



BCA Green Mark for Districts Version 1.0

Green Mark for Districts (version 1.0)

Point Allocations – Green Mark District

		Category	Point Allocations	
Minimum 10 points	Part 1 : Energy Efficiency			
		1-1 Energy Efficiency for Infrastructures	5	
		1-2 Onsite Energy Generation	4	
		1-3 Building Orientation and Ventilation	8	
		1-4 District ACMV	4	
		1-5 Energy Management System	5	
	Category Score for Part 1 – Energy Efficiency		26	
Minimum 40 points	Part 2 : Water Management			
		2-1 Water Efficiency for Infrastructures	4	
		2-2 Stormwater Management	8	
		2-3 Alternative Water Sources	5	
		2-4 Water Efficiency Management	5	
		Category Score for Part 2 – Water Management		22
	Part 3 : Material & Waste Management			
		3-1 Sustainable Construction for Infrastructures	12	
		3-2 Waste Management and Segregation	4	
		3-3 Waste Conveyance	2	
		3-4 Waste Processing	4	
		Category Score for Part 3 – Material & Waste Management		22
	Part 4 : Environmental Quality & Protection			
		4-1 Self-sufficient Development	2	
		4-2 Microclimate Optimisation	6	
		4-3 Outdoor Thermal Environment	5	
		4-4 Green and Blue Spaces	5	
		4-5 Habitat Conservation & Restoration	3	
		4-6 Minimise Site Disturbance	2	
		4-7 Green Transport within District	5	
		4-8 Light Pollution Reduction	2	
		Category Score for Part 4 – Environmental Quality & Protection		30
Part 5 : Green Building and Other Green Features				
	5-1 Green Buildings within District	20		
	5-2 PDM Integration	3		
	5-3 Green Features and Innovations	7		
	Category Score for Part 5 – Green Building and Other Green Features		30	
Total Points Allocated			130	

Note: For items not applicable for the development, points can be pro-rated to other items in the same category with evidence provided.

Green Mark Award Ratings and Pre-requisites

Green Mark Award Rating	Green Mark Scores	Pre-requisite
Platinum	90 and above	At least one building (GFA > 5000 m ²) at phase I to achieve Green Mark Platinum
Gold ^{Plus}	80 to <90	At least one building (GFA > 5000 m ²) at phase I to achieve Green Mark Gold ^{Plus}
Gold	65 to <80	At least one building (GFA > 5000 m ²) at phase I to achieve Green Mark Gold
Certified	50 to <65	Nil

Green Mark District Requirements

Part 1 – Energy Efficiency	Green Mark Points
<p><u>1-1 Energy Efficiency for Infrastructure & Public Amenities</u></p> <p>Encourage the use of better efficient equipment and system to minimise energy consumption.</p> <p><u>Baseline:</u> Minimum efficiency requirement of mechanical & electrical systems stated in SS 530, CP 13, LTA design criteria, or based on conventional systems, etc.</p> <p>The equipments include, but are not limited to</p> <ul style="list-style-type: none"> (a) Street/landscape/carpark lighting; electric signage (b) Water pump (c) Mechanical fan (d) Escalator 	<p>0.1 point for every percentage of saving over the total energy consumption of public facilities. These facilities include pumps, fans, lightings used for public areas, excluding those under Green Mark for buildings.</p> <p>Points awarded = 0.1 x (% improvement)</p> <p>(Up to 5 points)</p>
<p><u>1-2 On-site Energy Generation</u></p> <p>Encourage the on-site generation of energy for self-supply of the district/precinct.</p> <ul style="list-style-type: none"> (a) Energy generation by efficient combined system such as cogeneration (b) Generation of renewable energy (c) Energy recovery from exhaust 	<ul style="list-style-type: none"> (a) 0.5 point for every percentage replacement of electricity (based on annual total electricity consumption) by combined systems (b) and (c) 0.1 point for every percentage replacement of electricity (based on annual total electricity consumption of equipment serving the same purpose) by renewable energy <p>(Up to 4 points)</p>
<p><u>1-3 Building Orientation and Ventilation</u></p> <p>Minimise the heat gain by use of passive solar strategies</p> <ul style="list-style-type: none"> (a) 50% or more of the plot have one axis within plus minus 22.5 degree of geographical west/east, and east/west length is at least as long or longer as the north/south length. (b) 50% or more of the project building GFA have one axis of each building is at least 1.5 times longer than the other, and the longer axis is within 22.5 degrees of geographical east/west axis. (c) Reduction of the area of the west facing building's elevation, or application of inter-block shading strategies to west/east facing facades (d) Planning of building layout and massing to avoid blocking prevailing wind 	<p><u>(a) Plot coverage</u></p> <p>0.1 point for every percentage improvement in the plot coverage</p> <p>Points awarded = 0.1 x (% improvement)</p> <p style="text-align: center;">OR</p> <p><u>(b) GFA coverage</u></p> <p>0.15 point for every percentage improvement in the GFA coverage</p> <p>Points awarded = 0.15 x (% improvement)</p> <p>(Up to 4 points)</p> <p>2 points each for (c) and (d)</p>

<p><u>1-4 District Air-conditioning</u></p> <p>Improve district cooling load profile and reduce building energy consumptions</p> <p><u>Baseline:</u></p> <p>(a) at least 80% of the total GFA is connected;</p> <p>(b) at least 80% of the peak cooling load is connected;</p> <p>(c) Efficiency of each component of the system must have an overall efficiency that meets ASHRAE or SS 530 requirements.</p>	<p><u>(a) & (b) System connection</u></p> <p>0.1 point for every percentage improvement in the coverage Points awarded = 0.1 x (% improvement) (Up to 1 points)</p> <p><u>(c) Energy efficient component</u></p> <p>0.1 point for every percentage improvement in the average efficiency of components (Up to 3 points)</p>
<p><u>1-5 Energy Management System</u></p> <p>Design and incorporate energy monitoring and/or control system to facilitate energy consumption monitoring and management for public facilities</p> <p>(a) Provide with sub-metering with remote metering capability for subsystems > 15 kW or with electric loads > 100 kVA</p> <p>(b) Provide with automatic control systems for applicable energy consuming systems to save energy</p> <p>(c) Provide with energy management plan at design stage such as setting targets, developing measures and strategies</p>	<p>(a) 2 points</p> <p>(b) 0.5 point for each control system to public facilities, such as motion or photo sensors for lighting control, etc. Up to 2 points</p> <p>(c) 1 point</p> <p>* For (b), a minimum of 90% coverage of the system capacity is required.</p>
<p>PART 2 – ENERGY EFFICIENCY CATEGORY SCORE :</p>	<p>Sum of Green Mark Points obtained from Item 1-1 to 1-5: 26</p>

Part 2 – Water Management	Green Mark Points					
<p><u>2-1 Water Efficient Fittings for Infrastructure & Public Amenities</u></p> <p>Encourage the use of water efficient fittings covered under the Water Efficiency Labelling Scheme (WELS).</p>	<p>Rating based on Water Efficiency Labelling Scheme (WELS)</p>	<p>Points awarded based on the number and water efficiency rating of the fitting type used</p> <p>(Up to 4 points)</p>				
<p><u>2-2 Stormwater Management</u></p> <p>Provisions of the following ABC Waters design features* within the site</p> <ul style="list-style-type: none"> • Bioretention swales / other Bioretention systems • Rain Gardens • Constructed wetlands • Cleansing biotopes <p>* Note: Singapore is adopting ABC Waters Management strategy where water will be retained and treated by natural means using plants and soil media for water quality improvement using the green features called “ABC Waters Design Features”.</p>	<table border="1"> <tr> <td data-bbox="781 296 964 348">V Good</td> <td data-bbox="964 296 1105 348">Excellent</td> </tr> <tr> <td data-bbox="781 348 964 401">3</td> <td data-bbox="964 348 1105 401">4</td> </tr> </table>	V Good	Excellent	3	4	<ul style="list-style-type: none"> • 8 pts for the use of ABC Waters design features to treat runoff from greater than or equal to 50% of the impervious area within the site. In addition, provide a maintenance plan for ABC Waters design features. • 6 pts for the use of ABC Waters design features to treat runoff from greater than or equal to 50% of the impervious area within the site. • 3 pts for the use of ABC Waters design features to treat runoff from greater than or equal to 25% of the impervious area within the site
V Good	Excellent					
3	4					
<p><u>2-3 Alternative Water Sources</u></p> <p>Use of suitable systems that utilize alternative water sources for non-potable uses: irrigation, washing, water features, cooling tower make-up water to reduce use of potable water.</p> <p>Alternative sources can include rainwater, greywater, NEWater and recycled water from approved sources</p>		<p>> 50 % - 5 points < 10 % to 50 % - 3 points < 10 % - 1 point</p> <p>(Up to 5 points)</p>				
<p><u>2-4 Water Efficiency Management</u></p> <p>(a) Senior management commitment taking the lead in water conservation and involvement of employees leading to sustainable water savings.</p> <p>(b) Provide the use of private water meters and leak detection system for better monitoring and control at major water usage areas, e.g. irrigation, swimming pools, etc</p> <p>(c) Committed water savings accrued from proposed measures should be quantified.</p> <p>(d) Targets to improve public area water performance should be set. To show intent, measures and implementation strategies of water efficiency improvement plans over the next three years.</p>		<p>For (a), (b), (c), 1 point each;</p> <p>2 points for (d)</p>				
<p>PART 2 – WATER EFFICIENCY CATEGORY SCORE :</p>	<p>Sum of Green Mark points obtained from Item 2-1 to 2-4:</p> <p>22</p>					

Part 3 – Waste/Material Management	Green Mark Points
<p><u>3-1 Sustainable Construction for Infrastructures</u></p> <p>Encourage use of sustainable materials and products in infrastructure construction such as :</p> <ul style="list-style-type: none"> (a) Recycle or salvage at least 50% of non-hazardous construction waste by weight, or conserve at least 50% of existing structural elements or building envelope by area (b) Use of Recycled Concrete Aggregate (RCA) as an alternative backfill material on roads or walkways (c) Replacing non-structural cement with industrial by-products by at least 20% by mass (d) Environmental friendly products that are certified under The Singapore Green Labelling Scheme (SGLS). (e) Products with at least 30% recycled content by weight or volume. <p>Note: For products that are certified under SGLS and with at least 30% recycled contents, points can only be awarded either from item (d) or (e).</p>	<p>(a) 0.1 point for every percentage improvement (Up to 4 points)</p> <p>(b) Up to 2 points*</p> <p>(c)~(e) 1 point for each product Up to 6 points for (c) ~ (e)</p> <p>*2 points for high impact applications, 1 point for low impact applications</p>
<p><u>3-2 Waste Management and Segregation</u></p> <p>Promote proper disposal of waste and provide waste management infrastructures.</p> <ul style="list-style-type: none"> (a) Provision of at least one recycling station dedicated to the separation, collection and storage of recyclable materials such as paper, glass, plastics and metals (b) Provision of at least one drop-off point for potentially hazardous waste such as paints, solvents, batteries (c) Provision of at least one compost station dedicated to collection of food wastes (d) Provision of litter receptacles with integrated recycle containers 	<p>1 point for every item of requirement that is met (Up to 4 points)</p>

<p><u>3-3 Waste Conveyance</u></p> <p>Reduce the negative impact on environment during waste conveyance, such as use of odourless pneumatic conveyance system, specific waste transport design to minimise the disturbance.</p>	<p>Up to 2 points</p> <p>*2 points for high impact applications, 1 point for low impact applications</p>
<p><u>3-4 Waste Processing</u></p> <p>Encourage use of environmentally friendly waste processing system</p> <p>(a) Provision of local composting/chipping facilities within 500 m of the centre of the development</p> <p>(b) Use of organic waste for energy generation through bio-methanisation</p>	<p>Up to 2 point</p> <p>Up to 2 point</p> <p>*2 points for high impact applications, 1 point for low impact applications</p>
<p>PART 3 – WASTE EFFICIENCY CATEGORY SCORE :</p>	<p>Sum of Green Mark Points obtained from Item 3-1 to 3-4: 22</p>

Part 4 – Environmental Quality & Protection	Green Mark Points
<p><u>4-1 Self-sufficient Development</u></p> <p>Provide basic amenities easily accessible within the district to minimise the need to travelling out of the development, including</p> <ul style="list-style-type: none"> (a) retail; (b) services; (c) civic/community facilities 	<p>1 point for provision of amenities; 1 point for easy accessibilities</p>
<p><u>4-2 Microclimate Optimisation</u></p> <p>Promote the design optimisation, including site planning and building massing, for better micro-climate, such as use of natural planting and water body to optimize microclimate, through modelling and simulation, verifying by field measurements of major climate data before and after the development:</p> <ul style="list-style-type: none"> (a) Solar analysis (sun path OR solar insolation simulation) (b) Wind environment simulation or wind tunnel testing (c) Ambient temperature simulation 	<p>For each item, 1 point for design optimisation and 1 point for field measurement</p> <p>(Up to 6 points)</p>
<p><u>4-3 Outdoor Thermal Environment</u></p> <p>Encourage to use any combination of following strategies to improve the outdoor thermal comfort and reduce heat island effect</p> <ul style="list-style-type: none"> (a) Provide shade from open structures such as covered walkways, vine pergolas >50% (b) Streets sidewalks shaded over 40% (c) Use of paving materials with SRI > 29 (d) Covered parking (excl. underground/under roof) > 50% (e) Open grid pavement system (at least 50% pervious) for pedestrian paths at green spaces > 40% (f) Permeable paving > 40% (g) Avoid building heat exhaust to pedestrian walkways <p>(*SRI: Solar Reflectance Index)</p>	<p>1 point for every item of requirement that is met</p> <p>(Up to 5 points)</p>
<p><u>4-4 Green and Blue Space for Public</u></p> <p>Provide sufficient green and blue spaces for residents and occupants</p> <ul style="list-style-type: none"> (a) Parks, green spaces or water body at least 800 m² within 400 m walk distance (b) Interconnectivity of green/blue spaces (c) Adopt native plant strategies in landscape design (d) Conduct biodiversity study and design (e) Provide shade from tree canopy for public areas and streets (f) Vegetated roof for public amenity 	<p>1 point for every item of requirement that is met</p> <p>(Up to 5 points)</p>

<p><u>4-5 Habitat Conservation & Restoration</u></p> <p>Conserve and restore significant habitats on greenfield site</p> <ul style="list-style-type: none"> (a) Identify imperiled species and provide protection schemes (b) Identify geographic extent and buffer zone of habitats and address it in design (c) Provide access for wildlife migration (d) Preserve or transplant existing plants, vegetations and previous surfaces 	<p>1 point for every item of requirement that is met (Up to 3 points)</p>
<p><u>4-6 Minimise Site Disturbance</u></p> <p>Minimise negative impact on the site environment by constraining construction activities</p> <ul style="list-style-type: none"> (a) Minimise cut and fill in earthworks (b) Preserving existing buildings for rejuvenation 	<p>1 point for every item of requirement that is met (Up to 2 points)</p>
<p><u>4-7 Green Transport within District</u></p> <p>Promote environmental friendly transport options in the district, reduce pollution from individual car use.</p> <ul style="list-style-type: none"> (a) Good access to nearest MRT/LRT or bus stops within a 500 m walking distance, with sheltered and connected linkage (b) Reduced carpark footprint by employing underground or multi-storey carpark etc. (c) Provide dedicated shuttle services and facilities to mass transit (d) Provide bicycle lots/lanes or bicycle lane friendly transport design (e) Provide hybrid/electric vehicle refueling/recharge stations (f) Provide preferred public parking for carpools and vanpools 	<p>1 point for every item of requirement that is met (Up to 5 points)</p>
<p><u>4-8 Light Pollution Reduction</u></p> <p>Minimize light trespass from site, only light areas as required for safety and comfort.</p>	<p>2 points</p>
<p style="text-align: center;">PART 4 – ENVIRONMENTAL PROTECTION CATEGORY SCORE :</p>	<p style="text-align: center;">Sum of Green Mark Points obtained from Item 4-1 to 4-8: 30</p>

