics to the surrounding and provides a more pleasant working environment, which is also discussed in Indoor Environment Quality.
2. Roof application includes roofs over individual parking lots and roofs over parking structures.

**REQUIREMENTS**

1. Use roof material with SRI ≥ 78 for low pitch roof (gradient < 2:12), or SRI ≥ 29 for steep pitch roof (gradient > 2:12) for ≥75% of the roof surfaces; **OR**
2. Install a vegetated roof to at least 50% of the roof area; **OR**
3. Install high albedo and vegetated roof surface that, in combination, meet the following criteria:  
 $(Area\ of\ SRI\ Roof / 0.75) + (Area\ of\ vegetated\ roof / 0.5) \geq Total\ Roof\ Area.$

**APPROACH & IMPLEMENTATION**

During concept design stage, ensure landscaping design is incorporated and choice of materials with preferred SRI is considered. Where possible, introduce landscaping to exposed roof surfaces.

<b>REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. List of material used and their characteristics, including SRI values.	<input type="radio"/>	<input type="radio"/>
2. Scaled Roof Plan showing the extent of proposed roof (with its SRI value) and/or greenscape.	<input type="radio"/>	<input type="radio"/>
3. Scaled section drawing of the rooftop showing details of built-up roof greenery.	<input type="radio"/>	<input type="radio"/>
4. Scaled site plan showing the extent of proposed roof (with its SRI value) and/or greenscape. Indicate the percentage of roof and/or greenscape out of total site area.	<input type="radio"/>	<input type="radio"/>

<b>REQUIRED SUBMISSION FOR COMPLETION &amp; VERIFICATION ASSESSMENT (CVA)</b>	<b>SUBMITTER</b>	<b>GBI</b>
1. Scaled as-built plans and list of materials used with their SRI values. Indicate the percentage of roof (with its SRI value) and/or greenscape out of total site area	<input type="radio"/>	<input type="radio"/>
2. Photographic evidence of roof and/or greenery.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

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**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | SUSTAINABLE SITE PLANNING & MANAGEMENT (SM)**

<b>SM14</b>	<b>COMPOSTING</b>	<b>1 POINT</b>
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**INTENT**

To reduce the use of synthetic fertilizers and reduce the amount of landscape and/or organic wastes.

**REQUIREMENTS**

1. Recycle landscape and/or organic waste to meet at least 50% of landscape fertilizer needs; **AND**
2. To provide a programme for the recycling of the landscape and/or organic waste.

**APPROACH & IMPLEMENTATION**

Ensure the composting strategy is incorporated during greenscape design and to plan an organic waste programme to reduce the use of synthetic fertilizer.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Calculation showing the number of the compost bins required to satisfy criteria.	<input type="radio"/>	<input type="radio"/>
2. Scaled site plan showing locations of the compost bins.	<input type="radio"/>	<input type="radio"/>
3. Recycling landscape and/or organic waste programme.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Verification and photographic evidence of the compost bins provided.	<input type="radio"/>	<input type="radio"/>
2. Scaled site plan showing locations of the compost bins.	<input type="radio"/>	<input type="radio"/>
3. Recycling landscape and/or organic waste programme.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
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<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

RESIDENTIAL NEW CONSTRUCTION (RNC)  
**MATERIAL & RESOURCES**  
**(MR)**

## RESIDENTIAL NEW CONSTRUCTION (RNC)

### RNC | MATERIALS AND RESOURCES (MR)

**MR1****MATERIAL REUSE AND SELECTION****2 POINTS****INTENT**

Encourage owners to specify the usage of reused building materials in new buildings.

**DESCRIPTION**

Reuse building materials and products to reduce demand for virgin materials and reduce creation of waste. This serves to reduce environmental impact associated with extraction and processing of virgin resources. Integrate building design and its buildability with careful selection of building materials in relation with embodied energy and durability of the material to lower carbon foot print and improve material's life cycle.

**REQUIREMENTS**

Where reused products or materials constitutes $\geq 2\%$ of the project's total material cost value, <b>OR</b>	1
Where reused products or materials constitutes $\geq 5\%$ of the project's total material cost value.	2

**APPROACH & IMPLEMENTATION**

The following approach can achieve this point by using:

1. Reused Materials found on site
  - Fixed components such as doors, cabinetries, posts etc. that no longer serve their original function are refurbished, reconditioned and installed for a different use or in a different location.
2. Reused Materials found off site
  - Use of salvaged materials found off site. They must be previously used or they may be relocated from another facility.
3. Temporary structures
  - Temporary formwork, framing and structures etc. that can be reused many times before disposal (minimum 5-10 cycles of usage) can also be included. If the temporary structures are not new procurement to this project and have been used previously in other projects, state the number of re-use that are remaining (e.g use of system formwork is encouraged).

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. List of reused or salvaged materials used in the project.	<input type="radio"/>	<input type="radio"/>
2. Cost of each proposed reused or salvaged materials.	<input type="radio"/>	<input type="radio"/>
3. Establish the estimated Total Cost of the materials in the project.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As built drawings or as built specifications including photographs confirming that the building has been constructed in accordance with the design stage drawings/specifications.	<input type="radio"/>	<input type="radio"/>
2. List of reused or salvaged materials used in the project after completion and their locations in the building.	<input type="radio"/>	<input type="radio"/>
3. Cost of each reused or salvaged materials either based on actual cost paid or replacement value of the material.	<input type="radio"/>	<input type="radio"/>
4. Provide the Actual Total Cost of the materials in the project.	<input type="radio"/>	<input type="radio"/>
5. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | MATERIALS AND RESOURCES (MR)**

<b>MR2</b>	<b>RECYCLED CONTENT MATERIALS</b>	<b>2 POINTS</b>
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**INTENT**

Encourage designers to specify the usage of recycled content materials in new buildings.

**DESCRIPTION**

Increase demand for building products that incorporate material with recycled content materials, thereby reducing impacts resulting from extraction and processing of virgin materials. (Recycle content shall be defined in accordance with the International Organization of Standards Document).

**REQUIREMENTS**

Where use of products or materials with recycled content is such that the sum of post-consumer recycled plus one-half of the pre-consumer content constitutes $\geq 10\%$ (based on cost) of the total value of the materials in the project, <b>OR</b>	1
Where use of products or materials with recycled content is such that the sum of post-consumer recycled plus one-half of the pre-consumer content constitutes $\geq 30\%$ (based on cost) of the total value of the materials in the project.	2

**APPROACH & IMPLEMENTATION**

The goal in using materials with recycled contents should be established during the design phase. The project team must identify materials with recycled content and such availability should be coordinated (as early as possible) by the project team with the contractor, subcontractors and suppliers.

The amounts and values of the recycled content of the materials to the total material cost must be documented by the project team.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. List all materials and products with recycled contents materials and products and their costs.	<input type="radio"/>	<input type="radio"/>
2. The percentage of post-consumer and/or pre-consumer recycled contents must be established by value.	<input type="radio"/>	<input type="radio"/>
3. Information on the sources/suppliers on the materials with recycled content must be provided.	<input type="radio"/>	<input type="radio"/>
4. Calculation on the value of recycled contents of each material must be provided.	<input type="radio"/>	<input type="radio"/>
5. Calculate the total percentage (based on cost) value of the materials with recycled contents of the estimated total value of the materials in the project.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As-built drawings or as-built specifications including photographs confirming that the building has been constructed in accordance with the design stage drawings/specifications.	<input type="radio"/>	<input type="radio"/>
2. List all materials and products with recycled contents materials and products and their costs used in the project after completion.	<input type="radio"/>	<input type="radio"/>
3. The percentage of post-consumer and/or pre-consumer recycled content must be established by value.	<input type="radio"/>	<input type="radio"/>
4. Information on the sources/suppliers on the materials with recycled content must be provided.	<input type="radio"/>	<input type="radio"/>
5. Calculation on the value of recycled contents value of each material must be provided.	<input type="radio"/>	<input type="radio"/>
6. Calculate the total percentage (based on cost) value of the materials with recycled contents of the actual total value of the materials in the project.	<input type="radio"/>	<input type="radio"/>
7. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**



## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | MATERIALS AND RESOURCES (MR)

MR3

REGIONAL MATERIALS

2 POINTS

### INTENT

Encourage sourcing of regional materials to reduce environmental impacts due to transportation.

### DESCRIPTION

Increase demand for building materials and products that are extracted and manufactured within the region, thereby supporting the use of indigenous resources and reducing the environmental impacts resulting from transportation.

### REQUIREMENTS

Use building products or materials that have been extracted, harvested or recovered, as well as manufactured, within Malaysia for $\geq 50\%$ (based on cost) of the total material value, <b>OR</b>	1
Use building products or materials that have been extracted, harvested or recovered, as well as manufactured, within Malaysia for $\geq 75\%$ (based on cost) of the total material value.	2

Mechanical, electrical and plumbing components shall not be included. Only include materials permanently installed in the project.

### APPROACH & IMPLEMENTATION

This point must be evaluated early in the design process as materials and products that can be sourced locally can be established. The contractor must work with subcontractors and suppliers to verify the availability of materials which are extracted/harvested/recovered and manufactured locally. This will ensure that the project team is aware on the availability of such materials and give focus on the materials that will contribute the most to this point.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. List of products that are extracted/harvested/recovered and manufactured within Malaysia.	<input type="radio"/>	<input type="radio"/>
2. Provide the following: <ul style="list-style-type: none"> <li>• Name of the manufacturer</li> <li>• Product cost</li> <li>• The distance between the project site and the manufacturer</li> <li>• The distance between the project site and the extraction site for each raw material contained within each product</li> </ul>	<input type="radio"/>	<input type="radio"/>
3. Determine the Total Material Cost	<input type="radio"/>	<input type="radio"/>
4. Calculate the percent local materials = Total Cost of Local Materials (RM)/Total Material Cost (RM)	<input type="radio"/>	<input type="radio"/>

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | MATERIALS AND RESOURCES (MR)**

<b>MR3</b>	<b>REGIONAL MATERIALS (CONTINUED)</b>	<b>2 POINTS</b>
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**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As built drawings or as built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications.	<input type="radio"/>	<input type="radio"/>
2. List of products that are extracted/harvested/recovered and manufactured within Malaysia. of the project site after completion.	<input type="radio"/>	<input type="radio"/>
3. Provide the following: <ul style="list-style-type: none"> <li>• Name of the manufacturer</li> <li>• Product cost</li> <li>• The distance between the project site and the manufacturer</li> <li>• The distance between the project site and the extraction site for each raw material contained within each product.</li> </ul>	<input type="radio"/>	<input type="radio"/>
4. Determine the Actual Total Material Cost.	<input type="radio"/>	<input type="radio"/>
5. Calculate the percent local materials = Total Cost of Local Materials (RM)/Actual Total Material Cost (RM).	<input type="radio"/>	<input type="radio"/>
6. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | MATERIALS AND RESOURCES (MR)

MR4

SUSTAINABLE TIMBER

2 POINTS

### INTENT

Promote responsible forest management taking into account the three pillars of sustainability, i.e. economic, environmental and social factor including the interest of indigenous people.

### DESCRIPTION

Encourage environmentally responsible forest management.

The wood-based materials and products components include, but are not limited to, structural framing and general dimensional framing, flooring, sub-flooring, wooden doors and finishes. To include wood materials permanently installed and also temporarily purchased for the project. Compliance with certificates issued by:

1. Forest Stewardship Council (FSC), OR
2. Malaysian Timber Certification Scheme (MTCS).

### REQUIREMENTS

Where $\geq$ 50% of wood-based materials and products used are certified, <b>OR</b>	1
Where $\geq$ 75% of wood-based materials and products used are certified.	2

### APPROACH & IMPLEMENTATION

Establish the volume and types of use of the wood products to be used in the project. Check the availability of the wood species and products that comply with the Forest Stewardship Council (FSC) or Malaysian Timber Certification Scheme (MTCS) requirements or equivalent by making contact with the local vendors, suppliers and manufacturers that provide FSC certified or MCTS-certified products.

Provide a list of certified vendors, suppliers and manufacturers to the contract bidders that they will establish availability of the wood products specified in the project.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. List all new wood products specified in the project and identify which components are at least FSC or MTCC certified.	<input type="radio"/>	<input type="radio"/>
2. Provide a list of vendors/suppliers capable of providing FSC or MTCC certified wood products or equivalent for the project.	<input type="radio"/>	<input type="radio"/>
3. The value of each wood product must be shown.	<input type="radio"/>	<input type="radio"/>

### REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)

	SUBMITTER	GBI
1. As-built drawings or as-built specifications confirming that the building has been constructed in accordance with the design stage drawings/specifications.	<input type="radio"/>	<input type="radio"/>
2. List all new wood products specified in the project and identify which components are at least FSC or MTCC certified.	<input type="radio"/>	<input type="radio"/>
3. The value of each wood product must be shown.	<input type="radio"/>	<input type="radio"/>
4. The vendor's chain-of-custody (COC) number must be shown in the invoice that includes FSC or MTCC products.	<input type="radio"/>	<input type="radio"/>
5. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | MATERIALS AND RESOURCES (MR)**

<b>MR5</b>	<b>STORAGE &amp; COLLECTION OF RECYCLABLES</b>	<b>2 POINT</b>
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**INTENT**

Provide dedicated areas and storage bins for non-hazardous materials for recycling during BOTH construction and building occupancy.

**DESCRIPTION**

Facilitate the reduction of waste generated by construction and during occupancy, that is hauled and disposed off in landfills.

**REQUIREMENTS**

During Construction, provide dedicated area(s) and storage for collection of non-hazardous materials for recycling.	1
During Building Occupancy, provide permanent recycling bins AND provide Recyclable Segregation Plan. The waste that should be collected at a minimum should include aluminum, paper, plastics, glass and others (e.g corrugated cardboard, batteries, etc )	2

**APPROACH & IMPLEMENTATION**

During construction, designate a dedicated area where on-site sorted waste materials can be stored in separate skips for collection to recycling facilities. This is tied in with credit MR6: Construction Waste Management.

Designate areas in the building for recycling bins to be located which is accessible and convenient for occupants to recycle their wastes. It could be located in one main area or each floor as long it can be demonstrated that the recycling facilities provided under the Recyclable Segregation Plan is sufficient to cater for the volume of waste generated by the occupants.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Scale site plan indication the designated area for storage and collection of construction waste to be recycled.	<input type="radio"/>	<input type="radio"/>
2. Scale floor plan showing the location of the storage are for recyclables during occupancy.	<input type="radio"/>	<input type="radio"/>
3. Ensure that the space provided for recyclables is in addition to the storage allocated for general waste.	<input type="radio"/>	<input type="radio"/>
4. The drawings should ensure that the vehicular access provides adequate space for maneuvering and sufficient size for loading bays for vehicles collecting the recyclables.	<input type="radio"/>	<input type="radio"/>
5. A description of the labeling of recyclables should be also provided.	<input type="radio"/>	<input type="radio"/>
6. Recyclable Segregation Plan strategy.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Scaled as-built drawing plan/s showing the location/s of the storage area for recyclables. The plan should indicate the proximity of the storage from the building entrance and show vehicular access.	<input type="radio"/>	<input type="radio"/>
2. The drawings should ensure that the vehicular access provides adequate space for maneuvering and sufficient size for loading bays for vehicles collecting the recyclables.	<input type="radio"/>	<input type="radio"/>
3. Photographs showing the location, size, the storage provision and labeling of dedicated facilities.	<input type="radio"/>	<input type="radio"/>
4. Description of how the recyclables are to be handled.	<input type="radio"/>	<input type="radio"/>
5. Implementation of Recyclable Segregation Plan.	<input type="radio"/>	<input type="radio"/>
6. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>	
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE	
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE	

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | MATERIALS AND RESOURCES (MR)**

<b>MR6</b>	<b>CONSTRUCTION WASTE MANAGEMENT</b>	<b>2 POINT</b>
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**INTENT**

Divert construction debris from disposal in landfill and incineration. Redirect recyclable and recoverable resources back to manufacturing process. Redirect reusable materials to appropriate sites.

**DESCRIPTION**

Develop and implement a construction waste management plan that, as a minimum identifies the materials to be diverted from disposal and sorted on site. Quantify by measuring total volume/tonnage of waste or truck loads of waste disposal.

**REQUIREMENTS**

Recycle and/or salvage ≥50% volume/tonnage of non-hazardous construction debris, <i>OR</i>	1
Recycle and/or salvage ≥75% volume/tonnage of non-hazardous construction debris.	2

**APPROACH & IMPLEMENTATION**

1. A waste management plan to be developed and the types of non-hazardous construction waste identified. Excavated soil must be excluded in the calculation.
2. Identify construction haulers and recyclers to handle the designated construction wastes and ensure that records are kept to verify that the materials diverted have been recycled or salvaged as intended.
3. Use of pre-cast materials and components to reduce waste produced on site.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Calculate the percentage, convert all waste materials to either weight (tons) or volume (cubic meter).	<input type="radio"/>	<input type="radio"/>
2. For comingled recycled wastes, summaries of diversion rates are required from the recyclers.	<input type="radio"/>	<input type="radio"/>
3. Provide a table with a list of diverted/recycled/landfill wastes and their quantities.	<input type="radio"/>	<input type="radio"/>
4. Specification with the clause that requires the main/principal contractor to produce the required waste management plan and waste audit.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Calculate the percentage, convert all waste materials to either weight or volume.	<input type="radio"/>	<input type="radio"/>
2. For co-mingled recycled wastes, summaries of diversion rates are required from the recyclers.	<input type="radio"/>	<input type="radio"/>
3. Construction waste management plan from the main/principal contractor and a table with a list of diverted/recycled waste/landfill waste and their quantities, destination or location.	<input type="radio"/>	<input type="radio"/>
4. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

RESIDENTIAL NEW CONSTRUCTION (RNC)  
**WATER EFFICIENCY**  
**(WE)**

## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | WATER EFFICIENCY (WE)

<b>WE1</b>	<b>RAINWATER HARVESTING</b>	<b>4 POINT</b>
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### INTENT

Encourage rainwater harvesting that will lead to reduction in potable water consumption.

### DESCRIPTION

Maximise rainwater collection from rooftop or runoff rainwater systems for residential consumption and/or irrigation.

### REQUIREMENTS

To achieve the following percentage in reduction of potable water consumption.  
(For Low-rise and High-rise, potable water consumption shall apply to the water consumption of Common Areas only, including swimming pool, if applicable.)

Rainwater harvesting that leads to $\geq$ 10% reduction in potable water consumption, <b>OR</b>	1
Rainwater harvesting that leads to $>$ 30% reduction in potable water consumption, <b>OR</b>	2
Rainwater harvesting that leads to $>$ 40% reduction in potable water consumption, <b>OR</b>	3
Rainwater harvesting that leads to $>$ 50% reduction in potable water consumption.	4

To submit calculation to demonstrate the reduction in water consumption compared to the building base condition.

### APPROACH & IMPLEMENTATION

2 main approaches to rainwater harvesting namely collection of runoff rainwater from areas around the site or roof top rainwater harvesting. Both systems require separate water storage tanks and additional pressure boosting equipment may be required. Gravity feed system is encouraged to avoid additional energy used for pumping. Water purifying systems may be necessary depending on the application and methodology of harvesting the rainwater.

### POTENTIAL TECHNOLOGIES & STRATEGIES

- Points are given for rainwater harvesting that leads to reduction in potable water consumption.
- Use rainwater for non-potable applications such as toilets and urinal flushing, landscape irrigation, washing clothes etc.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Report on the method and application of the rainwater harvesting system complete with diagram.	<input type="radio"/>	<input type="radio"/>
2. Calculation of potable water consumption of the base building.	<input type="radio"/>	<input type="radio"/>
3. Calculation / simulation to demonstrate the reduction in potable water consumption compared to the building base condition.	<input type="radio"/>	<input type="radio"/>

### REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)

	SUBMITTER	GBI
1. As-built calculations and measurement of rainwater harvesting, storage tank capacity and building usage distribution system.	<input type="radio"/>	<input type="radio"/>
2. Final drawings for rainwater harvesting system and storage tank location.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviations or additions to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | WATER EFFICIENCY (WE)

<b>WE2</b>	<b>WASTE WATER RECYCLING</b>	<b>2 POINT</b>
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### INTENT

Encourage water recycling that will lead to reduction in potable water consumption.

### DESCRIPTION

Encourage recycling of waste water (i.e. greywater or blackwater) for residential and irrigation use to reduce discharge to external sewer, thereby reducing the overall potable water consumption.

Encourage and recognise residential design that reduces water flows to sewerage treatment plants.

### REQUIREMENTS

To achieve the following percentage in reduction of potable water consumption.

(For Low-rise and High-rise, potable water consumption shall apply to the water consumption of Common Areas only, including swimming pool, if applicable.)

Treat and recycle ≥ 10% wastewater (grey and/or black) leading to reduction in potable water consumption, <b>OR</b>	1
Treat and recycle ≥ 30% wastewater (grey and/or black) leading to reduction in potable water consumption.	2

To submit calculation to demonstrate the percentage of wastewater treated and recycled.

### APPROACH & IMPLEMENTATION

1. Water treatment system and re-use technology option are used in treating greywater and blackwater.
2. The treated water is then recycled for use in irrigation, toilet flushing etc.
3. Sand filters can be a cost effective treatment technique.

### POTENTIAL TECHNOLOGIES & STRATEGIES

1. Consider channeling greywater from sinks, showers and other sources to wastewater treatment plant.
2. Options for on-site wastewater treatment include packaged biological nutrient removal systems and high efficiency filtration systems.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Listing of each type of waste water-generating fixtures and frequency of use to determine the amount of discharge generated.	<input type="radio"/>	<input type="radio"/>
2. A technical report describing the concept and details of treatment plant, conveyance system storage facility and distribution system.	<input type="radio"/>	<input type="radio"/>
3. The technical report shall include detail schematics showing how the wastewater is collected, channeled, stored and utilised.	<input type="radio"/>	<input type="radio"/>

### REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)

	SUBMITTER	GBI
1. Site measurements and calculations of wastewater collection, storage tank capacity and building usage distribution system.	<input type="radio"/>	<input type="radio"/>
2. As-built drawings for wastewater treatment system and storage tank location. (To scale)	<input type="radio"/>	<input type="radio"/>
3. Photographic evidence of system installed.	<input type="radio"/>	<input type="radio"/>
4. Describe any deviations or additions to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE



**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | WATER EFFICIENCY (WE)**

<b>WE3</b>	<b>WATER EFFICIENT – IRRIGATION / LANDSCAPING</b>	<b>2 POINT</b>
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**INTENT**

Encourage the design of system that does not require the use of potable water supply from the local water authority.

**DESCRIPTION**

The main aim is to reduce the consumption of potable water for landscape irrigation. This may be achieved through the use of native or adaptive plants that required minimum water to reduce potable water consumption.

**REQUIREMENTS**

Reduce potable water consumption for landscape irrigation by ≥ 50% (e.g. through use of native or adaptive plants to reduce requirement) <b>OR</b>	1
Do not use potable water at all for landscape irrigation.	2

**APPROACH & IMPLEMENTATION**

1. To design a water-efficient landscape through the selection of native or adaptive plants that require minimal water.
2. Do not use potable water for landscape irrigation.

**POTENTIAL TECHNOLOGIES & STRATEGIES**

Perform a soil/climate analysis to determine appropriate plant material and design the landscape with native or adaptive plants to reduce or eliminate irrigation requirements. Where irrigation is required, use high efficiency equipment and/or climate based controllers.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. A brief description of the system with reference(s) to the guidelines used, calculations, and an explanation of how the system meets the requirement for the target credit points.	<input type="radio"/>	<input type="radio"/>
2. A short report by a landscape architect detailing the water efficient irrigation system and demonstrating that it will meet all the requirements of the criteria.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. As built site plan showing the locations of landscaped areas.	<input type="radio"/>	<input type="radio"/>
2. As built plan showing the design of the irrigation system.	<input type="radio"/>	<input type="radio"/>
3. Calculation and measure of the reduction of portable water for landscape irrigation and submit photographic evidence of the system installed.	<input type="radio"/>	<input type="radio"/>
4. Describe any deviations or additions to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

## RESIDENTIAL NEW CONSTRUCTION (RNC) RNC | WATER EFFICIENCY (WE)

<b>WE4</b>	<b>WATER EFFICIENT FITTINGS</b>	<b>4 POINT</b>
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### INTENT

To encourage reduction in potable water consumption through the use of efficient devices.

### REQUIREMENTS

Reduce annual potable water consumption by $\geq$ 10%, <b>OR</b>	1
Reduce annual potable water consumption by $\geq$ 30%, <b>OR</b>	2
Reduce annual potable water consumption by $\geq$ 40%, <b>OR</b>	3
Reduce annual potable water consumption by $\geq$ 50%.	4

To submit calculation to demonstrate that the fittings selected will reduce the potable water consumption compared to the building base conditions.

### APPROACH & IMPLEMENTATION

1. The use of water efficient water closets, wash basins or shower heads or systems which has the potential to reduce potable water consumption in the residential area.
2. Specify the use of automatic self-closing faucets, electronic or otherwise, to eliminate wastage through faucets carelessly left running.
3. Specify the use of waterless urinals.

### POTENTIAL TECHNOLOGIES & STRATEGIES

Use high efficiency fixtures, including water efficient water closets, water urinals, showerheads and faucets.

### REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)

	SUBMITTER	GBI
1. Listing of each type of water consuming fixture, flows and frequency of use to determine the amount of potable water usage for base condition.	<input type="radio"/>	<input type="radio"/>
2. Listing similar to the above but based on water efficient fittings selected.	<input type="radio"/>	<input type="radio"/>
3. Calculation the percentage of reduction of potable water consumption compared to the building base conditions.	<input type="radio"/>	<input type="radio"/>

### REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)

	SUBMITTER	GBI
1. Inventory of all water efficient fittings incorporated.	<input type="radio"/>	<input type="radio"/>
2. Calculate and measure the final water consumption of selected water efficient devices.	<input type="radio"/>	<input type="radio"/>
3. Inventory of all water efficient fittings incorporated.	<input type="radio"/>	<input type="radio"/>
4. Describe any deviations or additions to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				<b>DATE</b>
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

RESIDENTIAL NEW CONSTRUCTION (RNC)  
**INNOVATION**  
**(IN)**

## RNC | INNOVATION (IN)

<b>IN1</b>	<b>INNOVATION IN DESIGN AND ENVIRONMENTAL DESIGN INITIATIVES</b>	<b>7 POINTS</b>
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**INTENT**

Provide the design team and the project the opportunity to be awarded points for exceptional performance above the requirements set by GBI rating system.

**DESCRIPTION**

Reward innovation and initiatives.

**REQUIREMENTS**

Encourage the design team and the project the opportunity to be score points for exceptional performance above the requirements set by GBI rating system:

Project team may submit any newinnovation items not listed above to GBIAP for consideration and approval. New innovation items shall be reviewed based on the impact they have on sustainable design and construction.

**1 point for each approved innovation and environmental design initiative up to a maximum of 7 points, such as, but not limited to:**

- Bioswale (25% of the building perimeter)
- Central Vacuum System (50% of NLA)
- Central Pneumatic Waste Collection System
- Charging Station for Hybrid or Electric Car (5% of the total parking spaces provided, up to a maximum of 20 nos)
- CUI  $\leq 0.5 \text{ m}^3/\text{m}^2$
- External Shading Devices (50% of glazed façade)
- Herb and/or Food Garden (Landed-25% of landscaped area. Low-rise and High-rise-10% of landscaped area or 20m2 whichever is the larger)
- LED Façade Lighting (only where mandated by Local Authority)
- Light Pipes (1% of NLA)
- Substantial usage of Green Label Product
- Sustainable Construction Practice (with substantial environmental impact)
- Performance 'over and above' any of the Tool's stated criterias (awarded on a case-by-case basis)
- Preserve existing greenery (awarded on a case-by-case basis)
- Promote Biodiversity (with substantial environmental impact)
- Provide only 5-Star Energy Efficient Appliances approved by KeTTHA, e.g. Air-Conditioner, Refrigerator, Fan, Television etc.
- Real time energy and water usage display and educational facilities
- Recycling Fire System Water (Sprinkler and Wet Riser systems, where applicable) during regular testing
- Regenerative Lift (50% of installed lifts)
- Self-cleaning Façade (90% of façade area)
- Solar Hot Water System (composition to meet Shower requirement for all Bathrooms)
- Turbine Ventilator (all roofs)
- Vertical Green Wall (10% of the façade area)
- Wind Chimney

**Note: Project team may submit any innovation not listed above to GBI for consideration and approval of credit point.**

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | INNOVATION (IN)**

<b>IN1</b>	<b>INNOVATION IN DESIGN AND ENVIRONMENTAL DESIGN INITIATIVES (CONTINUED)</b>	<b>7 POINT</b>
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**APPROACH & IMPLEMENTATION**

During Concept Design Stage, commence discussions on all possible innovation ideas to be incorporated into the building early. Late incorporation of innovation ideas may be difficult and costly.

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Report on each innovation, how it is derived, and how it would assist in reducing energy consumption and improving sustainable design.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Full documentation and photographic evidence of each innovation, and the process from commencement to commissioning, complete with drawings, manuals and maintenance write-up.	<input type="radio"/>	<input type="radio"/>
2. Describe any deviation or addition to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE** ATTACH ALL SUBMITTALS WITH THIS COVER PAGE

**RESIDENTIAL NEW CONSTRUCTION (RNC)**  
**RNC | INNOVATION (IN)**

<b>IN2</b>	<b>GREEN BUILDING INDEX FACILITATOR (GBIF)</b>	<b>1 POINT</b>
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**INTENT**

To support and encourage the design integration required for Green Building Index rated buildings and to streamline the application and certification process.

**DESCRIPTION**

Encourage and promote green technology service providers.

**REQUIREMENTS**

Support and encourage the design integration required for Green Building Index rated buildings and to streamline the application and certification, where:

At least one principal participant of the project team shall be a Green Building Index Facilitator who is engaged at the onset of the design process until completion of construction and Green Building Index certification is obtained. Name of GBI Facilitator shall be inserted in GBI Application and Registration Form.

**APPROACH & IMPLEMENTATION**

Appoint a Green Building Index Facilitator early to assist in the concept design stage, and ensure that the Facilitator follows through the entire project

**REQUIRED SUBMISSION FOR DESIGN ASSESSMENT (DA)**

	SUBMITTER	GBI
1. Proof of appointment of named GBI Facilitator.	<input type="radio"/>	<input type="radio"/>
2. Proof of the GBI Facilitator’s current registration.	<input type="radio"/>	<input type="radio"/>

**REQUIRED SUBMISSION FOR COMPLETION & VERIFICATION ASSESSMENT (CVA)**

	SUBMITTER	GBI
1. Proof of the GBI Facilitator’s current registration.	<input type="radio"/>	<input type="radio"/>
2. GBI Facilitator to present CVA submission to GBI Certifier.	<input type="radio"/>	<input type="radio"/>
3. Describe any deviations or additions to the DA submission.	<input type="radio"/>	<input type="radio"/>

<b>PROJECT NAME</b>				DATE
<b>SUBMITTING PROFESSIONAL</b>	NAME	DESIGNATION	COMPANY	SIGNATURE
<b>CLIENT</b>	NAME	DESIGNATION	COMPANY	SIGNATURE

**NOTE ATTACH ALL SUBMITTALS WITH THIS COVER PAGE**

## ACKNOWLEDGEMENTS

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