

GPSS

GREEN PRODUCT SCORING SYSTEM



JABATAN KERJA RAYA
MALAYSIA

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FOREWORD

The term “green” can be defined in many ways. Its definition tweaked to support a particular message or point of view. Yet, while the general consensus is that “green” refers, in some way, to environmentally-preferable attributes of a product, service, and/or technology, there is no single, universal definition of the term.

Prior to 1990, very few products were marketed with an environmentally friendly message. By the late 1990s, the notion of “green” products became somewhat trendier, and the practice of marketing products as such became more common place in niche markets. But it wasn’t until the start of the 21st century—when concerns over global warming and natural resource depletion began gaining momentum that “green” went mainstream and began influencing the practices of product manufacturers.

Around the same time, researchers focusing on building-related illnesses began to understand the health benefits of good Indoor Environment Quality(IEQ). Subsequently, building rating systems, certification programs, and certain eco-labels started to make IEQ a priority. Third-party product certification programs focusing specifically on “green” products also began surfacing in the market place, largely in response to concerns about product toxicity and children’s health.

JKR has always promoted the use of greener products through product talks, specifications in project needs statements and tender documents. In support of this, the Honorable Minister of Works requested for the percentage of green products used in projects implemented by JKR to be calculated. This can allow monitoring in the use of green products. By knowing the number of green products used by each discipline, the number of green products shall be increased proportionately.

This system was developed so that stakeholders are always aware of the number of green products being used in their projects. In Malaysia, manufacturers do not prioritise green products because the process may cost more, it is more difficult to manufacture or simply because there is no demand. Therefore, this system is also to create a demand amongst manufacturers. When more projects demand for green products, more green products will be manufactured.

1.0 INTRODUCTION





1.0 INTRODUCTION

THIS MANUAL FOR GREEN PRODUCT SCORING SYSTEM (GPSS) is developed in accordance with the government initiatives to promote and encourage the use of green products in the construction industry and constructing more sustainable buildings.

The manual outlines part of Public Works Department initiatives in the government sector to promote sustainable construction in consideration on its impact to the environment.

The manual is prepared as such with the intention that it is user friendly, understandable and fitting for the local construction industry to develop and adopt green manufacturing process.

The manual is a systematic and structured assessment method which can be utilised to consistently evaluate the content of green products that are used in a project.

This system shall be used for new projects only. However for any upgrading/retrofitting projects, consideration shall only take into account all new components that are specified in the works.

2.0 OBJECTIVES



2.0 OBJECTIVES

2.1 Objectives of the GPSS

- a. To measure and increase the number of green products used in a building and road works;
- b. To educate and create awareness among the stake holders on environmental friendly products and services;
- c. To encourage manufacturing industries to apply for Green Product Certification based on the current criteria by independent certification body.

2.2 Objectives of the Manual

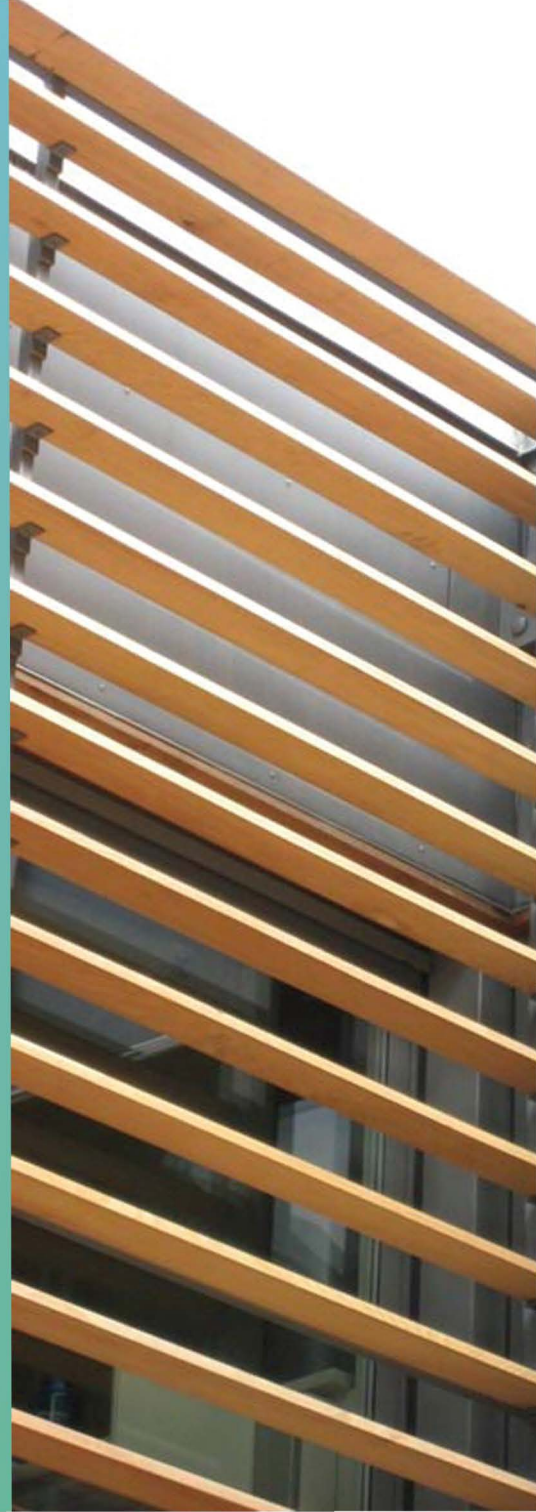
The objective of this manual is to provide a well-structured assessment system for green products in:

- a. Building projects.
- b. Road projects.

It sets out :

- a. Criteria of product to be considered for points
- b. Major products of components in a building and road works
- c. Methods of calculating the GPSS
- d. Explanatory notes

3.0 PRINCIPLES



3.0 PRINCIPLES of GPSS

The principles applied in the assessment are based on a number of criteria used and recognised in the construction industry worldwide. Quantitative assessment procedure has been adopted to obtain ratings and grading for the system being assessed. All products used in the project shall be listed in the Green Product Scoring Sheet and taken into consideration for the purpose of score calculation.

The assessment of the green products content is based on the following attributes:

a. Building

- Architectural Works
- Mechanical Works
- Electrical Works
- Civil & Structural Works

b. Road

- Road & Geotechnical Works
- Structural Works
- Electrical Works



3.0 PRINCIPLES of GPSS

3.1 GREEN CRITERIA

The GPSS puts emphasis on the following criteria:



Durable Products

Products that are long lasting even if they are used regularly.



Environment Protection

Products that protect the biophysical environment from degradation, waste production, air pollution, loss of biodiversity.



Renewable Energy

Products that generate electricity using alternative to fossil fuel.



Recycle Content

A product that has been recycled into the same product at the end of its first useful life.



Local Product

Products produced locally or regionally which would save the energy and resources in transportation.



Recyclable Material

Products that utilizes recycled materials in their manufacturing process and materials or products that are recyclable at the end of their useful life.



Improved Water Quality / Efficiency

Products that improve water quality by effective removal of nutrients, sediments and gross pollutants before it can re-enter to the natural



Energy Efficiency

Products that help to reduce energy consumption in building and facilities.



Improved IAQ

Products that promote healthy IAQ by identifying indoor air pollutants & enhancing the air quality, reducing noise, improving thermal comfort, lighting & visual perception.

3.0 PRINCIPLES of GPSS

3.2 SCOPE

- a. This document is to evaluate the green products content scoring for buildings and roads.
- b. Substructure components for the building and all temporary works are not taken into account in calculation.
- c. Minimum quantity of product used shall be 50% of the particular product for the purpose of point accreditation

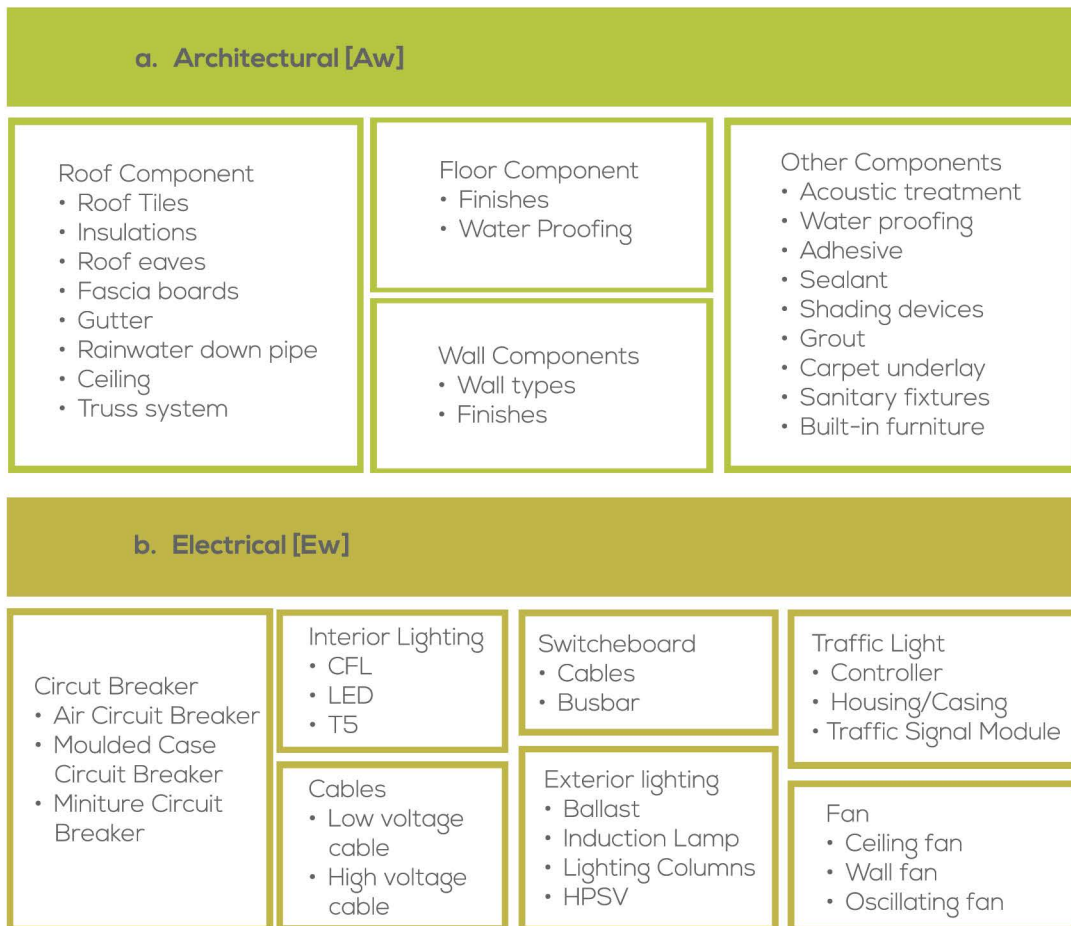
3.3 MINIMUM QUANTITY OF PRODUCTS USED

Point accreditation should only be considered if the particular products used are more than 50% used.

3.0 PRINCIPLES of GPSS

3.4 MAJOR PRODUCTS COMPONENTS FOR BUILDING PROJECTS

Fundamentally, GPSS starts with a calculation for Percentage of Green Products Used in Specific Works. Listed below are the major products of components which need to be given priority during evaluation process. However, the list is not intended to be exhaustive.



3.0 PRINCIPLES of GPSS

3.4 MAJOR PRODUCTS COMPONENTS FOR BUILDING PROJECTS

c. Mechanical [Mw]

Water Cooled Chiller System

- Refrigerant
- Air Handling Unit
- Pump
- Cooling tower
- Electronic Water descaler

Cold Water System

- Pump
- Water Tank

Fire Fighting System

- Mist
- Pump

Multiple Air-Conditioning System

- Refrigerant
- Air Handling Unit
- Outdoor Unit

Lift

- lift Motor

Split Unit

- Refrigerant

Innovation

- Rain water harvesting

d. Civil & Structure [Cw]

Common Item

- Cement
- Reinforcement Bar
- Sand
- Aggregate

Roof Trusses

- Steel
- Timber
- Bolt

Super Structure

- Concrete
- Reinforcement Bar
- Steel
- Water Stop
- Damp Proof Membrane
- Plasting Sheeting
- Sealent

Earth Works/Erosion Sediment Control

- Geotextile
- Erosion Mat
- Geogrid
- Mulching
- Gabion
- Hydrorseeding

Drainage Works

- Drain
- Culvert
- Sump
- Pipe
- Modular Tank

Sewerage Works

- Pipes
- Tank
- Pump
- Manhole

3.0 PRINCIPLES of GPSS

3.5 MAJOR PRODUCTS COMPONENTS FOR ROAD PROJECTS

Listed below are the major products of components which need to be given priority during evaluation process. However, the list is not intended to be exhaustive.

a. Road & Geotechnical works [Rw]

Road Furnitures

- High Intensity
- Guadrails
- Railings
- Road paint
- Sound Barrier
- Paving Block
- Road Stud
- Flexible post
- Wire Rope
- Anti glare screen
- Impact Attenuator

Pavements

- Prime coat
- Tack coat
- Porous asphalt
- Soil stabiliser
- Cold in place recycling
- Stone mastic asphalt
- Concrete pavement
- Polymer modified

Geotechnical Works

- Prefabricated vertical drains
- Soft soil reinforcement
- Safety net

Common Items

- Cement
- Steel fabric
- Form works
- Piles

Drainage Works

- Pipes
- Drain
- Bricks
- Gabion cage
- Precast subsoil drain
- Grating
- Water stop

b. Structure works [Sw]

Road Structures (Bridge)

- Abutment
- Pier
- Bearing pad
- Decking
- Expansion joint
- Parapet wall

3.0 PRINCIPLES of GPSS

3.5 MAJOR PRODUCTS COMPONENTS FOR ROAD PROJECTS

c. Electrical [Ew]

Road Lighting Luminaires (LED)

- Housing / Casing
- Electronic controlgear
- LED module

Exterior Lightings/Road Lighting Luminaires

- Ballast
- Induction Lamp
- HPSV (high Pressure Sodium Vapor)
- Road lighting luminaires
- Lighting Columns

Traffic Light

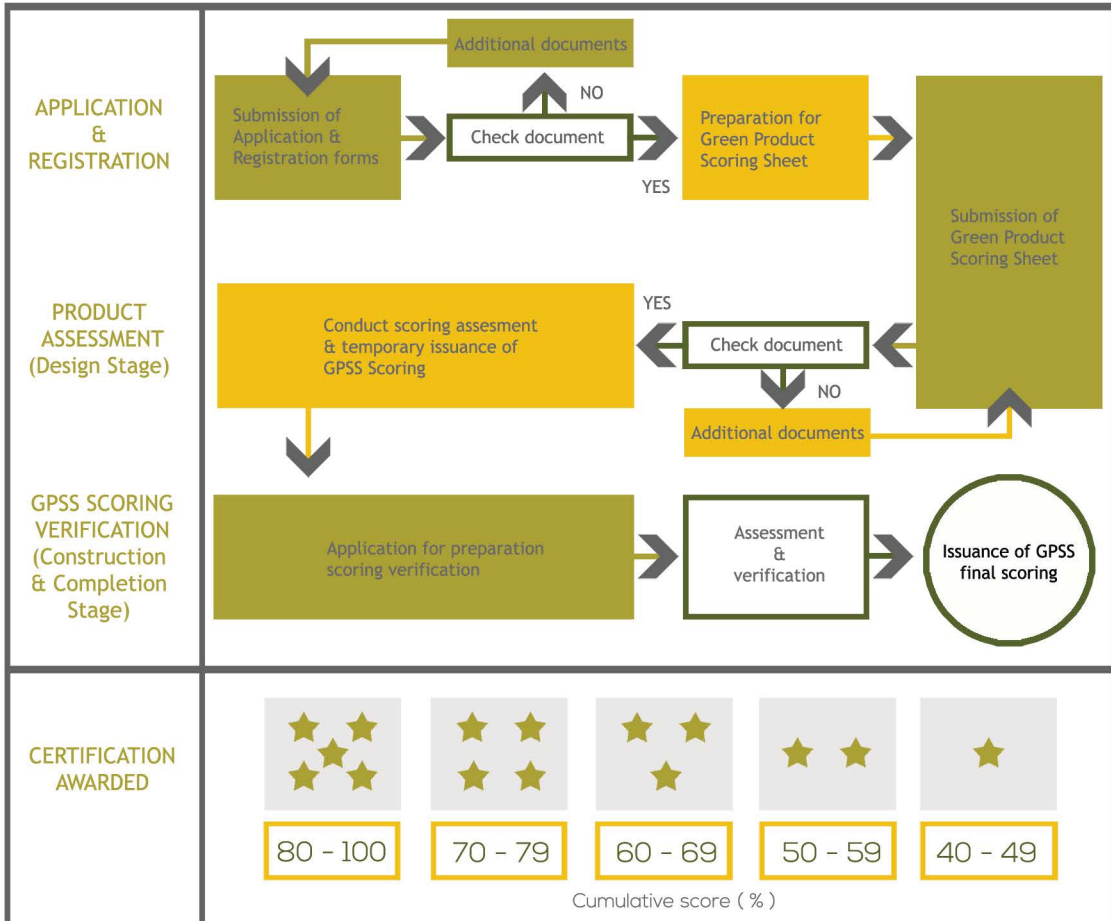
- Housing / Casing
- Controller
- Traffic Signal Module
- Lighting Columns

4.0 METHOD



4.0 GPSS METHOD

4.1 GPSS CERTIFICATION PROCESS FLOWCHART



4.0 GPSS METHOD

4.2 SCORING CALCULATION METHOD

GPSS uses simple point scale allocation and accreditation method from 0 to 2 points as described below:

0

The product used is not considered Green or does not have any form of certification.

1

Product self-declared Green by the manufacturer with certification from independent body; eg: compliance to ISO 14000
OR

*Type II: Self-declarations or claims made by manufacturer;
Any certificate or accreditation from any green/
eco-friendly organization from all over the world.

2

*Type I: Based on multiple criteria and life-cycle considerations;
eg: product or materials that have ecolabel
OR

Certificate from any members of Global Eco Labelling Network (GEN) or any product listed in MyHIJAU Directory by Malaysian Green Technology Corporation

4.0 GPSS METHOD

4.2 SCORING CALCULATION METHOD

Green Products Scoring in a Building

Maximum Total Score of Green Products in a Building and Road is 100%.

Point accreditation should only be considered if the particular product more than 50% used.

$$\begin{aligned} \text{GPSS average (\%)} &= \frac{Aw + Mw + Ew + Cw}{4} \\ &= 100\% \end{aligned}$$

Green Product Content Score For a Project (Group of Buildings)

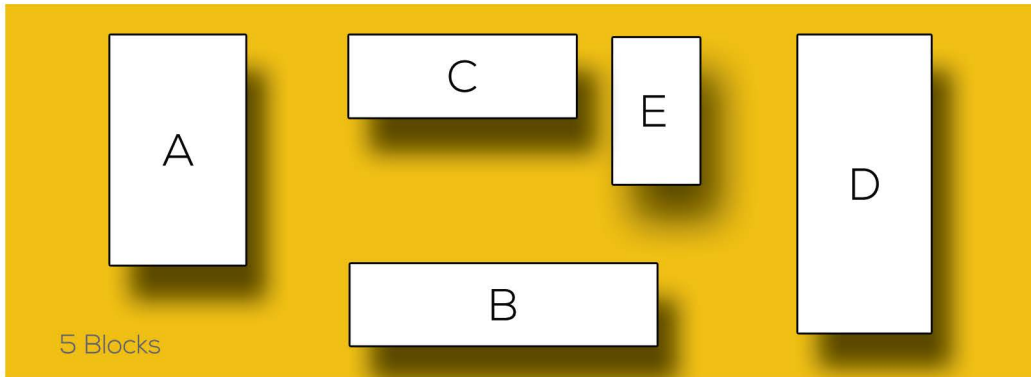
EXAMPLE 1:

Example for calculating green product score for group of buildings shall be as shown below::

Project Information :

Main buildings in the development consists of 3 blocks of office buildings, 1 block of staff quarters and 1 block of garage/workshop (**figure 1**)

The site plan for a typical Ibu Pejabat Polis Daerah development project is as shown



(Figure 1 : Site Layout Plan)

SCORING CALCULATION FOR BUILDINGS:

- i) Block A- 4 storey Main Administration Centre
- ii) Block B- 4 storey Crime Investigation Branch
- iii) Block C- 3 storey Narcotics Branch
- iv) Block D- 5 storey Accommodation (Staff Quarters)
- v) Block E- Garage & Workshop

The calculation can be tabulated as in the table below:

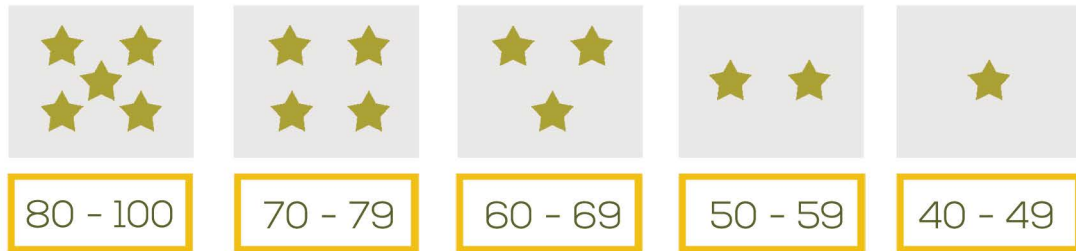
Block	Score Aw (%)	Score Mw (%)	Score Ew (%)	Score Cw (%)	Green Product Score (%)
A	50	45	65	70	57.5
B	65	70	50	50	58.75
C	70	70	80	65	71.25
D	50	65	65	70	62.5
E	60	60	70	70	65
TOTAL					63.00

Therefore the Green Product Score for the whole development project is **63%**

4.0 GPSS METHOD

4.3 RATING CLASSIFICATION

Rating and cumulative Green Products Scoring in a building



Cumulative score (%)

5.0 **FORMULA** for building



5.0 GPSS FORMULA for BUILDING

LEGEND

- [Aw]** The percentage of **Architectural Green Products**
Refer to the Appendix XAw
- [Mw]** The percentage of **Mechanical Green Products**
Refer to the Appendix XMw
- [Ew]** The percentage of **Electrical Green Products**
Refer to the Appendix XEw
- [Cw]** The percentage of **Civil & Structural Green Products**
Refer to the Appendix XCw

[Total Points Allocation] Sum of the maximum points allocated for products used in building project

(It may vary for different types or categories of building design and specifications)

[Total Points Accredited] Sum of the points awarded for each Green Product

5.0 GPSS FORMULA for BUILDING

5.1 MAJOR PRODUCTS COMPONENTS

a. Total Percentage of Green Products Used in Specific

$$\begin{array}{l} \text{Architectural Products} \\ \text{[Aw]} \end{array} = \frac{\text{Total Points Accredited}}{\text{Total Points Allocation}} \times 100 \%$$

$$[\text{Aw}] = \text{---} \%$$

$$\begin{array}{l} \text{Mechanical Products} \\ \text{[Mw]} \end{array} = \frac{\text{Total Points Accredited}}{\text{Total Points Allocation}} \times 100 \%$$

$$[\text{Mw}] = \text{---} \%$$

$$\begin{array}{l} \text{Electrical Products} \\ \text{[Ew]} \end{array} = \frac{\text{Total Points Accredited}}{\text{Total Points Allocation}} \times 100 \%$$

$$[\text{Ew}] = \text{---} \%$$

$$\begin{array}{l} \text{Civil \& Structural} \\ \text{Products} \\ \text{[Cw]} \end{array} = \frac{\text{Total Points Accredited}}{\text{Total Points Allocation}} \times 100 \%$$

$$[\text{Cw}] = \text{---} \%$$

5.0 GPSS FORMULA for BUILDING

5.2 FORMULA

b. Green Products in a building

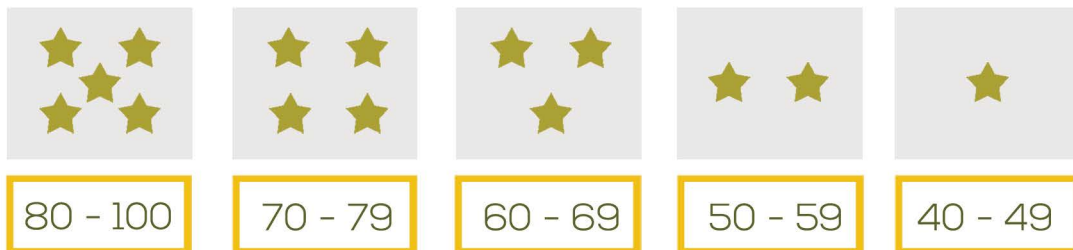
Maximum Total Score of Green Products in a Building and Road is 100%.

Point accreditation should only be considered if the particular product used more than 50% used.

$$\begin{aligned} \text{GPSS average (\%)} &= \frac{Aw + Mw + Ew + Cw}{4} \\ &= 100\% \end{aligned}$$

5.3 RATING CLASSIFICATION

Rating and cumulative Green Products Scoring in a building



Cumulative score (%)

5.0 GPSS FORMULA for BUILDING

5.4 MOCK UP CALCULATION

- a. From the Mock-Up Green Product Scoring Sheet of XAw, XMw, XEw, XCw, the Total Percentage of Green Products Used in a Building

$$\begin{aligned} \text{Architectural Products} &= \frac{62}{94} \times 100 \% \\ [\text{Aw}] &= 65.96 \% \end{aligned}$$

$$\begin{aligned} \text{Mechanical Products} &= \frac{15}{28} \times 100 \% \\ [\text{Mw}] &= 53.57 \% \end{aligned}$$

$$\begin{aligned} \text{Electrical Products} &= \frac{25}{40} \times 100 \% \\ [\text{Ew}] &= 62.50 \% \end{aligned}$$

$$\begin{aligned} \text{Civil, Structural \& Geotechnical Products} &= \frac{15}{68} \times 100 \% \\ [\text{Cw}] &= 22.06 \% \end{aligned}$$

5.0 GPSS FORMULA for BUILDING

5.5 MOCK UP CALCULATION

b. Green Products in a building

Maximum Total Score of Green Products in a Building and Road is 100%.

Point accreditation should only be considered if the particular product used more than 50% used.

$$\begin{aligned} \text{GPSS average (\%)} &= \frac{[\text{Aw}] + [\text{Mw}] + [\text{Ew}] + [\text{Cw}]}{4} \\ &= \frac{65.96 + 53.57 + 62.50 + 22.06}{4} \\ &= 51.02 \% \end{aligned}$$

Rating Classification =



50 - 59

Cumulative score (%)

5.0 GPSS FORMULA for BUILDING

5.6 MOCK-UP GREEN PRODUCT SCORING SHEET

GREEN PRODUCT SCORING SHEET						
Roof System						
LIST OF PRODUCT USED						
No	Component	Product**	Points Allocated	Point Requested *	Points Accredited (By Secretariat)	Remark
1	Roof Tiles	Clay Tiles				
		Concrete Tiles	2	2	2	
		Metal Roofing	2	2		
		Shingles				
2	Insulation	Rockwool	2	2	2	
		Glasswool				
		Foam				
		Aluminium Foil				
		Undersheeting	2	2		
3	Roof Eaves	Metal				
		Fiber Cement	2	2	2	
		Plasterboard				
4	Fascia Boards	Metal				
		Fibre Cement	2	2	2	
		Plasterboard				
		Timber				
5	Gutter	UPVC	2	2	2	
		Galvanised Iron				
		Aluminium				
		Stainless Steel				
6	Rainwater Down Pipes	UPVC	2	2	2	
		Galvanised Iron				
		Aluminium				
		Stainless Steel				
7	Ceiling	Plasterboard	2	2		
		Fibre Cement Board				
		Metal Strip	2	2	2	
8	Truss System	Timber				
		Metal	2	2	2	
TOTAL POINTS			22	22	16	

5.0 GPSS FORMULA for BUILDING

5.6 MOCK-UP GREEN PRODUCT SCORING SHEET

GREEN PRODUCT SCORING SHEET						
Wall System						
LIST OF PRODUCT USED						
No	Component	Product**	Points Allocated	Point Requested *	Points Accredited (By Secretariat)	Remark
1	Wall Types	Bricks				
		Timberwork	2	2		
		Clay Bricks	2	2	2	
		Blockwork	2	2		
		Reinforce Concrete	2	2		
		Aerated Concrete				
		Glass				
		Gypsum Board				
		Cement Board				
		Fibre cement				
2	Finishes	Paints	2	2	2	
		Composite Panel				
		Wall Paper	2	2		
		Ceramic Tiles	2	2	2	
		Stones				
		Pebblewash				
		Granite				
		Glass	2	2		
		Glass Block				
		Timber Panelling				
		Plaster	2	2	2	
		Growall				
TOTAL POINTS			18	18	8	

5.0 GPSS FORMULA for BUILDING

5.6 MOCK-UP GREEN PRODUCT SCORING SHEET

GREEN PRODUCT SCORING SHEET

Window System						
LIST OF PRODUCT USED						
No	Component	Product**	Points Allocated	Point Requested *	Points Accredited (By Secretariat)	Remark
1	Frames	Aluminium	2	2	2	
		Mild Steel				
		Timber	2	2		
		uPVC				
2	Sub Component (Panel)	Glass				
		Timber	2	2	2	
		Aluminium	2	2		
		Steel				
3	Ironmongeries	Friction Stay				
		Hinges	2	2	2	
		Handle	2	2	2	
		Ruber Gasket	2	2		
4	Finishes	Anodised Coatings	2	2	2	
		Paint				
		Varnish/Scellac				
TOTAL POINTS			16	16	10	

Door System						
LIST OF PRODUCT USED						
No	Component	Product**	Points Allocated	Point Requested *	Points Accredited (By Secretariat)	Remark
1	Frames	Aluminium				
		Mild Steel	2	2	2	
		Timber				
		uPVC				
2	Sub Component (Panel)	Timber				
		Aluminium	2	2	2	
		uPVC				
		Steel				
3	Ironmongeries	Glass				
		Lockset	2	2	2	
		Door Closer	2	2		
		Hinges	2	2	2	
4	Finishes	Anodised Coatings	2	2	2	
		Paints				
		Varnish/Shellac				
TOTAL POINTS			12	12	10	

5.0 GPSS FORMULA for BUILDING

5.6 MOCK-UP GREEN PRODUCT SCORING SHEET

GREEN PRODUCT SCORING SHEET						
Floor System						
LIST OF PRODUCT USED						
No	Component	Product**	Points Allocated	Point Requested *	Points Accredited (By Secretariat)	Remark
1	Floor	Epoxy Paint				
		Floor Hardener				
		Ceramic Tiles	2	2	2	
		Stones				
		Granite				
		Marble				
		Carpet	2	2		
		Carpet Underlay	2	2		
		Vinyl				
		Timber	2	2		
		Interlocking Pavers				
		Pebble Wash				
		Bamboo				
		Cement Render				
		Marmoleum				
		Rubber Mat (playground)				
		Concrete Imprint				
Laminated Flooring	2	2	2			
2	Water Proofing	Adhesive	2	2	2	
		Sealant				
		Grout				
TOTAL POINTS			12	12	6	

5.0 GPSS FORMULA for BUILDING

5.6 MOCK-UP GREEN PRODUCT SCORING SHEET

GRAND TOTAL POINTS

GREEN PRODUCT SCORING SHEET							
Sanitary							
LIST OF PRODUCT USED							
No	Component	Product**	Points Allocated	Point Requested *	Points Accredited (By Secretariat)	Remark	
1	Sanitary Features	Tap Fitting	2	2	2		
		Water Closet	2	2	2		
		Wash Basin	2	2	2		
		Sink					
		Urinal	2	2	2		
		Bidet	2	2	2		
		Floor Trap	2	2	2		
		Shower	2	2			
		Faucet					
TOTAL POINTS			14	14	12		
GRAND TOTAL POINTS			94	94	62		

The total Green Product Scoring for Architectural Products [Aw] :

	Points Allocated	Point Requested	Points Accredited
Architecture Products [Aw]	94	94	62

Assume the total Green Product Scoring for the following works as:

Mechanical Products [Mw]	28	28	15
Electrical Products [Mw]	40	40	25
Civil & Structural & Products [Cw]	68	68	15

Note :

The percentage of Green Products used for the respective works shall be as shown in item 5.4 : Mock Up Calculation

6.0 **FORMULA** for road



6.0 GPSS FORMULA for ROAD

LEGEND

[Rw] The percentage of **Road & Geotechnical Products**
Refer to the Appendix XRw

[Sw] The percentage of **Structural Products**
Refer to the Appendix XCw

[Ew] The percentage of **Electrical Products**
Refer to the Appendix XEw

[Total Points Allocation] Sum of the maximum points allocated for products used in road project

[Total Points Accredited] Sum of the points awarded for each Green Product

6.0 GPSS FORMULA for ROADS

6.1 MAJOR PRODUCTS COMPONENTS

a. Total Percentage of Green Products Used in Specific Works

$$\begin{aligned} \text{Road \& Geotechnical Products [Rw]} &= \frac{\text{Total Points Accredited}}{\text{Total Points Allocation}} \times 100 \% \\ \text{[Rw]} &= \text{---} \% \end{aligned}$$

$$\begin{aligned} \text{Structural Products [Sw]} &= \frac{\text{Total Points Accredited}}{\text{Total Points Allocation}} \times 100 \% \\ \text{[Sw]} &= \text{---} \% \end{aligned}$$

$$\begin{aligned} \text{Electrical Products [Ew]} &= \frac{\text{Total Points Accredited}}{\text{Total Points Allocation}} \times 100 \% \\ \text{[Ew]} &= \text{---} \% \end{aligned}$$

b. Green Products Scoring for road

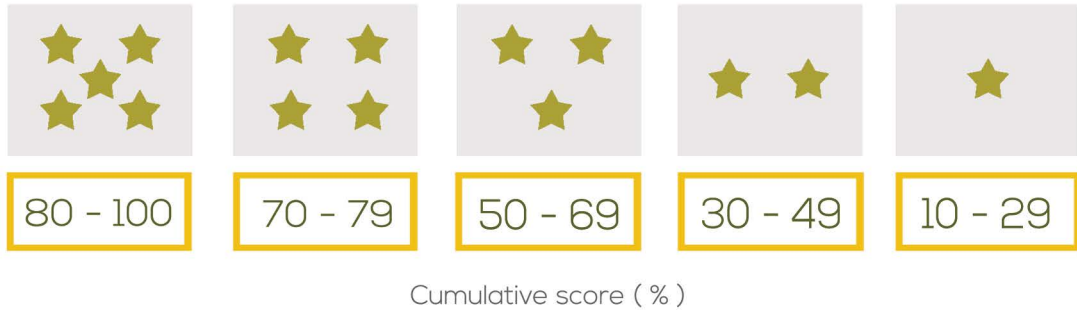
$$\begin{aligned} \text{GPSS average (\%)} &= \frac{\text{Rw} + \text{Sw} + \text{Ew}}{3} \\ &= 100\% \end{aligned}$$

Note : For roads with bridges

6.0 GPSS FORMULA for ROADS

6.2 FORMULA

Rating and cumulative Green Product Scoring for road



7.0 REFERENCE



7.0 REFERENCE

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2. Green Pages Malaysia
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4. Green Purchasing Network Malaysia
5. MyHijau Directory - <http://www.greendirectory.my>
6. JMAL - Green Product Directory

8.0 ACKNOWLEDGMENT



8.0 ACKNOWLEDGEMENT

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Pn. Zuliana Bt. Ramli

9.0 APPENDIX

9.1 Members of the Global Ecolabelling Network (GEN)



AUSTRALIA

Good Environmental Choice Australia Ltd.
The Australian Ecolabel Program

www.geca.org.au



BRAZIL

Associação Brasileira de Normas Técnicas

www.abnt.org.br/rotulo



CANADA

TerraChoice Group Inc, North America (Canada)

www.ecologo.org



CHINA

China Environment United Certification
Center

www.sepacec.com



CHINESE TAIPEI

Environment & Development Foundation
Green Mark Program

www.greenliving.epa.gov.tw



CROATIA

Ministry of Environmental Protection, Physical
Planning & Construction, Directorate for International
Cooperation & Sustainable Development

www.mzopu.hr

9.0 APPENDIX

9.1 Members of the Global Ecolabelling Network (GEN)



CZECH REPUBLIC

Ministry of the Environment

www.ekoznacka.cz



EUROPEAN UNION

European Commission - DG ENVIRONMENT

www.ecolabel.eu



GERMANY

Federal Environmental Agency

www.blauer-engel.de



HONG KONG

Green Council, Hong Kong

www.greencouncil.org



Hong Kong Federation of Environmental Protection (HKFEP) Ltd.

www.hkfep.com



INDIA

Central Pollution Control Board (CPCB)

www.cpcb.delhi.nic.in



INDONESIA

Ministry of Environment RAMAH LINGKUNGAN

www.menlh.go.id

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9.0 APPENDIX

9.1 Members of the Global Ecolabelling Network (GEN)



JAPAN

Eco Mark Office, Jaoan Environment Association (JEA)

www.ecomark.jp



KOREA

Korea Eco-products Institute (KOECO)

www.koeco.or.kr



MALAYSIA

SIRIM QAS International Sdn. Bhd.

www.sirim-qas.com.my



NEW ZEALAND

Environmental Choice New Zealand

www.enviro-choice.org.nz



NORDIC 5 COUNTRIES

Nordic Ecolabelling Board

www.svanen.nu



NORTH AMERICA (USA)

Green Seal Inc.

www.greenseal.org

9.0 APPENDIX

9.1 Members of the Global Ecolabelling Network (GEN)



RUSSIA

Saint-Petersburg Ecological Union
Ecolabel "Vitality leaf"

www.ecounion.ru



SINGAPORE

Singapore Environment Council (SEC)
Singapore Green Label Scheme (SGLS)

www.sec.org.sg



Bra Miljöval

SWEDEN

The Swedish Society for Nature
Conservation (SSNC)

www.naturskyddsforeningen.se



TCO Development (TCO)

www.tcodevelopment.com



THAILAND

Thailand Environment Institute

www.tei.or.th



UKRAINE

Living Planet
The Program for Development of Ecological
Marking in Ukraine

www.tcodevelopment.com

9.0 APPENDIX

9.2 OTHER GREEN LABELS / ACCREDITATION

- the labels listed below are not intended to be exhaustive



American Society for Testing and Materials



Barangan Malaysia



Blue Tick Product Certification



British Board of Agreement ;
Approval Inspection Testing Certification



Building and Environment Institute e.V



Bureau Veritas Quality International



Carpet & Rug Institute Green Label



Centre Scientifique Et Technique
Du Batiment



Certificate of Conformity &
The Safety Mark, Singapore



Cool Roof Rating Council



Ecospecifier Global, Australia



Emirates Green Building Council



Energy Star
Joint Program of the US Environmental
Protection Agency & the US Dept. of Energy



Floorscore Certification Label



Green Building Council Australia



GREENGUARD Environmental Institute



Guardian Independent Certification



Industrialised Building System



International Accreditation Forum



International Certification Network



Jas-anz

9.0 APPENDIX

9.2 OTHER GREEN LABELS / ACCREDITATION

- the labels listed below are not intended to be exhaustive



Leadership in Energy and Environmental Design by the US Green Building Council (USGBC)



Malaysia Good Design Mark



Malaysian Green Building Confederation



Moody International Certification



National Voluntary Laboratory Accreditation Program



Saudi Arabia Standard Organization



Scientific & Technical Center for Construction



Singapore Green Building Council



SIRIM Certificate



Societe Generale De Surveillance



South African Bureau of Standards



Standard Malaysia under Akta Standard Malaysia 1996



Suruhanjaya Perkhidmatan Air Negara



Suruhanjaya Tenaga



The Asia Pacific Brands Foundation (APBF)



The New Zealand Green Building Council



TUV SUD PSB is accredited under the Singapore Accreditation Council Singapore Laboratory Accreditation (SAC-Singlas)



Worldwide System for Conformity Testing & Certification of Electrotechnical Equipment & Components



GreenTag, Malaysia

9.0 APPENDIX

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ARCHITECTURAL - Roof				
No	Component	Product	Points Allocated	Remark
1	Roof Tiles	Clay Tiles	2	
		Concrete Tiles	2	
		Metal Roofing	2	
		Shingles	2	
2	Insulation	Rockwool	2	
		Glasswool	2	
		Foam	2	
		Aluminium Foil	2	
		Undersheeting	2	
3	Roof Eaves	Metal	2	
		Fiber Cement	2	
		Plasterboard	2	
4	Fascia Boards	Metal	2	
		Fibre Cement	2	
		Plasterboard	2	
		Timber	2	
5	Gutter	UPVC	2	
		Galvanised Iron	2	
		Aluminium	2	
		Stainless Steel	2	
6	Rainwater Down Pipes	UPVC	2	
		Galvanised Iron	2	
		Aluminium	2	
		Stainless Steel	2	
7	Ceiling	Plasterboard	2	
		Fibre Cement Board	2	
		Metal Strip	2	
8	Truss System	Timber	2	
		Metal	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ARCHITECTURAL - Wall System				
No	Component	Product	Points Allocated	Remark
1	Wall Types	Bricks	2	
		Timberwork	2	
		Clay Bricks	2	
		Blockwork	2	
		Reinforce Concrete	2	
		Aerated Concrete	2	
		Glass	2	
		Gypsum Board	2	
		Cement Board	2	
		Fibre cement	2	
2	Finishes	Paints	2	
		Composite Panel	2	
		Wall Paper	2	
		Ceramic Tiles	2	
		Stones	2	
		Pebblewash	2	
		Granite	2	
		Glass	2	
		Glass Block	2	
		Timber Panelling	2	
		Plaster	2	
		Growall	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ARCHITECTURAL - Window				
No	Component	Product	Points Allocated	Remark
1	Frames	Aluminium	2	
		Mild Steel	2	
		Timber	2	
		uPVC	2	
2	Sub Component (Panel)	Glass	2	
		Timber	2	
		Aluminium	2	
		Steel	2	
3	Ironmongeries	Friction Stay	2	
		Hinges	2	
		Handle	2	
		Ruber Gasket	2	
4	Finishes	Anodised Coatings	2	
		Paint	2	
		Varnish/Scellac	2	

LIST OF PRODUCT FOR ARCHITECTURAL - Door				
No	Component	Product**	Points Allocated	Remark
1	Frames	Aluminium	2	
		Mild Steel	2	
		Timber	2	
		uPVC	2	
2	Sub Component (Panel)	Timber	2	
		Aluminium	2	
		uPVC	2	
		Steel	2	
3	Ironmongeries	Glass	2	
		Lockset	2	
		Door Closer	2	
		Hinges	2	
4	Finishes		2	
		Anodised Coatings	2	
		Paints	2	
		Varnish/Shellac	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ARCHITECTURE - Floor				
No	Component	Product**	Points Allocated	Remark
1	Floor	Epoxy Paint	2	
		Floor Hardener	2	
		Ceramic Tiles	2	
		Stones	2	
		Granite	2	
		Marble	2	
		Carpet	2	
		Carpet Underlay	2	
		Vinyl	2	
		Timber	2	
		Interlocking Pavers	2	
		Pebble Wash	2	
		Bamboo	2	
		Cement Render	2	
		Marmoleum	2	
		Rubber Mat (playground)	2	
		Concrete Imprint	2	
Laminated Flooring	2			
2	Water Proofing	Adhesive	2	
		Sealant	2	
		Grout	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ARCHITECTURE - Sanitary				
No	Component	Product**	Points Allocated	Remark
1	<i>Sanitary Features</i>	Tap Fitting	2	
		Water Closet	2	
		Wash Basin	2	
		Sink	2	
		Urinal	2	
		Bidet	2	
		Floor Trap	2	
		Shower	2	
		Faucet	2	

LIST OF PRODUCT FOR ARCHITECTURE - System Furniture				
No	Component	Product**	Points Allocated	Remark
1	<i>Built In Furniture (System Furniture)</i>	Office Workstation	2	
		Toilet Cubicle	2	
		Institutional Seating	2	
		Built-in Cupboards	2	
		Sports Facilities Seating	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR CIVIL				
No	Component	Product	Points Allocated	Remark
1	Common Items	Cement	2	
		Timber	2	
		Reinforcement Bar	2	
		Sand	2	
		Aggregate	2	
		Stone/Rock	2	
2	Earth Works/Erosion Sediment Control	Geotextile	2	
		Erosion Mat	2	
		Geogrid	2	
		Mulching	2	
		Gabion	2	
		Hydroseeding	2	
3	Drainage Works	Drain	2	
		Culvert	2	
		Sump	2	
		Pipe	2	
		Modular tank	2	
		Geotextile	2	
		Grating	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR CIVIL				
No	Component	Product	Points Allocated	Remark
4	Pavement/Road Furniture	Asphalt Concrete	2	
		Porous Asphalt	2	
		Prime Coat	2	
		Tack Coat	2	
		Retroreflective Sheeting	2	
		Road Paint	2	
		Paver Block	2	
		Permeable Paver	2	
		Kerb	2	
		Road Stud	2	
		Chevron Delinator	2	
		Guardrail	2	
		Railing	2	
		Wire Rope	2	
		Signages	2	
5	Water Reticulation Works	Pipes	2	
		Bulk Meter	2	
		Valves	2	
		Tank	2	
		Pump	2	
		First Flush Filter	2	
		Sand Filter	2	
6	Sewerage Works	Pipes	2	
		Tank	2	
		Pump	2	
		Manhole	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR STRUCTURE				
No	Component	Product	Points Allocated	Remark
1	Common Items	Cement	2	
		Reinforcement Bar	2	
		Sand	2	
		Aggregate	2	
		Timber	2	
2	Super Structure	Concrete	2	
		Reinforcement Bar	2	
		Steel	2	
		Water Stop	2	
		Damp Proof Membrane	2	
		Plastic Sheeting	2	
		Sealant	2	
3	Roof Trusses	Steel	2	
		Timber	2	
		Aluminium	2	
		Bolt	2	
		Plates	2	
		Membrane	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR MECHANICAL				
No	Component	Product**	Points Allocated	Remark
1	<i>Water cooled chiller system</i>	Compressor -Refrigerant	2	R410a
		Air Side -Air Handling Unit	2	constant speed motor
		Water Side -Pump	2	constant speed motor
		-Cooling tower -Electronic Water de-scaler	2 2	constant speed motor constant speed motor
2	<i>Multiple Air-Conditioning System</i>	Compressor -Refrigerant	2	R410a
		Air Side -Air Handling Unit	2	Variable Speed Drive Motor High Efficiency Motor
		-Outdoor unit	2	
3	<i>Split unit</i>	Compressor -Refrigerant	2	R410a
4	<i>Lift</i>	Lift motor	2	use normal motor
5	<i>Fire fighting system</i>	Clean agent -Mist	2	use normal motor
		Hose reel -Pump	2	
		Sprinkler -Pump	2	use normal motor
		Wet or dry riser -Pump	2	use normal motor
6	<i>Cold water system</i>	Pump	2	use normal motor
		Water tank	2	use high durability material
7	<i>Innovation</i>	Rain water harvesting	2	use rain water harvesting system for irrigation

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ELECTRICAL WORKS				
No	Component	Product	Points Allocated	Remark
1		Generator Set	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Local product 3. Recyclable material 4. Durable product 5. Environmental protection 6. Improved IAQ
2		Transformer	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Local product 3. Low Loss (Refer to L-S17) 4. Recyclable material 5. Durable product 6. Environmental protection 7. Improved IAQ
3		Surge Protective Device (SPD)	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Local product 3. Environmental protection 4. Energy Efficiency
4	Protection Relays	Combined Overcurrent and Earth Fault Relay	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Local product 3. Durable product 4. Energy Efficiency
		Overcurrent Relay	2	
		Earth Fault Relay	2	
		Earth Leakage Relay	2	
5	Circuit Breaker	Air Circuit Breaker (ACB)	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Manufacture in Malaysia with all raw of materials, or imported material to be assembled in Malaysia. 3. Environmental protection 4. Recyclable material 5. Durable product
		Moulded Case Circuit Breaker (MCCB)	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Manufacture in Malaysia with all raw of materials, or imported material to be assembled in Malaysia. 3. Environmental protection 4. Recyclable material 5. Improved Indoor Air Quality (IAQ)
		Miniature Circuit Breaker (MCB)	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Manufacture in Malaysia with all raw of materials, or imported material to be assembled in Malaysia. 3. Environmental protection 4. Recyclable material 5. Improved Indoor Air Quality (IAQ)

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ELECTRICAL WORKS				
No	Component	Product	Points Allocated	Remark
6	Residual Current Devices	Residual Current Operated Circuit Breakers (RCCB)	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Environmental protection 3. Local product
7	Switchboard	Metal Enclosure	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Durable 3. Environmental Protection 4. Recycle content 5. Local Product 6. Fire Rated
		Busbar Support	2	
		Cables	2	
		Busbar	2	
		Distribution Board	2	
8	Interior Lightings	CFL (Compact Fluorescent Lamp)	2	<ol style="list-style-type: none"> 1. Low wattage high lumen output 2. High lamp efficacy. Comply to Electricity Supply Act (Amendment) 2013, which Minimum Energy Performance Standard (MEPS) : <ol style="list-style-type: none"> i) CFL (self-ballasted) : <ol style="list-style-type: none"> a) < 9W = 55 lm/W; b) 9 - 15W = 60 lm/W; c) 16 - 24W = 60 lm/W; d) ≥25W = 60 lm/W ii) CFL (non-integrated lamp) : <ol style="list-style-type: none"> a) ≤ 10W = 60 lm/W; b) 11 - 26W = 65 lm/W; c) ≥27W = 85 lm/W 3. Less material, packaging, weight, transport and recycling volume due to smallest product dimensions. 4. RoHS Compliant (Restriction of Hazardous Substance). 5. Comply to requirements of the WEEE Directive. (Waste Electrical and Electronic Equipment). 6. Comply to Environmental Standard EMS ISO 14001
		Fluorescent Light	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Durable 3. Environmental Protection 4. Recyclable Material 5. Local Product 6. Energy Efficiency 7. Improved Indoor Air Quality (IAQ) 8. Fire Rated (for emergency light)
		T5 (Diameter of fluorescent Lamp)	2	<ol style="list-style-type: none"> 1. Low wattage high lumen output 2. High lamp efficacy. Comply to Electricity Supply Act (Amendment) 2013, which Minimum Energy Performance Standard (MEPS) : <ol style="list-style-type: none"> i) T5 14W - 80 lm/W ii) T5 ≥15W - 85lm/W 3. Less material, packaging, weight, transport and recycling volume due to smallest product dimensions. 4. RoHS Compliant (Restriction of Hazardous Substance). 5. Comply to requirements of the WEEE Directive. (Waste Electrical and Electronic Equipment). 6. Comply to Environmental Standard EMS ISO 14001.

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ELECTRICAL WORKS				
No	Component	Product	Points Allocated	Remark
9	Luminaires	LED (Light Emitting Diode) Emergency Light	2	1. Comply to EMS ISO 14000 2. Durable 3. Environmental Protection 4. Recyclable Material 5. Local Product 6. Energy Efficiency 7. Improved Indoor Air Quality (IAQ) 8. Fire Rated (for emergency light)
		LED Luminaires	2	
		LED Lamps (T8 LED Tubes & LED Bulb)	2	
		Housing / Casing	2	
		Electronic Controlgear (Driver)	2	
10	Exterior Lightings / Road Lighting Luminaires	Ballast	2	1. Low wattage reduce flicker 2. Environmental protection 3. Energy Efficiency 4. Comply to EMS ISO 14000
		Induction Lamp	2	1. Low wattage higher Lumen 2. Comply to EMS ISO 14000 3. Durable 4. Environmental Protection
		HPSV (High Pressure Sodium Vapor)	2	1. Low wattage higher efficacy 2. Comply to EMS ISO 14000 3. Durable 4. Environmental Protection
		Road Lighting Luminaires	2	1. Comply to EMS ISO 14000 2. Recyclable Material 3. Durable product 4. Local product
		Lighting Columns	2	1. Comply to EMS ISO 14000 2. Recyclable Material 3. Local product 4. Durable product
11	Road Lighting Luminaires (LED)	Housing / Casing	2	1. Comply to EMS ISO 14000 2. Durable 3. Environmental Protection 4. Recyclable Material 5. Local Product 6. Energy Efficiency 7. Improved Indoor Air Quality (IAQ)
		Electronic Controlgear (Driver)	2	
		LED Module	2	
12	Traffic Light	Housing / Casing	2	1. Comply to EMS ISO 14000 2. Durable 3. Environmental Protection 4. Recyclable Material 5. Local Product 6. Energy Efficiency 7. Improved Indoor Air Quality (IAQ)
		Controller	2	
		Traffic Signal Module	2	
		Lighting Columns	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ELECTRICAL WORKS				
No	Component	Product	Points Allocated	Remark
13	Ballast	Electronic Ballast	2	<ol style="list-style-type: none"> 1. Low wattage reduce flicker 2. Shall be rated a minimum Energy Efficiency Index Classification (EEI) of A2 as per CELMA/ELC Guide. 3. Comply to Environmental Standard EMS ISO 14001. 4. EMC compliant to EN 55015, EN 61547, EN 61000-3-2, EN 61000 -3-3
14	Switches & Sockets Outlets	Switches	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Durable product
		Switched Socket Outlets	2	<ol style="list-style-type: none"> 3. Recyclable Material 4. Local product
15	Cables	Low Voltage Cable	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Material that are longer lasting or are comparable to conventional products with long life expectancies. 3. Products that have minimal chemical emission, emit low or no volatile organic compounds (VOCs) and avoid use of chlorofluorocarbons (CFCs). 4. Products embodied produced locally or regionally which would save the energy and resources in transportation. 5. Using Special Sheathing material such as termite protection, rodent protection, ultra violet protection, flame retardant and etc. 6. Recyclable material - such as copper cable
		High Voltage Cable	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Material that are longer lasting or are comparable to conventional products with long life expectancies. 3. Products that have minimal chemical emission, emit low or no volatile organic compounds (VOCs) and avoid use of chlorofluorocarbons (CFCs). 4. Products embodied produced locally or regionally which would save the energy and resources in transportation. 5. A product that has been recycled into the same product at the end of its first useful life. 6. Material used are recyclable at the end of their useful.
16	G.I Conduits & High Impact PVC Conduit/ Trunking/ Tray	Rigid High Impact PVC Conduit	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Durable product 3. Manufacture in Malaysia with all raw of materials, or imported material to be assembled in Malaysia. 4. Material used (e.g PVC, sheet steel, Aluminium, cast iron, etc) are recyclable.
		Galvanised Steel Conduit	2	
		Trunking	2	
		Cable Tray	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ELECTRICAL WORKS				
No	Component	Product	Points Allocated	Remark
17	Fan	Ceiling Fan	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Coefficient of Performance is ≥ 3.0 (5 Star Rating by S.T) 3. Products Comply with MS1220:2010 4. Manufacture in Malaysia with all raw of materials, or imported material to be assembled in Malaysia. 5. Materials used are recyclable. 6. Wattage should be 72W and below.
		Wall Fan	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Coefficient of Performance is ≥ 1.20 (5 Star Rating by S.T) 3. Products Comply with MS1220:2010 4. Manufacture in Malaysia with all raw of materials, or imported material to be assembled in Malaysia. 5. Material used are recyclable.
		Oscillating Fan	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Coefficient of Performance is ≥ 1.2 (5 Star Rating by S.T) 3. Products Comply with MS1220:2010 4. Manufacture in Malaysia with all raw of materials, or imported material to be assembled in Malaysia. 5. Material used are recyclable.
18	Capcitor for Power Factor Correction	Power Capacitors	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Products embodied produced locally or regionally which would save the energy and resources in transportation. 3. Self-Healing technology overpressure disconnecter 4. Durable product
		Power Factor Regulator	2	
19	Emergency Light & Luminous Sign	Keluar Sign	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Durable 3. Evironmental Protection 4. Products embodied produced locally or regionally which would save the energy and resources in transportation. 5. Energy efficiency 6. using material flame retardant type for diffuser
		Emergency Light	2	
20		11kV Metal enclosed Switchgear - VCB	2	<ol style="list-style-type: none"> 1. Comply to EMS ISO 14000 2. Material content are recyclable 3. Manufacture in Malaysia with all raw of materials, or imported material to be assembled in Malaysia or Imported but save energy and resources in transportation 4. Electronic components comply to EMC Test compliance 5. Durable Product
21	Renewable energy system	Solar Panel	2	<ol style="list-style-type: none"> 1. Comply to Environmental Standard EMS ISO 14001. 2. RoHS Compliant (Restriction of Hazardous Substance).
		Battery	2	
		Inverter	2	
		Low Voltage Cable	2	

9.3 GREEN PRODUCT REFERENCE LIST

LIST OF PRODUCT FOR ROAD & GEOTECHNICAL				
No	Component	Product	Points Allocated	Remark
1	Common Items	Cement	2	
		Formwork	2	
		Steel Fabric	2	
		Piles	2	
		Steel Reinforcement Bar	2	
		Silicone Sealant	2	
2	Slope Protection/Geotechnical Works	Geotetile	2	
		Geogrid	2	
		Prefabricated Vertical	2	
		Blanket	2	
		Sheeting	2	
		Fibro Mat	2	
3	Drainage Works	Precast Reinforced	2	Under going green manufacturing
		Pipes	2	
		Drains	2	
		Bricks	2	
		Precast Subsoil Drain	2	
		Bricks	2	
		Gabion Cage	2	
		Grating	2	
		Water Stop	2	
4	Pavements	Prime Coat	2	
		Tack Coat	2	
		Hot In Place Recycling	2	Under going green manufacturing
		Cold In Place Recycling	2	
		Polymer Modified	2	
		Stone Mastic Asphalt	2	
		Porous Asphalt	2	
		Concrete Pavement	2	
Soil Stabiliser	2			
5	Road Furnitures	High Intensity	2	
		Guardrails	2	
		Railings		
		Precast Concrete New	2	
		Wire Rope	2	
		Thermoplastic Road	2	
		Road Paint		
		Anti Glare Screen	2	
		Sound Barrier	2	
		Paving Block	2	
		Precast Concrete Kerb	2	
		Road Stud	2	
		Chevron Delinators	2	
		Flexible Post	2	
Impact Attenuator	2			
6	Others (specified if any)			

9.0 APPENDIX

9.4 GREEN PRODUCT SCORING SHEET

GREEN PRODUCT SCORING SHEET

PROJECT : _____

BUILDING/ROAD : _____

WORK COMPONENT: RW/CW/EW/MW/AW _____

LIST OF PRODUCT USED						
No	Component	Product**	Points Allocated	Point Requested *	Points Accredited (By Secretariat)	Remark
1						
2						
3						
TOTAL POINTS						

Note :

*i. To be submitted by Project Manager

**ii. All products that are used shall be listed and taken into consideration for the purpose of score calculation

iii. Points Allocated : Points allocated of all products used in the building.

iv. Points Requested : Points requested for Green Products used.

v. Points Accredited : Points awarded for each Green Product.

$$\text{Percentage mechanical score} = \frac{\text{point accredited} \times 100}{\text{point allocated}}$$

Prepared by :
Design Team

Checked By:
Project Manager

Verified By:
Secretariat



JABATAN KERJA RAYA MALAYSIA

JKR 20801-0010-14