

LCCF CHECKLIST
LOW CARBON CITIES FRAMEWORK AND ASSESSMENT SYSTEM (LCCF)

MALAYSIAN GREEN TECHNOLOGY CORPORATION

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PART 1: PROJECT INFORMATION

SECTION A: GENERAL INFORMATION

Applicant Category

<input type="checkbox"/>	Developer
<input type="checkbox"/>	Local Authority
<input type="checkbox"/>	Consultant
<input type="checkbox"/>	Others (<i>Please specify</i>)

Organisation : _____
Registration No. : _____
Officer Incharge : _____
Designation : _____
Address : _____
Post Code : _____
Telephone : _____ Mobile : _____
Fax : _____ Email : _____
Signature : _____ Date : _____
Company stamp :

SECTION B: PROJECT INFORMATION

Project Name : _____
Address : _____
Post Code : _____
State : _____
Development Type (Industry/residential /commercial etc..) : _____
Site Size (ha or sqm) : _____

For office use only

Checked by : _____
Designation : _____
Signature : _____ Date : _____
Approved by : _____
Designation : _____
Signature : _____ Date : _____

SECTION C: LCCF CRITERIA

Approach

- City Based (mitigating all the criteria as stated within the LCCF)
- One System (mitigating one criterion or not all the criteria in the LCCF)
- Urban Environment (Section C (i))
- Building (Section C (ii))
- Urban Transport (Section C (iii))
- Urban Infrastructure (Section C (iv))

SECTION C (i): Urban Environment

UE 1 Site Selection

- 1-1 Development within Define Urban Footprint
- 1-2 Infill Development
- 1-3 Development within Transit Nodes and Corridor
- 1-4 Brownfield and Greyfield Redevelopment
- 1-5 Hill Slope Development

UE 2 Urban Form

- 2-1 Mixed-Use Development
- 2-2 Compact Development
- 2-3 Road and Parking
- 3-4 Comprehensive Pedestrian Network
- 2-5 Comprehensive Cycling Network
- 2-6 Urban Heat Island (UHI) Effect

UE 3 Urban Greenery and Environmental Quality

- 3-1 Preserve Natural Ecology, Water Body and Biodiversity
- 3-2 Green Open Space
- 3-3 Number of Trees

SECTION C (ii): Building

B1 Low Carbon Buildings

- 1-1 Operational Energy Emissions
- 1-2 Operational Water Emissions
- 1-3 Emission Abatement through Retrofitting
- 1-4 Building Orientation

B 2 Community Services

- 2-1 Shared Facilities and Utilities within Building

SECTION C (iii): Urban Transport

UT1 Shift of Transport Mode

- 1-1 Single occupancy Vehicle (SOV) Dependency

UT 2 Green Transport Infrastructure

- 2-1 Public Transport
- 2-2 Walking and Cycling

UT 3 Clean Vehicles

- 3-1 Low Carbon Public Transport
- 3-2 Low Carbon Private Transport

UT 4 Traffic Management

- 4-1 Vehicle Speed Management
- 4-2 Traffic Congestion and Traffic Flow Management

SECTION C (iv): Urban Infrastructure

UI 1 Infrastructure Provision

- 1-1 Land Take for Infrastructure and Utility Services
- 1-2 Earthwork Management
- 1-3 Urban Storm Water Management and Flood Mitigation

UI 2 Waste

- 2-1 Construction and Industrial Waste Management
- 2-2 Household Solid Waste Management

UI 3 Energy

- 3-1 Energy Optimisation
- 3-2 Renewable Energy
- 3-3 Side-Wide District Cooling System

UI 4 Water Management

- 4-1 Efficient Water Management

SECTION C (i): URBAN ENVIRONMENT

ITEM		APPLICABILITY (Y/N/NA)	REMARKS
URBAN ENVIRONMENT (UE) 1 : SITE SELECTION			
1-1	Development Within Defined Urban Footprint		
	a. Site/Land is already served by urban services (open space, community facilities, public transport etc.)		
	b. Site/Land is already committed or approved for development.		
1-2	Infill Development		
	a. Site/Land is located in an existing built area or within a currently being developed area		
	b. Site/Land is within and/or near existing communities or neighbourhood area		
	c. Site is served by public transit and infrastructure i.e. existing water, power, sewer, drainage and roads.		
1-3	Development Within Transit Nodes and Corridors		
	a. Site/Area is served by public transit i.e. bus and rail		
	b. Site is within existing public transit corridor i.e. rail transit station or bus rapid transit station (within 400m to 800 m from transit stations)		
	c. Site has retail activities/public housing within transit corridor.		
1-4	Brownfield & Greyfield Redevelopment		
	a. Site is abandoned, underutilized within city area/limits		
	b. Site is served by existing infrastructure – roads, drains, sewer, water, power, public transit etc.		
	c. Site is to be redeveloped with an environmental remediation program and with a more productive use.		
1-5	Hill Slope Development		
	a. Site is not classified under Class III (25-35 degrees) and Class IV (>35°) category.		
	b. Site is served by existing infrastructure – roads, drains, sewer, water, power, public transit etc.		
	c. Site has an established slope protection and management plan by Local Planning Authority/related agencies		
	d. Slope areas has natural vegetation or has been restored with native plants or non-invasive plants		
	e. Slope areas have earlier been disturbed and are exposed to weather conditions.		
	<i>Total Criteria Achieved for UE1</i>		16

ITEM		APPLICABILITY (Y/N/NA)	REMARKS
URBAN ENVIRONMENT (UE) 2 : URBAN FORM			
Mixed-use Development			
2-1	a. Project/site integrates 2 or 3 uses/activities that encourage prolonged use of space		
	b. Project/site includes housing options for diverse household types		
Compact Development			
2-2	a. Project/site is of an acceptable high density development with mixed of uses for building/land.		
	b. Project/site is of an acceptable high density development with complete community facilities (schools, kindergarten, park, surau, childcare centre)		
Roads and Parking			
2-3	a. Site/development has less than 20% area for roads and at-grade parking OR parking spaces is balanced with parks, open spaces and landscape areas		
	b. Parking surfaces uses pervious material such as Grass Crete etc.		
	c. Building/s allows for connected and shared parking with other adjacent building/s.		
	d. Local service roads are designed for moderate speed i.e. less than 40 km/hr.		
Comprehensive Pedestrian Network			
2-4	a. Site/development is accessible by pedestrian walkways i.e. more than 70% of area is accessible by pedestrian network (at-grade, elevated etc)		
	b. Public accessible buildings/areas are connected/accessible by Pedestrian Walkway i.e. school, shopping mall, parks, civic buildings, transit stations etc.		
	c. TOD/TAD/TED zone is 100% walkable and accessible to pedestrian		
Comprehensive Cycling Network			
2-5	a. Site/development has a dedicated, continuous and safe cycling network.		
	b. Cycle way is integrated with other activity nodes i.e. school, shopping, parks, offices and transit stations.		
	c. Site/development provides bicycle parking at major nodes and transit stations.		
Urban Heat Island (UHI) Effects			
2-6	a. Site/development has shaded/canopied trees along its main street, service roads and/or within its plot development.		
	b. Site/development incorporates vegetation on roof tops/ community garden and/or external façade of buildings.		

ITEM		APPLICABILITY (Y/N/NA)	REMARKS
	c. Site/development incorporates water-retentive pavement or other paving materials that is solar reflective (Solar Reflective Index.)		
	d. Site/development incorporates solar reflective coatings/light coloured/high albedo materials according to the Solar Reflective Index (SRI)		
	e. Site/development has varying heights of buildings in its city centre area.		
	<i>Total Criteria Achieved for UE2</i>		19
URBAN ENVIRONMENT (UE) 3: URBAN GREENERY AND ENVIRONMENTAL QUALITY			
Preserve Natural Ecology, Water Body and Biodiversity			
3-1	a. Site/development incorporates green and/or blue corridors in the plan		
	b. Site/development incorporates plan to enhance existing habitats and creation of new habitats for urban biodiversity		
	c. Site/development clearly identifies areas for environmental sensitive protection		
	d. Site/development preserves existing forest, trees/vegetation, water bodies and/or wetlands		
Green Open Space			
3-2	a. Site/development has a gazette/approved public open space or has more than the minimum 10% required open spaces (30% is ideal).		
	b. Site/development has greenways that link every open space and parks.		
	c. Site/development incorporates double-volume landscape (for high rise project/development only)		
Number of Trees			
3-3	a. Incorporation of tree planting programme/campaign		
	b. Has a program to increase number of trees planted per year.		
	c. Have trees that are fast-growing, canopied and low maintenance types of trees. Please state their name(s):		
	<i>Total Criteria Achieved for UE3</i>		10

SECTION C (ii): BUILDING

ITEM	APPLICABILITY (Y/N/NA)	REMARKS
BUILDING (B) 1 : LOW CARBON BUILDINGS		
Operational Energy Consumptions (Jabatan Bangunan/Kejuruteraan)		
1-1	a. Monitor current energy consumption during the operational stage of building(s)	
	b. Undertake projection of energy consumption during the operational stage of building(s).	
	c. Undertakes comparison of building performances to the benchmark of Building Energy Index (BEI) using Common Carbon Matrix	
	d. (CCM) methodology.	
Operational Water Consumptions		
1-2	a. Monitor current water consumption during the operational stage of building(s)	
	b. Undertake projection of water consumption during the operational stage of building(s)	
	c. Undertake comparison of building performances to the benchmark of Building Water Index (BWI) using CCM methodology.	
Emissions Abatement Through Retrofitting(existing building)		
1-3	a. Reuse existing buildings for a more productive usage.	
	b. Installation of renewable and alternative energy (e.g. solar-powered, wind turbine, etc.)	
Building Orientation		
1-4	a. Utilization of passive solution on buildings for maximization of daylighting and wind.	
	b. Clear connection between indoor and outdoor spaces through air ventilation.	
	<i>Total Criteria Achieved for B1</i>	10
BUILDING (B) 2 : COMMUNITY SERVICES		
Shared Facilities and Utilities Within Buildings		
2-1	a. Integrated building use with community service centres (i.e. Urban transformation Centre, UTC)	
	<i>Total Criteria Achieved for B2</i>	1

SECTION C (iii): URBAN TRANSPORT

ITEM	APPLICABILITY (Y/N/NA)	REMARKS
URBAN TRANSPORT (UT) 1 : SHIFT OF TRANSPORT MODE		
1-1	Single Occupancy Vehicle (SOV) Dependency	
	a. Site/Development incorporates priority parking zone for car-pool vehicles.	
	b. Site/development has Time Zone Parking for areas that are within transit corridors/accessible by public transport.	
	c. Site/development provides 'Park & Ride' area (for areas with transit).	
	d. Site/development implements road area pricing or congestion charges in City Centre or selected areas.	
	e. Site/development implements high car parking charges in City Centre or selected areas. (excluding park & ride parking facilities)	
	<i>Total Criteria Achieved for UT1</i>	5
URBAN TRANSPORT (UT) 2 : GREEN TRANSPORT INFRASTRUCTURE		
	Public Transport	
2-1	a. Site/development is fully served by public transport and ample transit stations are provided within 150m to 250m interval (buses) or 400m (for rail).	
	b. Site/development clearly identifies and demarcates areas where no private vehicular access is allowed	
	c. Site/development provides a well-planned, covered and safe walkways or bicycle ways leading up to feeder transport.	
	d. Site/development has Inter-modal stations to integrate various modes of transportation.	
	Walking and Cycling	
2-2	a. Site/Development integrates pedestrian and cycling networks with other activity, nodes and public transport system.	
	b. Site/Development provides continuous dedicated lanes for cycling and walking.	
	<i>Total Criteria Achieved for UT2</i>	6

ITEM		APPLICABILITY (Y/N/NA)	REMARKS
URBAN TRANSPORT (UT) 3 : CLEAN VEHICLES			
3-1	Low Carbon Public Transport		
	a. The City/State has a clean fuel policy.		
	b. The public transport (bus) is using clean fuel or alternative fuel usage.		
3-2	Low Carbon Private Transport		
	a. Convert existing government vehicles to low carbon vehicles.		
	b. Provision of locational incentives for low carbon vehicles such as low parking rates and priority parking for EV's/ Hybrid Vehicles.		
	c. Site/development provides charging stations for hybrid vehicles or EV's.		
	<i>Total Criteria Achieved for UT3</i>		5
URBAN TRANSPORT (UT) 4 : TRAFFIC MANAGEMENT			
	Vehicle Speed Management		
4-1	a. Site/development has a comprehensive and integrated traffic management plan.		
	b. Site/development incorporates passive design solutions to roads such as traffic calming in order to reduce vehicular speed.		
	Traffic Congestion and Traffic Flow Management		
	a. Site/development has a Traffic Impact Assessment (TIA)/Traffic Study.		
4-2	b. Site/development prioritizes ingress and egress to ensure sufficient and smooth flow in or out of the development.		
	c. Site/development incorporates smart traffic control and Integrated Traffic Information System (ITIS).	NA	
	<i>Total Criteria Achieved for UT4</i>		5

SECTION C (iv): URBAN INFRASTRUCTURE

ITEM	APPLICABILITY (Y/N/NA)	REMARKS
URBAN INFRASTRUCTURE (UI) 1 : INFRASTRUCTURE PROVISION		
Land Take for Infrastructure and Utility Services (Jabatan Kejuruteraan)		
1-1	a. Site/development has a common utility tunnel/reserve that allows utilities to share common reserves.	
Earthwork Management (Jabatan Kejuruteraan)		
1-2	a. Site/development has an earthwork management plan of the development.	
	b. Site/development clearly identifies the limitation of earthwork movements to within the development area and minimizes any cut and fill activities.	
Urban Storm Water Management and Flood Mitigation (Jabatan Kejuruteraan)		
1-3	a. Site/development has a local floodplain management plan that clearly identifies high and moderate risk floodplain area.	
	b. Site/development clearly identifies flood mitigation strategies (whereby necessary).	
	c. Site/development incorporates storm water management plan with detail description on stormwater run-off conditions.	
	d. Site/development incorporates well-planned and good design for drainage and irrigation system.	
	e. Site/development incorporates pervious pavement for road surfaces that captures, slows, filters and potentially infiltrates storm water runoff into the ground.	
	f. Site/development incorporates storm water facilities that are simple and cost effective such as vegetated swales, rain gardens and green roofs that are best fit for different types/conditions of developments (e.g. low-density, high-density, commercial main street, boulevard, parking lots, etc.	
	<i>Total Criteria Achieved for UI1</i>	9
URBAN INFRASTRUCTURE (UI) 2 : WASTE		
Construction and Industrial Waste Management		
2-1	a. Site/development incorporates plan for segregation of construction and/or industry waste materials on site.	To check with CIDB on green construction
	b. Site/development clearly identifies reuse of each category of waste within the site.	
	c. Site/development uses recycled construction materials from certified renewable resources, eg. wood salvage from demolition etc.	

ITEM		APPLICABILITY (Y/N/NA)	REMARKS
	d. Site/development incorporates innovative solutions to replace the conventional system, i.e. formwork to IBS (Industrial Building System).		
Household Waste Management			
2-2	a. Project/Development has a waste prevention programme to support households and communities to be resource efficient and encourage recycling and up-cycling activities that generate local economy.		
	b. Site/development has established an effective waste disposal system/facility and undertakes waste segregation at source.		
	c. Site/development uses innovative technology or has systems such as transfer station, composting plant and thermal treatment plant to manage waste.		
	d. Site/development has established a method for organic waste (green waste from food and garden) usage such as composting etc.		
<i>Total Criteria Achieved for UI2</i>			8
URBAN INFRASTRUCTURE (UI) 3 : ENERGY			
3-1	Energy Optimisation		
	a. Use of day lighting (passive design solution) as an integral part of the development.		
Renewable Energy			
3-2	a. Utilisation of any renewable source of energy by solar, wind and biogas or any other sources.		
	b. Installation of wind generators on tall buildings.		
	c. Utilisation of methane gas from waste landfill sites as energy supply.		
	d. Installation of solar panels on buildings with large roof surfaces as solar farms in order to harvest energy.		
	e. Use of solar or low energy consumption street furniture and fixtures - street lights and lightings of other public spaces, parking meter etc.		
3-3	Site-wide District Cooling		
	a. Site/development incorporates site-wide district cooling system.		
<i>Total Criteria Achieved for UI3</i>			7

URBAN INFRASTRUCTURE (UI) 4 : WATER			
4-1	Efficient Water Management		
	a. Efficient design of collection of grey water and black water for recycle use.		
	b. Site/development incorporates roof-water collection system (e.g. rainwater harvesting) for irrigation or other uses to reduce potable water usage.		
	c. Use of low flow sanitary fittings and efficient water fixtures for optimisation use of water		
	d. Site/development have an effective sewage treatment plan.		
	<i>Total Criteria Achieved for UI4</i>		4
	TOTAL CRITERIAS ACHIEVED		108

PART 2: SCORING AND RATING OF LCCF

Total scores from each element will be combined in this section to produce a LCCF rating. The rating benchmarks for the LCCF are as follows:

LCCF RATING	% SCORE
Outstanding	>90
Excellent	80 - 89
Very Good	70 - 79
Good	60 - 69
Pass	50 - 59
Unclassified	<50

An unclassified rating represents performance that is not compliant with the LCCF Standard. This may be due to failure to meet the key assessment or the overall threshold score required for baseline carbon emission calculation.

Criteria	No of Criteria	No of Applicable Criteria	Score	Percentage Score	Remarks
URBAN ENVIRONMENT					
UE 1	16				
UE 2	19				
UE 3	10				
SCORE FOR UE	45				
BUILDING					
B 1	10				
B 2	1				
SCORE FOR B	11				
URBAN TRANSPORT					
UT 1	5				
UT 2	6				
UT 3	5				
UT 4	5				
SCORE FOR UT	21				
URBAN INFRASTRUCTURE					
UI 1	9				
UI 2	8				
UI 3	7				
UI 4	4				
SCORE FOR UI	30				
OVERALL SCORE	105				