

BPD_GM01

GM Submission at BP stage for Residential Building

Sample Forms Attached For Viewing Only

Applicable for projects with 1st submission date for URA planning permission on or after 1st Dec 2010

All these forms and calculations are to be generated from the Green Mark (GM) e-filing system.

The forms spell out all the elective requirements which the QPs and the other practitioners can choose for their design to meet the environmental sustainability requirement.

QPs are only required to provide salient information pertaining to the items that are relevant to their design and the GM e-filing system will automatically compute the score to be allocated for the items selected.

Documentary evidences need not be submitted together with these forms. However, QPs are advised to maintain such records. BCA may require such evidences to be submitted for auditing purpose.

**SUBMISSION OF GREEN MARK SCORE CALCULATIONS
Regulation 7 of the Building Control (Environmental Sustainability) Regulations 2008 (Cap. 29)**

Commissioner of Building Control
Building & Construction Authority
5 Maxwell Road #02-00
Tower Block, MND Complex
Singapore 069110

INSTRUCTIONS

- (1) Please refer to the Explanatory Notes attached before completing these forms via Green Mark (GM) e-Filing system.
- (2) Submit one copy of this form together with Form BPD_GM01_Appendix 1 (for residential building) and/or Form BPD_GM01_Appendix 2 (for non-residential building) with the application for approval of building plans.

Section I (To be completed by Qualified Person)

1. I confirm that I have been appointed under section 8(1)(a) or 11(1)(d)(i) of the Building Control Act (Cap 29) as the qualified person in respect of the building works herein described.

Project Reference No. : _____ GM e-Filing No.: _____

Description of building works: _____

2. I hereby declare that the building works or parts thereof assessed and the numerical scores assigned to these building works or parts thereof using the scoring methodology specified in the Code for Environmental Sustainability of Buildings are correct. I further declare that the Green Mark score submitted herewith complies with the minimum environmental sustainability standard under the Building Control (Environmental Sustainability) Regulations and the Green Mark score calculations are as stated in Form BPD_GM01_Appendix 1 and/or Form BPD_GM01_Appendix 2. The Green Mark score for the proposed building works is _____ for residential buildings and/or _____ for non-residential buildings respectively.

Name & Address of Professional Firm

Name & Signature of Qualified Person

Date:

Tel No.:

Section II (To be completed by Appropriate Practitioners)

3. We hereby declare that the building works or parts thereof assessed and the numerical scores assigned to these building works or parts thereof using the scoring methodology specified in the Code for Environmental Sustainability of Buildings are correct.

Name & Address of Professional Firm

Name & Signature of Practitioner for Mechanical Works

Date:

Tel No.:

Name & Address of Professional Firm

Name & Signature of Practitioner for Electrical Works

Date:

Tel No.:

CALCULATIONS OF GREEN MARK SCORE FOR RESIDENTIAL BUILDINGS
Regulation 7 of the Building Control (Environmental Sustainability) Regulations 2008 (Cap. 29)

SECTION I : SUMMARY

Project Reference No.: _____ GM e-Filing No.: _____

The Gross Floor Area (GFA) for the building works, where applicable :

Building Works	New GFA in m ²	Existing GFA in m ² (Major Retrofitting)
Residential		Not Applicable
Non-Residential		
Total		

Category Items	Max Points Allocated	Points Scored
(I) Energy Related Requirements		
Part 1 : Energy Efficiency		
RB 1-1 Thermal Performance of Building Envelope – RETV	15	
RB 1-2 Naturally Ventilated Design and Air-Conditioning System	22	
RB 1-3 Daylighting	6	
RB 1-4 Artificial Lighting	10	
RB 1-5 Ventilation in Carparks	6	
RB 1-6 Lifts	1	
RB 1-7 Energy Efficient Features	7	
RB 1-8 Renewable Energy	20	
Category Score for Part 1 - Energy Efficiency (Min 30 points) :	87	

Project Reference No.: _____		GM e-Filing No.: _____	
Category Items	Max Points Allocated	Points Scored	
(II) Other Green Related Requirements			
Part 2 : Water Efficiency			
RB 2-1 Water Efficient Fittings	10		
RB 2-2 Water Usage Monitoring	1		
RB 2-3 Irrigation System and Landscaping	3		
Category Score for Part 2 - Water Efficiency :	14		
Part 3 : Environmental Protection			
RB 3-1 Sustainable Construction	10		
RB 3-2 Sustainable Products	8		
RB 3-3 Greenery Provision	8		
RB 3-4 Environmental Management Practice	8		
RB 3-5 Green Transport	4		
RB 3-6 Stormwater Management	3		
Category Score for Part 3 - : Environmental Protection :	41		
Part 4 : Indoor Environmental Quality			
RB 4-1 Noise Level	1		
RB 4-2 Indoor Air Pollutants	2		
RB 4-3 Waste Disposal	1		
RB 4-4 Indoor Air Quality for Wet Areas	2		
Category Score for Part 4 - Indoor Environmental Quality :	6		
Part 5 : Other Green Features			
RB 5-1 Green Features & Innovations	7		
Category Score for Part 5 - Other Green Features :	7		
Category Score for Part 2 to Part 5 (Min 20 points) :	68		
Category Score for Part 1 - Energy Efficiency (Min 30 points) :	87		
Green Mark Score (Min 50 points) - {Category Score for Part 1 (Min 30 points) + Category Score for Part 2 to Part 5 (Min 20 points)} :	155		

The Green Mark score for the proposed building works is _____ for residential buildings.

SECTION II : GREEN MARK SCORE CALCULATIONS DETAILS																																		
Project Reference No.: _____ GM e-Filing No.: _____																																		
(I) Energy Related Requirements																																		
Part 1 : Energy Efficiency	Max Points Allocated	Points Scored																																
RB 1-1 Thermal Performance of Building Envelope – RETV	15																																	
<p style="text-align: center;">RETV = W/m²</p> <p style="text-align: center;"><i>Green Mark Points : Points scored = 75 – (3 x RETV); Max 15 points</i> <i>Max Permissible RETV (Residential Envelope Thermal Value)=25 W/m²</i></p>																																		
RB 1-2 Naturally Ventilated Design and Air-Conditioning System	22																																	
<p>(a) Dwelling Unit Indoor Comfort </p> <p>Enhance dwelling unit indoor comfort as in Option 1 OR Option 2 respectively</p> <p>Option 1 – Ventilation Simulation Analysis (<i>Max 20 points</i>) </p> <p style="padding-left: 20px;">Percentage of units with good natural ventilation = %</p> <p style="padding-left: 20px;"><i>Green Mark Points : 0.2 point for every % of units with good natural ventilation</i></p> <p>OR</p> <p>Option 2 – Ventilation Design (without the use of simulation analysis) and Efficient Use of Air-Conditioning System (<i>Max 16 points</i>)</p> <p>(i) Air flow within dwelling units (<i>Max 8 points</i>) </p> <p style="padding-left: 20px;">* <u>Building Layout Design</u></p> <table border="1" style="margin-left: 20px; border-collapse: collapse; width: 100%;"> <thead> <tr> <th rowspan="2" style="width: 25%;">Total No. of units in the development</th> <th colspan="3" style="text-align: center;">Units with windows facing north and south directions <i>(0.5 point for every 10 %)</i></th> </tr> <tr> <th style="width: 15%;">Total No.</th> <th style="width: 15%;">Percentage</th> <th style="width: 15%;">Points Scored</th> </tr> </thead> <tbody> <tr> <td style="background-color: yellow;"></td> <td style="background-color: yellow;"></td> <td style="background-color: lightgreen;"></td> <td style="background-color: lightgreen;"></td> </tr> </tbody> </table> <p style="padding-left: 20px;">* <u>Dwelling Unit Design</u></p> <table border="1" style="margin-left: 20px; border-collapse: collapse; width: 100%;"> <thead> <tr> <th rowspan="2" style="width: 25%;">Total No. of living rooms and bedrooms in the development</th> <th colspan="3" style="text-align: center;">Living rooms and bedrooms with true cross ventilation <i>(0.5 point for every 10 %)</i></th> </tr> <tr> <th style="width: 15%;">Total No.</th> <th style="width: 15%;">Percentage</th> <th style="width: 15%;">Points Scored</th> </tr> </thead> <tbody> <tr> <td style="background-color: yellow;"></td> <td style="background-color: yellow;"></td> <td style="background-color: lightgreen;"></td> <td style="background-color: lightgreen;"></td> </tr> </tbody> </table> <p>(ii) Provision of air-conditioning system (<i>Max 8 points</i>) </p> <p style="padding-left: 20px;">Use of energy efficient air-conditioners certified under the Singapore Energy Labelling Scheme</p> <table border="1" style="margin-left: 20px; border-collapse: collapse; width: 100%;"> <tbody> <tr> <td style="width: 80%;">Air-conditioners with 3 Ticks and/or equivalent COP <i>(4 points)</i></td> <td style="width: 20%; background-color: yellow;"></td> </tr> <tr> <td>Air-conditioners with 4 Ticks and/or equivalent COP <i>(8 points)</i></td> <td style="background-color: yellow;"></td> </tr> <tr> <td>No provision of air-conditioning system (<i>points scored prorated under Option 2(i)</i>)</td> <td style="background-color: yellow;"></td> </tr> </tbody> </table> <p style="padding-left: 20px;"><i>Green Mark Points : 3 Ticks – 4 points; 4 Ticks - 8 points</i> <i>Option 2(ii) is not applicable for development where air-conditioners are not provided. Points can be scored and prorated under Option 2(i)</i></p> <p>(b) Natural Ventilation in Common Areas </p> <p style="padding-left: 20px;">Extent of coverage : At least 80% of the applicable areas</p> <table border="1" style="margin-left: 20px; border-collapse: collapse; width: 100%;"> <tbody> <tr> <td style="width: 80%;">(i) Lift lobbies and corridors (<i>1 point</i>)</td> <td style="width: 20%; background-color: yellow;"></td> </tr> <tr> <td>(ii) Staircases (<i>1 point</i>)</td> <td style="background-color: yellow;"></td> </tr> </tbody> </table>			Total No. of units in the development	Units with windows facing north and south directions <i>(0.5 point for every 10 %)</i>			Total No.	Percentage	Points Scored					Total No. of living rooms and bedrooms in the development	Living rooms and bedrooms with true cross ventilation <i>(0.5 point for every 10 %)</i>			Total No.	Percentage	Points Scored					Air-conditioners with 3 Ticks and/or equivalent COP <i>(4 points)</i>		Air-conditioners with 4 Ticks and/or equivalent COP <i>(8 points)</i>		No provision of air-conditioning system (<i>points scored prorated under Option 2(i)</i>)		(i) Lift lobbies and corridors (<i>1 point</i>)		(ii) Staircases (<i>1 point</i>)	
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Project Reference No.: _____		GM e-Filing No.: _____																
(I) Energy Related Requirements																		
Part 1 : Energy Efficiency cont'd			Max Points Allocated	Points Scored														
RB 1-3 Daylighting			6															
(a) Use of daylight and glare simulation analysis to verify the adequacy of ambient lighting levels in all dwelling unit's living and dining areas Extent of coverage : At least 80% of the units with effective daylighting provisions Distance from façade perimeter meeting minimum required illuminance level = <input type="text"/> m		<input type="text"/>																
<i>Green Mark Points</i> <table border="1"> <tr> <td>Distance from the façade perimeters (m)</td> <td>≥ 3.0</td> <td>4.0 - 5.0</td> <td>> 5.0</td> </tr> <tr> <td>Points Allocated</td> <td>1</td> <td>2</td> <td>3</td> </tr> </table>		Distance from the façade perimeters (m)	≥ 3.0	4.0 - 5.0	> 5.0	Points Allocated	1	2	3									
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Points Allocated	1	2	3															
(b) Daylighting in Common Areas Extent of coverage : At least 80% of the applicable areas		<input type="text"/>																
<table border="1"> <tr> <td>(i) Lift lobbies and corridors (1 point)</td> <td><input type="text"/></td> </tr> <tr> <td>(ii) Staircases (1 point)</td> <td><input type="text"/></td> </tr> <tr> <td>(iii) Carparks (1 point)</td> <td><input type="text"/></td> </tr> </table>		(i) Lift lobbies and corridors (1 point)	<input type="text"/>	(ii) Staircases (1 point)	<input type="text"/>	(iii) Carparks (1 point)	<input type="text"/>											
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(iii) Carparks (1 point)	<input type="text"/>																	
RB 1-4 Artificial Lighting			10															
Artificial lighting in common areas. Percentage improvement in lighting power budget (compared with SS530) = <input type="text"/> % <i>Green Mark Points : 0.25 point for every % improvement; Max 10 points</i>		<input type="text"/>																
RB 1-5 Ventilation in Carparks			6															
<table border="1"> <thead> <tr> <th>Mode of Ventilation</th> <th>Max Points (A)</th> <th>Carpark Area (m²) (B)</th> </tr> </thead> <tbody> <tr> <td>Natural ventilation</td> <td>6</td> <td><input type="text"/></td> </tr> <tr> <td>Fume extract with CO sensors</td> <td>4</td> <td><input type="text"/></td> </tr> <tr> <td>Mechanical ventilation with CO sensors</td> <td>3</td> <td><input type="text"/></td> </tr> <tr> <td>Others (not listed above)</td> <td>-</td> <td><input type="text"/></td> </tr> </tbody> </table>		Mode of Ventilation	Max Points (A)	Carpark Area (m ²) (B)	Natural ventilation	6	<input type="text"/>	Fume extract with CO sensors	4	<input type="text"/>	Mechanical ventilation with CO sensors	3	<input type="text"/>	Others (not listed above)	-	<input type="text"/>		
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Mechanical ventilation with CO sensors	3	<input type="text"/>																
Others (not listed above)	-	<input type="text"/>																
<i>Green Mark Points : Points scored = $\sum(A \times B) / \sum B$; Max 6 points</i>																		
RB 1-6 Lifts			1															
Use of lifts with AC variable voltage and variable frequency (VVVF) motor drive or equivalent and energy efficient features such as sleep mode features or equivalent (1 point).																		
RB 1-7 Energy Efficient Features			7															
(a) The following energy efficient features are deemed acceptable :																		
(i) Use of heat recovery devices - more than 50% of all dwelling units (2 points) - at least 25% of all dwelling units (1 point) - in club house or other common facilities (0.5 point)		<input type="text"/>																
(ii) Use of thermal insulation or cool paints on east and west facing external walls with window-to-wall ratio (WWR) - less than 0.5 (2 points) - from 0.5 to 0.75 (1 point) - more than 0.75 (0.5 point)		<input type="text"/>																
(iii) Use of motion sensors for private lift lobbies/ staircases / common toilets - at least 50 nos. motion sensors installed (1 point) - less than 50 nos. motion sensors installed (0.5 point)		<input type="text"/>																

Project Reference No.: _____		GM e-Filing No.: _____	
(I) Energy Related Requirements			
Part 1 : Energy Efficiency cont'd		Max Points Allocated	Points Scored
RB 1-7 Energy Efficient Features cont'd			
(iv)	Provision of vertical greenery system on building facades abutting the living, dining and bedrooms areas of dwelling units and club house - more than 50% on building facades (2 points) - at least 25% on building facades (1 point) - in club house (0.5 point)	<input type="text"/>	
(v)	Provision of gas water heater - at least 90% of all dwelling units (1 point) - at least 50% of all dwelling units (0.5 point)	<input type="text"/>	
(vi)	Provision of clothes drying facilities and open spaces - at least 90% of all dwelling units (1 point) - at least 50% of all dwelling units (0.5 point)	<input type="text"/>	
(vii)	Provision of lifts with gearless drive - at least 90% of the lifts (1 point)	<input type="text"/>	
(viii)	Provision of re-generative lifts - at least 90% of the lifts (2 points)	<input type="text"/>	
(ix)	Use of sun pipes for natural lighting - more than 10 nos. of sun pipes installed (1 point) - at least 5 nos. of sun pipes installed (0.5 point)	<input type="text"/>	
(x)	Provision of ductless fan for basement ventilation (0.5 point)	<input type="text"/>	
(xi)	Calculation of Energy Efficiency Index (EEI) - for common facilities of the development(0.5 point) EEI = <input type="text"/> kWh/m ² /year	<input type="text"/>	
(b)	Items that are not listed above but with clearance from BCA :		
(i)	_____	<input type="text"/>	
(ii)	_____	<input type="text"/>	
(iii)	_____	<input type="text"/>	
(iv)	_____	<input type="text"/>	
(v)	_____	<input type="text"/>	
RB 1-8 Renewable Energy		20	
Application of renewable energy sources in buildings Percentage replacement of electricity by renewable energy = <input type="text"/> % <i>Green Mark Points : 3 points for every % replacement (exclude household's usage); Max 20 points</i>		<input type="text"/>	
Category Score for Part 1 – Energy Efficiency (Min 30 points) :		87	

Project Reference No.: _____	GM e-Filing No.: _____															
(II) Other Green Requirements																
Part 2 : Water Efficiency	Max Points Allocated	Points Scored														
RB 2-1 Water Efficient Fittings	10															
Use of water fittings that are certified under the Water Efficiency Labelling Scheme (WELS).																
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th rowspan="2">Water Fittings</th> <th colspan="2">Rating based on WELS</th> <th rowspan="2">Others</th> </tr> <tr> <th>Excellent</th> <th>Very Good</th> </tr> </thead> <tbody> <tr> <td>No. of Fittings (A)</td> <td style="background-color: yellow;"></td> <td style="background-color: yellow;"></td> <td style="background-color: yellow;"></td> </tr> <tr> <td>Weightage (B)</td> <td style="text-align: center;">10</td> <td style="text-align: center;">8</td> <td style="text-align: center;">-</td> </tr> </tbody> </table>	Water Fittings	Rating based on WELS		Others	Excellent	Very Good	No. of Fittings (A)				Weightage (B)	10	8	-		
Water Fittings		Rating based on WELS			Others											
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No. of Fittings (A)																
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<i>Green Mark Points : Points scored = $\sum(A \times B) / \sum A$; Max 10 points</i>																
RB 2-2 Water Usage Monitoring	1															
Provision of private meters to monitor major water usage system such as irrigation, swimming pools and other water features																
RB 2-3 Irrigation System and Landscaping	3															
(a) Use of non potable water including rainwater for landscape irrigation (1 point) 																
(b) Use of automatic water efficient irrigation system with rain sensor for at least 50% of the landscape areas served by the system (1 point) 																
(c) Use of drought tolerant plants require minimal irrigation for at least 80% of the landscape areas (1 point) 																
Category Score for Part 2 – Water Efficiency :	14															
Part 3 : Environmental Protection																
RB 3-1 Sustainable Construction	10															
(a) Use of Sustainable and Recycled Materials (Max 5 points) 																
(i) Green Cements with approved industrial by-products (that is Ground Granulated Blastfurnace Slag (GGBS), silica fume, fly ash) to replace Ordinary Portland Cement (OPC) by at least 10% by mass for superstructure works. (1 point) 																
(ii) Recycled Concrete Aggregates (RCA) and Washed Copper Slag (WCS) from approved sources to replace coarse and fine aggregates for concrete production of main building elements 																
<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Use of RCA and WCS to replace coarse and fine aggregates</th> <th>Total Quantity Used in tonnage</th> <th>Minimum Usage Requirement in tonnage [0.03 x (GFA in m²)]</th> </tr> </thead> <tbody> <tr> <td>* RCA (replace coarse)</td> <td style="background-color: yellow;"></td> <td style="background-color: yellow;"></td> </tr> <tr> <td>* WCS (replace fine)</td> <td style="background-color: yellow;"></td> <td style="background-color: yellow;"></td> </tr> </tbody> </table>	Use of RCA and WCS to replace coarse and fine aggregates	Total Quantity Used in tonnage	Minimum Usage Requirement in tonnage [0.03 x (GFA in m ²)]	* RCA (replace coarse)			* WCS (replace fine)									
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* WCS (replace fine)																
<i>Green Mark Points : 2 points when total quantity used is at least equal to minimum requirement; 4 points when total quantity used $\geq 2 \times$ minimum requirement</i>																
(b) Concrete Usage Index (CUI) 																
<table border="1" style="width:100%; border-collapse: collapse;"> <tbody> <tr> <td>Concrete Volume in m³ (A)</td> <td style="background-color: yellow;"></td> </tr> <tr> <td>Total Constructed Floor Area in m² (B)</td> <td style="background-color: yellow;"></td> </tr> <tr> <td>CUI (C = A / B)</td> <td style="background-color: lightgreen;"></td> </tr> </tbody> </table>	Concrete Volume in m ³ (A)		Total Constructed Floor Area in m ² (B)		CUI (C = A / B)											
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<table border="1" style="width:100%; border-collapse: collapse;"> <thead> <tr> <th>Project CUI (m³/m²)</th> <th>≤ 0.70</th> <th>≤ 0.60</th> <th>≤ 0.50</th> <th>≤ 0.40</th> <th>≤ 0.35</th> </tr> </thead> <tbody> <tr> <td>Points Allocated</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> </tr> </tbody> </table>	Project CUI (m ³ /m ²)	≤ 0.70	≤ 0.60	≤ 0.50	≤ 0.40	≤ 0.35	Points Allocated	1	2	3	4	5				
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Project Reference No.: _____	GM e-Filing No.: _____																													
(II) Other Green Requirements																														
Part 3 : Environmental Protection cont'd	Max Points Allocated	Points Scored																												
RB 3-2 Sustainable Products	8																													
<p>Use of environmental friendly products that are certified by approved local certification body and are applicable for non-structural building components and construction <input type="checkbox"/></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 10px;"> <thead> <tr> <th rowspan="2">Environmental friendly products</th> <th colspan="3">Weightage based on extent of environmental friendliness</th> </tr> <tr> <th>Good</th> <th>Very Good</th> <th>Excellent</th> </tr> </thead> <tbody> <tr> <td>Points (A)</td> <td style="background-color: #e0ffe0;"></td> <td style="background-color: #e0ffe0;"></td> <td style="background-color: #e0ffe0;"></td> </tr> <tr> <td>Weightage (B)</td> <td style="text-align: center;">1.0</td> <td style="text-align: center;">1.5</td> <td style="text-align: center;">2.0</td> </tr> </tbody> </table> <p><i>Green Mark Points : 1 point for high impact, 0.5 point for low impact; Points scored = $\sum(A \times B)$; Max 8 points</i></p>	Environmental friendly products	Weightage based on extent of environmental friendliness			Good	Very Good	Excellent	Points (A)				Weightage (B)	1.0	1.5	2.0															
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<p>(a) Green Plot Ratio (GnPR) <input type="checkbox"/></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td>Total Leaf Area in m² (A)</td> <td style="background-color: #ffff00;"></td> </tr> <tr> <td>Site Area in m² (B)</td> <td style="background-color: #ffff00;"></td> </tr> <tr> <td>GnPR (C = A / B)</td> <td style="background-color: #e0ffe0;"></td> </tr> </table> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <thead> <tr> <th colspan="7">Green Mark Points</th> </tr> <tr> <th>GnPR</th> <th>1.0 to <2.0</th> <th>2.0 to <3.0</th> <th>3.0 to <4.0</th> <th>4.0 to <5.0</th> <th>5.0 to <6.0</th> <th>≥6.0</th> </tr> </thead> <tbody> <tr> <td>Points Allocated</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> </tr> </tbody> </table> <p>(b) Restoration of trees on site, conserving or relocating of existing trees on site (1 point) <input type="checkbox"/></p> <p>(c) Use of compost recycled from horticulture waste (1 point). <input type="checkbox"/></p>	Total Leaf Area in m ² (A)		Site Area in m ² (B)		GnPR (C = A / B)		Green Mark Points							GnPR	1.0 to <2.0	2.0 to <3.0	3.0 to <4.0	4.0 to <5.0	5.0 to <6.0	≥6.0	Points Allocated	1	2	3	4	5	6			
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Green Mark Points																														
GnPR	1.0 to <2.0	2.0 to <3.0	3.0 to <4.0	4.0 to <5.0	5.0 to <6.0	≥6.0																								
Points Allocated	1	2	3	4	5	6																								
RB 3-4 Environmental Management Practice	8																													
<p>(a) Implement effective environmental management programmes (1 point). <input type="checkbox"/></p> <p>(b) Main builder that has good track records in the adoption of sustainable, environmentally friendly and considerate practices during construction such as Green and Gracious Builder Award). (1 point). <input type="checkbox"/></p> <p>(c) Building quality assessed under Construction Quality Assessment System (CONQUAS) / Quality Mark Scheme (QMS) <input type="checkbox"/></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td>(i) CONQUAS (1 point)</td> <td style="background-color: #ffff00;"></td> </tr> <tr> <td>(ii) QMS (1 point)</td> <td style="background-color: #ffff00;"></td> </tr> </table> <p>(d) Firms ISO 14000 certified (0.25 point for each firm) <input type="checkbox"/></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td>(i) Developer</td> <td style="background-color: #ffff00;"></td> </tr> <tr> <td>(ii) Main builder</td> <td style="background-color: #ffff00;"></td> </tr> <tr> <td>(iii) M&E consultant</td> <td style="background-color: #ffff00;"></td> </tr> <tr> <td>(iv) Architect</td> <td style="background-color: #ffff00;"></td> </tr> </table> <p>(e) Project team comprises Green Mark Manager (GMM), Green Mark Facilities Manager (GMFM) and Green Mark Professional (GMP)(Max 1 point) <input type="checkbox"/></p> <table border="1" style="width: 100%; border-collapse: collapse; margin-top: 5px;"> <tr> <td>(i) Certified GMM (0.5 point)</td> <td style="background-color: #ffff00;"></td> </tr> <tr> <td>(ii) Certified GMFM (0.5 point)</td> <td style="background-color: #ffff00;"></td> </tr> <tr> <td>(iii) Certified GMP (1 point)</td> <td style="background-color: #ffff00;"></td> </tr> </table> <p>(f) Provision of building users' guide (1 point) <input type="checkbox"/></p> <p>(g) Provision of facilities or recycling bins at each block of the development for collection and storage of different recyclable waste such as paper, glass, plastic, etc, (1 point) <input type="checkbox"/></p>	(i) CONQUAS (1 point)		(ii) QMS (1 point)		(i) Developer		(ii) Main builder		(iii) M&E consultant		(iv) Architect		(i) Certified GMM (0.5 point)		(ii) Certified GMFM (0.5 point)		(iii) Certified GMP (1 point)													
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(iii) Certified GMP (1 point)																														

Project Reference No.: _____		GM e-Filing No.: _____	
(II) Other Green Requirements			
Part 3 : Environmental Protection cont'd		Max Points Allocated	Points Scored
RB 3-5 Green Transport		4	
(a)	Good access to nearest MRT/LRT stations or bus stops (<i>1 point</i>). <input type="checkbox"/>		
(b)	Provision of covered walkway to facilitate connectivity and use of public transport (<i>1 point</i>). <input type="checkbox"/>		
(c)	Provision of hybrid/electric vehicle refueling/ recharge stations within the development (<i>1 point</i>). <input type="checkbox"/>		
(d)	Provision of covered/sheltered bicycles parking lots (<i>Max 1 point</i>). - at least 10% of the dwelling units (<i>1.0 point</i>) - at least 5% of the dwelling units (<i>0.5 point</i>) <input type="checkbox"/>		
RB 3-6 Stormwater Management		3	
	Treatment of stormwater runoff before discharge <input type="checkbox"/> The extent of stormwater treatment - more than 35% of total site area or paved area (<i>3 points</i>) - more than 10% to 35% of total site area (<i>2 points</i>) - up to 10% of total site area (<i>1 point</i>)		
Category Score for Part 3 - Environmental Protection :		41	
Part 4 : Indoor Environmental Quality			
RB 4-1 Noise Level		1	
	Building design to achieve ambient internal noise level as specified 55dB (6am – 10pm) LeqA 45dB (10pm – 6am) LeqA		
RB 4-2 Indoor Air Pollutants		2	
(a)	Use of low volatile organic compounds (VOC) paints certified by approved local certification body for at least 90% of the total internal areas (<i>1 point</i>) <input type="checkbox"/>		
(b)	Use of environmentally friendly adhesives certified by approved local certification body for at least 90% of the applicable areas (<i>1 point</i>). <input type="checkbox"/>		
RB 4-3 Waste Disposal		1	
	Locating refuse chutes or waste disposal area at open ventilation areas such as service balconies or common corridors.		
RB 4-4 Indoor Air Quality in Wet Areas		2	
	Provision of adequate natural ventilation and daylighting in wet areas such as kitchens, bathrooms and toilets. <input type="checkbox"/> - more than 90% of all applicable areas (<i>2 points</i>) - at least 50% of all applicable areas (<i>1 point</i>)		
Category Score for Part 4 - Indoor Environmental Quality :		6	

Project Reference No.: _____		GM e-Filing No.: _____	
(II) Other Green Requirements			
Part 5 : Other Green Features		Max Points Allocated	Points Scored
RB 5-1 Green Features and Innovations		7	
(a) The following green features are deemed acceptable :			
<u>(1) Water Efficiency</u>			
(i)	Use of self cleaning façade system - more than 75% of the applicable façade areas (2 points) - more than 50% of the applicable façade areas (1 point) - at least 25% of the applicable façade areas (0.5 point)	<input type="checkbox"/>	
(ii)	Use of integrated basin/cistern pedestal system - more than 50% of all dwelling units' flushing cisterns (2 points) - more than 25% of all dwelling units' flushing cisterns (1 point) - at least 10% of all dwelling units' flushing cisterns (0.5 point)	<input type="checkbox"/>	
(iii)	Use of grey water recycling system - all blocks of the development(2 points) - at least 1 block of the development (1 point)	<input type="checkbox"/>	
(iv)	Provision of system to recycle runoff from vertical green wall and sky garden - at least 25% of the green areas (1 point) - less than 25% of the green areas (0.5 point)	<input type="checkbox"/>	
(v)	Use of water efficient washing machine with WELS good rating and above - more than 90% of all dwelling units (1 point) - at least 50% of all dwelling units (0.5 point)	<input type="checkbox"/>	
<u>(2) Environmental Protection</u>			
(i)	Use of precast toilets - more than 75% of all toilets (2 points) - more than 50% of all toilets (1 point) - at least 25% of all toilets (0.5 point)	<input type="checkbox"/>	
(ii)	Provision of green roof and roof top garden - more than 50% of the roof areas (1 point) - at least 25% of the roof areas (0.5 point)	<input type="checkbox"/>	
(iii)	Provision of vertical greening in common areas - more than 75% of the applicable wall areas (2 points) - more than 50% of the applicable wall areas (1 point) - at least 25% of the applicable wall areas (0.5 point)	<input type="checkbox"/>	
(iv)	Provision of double refuse chutes to separate recyclable from non-recyclable waste (1 point).	<input type="checkbox"/>	
(v)	Use of non-chemical termite treatment system such as termite baiting system, anti-termite mesh, etc (0.5 point).	<input type="checkbox"/>	
(vi)	Use of at least 5 nos. of compost bins to recycle organic waste (0.5 point).	<input type="checkbox"/>	
(vii)	Use of non-chemical water treatment for swimming pools (0.5 point).	<input type="checkbox"/>	
(viii)	Conservation of existing buildings structure - more than 50% of existing structure or building envelope (2 points) - at least 25% of existing structure or building envelope (1 point)	<input type="checkbox"/>	

Project Reference No.: _____		GM e-Filing No.: _____	
(II) Other Green Requirements			
Part 5 : Other Green Features cont'd		Max Points Allocated	Points Scored
RB 5-1 Green Features and Innovations cont'd			
(2) Environmental Protection contd			
(ix)	Project Buildability Score (Bscore) above prevailing minimum requirement stated in relevant COP on Buildable Design. - Bscore > 5 points above minimum requirement (1 point) - Bscore > 3 points above minimum requirement (0.5 point)	<input type="checkbox"/>	
(x)	Calculation of carbon footprint of the development (1.0 point)	<input type="checkbox"/>	
(xi)	Adoption of demolition protocol to maximise resource recovery of demolition materials for reuse or recycling - recovery rate of more than 35% crushed concrete waste to be sent to the approved recyclers with proper facilities (2 points) - recovery rate of at least 20% crushed concrete waste to be sent to the approved recyclers with proper facilities (1 point)	<input type="checkbox"/>	
(3) Indoor Air Quality			
(i)	Use of pneumatic waste collection system.(1 point)	<input type="checkbox"/>	
(4) Others			
(i)	Use of siphonic rainwater discharge system at roof (0.5 point)	<input type="checkbox"/>	
(b)	Items that are not listed above but with clearance from BCA :		
(i)	_____	<input type="checkbox"/>	
(ii)	_____	<input type="checkbox"/>	
(iii)	_____	<input type="checkbox"/>	
(iv)	_____	<input type="checkbox"/>	
(v)	_____	<input type="checkbox"/>	
Category Score for Part 5 – Other Green Features :		7	
Category Score for Part 2 to 5 (Min 20 points) :		68	
Green Mark Score (Min 50 points) –{Category Score for Part 1 (Min 30 points) + Category Score for Part 2 to 5 (Min 20 points) }		155	

Explanatory Notes :

Forms BPD_GM01, BPD_GM01_Appendix 1 and BPD_GM01_Appendix 2

- 1) For building works that are subject to the Building Control (Environmental Sustainability) Regulation 2008, the Form BPD_GM01 must be completed, accompanied with 1 set of Form BPD_GM01_Appendix 1 and/or 1 set of Form BPD_GM01_Appendix 2 where applicable. These forms are to be generated using the **Green Mark (GM) e-Filing System** accessible from BCA website and submitted together with the application for building plan approval.
- 2) For building works that involve mixed-use building which comprises both residential and non-residential buildings, the Green Mark score calculation as in Form BPD_GM01_Appendix 1 and Appendix 2 will have to be submitted together with the Form BPD_GM01 unless the following condition apply :
 - Where any part of the building works that related to a non-residential building or residential building involve a gross floor area (GFA) of less than 2000m² and that of the other part of these building works, only the Green Mark score calculation of the larger part of these building works (Form BPD_GM01_Appendix 1 OR Appendix 2) are required to be submitted together with the Form BPD_GM01.
 - For example, if the gross floor area (GFA) of the non-residential buildings is less than 2000m² and that of the residential buildings, only the Green Mark score calculation for the residential buildings that is Form BPD_GM01_Appendix 1 will need to be submitted together with Form BPD_GM01 for building plan approval as illustrated in Table 2-1 below.

Table 2-1 – Applicable Criteria for Mixed-Use Buildings with New GFA ≥ 2000m²

Project Type	Total New GFA Residential (m ²)	Total New GFA Non-Residential (m ²)	Form BPD_GM01_Appendix 1	Form BPD_GM01_Appendix 2
Mixed-use building	≥ 2000	≥ 2000	1 set	1 set
	≥ 2000	< 2000	1 set	Not applicable
	< 2000	≥ 2000	Not applicable	1 set
	< 2000	< GFA for Residential	1 set	Not applicable
	< GFA for Non-Residential	< 2000	Not applicable	1 set