



# MALAYSIAN SUSTAINABLE INFRASTRUCTURE RATING TOOL

## THE REFERENCE GUIDE



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The creation of Sustainable INFRASTAR was only made possible with the invaluable contribution of the individual and organization below: -

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- THE INSTITUTION OF ENGINEERS MALAYSIA (IEM)
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- GAMUDA
- JABATAN KERJA RAYA MALAYSIA (JKR)
- PRASARANA
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- RAILWAY ASSETS CORPORATION
- PENGURUSAN ASET AIR BERHAD (PAAB)
- PERBADANAN BEKALAN AIR PULAU PINANG
- SURUHANJAYA PERKHIDMATAN AIR NEGARA
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## Introduction

Infrastructure development is imperative to address the needs of enhancing social development and to spur a country's economy growth. Anyhow infrastructure development potentially contributes to various ecological and sustainability concerns thus the decision to pursue must be rightly balanced between economy, social and environmental factors. Therefore, a sustainable infrastructure can enhance not only the quality of life of community but also minimise the impact on environmental through preservation of the natural resources and mitigating adverse ecological issues. where a standardised method or tool to appraise the sustainability of infrastructure development is becoming essential. Realising the importance to have a systematic approach for such development, CIDB through its' Construction Industry Transformation Programme (CITP) 2016 – 2020 had outlined those needs in Environmental Sustainability Thrust. Consequently, the Sustainable Construction Excellence Centre (MAMPAN) of the Construction Research Institute of Malaysia (CREAM) has been assigned to develop sustainable infrastructure rating tool for Malaysia. The ultimate purpose of the tool is to assess the extent of sustainability measures adopted by infrastructure projects in Malaysia primarily at both design and construction stages. The initial framework of this rating tool has been developed based on an extensive benchmarking study on several sustainable infrastructure rating systems established around the world. The tool is later verified and customised to suit with the current industry practice in Malaysia. Pilot projects were carried out to test the suitability and feasibility of the tool and as a result.

As a result, an infrastructure sustainability rating tool for Malaysia known as Sustainable INFRASTAR has been developed through a collaborative effort between public and private agencies. This rating tool is essential and critical to enable a holistic consideration of sustainable elements to be incorporated early on in any infrastructure development and provide a comprehensive assessment on the level of sustainability being implemented in a project. It is as an objective and evidence-based rating tool that evaluates social and environmental aspects including land use planning and management, resource management, energy and water management, biodiversity and other ecosystems.

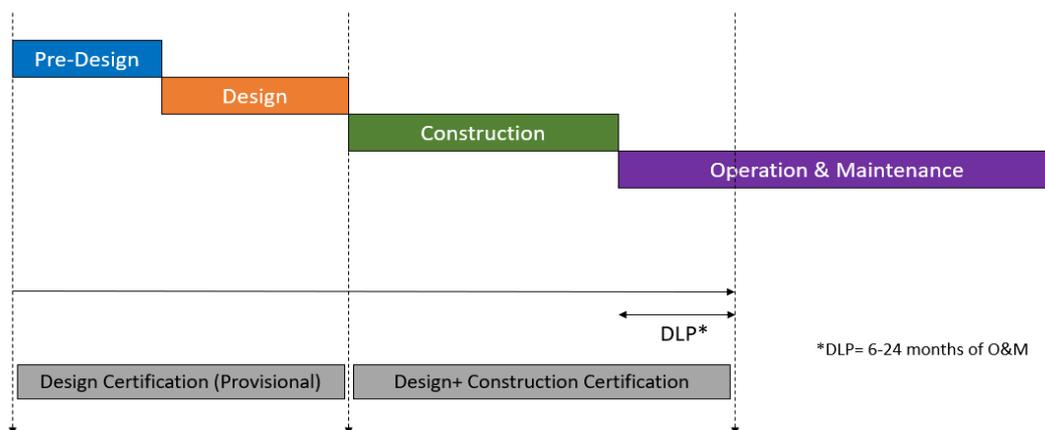
## The Aim of Sustainable INFRASTAR

- To create a continuous awareness of the importance of sustainability throughout the design and development stages of infrastructure projects;
- To prioritise significant environmental, social and economy attributes for sustainable infrastructure as early as the conceptual stage;
- To convey an improved performance related to environmental and social through project design and construction;
- To recognise efforts made by projects towards achieving an exceptional level of sustainable infrastructure; and
- To ensure the implementation of environmental and social best practices are following the standards adopted locally and globally.

## Type of Rating Assessment by Sustainable INFRASTAR

- This rating tool focuses on assessing the sustainability of an infrastructure project during the design and construction stage only. It does not offer a sustainability assessment for operation & maintenance stage.
- There are two types of rating assessment by this tool, namely *Design Assessment* and *Design + Construction Assessment*.
  - i. *Design Assessment* – assesses the sustainability of project activities that take place during pre-construction stage including setting up of the policies and targets for the development project as well as considerations on value for money options and resources efficiency in the design submission process.
  - ii. *Design + Construction Assessment* – assesses the sustainability of project activities that had been considered extensively in the planning and design, which then being executed accordingly during construction including the provision of suitable worker amenities and a comprehensive monitoring plan for noise and vibration of construction activities on site.

## Rating Assessment Timeline of Sustainable INFRASTAR



The rating assessment takes place at two project stages:

- Pre-construction stage - during planning and design.
- Pre-commissioning to the CPC stages – during construction and also within the duration where contractors are liable to rectify any defects during operation & maintenance, i.e. between 6 – 24 months after project commissioning depending on contract conditions.

| Certification Award                            | Assessment Point               | Assessment Details  |
|--|--------------------------------|---|
| <b>Design Certification (Provisional)</b>      | Pre-Construction Stage         | <ul style="list-style-type: none"> <li>• Points are awarded based on the policy and target set in planning</li> <li>• Points awarded are verified by a documented evidence to authenticate their definite execution in the detailed design.</li> </ul>          |
| <b>Design &amp; Construction Certification</b> | Pre-Commissioning to CPC Stage | <ul style="list-style-type: none"> <li>• Points are awarded based on policy and target addressed in the detailed design</li> <li>• Points awarded are verified by documented evidence to prove their definite implementation in actual construction.</li> </ul> |

## Assessment Criteria of Sustainable INFRASTAR

- The tool measures the extent to which a project addresses sustainability approaches implemented in an infrastructure project.
- The tool does not evaluate the performance achievement of a project but incentivises all the efforts taken to ensure the effective and efficient use of land, materials, energy, and water with minimal waste in infrastructure development.
- This rating tool comprises of six core criteria:
  - I. *Pre-Design & Pre-Construction (PDC)* represents setting up of the project plan and design that are able to ensure all the pre-determined construction activities are being executed effectively and efficiently throughout an infrastructure project.
  - II. *Site Land Use (SLU)* requires a proper plan for land use strategy that is developed based on a systematic technical procedure, which would enable making decisions based on the allocation and exploitation of the available land resources.
  - III. *Ecology & Environment (ENE)* is a functional unit known as an ecosystem that requires a comprehensive consideration on *biotic* (plant, animals and micro-organism) and *abiotic* (soil, sunlight, topography, water, atmosphere, nutrients) with how living organisms interact with each other.
  - IV. *Material, Resources and Waste (MRW)* aims to do more with less that emphasises the efficient use of material, resources and waste in the most sustainable manner to minimise the significant impact on the environment, i.e. optimising the use of lowered embodied carbon materials, reuse of recycled materials as well as diverting construction waste from landfill.
  - V. *Energy Performance (ENP)* addresses issues related to the type of Plant, Machinery & Equipment (PME) that is used to maximise energy efficiency and minimise carbon emission during construction.
  - VI. *Social & Culture (SOC)* addresses various community-affected aspects including transport/traffic-oriented social effect, safety and health as well as historical and cultural value.

| Core Criteria<br>(6)                | Criteria<br>(27)  | Sub-Criteria<br>(89) | Sub-Criteria Statement |                    |
|-------------------------------------|---|----------------------|------------------------|--------------------|
|                                     |   |                      | Compulsory<br>(65)     | Applicable<br>(29) |
| Pre-Design & Pre-Construction (PDC) | Policy & Target, Design Process, Submission Process, Cost-Benefit Analysis, Procurement, Risk Management Plan                   | 20                   | 23                     | 0                  |
| Site Land Use (SLU)                 | Site Selection, Temporary Site Utilisation, Landscape & Landform, Green Inventory, Land Use Efficiency                          | 16                   | 8                      | 9                  |
| Ecology & Environment (ENE)         | Compliance to the legal & regulatory requirement, Flora & Fauna, Water (Existing), Water (Use), Noise & Vibration, Air, Habitat | 24                   | 17                     | 7                  |
| Material, Resources & Waste (MRW)   | Resource Planning, Lowering Embodied Carbon, Waste Management   | 10                   | 7                      | 4                  |
| Energy Performance (ENP)            | Energy Performance Compliance, Energy Use, Plant, Machinery & Equipment (PME) Use During Construction                           | 5                    | 5                      | 0                  |
| Social & Culture (SOC)              | Transport/Traffic Oriented Social Effect, Safety & Health, Social Impact, Historical and Cultural Value                         | 14                   | 5                      | 9                  |

- *Compulsory (C) statement* – refer to sub-criteria in which a project must strive to ensure appropriate credit points are awarded based on compliance with the stipulated requirements and supported by relevant documented evidence.
- *Applicable (A) statement* – reflect sub-criteria that may be excluded from the assessment due to their irrelevancy to the project. However, approval for the exclusion must be supported by appropriate documented evidence and also agreed by the appointed assessor.

### **Additional Assessment Criteria of Sustainable INFRASTAR**

- Innovation and incentive in any infrastructure development project typically evolve through the establishment of more advanced and useful products, processes, services, technologies and ideas for implementation.
- The application of any new creative ideas from these activities, which enable the project to progress extensively towards more sustainable outcomes, will be rewarded in the tool's rating assessment under Criteria 7: Innovation & Incentive.

- A maximum of 30 points has been allotted in this tool for any innovation and incentive involved in a project for the design assessment. As for design + construction assessment, 30 points each has been allocated for any innovation and incentive that take place in the design and construction, which lead towards a maximum of 60 points for these criteria in total.

### Priority Weightages of Sustainable INFRASTAR

- The priority weightages for each criterion have been determined through extensive consultation with relevant stakeholder groups and interested parties through the industrial stakeholders' engagement.
- The finalised priority weightages have been converted into a total credit point of 1000, which are then allotted to the core criteria, criteria and sub-criteria statements accordingly based on the type of assessment required by the project.

| Design Assessment                        | Maximum Point | Weightage   |
|--|---------------|-------------|
| Section 1- Pre-Design & Pre-Construction | 144           | 33.6 %      |
| Section 2- Site Land Use                 | 42            | 9.8 %       |
| Section 3- Ecology & Environment         | 152           | 35.4 %      |
| Section 4- Material, Resources & Waste   | 29            | 6.8 %       |
| Section 5- Energy Performance            | 21            | 4.9 %       |
| Section 6- Social & Culture              | 41            | 9.6 %       |
| <b>TOTAL POINTS</b>                      | <b>429</b>    | <b>100%</b> |
| Section 7 – Innovation & Incentive       | 30            | -           |
| <b>TOTAL POINTS WITH BONUS POINTS</b>    | <b>-</b>      | <b>-</b>    |

| Construction Assessment                  | Maximum Point | Weightage |
|--|---------------|-----------|
| Section 1- Pre-Design & Pre-Construction | 44            | 7.7 %     |
| Section 2- Site Land Use                 | 30            | 5.3 %     |
| Section 3- Ecology & Environment         | 279           | 48.9 %    |
| Section 4- Material, Resources & Waste   | 131           | 22.9 %    |
| Section 5- Energy Performance            | 19            | 3.3 %     |

|                                       |            |             |
|---------------------------------------|------------|-------------|
| Section 6- Social & Culture           | 68         | 11.9 %      |
| <b>TOTAL POINTS</b>                   | <b>571</b> | <b>100%</b> |
| Section 7 – Innovation & Incentive    | 30         | -           |
| <b>TOTAL POINTS WITH BONUS POINTS</b> | <b>-</b>   | <b>-</b>    |

| Design + Construction Assessment         | Maximum Point | Weightage   |
|--|---------------|-------------|
| Section 1- Pre-Design & Pre-Construction | 188           | 18.8 %      |
| Section 2- Site Land Use                 | 72            | 7.2 %       |
| Section 3- Ecology & Environment         | 431           | 43.1 %      |
| Section 4- Material, Resources & Waste   | 160           | 16.0 %      |
| Section 5- Energy Performance            | 40            | 4.0 %       |
| Section 6- Social & Culture              | 109           | 10.9 %      |
| <b>TOTAL POINTS</b>                      | <b>1000</b>   | <b>100%</b> |
| Section 7 – Innovation & Incentive       | 60            | -           |
| <b>TOTAL POINTS WITH BONUS POINTS</b>    | <b>-</b>      | <b>-</b>    |

### Rating Award Classification of Sustainable INFRASTAR

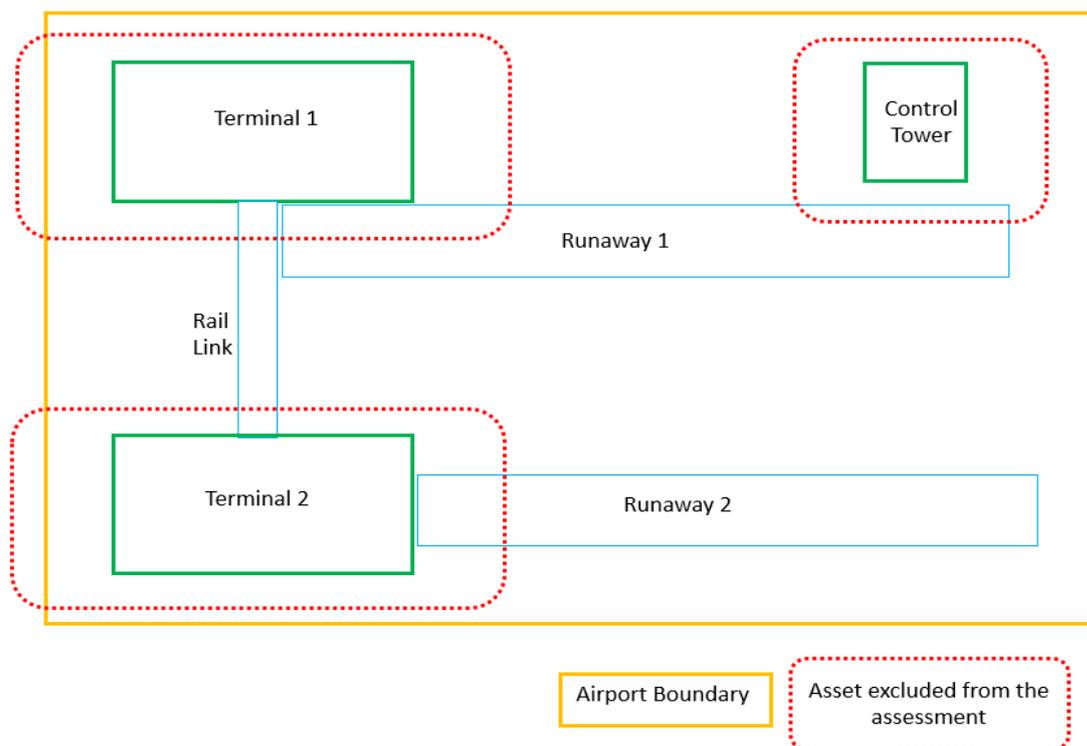
| Finalised Percentage | Certified Rating Award  | Description                             |
|----------------------|---|---|
| < 30%                | Not eligible for rating   | Insufficient sustainability performance |
| 30% - 39%            | Pass  | Minimum sustainability performance      |
| 40% - 49%            |  | Improved sustainability performance     |
| 50% - 59%            |  | Enhanced sustainability performance     |
| 60% - 69%            |  | Commended sustainability performance    |
| 70% - 79%            |  | Excellent sustainability performance    |
| 80% - 100%           |  | Superior sustainability performance     |

## Suitable Infrastructure for Rating Assessment by Sustainable INFRASTAR

| Type of Infrastructure                                 | Classification of Infrastructure   |
|--|--|
| Road, Tunnel and Bridges                               | <ul style="list-style-type: none"> <li>• Toll Expressways (Expressway Under LLM)</li> <li>• Federal Roads (Highway Under JKR)</li> <li>• State Roads (Highway Under JKR)</li> <li>• Municipal Road (Highway Under Municipal Council)</li> <li>• Tunnel Highway</li> <li>• Bridges</li> </ul> |
| Rail Transport System                                  | <ul style="list-style-type: none"> <li>• Heavy Rail (Commuter Rail)</li> <li>• Express Rail Link (ERL)</li> <li>• Light Rapid Transit (LRT)</li> <li>• Mass Rapid Transit (MRT)</li> <li>• High-Speed Rail</li> <li>• Monorail</li> <li>• Funicular Railway Line (Cable Railway)</li> </ul>  |
| Water Utility Services                                 | <ul style="list-style-type: none"> <li>• Dam/Reservoir</li> <li>• Water Supply Network</li> <li>• Water Treatment Plant</li> </ul>   |
| Airports   | <ul style="list-style-type: none"> <li>• Runway</li> <li>• Public Infrastructure</li> <li>• Airport Rail Link</li> </ul>   |
| Waterways, Canals & Ports                              | <ul style="list-style-type: none"> <li>• Waterway</li> <li>• Canal</li> <li>• Port</li> <li>• Jetty</li> <li>• Marina</li> </ul>   |
| Waste Facilities – Solid Waste, Wastewater & Hazardous | <ul style="list-style-type: none"> <li>• Solid Waste Treatment Plant</li> <li>• Incinerator</li> <li>• Recycling Plant</li> <li>• Sewerage Pipe Network</li> <li>• Wastewater Treatment Plant</li> </ul>   |
| Energy Generation & Distribution                       | <ul style="list-style-type: none"> <li>• Power Plant</li> <li>• Power Supply Network</li> </ul>  |
| Telecommunication                                      | <ul style="list-style-type: none"> <li>• Telecommunication Network</li> </ul>  |

## Project Assessment Boundary of Sustainable INFRASTAR

- The setting of project boundary must be pre-determined by the project owner and must be agreed between the project team and the appointed facilitator prior to the tool assessment.
- A clear statement and delineation of the project boundary help to clarify whether the project range and type of asset to be evaluated are within the assessment scope.
- Project boundary is closely associated with the project objectives in which the contractual agreement defines a holistic perception of project activities and the expected outcomes.
- The project assessment boundary shall be limited to the extent to which project assets are measurable and accessible for evaluation.
- Nevertheless, a linear Infrastructure project is associated with the procurement of large buildings such as main stations, administration offices and commercial buildings, which are categorised under building category rather than infrastructure.
- Thus, such building assets must be omitted from the project boundary decided for the tool assessment.
- An example of an airport project:



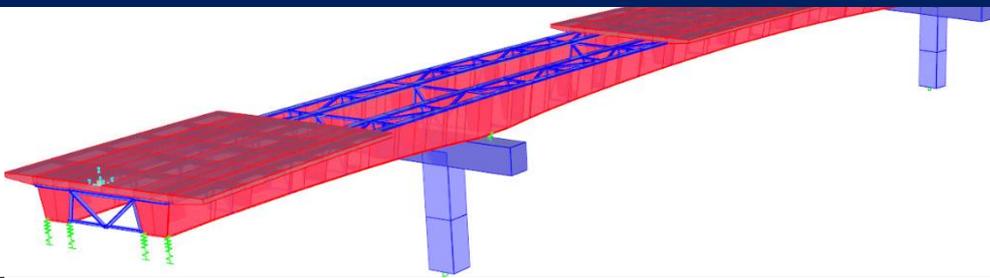
## How to read the Reference Guide

| Core Criteria |   | ECE – Ecology & Environment |   | Points |              |
|---------------|---|-----------------------------|---|--------|--------------|
|               |   | Criteria                    |   | Design | Construction |
|               |   | ECE 3.3                     | Water (Existing)  | 8      | 12           |
|               |   | 3.3.3                       | Impact monitoring mechanism   |        |              |
|               | Classification of sub-criteria                        | Compulsory                  | Sufficient measures have been incorporated in the project that allows the monitoring of potential impact on freshwater and/or marine environments   | 8      | 12           |
|               |   | Aim                         | <ul style="list-style-type: none"> <li>To reward the effort on monitoring of impact on existing water bodies including marine.</li> </ul>   |        |              |
|               | Breakdown of the maximum point for design             | Requirement                 | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points – A systematic water Monitoring Plan key aspects or criteria that includes sample site, parameters, frequency of inspection etc. has been detailed out as part of design concept.</li> <li>4 points – This plan or system is incorporated into design details and included in tender documents for implementation by contractors.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>4 points – The conditions set in design and additional relevant monitoring mechanism is taken into consideration to prepare monitoring plan (e.g. EMCP)</li> <li>2 Points – The said plan is approved by the relevant authorities including client appointed consultant if any.</li> <li>3 points – A dedicated team and clear job responsibilities are available to execute the monitoring activities.</li> <li>3 points – Detailed report on the monitoring and the outcome is made available.</li> </ul> |        |              |
|               | Breakdown of the maximum point for construction       | Submittal Evidence          | <ul style="list-style-type: none"> <li>Water Monitoring Plan</li> <li>Environmental Management Compliance Plan (EMCP)</li> <li>Audit/Monitoring Schedule</li> <li>Organisation Chart with Job Responsibilities</li> <li>Monitoring Report.</li> </ul>   |        |              |
|               | Proof required to acquire all the allotted points     | Guidance                    | <ul style="list-style-type: none"> <li>The sub-criterion focuses on monitoring of water bodies that can be included as part Environmental Management Compliance Plan (EMCP)</li> <li>Have a monitoring program and inculcate continuous improvement initiatives to immediately handle any issues.</li> <li>A third party audit or monitoring by an environmental consultant could be adopted.</li> </ul>  |        |              |
|               | Documentation that is used to acquire allotted points | Reference                   | <ul style="list-style-type: none"> <li>Environmental Quality Act (EQA) 1974</li> </ul>  |        |              |

## Administrator of Sustainable INFRASTAR

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CRITERIA 1:  
PRE-DESIGN AND PRE-CONSTRUCTION  
(PDC)



## The Preface of Pre-Design & Pre-Construction

A successful project are results of diligent planning, proper target setting, wise strategy, risk averse mindset and with precise vision. Similarly for any project that wants to achieve high level sustainability efforts. Project development involves mainly few stages which are initiation (conceptual), design and construction phase.

It is essential that during the conceptual phase many factors are considered such as; Is it feasible, purpose, the cost vs benefit and parties involved which can be basis of setting the relevant requirements for the project.

The list of requirements that is developed in the conceptual phase can be used to make design choices. Thus, the Pre-design process aimed to ensure those requirements are addressed aimed to ensure the project's desired result can apparently be achieved.

The construction planning is a fundamental and challenging stage in the management and execution of construction projects. Developing the construction plan is a critical task in the management of construction, to ensure that those requirements set in design and the needed planning are sufficiently considered during the pre-construction stage. Traditionally, pre-design and pre-construction stage involves performing preliminary planning and engineering to define the project, to identify potential issues, and to analyse cost impacts as defining the project scope, schedule, and cost as early as possible with the most efficient use of resources and money. Thus, a good construction plan is the basis for developing the budget and the schedule for work. As a result, the constructability of the project and opportunities for value engineering can be identified from a robust planning through the following deliverables:

- Project scope – policy and target, etc.
- Risk analysis and mitigation plan
- Basis of design – preliminary and submission of design
- Value management – cost and benefit
- Procurement plan and management
- Project scheduling

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.1                             | Policy & Target   | Design | Construction |
|                                     |   | 14     | -            |
| 1.1.1                               | Sustainable development principle   |        |              |
| Compulsory                          | a) Relevant and appropriate principles of sustainable development have been defined for implementation in the project   | 7      |              |
| Compulsory                          | b) Specific targets have been set during the concept and design stages to enable monitoring of environmental and social performances during construction and operation  | 7      |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To secure a commitment from the project owner and the design team towards supporting sustainable development.</li> <li>To set targets or objectives envisaged being achieved concerning sustainable development performances at both construction and during operation stage that will ensure a benchmark is available for monitoring purposes.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <p>a) 2 points for each sustainability pillar, i.e. environment, economy and social, are identified which can be the policy of sustainable development for the project; 1 point if the project owner's top management signs the principles or policy.</p> <p>b) 3 points if there are specific targets set for environmental and social performances to be achieved during construction; 4 points if there are specific targets set for environmental and social performances to be achieved during operation.</p> |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Project Specific Policy and/or Framework for Sustainable Development</li> <li>Key Performance Index (KPI) or performance target on socio-environment aspects.</li> <li>Design brief, project objective or need statement which stated the intended targets</li> </ul>  |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>A statement or policy for sustainable development is made available during project inception and incorporated as the project charter or project need statement and that the top management endorses it.</li> <li>Project specifics and related targets based on the baseline data from sub-criterion 3.3.6 must be set to measure the sustainability performance of the project, ideally in the project need statement or in the design brief.</li> </ul>  |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Garis Panduan Pengurusan Pembinaan Projek Jabatan Kerja Raya</li> <li>ISO 9001/ISO 14001 standards</li> <li>Local Agenda</li> <li>Green Building Policy by authorities</li> </ul>  |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.1                             | Policy & Target   | Design | Construction |
|                                     |   | 7      | -            |
| 1.1.2                               | Economic benefit  |        |              |
| Compulsory                          | <p>Significant economic benefits of the project have been considered with emphasis on:</p> <p>I. Financial viability of the project and its contribution to economic growth,</p> <p>II. Impact on local community's economic</p>  | 7      |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure project development assessment is carried out accordingly to determine a positive impact on the economy of local communities.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <p>I. 3 points if the study has been done on the financial viability of the project. Also, on how it will contribute to the economic growth or spur the economy;</p> <p>II. 4 points if the study is extended on impact to the local economy that arises as a result of this project including its enhancement potentials.</p> |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Economic Benefit and Impact Assessment and/or any related documents</li> <li>Project feasibility/viability study or report</li> <li>Master plan development and its strategy report</li> <li>Project Investment Appraisal (PIA)</li> <li>Cost-Benefit Analysis</li> <li>Value Engineering Report</li> </ul>  |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Project development cost vs benefit study can be implemented during the conceptual stage.</li> <li>Studies can be carried out to see if this project will enhance the economic growth in the surrounding area, reduce travelling time, create new jobs, or rejuvenate the community.</li> </ul>              |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Panduan Pelaksanaan Environmental Impact Assessment (EIA) di Projek</li> </ul>   |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.1                             | Policy & Target  | Design | Construction |
|                                     |  |        |              |
| 1.1.3                               | Social benefit   |        |              |
| Compulsory                          | Significant social benefits of the project have been considered in terms of: <ol style="list-style-type: none"> <li>I. Enriching demographic and people capacity,</li> <li>II. Vitalisation of local community's quality of life and liveability</li> </ol>  | 7      | /            |
|                                     |  |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>• To ensure that social benefits of the project have been explored and considered at the planning stage.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p style="margin-left: 20px;"><b>Design</b></p> <ol style="list-style-type: none"> <li>I. 3 points if people capacity and/or healthy demographic will be developed through this project;</li> <li>II. 4 points if the local communities' quality of life will be improved.</li> </ol>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>• Project Social Benefit Assessment or any similar assessment/report</li> <li>• Project feasibility/viability study or report</li> <li>• Master plan development and its strategy report</li> <li>• Social Impact Assessment (SIA)</li> </ul>   |        |              |
| <b>Guidance</b>                     | Project design team may include the following as their design brief or need statement: <ul style="list-style-type: none"> <li>• The project must be able to bring social benefits such as rejuvenation of communities, improving the quality of life, improving the local workforce capabilities etc. The social benefits can be analysed and compiled in a study report.</li> <li>• Capacity of local community can be improved by creating more local industry, job opportunities and upskill.</li> <li>• Demographic must be less homogeneous, with more variation in race or ethnic background or education background or income level</li> <li>• Enhancement and improvement of connectivity and facilities are influencing factor in vitalisation of community.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>• Panduan Pelaksanaan Environmental Impact Assessment (EIA) di projek</li> </ul>  |        |              |
|                                     |  |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.1                             | Policy & Target  | Design | Construction |
|                                     |  | 7      | -            |
| 1.1.4                               | Environmental benefit  |        |              |
| Compulsory                          | Environmental benefits and impact of the project have been considered in terms of:<br>I. Human health,<br>II. Ecosystem health   | 7      |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure that a policy on environmental benefit of the project is considered in the planning stage</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>I. 2 points if environmental benefits have been considered to the human health;</li> <li>II. 5 points if environmental benefits have been considered to the ecological health; <ul style="list-style-type: none"> <li>- 3 points for consideration on the living environment</li> <li>- 2 points for consideration on the non-living environment</li> </ul> </li> </ul>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Any documentation that able to justify this criterion has been assessed during the inception stage of the project, i.e. Environmental Impact Assessment (EIA)</li> <li>Project Feasibility or Preliminary Site Assessment reports</li> </ul>  |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Have conducted a study that analyses potential benefit and impact on the environment that may arise from this project.</li> <li>Alternatively, a study on the environmental benefits to compare this project to an alternative project with a similar goal can be used.</li> <li>Ecosystem health includes the conditions of all living things (plants, animals and organisms) in a given area, interacting with each other and also with their non-living environments (weather, earth, sun, soil, climate, atmosphere)</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Panduan Pelaksanaan Environmental Impact Assessment (EIA)</li> <li>Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Alam Sekeliling) 1987; (Pindaan 2015)</li> </ul>  |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.1                             | Policy & Target  | Design | Construction |
|                                     |  |        |              |
| 1.1.5                               | Sustainability aims during construction  |        |              |
| Compulsory                          | Sustainability targets /objectives set at the conceptual and design stages concerning project performances are considered for implementation during construction   | /      | 7            |
|                                     |  |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure the commitment to implement sustainability targets as part of the performance indicator of the project.</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points if the contractor has adopted and included the targets set during conceptual and design stages that will enhance the sustainability of the project;</li> <li>3 points if required actions such as project planning or work programme is developed as a strategic plan to achieve the listed targets during construction.</li> </ul>              |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Sustainability Targets Monitoring Plan or similar and Achievement records</li> <li>Environmental Management Compliance Plan</li> <li>Project Planning/Work Programme or Action plan</li> </ul>  |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Sustainability targets to minimise the environmental and social impact that were set prior to the construction stage are identified and analysed for implementation.</li> <li>These targets are included as part of project planning or action plan during construction to ensure that actions are being done to achieve the goals.</li> <li>The related sub-criterion is 1.1.1.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Jabatan Kerja Raya (JKR) Garis Panduan Pengurusan Pembinaan Projek</li> <li>ISO 9001/ISO 14001 standards</li> <li>Local Agenda</li> <li>Green Building Policy by authorities</li> </ul>   |        |              |
|                                     |  |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.1                             | Policy & Target   | Design | Construction |
|                                     |   | 2      | 5            |
| 1.1.6                               | Resource efficiency   |        |              |
| Compulsory                          | Policies and targets on efficient utilisation of resources are being illustrated during design and construction process in terms of: <ol style="list-style-type: none"> <li>I. Materials used</li> <li>II. Waste reduction</li> <li>III. Water usage</li> <li>IV. Energy efficiency</li> <li>V. Minimise carbon emissions</li> </ol>  | 2      | 5            |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>Targets towards resource efficiency measures are incorporated into project planning and construction.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>1 point if targets have been set in the design details aiming to improve resources efficiency such as use of material, water and energy more efficiently, reduce waste and reduce carbon emissions. Targets must be relevant and applicable to the project;</li> <li>1 point if each target set that has been identified and recorded for implementation</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>1 point will be awarded to each attribute if it has been implemented during construction</li> </ul> |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Policy and/or target by client/designer and contractor or other evidence that resource efficiency targets are included in project design and construction planning</li> <li>Design brief/Conceptualisation plan</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Policy to improve resource efficiency and targets shall be made in the design stage, prior to construction commencement.</li> <li>These targets shall be cascaded to pre-construction stage planning or at early stage of construction. Therefore, anything prepared during the design stage is identified for construction planning and execution.</li> </ul>   |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Policy Guidance on Resource Efficiency- OECD</li> </ul>  |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.2                             | Design Process  | Design | Construction |
|                                     |   |        |              |
| 1.2.1                               | Climate change adaptability   |        |              |
| Compulsory                          | a) Sufficient considerations are made on the potential effects of the following natural calamities due to climate change but not limited to: <ol style="list-style-type: none"> <li>I. Flood risk</li> <li>II. Sea-level uncertainty</li> <li>III. High intensity of rainfall</li> <li>IV. Temperature uncertainty</li> <li>V. Drought</li> </ol>   | 4      |              |
| Compulsory                          | b) Any strategies adopted and applied to address the relevant natural calamities including application of the appropriate adaptation strategies   | 4      |              |
|                                     |   |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To encourage the consideration on the potential effect of climate change on the development.</li> <li>To identify required action to mitigate the identified calamities or adaptive measures in the design.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <b>Design</b> <ol style="list-style-type: none"> <li>a) 4 points if a study related to the relevant potential effects of climate change have been carried out in the design;</li> <li>b) 4 points if a strategy on the potential effect has been adopted.</li> </ol>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Environmental Impact Assessment (EIA) or site assessment report, project planning minutes or project design input records</li> <li>Design brief/specification/drawings</li> <li>Feasibility report</li> </ul>  |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Climate change phenomenon refers to seasonal changes over a long period with respect to the growing accumulation of greenhouse gases in the atmosphere.</li> <li>Possible impacts to the project caused by climate change shall be studied to ensure the needed adaptation measures incorporated.</li> <li>Design shall incorporate features to withhold these potential climate change impacts to natural ecosystem and human well being</li> <li>Additional adaptation strategies can also be prepared.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Environmental Impact Assessment (EIA)/Detailed Environmental Impact Assessment (DEIA)</li> <li>Environmental Quality Act 1974, Environmental Protection Enactment 2002 by EPD</li> <li>National Climate Change Policy – NRE</li> <li>Sustainable Development Goal (SDG)</li> <li>National Committee on Climate Change</li> <li>Sendai Framework for Disaster Risk Reduction</li> <li>NAHRIM Sea Level Rise Studies</li> <li>NRE National Communication to UNFCCC</li> </ul>  |        |              |
|                                     |   |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.2                             | Design Process  | Design | Construction |
|                                     |   |        |              |
| 1.2.2                               | Physical resources strategy   |        |              |
| Compulsory                          | a) Strategy on physical resource utilisation developed by considering the following issues:<br>I. Energy<br>II. Water & wastewater<br>III. Source of material<br>IV. Waste and recycle management   | 4      | /            |
| Compulsory                          | b) Physical resource strategy was incorporated in the project planning and design   | 4      | /            |
|                                     |   |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To encourage issues related to physical resources are being considered.</li> <li>To reward the adoption of physical resource strategy in the planning and design.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <p>a) 4 points (max) if a strategy has been developed to optimise the utilisation of physical resources;<br/>1 point for each issue identified.</p> <p>b) 4 points (max) if the strategy has been incorporated into the design;<br/>1 point for each strategy based on the issue.</p>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Physical Resource Management Plan, Design Brief</li> <li>Detailed Design Drawings</li> <li>Technical Specification</li> <li>Minute of Meeting</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>A Physical Resource Strategy Plan shall be developed to ensure that there is a plan to minimise physical resources consumption in the planning and design.</li> <li>The design shall incorporate features that is in line with the strategies in the plan.</li> <li>The related sub-criterion is 1.1.6.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Policy Guidance on Resource Efficiency- OECD</li> </ul>  |        |              |
|                                     |   |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.2                             | Design Process   | Design | Construction |
|                                     |  |        |              |
| 1.2.3                               | Whole-life approach  |        |              |
| Compulsory                          | Potential whole-life impact of construction methods and materials chosen on the environment and social are considered  | 2      | 2            |
|                                     |  |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To reduce or mitigate any long-lasting effect derived from inappropriate construction methods and materials.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>2 Points if the whole-life impact of the construction methods and material were considered in the design;</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>2 Points if the construction method and material chosen in the design stage were followed through during construction.</li> </ul>   |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Value Management Report</li> <li>Design Development Minutes of Meeting (material inventory/schedule of material/integrated design input)</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Through a value engineering workshop, different construction methods and different material can be compared in terms of the whole-life impact.</li> <li>Decisions made during the workshop shall be incorporated into the design.</li> <li>Whole life on this situation shall consist from design to operation and maintenance stage at minimum.</li> <li>Construction method and material chosen shall be given consideration of its prolonged effect, i.e. generation of waste and durability.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>ISO 15686 Building and constructed assets- Service life planning</li> </ul>   |        |              |
|                                     |  |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.2                             | Design Process   | Design | Construction |
|                                     |  |        |              |
| 1.2.4                               | Integrity for low maintenance  |        |              |
| Compulsory                          | Integrity or solidness of elements and components considered in the design with specification for low maintenance during operation   | 4      | /            |
|                                     |  |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure the chosen elements and components do not inflict high maintenance cost and maintenance difficulty.</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 Points if main elements and components used in the project will require low maintenance during the use, i.e. its operation stage have been considered in the design.</li> </ul>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Value Management Report</li> <li>Minutes of Meeting</li> <li>Design Brief</li> <li>Technical Specification</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Through a value engineering workshop, consider ease of maintenance as one of the criteria.</li> <li>Input from facility manager or the user especially on maintenance. Refer to lesson learned from similar projects.</li> <li>List the primary element or component that usually requires periodic maintenance or has potential for being defective. Create a technical vs cost comparison.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>ISO 15686 Building and constructed assets- Service life planning</li> </ul>   |        |              |
|                                     |  |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.2                             | Design Process   | Design | Construction |
|                                     |  |        |              |
| 1.2.5                               | Recycle component adaptability   |        |              |
| Compulsory                          | Construction components or material considered in planning and design can be easily separated/disassembled into suitable material for recycling  | 4      | /            |
|                                     |  |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To encourage recycle component adaptability once the project reaches its end of life or demolition.</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>4 Points if any or combination of major components have been designed for future disassembly/deconstruction, for recycling or reuse of resources.</li> </ul>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Design Brief</li> <li>Design Drawings or any similar documents</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Identify type of material or component for future disassembly; this criterion can be included in the design brief.</li> <li>Subsequently, the detailed design needs to incorporate the listed features.</li> <li>Steel structure or precast elements are a good example.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Guidelines on Construction Waste Management- CREAM</li> </ul>   |        |              |
|                                     |  |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.2                             | Design Process  | Design | Construction |
|                                     |   | 4      | -            |
| 1.2.6                               | Transport network flexibility   |        |              |
| Compulsory                          | Resilience of the existing transport network is considered in the design to accommodate future changes  | 4      |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure that the existing transport network will be able to cope with future growth projection.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 Points if the design has analysed whether existing transport network able to cope with transport-related growth in addition allowed to accommodate future expansion of the transport network.</li> </ul>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Traffic Impact Analysis (TIA) Report</li> <li>Environmental Impact Assessment (EIA) report or Project feasibility report and design brief</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Resilience of the existing transport network shall be considered, as traffic volume will increase in the future.</li> <li>Transport-related infrastructure can be designed for the capacity to be expandable.</li> <li>Transport network shall mean any form of connectivity such road, railroad, i.e. that is linked or connected to the proposed development. Not necessarily just the access road to the site but extended to the connectivity network system.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Traffic Impact Assessment (TIA) Report</li> </ul>  |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.3                             | Submission Process  | Design | Construction |
|                                     |   |        |              |
| 1.3.1                               | Landscape design proposal   |        |              |
| Compulsory                          | <p>The following methods and/or systems are considered:</p> <ol style="list-style-type: none"> <li>I. Planning and third-party involvement</li> <li>II. Best practice application for planting or habitat management to minimise impact on landscape features</li> <li>III. Suitability of soil condition to meet the desired landscape requirements</li> </ol>   | 9      | -            |
|                                     |   |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>• To ensure that landscape design obtain input from all relevant parties to mitigate any impact to the ecology of its surrounding.</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ol style="list-style-type: none"> <li>I. 2 points if authorities and/or stakeholders are engaged in the planning stage.</li> <li>II. 4 points if there are any best practice methods specified to minimise the impact of the project with regards to the existing landscape.</li> <li>III. 3 points if the soil condition has been assessed, and if suitable landscape is proposed based on that condition</li> </ol> |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>• Minutes of Meeting or Planning Records</li> <li>• Landscape design brief, landscape plan</li> <li>• Soil investigation or soil proficiency test report</li> <li>• Terrain Mapping</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>• Stakeholders shall be engaged during planning stage to know the landscape requirements.</li> <li>• In the landscape proposal, best practice methods shall be specified to minimise the impact to the existing landscape.</li> <li>• Soil condition shall be assessed to ensure that the landscape that is proposed will flourish under that soil condition.</li> </ul>                             |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>• Garis Panduan Landskap Negara (<a href="http://jln.kpkt.gov.my/index.php/pages/view/58">http://jln.kpkt.gov.my/index.php/pages/view/58</a>)</li> <li>• Dasar Landskap Negara (KPKT)</li> <li>• Local Plans</li> </ul>  |        |              |
|                                     |   |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.3                             | Submission Process   | Design | Construction |
|                                     |  |        |              |
| 1.3.2                               | Operation and maintenance management plan  |        |              |
| Compulsory                          | <p>A long-term management plan has been developed to consider:</p> <ol style="list-style-type: none"> <li>I. Responsibility of the management plan has been allocated to appropriate individual, organisation or entity</li> <li>II. Future programme that allows on-going monitoring and review to assess the effectiveness of maintenance operations</li> <li>III. Appropriate recommendations for potential maintenance work required to ensure project objectives are continuously achieved</li> </ol> | 10     | -            |
|                                     |  |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>• To encourage the establishment of an appropriate long-term management plan to ensure continuity of the project and its sustainability initiatives.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b><u>Design</u></b></p> <ol style="list-style-type: none"> <li>I. 2 points if there is an organisational chart, with clear roles and responsibilities.</li> <li>II. 3 points if there is a guide/specification prepared during the design stage for operation and maintenance.</li> <li>III. 5 points if recommendations/programme for future maintenance work have been prepared during the design stage.</li> </ol>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>• Organisational chart and roles/responsibilities</li> <li>• Guide/specifications for operation and maintenance</li> <li>• Maintenance Work Programme</li> <li>• Operation &amp; Maintenance (O&amp;M) Manual</li> </ul>  |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>• Operation and Maintenance Plan shall be prepared in the design stage to ensure that the long-term maintenance of the project will not be neglected, and based on the design specifications for maintenance work.</li> </ul>   |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>• ISO 31000:2009 Risk Management Principles and Guidelines</li> <li>• Environmental Impact Assessment (EIA) Guidelines on Risk Management</li> <li>• Risk Management Plan</li> </ul>  |        |              |
|                                     |  |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.4                             | Cost-Benefit Analysis (CBA)   | Design | Construction |
|                                     |   |        |              |
| 1.4.1                               | Value for money   |        |              |
| Compulsory                          | Alternative or different sustainability design options that combined optimum whole-life cost and quality to meet project requirements has been considered   | 30     | /            |
|                                     |   |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure a methodological approach is used to consider best options on the value for money or fit for purpose of a project.</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>Total 10 points if cost-benefit analysis has considered following aspects for construction phase: <ul style="list-style-type: none"> <li>I. 3 points- Material cost</li> <li>II. 2 points- Construction method/process cost</li> <li>III. 3 points- Environmental cost</li> <li>IV. 2 points- Social cost</li> </ul> </li> <li>Total 20 points if cost-benefit analysis has considered following aspects for operation/maintenance phase: <ul style="list-style-type: none"> <li>I. 8 points- Maintenance <ul style="list-style-type: none"> <li>- 3 points- Durability</li> <li>- 3 points- Ease/Practicability</li> <li>- 2 points- Accountability</li> </ul> </li> <li>II. 1 point- Energy</li> <li>III. 1 point- Water</li> <li>IV. 2 points- Waste</li> <li>V. 2 points- Climate Adaptation</li> <li>VI. 3 points- Environmental</li> <li>VII. 3 points- Social</li> </ul> </li> </ul> |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Value management/cost-benefit analysis report (including IRR, etc.)</li> <li>Baseline study of Environmental and Social cost</li> </ul>  |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>To have a value engineering or management discussion.</li> <li>Project budget or costing preparation shall consider options on CBA.</li> </ul>   |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>ISO 15686 Life Cycle Costing &amp; Service life Planning</li> <li>Value Management Implementation Guideline No.3/2009 (EPU WEBSITE)</li> <li>Value Management Implementation Guide in Government Programmes/Projects (EPU WEBSITE)</li> <li>Value Engineering (JKR WEBSITE)</li> </ul>   |        |              |
|                                     |   |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.5                             | Procurement  | Design | Construction |
|                                     |  |        | 8            |
| 1.5.1                               | Selection process for consultant & contractor  |        |              |
| Compulsory                          | Selection process for consultant and/or contractor considered the evaluation on their past environmental and social performances   | 8      |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure environmental and social performances and past experiences are given due importance in the selection process.</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>Total 8 points if past environmental and social performances of consultants and/or contractors have been considered: <ul style="list-style-type: none"> <li>I. 3 points if past environmental and social performances of consultants considered</li> <li>II. 5 points if past environmental and social performances of contractors considered. <ul style="list-style-type: none"> <li>- 3 points for appointment or selection of contractor with CIDB SCORE rating of 4-star and above; 2 points for Contractor with 3-star; 1 point for Contractor with 2-star; No points if rating below 2-star;</li> <li>- 2 points if the contractor has ISO EMS 14001 certification.</li> </ul> </li> </ul> </li> </ul> |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Evidence can be in a form of a database of performance evaluations and/or in the tender requirements (ISO 14001/any sustainable green rating/sustainability report/scope of work or project brief)</li> <li>Certificate on valid and recent SCORE rating and ISO 14001</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>A database of past performances for consultants and contractors shall be made as a reference for the selection of consultants and contractors. Their social and environmental performances must be considered.</li> <li>Related criteria must be set during the selection and evaluation process. Each consultant and contractor are to complete registration form with the required details.</li> </ul>  |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Keperluan &amp; Prosedur Pendaftaran Kontraktor dengan CIDB 2016</li> </ul>   |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.5                             | Procurement   | Design | Construction |
|                                     |   | -      | 8            |
| 1.5.2                               | Contract requirement on environmental and social performance  |        |              |
| Compulsory                          | Requirements on the specific environmental and social performances been specified and included in the contract  | /      | 8            |
|                                     |   |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>This ensure that environmental and social performances are stipulated in the contract.</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p style="margin-left: 20px;"><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points if specific and related environmental performances requirements are specified in the contract.</li> <li>4 points if specific social performances requirements are specified in the contract.</li> </ul>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>Targets and/or monitoring requirements in contract documents</li> <li>Conditions of Contract or Preambles (Contract Document)</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>To enhance the environmental and social performances of consultants and contractors, it is best that the requirements, in line with the sustainability policy and targets be included in the contract documents. With this, the consultants and contractors are obliged to fulfil the requirements.</li> <li>Include the conditions as part of conditions of Contracts or Preamble.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>Government Green Procurement (GGP)</li> </ul>  |        |              |
|                                     |   |        |              |

| PDC – Pre-Design & Pre-Construction |  | Points |              |
|-------------------------------------|--|--------|--------------|
| PDC 1.6                             | Risk Management Plan   | Design | Construction |
|                                     |  |        |              |
| 1.6.1                               | Sustainability management mechanisms   |        |              |
| Compulsory                          | Mechanisms have been put in place to identify and how to manage the environmental and social risks, impacts and opportunities of the project   | 6      | /            |
|                                     |  |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To encourage the adoption of risk management methods in terms of sustainability management mechanisms.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points (max) if relevant and related issues of environmental and social risk analysis is done at early stage of the project have been identified. <ul style="list-style-type: none"> <li>I. 1 point for environmental.</li> <li>II. 1 point for social issues.</li> </ul> </li> <li>2 points if appropriate strategy have been planned to manage environmental issues.</li> <li>2 points if appropriate strategy have been planned to manage social issues.</li> </ul> |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>A part of the risk management plan (with detailed environmental and social risk for design and construction stage</li> <li>Risk Analysis/Risk Matrix (related to environmental and social)</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>A risk management plan shall be prepared, including all the environmental and social risk.</li> <li>During conceptual /inception stage itself, formulate a Risk Analysis plan.</li> </ul>   |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>ISO 31000:2009 Risk Management Principles and Guidelines</li> <li>Environmental Impact Assessment (EIA) Guidelines on Risk Management</li> <li>Risk Management Plan</li> </ul>  |        |              |
|                                     |  |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.6                             | Risk Management Plan  | Design | Construction |
|                                     |   |        |              |
| 1.6.2                               | Prioritisation of environmental and social risks  |        |              |
| Compulsory                          | Environmental and social risks have been prioritised according to their significance  | 14     | /            |
|                                     |   |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure prioritised or high-risk factor aspect areas are given due consideration.</li> </ul>   |        |              |
| <b>Requirement</b>                  | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>7 points for environmental and 7 points for social risk if have been assessed and ranked based on its aspect and impact with appropriate marking system such to rank its significance.</li> </ul>   |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>A part of the risk management plan (with detailed environmental and social risk for design and construction stage)</li> <li>Risk Analysis/Risk Matrix (related to environmental and social)</li> </ul>   |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>All risk in the risk management plan shall be identified, analysed, evaluated and ranked. These risks can be recorded in a risk register.</li> <li>The related criterion is PDC 1.6.1 where risk assessment/analysis is done. This sub-criterion requires the identified risks to be ranked accordingly, so the actions taken can be prioritised too.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>ISO 31000:2009 Risk Management Principles and Guidelines</li> <li>Environmental Impact Assessment (EIA) Guidelines on Risk Management</li> <li>Risk Management Plan</li> </ul>   |        |              |
|                                     |   |        |              |

| PDC – Pre-Design & Pre-Construction |   | Points |              |
|-------------------------------------|---|--------|--------------|
| PDC 1.6                             | Risk Management Plan  | Design | Construction |
|                                     |   |        |              |
| 1.6.3                               | Implementation and achievement of mechanisms  |        |              |
| Compulsory                          | A regular monitoring exercise is used, and results are assessed to ensure successful implementation of environmental and social aspects' management mechanisms  | /      | 22           |
|                                     |   |        |              |
| <b>Aim</b>                          | <ul style="list-style-type: none"> <li>To ensure that implementation is as planned and to identify any shortfalls for continuous improvement and actions including identification and mitigation of any new risk.</li> </ul>  |        |              |
| <b>Requirement</b>                  | <p style="margin-left: 20px;"><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>11 points if the management mechanisms of how the environmental risk will be monitored and assessed during construction.</li> <li>11 points if the management mechanisms of how the social risk will be monitored and assessed during construction.</li> </ul>  |        |              |
| <b>Submittal Evidence</b>           | <ul style="list-style-type: none"> <li>A strategic plan or method of monitoring based on the risk management plan needs to be provided. A framework containing related action plan can also be submitted.</li> </ul>  |        |              |
| <b>Guidance</b>                     | <ul style="list-style-type: none"> <li>Risk Management Guide or framework to be prepared by Contractor which details how to monitor, and review of the risks identified including the ones done during the design stage (refer sub-criteria 1.6.1 and 1.6.2).</li> <li>Dedicated team or personnel in charge of this with specific job functions can aid the success of risk management.</li> </ul> |        |              |
| <b>Reference</b>                    | <ul style="list-style-type: none"> <li>ISO 31000:2009 Risk Management Principles and Guidelines</li> <li>Risk Management Plan</li> </ul>  |        |              |
|                                     |   |        |              |

CRITERIA 2:  
SITE LAND USE  
(SLU)



## **The Preface of Site Land Use**

Site selection is the process of examining multiple options and assessing their feasibility and suitability of a respective development with not only economic consideration but ecological and natural calamities too. Among the site's characteristics that ought to be thoroughly considered encompasses topography, geology, hydrogeology, hydrology, flora and fauna, ethnographic, and heritage values. Any adverse impacts to these landscape and landform features must be sufficiently mitigated.

Land use involves the analysis, management and modification of natural environment into built environment such as roads and other facilities. Land use efficiency measures can help conserving land resources needed to serve both existing and future population. This includes temporary site utilization to accommodate structures that are used to facilitate the construction of infrastructure and other above and below ground facilities by providing sufficient access, support, and protection while under construction. Also, a detailed consideration has to be made on the visible features of an area of land in terms of their visual appeal as well as the surface feature and characteristic shape as both landscape and landform are closely associated to site land use.

| SLU – Site Land Use       |  | Points |              |
|---------------------------|--|--------|--------------|
| SLU 2.1                   | Site Selection   | Design | Construction |
|                           |  | 5      | -            |
| 2.1.1                     | Site suitability   |        |              |
| Compulsory                | Comparative study on various site location undertaken to justify the suitability of the chosen site  | 5      |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward the extensive assessment of the site selection.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>5 points if a study has been done to compare alternative site locations.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Environmental and Social Screening Report</li> <li>National Physical Plan Report</li> <li>Soil Investigation Report</li> <li>Geological Report</li> <li>Value Assessment Report</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Before the project site is selected, a preliminary study shall be carried out for alternative site locations and assess the potential environmental and social impact.</li> <li>The environmental screening study may include the physical environment and the ecological environment.</li> <li>The social screening study may include the sociological and economic impact.</li> <li>If the site has already been predetermined such as part of Malaysia National Physical Plan, provide the national spatial planning details.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Guidelines for Site Investigation Works (JKR)</li> </ul>  |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.1                   | Site Selection  | Design | Construction |
|                           |   | 4      | -            |
| 2.1.2                     | Previous utilisation of the selected site   |        |              |
| Applicable                | Chosen site has been previously used for development  | 4      |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To encourage the development of used land and not greenfield.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points if evidence can be provided that the site has been previously used for development.</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Proof of historical use of land</li> <li>Submission of GIS Data</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Used land shall be denoting or relating to previously developed sites for commercial development or exploitation but not included cleared vegetation land/plant habitat and water bodies.</li> <li>Check with local authorities on the historic land use of the site.</li> <li>Record the existing site condition prior to the commencement of the project.</li> <li>A google earth map of the site location before work commencement can be acquired.</li> <li>An official GIS data from JUPEM</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Guidelines for Site Investigation Works (JKR)</li> </ul>   |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.1                   | Site Selection  | Design | Construction |
|                           |   | 2      | -            |
| 2.1.3                     | Contamination risk assessment   |        |              |
| Compulsory                | The potential contaminant source and pollution pathways associated to soil, groundwater and surrounding land use have been considered in site selection   | 2      |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To encourage consideration on the potential contamination risk assessment for the site hence reducing extreme mitigation measures. Focus is to have pro-active measures implemented than corrective action.</li> </ul>     |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points if a risk assessment on possible contaminations source on the site is done and a report or summary is available.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Contamination risk assessment and/or land/site feasibility study report</li> <li>Environmental Aspect Impact register</li> <li>Soil Investigation Report</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>During site survey or feasibility study, identify any potential contamination source as part of EIA or land/hydrology study.</li> <li>Related criterion is PDC 1.6.</li> </ul>   |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Environmental Quality Act (EQA)</li> <li>Contaminated Land Management and Control Guideline</li> <li>ISO 31000 Risk Management Principle and Guideline</li> <li>Water Services Industry Act, 2006 (Act No. 655)</li> </ul> |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.1                   | Site Selection  | Design | Construction |
|                           |   | 2      | 4            |
| 2.1.4                     | Contamination risk mitigation   |        |              |
| <i>Applicable</i>         | Appropriate and viable remedial options have been considered in the design and implemented for contamination risk identified  | 2      | 4            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward the effort on contamination risk mitigation.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>2 points if ground remedial proposal has been considered in the design.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points if the ground remedial proposal is implemented during construction. (This sub-criterion can only be omitted if NO contamination risk had been identified in sub-criterion 2.2.3)</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Contamination mitigation plan/action plan</li> <li>Design details and construction records</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>The potential contamination risk identified in sub-criterion 2.2.3 are analysed and the needed mitigation action are prepared. Arrange this during risk management or environmental meeting.</li> <li>The action identified can be adopted as part of design details and discussed during design coordination meeting.</li> <li>Construction drawing or requirement shall include the needed action. Contractor progress report or environmental compliance report must include the details of the actual taken. Photographic evidence to be taken.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Environmental Quality Act (EQA)</li> <li>Contaminated Land Management and Control Guideline</li> <li>ISO 31000:2009 Risk Management Principle and Guideline</li> <li>Water Services Industry Act, 2006 (Act No. 655)</li> </ul>  |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.1                   | Site Selection  | Design | Construction |
|                           |   | -      | 4            |
| 2.1.5                     | Effectiveness of contamination remedial solution  |        |              |
| <i>Applicable</i>         | Mitigation measures taken have effectively reduced the risk mentioned above   |        | 4            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure the effectiveness of contamination remedial solution proposed.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points if measures have been taken to ensure the effectiveness of the remedial solution.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Risk or environmental monitoring report</li> <li>Audit on the effectiveness of mitigation action plan (by independent party)</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Remedial action of contamination shall be monitored to ensure that it is effective.</li> <li>Carry out continuous improvement initiative to get the desired result wanted.</li> <li>Further testing shall be conducted with the test results incorporated into the monitoring report.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Environmental Quality Act (EQA)</li> <li>Contaminated Land Management and Control Guideline</li> <li>ISO 31000 Risk Management Principle and Guideline</li> <li>Water Services Industry Act, 2006 (Act No. 655)</li> </ul>   |        |              |

| SLU – Site Land Use       |  | Points |              |
|---------------------------|--|--------|--------------|
| SLU 2.1                   | Site Selection   | Design | Construction |
|                           |  | 4      | -            |
| 2.1.6                     | Natural calamities risk assessment and mitigation  |        |              |
| <i>Applicable</i>         | a) Potential natural calamities risk or effect identified<br>b) Appropriate risk mitigation measures have been considered in the design  | 4      |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward mitigation and enhancement of natural calamities risk-prone areas.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <p>a) 2 points if the risks of natural calamities have been identified.<br/>b) 2 points if appropriate mitigation measures have been incorporated into the design. (This sub-criterion can only be omitted if the project site and its vicinity does not have any potential natural calamities risk.)</p>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Natural calamity is a traumatic environmental event, such as a flood, an earthquake, a typhoon, a hurricane, a tornado, a mudslide, a landslide, a volcanic eruption, a wildfire or other events that causes catastrophic damage and destruction affecting a large area, large numbers of people or both. It is caused by the environment (“nature”) and not by something caused by humans or can be controlled.</li> <li>Project site must be surveyed and gauged for any potential of natural calamities risk.</li> <li>Once the risk is identified, appropriate mitigation measures can be incorporated into the design.</li> <li>Natural calamity caused by flood and associated with water effect shall be addressed.</li> </ul> |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Project site must be surveyed and gauged for any potential of natural calamities risk.</li> <li>Once the risk is identified, appropriate mitigation measures can be incorporated into the design.</li> </ul>  |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>ISO 31000 Risk Management Principle and Guideline</li> <li>KSAS – Kawasan Sensitif Alam Sekitar</li> <li>Jabatan Mineral dan Geologi (JMG) Geohazard Maps</li> <li>Jabatan Perparitan dan Saliran (JPS) Flood Mapping</li> </ul>  |        |              |

| SLU – Site Land Use       |  | Points |              |
|---------------------------|--|--------|--------------|
| SLU 2.2                   | Temporary Site Utilisation   | Design | Construction |
|                           |  | -      | 6            |
| 2.2.1                     | Selection of temporary use of a site   |        |              |
| Compulsory                | a) The selection process for temporary use of site land for construction is well defined   | /      | 4            |
| Compulsory                | b) The long-term adverse impacts of the temporary use of site during construction have been assessed and mitigated   | /      | 2            |
|                           |  |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure a well-defined process is available for the selection of temporary use of a site land use which does not cause environmental or social issues and also ensuring a better logistic management during construction.</li> <li>To reward the consideration on the adverse impacts of the temporary use of site land and mitigation action taken.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Construction</b></p> <p>a) 2 points if the selection of temporary land used for construction have been assessed, considered the environmental impact;<br/>2 points if the selection of temporary land used for construction have been assessed, considered the social impact;</p> <p>b) 1 point if there are mitigation measures to ensure the minimisation of environmental impact;<br/>1 point if there are mitigation measures to ensure the minimisation of social impact.</p> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Documentation on temporary use of the site selection process</li> <li>Impact assessment and mitigation report on temporary site</li> <li>Authority approval/permit</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Temporary use site shall include use for storage, fabrication, laboratory, accommodation and any other facilities that is of temporary nature for the main construction activity.</li> <li>Consideration on the environmental and social impact is important to be part of the land selection process for the temporary land use. This must be documented via minutes of meetings or a land selection report.</li> </ul>                          |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Guidelines for Site Investigation Works (JKR)</li> </ul>  |        |              |
|                           |  |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.2                   | Temporary Site Utilisation  | Design | Construction |
|                           |   | 2      | 4            |
| 2.2.2                     | Worker amenities  |        |              |
| <i>Applicable</i>         | Provision of appropriate worker amenities required during construction considered in the design and executed during construction  | 2      | 4            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure the livelihood and comfort of workers are well cared for.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>2 points if provision of workers’ amenities have been considered during the design stage.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points if the amenities planned during design and required during project construction activity have been made available accordingly.</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Layout Plan for worker amenities/Permit from authority</li> <li>Contract documents</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Proper worker amenities can be planned during the design stage. The welfare of the construction workforce must be considered in the planning process.</li> <li>The demanded amenities can be detailed out in the contract document.</li> <li>Amenities shall include – accommodation, toilet, canteen, rest area, prayer room</li> <li>Site logistics plan or land use plan may indicate the location and details of provided amenities</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>MS 2593 Temporary construction site workers' amenities and accommodation -.</li> <li>Code of practice. ICS: 91.040. Descriptors: planning, specification, management, maintenance, temporary workers, amenities, accommodation</li> </ul>  |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.2                   | Temporary Site Utilisation  | Design | Construction |
|                           |   | -      | 4            |
| 2.2.3                     | Storage/fabrication area  |        |              |
| <i>Applicable</i>         | Appropriate areas for storage and fabrication been considered and executed during construction  |        | 4            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward the practices of identifying strategic location for storage and fabrication during construction that aids the project delivery.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points if appropriate areas for storage and fabrication have been identified and prepared accordingly during construction stage.</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Site/Logistic Plan</li> <li>Photography evidence</li> <li>Authority approval</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Designated areas for storage, fabrication, stockpile etc. are identified in the construction stage that is away from the source of contamination to land or waterways.</li> <li>Such area can aid the project progress where it is strategically placed to minimise within site travel of material or machineries transport.</li> <li>Have site logistic planning and dedicated personnel to manage it.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Guidelines for public safety and health at construction sites (DOSH) (<a href="http://www.dosh.gov.my">www.dosh.gov.my</a>)</li> </ul>   |        |              |

| SLU – Site Land Use       |  | Points |              |
|---------------------------|--|--------|--------------|
| SLU 2.3                   | Landscape and Landform   | Design | Construction |
|                           |  | 3      | -            |
| 2.3.1                     | Visual factors/aesthetic   |        |              |
| Compulsory                | Visually appealing and aesthetic enhancing factors such as familiar native and/or exotic features been considered in the landscape/landform design   | 3      |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To encourage design that enhances the landscape look and values especially focused on the physical and structural aspects.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>3 points if visually appealing design have been considered based on the surrounding landscape.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Landscape Design Brief or similar documents</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>The design shall incorporate features that enhances the view of the surrounding. Familiar or exotic features can also be incorporated in the design to improve on the view.</li> <li>Landscape: The visible features of an area, including: <ul style="list-style-type: none"> <li>I. Natural elements of landforms (such as mountains, valleys, coastlines) and water bodies (such as rivers, lakes, seas and oceans);</li> <li>II. Living elements of land cover (including vegetation and wildlife);</li> <li>III. Human elements (including different forms of land use, buildings and structures); Changeable elements (such as weather conditions).</li> </ul> </li> <li>Landform: The shape (morphology) and character of the land surface that results from the interaction of physical processes. For example, the action of water (fluvial action), action of wind, glacial action and weathering, and the movements within the earth's crust such as large features as plains, plateaus, mountains, valleys as well as small features such as hills and canyons</li> <li>The features do not include type of plant or vegetation, i.e. more on the physical and structure design/concept.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Garis Panduan Jabatan Landskap Negara</li> </ul>  |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.3                   | Landscape and Landform  | Design | Construction |
|                           |   | 4      | -            |
| 2.3.2                     | Blend with local character/topography   |        |              |
| Compulsory                | Use of local landscape character and existing topography such as landform character in terms of levels, materials, or patterns, water feature and vegetation in the design  | 4      |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward conservation of local character and encourage use of existing landform conditions hence minimising disturbance.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points if the design has considered the local landscape character and the existing topography.</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Landform design and plan consideration in design brief or similar documents</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Use 3D modelling or appropriate software incorporating existing topography to get the best visualisation and output</li> <li>Identify the local landscape character and use it for the design. This input can be obtained during the consultation with local authority.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Garis Panduan Jabatan Landskap Negara</li> </ul>   |        |              |

| SLU – Site Land Use       |  | Points        |                     |
|---------------------------|--|---------------|---------------------|
| SLU 2.3                   | Landscape and Landform   | <i>Design</i> | <i>Construction</i> |
|                           |  |               |                     |
| 2.3.3                     | Selected species suitability   |               |                     |
| Compulsory                | Suitability of species selection considered factors such as climate change adaptation, local origin and soil stability for the landscape design  | 4             | /                   |
|                           |  |               |                     |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure that species selected are suitable, able to survive better and require minor maintenance or replanting.</li> </ul>  |               |                     |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>4 points if suitability of species based on the site conditions and/or native species have been considered for the selection of plants for landscape.</li> </ul>  |               |                     |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Landscape design brief</li> </ul>   |               |                     |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Soil condition and the local climate must be assessed for species selection of plants for the landscape design.</li> <li>Consideration of native species, durability.</li> <li>Comparison of species on their ability to withstand climate change issues related to the selected site.</li> </ul> |               |                     |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Garis Panduan Jabatan Landskap Negara</li> </ul>  |               |                     |
|                           |  |               |                     |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.4                   | Green Inventory   | Design | Construction |
|                           |   |        | 9            |
| 2.4.1                     | Site Inventory  |        |              |
| <i>Applicable</i>         | Site Inventory or report on existing vegetation including water bodies been prepared (for greenfield only)<br>I. Green/water coverage report<br>II. Carbon sequestration report<br>III. Detailing types of species of plants  | 9      | /            |
|                           |   |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To establish a baseline study on green inventory which also works as reference data.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p style="margin-left: 20px;"><b>Design</b></p> <ul style="list-style-type: none"> <li>I. 3 points if a green/water coverage report is prepared.</li> <li>II. 3 points if a carbon sequestration report is prepared.</li> <li>III. 3 points if the species and details of existing vegetation is well documented.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Inventory report for vegetation including water bodies</li> <li>Carbon sequestration report</li> <li>Lists of plants' species</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Green inventory is required for a documentation of the existing environment. This includes all vegetation (with details of the species) and water bodies in the project site.</li> <li>A carbon sequestration report can be produced, using the data from the inventory report.</li> <li>Appoint a horticulturist or arborist to prepare a filed report at the early stage</li> <li>The sub-criteria can be omitted if the location is a previously utilised site</li> <li>Related sub-criterion is SLU 2.2.2</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Garis Panduan Perancangan Pemuliharaan dan Pembangunan (GPPPP) Kawasan Sensitif Alam Sekitar (KSAS)</li> <li>National Policy on Biodiversity by Ministry of Natural Resources and Environment, Malaysia</li> </ul>   |        |              |
|                           |   |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.5                   | Land Use Efficiency   | Design | Construction |
|                           |   | 1      | 2            |
| 2.5.1                     | Balanced cut and fill   |        |              |
| <i>Applicable</i>         | Excess of cut and fill material and its monitoring during construction are considered in the design stage   | 1      | 2            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure efficient planning of land use such as a balanced cut and fill activities and management of the excess material.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>1 point if balanced cut and fill for the earthworks are considered in the design.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>2 points if it is executed in the construction stage.</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Cut and fill volume calculation/mass haul diagram and soil management plan</li> <li>Digital Terrain Model</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Cut and fill volume can be calculated based on the topographical survey's ground level and the project's designed level.</li> <li>Details of the earthworks carried out can be recorded during construction, with no import and export of soil to the project site.</li> <li>This sub-criterion can be omitted if the project has no major earthwork or situation where excess material does not occur.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Guidelines for Slope Design (Jabatan Kerja Raya Malaysia)</li> </ul>   |        |              |

| SLU – Site Land Use       |  | Points |              |
|---------------------------|--|--------|--------------|
| SLU 2.5                   | Land Use Efficiency  | Design | Construction |
|                           |  | 1      | 3            |
| 2.5.2                     | Land use efficiency  |        |              |
| Compulsory                | Efforts made to maximise the land use efficiency in the design and duly monitored during construction  | 1      | 3            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward the efficiency of land use.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>1 point if the land use for the project has been optimised to avoid unnecessary land use or effectively planned during the design stage.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>3 points if it is executed in the construction stage.</li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Site layout plan and design detail</li> <li>As built drawing</li> <li>Land use strategy and related calculation</li> <li>Monitoring record</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>The efficiency of land use shall be considered during the design stage with different options, to minimise the unnecessary usage.</li> <li>Land can be used for other purposes, e.g. having park above basement structures.</li> <li>Maximise plot ratio of the structure being built.</li> </ul>           |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Guidelines for Slope Design (Jabatan Kerja Raya Malaysia)</li> </ul>  |        |              |

| SLU – Site Land Use       |   | Points |              |
|---------------------------|---|--------|--------------|
| SLU 2.5                   | Land Use Efficiency   | Design | Construction |
|                           |   | 1      | 3            |
| 2.5.3                     | On-site conservation of natural resources   |        |              |
| <i>Applicable</i>         | Efforts on conservation of on-site natural resources such as topsoil, subsoil, seabed surface geology and other mineral resources are made in the design and duly implemented during construction   | 1      | 3            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To encourage effort on conservation of any form of natural resources in order not to deplete it or overuse.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>1 point if the conservation of natural resources at site has been designed to be conserved during the design stage.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>3 points if it is executed in the construction stage.</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Environmental Impact Assessment (EIA),</li> <li>Soil or ecological management plan or similar including design brief and related construction details</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Topsoil or any other mineral resources is considered to be a valuable resource. It must be conserved at site or relocated to where it can be used again to improve the ecological environment.</li> <li>This sub-criterion can be omitted if no natural resources are available at the site such as in brownfield area.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Penyiasatan Kajibumi 1974</li> <li>Environmental Quality Act (EQA)</li> <li>EIA Order 1987</li> </ul>   |        |              |

CRITERIA 3:  
ECOLOGY AND ENVIRONMENT  
(ECE)



## **The Preface of Ecology & Environment**

Ecology involves relationship between living organisms, including humans, and their physical environment. In other words, ecology seeks to understand the vital connections between plants and animals and the world around them. Environment is meanwhile everything that is around us where there are different types of interaction between the living things such as plants, animals and organisms with their non-living settings that include weather, earth, sun, soil, climate and atmosphere. Better understanding on the key domains within surrounding ecology such as marine, vegetation and habitat would enhance the gratitude towards ecosystem around us.

Consequently, it helps to improve our environment, manage our natural resources, and protect human health in an effective and efficient manner. Protecting water bodies and embodied water as well as improving long term quality of the water environment are fundamental in providing protection of human health, biodiversity and environment in a holistic way. Besides water, the impact of air, noise and vibration must also be systematically considered in the ecology and environmental assessment. Construction noise and vibration in the community may not pose a health risk or damage peoples' sense of hearing but it can adversely affect peoples' quality of life. Land clearing, demolition and working with toxic materials are among construction activities that contribute to air pollution. Thus, these activities need to be monitored and managed correctly to ensure a minimal impact on the surrounding environment.

| ECE – Ecology & Environment |  | Points |              |
|-----------------------------|--|--------|--------------|
| ECE 3.1                     | Adherence to Nature Conservation Good Practices  | Design | Construction |
|                             |  | 5      | 10           |
| 3.1.1                       | Consultation with nature conservation organisations  |        |              |
| Compulsory                  | Consultation has been made with relevant nature conservation organisation on the ecological and environmental impact of the proposals. The outcome or findings has been communicated to project team members at both design and construction stages.   | 5      | 10           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To gather the required information to develop a better management approach to ecological and environmental preservation, conservation and protection.</li> <li>To have efficient dissemination of the related findings to enable action taken at both design and construction stages.</li> <li>To encourage the project to have additional effort beyond legal/regulatory conditions.</li> </ul>  |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>5 points - if consultation is done with nature conservation bodies on other best management approach related to ecological and environmental aspects and the related findings are disseminated among the design team and used as a guide in the requisite design input or as mitigation action plan/strategy such as the World Wide Fund for Nature (WWF) and Malaysian Nature Society (MNS).</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>6 points - if the items identified during the designing stage are constructed accordingly along with the execution of mitigation plan/strategy.</li> <li>4 points - if continuous engagement with the said nature conservation organisation/s is made to identify any shortfall and/or to gauge the effectiveness of an action taken. Also, to incorporate any continuous improvement if needed.</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Minutes of meeting, discussion notes</li> <li>Survey result</li> <li>Design brief/drawings that incorporated the findings or action plan</li> <li>Specification</li> <li>Contract conditions (i.e. preambles or Bill of Quantities (BQ))</li> </ul>   |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Identify the related nature conservation and protection organisation for example; Department of Environment (DOE), World Wide Fund for Nature (WWF), Malaysian Nature Society (MNS), Jabatan Perhilitan</li> <li>Seek their view on the potential impact arising from the project. Use a questionnaire form to perform a survey.</li> <li>Analyse the findings or feedback, then include it as part of design input where needed. Or have an action plan to mitigate the potential impacts identified.</li> <li>Include the relevant conditions in the contract document to ensure compliance by the contractor</li> <li>Keep the documentation evidence of action taken including photographs of the site (before and after construction) and reports</li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>International Union for Conservation of Nature (IUCN) (<a href="https://www.iucn.org">https://www.iucn.org</a>)</li> <li>Guidelines for species conservation planning, (<a href="https://portals.iucn.org/library/sites/library/files/documents/2017-065.pdf">https://portals.iucn.org/library/sites/library/files/documents/2017-065.pdf</a>)</li> <li>List of NGOs by MENGO/other relevant parties</li> </ul>   |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.2                     | Ecology   | Design | Construction |
|                             |   | 20     | -            |
| 3.2.1                       | Biodiversity study  |        |              |
| <i>Applicable</i>           | Biodiversity study on flora and fauna has been carried out and considered in the design   | 20     |              |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To ensure a comprehensive baseline study on existing biodiversity study is made and its findings are used in the design.</li> <li>To minimise impact to the biodiversity potentially caused by the project.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>Even though some project makes it a requirement to have Biodiversity Study under Environmental Impact Assessment (EIA), points are given if the project considered the findings of the study and incorporated it in either the process or the design.</li> <li>4 Points – conduct comprehensive biodiversity study that includes endangered species report, flora and fauna species;</li> <li>4 more points if the above study includes the count/density report.</li> <li>12 points – design or development consideration made in the project taken based on the findings of the biodiversity study. <ul style="list-style-type: none"> <li>I. 3 points for Flora.</li> <li>II. 3 points for Fauna.</li> <li>III. 6 points if a comprehensive ecosystem consideration is made.</li> </ul> </li> </ul> <p>(This sub-criterion can only be omitted if the project site does not have any significant biodiversity/ecological value such as a brownfield area; this must be confirmed by a Qualified person such as an Ecologist)</p> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Environmental Impact Assessment (EIA) or Biodiversity report</li> <li>Design brief</li> <li>Design drawings/minutes of meetings, reports</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Biodiversity refers to a variety of plant and animal life in a particular habitat.</li> <li>Conduct Biodiversity Study, or it may already have been included in EIA study.</li> <li>The considerations taken from the findings or any adjustments made due to the findings/recommendation of the study.</li> <li>It may be interpreted during meetings, design drawing, mitigation measures, etc.</li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>National Policy on Biodiversity by Ministry of Natural Resources and Environment, Malaysia</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.2                     | Ecology   | Design | Construction |
|                             |   | 8      | 12           |
| 3.2.2                       | High Conservation Value Area  |        |              |
| <i>Applicable</i>           | Identification of land of high ecological value within the project and the development plan to avoid/minimise encroachment/disturbance  | 8      | 12           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To ensure any high ecological value land are protected and preserved.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points – detailed ecological assessment by an ecologist, supported by relevant government agencies on areas with a high ecological value within the project site.</li> <li>4 points – findings on the above assessment are considered in the project design process.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>5 points – constructed as per the design details</li> <li>5 points – mitigation and control actions identified are adhered during construction activities</li> <li>2 points – if any additional effort taken to avoid disturbance or minimise disturbance to the ecologically valuable land.</li> </ul> <p>(This sub-criterion can only be omitted if the project site does not have any significant biodiversity/ecological value such as a brownfield area; this must be confirmed by a Qualified person such as an Ecologist who must be registered with DOE or any relevant agency)</p> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Environmental Impact Assessment (EIA) or relevant ecological assessment</li> <li>Design details (to prove avoidance, minimising impact)</li> </ul>   |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>The ecological value of land including water bodies can be defined from the level of benefits that it has as part of a natural ecosystem to support native life forms, both humans and nonhumans alike.</li> <li>Land of high ecological value can be defined if it consists but not limited to: <ul style="list-style-type: none"> <li>As defined by the national policy or law on biodiversity or ecosystem</li> <li>has protected and endangered species</li> <li>has significant importance to natural landscape resilience</li> </ul> </li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Garis Panduan Perancangan Pemuliharaan dan Pembangunan (GPPPP) Kawasan Sensitif Alam Sekitar (KSAS)</li> <li>National Policy on Biodiversity by Ministry of Natural Resources and Environment, Malaysia</li> <li>High Conservation Value Forests (HCVF) Toolkit for Malaysia</li> </ul>  |        |              |

| ECE – Ecology & Environment |  | Points |              |
|-----------------------------|--|--------|--------------|
| ECE 3.2                     | Ecology  | Design | Construction |
|                             |  | 8      | 10           |
| 3.2.3                       | Preservation of protected and endangered species   |        |              |
| <i>Applicable</i>           | Plans and Strategy for the preservation of protected and endangered plant and animal species are drawn up in the design and monitored during construction  | 8      | 10           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To encourage the preservation of protected and endangered species.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points – if a detailed list or summary on endangered species found at site and within its areas of development is available;</li> <li>4 points – if there is an action plan on how to address the preservation of endangered species including approval of the plan by relevant authorities during the design stage.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>10 points (maximum) in which 2 points are awarded for every mitigation action including the required structure/facilities built as defined in design are executed during construction.<br/>(This sub-criterion can only be omitted if the project site does not have any endangered flora and/or fauna as verified in the biodiversity or ecological value land report)</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Biodiversity or Ecological report</li> <li>Mitigation action plan</li> <li>Design brief</li> <li>Construction drawings/specification</li> </ul>   |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Based on sub-criteria ECE 3.2.1 and ECE 3.2.2, any findings related to endangered species that are listed on the International Union for the Conservation of Nature (IUCN) Red List of endangered species require a proper action to be taken and recorded.</li> </ul>  |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Akta Perlindungan Hidupan Liar 1972 [Akta 76].</li> <li>Akta Pemuliharaan Hidupan Liar 2010 [Akta 716]</li> <li>Akta Perhutanan Negara 1984 (Akta 313 dan 314)</li> <li>Wildlife Management Plan</li> <li>Approvals and/or agreement with PERHILITAN</li> </ul>   |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.2                     | Ecology   | Design | Construction |
|                             |   | 8      | 12           |
| 3.2.4                       | Ecology Management Programme  |        |              |
| Applicable                  | There is a programme in place to manage existing ecological features and translocation of particular species on site  | 8      | 12           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To reward the management and conservation of significant ecological features.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>3 points – Existing Ecological Features report/any findings on existing ecological features on site.</li> <li>5 points – Ecological Work Plan/Ecological Management recommendation by the experts (e.g. EIA) including translocation details.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>Identified management activities as per plan are executed accordingly including any trans-location program; <ul style="list-style-type: none"> <li>I. 3 points- 25% of action taken during construction against planned action defined during design or pre-construction</li> <li>II. 6 points- 50% of action taken during construction against planned action defined during design or pre-construction</li> <li>III. 9 points- 75% of action taken during construction against planned action defined during design or pre-construction</li> <li>IV. 12 points- 100% of action taken during construction against planned action defined during design or pre-construction</li> </ul> </li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Biodiversity or Ecological report</li> <li>Mitigation action plan</li> <li>Design brief</li> <li>Construction drawings/specification</li> <li>Environmental Management Plan (EMP)</li> <li>Monitoring plan and report</li> </ul>   |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Ecological Works Plan or Ecological Section under Environmental Management Plan is important to this sub-criterion. In Ecological Features, the construction site needs to be adequately managed as recommended in the related sub-criteria 3.2.1, 3.2.2 and 3.2.3.</li> <li>Significant Ecological Features are considered to be of particular importance for either a region's biodiversity or its ecosystem function and integrity. This might be related to a species integral to a community (e.g. a predator that impacts a large biomass or number of species), a critical habitat type (e.g. that supports high productivity or aggregations of nesting or breeding animals), or a unique seafloor feature that positively impacts the surrounding ecosystem (e.g. a deep canyon that stimulates upwelling of nutrient-rich water). Salt licks is an example of ecological features</li> <li>Wildlife relocation programme with the authority, e.g. Perhilitan.</li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Akta Perlindungan Hidupan Liar 1972 [Akta 76].</li> <li>Akta Pemuliharaan Hidupan Liar 2010 [Akta 716]</li> <li>Akta Perhutanan Negara 1984 (Akta 313 dan 314)</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.2                     | Ecology   | Design | Construction |
|                             |   | 10     | 19           |
| 3.2.5                       | Creation of wildlife habitats   |        |              |
| <i>Applicable</i>           | Any effort that is taken to create new wildlife habitats (flora or fauna) as part of the project, or in its vicinity.   | 10     | 19           |
| <b>Aim</b>                  |   |        |              |
|                             | <ul style="list-style-type: none"> <li>To promote the creation of new wildlife habitats to create continuity of the ecological system.</li> </ul>   |        |              |
| <b>Requirement</b>          |   |        |              |
|                             | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>5 points – Potential wildlife habitat creation identification and method of attracting the wildlife is done at design.</li> <li>5 points – Design details based on the potential wildlife habitat creation is done and included as part of project design requirement.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>8 points – Existing wildlife habitat within the project area is mapped accordingly before construction activity.</li> <li>6 points – Work including any structure or system is done or put in place according to design.</li> <li>3 points – Details of the creation and method to ensure its success including the ability to attract wildlife are handed over to the project user/owner.</li> <li>2 points – If evidence of any new wildlife generation is available.</li> </ul>                    |        |              |
| <b>Submittal Evidence</b>   |   |        |              |
|                             | <ul style="list-style-type: none"> <li>Design details</li> <li>Ecological assessment</li> <li>Photograph</li> <li>Site report</li> </ul>  |        |              |
| <b>Guidance</b>             |   |        |              |
|                             | <ul style="list-style-type: none"> <li>Wildlife Habitat Mapping, this mapping provides baseline information about the type, location, and quality of wildlife habitat in the area. This data must be compared to land cover in the project area on an ongoing basis to determine: <ul style="list-style-type: none"> <li>I. Whether the amount of wildlife habitat is increasing or decreasing</li> <li>II. Whether specific types of habitat are increasing or decreasing</li> <li>III. Whether fragmentation is increasing or decreasing</li> <li>IV. Whether patches are being lost, created, or maintained</li> </ul> </li> <li>Can incorporate wildlife habitat planning considerations into project, community and neighbourhood planning processes. Example - a new water retention system can be made as a lake to become a new habitat.</li> <li>New wildlife shall include both flora and fauna.</li> </ul> |        |              |
| <b>Reference</b>            |   |        |              |
|                             | <ul style="list-style-type: none"> <li>Wildlife Conservation Enactment 1997</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.2                     | Ecology   | Design | Construction |
|                             |   | 10     | 16           |
| 3.2.6                       | Particular structures or facilities for wildlife liveability  |        |              |
| <i>Applicable</i>           | Any strategy or provision to create particular structures or facilities to accommodate identified wildlife’s liveability  | 10     | 16           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To ensure structures or facilities for wildlife are made to mitigate the potential disturbance to the natural wildlife habitat caused by the project.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>5 points – The needed structures or facilities to accommodate wildlife within the project area are identified by the experts such as an ecologist.</li> <li>5 points – Design details based for the identified structures or facilities is done and included as part of project design requirement.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>7 points – The structure or facilities is done or put in place according to design.</li> <li>6 points – Details of structure and facilities are handed over to the project user/owner including the relevant authorities.</li> <li>3 points – If evidence of any use of the structure or facilities is available.</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Design brief</li> <li>Design details</li> <li>Construction and as built drawings</li> <li>Photograph</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Wildlife tunnel and crossing are one of the methods.</li> <li>Lighting policy aimed at protecting wildlife as well as making their communities more liveable also a strategy to accommodate wildlife.</li> <li>Consultation with the experts such as an ecologist and relevant authorities must be obtained</li> <li>Existing wildlife and biodiversity study done in sub-criteria 3.7.1 and 3.2.1 must be used as a reference.</li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Wildlife Conservation Enactment 1997</li> </ul>  |        |              |

| EE – Ecology & Environment |  | Points |              |
|----------------------------|--|--------|--------------|
| ECE 3.2                    | Ecology  | Design | Construction |
|                            |  | -      | 25           |
| 3.2.7                      | Restoring range of biodiverse habitat  |        |              |
| <i>Applicable</i>          | Upon completion of the project, is there any evidence of restoring a range of biodiverse habitats compared to site baseline data or initial condition  |        | 25           |
| <b>Aim</b>                 | <ul style="list-style-type: none"> <li>To reward monitoring and effort incorporated to recreate, restore or increase features of high ecological value or habitat.</li> </ul>  |        |              |
| <b>Requirement</b>         | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>2 points- Consultation with nature or conservation agency</li> <li>5 points – Post-Construction Ecological Assessment and comparison study against baseline data of biodiversity and habitat by the experts such as an ecologist.</li> <li>6 points- Restoring flora</li> <li>6 points- Restoring fauna</li> <li>6 points- Other ecological features or habitat</li> </ul> |        |              |
| <b>Submittal Evidence</b>  | <ul style="list-style-type: none"> <li>Ecological or biodiversity assessment</li> </ul>  |        |              |
| <b>Guidance</b>            | <ul style="list-style-type: none"> <li>Efforts taken preserving and maintaining biodiversity and habitat that has been inculcated in many sub-criteria herein are fundamental to these sub-criteria.</li> <li>Planning and strategy in habitat and biodiversity management are essential.</li> <li>The baseline can be acquired from sub-criterion SLU 3.2.1.</li> </ul>   |        |              |
| <b>Reference</b>           | <ul style="list-style-type: none"> <li>Wildlife Conservation Enactment 1997</li> </ul>   |        |              |

| ECE – Ecology & Environment |  | Points |              |
|-----------------------------|--|--------|--------------|
| ECE 3.3                     | Water (Existing)   | Design | Construction |
|                             |  | 6      | 12           |
| 3.3.1                       | Protection of water bodies   |        |              |
| Compulsory                  | Strategic plan in controlling the impacts of the completed project on the water environment (fresh and/or marine whatever appropriate) been incorporated in the design and implemented during construction   | 6      | 12           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To ensure that plans are made to protect existing water bodies within the area of the development and beyond that is by any means connected to the development waterways.</li> </ul>  |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>3 points – Identification of water bodies that may be affected and the potential source of the pollution from the completed development.</li> <li>3 points – Design consideration to manage the risks or sources of pollution</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>4 points – if the measures identified during design are translated into construction details or drawings</li> <li>8 points – if all measures are constructed or implemented accordingly; <ul style="list-style-type: none"> <li>2 Points for every 25 % of measures identified are constructed or implemented during construction, i.e. against planned action defined during design or pre-construction</li> </ul> </li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Hydrology or Hydro-geology plan of the project and its surrounding area</li> <li>Layout plan of water body system</li> <li>Report on risks or sources of pollutions</li> <li>Surface runoff risk assessment</li> <li>Environmental Management Plan (EMP)</li> <li>Design and as built drawings</li> <li>Erosion and Sedimentation control plan and report</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Water bodies can include river system, lakes, stream, underground water channels and sea.</li> <li>Carry out site assessment before project development and identify all water bodies including topographic and existing site landscape features.</li> <li>List down potential risks or sources of the pollutions from the development, possibly due to surface run-off and effluents.</li> <li>Have a strategic preventive plan and translate it to the built of the development whether it is a physical structure or management system.</li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Manual Saliran Mesra Alam (MSMA) and other relevant Department of Irrigation and Drainage (DID) Guidelines</li> <li>Environmental Quality Act, 1974. (Act 127)</li> <li>Erosion and Sediment Control Plans (ESCP) Guideline</li> <li>Water Industrial Act</li> <li>State Water Authority</li> </ul>   |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.3                     | Water (Existing)  | Design | Construction |
|                             |   | -      | 18           |
| 3.3.2                       | Potential pollution avoidance   |        |              |
| Compulsory                  | Sufficient measures have been taken to prevent or minimise potential pollution of groundwater, existing freshwater features or the sea (if relevant) during construction  |        | 18           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To reward preventive management thinking and to create measures of avoiding arising pollution due to the construction activities.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>6 points – assessment of potential risks include the effect on water features during construction.</li> <li>4 points – Preventive management plan on water features during construction (e.g. Erosion and Sedimentation Control Plan, Grease Containment, etc.)</li> <li>8 points – execution of the preventive plan done accordingly.</li> </ul>   |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Environmental Management Plan (EMP)</li> <li>Erosion and Sediment Control Plan (ESCP)</li> <li>Evidence of carrying out Best Management Practices and relevant reports</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Carry out site assessment before project development and identify all water bodies including topographic and existing site landscape features.</li> <li>Carry out an environmental impact assessment on potential risks or sources of pollutions from the construction activities. Prepare an Environmental Management Compliance Plan (EMCP).</li> <li>Identify all remedial and temporary measures to prevent the pollutions and create a dedicated team.</li> <li>This sub-criterion emphasises on potential pollution, thus linked to risk identification and mitigation indicated in sub-criteria PDC 1.6.</li> </ul> |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>ISO EMS 14001 and Risk Management Plan</li> <li>Manual Saliran Mesra Alam (MSMA) and other relevant Department of Irrigation and Drainage (DID) Guidelines</li> <li>Environmental Quality Act (EQA), 1974. (Act 127)</li> <li>Badan Kawal Selia</li> <li>ESCP Guideline</li> <li>Water Industrial Act</li> <li>State Water Authority</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.3                     | Water (Existing)  | Design | Construction |
|                             |   | 8      | 12           |
| 3.3.3                       | Impact monitoring mechanism   |        |              |
| Compulsory                  | Sufficient measures have been incorporated in the project that allows the monitoring of potential impact on freshwater and/or marine environments   | 8      | 12           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To reward the effort on monitoring of impact on existing water bodies including marine.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points – A systematic water quality monitoring plan key aspects or criteria that includes sampling location, parameters, the frequency of inspection etc. has been detailed out as part of the design concept.</li> <li>4 points – This plan or system is incorporated into design details and included in tender documents for implementation by contractors.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>4 points – The conditions set in design and additional relevant monitoring mechanism is taken into consideration to prepare a monitoring plan (e.g. EMCP)</li> <li>2 Points – The said plan is approved by the relevant authorities including client appointed consultant if any.</li> <li>3 points – A dedicated team and clear job responsibilities are available to execute the monitoring activities.</li> <li>3 points – Detailed report on the monitoring and the outcome is made available.</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Water Quality Monitoring Plan</li> <li>Environmental Management Compliance Plan (EMCP)</li> <li>Audit/Monitoring Schedule</li> <li>Organisation Chart with Job Responsibilities</li> <li>Monitoring Report</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>The sub-criterion focuses on monitoring of water bodies that can be included as part Environmental Management Compliance Plan (EMCP)</li> <li>Have a monitoring program and inculcate continuous improvement initiatives to handle any issues immediately.</li> <li>Adopt a third-party auditor or monitoring service by an environmental consultant.</li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Environmental Quality Act (EQA) 1974</li> </ul>  |        |              |

| ECE – Ecology & Environment |  | Points |              |
|-----------------------------|--|--------|--------------|
| ECE 3.3                     | Water (Existing)   | Design | Construction |
|                             |  | 8      | 12           |
| 3.3.4                       | Sustainable drainage systems   |        |              |
| Compulsory                  | Alternatives to drainage concept have been considered and integrated into the design to channel surface water to the nearby watercourses   | 8      | 12           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To consider on alternative drainage systems and minimise additional discharge load on existing watercourses.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>3 points – Design plan according to Manual Saliran Mesra Alam (MSMA)</li> <li>2 points – Approval from Local Authority on drainage design</li> <li>3 points – Additional sustainable design concept or strategy are proposed that is beyond MSMA requirements</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>8 points – Project execution according to an approved design plan including other conditions set by the authority.</li> <li>4 points – Execution of the additional sustainable strategy identified.<br/>(Note: Points to be prorated based on actions taken)</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Plans of design based on the guidelines of Manual Saliran Mesra Alam (MSMA)</li> <li>Other related design plan or concept.</li> <li>As built drawings or related report</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>As part of the design approval, the project must comply with the design of drainage systems according to Manual Saliran Mesra Alam (MSMA).</li> <li>The calculation of the design and drawings need to be submitted.</li> <li>The work provision for drainage needs to be demonstrated as part of the construction phase.</li> <li>Work executed according to the design must be presented as part of the submission.</li> </ul>  |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Manual Saliran Mesra Alam (MSMA)</li> </ul>   |        |              |

| ECE – Ecology & Environment |  | Points |              |
|-----------------------------|--|--------|--------------|
| ECE 3.3                     | Water (Existing)   | Design | Construction |
|                             |  | -      | 18           |
| 3.3.5                       | Managing potential overland flow at source   |        |              |
| Compulsory                  | Measures have been taken to minimise surface water runoff at source through infiltration and saturation  |        | 18           |
| <b>Aim</b>                  |  |        |              |
|                             | <ul style="list-style-type: none"> <li>To encourage infiltration and saturation concept which directly reduces surface run-off and increases subsurface moisture or wetness.</li> </ul>  |        |              |
| <b>Requirement</b>          |  |        |              |
|                             | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>5 points – Action plan on the strategy of minimising surface water run-off with its calculation based on local regulatory conditions, e.g. Manual Saliran Mesra Alam (MSMA)</li> <li>13 points – for the amount of infiltration or saturation against overall run-off calculated. <ul style="list-style-type: none"> <li>5 points – At least 10%</li> <li>8 points – At least 20-30%</li> <li>13 points – more than 30%</li> </ul> </li> </ul> |        |              |
| <b>Submittal Evidence</b>   |  |        |              |
|                             | <ul style="list-style-type: none"> <li>Drainage calculation</li> <li>Design drawings and layout plan including landscape details</li> <li>Details/Specification (especially on discharge coefficient) of the materials or concept used</li> </ul>  |        |              |
| <b>Guidance</b>             |  |        |              |
|                             | <ul style="list-style-type: none"> <li>Calculate the actual surface run-off based before development and after development.</li> <li>Identify pavement material that is permeable or with high infiltration value, turfed vs concrete pavement.</li> <li>Create a porous piping drainage system/bio-swale and others.</li> </ul>   |        |              |
| <b>Reference</b>            |  |        |              |
|                             | <ul style="list-style-type: none"> <li>Manual Saliran Mesra Alam (MSMA)</li> </ul>   |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.3                     | Water (Existing)  | Design | Construction |
|                             |   | -      | 18           |
| 3.3.6                       | Quality of water  |        |              |
| Compulsory                  | Existing water body quality and parameters been assessed before construction and monitored consistently during construction for work activities that affect ground and/or surface waters and mitigated if exceeds allowable limits  |        | 18           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To have baseline data on existing water quality and ensure mitigation or even improvement.</li> </ul>  |        |              |
| <b>Requirement</b>          | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>6 points – Pre-construction water quality assessment according to National and/or Local Water Quality Standards as a baseline data.</li> <li>8 points – A detailed water quality monitoring programme with records of achievement against target set.</li> <li>4 points – Corrective action taken on any non-achievement and made enhancement to ensure targets are achieved.</li> </ul>  |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Monitoring reports of water quality based on National Water Quality Standard</li> <li>Minutes of meetings on review water quality, action taken etc.</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>In sub-criteria ECE 3.3.3, monitor the impact on the water quality. Additionally, the water quality monitoring plan needs to include data found during EIA or pre-construction (baseline of water quality) and its comparison with water quality monitored during construction.</li> <li>Ensure sampling points are adequately and correctly identified to have a reflective data.</li> <li>The data collection needs to be recorded and reviewed upon changes and any related action taken to improve the water quality.</li> <li>Related sub-criteria are ECE 3.3.1 until ECE 3.3.7</li> </ul> |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Standards on Water quality by Department of Environment (DOE), National Water Services Commission (SPAN)</li> <li>National Lake Water Quality Standard – NAHRIM</li> <li>Environmental Quality Act (EQA), 1974. (Act 127)</li> <li>Environmental Impact Assessment (EIA)</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.3                     | Water (Existing)  | Design | Construction |
|                             |   | 8      | 12           |
| 3.3.7                       | Effluent water quality  |        |              |
| Compulsory                  | Content and quality of effluent or discharge water (wastewater) channelled to any water bodies or ground must be considered in the design and mitigation measures implemented during construction   | 8      | 12           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To ensure effluent water including wastewater quality does not exceed allowed limit by relevant regulatory bodies or potentially exceeding the baseline parameters.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points – Effluent source and parameters identified. Baseline data is established.</li> <li>2 points – Effluent monitoring plan including risk management (effluent limits)</li> <li>2 points – Approval of design by Local Authority/SPAN</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>6 points – Work executed according to design</li> <li>4 points – Effluent monitoring report and review</li> <li>2 points – If any immediate mitigation or enhancement action taken once effluent limit had exceeded</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Effluent design</li> <li>Monitoring plan</li> <li>Construction drawings</li> </ul>   |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Any wastewater produced during construction need to follow the regulation of Suruhanjaya Perkhidmatan Air Negara (SPAN) as well as their approved design.</li> <li>Baseline data from sub-criteria ECE 3.3.6 must be used as a reference.</li> <li>The monitoring of the effluent/discharge from the facilities needs to be included in EMP based on sub-criteria ECE 3.3.3 and ECE 3.3.6.</li> <li>Work done evidence needed as per drawing to show that the facilities being constructed accordingly.</li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>EQ (Sewage and Industrial Effluents) Regulations 2009</li> <li>Suruhanjaya Perkhidmatan Air Negara (SPAN)</li> </ul>   |        |              |

| ECE – Ecology & Environment |  | Points |              |
|-----------------------------|--|--------|--------------|
| ECE 3.3                     | Water (Existing)   | Design | Construction |
|                             |  | 18     | -            |
| 3.3.8                       | Future resilience and adaptation of flood  |        |              |
| Applicable                  | The capability of long-term flood resilience and its adaptation incorporated into the design   | 18     |              |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To promote resilient design and adaptation to ensure the project is able to withstand or survive flood effects.</li> </ul>  |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>5 points – Flood Map of the project site</li> <li>3 points – Consultation with Authorities on Risk Map (JPS Local Authority)</li> <li>10 points – Design calculation and design addressing Flood Risk<br/><i>(This sub-criterion can only be omitted if the project site and its vicinity do not have any potential flood risk.)</i></li> </ul>                      |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Flood risk map</li> <li>Design calculation</li> <li>Additional features for flood resilience</li> </ul>   |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>The project needs to consider its risk or vulnerability towards flood or risk of having the project on a flood-prone area. Ensure the incorporation of such risks into the design to promote resiliency.</li> <li>Add on a risk map approved by Jabatan Pengairan dan Saliran in the calculation, along with the list of calculated risks and actions reflected in the design.</li> </ul> |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Flood map can be obtained from National Register of River Basin, Department of Irrigation and Drainage Malaysia (DID)</li> <li>National Hydraulic Research Institute of Malaysia (NAHRIM) - Hydroclimate projection</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.4                     | Water (Use)   | Design | Construction |
|                             |   | 4      | 8            |
| 3.4.1                       | Efficient use of treated water  |        |              |
| Compulsory                  | Minimise the use of processed water during construction through strategic design and construction methods   | 4      | 8            |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To reward efficient use or savings of processed water during construction activity.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points – Conditions on efficient use of processed water are included in the contract document.</li> <li>2 points – Any specific design or system incorporated that enables efficient use of water during construction.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>2 points – Water Management strategy and monitoring mechanism is available including a target to be achieved.</li> <li>4 points – The strategy and monitoring action are implemented, and records are maintained.</li> <li>2 points – Any remedial or corrective action done in instances achievement is below target.</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Contract conditions</li> <li>Design drawings</li> <li>Water usage plan</li> <li>Record of water usage (Give percentage indicator)</li> </ul>   |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Water Management Plan or the equivalent is needed under this sub-criterion. Specifically, the plan may include but not limited to: <ul style="list-style-type: none"> <li>Water Management during Construction</li> <li>Strategies on reducing processed water during construction</li> </ul> </li> <li>The plan needs to be presented in detailed drawings including the calculation and monitoring method.</li> <li>The plan needs to be executed, providing evidence of execution, work provision and work done as part of the implementation.</li> <li>Monitoring and reviewing the water management plan are part of the submission.</li> </ul>         |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>EQ (Sewage and Industrial Effluents) Regulations 2009</li> <li>Suruhanjaya Perkhidmatan Air Negara (SPAN)</li> </ul>   |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.4                     | Water (Use)   | Design | Construction |
|                             |   | 4      | 8            |
| 3.4.2                       | Water consumption during operation  |        |              |
| Compulsory                  | Details on how to measure and minimise the consumption of processed/natural sources water during operation been included in the project design and implemented (reduction from baseline)  | 4      | 8            |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To promote the design concept of water use efficiency as well as the management and monitoring of water consumption during operations.</li> </ul>  |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points – Water Management strategy during the development operations where requirements on the efficient use of processed water are included in the design document.</li> <li>2 points – Design details and parameters based on the strategies above have been specified.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>6 points – Work completed according to the design, the installation of features accordingly.</li> <li>2 points – Training and handover process to operation team have been conducted.</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Design brief/drawings</li> <li>Method statements</li> <li>Type of features or fitting used</li> <li>Operation and Maintenance Manual</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>As stated in sub-criteria ECE 3.4.1, Water Management Plan or the equivalent can additionally include the below but not limited to: <ul style="list-style-type: none"> <li>Water Minimisation strategies during operation and maintenance.</li> </ul> </li> <li>The plan needs to be presented in detailed drawings including the calculation and water consumption modelling (if applicable).</li> <li>The plan needs to be executed, providing evidence of execution, work provision and work done as part of the implementation.</li> </ul>                                 |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>EQ (Sewage and Industrial Effluents) Regulations 2009</li> <li>Suruhanjaya Perkhidmatan Air Negara (SPAN)</li> </ul>   |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.4                     | Water (Use)   | Design | Construction |
|                             |   | 4      | 8            |
| 3.4.3                       | Management of water usage from natural sources  |        |              |
| Compulsory                  | The utilisation of water from natural resources such as rainwater, underground water and surface water has been considered in the design where feasible   | 4      | 8            |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To reward and encourage direct utilisation of water from natural sources hence reducing the use of processed water.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points – Strategies for water usage from natural sources.</li> <li>2 points – Design that allows water extracted water from natural sources for either during construction and/or operation.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>4 points – Work executed according to design.</li> <li>2 points – During construction activity water from natural sources used.</li> <li>2 points – Calculation and record of water extracted and used is available.</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Water management plan</li> <li>Design details</li> <li>Record</li> <li>Photographic evidence</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>As stated in sub-criteria ECE 3.4.1 and ECE 3.4.2, water management plan or the equivalent can include using water from natural resources as part of the strategy. This must be included during the design phase. The plan needs to be presented in detailed drawings including the calculation and monitoring method.</li> <li>The plan needs to be executed, providing evidence of execution, work provision and work done as part of the implementation.</li> </ul>   |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Rainwater harvesting</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.4                     | Water (Use)   | Design | Construction |
|                             |   | 9      | -            |
| 3.4.4                       | Embodied water  |        |              |
| <i>Applicable</i>           | Lesser or lowered content of embodied water in the materials used are given due consideration during the design stage   | 9      |              |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To encourage the collection of data on the embodied water of construction materials</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>Materials used for the project with the calculation of its embodied water used against a standard material. <ul style="list-style-type: none"> <li>I. 3 points – if 1 material proposed in the design</li> <li>II. 6 points – if 2 materials proposed in the design</li> <li>III. 9 points – if 3 or more materials proposed in the design</li> </ul> </li> </ul>                                   |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Calculation of embodied water in a construction material</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Together with guidance under sub-criteria MRW 4.3.1, as part of having lower embodied carbon, the material may include lower embodied water.</li> <li>The material supplier can provide water footprint calculation.</li> <li>Comparison of similar types of material to be used based on its embodied water (water footprint), e.g. concrete of similar grade and strength but having different water ratio.</li> </ul> |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>ISO 14046 Environmental Management-Water Footprint</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.5                     | Air   | Design | Construction |
|                             |   | 8      | 10           |
| 3.5.1                       | The monitoring and management of air quality  |        |              |
| Compulsory                  | Design/Planning has included appropriate monitoring and management plan of air quality and implemented during construction  | 8      | 10           |
| <b>Aim</b>                  |   |        |              |
|                             | <ul style="list-style-type: none"> <li>To reward the monitoring and management of air quality.</li> </ul>   |        |              |
| <b>Requirement</b>          |   |        |              |
|                             | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points – Air pollution source and air quality parameters are identified within the air sensitive receptors</li> <li>4 points – Air quality management plan including risk management (Air quality limits) established.</li> <li>2 points – Approval of monitoring plan by Local Authority/Department of Environment (DOE) or by the respective organisation's top management (for a project that does not require approval from the authority).</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>4 points – Air quality monitoring report and review done.</li> <li>6 points – Identified and the needed control measures and action is implemented during construction.</li> </ul> <p>(Note: Points to be prorated based on actions taken)</p> |        |              |
| <b>Submittal Evidence</b>   |   |        |              |
|                             | <ul style="list-style-type: none"> <li>Environmental Management Plan (EMP)</li> <li>Air quality management plan and monitoring reports</li> <li>Photographic evidence</li> </ul>  |        |              |
| <b>Guidance</b>             |   |        |              |
|                             | <ul style="list-style-type: none"> <li>Under the requirement of Environmental Management Plan (EMP), the project must also monitor the air quality.</li> <li>The air quality performance must be designed accordingly based on the location and the area of coverage along with the submission of the respective calculation.</li> <li>Air quality monitoring and its report during construction can be done as part of the environmental management system.</li> <li>Baseline data of air quality completed in sub-criteria ECE 3.5.2 may be used as the reference data.</li> </ul>  |        |              |
| <b>Reference</b>            |   |        |              |
|                             | <ul style="list-style-type: none"> <li>A Guide to Air Pollutant Index in Malaysia</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.5                     | Air   | Design | Construction |
|                             |   | -      | 17           |
| 3.5.2                       | Enhancement   |        |              |
| <i>Applicable</i>           | A mechanism is used to improve the condition of air quality during construction through enhanced monitoring and management  |        | 17           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To reward additional effort in ensuring better or improved air quality during construction.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points – Pre-construction baseline data of air quality within the identified air sensitive receptors</li> <li>4 points – Air Quality monitoring and audit by an external party with the review process focused on improvement efforts.</li> <li>6 points – Air Quality improvement action plan and it is executed accordingly during construction.</li> <li>3 points – If measures are taken to improve/enhance any baseline air quality that does not meet the national or local minimum standard. OR any effort is taken to enhance the air quality conditions within the area.</li> </ul> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Environmental Management Plan (EMP)</li> <li>Method statements</li> <li>Air quality monitoring and action plan</li> <li>Photograph</li> <li>Reports</li> </ul>   |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>As stated under sub-criteria ECE 3.5.1, air monitoring performance can include any strategies or action plan to improve the air condition of the site.</li> <li>The effectiveness of these strategies in improving air quality must be implemented and monitored. The implementation needs to be recorded in design, provision, or in other forms of evidence.</li> <li>Environmental Management Plan (EMP) reports are needed to monitor improvements and reviews.</li> <li>Plants with higher sequestration compared with the existing one as at pre-construction is one way to enhance air quality.</li> </ul>                |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>A Guide to Air Pollutant Index in Malaysia</li> </ul>  |        |              |

| ECE – Ecology & Environment |   | Points |              |
|-----------------------------|---|--------|--------------|
| ECE 3.6                     | Noise & Vibration   | Design | Construction |
|                             |   | 6      | 10           |
| 3.6.1                       | The monitoring and management of noise & vibration control  |        |              |
| Compulsory                  | Design/Planning had included appropriate monitoring and management plan of noise & vibration and is implemented during construction   | 6      | 10           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To reward the monitoring and management of noise &amp; vibration control.</li> </ul>   |        |              |
| <b>Requirement</b>          | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>4 points – Potential noise and vibration source and air its parameters are identified. Baseline data is established.</li> <li>2 points – Noise and vibration monitoring plan including risk management criteria established.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>3 points – Noise and vibration management planned and executed.</li> <li>3 points – Management report and review done.</li> <li>4 points – Identified and needed control measures and action is implemented during construction.</li> </ul> <p>(Note: Points to be prorated based on actions taken)</p> |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Method statement</li> <li>Environmental Management Plan (EMP)</li> <li>Noise quality and vibration management report</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Under requirement of Environmental Management Plan (EMP), project also need to monitor noise and vibration.</li> <li>The noise and vibration performance must be designed according to its location, the area of coverage and separate calculation must be submitted.</li> <li>Noise and Vibration monitoring report during construction can be done as part of the environmental management system.</li> <li>Baseline data in sub-criteria ECE 3.6.2 is to be used as reference data.</li> </ul>  |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Planning Guidelines for Environmental Noise Limits and Control</li> </ul>  |        |              |

| ECE – Ecology & Environment |  | Points |              |
|-----------------------------|--|--------|--------------|
| ECE 3.6                     | Noise & Vibration  | Design | Construction |
|                             |  | -      | 12           |
| 3.6.2                       | Enhancement  |        |              |
| Compulsory                  | Any mechanism being used to improve the level of noise and vibration during construction through enhanced monitoring and management  |        | 12           |
| <b>Aim</b>                  | <ul style="list-style-type: none"> <li>To reward additional effort in ensuring better or improved noise and vibration level during construction.</li> </ul>  |        |              |
| <b>Requirement</b>          | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>4 points – Noise and Vibration action plan during construction. Pre-construction baseline data of air quality within the project area is done.</li> <li>8 points – Noise and Vibration monitoring with review process on improvement</li> </ul>  |        |              |
| <b>Submittal Evidence</b>   | <ul style="list-style-type: none"> <li>Method statement</li> <li>Environmental Management Plan (EMP)</li> <li>Noise quality monitoring report</li> <li>Vibration monitoring report</li> </ul>  |        |              |
| <b>Guidance</b>             | <ul style="list-style-type: none"> <li>Monitoring is recommended to ensure that the measures proposed in a strategy are achieving the desired outcomes. The results of monitoring must be used to modify strategies as needed. As stated under sub-criteria ECE 3.6.1, Noise and Vibration performance can include any strategies or action plan to improve the air condition of the site.</li> <li>The effectiveness of these strategies in improving Noise and Vibration must be implemented and monitored. The implementation needs to be recorded in design, provision, or in other forms of evidence.</li> <li>Environmental Management Plan (EMP) report is needed to monitor improvements and reviews.</li> </ul> |        |              |
| <b>Reference</b>            | <ul style="list-style-type: none"> <li>Planning Guidelines for Environmental Noise Limits and Control</li> </ul>   |        |              |

CRITERIA 4:  
MATERIAL, RESOURCES & WASTE  
(MRW)



## **The Preface of Material, Resources & Waste**

Sustainable material is one that does not diminish non-renewable natural resources and has no adverse impact on the environment when used. Sustainable materials are products that provide environmental, social and economic benefits while protecting public health and environment over their whole life cycle, from the extraction of raw materials until the final disposal. The impact on the environment from sustainable materials in construction activities can be reduced through various ways including by using materials with lower embodied energy, reducing transport of materials and associated fuel, emissions and road congestion, preventing bulk of waste going to landfill as well as constructing using reuse and recycling materials.

Lowering embodied carbon is one of the essential issues for all construction projects because lowering carbon emissions are crucial to ensure effect of global warming is mitigated. A simple approach to reduce embodied carbon emission is by embedding leaner design, efficient use of available materials through designing out waste and reuse of recycled materials over the project life cycle in the project specification and detailed design. Waste management is another important aspect of sustainable and green construction practices. Waste management is viewed as part of a generation, collection and disposal system. A sustainable waste management system incorporates feedback loops, is focused on processes, embodies adaptability and diverts wastes from disposal.

| MRW – Material, Resources & Waste |   | Points |              |
|-----------------------------------|---|--------|--------------|
| MRW 4.1                           | Resource Planning   | Design | Construction |
|                                   |   |        |              |
| 4.1.1                             | Material management efficiency  |        |              |
| Compulsory                        | Strategic and appropriate resource planning on material optimisation aimed at minimising the material usage been considered at the design stage   | 12     | /            |
|                                   |   |        |              |
| <b>Aim</b>                        | <ul style="list-style-type: none"> <li>To encourage appropriate consideration of material management efficiency, which directly reduces the use of material and/or unnecessary waste generation. This can directly contribute to lowering embodied carbon and also to encourage the use of standardisation and modularisation.</li> </ul>   |        |              |
| <b>Requirement</b>                | <p style="margin-left: 20px;"><b>Design</b></p> <ul style="list-style-type: none"> <li>3 points – Identification of the type of construction materials consumption that can be reduced.</li> <li>3 points – Calculation and/or comparative study on types of material to be used as the replacement.</li> <li>3 points – Incorporation of material with recycled content.</li> <li>3 points – Alternative material or the strategy incorporated had considered its suitability in both technical and buildability aspects including its durability.</li> </ul>  |        |              |
| <b>Submittal Evidence</b>         | <ul style="list-style-type: none"> <li>Value Engineering or similar documents to show optimisation of material use. Alternative material used calculation or comparison</li> <li>Bill of Quantities (BQ) or Bill of Materials (BoM)</li> <li>Alternative Proposed (counter proposed)</li> <li>Resource/Material Planning Report</li> <li>Green Label /Eco Label Certificated</li> <li>Industrialised Building System (IBS) and related calculation</li> </ul>   |        |              |
| <b>Guidance</b>                   | <ul style="list-style-type: none"> <li>A material management efficiency strategy is vital to address these sub-criteria. The strategy can be formulated by considering the key materials and components to be incorporated in the project (by volume, value) to avoid procurement waste.</li> <li>Calculate the quantity of each material.</li> <li>Organise a Value Engineering discussion during the design stage. Obtain input from both the contractor and the user.</li> <li>The material can be in both temporary and permanent works. Example: use System formwork vs conventional timber formwork; use different piling methods to reduce concrete usage</li> </ul> |        |              |
| <b>Reference</b>                  | <ul style="list-style-type: none"> <li>Project Management Plan (PMP)</li> <li>Industrialised Building System (IBS) Manual</li> </ul>  |        |              |
|                                   |   |        |              |

| MRW – Material, Resources & Waste |   | Points |              |
|-----------------------------------|---|--------|--------------|
| MRW 4.1                           | Resource Planning   | Design | Construction |
|                                   |   | 4      | 8            |
| 4.1.2                             | Control and utilise existing material at site   |        |              |
| Applicable                        | The control and use of existing material at site has been integrated at the design stage and implemented during construction  | 4      | 8            |
|                                   |   |        |              |
| Aim                               | <ul style="list-style-type: none"> <li>To reward management and utilisation of the existing material at site for construction.</li> </ul>   |        |              |
| Requirement                       | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points – Identification of existing material at site and its suitability for site construction work.</li> <li>2 points – Design details had included these materials.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>4 points – The identified existing material had been used for construction works</li> <li>2 points – A relevant test is done to gauge the suitability of the material and approved by the client or consultants.</li> <li>2 points – Inventory or quantity of existing material used is maintained.<br/><i>(This sub-criterion can only be omitted if the project site does not have any existing material that is suitable for construction. Must provide evidence.)</i></li> </ul> |        |              |
| Submittal Evidence                | <ul style="list-style-type: none"> <li>Material Management strategy or similar/Scheduling of materials</li> <li>Bill of Quantities (BQ)</li> <li>Resource Efficiency Plan</li> <li>Design/Construction drawing</li> </ul>   |        |              |
| Guidance                          | <ul style="list-style-type: none"> <li>The Material Management Efficiency Strategy (refer to sub-criterion 4.2.1) may also include the strategy to reduce material purchasing; in this sub-criterion, utilising existing material at site. For example, the use of excavated material or rock within site, timbers, existing building to be demolished.</li> <li>The existing material can be used for both permanent and temporary works.</li> <li>The strategy formulated must be executed, recorded and reviewed accordingly.</li> </ul>   |        |              |
| Reference                         | <ul style="list-style-type: none"> <li>Project Management Plan (PMP)</li> </ul>   |        |              |

| MRW – Material, Resources & Waste |   | Points |              |
|-----------------------------------|---|--------|--------------|
| MRW 4.1                           | Resource Planning   | Design | Construction |
|                                   |   | -      | 10           |
| 4.1.3                             | Re-use of surplus materials and use of material with recycled content   |        |              |
| Applicable                        | a) Surplus materials are beneficially stored and re-used  |        | 5            |
| Compulsory                        | b) Use of construction material with recycled content   |        | 5            |
| <b>Aim</b>                        | <ul style="list-style-type: none"> <li>To reward management and utilisation of the existing material at site for construction.</li> <li>To encourage material planning using recycled content.</li> </ul>   |        |              |
| <b>Requirement</b>                | <p><b>Construction</b></p> <p>a) 3 points – Documentation on material procured, arrival and usage including the surplus of existing material at site.<br/>2 points – Strategy or plan on how to use the surplus material. Surplus material application, i.e. it is stored and re-used within site or externally.</p> <p>b) 5 points – Construction material used has recycled content.</p> <p style="padding-left: 20px;">I. 2 points - if 2 major material used has more than 25% of recycled content.</p> <p style="padding-left: 20px;">II. 3 points - Additional more than 2 major material used has more than 25% recycled content</p> <p><i>(The 5 marks of this sub-criteria can only be omitted if the project site does not have any surplus material that is suitable for construction. Must provide evidence.)</i></p> |        |              |
| <b>Submittal Evidence</b>         | <ul style="list-style-type: none"> <li>Site documentation on material management</li> <li>Site inventory or site record use of material at site material</li> <li>Resource planning and efficiency report</li> </ul>  |        |              |
| <b>Guidance</b>                   | <ul style="list-style-type: none"> <li>Even with Material Resource Management Strategy, it may have a surplus on the material. Material usage must be recorded and reviewed as per strategy.</li> <li>The surplus materials and how it is stored and used must be recorded. For example, a surplus Portland cement can be utilised for kindergarten or community works within the project area etc.</li> <li>Avoid surplus material from being wasted (exceeds its usability duration) or treated as waste.</li> </ul>  |        |              |
| <b>Reference</b>                  | <ul style="list-style-type: none"> <li>Policy Guidance on Resource Efficiency- OECD</li> </ul>  |        |              |

| MRW – Material, Resources & Waste |  | Points |              |
|-----------------------------------|--|--------|--------------|
| MRW 4.1                           | Resource Planning  | Design | Construction |
|                                   |  | 3      | 7            |
| 4.1.4                             | Timber source  |        |              |
| Applicable                        | Timber products used in permanent or temporary works been sourced from legal and sustainably managed sources or re-use from other project sites  | 3      | 7            |
| <b>Aim</b>                        | <ul style="list-style-type: none"> <li>To reward sustainable timber source management and practice.</li> </ul>   |        |              |
| <b>Requirement</b>                | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>1 point – List of timber products used in construction.</li> <li>2 points – Identification of sustainable timber certification for the products used.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>7 points – At least 70% of the products used sustainability certification from.</li> <li>4 points – Sustainability certification from at least 50% of the products used.</li> <li>2 points – Sustainability certification from at least 30% of the products used.<br/><i>(This sub-criterion can only be omitted if the project site does not use any timber product for temporary and/or permanent works. Must provide evidence.)</i></li> </ul> |        |              |
| <b>Submittal Evidence</b>         | <ul style="list-style-type: none"> <li>Product specification</li> <li>Source of product</li> <li>Bill of Quantities (BQ)</li> <li>Design specification</li> <li>Delivery order</li> <li>Certification by a recognised organisation, i.e. Malaysian Timber Certification Council (MTCC) and Forest Stewardship Council (FSC)</li> <li>System Formworks</li> </ul>   |        |              |
| <b>Guidance</b>                   | <ul style="list-style-type: none"> <li>During the procuring process, the specification can include sustainable timber specification.</li> <li>It can also include the certification by Malaysian Timber Certification Council (MTCC) under Malaysian Timber Certification Scheme (MTCS), and Forest Stewardship Council (FSC)</li> </ul>   |        |              |
| <b>Reference</b>                  | <ul style="list-style-type: none"> <li>Policy Guidance on Resource Efficiency- OECD</li> </ul>   |        |              |

| <b>MRW – Material, Resources &amp; Waste</b> |   | <i>Points</i> |                     |
|--|---|---------------|---------------------|
| <b>MRW 4.2</b>                               | <b>Lowering Embodied Carbon</b>   | <i>Design</i> | <i>Construction</i> |
|  |   | 4             | 8                   |
| 4.2.1  | Material purchasing (green/regional)  |               |                     |
| Compulsory                                   | Material/(s) with lowered embodied carbon especially major construction materials are considered during the planning and design of a project  | 4             | 8                   |
| <b>Aim</b>                                   | <ul style="list-style-type: none"> <li>To encourage green or regional material purchasing which directly contributes to lowering the embodied carbon of the respective material.</li> </ul>   |               |                     |
| <b>Requirement</b>                           | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points – Identify the major green/regional materials to be used in the project.</li> <li>2 points – Strategy and conditions for green/regional materials purchase are included in design details and/or contract requirement.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>4 Points – At least 50 % of the identified major materials are sourced such it has a green rating and/or within the region.</li> <li>4 points – At least above 50 % of the identified major material are sourced such it has a green rating and/or within the region.<br/>(Regional material means material procured from the nearest possible distance from the project location and within the region not exceeding 300km in travel distance)</li> </ul> |               |                     |
| <b>Submittal Evidence</b>                    | <ul style="list-style-type: none"> <li>Schedule of material and calculation of comparative embodied carbon</li> <li>Product specification and certification</li> </ul>  |               |                     |
| <b>Guidance</b>                              | <ul style="list-style-type: none"> <li>Construction material with Life Cycle Analysis (LCA) on Product Carbon Footprint (PCF) usually comes with ISO14040 certification or Green Label.</li> <li>On Material Summary, the specification can be made to specify a product with a carbon footprint to be procured and/or regional material within the nearest distance from the project site.</li> <li>The material purchased must be recorded and PCF. Purchase Note can be submitted as evidence for this sub-criterion.</li> <li>Identify major material for the project especially the top 10 materials in terms of quantity to be used. Additionally, prepare its value or cost to create a cost-benefit analysis.</li> </ul>  |               |                     |
| <b>Reference</b>                             | <ul style="list-style-type: none"> <li>ISO 14040-2006 – Environmental Management – Life Cycle Assessment – Principles and Formworks</li> </ul>  |               |                     |

| <b>MRW – Material, Resources &amp; Waste</b> |  | <i>Points</i> |                     |
|--|--|---------------|---------------------|
| <b>MRW 4.2</b>                               | <b>Lowering Embodied Carbon</b>  | <i>Design</i> | <i>Construction</i> |
|  |  | 2             | 10                  |
| 4.2.2  | Transportation   |               |                     |
| Compulsory                                   | Use of effective transportation management plan or transportation mode aimed to minimise carbon footprints of the project  | 2             | 10                  |
| <b>Aim</b>                                   | <ul style="list-style-type: none"> <li>To promote the use of efficient transportation management or strategy for material or waste or other resources to reduce carbon emission.</li> </ul>  |               |                     |
| <b>Requirement</b>                           | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>2 points – Transport management plan/Fleet Information and specification during design works.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>3 points – Workforce travel plan and movement record.</li> <li>7 points – Transport specification/provision for a project in which the travel distance is minimal for material delivery, construction activity and waste management.</li> </ul>   |               |                     |
| <b>Submittal Evidence</b>                    | <ul style="list-style-type: none"> <li>Transportation specification</li> <li>Logistic plan</li> <li>Transportation inventory</li> <li>Workforce travel plan</li> </ul>   |               |                     |
| <b>Guidance</b>                              | <ul style="list-style-type: none"> <li>Transport Management Plan during construction is vital for this sub-criterion. Proper planning on transporting workforce during construction is not only giving benefits economically but also contributing to lesser carbon emission.</li> <li>Transport management plan during construction can have these elements but not limited to: <ul style="list-style-type: none"> <li>I. Transport inventory: types, specification and usage</li> <li>II. Movement plan (route, frequency)</li> </ul> </li> <li>The plan must be executed, recorded and reviewed.</li> </ul> |               |                     |
| <b>Reference</b>                             | <ul style="list-style-type: none"> <li>ISO 14040-2006 – Environmental Management – Life Cycle Assessment – Principles and Formworks</li> </ul>   |               |                     |

| MRW – Material, Resources & Waste |  | Points |              |
|-----------------------------------|--|--------|--------------|
| MRW 4.2                           | Lowering Embodied Carbon   | Design | Construction |
|                                   |  | 4      | 8            |
| 4.2.3                             | Movement of construction materials and waste   |        |              |
| Applicable                        | Alternative use of other transport routes (other than the primary route), such as rail and/or sea for the movement of construction materials and waste is considered   | 4      | 8            |
|                                   |  |        |              |
| Aim                               | <ul style="list-style-type: none"> <li>To award sustainable management of transportation of the construction material and waste generated which contributes to lower net carbon emission.</li> </ul>   |        |              |
| Requirement                       | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points – Identification of other transport routes (if there is no such route, please provide evidence of unavailability)</li> <li>2 points – Feasibility study to compare the efficiency of lowering embodied carbon between the identified transport routes.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>2 points – Delivery report on method of transport.</li> <li>6 points – Carbon emission report of selected transport.<br/><i>(This sub-criterion can only be omitted if the project site does not have any alternative and better routes. Must provide evidence.)</i></li> </ul> |        |              |
| Submittal Evidence                | <ul style="list-style-type: none"> <li>Route planning for transport vehicles</li> <li>Fuel usage and carbon emission report</li> <li>Lifecycle Analysis</li> </ul>   |        |              |
| Guidance                          | <ul style="list-style-type: none"> <li>As mentioned in item 4.3.2, Transport Management Plan can include Transportation for Materials and Waste as well. For transportation of material and waste, it can include but not limited to: <ul style="list-style-type: none"> <li>Mode of transportation, type and capacity including fuel consumption.</li> <li>Route and frequency</li> </ul> </li> <li>The plan must be implemented, recorded and reviewed.</li> <li>Carbon emission report can be synthesised from the data collected.</li> </ul>   |        |              |
| Reference                         | <ul style="list-style-type: none"> <li>ISO 14040-2006 – Environmental Management – Life Cycle Assessment – Principles and Formworks</li> </ul>   |        |              |

| <b>MRW – Material, Resources &amp; Waste</b> |  | <i>Points</i> |                     |
|--|--|---------------|---------------------|
| <b>MRW 4.3</b>                               | <b>Waste Management</b>  | <i>Design</i> | <i>Construction</i> |
|  |  | -             | 10                  |
| 4.3.1  | Waste management plan  |               |                     |
| Compulsory                                   | Identification of all the types of waste generated at the project (including organic, solid, scheduled and non-scheduled waste) and the appropriate waste reduction plan established   |               | 10                  |
| <b>Aim</b>                                   | <ul style="list-style-type: none"> <li>To reward the consideration on the waste identification process and its management.</li> </ul>  |               |                     |
| <b>Requirement</b>                           | <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>3 points – Construction site waste management plan prepared with a detailed list of the waste type and item identified.</li> <li>5 points – This plan contains a strategy on how to have an appropriate waste reduction plan.</li> <li>2 points – This plan is approved by the authorised party.</li> </ul>   |               |                     |
| <b>Submittal Evidence</b>                    | <ul style="list-style-type: none"> <li>Waste Management Plan (WMP)</li> <li>Letter of Appointment for EO</li> <li>Notification form</li> </ul>   |               |                     |
| <b>Guidance</b>                              | <ul style="list-style-type: none"> <li>As stated under sub-criterion MRW 4.1.2, the project must create a comprehensive Waste Management Plan to identify the potential waste generated from the construction site and methods to manage it as well as the reduction strategies for the waste generated (compose, re-use, recycle, or dispose).</li> <li>The data must be recorded and, the plan needs to be executed and reviewed accordingly.</li> </ul> |               |                     |
| <b>Reference</b>                             | <ul style="list-style-type: none"> <li>MS 2673: Construction solid waste management</li> <li>Environment Quality Act 1974</li> <li>Environmental quality (schedule waste) 2017</li> <li>Solid Waste &amp; Public Cleansing Management Act 2007 (Act672)</li> </ul>   |               |                     |

| <b>MRW – Material, Resources &amp; Waste</b> |  | <i>Points</i> |                     |
|--|--|---------------|---------------------|
| <b>MRW 4.3</b>                               | <b>Waste Management</b>  | <i>Design</i> | <i>Construction</i> |
|  |  | -             | 30                  |
| 4.3.2  | Waste management execution   |               |                     |
| Compulsory                                   | Effective execution of the waste management plan (including organic, solid, scheduled and non-scheduled waste) and provision of needed facilities  |               | 30                  |
| <b>Aim</b>                                   | <ul style="list-style-type: none"> <li>To reward the effective execution of waste management.</li> </ul>   |               |                     |
| <b>Requirement</b>                           | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>5 points – Appointment of a Waste contractor</li> <li>15 points – Execution of Waste Management plan (bookkeeping, provision of facilities, etc.)</li> <li>10 points – Periodical review on Waste Management Plan</li> </ul>   |               |                     |
| <b>Submittal Evidence</b>                    | <ul style="list-style-type: none"> <li>Waste Management and disposal records</li> <li>Provision evidence of the facilities and layout plans</li> <li>Minutes of meeting</li> </ul>   |               |                     |
| <b>Guidance</b>                              | <ul style="list-style-type: none"> <li>As stated under sub-criteria MRW 4.4.2, the waste management plan must be able to identify the waste facilities needed, including the location and its provision.</li> <li>The data must be recorded and, the plan needs to be executed and reviewed accordingly.</li> <li>Periodical review frequency shall be pre-determined based on the type of waste.</li> </ul> |               |                     |
| <b>Reference</b>                             | <ul style="list-style-type: none"> <li>MS 2673: Construction solid waste management</li> <li>Environment Quality Act 1974</li> <li>Environmental quality (schedule waste) 2017</li> <li>Solid Waste &amp; Public Cleansing Management Act 2007 (Act672)</li> <li>Akta Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 - Act 673 - JPSPN</li> </ul>  |               |                     |

| MRW – Material, Resources & Waste |   | Points |              |
|-----------------------------------|---|--------|--------------|
| MRW 4.3                           | Waste Management  | Design | Construction |
|                                   |   | -      | 40           |
| 4.3.3                             | Waste execution and monitoring  |        |              |
| Compulsory                        | Effective execution of waste reduction, reuse and recycling as planned and progressively monitored, based on total waste generated  | /      | 40           |
| <b>Aim</b>                        | <ul style="list-style-type: none"> <li>To reward the execution and monitoring of waste reduction and waste recovery.</li> </ul>   |        |              |
| <b>Requirement</b>                | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>Effective execution of waste reduction, reuse and recycling as planned and progressively monitored, based on total waste generated as per following reductions:             <ol style="list-style-type: none"> <li>I. 0 -19, score 0</li> <li>II. 20 - 39%, score 10</li> <li>III. 40 -60%, score 20</li> <li>IV. 60 - 80%, score 30</li> <li>V. above 80%, score 40</li> </ol> </li> </ul> |        |              |
| <b>Submittal Evidence</b>         | <ul style="list-style-type: none"> <li>Waste Management Plan (WMP) and records</li> </ul>   |        |              |
| <b>Guidance</b>                   | <ul style="list-style-type: none"> <li>As stated under sub-criteria MRW 4.1,2, MRW 4.4.1, and MRW 4.4.2, the comprehensive Waste Management Plan needs to be appropriately executed main energy grid and the data from the activities must be recorded and reviewed.</li> <li>The reviewed data can be translated into reductions, savings and recovery.</li> </ul>   |        |              |
| <b>Reference</b>                  | <ul style="list-style-type: none"> <li>MS 2673: Construction solid waste management</li> <li>Environment Quality Act 1974</li> <li>Environmental quality (schedule waste) 2017</li> <li>Solid Waste &amp; Public Cleansing Management Act 2007 (Act672)</li> <li>Akta Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 - Act 673 - JPSPN</li> </ul>   |        |              |

SECTION 5:  
ENERGY PERFORMANCE  
(ENP)



## **The Preface of Energy Performance**

Reducing energy consumption in buildings and infrastructures to conserve the natural environment and resources by minimising the negative impact of human activities are among the key objectives of the National Green Technology Policy. As a result, various types of policy and standard related to energy efficiency and renewable energy such as the MS 1525 has been introduced to the industry practice. The key emphasis of these policies and standards are mainly on the best way to reduce energy consumption and carbon emission through active and passive designs.

Active design is a system or structure that uses or produces electricity while passive design utilizes natural energy such as sunlight, wind, temperature differences or gravity to achieve a result without electricity or fuel. Most infrastructures have an active design as they are using electricity.

An example of a passive design is wet infrastructure such as drainage system that does not consume power but uses gravity to move the water flow. Typically, in a construction project, the main contributor of energy consumption and carbon emission comes from Plant, Machinery and Equipment (PME) used during construction. Therefore, it is important to apply PME with energy efficient and lower emission types to ensure energy consumption and carbon emissions can be reduced significantly during construction.

| ENP – Energy Performance  |   | Points |              |
|---------------------------|---|--------|--------------|
| ENP 5.1                   | Energy Performance Compliance   | Design | Construction |
|                           |   | 4      | -            |
| 5.1.1                     | Compliance to best management policy or standards   |        |              |
| Compulsory                | Integrate energy policy into the project and relevant best practices standards incorporated into design and construction energy performance   | 4      |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure that best management and policy compliance on energy performance is incorporated into the design details including the monitoring of any energy performance control during construction.</li> </ul>  |        |              |
| <b>Requirement</b>        | <ul style="list-style-type: none"> <li>The related energy policy including relevant standards' requirement is complied with both design and construction stages. This includes submission and approval from the related authorities if required.</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Summary of related policy and standards on energy performance</li> <li>Design brief or design details and construction drawings/specification</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Energy shall include all types of energy source (non-renewable &amp; renewable). Prepare a list that details out the best management practices on energy use.</li> <li>Also include the relevant code or standard that needs to be complied with.</li> </ul>   |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Malaysia Standard MS 1525:2007 Code of Practice on Energy Efficiency and the use of Renewable Energy for Non-residential Buildings</li> <li>Building Sector Energy Efficiency Project (BSEEP) Passive Design</li> <li>Building Sector Energy Efficiency Project (BSEEP) Active Design</li> <li>Other related Infrastructure Project standard and guidelines</li> </ul> |        |              |

| ENP – Energy Performance  |   | Points |              |
|---------------------------|---|--------|--------------|
| ENP 5.2                   | Energy Use  | Design | Construction |
|                           |   | 15     | -            |
| 5.2.1                     | Plan to reduce energy consumption   |        |              |
| Compulsory                | Planning and Design had incorporated options to reduce energy consumption and carbon emissions of the project during the operation stage.   | 15     |              |
| <b>Aim</b>                |   |        |              |
|                           | <ul style="list-style-type: none"> <li>To ensure that plans are made to reduce energy consumption during operation through the use of active and passive designs.</li> </ul>  |        |              |
| <b>Requirement</b>        |   |        |              |
|                           | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>1 point – Identification of strategy to reduce energy consumption during the operation of the project.</li> <li>2 points – Strategy being incorporated into the design.</li> <li>2 points – Business-As-Usual or baseline energy consumption or demand calculation or report.</li> <li>Up to 10 points – Energy Reduction <ul style="list-style-type: none"> <li>I. &lt; 5%: 2 points</li> <li>II. 5% - 10%: 4 points</li> <li>III. 10% - 15%: 6 points</li> <li>IV. 15% - 20%: 8 points</li> <li>V. &gt; 20%: 10 points</li> </ul> </li> </ul> |        |              |
| <b>Submittal Evidence</b> |   |        |              |
|                           | <ul style="list-style-type: none"> <li>Design details and specifications</li> <li>Baseline or Business as usual calculation on energy use or demand</li> <li>Energy reduction calculation.</li> <li>Energy simulation (if applicable)</li> </ul>  |        |              |
| <b>Guidance</b>           |   |        |              |
|                           | <ul style="list-style-type: none"> <li>Energy modelling (calculation) or simulation that compare conventional design and Calculation on energy saving made.</li> <li>Incorporate use of renewable energy source such as photovoltaic cells.</li> <li>Specify the use of electrical and mechanical items, equipment and products that are EE rated.</li> <li>Seek EE consultant or Energy Manager input for the design of the needed features.</li> <li>Drawing and Contract terms on renewable energy source implementation planning.</li> </ul>  |        |              |
| <b>Reference</b>          |   |        |              |
|                           | <ul style="list-style-type: none"> <li>Malaysia Standard MS 1525:2007 Code of Practice on Energy Efficiency and the use of Renewable Energy for Non-residential Buildings</li> <li>Minimum Energy Performance Standard (MEPS)</li> <li>SIRIM ECO- Labelling Documents</li> <li>Building Sector Energy Efficiency Project (BSEEP) Passive Design</li> <li>Building Sector Energy Efficiency Project (BSEEP) Active Design</li> </ul>   |        |              |

| ENP – Energy Performance  |  | Points |              |
|---------------------------|--|--------|--------------|
| ENP 5.2                   | Energy Use   | Design | Construction |
|                           |  | -      | 5            |
| 5.2.2                     | Implementation of electrical and electronics (EE) features   |        |              |
| Compulsory                | Measures identified in energy efficient plan to reduce the energy consumption of the completed project are executed during construction  |        | 5            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure that energy efficient design is implemented and constructed accordingly.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>The features are installed accordingly <ul style="list-style-type: none"> <li>Up to 50%: 1 point</li> <li>Up to 75%: 3 points</li> <li>&gt; 75%: 5 points</li> </ul> </li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Design details including drawing and specification</li> <li>As built drawings</li> <li>List of Electrical and Electronics (EE) items installed, compared to the design</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Related sub-criterion is ENP 5.2.1 where the planning and design for such features are done.</li> <li>Have dedicated personnel such as Mechanical &amp; Electrical engineer in charge of such installation. Identify suitable and capable supplier with good experience in Electrical and Electronics (EE) features.</li> </ul>   |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Malaysia Standard MS 1525:2007 Code of Practice on Energy Efficiency and the use of Renewable Energy for Non-residential Buildings</li> <li>Minimum Energy Performance Standard (MEPS)</li> <li>SIRIM ECO-Labeling Documents</li> <li>Building Sector Energy Efficiency Project (BSEEP) Passive Design</li> <li>Building Sector Energy Efficiency Project (BSEEP) Active Design</li> <li>Electricity Supply Act 1990 [Act 447]</li> </ul> |        |              |

| ENP – Energy Performance  |   | Points |              |
|---------------------------|---|--------|--------------|
| ENP 5.3                   | Plant, Machinery & Equipment (PME) Energy Use During Construction   | Design | Construction |
|                           |   |        | 2            |
| 5.3.1                     | Construction Plant, Machinery & Equipment (PME) energy utilisation  |        |              |
| Compulsory                | Planning has incorporated options to reduce energy consumption and carbon emissions including verification for the use of construction PME that consist energy efficient and/or lower emission types  | 2      | 9            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To plans and verify utilisation of energy for PME during construction.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points – Identification of strategy for the use of efficient PME and energy has been specified in the contract documents.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>3 points – PME list of energy consumption in term of input unit per hour (e.g. Litre/hour for diesel based PME is available</li> <li>3 points – Energy consumption reduction and emission report for the identified plant, machinery and equipment</li> <li>3 points – The PME used has energy saving certification such as Energy Star or Eco-Label (only for the PME with certification available locally)</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>PME list with details of its energy consumption and emission indicator</li> <li>A comparison table with conventional (non-energy efficient) PME</li> <li>Certification (ISO/Energy Star/Eco-Label or the equivalent)</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>List of sources of energy usage during construction: from main energy grid, generators or renewable energy.</li> <li>Identify and calculate Energy Load and list them by category, e.g. site office or Plant Machinery Equipment inventory with the type of energy consumption rate.</li> <li>Ensure that Energy Consumption Record is recorded on a periodic basis (monthly preferably): main energy grid bills, generators and renewable energy record to identify the amount of usage.</li> <li>Include energy consumption and efficiency specification in PME List. It may include, fuel consumption/hour, or efficiency based on PME.</li> <li>Create an Energy Management Plan with reduction strategy, e.g. the use of purchased electricity for site office can be reduced by having EE office equipment, use of LED lights as floodlights and fuel saving plants/machinery.</li> <li>Implement an intervention on energy performance achievement such as strategy review discussion as part of the plan.</li> <li>Action taken during the construction period for energy savings must be recorded for measurement, monitoring and improvement.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Malaysian Valuation Standards 13 Valuation of Plant, Machinery and Equipment</li> </ul>  |        |              |

| ENP – Energy Performance  |  | Points |              |
|---------------------------|--|--------|--------------|
| ENP 5.3                   | Plant, Machinery & Equipment (PME) Energy Use During Construction  | Design | Construction |
|                           |  | -      | 5            |
| 5.3.2                     | Maintenance of Plant, Machinery & Equipment (PME)  |        |              |
| Compulsory                | Selected construction PME used has been maintained efficiently to minimise carbon emission and maximise energy efficiency during construction  |        | 5            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure implementation and action of efficient maintenance to minimise carbon emission and maximise energy efficiency during construction.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>1 point – If the manufacturer guide on type and period of the needed maintenance is available.</li> <li>2 points – Maintenance Schedule and person in charge of the maintenance prepared by the Contractor.</li> <li>2 points – Report on Maintenance and mitigation action if any.</li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Maintenance schedule by contractors</li> <li>Manufacturer’s advice maintenance schedule</li> <li>Maintenance slip/prove of maintenance being done</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>When formulating maintenance schedule of PME, refer (either in product brief, or engagement) to manufacturer of the PME for advice.</li> <li>Precise maintenance/abiding the maintenance schedule needed.</li> </ul>  |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Malaysian Valuation Standards 13 Valuation of Plant, Machinery and Equipment</li> </ul>   |        |              |

SECTION 6:  
SOCIAL & CULTURE  
(SOC)



## **The Preface of Social & Culture**

Social and cultural issues are part of sustainability initiatives to ensure that these are given the necessary importance in any development. In general, social and economic life today and in the future should fulfil basic human needs such as health, education, religion and most importantly balance in life as a long-term process that shapes up a social condition for future generations. Social impact is often perceived as the effects on people and communities that take place as a result of a project, programme or policy.

Thus, it is important to understand the difference between measuring the process of development, which involves tracking of the project's progress and measuring the outcomes of development that addresses whether the project has the intended effect and subsequently has improved the community in some way. However, effects of construction activities on local transportation/traffic system and public network as well as health and safety issues ought to be thoroughly considered in planning and design as the implication of improper execution may be appalling to the local community. Heritage and cultural value aspects must also be considered in the sustainable developments. The cultural values and heritage structures should be identified in order to assess significance, prioritize resources, and inform conservation decision-making.

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.1                   | Transport/Traffic Oriented Social Effect   | Design | Construction |
|                           |  | -      | 3            |
| 6.1.1                     | Effects of construction activities on local transportation/traffic system  |        |              |
| <i>Applicable</i>         | Project incorporated relevant strategies that improved transport/traffic situation affected by construction activities on the local community such as improved safety and minimised congestion   | /      | 3            |
|                           |  |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward and ensure implementation of mitigating action related to transport/traffic effects arising from construction activities to the community within the project area. Also, to ensure minimal disturbance to the livelihood of the people.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p style="margin-left: 20px;"><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>3 points if there are improved safety measures and proper traffic management executed during construction.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Traffic management plan (endorsed by a competent person, e.g. Traffic Management Officer)</li> <li>Photographs of area</li> <li>Road safety audit report</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>If the project site involves a public space, safety issues for the public need to be addressed.</li> <li>The contractor must ensure that any traffic diversion is implemented responsibly, with minimal or no disruption to the existing network/services.</li> <li>Issue notice and engage with the local community so they will have sufficient knowledge of the impact or the inconveniences.</li> <li>Conduct Traffic Impact Assessment study.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>JKR's Arahan Teknik Jalan 2A/85, 2B/85, 2C/85 and 2D/85</li> <li>Arahan Teknik (Jalan) 23-03 - Guidelines on the Estimation Procedures for Traffic Management During Construction</li> <li>Manual Penyediaan Traffic Management Plan (TMP)</li> </ul>   |        |              |
|                           |  |        |              |

| SOC – Social & Culture    |   | Points |              |
|---------------------------|---|--------|--------------|
| SOC 6.1                   | Transport/Traffic Oriented Social Effect  | Design | Construction |
|                           |   | -      | 3            |
| 6.1.2                     | Effect of construction traffic on the public network  |        |              |
| Compulsory                | Adequate measures considered in the design and implemented in construction to minimise the impact caused by construction vehicles on the public network   | /      | 3            |
|                           |   |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward planning and mitigation to minimise the impact on traffic within the public network that is connected or linked to the project area.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>3 points if there is route planning for the construction vehicles, to minimise disruption to the public roads (both major and minor).</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Traffic management plans for machinery, material, transportation etc.</li> <li>Any documents on route planning for delivery of material.</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Design may include dedicated temporary access route with minimum impact on the public network system.</li> <li>Movement of construction vehicles is planned correctly, especially if the traffic will be disrupted.</li> <li>Route planning, dedicated travelling time can be implemented, i.e. construction transportation limited to non-peak hours to ease the impact on the existing traffic.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>JKR's Arahan Teknik Jalan 2A/85, 2B/85, 2C/85 and 2D/85</li> <li>Arahan Teknik (Jalan) 23-03- Guidelines on the Estimation Procedures for Traffic Management During Construction</li> <li>Manual Penyediaan Traffic Management Plan (TMP)</li> </ul>   |        |              |
|                           |   |        |              |

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.1                   | Transport/Traffic Oriented Social Effect   | Design | Construction |
|                           |  | 3      | -            |
| 6.1.3                     | The implication of the completed project on transportation/traffic system  |        |              |
| <i>Applicable</i>         | Adequate measures and concept incorporated into the design that enable minimum transport-related impacts on the local community  | 3      | /            |
|                           |  |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward design and adaptability that enable minimum transport-related impacts on the local community.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>3 points if the design has incorporated measures to minimise transport related impacts to the local community.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Design brief and drawings</li> <li>Traffic Impact Assessment</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Design may include different access route or any widening with minimum impact on the public network system.</li> <li>Conduct Traffic Impact Assessment.</li> <li>The project, when completed shall not cause the existing transportation network to be affected for the local community. A study must be done to ensure that the local communities' needs are addressed.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>JKR's Arahan Teknik Jalan 2A/85, 2B/85, 2C/85 and 2D/85</li> <li>Arahan Teknik (Jalan) 23-03- Guidelines on the Estimation Procedures for Traffic Management During Construction</li> <li>Manual Penyediaan Traffic Management Plan (TMP)</li> </ul>  |        |              |
|                           |  |        |              |

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.2                   | Safety and Health  | Design | Construction |
|                           |  | 3      | 12           |
| 6.2.1                     | Project safety plan  |        |              |
| Compulsory                | All relevant issues related to safety and health are incorporated in the project safety plan and monitored during construction   | 3      | 12           |
|                           |  |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure adequate development of preventive measure are made and monitored in regards safety and health issues during construction.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>3 points if requirement on project safety plan has been specified in the design details and/or in contract documents.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points if approved project safety plan is available, approval either by the client or their representative</li> <li>2 points – If a dedicated person such as SHO is appointed to lead the implementation</li> <li>4 points – Implementation is done accordingly to the plan and periodical report is available. Either the client or their representative must verify this report.</li> <li>2 points – Remedial actions taken for any shortfalls in the implementation OR If no shortfall is identified, i.e. an effective and thorough execution.</li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Project safety plan</li> <li>Safety Monitoring plan and report</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>A project safety plan shall include the management of the safety and health, the safety and health programme, procedures, inspection programme, safe work practices etc.</li> <li>Reporting on the safety and health during construction, based on the project safety plan that must also be conducted on a monthly basis.</li> </ul>   |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>OHSAS 18001</li> <li>MS 1722</li> <li>ISO 45001</li> <li>OSHA 1994</li> <li>Factory and Machinery Act 1967, BOWEC</li> </ul>  |        |              |
|                           |  |        |              |

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.2                   | Safety and Health  | Design | Construction |
|                           |  | 3      | 12           |
| 6.2.2                     | SHASSIC implementation   |        |              |
| Compulsory                | Safety and health issues addressed in SHASSIC have been considered in the design and implemented extensively during construction   | 3      | 12           |
|                           |  |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward a coordinated and an extensive safety management plan and duly monitoring of SHASSIC or similar compliance.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>3 points if safety and health issues have been identified and addressed in the design stage for a better SHASSIC rating.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>2 points if 2-star of SHASSIC rating is achieved.</li> <li>5 points if 3-star of SHASSIC rating is achieved.</li> <li>8 points if 4-star of SHASSIC rating is achieved.</li> <li>12 points if 5-star of SHASSIC rating is achieved.</li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>SHASSIC concept in design detail and assessment records</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Incorporate SHASSIC requirement as part of contractual conditions.</li> <li>Appoint a SHASSIC experienced safety officer.</li> </ul>  |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>CIDB CIS 10: Safety and Health Assessment System In Construction</li> </ul>   |        |              |
|                           |  |        |              |

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.2                   | Safety and Health  | Design | Construction |
|                           |  | 6      | 10           |
| 6.2.3                     | Health Impact Assessment (HIA)   |        |              |
| <i>Applicable</i>         | Related and relevant potential effect of construction activities on the construction workforce, occupants and local community are taken into consideration in the project and mitigation action implemented  | 6      | 10           |
|                           |  |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward an assessment and the management of health impact (both positive and negative) to the workforce and public in the vicinity of the project area including the needed implementation. HIA provides evidence-based recommendations and well-informed decisions are made to protect and improve the community's health and wellbeing.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>3 points if HIA is conducted</li> <li>3 points – the findings from the assessment are incorporated into design details and project requirement.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>5 points if related mitigation measures on workforce and occupant of the project site are implemented</li> <li>5 points if the related mitigation measures on an external party, e.g. the local community within the project site are implemented.</li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Health impact assessment or equivalent documentation</li> <li>Management or mitigation plan</li> <li>Design drawings</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Health and welfare of the workforce for the project must be taken care of.</li> <li>An assessment can be done to provide better working conditions at the construction site.</li> <li>Develop action or mitigation plan to avert the identified health impact and continuously monitor the action taken.</li> </ul>   |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Health Impact Assessment (HIA) Guides &amp; Tools-NCCHPP</li> </ul>   |        |              |
|                           |  |        |              |

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.3                   | Social Impact  | Design | Construction |
|                           |  | 7      | -            |
| 6.3.1                     | Consultation with stakeholder  |        |              |
| Compulsory                | The relevant stakeholders have been consulted on potential effects on the local community that are expected to occur during construction   | 7      | /            |
|                           |  |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward outreach to different levels of stakeholders and gain valuable feedback from concerning parties to design and construct a socially conscious project.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points if the relevant regulatory bodies have been engaged before and/or during the design stage.</li> <li>2 points if the relevant NGOs have been engaged before and/or during the design stage.</li> <li>3 points if the local community (both people and business fraternities) have been engaged before and/or during the design stage.</li> </ul>   |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Social Impact Assessment (SIA)</li> <li>Engagement database and action plans</li> <li>Minutes of meeting</li> <li>Feedback records</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Stakeholder engagements shall be carried out and recorded in minutes meeting.</li> <li>Conduct a town-hall meeting and have a public review session.</li> <li>A survey feedback form can be used to collect information and views.</li> <li>Follow up actions shall be taken based on the stakeholders' feedback.</li> <li>Engagement shall be done to update the stakeholders on the actions taken based on their feedback, and to address additional concerns.</li> <li>Relevant stakeholder shall include the regulatory bodies, local community (people and business organisation), non-governmental organisation.</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>Manual Penyediaan SIA</li> </ul>  |        |              |
|                           |  |        |              |

| SOC – Social & Culture    |   | Points |              |
|---------------------------|---|--------|--------------|
| SOC 6.3                   | Social Impact   | Design | Construction |
|                           |   | 3      | 4            |
| 6.3.2                     | Community engagement  |        |              |
| Compulsory                | The responses from the community engagement programme are analysed and considered in the design and during construction   | 3      | 4            |
|                           |   |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward planning and implementation of the community engagement.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>3 points if communities have been engaged during or before the design stage, and action has been taken to address their comments and feedback in the design.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points if the above have been executed in the construction stage.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Community engagement management plan</li> <li>Minutes of meetings</li> <li>Social Impact Assessment (SIA) report</li> <li>Design brief/drawings</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Community engagements shall be carried out and recorded in minute meetings.</li> <li>Follow up actions shall be taken based on the communities' feedback.</li> <li>Include the views as part of design input for discussion and design accordingly</li> <li>Continuous engagement shall be done to update the communities on the actions taken based on their feedback, and to address additional concerns.</li> <li>Active engagement of communities and grievance mechanisms can be planned and executed during construction.</li> <li>Related sub-criteria – 1.1.3 and 6.3.1</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>Manual Penyediaan Social Impact Assessment (SIA)</li> </ul>  |        |              |
|                           |   |        |              |

| SOC – Social & Culture    |   | Points |              |
|---------------------------|---|--------|--------------|
| SOC 6.3                   | Social Impact   | Design | Construction |
|                           |   | 3      | 4            |
| 6.3.3                     | Effect on local community   |        |              |
| <i>Applicable</i>         | Any effect arising from project delivery on the local community such as requiring relocation of society and community landmarks considered in the project and mitigation action implemented   | 3      | 4            |
|                           |   |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure design and plan involving activities with local community create minimum social disturbance or inconvenience and adequate mitigation measure are identified or in the best case, it is avoided.</li> </ul>   |        |              |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>3 points if the social impact of the project has been assessed and mitigation plans have been proposed.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>4 points if the mitigation plans have been executed during construction.<br/><i>(This sub-criterion can be omitted if sufficient evidence from SIA or similar assessment had identified the absence of community landmark or society relocation.)</i></li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Social impact assessment (SIA) report</li> <li>Survey records</li> <li>Management or mitigation plan</li> <li>Design drawings</li> <li>Photographs</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>To minimise the social impact, the design must avoid relocation of communities and landmarks.</li> <li>Identify such landmarks during the feasibility study and have alternative route or site.</li> <li>Community landmarks include places with religious, cultural or historical significance</li> </ul>   |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>Manual Penyediaan SIA</li> </ul>   |        |              |
|                           |   |        |              |

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.3                   | Social Impact  | Design | Construction |
|                           |  | 3      | 4            |
| 6.3.4                     | Access for non-motorised users   |        |              |
| <i>Applicable</i>         | Project planning/design takes adequate measures that establishes links between the proposed routes with existing local services to ensure pedestrians and cyclists able to pass through the site on dedicated paths and any additional construction needed are built accordingly   | 3      |              |
|                           |  |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To ensure continuity of the existing and available facilities at the same time to avoid any inconvenience to users.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>3 points if the pedestrian and/or cyclist network is improved/enhanced with new links in the design.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>3 points if the above have been executed/constructed in the construction stage.<br/><i>(This sub-criterion can be omitted if the project has no access for non-motorised users)</i></li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Design brief</li> <li>Detailed design drawings and construction drawings</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Conduct a study on the pedestrian flow.</li> <li>Design for pedestrian walkways where there is a potential need for improvement.</li> <li>Have underpass/overpass for people.</li> </ul>  |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>Garis Panduan Perancangan Kejiranan Hijau</li> </ul>  |        |              |
|                           |  |        |              |

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.3                   | Social Impact  | Design | Construction |
|                           |  | 3      | 4            |
| 6.3.5                     | Effect on non-motorised users  |        |              |
| <i>Applicable</i>         | Adequate measures considered and incorporated in the project to improve the performance level of non-motorised users within or outside the project site  | 3      | 4            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward monitoring on the performance level of non-motorised users.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b>Design</b></p> <ul style="list-style-type: none"> <li>3 points if the design leads to an increase of pedestrian/cyclist count.</li> </ul> <p><b>Construction</b></p> <ul style="list-style-type: none"> <li>3 points if the above have been executed in the construction stage.<br/><i>(This sub-criterion can be omitted if the project has no access for non-motorised users)</i></li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>A preliminary study of accessibility and connectivity</li> <li>Impact assessment study</li> <li>Layout plan of the site and vicinity especially access to non-motorised user</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Design features that can be incorporated into the project to increase the amount of non-motorised users.</li> </ul>   |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>Garis Panduan Perancangan Kejiranan Hijau</li> </ul>  |        |              |

| SOC – Social & Culture    |  | Points |              |
|---------------------------|--|--------|--------------|
| SOC 6.3                   | Social Impact  | Design | Construction |
|                           |  |        | 3            |
| 6.3.6                     | Design for social responsibility and comfort   |        |              |
| <i>Applicable</i>         | Any diversity of the community identified, incorporated into the project design to promote equal access for all (i.e. elderly, people with disability and of different cultures and religions) and implemented   | 3      | 4            |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward the design and construction of social responsibilities and comfort.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>3 points if the design has incorporated features to assist the elderly, people with disabilities, people of different cultures and religion.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>3 points if the above have been executed in the construction stage.<br/><i>(This sub-criterion can be omitted if the project does not allow access to the public)</i></li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Design brief</li> <li>Detailed design drawings</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>Disabled friendly features shall be considered.</li> <li>For social responsibility, upgrading a walkway to a covered walkway can also be considered.</li> <li>Signage with different languages can be considered in the design.</li> </ul>  |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>Garis Panduan Perancangan Kejiranan Hijau</li> </ul>  |        |              |

| SOC – Social & Culture    |   | Points |              |
|---------------------------|---|--------|--------------|
| SOC 6.4                   | Historical and Cultural Value   | Design | Construction |
|                           |   | 4      | -            |
| 6.4.1                     | Identify historic-cultural structures and features  |        |              |
| <i>Applicable</i>         | Conduct a baseline study to identify the full range of historic-cultural environment and incorporated needed strategy to protect and preserve it  | 4      | /            |
|                           |   |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward the effort in conducting the baseline study on historical and cultural value including gazetted and non-gazetted. This baseline data is useful for in establishing any required mitigation strategy.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p style="margin-left: 20px;"><b>Design</b></p> <ul style="list-style-type: none"> <li>2 points if a baseline study on the historical and cultural environment including heritage assets, historical and archaeological features have been conducted.</li> <li>2 points if the required mitigation strategy had been established such retaining it, needed restoration and integrating it with the project.</li> </ul>  |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Baseline study or the equivalent report such as an assessment report</li> <li>Design details/brief</li> <li>Heritage Impact Assessment</li> </ul>  |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>A study can be done to check if there are any areas with historical and/or cultural significance, or with archaeological significance that is found in the project site or may get affected by the project.</li> <li>Engage local museum or university to conduct a study.</li> <li>Heritage assets within the project site shall be retained and restored, to be integrated as part of the project.</li> <li>Historical and cultural value structures/features shall include building, landscape and objects on land and water (surface or below).</li> </ul> |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Warisan Kebangsaan 2005 (<a href="http://www.heritage.gov.my">www.heritage.gov.my</a>)</li> <li>Heritage Impact Assessment Development - Town and Country Planning Act 1976 (Act 172)</li> <li>Manual Penyediaan Laporan Cadangan Pemajuan by the Federal Department of Town and Country Planning, Peninsular Malaysia</li> <li>Garis Panduan Perancangan Pemuliharaan dan Pembangunan Kawasan Sensitif Alam Sekitar, Warisan Kebudayaan dan Warisan Semulajadi (<a href="http://www.townplan.gov.my">www.townplan.gov.my</a>)</li> </ul>                 |        |              |
|                           |   |        |              |

| SOC – Social & Culture    |   | Points |              |
|---------------------------|---|--------|--------------|
| SOC 6.4                   | Historical and Cultural Value   | Design | Construction |
|                           |   | -      | 8            |
| 6.4.2                     | Preservation and protection of historic-cultural structures and features  |        |              |
| <i>Applicable</i>         | Adequate measures have been taken in the project to preserve and protect cultural value and heritage asset  | /      | 8            |
|                           |   |        |              |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward planning and preservation of historical value/heritage asset and archaeological remains.</li> </ul>  |        |              |
| <b>Requirement</b>        | <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>2 points if all gazetted and registered cultural/heritage assets identified within the project area had been either retained, restored or integrated into the proposed project has been executed during construction.</li> <li>3 points if any non-gazetted and non-registered cultural/heritage assets with high value identified within the project area had been either retained, restored or integrated into the proposed project 3 points if preservation and restoration of heritage features are done to its actual or original nature such does not distort its original values or looks.</li> </ul> |        |              |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Design brief</li> <li>Detailed design drawings</li> <li>Construction method statement</li> <li>As-built drawings</li> <li>Material specification</li> <li>Test record of materials or certification form the related organisation on heritage aspects</li> </ul>   |        |              |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>If they are any historical area/building/features in the project site, appropriate measures shall be taken to preserve it.</li> <li>If there are any archaeological remains, appropriate measures shall be taken to preserve and protect it during construction activity and upon project completion.</li> <li>Selection of material used in the project must be similar to the existing historical/cultural assets. This is in order not to distort the originality of the existing assets.</li> </ul>  |        |              |
| <b>Reference</b>          | <ul style="list-style-type: none"> <li>Akta Warisan Kebangsaan 2005 (<a href="http://www.heritage.gov.my">www.heritage.gov.my</a>)</li> <li>Heritage Impact Assessment Development - Town and Country Planning Act 1976 (Act 172)</li> <li>Manual Penyediaan Laporan Cadangan Pemajuan by the Federal Department of Town and Country Planning, Peninsular Malaysia</li> <li>Garis Panduan Perancangan Pemuliharaan dan Pembangunan Kawasan Sensitif Alam Sekitar, Warisan Kebudayaan dan Warisan Semulajadi (<a href="http://www.townplan.gov.my">www.townplan.gov.my</a>)</li> </ul>   |        |              |
|                           |   |        |              |

SECTION 7:  
INNOVATION & INCENTIVE



## **The Preface of Innovation & Incentive**

The conception of new ideas is the starting point for innovation. Innovation is defined as "new idea, creative thoughts, new imaginations in form of device or method" and seen as the application of better and effective solutions.

Each and every construction project is unique, therefore developer and contractor have to adapt innovative processes and resources in order to comply with the requirement of each project and strive to achieve better sustainability initiatives.

An innovative design approach often involves making product, services and space more desirable, usable, effective and more sustainable. For example, innovative design that uses of lightness with structures that challenge the traditional solid wall with windows. Introducing a new material or machinery including new method of construction into the project can be classified as innovation.

Application of an innovative technology or method in the construction industry will spur the development and knowledge growth in the construction development and nation at wide.

On the other hand, any additional effort or achievement beyond a specified target will be incentivised. Incentive points are accorded as stimulant for projects to strive better and achieve more in order to have more sustainability efforts. For example, effluent water quality is herein specified to meet SPAN/ Local Authority requirement. Therefore, any effort taken to ensure that effluent quality is better/enhanced than the specified limits or been recycled shall be considered for incentive points.

Both innovation and incentive points are BONUS points

| Innovation & Incentive    |   | Points        |                     |
|---------------------------|---|---------------|---------------------|
| <b>7.1</b>                | <b>Innovation</b>   | <i>Design</i> | <i>Construction</i> |
|                           |   | 20            | 20                  |
| <i>Applicable</i>         | Any innovation idea or concept submitted which could be related to the criteria or beyond it  | 20            | 20                  |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To encourage use of innovative ways to enhance the outcome of project in relation to sustainability initiatives.</li> </ul>  |               |                     |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>Additional points to a maximum of 20 can be rewarded.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>Additional points to a maximum of 20 can be rewarded.</li> </ul> <p>Note: The credit points awarded shall not exceed more than 50% of the respective sub criteria max point unless it is totally beyond any stated criteria.<br/>(For example, if an innovative initiative taken under sub criteria 2.2.2 Worker Amenities. The max point for design is 2 thus for any additional effort or innovative initiatives only 1 point will be awarded subject to assessor's prerogative.)</p>                  |               |                     |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Related details of the innovative design or action taken</li> <li>Subjected to approval of the assessor based on the evaluated outcome and resultant impact of the proposed idea or concept.</li> <li></li> </ul>  |               |                     |
| <b>Guidance</b>           | <ul style="list-style-type: none"> <li>The innovation ideas could be in both process and product innovation which may consist on use of new technology, material, machinery, method and others.</li> </ul> <p>Note:</p> <ul style="list-style-type: none"> <li>Steps to claim innovation points</li> </ul> <ol style="list-style-type: none"> <li>Submission of the innovative or additional effort concept must identify under which criteria and sub criteria the points are claimed.</li> <li>If not identified, clarify with assessor. If it is not within any criteria stated in this manual, the max point to be awarded shall be assessor's prerogative</li> <li>Provide all the relevant evidence.</li> </ol> |               |                     |

| Innovation & Incentive    |   | Points        |                     |
|---------------------------|---|---------------|---------------------|
| <b>7.2</b>                | <b>Incentive</b>  | <i>Design</i> | <i>Construction</i> |
|                           |   | 10            | 10                  |
| <i>Applicable</i>         | Any additional effort that exceeds the specified target / objective of a respective sub-criteria  | 10            | 10                  |
| <b>Aim</b>                | <ul style="list-style-type: none"> <li>To reward any additional effort taken beyond what is stipulated in the respective assessment criteria.</li> </ul>  |               |                     |
| <b>Requirement</b>        | <p><b><u>Design</u></b></p> <ul style="list-style-type: none"> <li>Additional points to a maximum of 10 can be rewarded.</li> </ul> <p><b><u>Construction</u></b></p> <ul style="list-style-type: none"> <li>Additional points to a maximum of 10 can be rewarded.</li> </ul> <p>Note: The credit points awarded shall not exceed more than 50% of the respective sub criteria max point unless it is totally beyond any stated criteria.<br/>(For example, if an initiative taken under sub criteria 5.2.1 Reduce Energy Consumption. The max point for design is 10 for energy reduction more than 20% than baseline / BAU, thus for any additional effort that aimed to reduce way beyond 20 %, only maximum of 5 additional point will be awarded subject to assessor's prerogative.)</p> |               |                     |
| <b>Submittal Evidence</b> | <ul style="list-style-type: none"> <li>Related details of the action taken, and target exceeded</li> <li>Subjected to approval of the assessor based on the evaluated outcome of the achievement</li> </ul>   |               |                     |

## References

| No | Sub-criteria associated                       | Document Title/Reference/Guideline   |
|----|---|--|
| 1  | 1.1.1 Sustainable development principle       | <ul style="list-style-type: none"> <li>Jabatan Kerja Raya (JKR) Garis Panduan Pengurusan Pembinaan Projek</li> <li>ISO 9001/ISO 14001 standards</li> <li>Local Agenda</li> <li>Green Building Policy by authorities</li> </ul>   |
| 2  | 1.1.2 Economic benefit                        | <ul style="list-style-type: none"> <li>Panduan Perlaksanaan Environmental Impact Assessment (EIA) di Projek</li> </ul>   |
| 3  | 1.1.3 Social benefit                          | <ul style="list-style-type: none"> <li>Panduan Perlaksanaan Environmental Impact Assessment (EIA) di Projek</li> </ul>   |
| 4  | 1.1.4 Environmental benefit                   | <ul style="list-style-type: none"> <li>Panduan Perlaksanaan Environmental Impact Assessment (EIA)</li> <li>Perintah Kualiti Alam Sekeliling (Aktiviti Yang Ditetapkan) (Penilaian Kesan Alam Sekeliling) 1987; (Pindaan 2015)</li> </ul>   |
| 5  | 1.1.5 Sustainability aims during construction | <ul style="list-style-type: none"> <li>Jabatan Kerja Raya (JKR) Garis Panduan Pengurusan Pembinaan Projek</li> <li>ISO 9001/ISO 14001 standards</li> <li>Local Agenda</li> <li>Green Building Policy by authorities</li> </ul>   |
| 6  | 1.1.6 Resource efficiency                     | <ul style="list-style-type: none"> <li>Policy Guidance on Resource Efficiency- OECD</li> </ul>   |
| 7  | 1.2.1 Climate change adaptability             | <ul style="list-style-type: none"> <li>Environmental Impact Assessment (EIA)/Detailed Environmental Impact Assessment (DEIA)</li> <li>Environmental Quality Act 1974, Environmental Protection Enactment 2002 by EPD</li> <li>National Climate Change Policy – NRE</li> <li>Sustainable Development Goal (SDG)</li> <li>National Committee on Climate Change</li> <li>Sendai Framework for Disaster Risk Reduction</li> <li>NAHRIM Sea Level Rise Studies</li> <li>NRE National Communication to UNFCCC</li> </ul> |
| 8  | 1.2.2 Physical resources strategy             | <ul style="list-style-type: none"> <li>Policy Guidance on Resource Efficiency- OECD</li> </ul>   |
| 9  | 1.2.3 Whole-life approach                     | <ul style="list-style-type: none"> <li>ISO 15686 Building and constructed assets- Service life planning</li> </ul>   |
| 10 | 1.2.4 Integrity for low maintenance           | <ul style="list-style-type: none"> <li>ISO 15686 Building and constructed assets- Service life planning</li> </ul>   |
| 11 | 1.2.5 Recycle component adaptability          | <ul style="list-style-type: none"> <li>Guidelines on Construction Waste Management- CREAM</li> </ul>   |
| 12 | 1.2.6 Transport network flexibility           | <ul style="list-style-type: none"> <li>Traffic Impact Assessment (TIA) Report</li> </ul>   |
| 13 | 1.3.1 Landscape design proposal               | <ul style="list-style-type: none"> <li>Garis Panduan Landskap Negara (<a href="http://jln.kpkt.gov.my/index.php/pages/view/58">http://jln.kpkt.gov.my/index.php/pages/view/58</a>)</li> <li>Dasar Landskap Negara (KPKT)</li> <li>Local Plans</li> </ul>   |

|    |  |   |
|----|--|---|
| 14 | 1.3.2 Operation and maintenance management plan                    | <ul style="list-style-type: none"> <li>• ISO 31000:2009 Risk Management Principles and Guidelines</li> <li>• Environmental Impact Assessment (EIA) Guidelines on Risk Management</li> <li>• Risk Management Plan</li> </ul>   |
| 15 | 1.4.1 Value for money  | <ul style="list-style-type: none"> <li>• ISO 15686 Life Cycle Costing &amp; Service life Planning</li> <li>• Value Management Implementation Guideline No.3/2009 (EPU WEBSITE)</li> <li>• Value Management Implementation Guide in Government Programmes/Projects (EPU WEBSITE)</li> <li>• Value Engineering (JKR WEBSITE)</li> </ul> |
| 16 | 1.5.1 Selection process for consultant & contractor                | <ul style="list-style-type: none"> <li>• Keperluan &amp; Prosedur Pendaftaran Kontraktor dengan CIDB 2016</li> </ul>  |
| 17 | 1.5.2 Contract requirement on environmental and social performance | <ul style="list-style-type: none"> <li>• Government Green Procurement (GGP)</li> </ul>  |
| 18 | 1.6.1 Sustainability management mechanisms                         | <ul style="list-style-type: none"> <li>• ISO 31000:2009 Risk Management Principles and Guidelines</li> <li>• Environmental Impact Assessment (EIA) Guidelines on Risk Management</li> <li>• Risk Management Plan</li> </ul>   |
| 19 | 1.6.2 Prioritisation of environmental and social risks             | <ul style="list-style-type: none"> <li>• ISO 31000:2009 Risk Management Principles and Guidelines</li> <li>• Environmental Impact Assessment (EIA) Guidelines on Risk Management</li> <li>• Risk Management Plan</li> </ul>   |
| 20 | 1.6.3 Implementation and achievement of mechanisms                 | <ul style="list-style-type: none"> <li>• ISO 31000:2009 Risk Management Principles and Guidelines</li> <li>• Risk Management Plan</li> </ul>  |
| 21 | 2.1.1 Site suitability   | <ul style="list-style-type: none"> <li>• Guidelines for Site Investigation Works (JKR)</li> </ul>   |
| 22 | 2.1.2 Previous utilisation of the selected site                    | <ul style="list-style-type: none"> <li>• Guidelines for Site Investigation Works (JKR)</li> </ul>   |
| 23 | 2.1.3 Contamination risk assessment                                | <ul style="list-style-type: none"> <li>• Environmental Quality Act (EQA)</li> <li>• Contaminated Land Management and Control Guideline</li> <li>• ISO 31000 Risk Management Principle and Guideline</li> <li>• Water Services Industry Act, 2006 (Act No. 655)</li> </ul>   |
| 24 | 2.1.4 Contamination risk mitigation                                | <ul style="list-style-type: none"> <li>• Environmental Quality Act (EQA)</li> <li>• Contaminated Land Management and Control Guideline</li> <li>• ISO 31000:2009 Risk Management Principle and Guideline</li> <li>• Water Services Industry Act, 2006 (Act No. 655)</li> </ul>  |
| 25 | 2.1.5 Effectiveness of contamination remedial solution             | <ul style="list-style-type: none"> <li>• Environmental Quality Act (EQA)</li> <li>• Contaminated Land Management and Control Guideline</li> <li>• ISO 31000:2009 Risk Management Principle and Guideline</li> <li>• Water Services Industry Act, 2006 (Act No. 655)</li> </ul>  |

|    |   |  |
|----|---|--|
| 26 | 2.1.6 Natural calamities risk assessment and mitigation   | <ul style="list-style-type: none"> <li>• ISO 31000 Risk Management Principle and Guideline</li> <li>• KSAS – Kawasan Sensitif Alam Sekitar</li> <li>• Jabatan Mineral dan Geologi (JMG) Geohazard Maps</li> <li>• Jabatan Perparitan dan Saliran (JPS) Flood Mapping</li> </ul>  |
| 27 | 2.2.1 Selection of temporary use of a site                | <ul style="list-style-type: none"> <li>• Guidelines for Site Investigation Works (JKR)</li> </ul>  |
| 28 | 2.2.2 Worker amenities                                    | <ul style="list-style-type: none"> <li>• MS 2593 Temporary construction site workers' amenities and accommodation -.</li> <li>• Code of practice. ICS: 91.040. Descriptors: planning, specification, management, maintenance, temporary workers, amenities, accommodation</li> </ul>   |
| 29 | 2.2.3 Storage/fabrication area                            | <ul style="list-style-type: none"> <li>• Guidelines for public safety and health at construction sites (DOSHS) (<a href="http://www.dosh.gov.my">www.dosh.gov.my</a>)</li> </ul>   |
| 30 | 2.3.1 Visual factors/aesthetic                            | <ul style="list-style-type: none"> <li>• Garis Panduan Jabatan Landskap Negara</li> </ul>  |
| 31 | 2.3.2 Blend with local character/topography               | <ul style="list-style-type: none"> <li>• Garis Panduan Jabatan Landskap Negara</li> </ul>  |
| 32 | 2.3.3 Selected species suitability                        | <ul style="list-style-type: none"> <li>• Garis Panduan Jabatan Landskap Negara</li> </ul>  |
| 33 | 2.4.1 Site Inventory                                      | <ul style="list-style-type: none"> <li>• Garis Panduan Perancangan Pemuliharaan dan Pembangunan (GPPPP) Kawasan Sensitif Alam Sekitar (KSAS)</li> <li>• National Policy on Biodiversity by Ministry of Natural Resources and Environment, Malaysia</li> </ul>  |
| 34 | 2.5.1 Balanced cut and fill                               | <ul style="list-style-type: none"> <li>• Guidelines for Slope Design (Jabatan Kerja Raya Malaysia)</li> </ul>  |
| 35 | 2.5.2 Land use efficiency                                 | <ul style="list-style-type: none"> <li>• Guidelines for Slope Design (Jabatan Kerja Raya Malaysia)</li> </ul>  |
| 36 | 2.5.3 On-site conservation of natural resources           | <ul style="list-style-type: none"> <li>• Akta Penyiasatan Kajibumi 1974</li> <li>• Environmental Quality Act (EQA)</li> <li>• EIA Order 1987</li> </ul>  |
| 37 | 3.1.1 Consultation with nature conservation organisations | <ul style="list-style-type: none"> <li>• International Union for Conservation of Nature (IUCN) (<a href="https://www.iucn.org">https://www.iucn.org</a>)</li> <li>• Guidelines for species conservation planning, (<a href="https://portals.iucn.org/library/sites/library/files/documents/2017-065.pdf">https://portals.iucn.org/library/sites/library/files/documents/2017-065.pdf</a>)</li> <li>• List of NGOs by MENGO/other relevant parties</li> </ul> |
| 38 | 3.2.1 Biodiversity study                                  | <ul style="list-style-type: none"> <li>• National Policy on Biodiversity by Ministry of Natural Resources and Environment, Malaysia</li> </ul>   |
| 39 | 3.2.2 High Conservation Value Area                        | <ul style="list-style-type: none"> <li>• Garis Panduan Perancangan Pemuliharaan dan Pembangunan (GPPPP) Kawasan Sensitif Alam Sekitar (KSAS)</li> <li>• National Policy on Biodiversity by Ministry of Natural Resources and Environment, Malaysia</li> <li>• High Conservation Value Forests (HCVF) Toolkit for Malaysia</li> </ul>   |
| 40 | 3.2.3 Preservation of protected and endangered species    | <ul style="list-style-type: none"> <li>• Akta Perlindungan Hidupan Liar 1972 [Akta 76].</li> <li>• Akta Pemuliharaan Hidupan Liar 2010 [Akta 716]</li> <li>• Akta Perhutanan Negara 1984 (Akta 313 dan 314)</li> <li>• Wildlife Management Plan</li> </ul>   |

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|    |  | <ul style="list-style-type: none"> <li>• Approvals and/or agreement with PERHILITAN</li> </ul>   |
| 41 | 3.2.4 Ecology Management Programme                                 | <ul style="list-style-type: none"> <li>• Akta Perlindungan Hidupan Liar 1972 [Akta 76].</li> <li>• Akta Pemuliharaan Hidupan Liar 2010 [Akta 716]</li> <li>• Akta Perhutanan Negara 1984 (Akta 313 dan 314)</li> </ul>   |
| 42 | 3.2.5 Creation of wildlife habitats                                | <ul style="list-style-type: none"> <li>• Wildlife Conservation Enactment 1997</li> </ul>   |
| 43 | 3.2.6 Particular structures or facilities for wildlife liveability | <ul style="list-style-type: none"> <li>• Wildlife Conservation Enactment 1997</li> </ul>   |
| 44 | 3.2.7 Restoring range of biodiverse habitat                        | <ul style="list-style-type: none"> <li>• Wildlife Conservation Enactment 1997</li> </ul>   |
| 45 | 3.3.1 Protection of water bodies                                   | <ul style="list-style-type: none"> <li>• Manual Saliran Mesra Alam (MSMA) and other relevant Department of Irrigation and Drainage (DID) Guidelines</li> <li>• Environmental Quality Act, 1974. (Act 127)</li> <li>• Erosion and Sediment Control Plans (ESCP) Guideline</li> <li>• Water Industrial Act</li> <li>• State Water Authority</li> </ul>   |
| 46 | 3.3.2 Potential pollution avoidance                                | <ul style="list-style-type: none"> <li>• ISO EMS 14001 and Risk Management Plan</li> <li>• Manual Saliran Mesra Alam (MSMA) and other relevant Department of Irrigation and Drainage (DID) Guidelines</li> <li>• Environmental Quality Act (EQA), 1974. (Act 127)</li> <li>• Badan Kawal Selia</li> <li>• ESCP Guideline</li> <li>• Water Industrial Act</li> <li>• State Water Authority</li> </ul> |
| 47 | 3.3.3 Impact monitoring mechanism                                  | <ul style="list-style-type: none"> <li>• Environmental Quality Act (EQA) 1974</li> </ul>   |
| 48 | 3.3.4 Sustainable drainage systems                                 | <ul style="list-style-type: none"> <li>• Manual Saliran Mesra Alam (MSMA)</li> </ul>   |
| 49 | 3.3.5 Managing potential overland flow at source                   | <ul style="list-style-type: none"> <li>• Manual Saliran Mesra Alam (MSMA)</li> </ul>   |
| 50 | 3.3.6 Quality of water   | <ul style="list-style-type: none"> <li>• Standards on Water quality by Department of Environment (DOE), National Water Services Commission (SPAN)</li> <li>• National Lake Water Quality Standard – NAHRIM</li> <li>• Environmental Quality Act (EQA), 1974. (Act 127)</li> <li>• Environmental Impact Assessment (EIA)</li> </ul>   |
| 51 | 3.3.7 Effluent water quality                                       | <ul style="list-style-type: none"> <li>• EQ (Sewage and Industrial Effluents) Regulations 2009</li> <li>• Suruhanjaya Perkhidmatan Air Negara (SPAN)</li> </ul>  |
| 52 | 3.3.8 Future resilience and adaptation of flood                    | <ul style="list-style-type: none"> <li>• Flood map can be obtained from National Register of River Basin, Department of Irrigation and Drainage Malaysia (DID)</li> <li>• National Hydraulic Research Institute of Malaysia (NAHRIM) - Hydroclimate projection</li> </ul>  |
| 53 | 3.4.1 Efficient use of treated water                               | <ul style="list-style-type: none"> <li>• EQ (Sewage and Industrial Effluents) Regulations 2009</li> <li>• Suruhanjaya Perkhidmatan Air Negara (SPAN)</li> </ul>  |
| 54 | 3.4.2 Water consumption during operation                           | <ul style="list-style-type: none"> <li>• EQ (Sewage and Industrial Effluents) Regulations 2009</li> <li>• Suruhanjaya Perkhidmatan Air Negara (SPAN)</li> </ul>  |

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| 55 | 3.4.3 Management of water usage from natural sources                        | <ul style="list-style-type: none"> <li>• Rainwater harvesting</li> </ul>  |
| 56 | 3.4.4 Embodied water  | <ul style="list-style-type: none"> <li>• ISO 14046 Environmental Management-Water Footprint</li> </ul>  |
| 57 | 3.5.1 The monitoring and management of air quality                          | <ul style="list-style-type: none"> <li>• A Guide to Air Pollutant Index in Malaysia</li> </ul>  |
| 58 | 3.5.2 Enhancement   | <ul style="list-style-type: none"> <li>• A Guide to Air Pollutant Index in Malaysia</li> </ul>  |
| 59 | 3.6.1 The monitoring and management of noise & vibration control            | <ul style="list-style-type: none"> <li>• Planning Guidelines for Environmental Noise Limits and Control</li> </ul>  |
| 60 | 3.6.2 Enhancement   | <ul style="list-style-type: none"> <li>• Planning Guidelines for Environmental Noise Limits and Control</li> </ul>  |
| 61 | 4.1.1 Material management efficiency  | <ul style="list-style-type: none"> <li>• Project Management Plan (PMP)</li> <li>• Industrialised Building System (IBS) Manual</li> </ul>  |
| 62 | 4.1.2 Control and utilise existing material at site                         | <ul style="list-style-type: none"> <li>• Project Management Plan (PMP)</li> </ul>   |
| 63 | 4.1.3 Re-use of surplus materials and use of material with recycled content | <ul style="list-style-type: none"> <li>• Policy Guidance on Resource Efficiency- OECD</li> </ul>  |
| 64 | 4.1.4 Timber source   | <ul style="list-style-type: none"> <li>• Policy Guidance on Resource Efficiency- OECD</li> </ul>  |
| 65 | 4.2.1 Material purchasing (green/regional)                                  | <ul style="list-style-type: none"> <li>• ISO 14040-2006 – Environmental Management – Life Cycle Assessment – Principles and Formworks</li> </ul>  |
| 66 | 4.2.2 Transportation  | <ul style="list-style-type: none"> <li>• ISO 14040-2006 – Environmental Management – Life Cycle Assessment – Principles and Formworks</li> </ul>  |
| 67 | 4.2.3 Movement of construction materials and waste                          | <ul style="list-style-type: none"> <li>• ISO 14040-2006 – Environmental Management – Life Cycle Assessment – Principles and Formworks</li> </ul>  |
| 68 | 4.3.1 Waste management plan   | <ul style="list-style-type: none"> <li>• MS 2673: Construction solid waste management</li> <li>• Environment Quality Act 1974</li> <li>• Environmental quality (schedule waste) 2017</li> <li>• Solid Waste &amp; Public Cleansing Management Act 2007 (Act672)</li> </ul>  |
| 69 | 4.3.2 Waste management execution  | <ul style="list-style-type: none"> <li>• MS 2673: Construction solid waste management</li> <li>• Environment Quality Act 1974</li> <li>• Environmental quality (schedule waste) 2017</li> <li>• Solid Waste &amp; Public Cleansing Management Act 2007 (Act672)</li> <li>• Akta Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 - Act 673 - JPSPN</li> </ul> |
| 70 | 4.3.3 Waste execution and monitoring  | <ul style="list-style-type: none"> <li>• MS 2673: Construction solid waste management</li> <li>• Environment Quality Act 1974</li> <li>• Environmental quality (schedule waste) 2017</li> </ul>   |

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|    |   | <ul style="list-style-type: none"> <li>• Solid Waste &amp; Public Cleansing Management Act 2007 (Act672)</li> <li>• Akta Perbadanan Pengurusan Sisa Pepejal dan Pembersihan Awam 2007 - Act 673 - JPSPN</li> </ul>   |
| 71 | 5.1.1 Compliance to best management policy or standards                         | <ul style="list-style-type: none"> <li>• Malaysia Standard MS 1525:2007 Code of Practice on Energy Efficiency and the use of Renewable Energy for Non-residential Buildings</li> <li>• Building Sector Energy Efficiency Project (BSEEP) Passive Design</li> <li>• Building Sector Energy Efficiency Project (BSEEP) Active Design</li> <li>• Other related Infrastructure Project standard and guidelines</li> </ul>  |
| 72 | 5.2.1 Plan to reduce energy consumption   | <ul style="list-style-type: none"> <li>• Malaysia Standard MS 1525:2007 Code of Practice on Energy Efficiency and the use of Renewable Energy for Non-residential Buildings</li> <li>• Minimum Energy Performance Standard (MEPS)</li> <li>• SIRIM ECO-Labeling Documents</li> <li>• Building Sector Energy Efficiency Project (BSEEP) Passive Design</li> <li>• Building Sector Energy Efficiency Project (BSEEP) Active Design</li> </ul>  |
| 73 | 5.2.2 Implementation of electrical and electronics (EE) features                | <ul style="list-style-type: none"> <li>• Malaysia Standard MS 1525:2007 Code of Practice on Energy Efficiency and the use of Renewable Energy for Non-residential Buildings</li> <li>• Minimum Energy Performance Standard (MEPS)</li> <li>• SIRIM ECO-Labeling Documents</li> <li>• Building Sector Energy Efficiency Project (BSEEP) Passive Design</li> <li>• Building Sector Energy Efficiency Project (BSEEP) Active Design</li> <li>• Electricity Supply Act 1990 [Act 447]</li> </ul> |
| 74 | 5.3.1 Construction Plant, Machinery & Equipment (PME) energy utilisation        | <ul style="list-style-type: none"> <li>• Malaysian Valuation Standards 13 Valuation of Plant, Machinery and Equipment</li> </ul>   |
| 75 | 5.3.2 Maintenance of Plant, Machinery & Equipment (PME)                         | <ul style="list-style-type: none"> <li>• Malaysian Valuation Standards 13 Valuation of Plant, Machinery and Equipment</li> </ul>   |
| 76 | 6.1.1 Effects of construction activities on local transportation/traffic system | <ul style="list-style-type: none"> <li>• JKR's Arahan Teknik Jalan 2A/85, 2B/85, 2C/85 and 2D/85</li> <li>• Arahan Teknik (Jalan) 23-03 - Guidelines on the Estimation Procedures for Traffic Management During Construction</li> <li>• Manual Penyediaan Traffic Management Plan (TMP)</li> </ul>   |
| 77 | 6.1.2 Effect of construction traffic on public network                          | <ul style="list-style-type: none"> <li>• JKR's Arahan Teknik Jalan 2A/85, 2B/85, 2C/85 and 2D/85</li> <li>• Arahan Teknik (Jalan) 23-03- Guidelines on the Estimation Procedures for Traffic Management During Construction</li> <li>• Manual Penyediaan Traffic Management Plan (TMP)</li> </ul>  |

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| 78 | 6.1.3 The implication of the completed project on transportation/traffic system | <ul style="list-style-type: none"> <li>• JKR's Arahan Teknik Jalan 2A/85, 2B/85, 2C/85 and 2D/85</li> <li>• Arahan Teknik (Jalan) 23-03- Guidelines on the Estimation Procedures for Traffic Management During Construction</li> <li>• Manual Penyediaan Traffic Management Plan (TMP)</li> </ul>   |
| 79 | 6.2.1 Project safety plan   | <ul style="list-style-type: none"> <li>• OHSAS 18001</li> <li>• MS 1722</li> <li>• ISO 45001</li> <li>• OSHA 1994</li> <li>• Factory and Machinery Act 1967, BOWEC</li> </ul>   |
| 80 | 6.2.2 SHASSIC implementation  | <ul style="list-style-type: none"> <li>• CIDB CIS 10: SAFETY AND HEALTH ASSESSMENT SYSTEM IN CONSTRUCTION</li> </ul>  |
| 81 | 6.2.3 Health Impact Assessment (HIA)  | <ul style="list-style-type: none"> <li>• Health Impact Assessment (HIA) Guides &amp; Tools-NCCHPP</li> </ul>  |
| 82 | 6.3.1 Consultation with stakeholder   | <ul style="list-style-type: none"> <li>• Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>• Manual Penyediaan Social Impact Assessment (SIA)</li> </ul>  |
| 83 | 6.3.2 Community engagement  | <ul style="list-style-type: none"> <li>• Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>• Manual Penyediaan Social Impact Assessment (SIA)</li> </ul>  |
| 84 | 6.3.3 Effect on local community   | <ul style="list-style-type: none"> <li>• Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>• Manual Penyediaan Social Impact Assessment (SIA)</li> </ul>  |
| 85 | 6.3.4 Access for non-motorised users  | <ul style="list-style-type: none"> <li>• Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>• Garis Panduan Perancangan Kejiranan Hijau</li> </ul>   |
| 86 | 6.3.5 Effect on non-motorised users   | <ul style="list-style-type: none"> <li>• Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>• Garis Panduan Perancangan Kejiranan Hijau</li> </ul>   |
| 87 | 6.3.6 Design for social responsibility and comfort                              | <ul style="list-style-type: none"> <li>• Akta Perancangan Bandar dan Desa 1976 (Akta 172)</li> <li>• Garis Panduan Perancangan Kejiranan Hijau</li> </ul>   |
| 88 | 6.4.1 Identify historic-cultural structures and features                        | <ul style="list-style-type: none"> <li>• Akta Warisan Kebangsaan 2005 (<a href="http://www.heritage.gov.my">www.heritage.gov.my</a>)</li> <li>• Heritage Impact Assessment Development - Town and Country Planning Act 1976 (Act 172)</li> <li>• Manual Penyediaan Laporan Cadangan Pemajuan by the Federal Department of Town and Country Planning, Peninsular Malaysia</li> <li>• Garis Panduan Perancangan Pemuliharaan dan Pembangunan Kawasan Sensitif Alam Sekitar, Warisan Kebudayaan dan Warisan Semulajadi (<a href="http://www.townplan.gov.my">www.townplan.gov.my</a>)</li> </ul> |
| 89 | 6.4.2 Preservation and protection of historic-cultural structures and features  | <ul style="list-style-type: none"> <li>• Akta Warisan Kebangsaan 2005 (<a href="http://www.heritage.gov.my">www.heritage.gov.my</a>)</li> <li>• Heritage Impact Assessment Development - Town and Country Planning Act 1976 (Act 172)</li> <li>• Manual Penyediaan Laporan Cadangan Pemajuan by the Federal Department of Town and Country Planning, Peninsular Malaysia</li> <li>• Garis Panduan Perancangan Pemuliharaan dan Pembangunan Kawasan Sensitif Alam Sekitar, Warisan</li> </ul>  |

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|  |  | Kebudayaan dan Warisan Semulajadi<br>( <a href="http://www.townplan.gov.my">www.townplan.gov.my</a> ) |
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