

## Attachment (Total Score and Carbon Calculator)

**MALAYSIAN CARBON REDUCTION AND  
ENVIRONMENTAL SUSTAINABILITY TOOL  
("MyCREST")**



## Carbon Calculator Scorecard Design

### Info:

- 1) All Grey box is auto computed and not allowed for editing
- 2) White box is the only box for user to input the details
- 3) Green box for default value, red for input, blue is auto calculated

IS	Infrastructure and Sequestration	SITE INVENTORY ANALYSIS ON GREENERY	Cr	Max Pts: Required
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### Step Procedure

1

#### ISreq1 Site Inventory Analysis On Greenery

TABLE 1A		NATURAL ECOLOGY AND LANDSCAPE		
	NATURAL ECOLOGY AND LANDSCAPE SURFACE AREA	SURFACE AREA		TYPE OF VEGETATION/WATER BODIES (FREE TEXT)
1	GREEN OPEN SPACE			
	- FOREST RESERVES (INCLUDING URBAN FORESTRY)	0.00	M2	
	- PARKS	0.00	M2	
	- GRASSLAND (SPECIFY SURFACE AREA AND TYPE OF VEGETATION)	0.00	M2	
2	AGRICULTURAL LAND (SPECIFY SURFACE AREA AND TYPE OF VEGETATION)	0.00	M2	
3	WATER BODIES*			
	- LAKES (SPECIFY SURFACE AREA)	0.00	M2	
	TOTAL EXISTING GREEN AREA		M2	

- Fill up table 1A
- Total Existing Area Will Be Calculated on Surface Area column

2

TABLE 1B		TYPE OF TREE								
REQUIREMENTS	LANDSCAPE	EXISTING QUANTITY/AREA		QUANTITY/AREA PROTECTED1 & PRESERVED2		QUANTITY/AREA REMOVED3		AGE (YEARS)	DIAMETER4 (CM)	HEIGHT (M)
GROUP OF TREES (TO CALCULATE GREEN AREA)	SPECIFY TYPE OF VEGETATION									
	- NATIVE TREES	0.00	M2	0.00	M2	0.00	M2	0.00	0.00	0.00
	- PALM	0.00	M2	0.00	M2	0.00	M2	0.00	0.00	0.00
	- GRASSLAND	0.00	M2	0.00	M2	0.00	M2	0.00	0.00	0.00
	- SHRUBS	0.00	M2	0.00	M2	0.00	M2	0.00	0.00	0.00
	- TURF	0.00	M2	0.00	M2	0.00	M2	0.00	0.00	0.00
	- BAMBOO	0.00	M2	0.00	M2	0.00	M2	0.00	0.00	0.00
WATER BODIES	WATER BODIES									
	AREA	0.00	M2	0.00	M2	0.00	M2	0.00	0.00	0.00
INDIVIDUAL TREES	DIAMETER GREATER THAN 28 CM									

- Fill up table 1B with all columns

3

- System will calculate
  - a) total existing green area (m2), total existing tree number

- b) total protected and preserved area (m2), total protected and preserved tree
- c) total removed area (m2), total remove tree number

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4

- Action: Click on Confirm button to save.
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<b>IS</b>	<b>Infrastructure and Sequestration</b>	<b>IS2 2.1</b>	<b>Preserve more than 80 Percent of trees</b>	<b>Cr</b>	<b>Max Pts: (2)</b>
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Project Reference No : MYC759811APPS112017

IS2.1: Carbon Sequestration - Preservation (For Trees With Trunk Diameter Larger Than 28CM)

<b>SITE AREA CONDITION</b>	
LOCATION OF SITE AREA	<div>SELECT LOCATION</div> <div>-Please Select One-</div>
WITHIN THE PROJECT BOUNDARY, TOTAL EXISTING TREES WITH TRUNK DIAMETER LARGER THAN 28CM	<div>INPUT HERE</div>
TOTAL PRESERVED AND PROTECTED TREES (WITH TRUNK DIAMETER LARGER THAN 28CM (AS PER ISREQ1 SITE INVENTORY ANALYSIS ON GREENERY TEMPLATE))	
EXISTING TREE PRESERVED EXPRESSED AS A PERCENT OF TOTAL EXISTING TREE	<div></div> %

**AUTO CALCULATED**

TREES WITH DIAMETER GREATER OR EQUAL 28 CM		AUTO CALCULATED	AUTO CALCULATED
DIAMETER2 (CM)	HEIGHT (M)	AGE (YEARS)	NUMBER OF TREES
0	0	0	0
0	0	0	0
0	0	0	0
INPUT BY USER	INPUT BY USER	0	INPUT BY USER
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
0	0	0	0
TOTAL DRY WEIGHT (TDW)			KG
TOTAL CARBON WEIGHT (TCW)			KG
TCARBON SEQUESTRATION, TCO2E			TCO2E

**AUTO CALCULATED**

IS2.1(I&II). CARBON SEQUESTRATION PRESERVATION FOR TREES MORE THAN 28CM	LOCATION	POINTS
		?
		<b>AUTO CALCULATED</b>
		Back

IS	Infrastructure and Sequestration	IS2 2.2	Carbon Sequestration - Preservation/Restoration/New Planting	SUB
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## IS2.2: Carbon Sequestration - Preservation / Restoration / New Planting

<b>BUILDING AND SITE AREA</b>	
TOTAL SITE AREA WITHIN THE PROJECT BOUNDARY (M2)	INPUT HERE <input type="text"/>
<b>NEW PLANTING LANDSCAPE AREA</b>	
TOTAL GREEN ROOF AREA (M2)	INPUT HERE <input type="text"/>
TOTAL GREEN WALL AREA (M2)	INPUT HERE <input type="text"/>
TOTAL GRASS PAVED CARPARK (M2)	INPUT HERE <input type="text"/>
TOTAL OTHER LANDSCAPE AREA (M2)	INPUT HERE <input type="text"/>
TOTAL NEW PLANTING LANDSCAPE AREA, WITHIN PROJECT BOUNDARY (M2)	AUTO CALCULATED <input type="text"/>
NEW PLANTING LANDSCAPE AREA EXPRESSED AS A PERCENT OF TOTAL SITE AREA INCLUDING BUILDING FOOTPRINT: %	<input type="text"/>

## Carbon Sequestration - Preservation / Restoration / New Planting

<b>FOR GRASS, TURF AND GROUNDCOVERS</b>	
TOTAL GRASS AREA	INPUT HERE <input type="text"/>
TOTAL DRY WEIGHT (TDW)	AUTO CALCULATED <input type="text"/>
TOTAL CARBON WEIGHT (TCW)	<input type="text"/>
CARBON SEQUESTRATION, TCO2E	<input type="text"/>
<b>FOR WATER BODIES</b>	
TOTAL WATER BODIES AREA	INPUT HERE <input type="text"/>
TOTAL DRY WEIGHT (TDW)	<input type="text"/>
TOTAL CARBON WEIGHT (TCW)	AUTO CALCULATED <input type="text"/>
*CARBON SEQUESTRATION, TCO2E	<input type="text"/>

TREES WITH DIAMETER LESS 28 CM					
DIAMETER2 (CM)	HEIGHT (M)	AGE (YEARS)	NUMBER OF TREES	DRY WEIGHT	
<b>INPUT HERE</b>	<b>INPUT HERE</b>		<b>INPUT HERE</b>		
		AUTO CALCULATED		AUTO CALCULATED	
TOTAL DRY WEIGHT (TDW)				KG	
TOTAL CARBON WEIGHT (TCW)				KG	
TCARBON SEQUESTRATION, TCO2E			AUTO CALCULATED		TCO2E

SUMMARY	
IS2.2 CARBON SEQUESTRATION FOR PRESERVATION / RESTORATION/ NEW PLANTING POINTS DOCUMENTED:	<div>AUTO CALCULATED</div> <div>POINTS <input type="text"/> ?</div>
TOTAL CARBON ACCOUNTING ON SITE - SITE INVENTORY FOR GREENFIELD (TCO2E):	<input type="text"/>
PRODUCE CARBON SEQUESTRATION OF NOT LESS THAN 0.5 TCO2E <b>POINTS</b>	<input type="text"/>
<div>Back</div>	

IS	Infrastructure and Sequestration	IS6 6.1	Heat Island Mitigation – Roof / Wall	Cr	Max Pts: (2)
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## IS6.1: Heat Island Mitigation - Roof/Wall

OPTION	SELECT OPTIONS
AT LEAST 30% OF FLAT ROOF AREA IS PREPARED FOR SHADY TREES OR NON-INTENSIVE LANDSCAPING THAT IS GRASSY AREA OR SHRUBS	<input checked="" type="checkbox"/>
AT LEAST 30% OF FAÇADE AREA MUST BE DESIGNED AS A LANDSCAPED WALL	<input checked="" type="checkbox"/>

<b>OPTION 1: VEGETATED ROOF</b>	
TOTAL ROOF AREA (EXCLUDING MECHANICAL EQUIPMENT, PHOTOVOLTAIC PANELS AND SKYLIGHTS)(M2)	1000 <b>INPUT HERE</b>
TOTAL VEGETATED ROOF AREA (M2)	800
VEGETATED ROOF AREA, AS PERCENTAGE OF TOTAL ROOF AREA <i>THE VEGETATED ROOF AREA MUST BE AT LEAST 50% OF THE TOTAL ROOF AREA TO EARN 1 POINT.</i>	80 <b>AUTO CALCULATED</b>
<b>TYPE OF PLANTING</b>	
GRASS, SHRUBS AND GROUNDCOVERS	<input checked="" type="checkbox"/>
SHADY TREES	<input checked="" type="checkbox"/>
<b>FOR GRASS, SHRUBS AND GROUNDCOVERS</b>	<b>INPUT HERE</b>
TOTAL GRASS AREA	100
TOTAL DRY WEIGHT (TDW) <b>AUTO CALCULATED</b>	56
TOTAL CARBON WEIGHT (TCW)	23.91
CARBON SEQUESTRATION, TCO2E	0.0877

FOR GRASS, SHRUBS AND GROUNDCOVERS				
TOTAL GRASS AREA	<input type="text" value="100"/>	INPUT HERE		
TOTAL DRY WEIGHT (TDW)	<input type="text" value="56"/>	AUTO CALCULATED		
TOTAL CARBON WEIGHT (TCW)	<input type="text" value="23.91"/>			
CARBON SEQUESTRATION, TCO2E	<input type="text" value="0.0877"/>			
SHADY TREES				
DIAMETER (CM)	HEIGHT (M)	AGE (YEARS)	NUMBER OF TREES	DRY WEIGHT
<input type="text" value="100"/>	<input type="text" value="5"/>	<input type="text" value="5"/>	<input type="text" value="5"/>	<input type="text" value="2508.49"/>
<input type="text" value="100"/>	<input type="text" value="3"/>	<input type="text" value="10"/>	<input type="text" value="5"/>	<input type="text" value="752.55"/>
<input type="text" value="100"/>	<input type="text" value="10"/>	<input type="text" value="7"/>	<input type="text" value="10"/>	<input type="text" value="7167.11"/>
<input type="text" value="100"/>	<input type="text" value="5"/>	<input type="text" value="9"/>	<input type="text" value="10"/>	<input type="text" value="2787.21"/>
TOTAL DRY WEIGHT (TDW)			<input type="text" value="13215.36"/>	AUTO CALCULATED
TOTAL CARBON WEIGHT (TCW)			<input type="text" value="6607.68"/>	
TCARBON SEQUESTRATION TCO2E			<input type="text" value="24.23"/>	

OPTION 2: LANDSCAPED WALL	
TOTAL FACADE AREA	<input type="text" value="100"/>
TOTAL VEGETATED ROOF AREA (M2)	<input type="text" value="100"/>
VEGETATED ROOF AREA, AS PERCENTAGE OF TOTAL ROOF AREA <i>THE VEGETATED ROOF AREA MUST BE AT LEAST 50% OF THE TOTAL ROOF AREA TO EARN 1 POINT</i>	<input type="text" value="100"/>
FOR GRASS, SHRUBS AND GROUNDCOVERS	
TOTAL GRASS AREA	<input type="text" value="100"/>
TOTAL DRY WEIGHT (TDW)	<input type="text" value="56"/>
TOTAL CARBON WEIGHT (TCW)	<input type="text" value="23.91"/>
TCARBON SEQUESTRATION, TCO2E	<input type="text" value="0.0877"/>
IS6.1 HEAT ISLAND MITIGATION ROOF/WALL POINT DOCUMENTED (POINTS)	<input type="text" value="1"/>
TOTAL CARBON SEQUESTRATION FOR GREEN ROOF/WALL (TCO2E/YEAR)	<input type="text" value="24.4054"/>
<p>Once button confirm appear, click to save</p> <p>Confirm Back</p>	



IS	Infrastructure and Sequestration	IS6 6.2	Heat Island Mitigation – Non-Roof	Cr	Max Pts: (2)
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## IS6.2: HEAT ISLAND MITIGATION NON-ROOF

OPEN-GRID PAVING (GRASS PAVER)		INPUT HERE
TOTAL CARPARK AREA (M2)		10000
AREA COVERED BY OPEN-GRID PAVEMENT SYSTEM (M2) (AT LEAST 50% PERVIOUS)		8000
QUALIFYING OPEN-GRID PAVEMENT AS A PERCENTAGE OF TOTAL SURFACE CARPARK AREA (MUST BE AT LEAST 50%)		80
		AUTO CALCULATED
CARBON SEQUESTRATION FOR OPEN-GRID PAVEMENT SYSTEM (GRASS PAVER)		
FOR GRASS, SHRUBS AND GROUNDCOVERS		
TOTAL GRASS AREA		200
TOTAL DRY WEIGHT (TDW)		33.6
TOTAL CARBON WEIGHT (TCW)		14.35
CARBON SEQUESTRATION, TCO2E		0.05
IS6.2 HEAT ISLAND MITIGATION - NON-ROOF POINTS DOCUMENTED: (POINTS)		1
TOTAL CARBON SEQUESTRATION FOR NON-ROOF (GRASS PAVER) : (TCO2E/YEAR)		0.05
Click Confirm to Save		<button>Confirm</button> <button>Back</button>

EP

Energy Performance Impacts

Req1

Building Envelope Performance

MAIN

Renewable Energy

Technology Type	Description	Annual Energy Offset By Renewable Technology, KWh
SELECT HERE		
Air Source Heat Pump	OPTIONAL INPUT	100
Air Source Heat Pump		100
Air Source Heat Pump		100
Ground Source Heat Pump		100
Ground Source Heat Pump		100
Solar Thermal Panels		100
		Total 600

Total Percentage Of Renewable Energy Used In The Building, %	0.0%
Total Carbon Offset By Renewable Technology, TCO2e	0.45

<b>EP Energy Performance Impacts</b>	<b>Req1</b>	<b>Building Envelope Performance</b>	<b>MAIN</b>
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Building Energy Consumption						
Item	Baseline Building (KWh/year)			Proposed Building (KWh/year)		
	Total Connected Load (KW)	Diversity Factor	Operational Hours	Building Energy Consumption (KWh)	Total Connected Load (KW)	Building Energy Consumption (KWh)
<b>MECHANICAL</b>						
Plant Room:	INPUT HERE	INPUT HERE	INPUT HERE	AUTO CALCULATED	INPUT HERE	AUTO CALCULATED
Chillers	0	0	0	0		0.0000
Chilled Water Pump	0	0	0	0		0.0000
Condenser Water Pump	0	0	0	0		0.0000
Cooling Tower	0	0	0	0		0.0000
Air System:						
Air Handling Unit, AHU(s)	0	0	0	0	0	0
Fan-Coil Unit, FCU(s)	0	0	0	0	0	0
Air-cooled Split Unit, ACU(s)	0	0	0	0	0	0
Lighting & Small Power:	INPUT HERE				INPUT HERE	AUTO CALCULATED
Interior Lighting	0	0	0	0	0	0
Plug Load	0	0	0	0	0	0
Other Loads:						
Receptacle / Process Load	0	0	0	0	0	0
Elevators And Escalators	0	0	0	0.00	0	0.0000
Total Annual Energy Consumption, Baseline (KWh/year)				0.00		
Total Annual Carbon Emission, Baseline (TCO2e/year)				0.0000		
Total Annual Energy Consumption, Proposed (KWh/year)				AUTO CALCULATED		0.0000
Total Annual Carbon Emission, Proposed (TCO2e/year)						0.0000
Total Percentage Annual Energy Consumption Reduction, %						0.0000

<b>EC</b>	<b>Lowering the Embodied Carbon</b>	<b>EC5</b>	<b>Lifecycle Analysis (LCA) – Building Works</b>	<b>MAIN</b>
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Proposed									
NO	Item	Description	kgCO2/kg	Quantity	Unit of materials	Facilitator must convert all BoQ Quantity to Unit kg C= See Note For Conversion	Total kgCO2e D=C*A	Total tCo2e E=D/1000	Conversion Note (from supplier or Web)
			Value A= From ICE						
1	Slab								
	A) Concrete G30-0% Flyash	100.00	100.00	100.00	1.00	90.00	9000	9	0.00
	Rebar / BRC	100.00	9.00	9.00	78.00	88.00	792	0.792	0.00
	Formwork 20mmthick	0.00	0.00	0.00	0.00	0.00	0	0	0.00
	B) Steel Structure	0.00	0.00	0.00	0.00	0.00	0	0	0.00
2		← INPUT HERE →				AUTO-CALCULATED		OPTIONAL INPUT	
	A) Concrete G30-0% Flyash	1000.00	10.00	10.00	10.00	10.00	100	0.1	0.00
	Rebar / BRC	100.00	10.00	10.00	10.00	10.00	100	0.1	0.00
	Formwork	100.00	10.00	10.00	10.00	10.00	100	0.1	0.00

7	Window frame								
	A) Timber Framek	100.00	10.00	10.00	10.00	10.00	100	0.1	0.00
	B) Aluminum Frame	55.00	5.00	5.00	5.00	5.00	25	0.025	0.00
8	Window Glass								
	Normal 12mmthick	100.00	10.00	100.00	100.00	66.00	660.00	0.66	0.00
	Low-E	100.00	10.00	100.00	100.00	77.00	770.00	0.77	0.00
Total TCO2e								22.3720	0.00
Reduction Of The Carbon Emission From Baseline (%)								99.71	0.00
Points								6	
<div style="display: flex; justify-content: space-between; align-items: center;"> <span>CONFIRM &amp; SAVE DATA</span> <span>update</span> <span>process</span> </div> <div style="display: flex; justify-content: space-between; align-items: center; margin-top: 5px;"> <span>VERIFY/CHECKING</span> <span></span> <span></span> </div>									

<b>WE</b>	<b>Water Efficiency Factors</b>	<b>WE1</b>	<b>Water Conservation Strategies</b>	<b>MAIN</b>
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Editing Project Reference No :  
MYC759811APPS112017

WEreq1: Reduced Potable Water - 10% Reduction

<b>Daily Occupancy</b>	<b>INPUT HERE</b>
Building Occupancy	<input type="text" value="1000"/>
Annual Work Days	<input type="text" value="100"/>

Baseline Case

Flush Fixture Data		AUTO CALCULATED	PRESET VALUE	AUTO CALCULATED
Flush Fixture	Fixture Type	Total Daily Uses	Flowrate (LPF)	Water Consumption (L)
Water-Closet	Conventional	<input type="text" value="2000"/>	<input type="text" value="6.00"/>	<input type="text" value="12000"/>
Urinal	Conventional	<input type="text" value="1000"/>	<input type="text" value="2.50"/>	<input type="text" value="2500"/>
Total Calculated Flush Fixture Water Use Volume (L)				<input type="text" value="14500"/>

Flow Fixture Data		AUTO CALCULATED	PRESET VALUE		AUTO CALCULATED
Flush Fixture	Fixture Type	Total Daily Uses	Flowrate (LPF)	Duration (Second)	Water Consumption (L)
Lavatory	Conventional	<input type="text" value="3000"/>	<input type="text" value="100.00"/>	<input type="text" value="100"/>	<input type="text" value="500000"/>
Kitchen Sink	Conventional	<input type="text" value="1000"/>	<input type="text" value="100.00"/>	<input type="text" value="100"/>	<input type="text" value="166666.66666666667"/>
Bidet	Conventional	<input type="text" value="1000"/>	<input type="text" value="100.00"/>	<input type="text" value="100"/>	<input type="text" value="166666.66666666666"/>
Ablution Tab	Conventional	<input type="text" value="400"/>	<input type="text" value="100.00"/>	<input type="text" value="100"/>	<input type="text" value="66666.66666666667"/>
Shower	Conventional	<input type="text" value="150"/>	<input type="text" value="100"/>	<input type="text" value="100"/>	<input type="text" value="25000"/>
Total Calculated Flush Fixture Water Use Volume (L)					<input type="text" value="925000"/>

Proposed Case

Flush Fixture Data		AUTO CALCULATED	PRESET VALUE	AUTO CALCULATED
Flush Fixture	Fixture Type	Total Daily Uses	Flowrate (LPF)	Water Consumption (L)
Water-Closet	Ultra Low-Flow	<input type="text" value="2000"/>	<input type="text" value="100"/>	<input type="text" value="200000"/>
Urinal	Ultra Low-Flow	<input type="text" value="1000"/>	<input type="text" value="100"/>	<input type="text" value="100000"/>
Total Calculated Flush Fixture Water Use Volume (L)				<input type="text" value="300000"/>

Flush Fixture Data			AUTO CALCULATED		AUTO CALCULATED	
Flush Fixture	Fixture Type	Total Daily Uses	Flowrate (L/PF)	Duration (Second)	Annual Water Consumption (L)	
Lavatory	Low-flow	3000	100	10	50000	
Kitchen Sink	Low-flow	1000	100	10	16666.666666666668	
Bidet	Low-flow	1000	100	10	16666.666666666668	
Ablution Tab	Low-flow	400	100	10	6666.666666666667	
Shower	Low-flow	150	100	10	2500	
Total Calculated Flush Fixture Water Use Volume (L)			PRESET VALUE		92498	

  

Total Calculated Flow Fixture Water Use Annual Volume, Baseline Case (L)	93950000
Total Calculated Flow Fixture Water Use Annual Volume, Proposed Case (L)	AUTO CALCULATED 39249800
Percent Reduction Of Water Use (%)	58.22267163384779