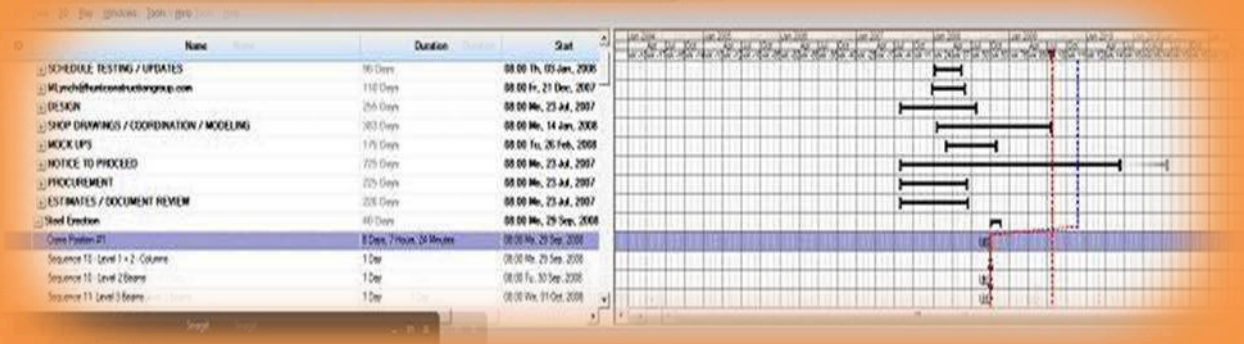
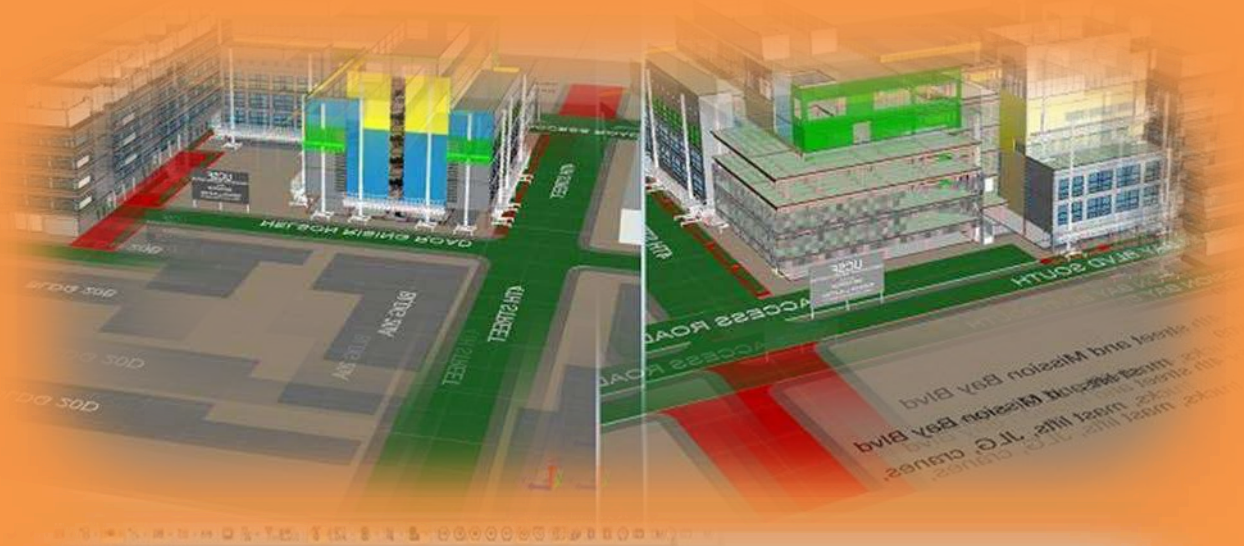


# WORK PROGRAM GUIDELINES

## PROJECT MANAGEMENT EXCELLENCE



Jabatan Kerja Raya Malaysia





---

## Document Information

<b>Document Title</b>	Work Program Guidelines
<b>Authorizing Authority</b>	Senior Director Cawangan Perancangan Aset Bersepadu (CPAB) JKR Malaysia
<b>Section</b>	Whole documents
<b>Contact Details</b>	Cawangan Perancangan Aset Bersepadu (CPAB) Ibu Pejabat JKR Malaysia Tingkat 28, Menara PJD No. 50, Jalan Tun Razak 50400 Kuala Lumpur Malaysia +603 – 2610 8888 (General Line)
<b>Version</b>	No. 1 - July 2014 No. 2 – August 2020

---



**THIS PAGE INTENTIONALLY LEFT BLANK**

## CONTENTS

PREFACE .....	1
1.0 Introduction to Work Program Guidelines.....	2
2.0 Overview on Work Program .....	3
3.0 Elements Of Developing Work Program.....	4
4.0 Schedule Components .....	6
5.0 Format Of Work Program For Submission .....	6
6.0 Schedule Conformance Assessment .....	7
6.1 Assessing Work Program – Planning Stage.....	7
6.2 Assessing Work Program – Progress Stage .....	7
6.3 Assessing Work Program – Revision Stage .....	7
Appendix A .....	8
Scheduling Components .....	8
Appendix B .....	14
Checklist for Assessing Work Program – Planning Stage .....	14
Appendix C .....	24
Checklist for Assessing Work Program – Progress Stage.....	24
Appendix D .....	25
Checklist for Assessing Work Program – Revision Stage .....	25



**THIS PAGE INTENTIONALLY LEFT BLANK**

## **PREFACE**

This guideline is based on Project Management Book of Knowledge (PMBok) and the Practice Standard for Scheduling by the Project Management Institute (PMI), USA. It is adapted to the introduction and development of Work Program particularly in Jabatan Kerja Raya Malaysia.

This guideline serves as reference to: -

- Develop Work Program.
- Evaluate Work Program for approval.

This guideline contains the:

- Steps involved in developing a Work Program;
- Format of Work Program submitted for approval.
- Work Program components and items that needs to be included in a Work Program;
- Checklist for assessing Work Program submitted by contractors/consultant during planning, progress and revision stage.

## 1.0 INTRODUCTION TO WORK PROGRAM GUIDELINES

Project management is one of JKR core business. In this aspect, JKR promised to deliver the projects on time, within budget and with the specified quality. To achieve this, project management best practices is being inculcated within JKR working environment.

Project schedule management is the core function of project management whereby any changes in time will affect the success of the project. Project schedule management includes the processes required to accomplish timely completion of the project. One of the tools being used to achieve this objective is Work Program.

Work Program describes the work to be done, who will undertake the work (resources) and when it should be done. The benefits of having a Work Program are:

- project planning and strategic analysis;
- encourages detailed thinking and planning;
- improves communication;
- provides a target;
- gives indication when you are off track;
- managing time, cost and resources effectively;
- detects problems at early stage – to prevent, minimize and/or mitigate the impact of schedule problems on the completion of the project; and
- enables project manager to control the project.

## 2.0 OVERVIEW ON WORK PROGRAM

The purpose of the Work Program is to provide a useful 'road map' that can be used by the project manager and the project team to:

- Plan, monitor, and control the timely execution of the work, from the day the project commences through each of its phases to successful completion;
- Track and monitor the progress of the project;
- Manage resources more smoothly;
- Identify and monitor dependencies and constraints between tasks to prevent unnecessary delays; and
- Communicate more frequently and effectively with stakeholders.

Establishing a realistic and achievable Work Program is one of the critical initial actions in setting up a project.

The Work Program provides a graphical representation of predicted tasks, milestones, dependencies, resource requirements, task duration and deadlines. The Work Program should be detailed enough to show each Work Breakdown Structure (WBS) task to be performed, the resources responsible for completing the task, the start and end date of each task, and the expected duration of the task.

Failure to meet schedule goals is most often due to unrealistic deadlines, passive project execution, unforeseen problems, or things overlooked in the plan.



### 3.0 ELEMENTS OF DEVELOPING WORK PROGRAM

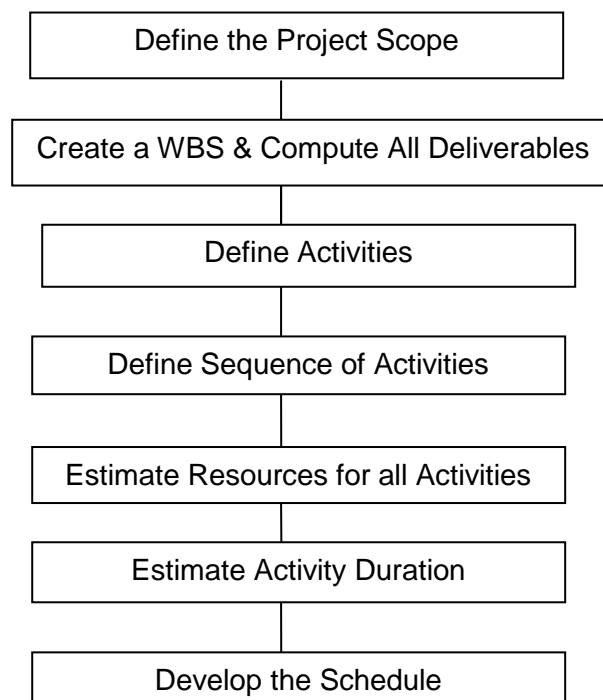
No.	Process	Description
1.	Define the Project Scope	Obtain a clear picture of what the scope, deliverables and tasks of the project.
2.	Create WBS and Capture All Deliverables	Subdividing the major project deliverables and project work into smaller and more manageable components.
3.	Define Activities	Identifying the specific schedule activities that need to be performed to produce the various project deliverables inclusive of risk mitigation measures. It should have enough detail to reduce the risk of forgetting important steps.
4.	Define Sequence of Activities	<ul style="list-style-type: none"><li>• Arrange the tasks in sequence according to general arrangement and methods of construction (horizontally and vertically).</li><li>• Identify and document the logical relationships among the scheduled activities.</li></ul>
5.	Estimate Resources for All Activities	Estimating the type and quantities of resources required to perform each scheduled activities.
6.	Estimate Activity Duration	Estimating the time needed to complete each scheduled activities (e.g. parametric estimating - based on productivity rates and quantity of work).

7.	Develop the Schedule	Analyzing activity sequences, durations, resource requirements, schedule constraints and other processes to produce the final project schedule.
8.	Cost Estimate and Budget	Estimating and distributing the cost to WBS according to item cost in the BQ.

A Work Program consists of a table of activities with their scheduled dates when activities and milestones are to take place. In the project management profession, Work Programs are used to guide the execution of the project as well as to communicate to all stakeholders when certain activities and events are expected to happen.

Successful completion of a project is heavily dependent on effective planning. A project plan allows you to complete a project within a specified timeline and a specified budget. The Work Program provides an outline structure to the project. In short, a Work Program tells us how much time a project or any part of it will take.

The main steps in developing a Work Program are as below:



**Table 1: Description of Process**

## 4.0 SCHEDULE COMPONENTS

The schedule component provides a detailed categorized list of the potential components of a scheduling.

Some guidance is given on those components that are required for JKR projects but the project manager may add more components if the need arises, please refer to Appendix A.

## 5.0 FORMAT OF WORK PROGRAM FOR SUBMISSION

For all JKR projects, Work Program submitted (soft and hard copies) should consist of the followings items:

Components	Items To Be Included
Gantt Table	ID, Indicators, WBS Code/ID, Task Name, Duration (days), Start Date, Finish Date, Predecessor, Successor, Resource name, Cost, Total Float
Gantt Bar	Bar, link, resource name, milestone
Identification of Critical Activities (critical activities should be in red color)	<u>Gantt Table</u> ID, Indicator, WBS, Task name, Duration, Start Date, Finish Date, Predecessor, Total Float/Slack <u>Gantt Bar</u> Bar, Link, Resource name <u>Network Diagram</u> Critical activities, critical path, relationship.

**Table 2: Format of Work Program Submission**

## 6.0 SCHEDULE CONFORMANCE ASSESSMENT

### 6.1 Assessing Work Program – Planning Stage

Assessment of the Work Program during the planning stage for approval.

**Appendix B** indicates the items required to ensure the Work Program is adequate and can be used for monitoring. Once approved, the Work Program will be the Baseline Work Program on which the monitoring and control of the project is based on.

Generation of the financial and physical S-Curve for the project must be from the approved baseline program.

### 6.2 Assessing Work Program – Progress Stage

At this stage the contractor will submit the Work Program showing the progress of the work.

Project Team shall verify the correctness / integrity/ authenticity Updated Work Program submitted.

The guide is as in **Appendix C**.

### 6.3 Assessing Work Program – Revision Stage

Whenever the need arises to revise the Work Program due to delay or EOT, then the contractor/consultant shall revise the Work Program.

Once approved, the Work Program will become the new baseline program on which the monitoring and control of the project is based on.

The guide is as in **Appendix D**.

## Appendix A

### Scheduling Components

Category	Components	Required/Optional	Remark
Calendar	Activity Calendar	Optional	Project Calendar for JKR project must be based on the Government working days.
	Project Calendar	Required	
	Resource Calendar	Optional	
Constraint	Expected Finish	Optional	<b>Not allowed</b> unless with prior approval from SO/PD. Constraint in the program does not reflect the true situation of the project.
	Finish Not Earlier Than	Optional	
	Finish Not Later Than	Optional	
	Finish On	Optional	
	Mandatory Finish Date	Optional	
	Mandatory Start Date	Optional	
	Project Start Constraint	Optional	
	Project Finish Constraint	Optional	
	Start Not Earlier Than	Optional	
	Start Not Later Than	Optional	
	Start On	Optional	

Category	Components	Required/Optional	Remark
Duration	Actual Duration	Required	Tasks shall be less than one month (20 working days) in duration.
	Baseline Duration	Required	
	Remaining Duration	Optional	
	Actual Duration	Required	
	Baseline Duration	Required	
	Project Remaining Duration	Optional	
	Project Target Duration	Optional	
	Total Duration	Optional	
Finish Date	Actual Finish	Required	
	Baseline Finish	Required	
	Finish	Required	
	Early Finish	Optional	
	Late Finish	Optional	
Percent Complete	Percent Complete	Required	
	Physical Percent Complete	Optional	
	Work Percent Complete	Optional	

Category	Components	Required/Optional	Remark
Relationship	Finish to Finish	Optional	<ul style="list-style-type: none"> <li>Based on the method statement and method of construction proposed.</li> <li>There will be no loose ends in the scheduling logic (every task and milestone will have a predecessor except the project start milestone; every task and milestone will have a successor except the project end milestone).</li> <li>Any of use of start-to-start, start-to-finish, and finish-to-finish scheduling logic will be accompanied by an explanation; generally, this logic is discouraged.</li> </ul>
	Finish to Start	Required	
	Start to Finish	Optional	
	Start to Start	Optional	

Category	Components	Required/Optional	Remark
Resource	Resource Sheet	Required	<ul style="list-style-type: none"> <li>For construction scheduling, the resources should be determined by the contractor, but JKR Project Managers must check to ensure resources are adequate to meet project requirements.</li> <li>Resources, work and scheduling logic shall never be associated with summary elements in the WBS; they shall be tied to tasks and milestones only.</li> </ul>
	Resource Assignment	Required	
	Resource Availability	Optional	
	Resource Description	Optional	
	Resource ID	Optional	
	Resource Lag	Optional	
	Resource Leveling	Optional	
	Resource Library\Dictionary	Optional	
	Resource Rates/Prices	Optional	
Start Date	Start	Required	
	Baseline Start	Required	
	Actual Start	Required	
	Early Start	Optional	
	Late Start	Optional	



Category	Components	Required/Optional	Remark
Miscellaneous	Activity Code	Optional	<ul style="list-style-type: none"> <li>More than one critical path indicates that the Work Program needs to be re-planned.</li> <li>Project start and project finish in the contract to be indicated as Milestones.</li> <li>Duration unit: days.</li> <li>The contractor shall be required to update the progress of work weekly/monthly or as instructed by the SO in order to detect task slippage early.</li> <li>Every project deliverable should appear by name in the Work Breakdown Structure (WBS).</li> </ul>
	Activity Cost Estimate	Optional	
	Activity Effort	Optional	
	Activity ID	Required	
	Activity Label	Optional	
	Activity Scope Definition	Optional	
	Assigned Quantity	Optional	
	Baseline Data Date	Optional	
	Critical Path	Required	
	Custom Field	Optional	
	Data Date	Optional	
	Earned Value	Optional	
	Estimate at Completion (EAC)	Optional	
	Estimate to Complete (ETC)	Optional	
	Lag	Optional	
	Lead	Optional	
	Milestone	Required	
	Project Description	Optional	
	Project Manager	Optional	
	Project Name	Required	
	Work Program ID	Optional	

Category	Components	Required/Optional	Remark
	Project Version	Optional	<ul style="list-style-type: none"> <li>The WBS will be hierarchical, with each level of the hierarchy generally containing between three and seven sub items.</li> <li>The primary goal of the WBS will be to organize the work so it is clear to stakeholders and completely defined.</li> </ul>
	Summary Activity	Required	
	Unit of Measure	Optional	
	Update Cycle	Optional	
	WBS ID	Required	
Float / Slack	Free Float / Slack	Optional	Float/ slack can be used to verify/ confirm the critical activities.
	Total Float/Slack	Required	

## Appendix B

### Checklist for Assessing Work Program – Planning Stage

Project Management Process	Elements	What To Look For / Best Practice
<b>Scope Definition</b>	Project Name	In the Project Properties, name should be the same name as in the contract.
	Project Start Date or Finish Date	Start and finish date must be the same as in the contract date.
	Scheduling Pattern	Check whether Forward or Backward Scheduling – Ensure forward scheduling is used. This will determine the way of scheduling and planning.
	Project File Name, Folder Name, Revision No.	<ul style="list-style-type: none"> <li>Project file name should contain Project Name for ease of documentation and search.</li> <li>Revision numbering to be agreed between JKR and contractor and should include date revised.</li> </ul>
	Type of Software and version to run the file	Use the latest version of planning software as approved by SO.
<b>Create WBS</b>	WBS List	<ul style="list-style-type: none"> <li>Includes all schedule activities that need to be performed to produce the various project deliverables.</li> <li>WBS must be measurable and manageable.</li> </ul>

Project Management Process	Elements	What To Look For / Best Practice
<b>Create WBS</b>	WBS Level	<ul style="list-style-type: none"> <li>▪ Deliverables should be broken down to minimum level of Work Package.</li> <li>▪ Every single group of work (summary task) will have different level of WBS.</li> </ul>
	WBS Coding System	
	WBS has been created completely by expanding all sub-tasks	
	Work Package	Acceptance Criteria for the lowest level of each WBS must be measurable and manageable, i.e. duration, cost and resource can be easily assigned to the work package.
	Work Attributes	<p>There are generally two categories:</p> <ul style="list-style-type: none"> <li>▪ Physical (Contribute to the physical progress);</li> <li>▪ Supporting or Level of Effort (LOE) [Contribute financially, but would not affect the physical progress] e.g. maintenance of site office, inspection &amp; testing, progress report.</li> </ul>
	Total Work Package = Works defined in the Contract Documents	Ensure no work is left out.

Project Management Process	Elements	What To Look For / Best Practice
<b>Create WBS</b>	<p>WBS Attributes can be classified as</p> <ul style="list-style-type: none"> <li>▪ Summary Tasks</li> <li>▪ Sub-Tasks</li> <li>▪ Milestones (has zero duration)</li> <li>▪ Recurring Tasks</li> <li>▪ Tasks with the Split</li> <li>▪ Tasks with the Constraints</li> </ul>	<p>Ensure:</p> <ul style="list-style-type: none"> <li>▪ Milestone has zero duration.</li> <li>▪ External dependencies such as supply of services (e.g. electrical, water, gas and etc.) and land acquisition to be identified and can be created as milestone.</li> <li>▪ Identify Recurring Tasks such as monthly site meeting and monthly progress report.</li> <li>▪ Split task is not allowed for JKR projects. If not, justification is needed.</li> <li>▪ Any constraints on task is not allowed (except ASAP and Recurring Task).</li> </ul>
	<p>Long Lead Items:</p> <ul style="list-style-type: none"> <li>▪ Proposal</li> <li>▪ Approval</li> <li>▪ Design</li> <li>▪ Fabrication</li> <li>▪ Supply</li> <li>▪ Testing (Factory Acceptance Testing)</li> <li>▪ Delivery/Installation</li> <li>▪ Testing &amp; Commissioning</li> <li>▪ Preliminary, Provision Sum, Design Elements – Identify the WBS level</li> </ul>	<p>Decide whether procurement components to be included or not, depending on how it affect the progress of work. This may apply to Equipment, Material, Tools, Machinery and etc.</p>

Project Management Process	Elements	What To Look For / Best Practice
<b>Activity Sequencing</b>	Method Statement	Ensure all supporting documents are submitted. These documents indicate the contractors plan to carry out the Project Works. It should be the basis to check for completeness and logic of activity sequencing.
	Method of Construction	
	Shop Drawing	
	Work Procedures	
	Predecessors	<ul style="list-style-type: none"> <li>Every task must have a predecessor, except the Project Start and recurring tasks.</li> <li>Every task must have a successor, except the Project Finish Date and recurring tasks.</li> </ul>
	Successors	
	Link Type: Finish-Start (FS), Start-Start (SS), Finish-Finish (FF), Start-Finish (SF)	Lead and lag time must be logic and realistic according to the sequence of work.
	Task Constraints	<ul style="list-style-type: none"> <li>Check for constraints imposed on certain work (indicators column).</li> <li>Query on constraints and take appropriate action.</li> </ul>
	Network Diagram	Check continuity of linkages from Project Start to Project Finish to ensure true Critical Paths.
	Linking Pattern: sub-task to sub-task, sub-task to summary task, sub-task to milestones and etc.	<p>Ensure there is <b>NO</b> linking to summary tasks.</p> <p>Ensure all links pattern are logic.</p>

Project Management Process	Elements	What To Look For / Best Practice
<b>Activity Resource Planning</b>	Resource List (Type, Group, Maximum Numbers in project, job functions)	<ul style="list-style-type: none"> <li>Check contractor's resource plan for adequacy of resource allocation, realistic productivity rates, etc.</li> <li>This is meant to check for Activity Duration Estimate only.</li> </ul>
	Resource Allocation (assign resource to the task)	<ul style="list-style-type: none"> <li>Use resource allocation to estimate the duration of work, to determine the resource's responsibility and cost estimation for that particular work.</li> <li>Check that all activities (at work package level) are assigned with appropriate resources except recurring tasks.</li> <li>Resource should not be assigned to summary tasks.</li> </ul>
<b>Activity Duration Estimate</b>	Activity Duration Estimate (ADE) table: <ol style="list-style-type: none"> <li>Quantity of work</li> <li>Risk identification at Work Package level</li> <li>Duration entry only to Sub-Task level</li> <li>In default, it means:               <ul style="list-style-type: none"> <li>1 Day = 8 hours</li> <li>1 week = 5 days</li> <li>1 month = 20 days</li> </ul> </li> </ol>	<ul style="list-style-type: none"> <li>Contractor/ consultant should be able to explain the basis of the estimate submitted.</li> <li>Check quantity of work is as in Bill of Quantities.</li> <li>Risk should be considered during duration estimation (e.g. time lapse needed for test result, etc.).</li> <li>Standardize unit of duration to 'day'. Duration in 'weeks' may</li> </ul>

Project Management Process	Elements	What To Look For / Best Practice
Activity Duration Estimate		result in different finish date due to different interpretation of working days.
	Milestones	Ensure no tasks other than milestones or external dependencies is assigned with 'zero duration'. Important to indicate dates at Gantt Bar area.
	Duration for Summary Task will be gathered from the sub-tasks underneath.	Duration for summary task should not be 'typed in'. It is automatically calculated by the program if the WBS level is done correctly.
	Length of Working Duration	Length of working duration should not exceed one reporting period (for example, 20 days – for monthly reporting).
	Define Calendar a) Working Time (it can be Standard (8 hours working + 1-hour lunch), Night shift, 24 hours working, or else determined by the Contractor) b) Working Day and Non-Working Day including Public Holiday. c) Includes calendar days throughout contract duration.	<ul style="list-style-type: none"> <li>Working time should be the standard working time.</li> <li>Ensure contractor has allowed all public holidays.</li> </ul>



Project Management Process	Elements	What To Look For / Best Practice
<b>Schedule Development</b>	a) Initial Work Program b) Accepted Work Program c) Revised Work Program	Ensure program contains the required information as in Appendix A.
	Presentation Format – Gantt Chart (Gantt Table + Gantt Bar)	Printed copy should include information of project, such as: <ul style="list-style-type: none"> <li>▪ Project Name</li> <li>▪ Revision Number</li> <li>▪ Legend</li> <li>▪ File Name</li> <li>▪ Initial/Accepted/Updated Program</li> </ul> Softcopy shall be submitted in original scheduling software format
	Information in Gantt Table area (Refer screenshot 1a)	Ensure the table has the following items:  ID; Indicator; WBS Code; Task Name; Duration; Start; Finish; Predecessors; Successor; Resources; Cost / Contract Sum; Total Slack;
	Information in Gantt Bar area (Refer screenshot 1b)	Ensure the information in Gantt Bar area are as follow:  Summary Task; Sub-Task; Milestones; Critical / Non-Critical Activities

Project Management Process	Elements	What To Look For / Best Practice
<b>Schedule Development</b>	Working Logic	Ensure all tasks are linked from Project Start to Project Finish.
	Supporting Details	Ensure no negative float/ slack.
<b>Cost Budgeting</b>	Assigning Cost	<ul style="list-style-type: none"> <li>▪ The total cost assigned to all tasks must be equal to project's contract sum.</li> <li>▪ Cost shall be entered in Fixed Cost column (not at Total Cost column) at the task level.</li> <li>▪ Cost shall not be assigned for milestone and external dependency.</li> </ul>
	Financial S-Curve (x axis → time, y axis → cost (or converted to percentage))	Ensure that the Financial S-curve is generated from the Accepted Program.
	Study and analyze the Financial S-Curve to ensure the followings at high level (Overall Management): <ul style="list-style-type: none"> <li>i. Logic</li> <li>ii. Workability</li> <li>iii. Continuity (work contour)</li> <li>iv. Manageable and track able</li> </ul>	Ensure there is no front or back loading.

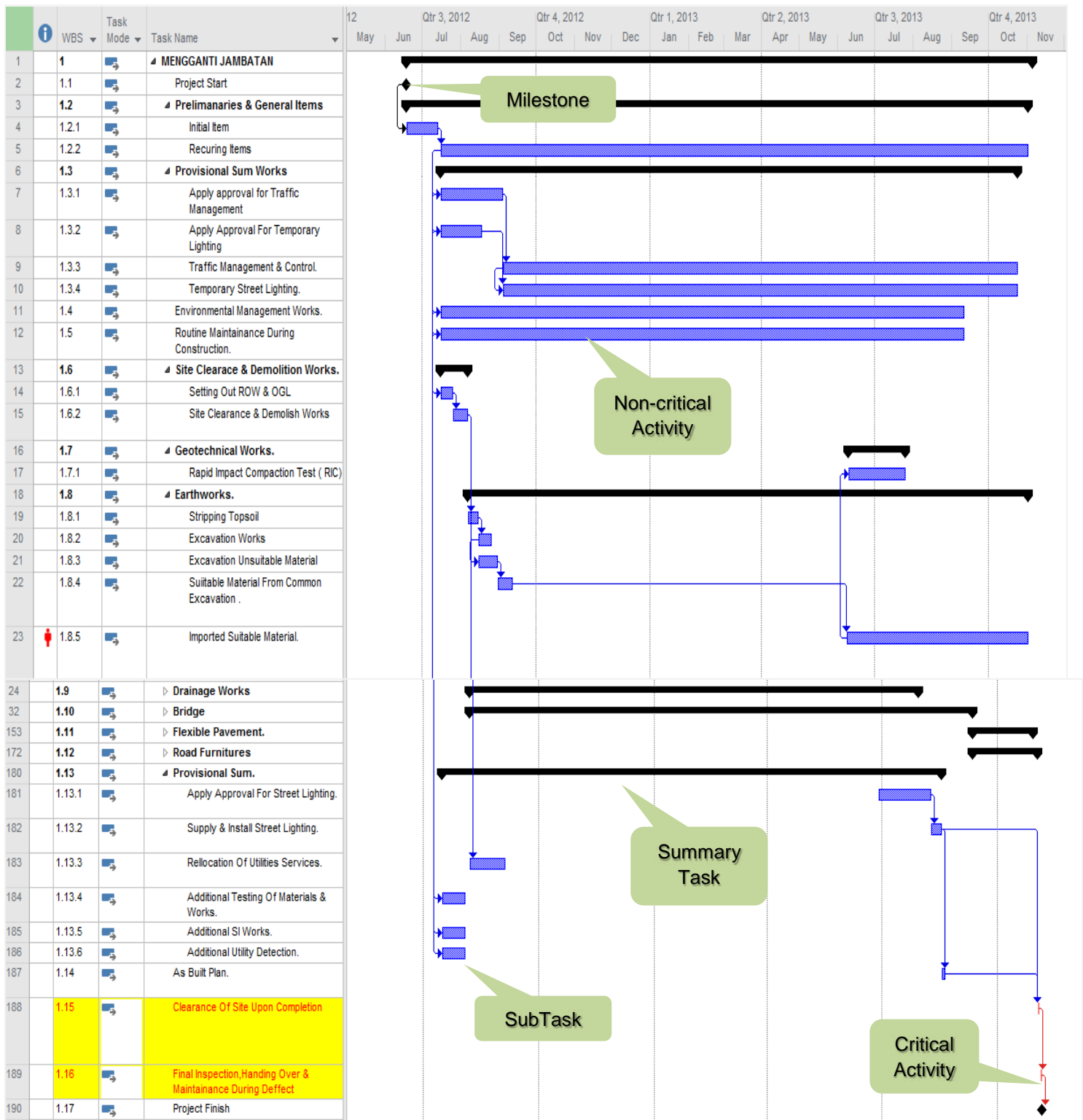


## Work Program Guidelines Jabatan Kerja Raya Malaysia



	i	WBS	Task Mode	Task Name	Duration	Start	Finish	Predecessors	Successors	Resource Names	Cost	Total Slack
1		1		▲ MENGGANTI JAMBATAN	338 days	Mon Jun 18, '12	Mon Nov 4, '13				RM4,262,573.75	0 days
2		1.1		Project Start	0 days	Mon Jun 18, '12	Mon Jun 18, '12		4SS		RM0.00	1 day
3		1.2		▲ Preliminaries & General Items	337 days	Mon Jun 18, '12	Fri Nov 1, '13				RM263,766.20	1 day
4		1.2.1		Initial Item	20 days	Mon Jun 18, '12	Fri Jul 13, '12	2SS	5		RM37,766.20	1 day
5		1.2.2		Recurring Items	317 days	Mon Jul 16, '12	Fri Nov 1, '13	4	7SS,11SS		RM226,000.00	1 day
6		1.3		▲ Provisional Sum Works	310 days	Mon Jul 16, '12	Wed Oct 23, '13				RM150,000.00	8 days
7		1.3.1		Apply approval for Traffic Management	30 days	Mon Jul 16, '12	Mon Sep 3, '12	5SS	8SS,9		RM0.00	8 days
8		1.3.2		Apply Approval For Temporary Lighting	25 days	Mon Jul 16, '12	Fri Aug 17, '12	7SS	4SS,18SS,186SS		RM0.00	11 days
9		1.3.3		Traffic Management & Control.	280 days	Tue Sep 4, '12	Wed Oct 23, '13	7	10SS		RM100,000.00	8 days
10		1.3.4		Temporary Street Lighting.	280 days	Tue Sep 4, '12	Wed Oct 23, '13	8,9SS	25SS		RM50,000.00	8 days
11		1.4		Environmental Management Works.	280 days	Mon Jul 16, '12	Tue Sep 10, '13	5SS	12SS		RM104,828.00	2 days
12		1.5		Routine Maintenance During Construction.	280 days	Mon Jul 16, '12	Tue Sep 10, '13	11SS	14SS		RM21,544.00	2 days
13		1.6		▲ Site Clearance & Demolition Works.	16 days	Mon Jul 16, '12	Mon Aug 6, '12				RM21,512.00	2 days
14		1.6.1		Setting Out ROW & OGL	9 days	Mon Jul 16, '12	Wed Jul 25, '12	12SS	15	Survey Team 1	RM6,000.00	2 days
15		1.6.2		Site Clearance & Demolish Works	10 days	Thu Jul 26, '12	Mon Aug 6, '12	14	19,26,183,33	Backhore 1, Excavator 1[0.5],Lorry	RM15,512.00	2 days
16		1.7		▲ Geotechnical Works.	30 days	Mon Jun 10, '13	Thu Jul 25, '13				RM219,470.00	51 days
17		1.7.1		Rapid Impact Compaction Test ( RIC)	30 days	Mon Jun 10, '13	Thu Jul 25, '13	23SS	163		RM219,470.00	51 days
18		1.8		▲ Earthworks.	301 days	Tue Aug 7, '12	Fri Nov 1, '13				RM415,053.00	1 day
19		1.8.1		Stripping Topsoil	7 days	Tue Aug 7, '12	Tue Aug 14, '12	15	20	Excavator 1	RM4,606.50	176 days
20		1.8.2		Excavation Works	10 days	Wed Aug 15, '12	Sat Aug 25, '12	19	21SS	Rxcavator 1	RM2,145.00	176 days
21		1.8.3		Excavation Unsuitable Material	14 days	Wed Aug 15, '12	Thu Aug 30, '12	20SS	22	Excavator 1	RM240.00	176 days
22		1.8.4		Suitable Material From Common Excavation .	10 days	Fri Aug 31, '12	Tue Sep 11, '12	21	23	Excavator 1, Compactor 25 Ton 1, Back Pusher 1	RM217.50	181 days
23		1.8.5		Imported Suitable Material.	126 days	Sat Jun 8, '13	Fri Nov 1, '13	22,137	25SS,17SS	Back Pusher 1, Compactor 25 Ton 1, Lorry 1, Lorry 2 Lorry 3	RM407,844.00	1 day
24		1.9		▷ Drainage Works	233 days	Tue Aug 7, '12	Mon Jul 29, '13				RM51,777.00	31 days
32		1.10		▷ Bridge	264 days	Tue Aug 7, '12	Tue Sep 10, '13				RM1,290,861.80	0 days
153		1.11		▷ Flexible Pavement.	33 days	Wed Sep 11, '13	Mon Oct 28, '13				RM1,064,295.55	0 days
172		1.12		▷ Road Furnitures	37 days	Wed Sep 11, '13	Fri Nov 1, '13				RM195,943.60	0 days
180		1.13		▲ Provisional Sum.	263 days	Mon Jul 16, '12	Fri Aug 16, '13				RM440,000.00	11 days
181		1.13.1		Apply Approval For Street Lighting.	30 days	Fri Jun 28, '13	Thu Aug 8, '13	143	182		RM0.00	52 days
182		1.13.2		Supply & Install Street Lighting.	6 days	Fri Aug 9, '13	Fri Aug 16, '13	181	187,188		RM50,000.00	52 days
183		1.13.3		Relocation Of Utilities Services.	14 days	Tue Aug 7, '12	Mon Sep 3, '12	15	155		RM300,000.00	250 days
184		1.13.4		Additional Testing Of Materials & Works.	14 days	Mon Jul 16, '12	Thu Aug 2, '12	8SS	36		RM20,000.00	11 days
185		1.13.5		Additional SI Works.	14 days	Mon Jul 16, '12	Thu Aug 2, '12	8SS	36		RM20,000.00	11 days
186		1.13.6		Additional Utility Detection.	14 days	Mon Jul 16, '12	Thu Aug 2, '12	8SS	36		RM50,000.00	11 days
187		1.14		As Built Plan.	2 days	Sat Aug 17, '13	Mon Aug 19, '13	182	188	Survey Team 1, Draftman 1	RM5,000.00	52 days
188		1.15		Clearance Of Site Upon Completion	1 day	Sat Nov 2, '13	Sat Nov 2, '13	5,176,187,182,179	189	Lorry 1,Backhore 1, General Worker 1, General Worker 2, General Worker 3	RM3,000.00	0 days
189		1.16		Final Inspection,Handing Over & Maintenance During Defect	1 day	Mon Nov 4, '13	Mon Nov 4, '13	188	190		RM15,522.60	0 days
190		1.17		Project Finish	0 days	Mon Nov 4, '13	Mon Nov 4, '13	189			RM0.00	0 days

**Screenshot 1(a): Sample Template of Initial Work Program (Gantt Chart)**



**Screenshot 1(b): Sample Template of Initial Work Program (Gantt Bar)**

## Appendix C

### Checklist for Assessing Work Program – Progress Stage

Project Management Process	Elements	What To Look For / Best Practice
<b>Project Monitoring</b>	Baseline	Check whether the baseline is as per accepted baseline.
	Status Date	Check the status date whether it is as per request.
	Scheduled Progress (Financial, Physical, Work)	<ul style="list-style-type: none"> <li>Check the schedule progress based on the status date.</li> <li>Shall be updated based on accepted baseline.</li> <li>Additional columns shall be created to store schedule data.</li> </ul>
	Actual Progress Tracking (Financial, Physical)	<ul style="list-style-type: none"> <li>Ensure actual start and finish dates are updated after updating % complete.</li> <li>Shall be verified by the Supervision Team.</li> </ul>
	Identify Variances (Financial, Physical, Finish)	<ul style="list-style-type: none"> <li>Check cost variance (financial)</li> <li>Check duration variance (physical)</li> <li>Check finish variance (Project finish date)</li> </ul>
	Gantt Chart view (all 6 columns are mandatory for monitoring of progress)	<ul style="list-style-type: none"> <li>Actual Start</li> <li>Actual Finish</li> <li>Schedule %</li> <li>Actual %</li> <li>Schedule Cost</li> <li>Actual Cost</li> </ul>

## Appendix D

### Checklist for Assessing Work Program – Revision Stage

Project Management Process	Elements	What To Look For / Best Practice
Revision of Work Program	Revision due to change in scope	<ul style="list-style-type: none"><li>▪ Ensure correction, improvement &amp; re-planning of schedule is carried out, the process shall be repeated as in Appendix B.</li><li>▪ Program to be saved as new baseline.</li></ul>
	Revision due to change in project duration.	<ul style="list-style-type: none"><li>▪ Contractors shall propose based upon approved EOT.</li><li>▪ Program to be saved as new baseline.</li></ul>
	Revision due to contractor's delay (Recovery Plan).	<ul style="list-style-type: none"><li>▪ Check for schedule compression (fast tracking &amp; crashing) and overtime.</li><li>▪ Program to be saved as an extension to the existing baseline (e.g. Baseline 1_1)</li></ul>

Task Name	Baseline Start	Act. Start	Baseline Finish	Act. Finish	Schedule Physical	% Comp.	Schedule Cost	Act. Cost
[-] Projek Membina bangunan serbaguna Dan Pondok Pengawal JKR	Tue 01 03 11	NA	Wed 30 11 11	NA	40%	0%	RM495,000	RM0
Project Start	Tue 01 03 11	NA	Tue 01 03 11	NA	100%	0%	RM0	RM0
[-] Preliminaries	Tue 01 03 11	NA	Wed 30 11 11	NA	54%	0%	RM60,000	RM0
Performance Bonds & Insurance	Tue 01 03 11	NA	Wed 09 03 11	NA	100%	0%	RM10,000	RM0
Site Office	Thu 10 03 11	NA	Tue 15 03 11	NA	100%	0%	RM30,000	RM0
Setting Out	Thu 10 03 11	NA	Sun 20 03 11	NA	100%	0%	RM20,000	RM0
[+] Progress Report	Tue 01 03 11	NA	Tue 22 11 11	NA	50%	0%	RM0	RM0
CCC	NA	NA	Wed 30 11 11	NA	0%	0%	RM0	RM0
[+] External Works	Mon 21 03 11	NA	Thu 10 11 11	NA	30%	0%	RM35,000	RM0
[-] bangunan Serbaguna	Tue 24 05 11	NA	Tue 25 10 11	NA	29%	0%	RM110,000	RM0
Frame	Tue 24 05 11	NA	Sun 10 07 11	NA	100%	0%	RM60,000	RM0
Wall	Tue 05 07 11	NA	Tue 26 07 11	NA	56%	0%	RM16,800	RM0
Roof	Mon 11 07 11	NA	Mon 29 08 11	NA	14%	0%	RM5,600	RM0
Finnishes & Furniture	NA	NA	Mon 10 10 11	NA	0%	0%	RM0	RM0
Door & Windows	NA	NA	Tue 02 08 11	NA	0%	0%	RM0	RM0
Sanitary & Plumbing	Tue 05 07 11	NA	Thu 21 07 11	NA	69%	0%	RM27,600	RM0
[-] Electrical Works	NA	NA	Wed 19 10 11	NA	0%	0%	RM0	RM0
Wiring	NA	NA	Tue 20 09 11	NA	0%	0%	RM0	RM0
Lighting Switches & Powerpoints	NA	NA	Tue 04 10 11	NA	0%	0%	RM0	RM0
Fittings	NA	NA	Wed 19 10 11	NA	0%	0%	RM0	RM0
[-] Mechanical Works	NA	NA	Tue 25 10 11	NA	0%	0%	RM0	RM0
A.C & Ventilation Works	NA	NA	Tue 25 10 11	NA	0%	0%	RM0	RM0
Fire Protection Works	NA	NA	Mon 24 10 11	NA	0%	0%	RM0	RM0
[-] Pondok Pengawal	Tue 01 03 11	NA	Tue 02 08 11	NA	84%	0%	RM290,000	RM0
Land Acquisition	Tue 01 03 11	NA	Tue 01 03 11	NA	100%	0%	RM0	RM0
Frame	Tue 24 05 11	NA	Wed 29 06 11	NA	100%	0%	RM60,000	RM0
Wall	Thu 30 06 11	NA	Sun 17 07 11	NA	100%	0%	RM90,000	RM0
Roof	Thu 30 06 11	NA	Wed 20 07 11	NA	80%	0%	RM120,000	RM0
Door, Window & Finishes	NA	NA	Tue 02 08 11	NA	0%	0%	RM0	RM0
Minor Electrical & Mechanical Works	Thu 30 06 11	NA	Wed 13 07 11	NA	100%	0%	RM20,000	RM0
T&C	NA	NA	Tue 08 11 11	NA	0%	0%	RM0	RM0
Project Finish	NA	NA	Wed 30 11 11	NA	0%	0%	RM0	RM0

**Screenshot 2: Sample Template of Updated Work Program**



**THIS PAGE INTENTIONALLY LEFT BLANK**