

6. VALUE AND RISK MANAGEMENT INTEGRATION



6. VALUE AND RISK MANAGEMENT INTEGRATION

The integration of VM and Risk Management (RM) minimizes the concern that project value cannot be maximized unless the associated risks have been managed. Both methodologies are interrelated and complement each other in such a way that managing value can reduce project risks and managing risks provides opportunities to increase value. Both value and risk management are best managed in parallel and their integration through the project cycle may produce better results with optimum performance and quality.

Value is maximized through Value Management and its uncertainty is minimized through Risk Management

(Source: Dallas, 2006)

In the implementation of VE at Design Stage, JKR has taken initial steps to integrate RM and VE as follows:

- Project risks identification or risk review is incorporated as VE study output (in the form of Project Risks Register) so as to ensure that all associated risks are identified and suitable mitigation measures are initiated.
- VE recommendations are evaluated for their possible risks in terms of acceptability and control, should the recommendations be adopted.

The aim of integrating VM and RM is to achieve better value through the allocation of risk to the party who can manage them effectively. If project risk are not well managed, the project will face time, cost and quality overruns, thus affecting the viability of the project. Therefore, a fully integrated Value and Risk Management (VRM) will be considered together to deliver maximum benefits to projects. VRM best practices indicates that wherever possible, VRM process, tools and techniques need to be integrated with the existing VM practice. Table 6 illustrates an example of VRM in a typical value study job plan.

Table 6 – Risk Considerations in Value Study (Source: Thompson, 2004)

JOB PLAN PHASE	RISK CONSIDERATIONS
Information Phase	<ul style="list-style-type: none"> • Listing of known risks, issues, problems associated with the project. • Project may have been initiated as a result of a problem or a risk
Function Analysis Phase	<ul style="list-style-type: none"> • Some functions may address or be influenced by known risks
Creative Phase	<ul style="list-style-type: none"> • Ideas may address how to get around known or possible risks
Evaluation Phase	<ul style="list-style-type: none"> • Evaluation criteria should include risks items to eliminate ideas which have a very high risk associated with them
Development Phase	<ul style="list-style-type: none"> • Risk allowances associated with each proposal at all stages of a project, especially during the construction and operation and maintenance will give a better comparison of proposal during any cost / benefit analysis using whole life costing • Time implications
Presentation Phase	<ul style="list-style-type: none"> • The risk that not everyone will sign up to the preferred proposal and how to deal with it

7. INCENTIVISATION THROUGH VALUE ENGINEERING CHANGE PROPOSAL



7. INCENTIVISATION THROUGH VALUE ENGINEERING CHANGE PROPOSAL

In achieving maximum value enhancement in project, value should be continuously and consistently improved right through construction. At the construction stage, any value change proposal requires clear provision in the contract to allow the contractor's participation in further project optimisation. Thus, a formal mechanism known as Value Engineering Change Proposal (VECP) should be provided within the contract, which either allows the contractor to voluntarily suggest more economical methods of construction or requires the contractor to submit economical alternatives / methods to the government.

VECP is a provision in the contract which provides incentives to encourage the contractor to propose innovative modifications or changes during the course of construction to:

- accomplish the project functional requirements at a less cost
- improve project value or performance with no increase in cost
- accelerate project completion

In most cases, the VECP clause of any contract provides an incentive pay out to the contractor at a reasonable sharing rate from the net savings or cost reduction. As such, the incentive clause for VECP should be explicit in the conditions of contract, allowing the contractor to offer alternative proposals to the government. An example of such provision is Clause 13.2 of the FIDIC Condition of Contract for Construction (1999).

Within this context, it is timely for the government to consider incorporating such VECP clause(s) into the current contract provisions to promote creativity in the construction of public projects and to spur a more innovative constructing environment.

8. VALUE ENGINEERING TOOLS AND TECHNIQUES



8. VALUE ENGINEERING TOOLS AND TECHNIQUES

Pre Lab & Information Phase

TOOLS / TECHNIQUES	PURPOSES
• Project Objectives (S.M.A.R.T. Approach)	• Clarity in project mission • Set measurable objectives
• Project Outcomes (S.M.A.R.T. Approach)	• Strategic direction for outcomes delivery • Set measurable outcomes
• Client Value Systems (CVS) (Tool - Paired Comparison)	• Set value criteria (objectives) to be delivered • Prioritize value criteria for allocating resources
• Stakeholder Analysis	• Clear on interests and impacts of stakeholders
• Project Driver Analysis	• Justify factors of project business case
• Strategic Time Line	• Determine when key milestones to occur
• Project Work Programme	• Establish schedule of activities for execution
• Time / Cost / Quality Analysis	• Establish the priority of T / C / Q objectives • Guide in strategizing project implementation
• Interviews	• Facilitate on exploring project issues
• Questionnaires	• Survey issues or problems to be resolved.
• A.C.I.D. Test	• Determine the required composition of workshop • Ensure right people for right roles and responsibility
• Drawings & Document Analysis	• Gather basic information for understanding project
• POE Report	• Provide valuable information on operational issues
• Histogram of Cost	• Present project cost for comparison and analysis
• Site Tour	• Understand the site physical context and constraints
• Facilities Walk-Through	• Guide on how users would use the facility to be
• S.W.O.T. Analysis	• Analyse strengths-weaknesses-opportunities-threats of the developing concept or design
• Risks Identification	• Provide risk information in relation to value issues
• Team Building	• Improve human dynamics and co-operation
• VE Pre Lab Forms and Lab Template (Information Phase)	• Facilitate tasks execution and record outputs

Function Analysis Phase

TOOLS / TECHNIQUES	PURPOSES
<ul style="list-style-type: none"> Function Analysis (At Project / Space / Element / Component / System levels) 	<ul style="list-style-type: none"> Determine the function requirements at respective levels Identify cost / worth and re-align function mismatches Guide towards function-based generation of ideas
<ul style="list-style-type: none"> FAST Diagrams <ul style="list-style-type: none"> Technical FAST Task FAST SMART Methodology Strategic FAST 	<ul style="list-style-type: none"> Represent diagrammatic relationship of required functions under study ; and to align functions with objectives and deliverables
<ul style="list-style-type: none"> Goals & Systems Modelling 	<ul style="list-style-type: none"> Match or review project deliverables to the required functions
<ul style="list-style-type: none"> Value vs Cost 	<ul style="list-style-type: none"> Rank to prioritize the identified functions to their perceived value and estimated cost
<ul style="list-style-type: none"> Users Analysis Process Flow Charting Spatial Adjacency 	<ul style="list-style-type: none"> Determine spatial functions to improve user flows, adjacencies and facility's performance and efficiency
<ul style="list-style-type: none"> VE Lab Templates (Function Analysis Phase) 	<ul style="list-style-type: none"> Facilitate tasks execution and record outputs

Creative Phase

TOOLS / TECHNIQUES	PURPOSES
<ul style="list-style-type: none"> Brainstorming of Ideas 	<ul style="list-style-type: none"> Generate as many ideas in solving the identified value mismatches and improving project value
<ul style="list-style-type: none"> VE Lab Template (Creative Phase) 	<ul style="list-style-type: none"> Facilitate tasks execution and record outputs

Evaluation Phase

TOOLS / TECHNIQUES	PURPOSES
<ul style="list-style-type: none"> Judgement of Ideas <ul style="list-style-type: none"> Client Acceptability Functional Suitability Technical Feasibility Economical Feasibility 	<ul style="list-style-type: none"> Judge the generated ideas for shortlisting as initial part of evaluation process
<ul style="list-style-type: none"> Categorization of Ideas <ul style="list-style-type: none"> “Evaluate” (Potential Ideas) “Information” (Potential for Future) “Discard” (Non Potential Ideas) 	<ul style="list-style-type: none"> Categorize and shortlist potential ideas for further development / evaluation based on the earlier judgement process
<ul style="list-style-type: none"> Other Evaluation Methods <ul style="list-style-type: none"> Silence means “No” Coloured Dots Championing Decision Matrices 	<ul style="list-style-type: none"> Additional evaluation tools and techniques (if necessary) for more effective and objective appraisal, to minimize argument and conflicts and gain consensus during study
<ul style="list-style-type: none"> VE Lab Template (Evaluation Phase) 	<ul style="list-style-type: none"> Facilitate tasks execution and record outputs

Development Phase

TOOLS / TECHNIQUES	PURPOSES
<ul style="list-style-type: none"> Development of Ideas <ul style="list-style-type: none"> Advantages & Disadvantages of Ideas Risks / Constraints Cost Implications 	<ul style="list-style-type: none"> Further evaluation on the evaluated ideas before deciding on best solution as recommendations
<ul style="list-style-type: none"> Action Planning 	<ul style="list-style-type: none"> Schedule for post lab activities / action plan and identify owner of responsibilities
<ul style="list-style-type: none"> VE Lab Templates (Development Phase and Summary) 	<ul style="list-style-type: none"> Facilitate tasks execution and record outputs

Presentation Phase

TOOLS / TECHNIQUES	PURPOSES
<ul style="list-style-type: none"> VM Report 	<ul style="list-style-type: none"> Consolidate and encapsulate key information been sought, generated ideas, evaluation, justification, recommendations and findings from VE Study
<ul style="list-style-type: none"> Presentation 	<ul style="list-style-type: none"> Present VE recommendations for securing the lab team members' / stakeholders' agreement.

- Sources:
- Kelly, J., Male, S. and Graham, D. (2004)
 - Male, S et al (1998)
 - EPUVM Guide (2011)

The Power Of Tools

- More objective (quantitative) evaluation
- Better justified decision making
- More structured and systematic process
- Minimize conflicts and argument
- Aid for achieving consensus
- Increase competency level of VM facilitator

9. REFERENCES

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10. APPENDICES

- Value Engineering Methodology Matrix (VEMM)
- Value Engineering Form & Templates





VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Pre Lab Stage

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A	PRE LAB STAGE ACTIVITIES	Work Process TASKS	Faci	Client	PM	Designer	Others*	Tools & Techniques	Outputs
a	Interface with client and project manager / HOPT(JKR)	i. Discuss and record on initial planning of VE Study Implementation : Status of project implementation - to check for readiness and VE Study timeline VE Study objectives and expected VE Study findings / deliverables Scope / Levels of study Implications and constraints of VE Study Compliance to VA Study Requirement for further VE Studies (if necessary) VE Study logistics - date, itinerary, venue and budget Composition of lab participants	●	○	○			- Initiation meeting / discussion - Instruction / application letter - Minutes of meeting - VE Study Pre Requisite template - VE Study Pre Lab Checklist template	- Records of information - Records of decision

● Responsible Party ○ Involved Party Others* May include internal / external experts, relevant authorities, other stakeholders of the project as required



VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Pre Lab Stage

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A	PRE LAB STAGE ACTIVITIES	Work Process TASKS	Faci	Client	PM	Designer	Others*	Tools & Techniques	Outputs
b	Collate project information	i. Provide information and documents as follows: VA Lab Report (where applicable) Client needs and requirements Project brief including Schedule of Accommodation (SOA) for building project Drawings Specifications Technical brief Technical reports (traffic study, soil investigation, survey plan, feasibility study, EIA, etc) Relevant statistical data Approved project budget Project cost estimate (e.g. PDA) Project work programme Project risk management plan Relevant authorities requirements Other documents as required ii. Collect and compile information and documents as above	○	●	●	●	●	- Desk study - Field work - Interview - Meeting	Compilation of information and documents
			●	○	○	○	○		

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

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A	PRE LAB STAGE ACTIVITIES	Work Process TASKS	Faci	Client	PM	Designer	Others*	Tools & Techniques	Outputs
c	Commence initial study	i. Commence study covering the following: Study design proposal and quality requirements Visit project site (as required) Study project objectives and project outcomes Study project functions and propose FAST Diagram Identify and prioritize Client Value System with client Propose Space / Cost / Quality (or others) study model(s) Check compliance of design proposal against VA recommendation ii. Identify possible value mismatches and potential value improvement	●	○	○	○	○	- Strategic FAST diagrams and / or Technical FAST diagrams or others - Goal and System technique - Paired Comparison technique - Cost Worth Index - Study Model(s)	- Design information - Site information - Project objectives - Proposed FAST / project functions - Prioritised Client Value System - Proposed Space / Cost / Quality Model (or others) - Compliance to VA - Identified mismatches and value improvements
			●	○	○	○	○		

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Pre Lab Stage

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A	PRE LAB STAGE ACTIVITIES	Work Process TASKS	Faci	Client	PM	Designer	Others*	Tools & Techniques	Outputs
d	Develop lab programmes and arrange logistics	i. Prepare for lab execution: Develop lab agenda Identify and appoint facilitation team Identify lab tools and techniques Identify and propose list of lab participant Identify lab working groups and study scopes Prepare lab kit Advise on lab arrangement and requirement (room layout, equipment, etc) ii. Arrange logistics for lab	●	○	○	○	○	- VE Study Pre Lab Checklist template - VE Lab Participants Identifications template (A.C.I.D. Test technique)	- Proposed Lab Agenda - Appointment of facilitation team - Identified lab tools and techniques - Proposed list of participants - Proposed lab working groups - Lab Kit - Invitation to lab participants - Lab logistics & requirements
e	Organize orientation session (if necessary)	i. Carry out orientation session to the required teams - facilitation team / project team / lab participants	●	○	○	○	○	- Briefing session / meeting	Orientation session

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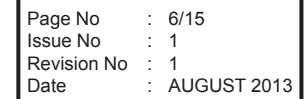
VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Lab Stage - Information Phase

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B I	INFORMATION PHASE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others*		
a	Register lab participants	i. Record attendance of participants ii. Ensure attendance of key stakeholders	○ ○	● ●	○ ○			Listing of participants	Confirmed list of participants
b	Hold lab opening session	i. Conduct introduction session (provide opening remark, explain direction and lab expectation) ii. Conduct team building session (provide motivation, clarify roles and responsibilities)	● ●	○ (Lab team members) ○ (Lab team members)				Ice breaking / Team building techniques	- Team building
c	Brief and verify VE Lab agenda	i. Conduct briefing on lab agenda and process ii. Verify VE lab agenda iii. Conduct briefing on Information Phase (purpose, activities, expected outputs)	● ● ●	○ (Lab team members)				- Briefing / presentation - Discussion / feedback	- Verified VE Lab Agenda - Explanation of Information Phase activities
d	Brief and verify VE Study objectives	i. Conduct briefing on VE Study objectives ii. Verify VE Study objectives	● ●	○ (Lab team members)				- Briefing / presentation - Discussion / feedback	Verified VE Study objectives

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Lab Stage - Information Phase

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B I	INFORMATION PHASE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others*		
h	Inform Client Value Systems (CVS)	i. Present CVS findings (as prioritised by client) ii. Gain acceptance on prioritised CVS as value criteria in design, specification and expected project deliverables	● ●	○ (Lab team members)				- Briefing / presentation - Discussion / feedback	Accepted CVS
i	Confirm lab working groups and selected VE Study scopes	i. Conduct briefing on proposed lab working groups and selected VE Study scope ii. Form physical lab working group(s)	● ●	○ (Lab team members)				- Briefing / presentation - Discussion / feedback	Lab working groups formation
j	Establish project parameters to be studied	i. Conduct briefing on Information Phase template ii. Discuss and record project parameters in Information Phase template iii. Sharing of information on project parameters	● ○ ○	● (Lab team members) ● (Lab team members)				- Briefing - Discussion / feedback - Information Phase template - Presentation	- Completed Information Phase template

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Lab Stage - Funtion Analysis Phase

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B2	FUNTION ANALYSIS PHASE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others*		
a	Brief on Function Analysis Phase	i. Conduct briefing on function analysis phase (purpose, activities, expected outputs)	●					- Briefing / presentation	Explanation of Function Analysis Phase activities
b	Verify project functions	i. Present proposed FAST diagram / project functions ii. Verify proposed FAST diagram / project functions iii. Analyse required functions and expected project deliverables iv. Identity value mismatches	● ● ● ●	○ (Lab team members) ○ (Lab team members) ○ (Lab team members)				- Briefing / presentation - Discussion / feedback - Strategic FAST diagrams and / or Technical FAST diagrams - Goal and System technique - Cost Worth Index	- Verified project functions - Identified value mismatches
c	Analyse functions of space / element / component / system	i. Conduct briefing on Function Analysis Phase template ii. Identify, analyse, discuss and record relevant functions in template iii. Sharing of information on function analysis	● ○ ○	● (Lab team members) ● (Lab team members)				- Briefing - Discussion / feedback - Function Analysis Phase Template - Adjacency Matrix - User flow diagram - Presentation	- Completed Function Analysis Phase Template - Identified value mismatches

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Lab Stage - Creative Phase

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B3	CREATIVE PHASE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others		
a	Brief on Creative Phase	i. Conduct briefing and set ground rules on creative phase (purpose, activities, expected outputs)	● ●					- Briefing / presentation - Creative session ground rules	Explanation of Creative Phase activities
b	Generate alternate ideas to the original design proposal / specifications	i. Conduct briefing on Creative and Evaluaton Phase template (focus on Creative Phase) ii. Generate and record ideas in template iii. Sharing of information on generated ideas	● ○ ○	● (Lab team members) ● (Lab team members)				- Briefing / presentation - Discussion / feedback - Creative and Evaluation Phase template - Creative and innovative tools and techniques (eg: brainstorming, creative thinking, Pareto principle)	Broadlist of creative and innovative ideas

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Lab Stage - Evaluation Phase

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B4	EVALUATION PHASE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others		
a	Brief on Evaluation Phase	i. Conduct briefing and set ground rules on Evaluation Phase (purpose, activities, expected outputs)	●					- Briefing / presentation - Evaluation session ground rules	Explanation of Evaluation Phase activities
b	Evaluate to shortlist the generated ideas for further development and evaluation.	i. Conduct briefing on Creative and Evaluation Phase template (focus on Evaluation Phase) ii. Judge ideas based on client acceptability, functional suitability, technical and economical feasibility iii. Categorize ideas into 3 categories - "Evaluate" (Potential ideas); "Information" (Potential ideas); & "Discard" (Non Potential ideas)	● ○ ○	● (Lab team members) ● (Lab team members)				- Creative and Evaluation Phase template - Prioritizing Matrix - Weight Evaluation Matrix - Coloured Dots - Voting	- Judged ideas - Categorized ideas
c	Obtain consensus on the categorized ideas	i. Present and obtain consensus on the categorized ideas	○	● (Lab team members)				- Briefing / presentation - Discussion / feedback	Shortlisted ideas

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Lab Stage - Development Phase

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B5	DEVELOPMENT PHASE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others*		
a	Brief on Development Phase	i. Conduct briefing and set ground rules on Development Phase (purpose, activities, expected outputs)	●					- Briefing / presentation	Explanation of Development Phase activities
b	Develop and further evaluate shortlisted ideas into workable options and to determine best solutions	i. Conduct briefing on Development Phase template ii. Develop details of shortlisted ideas against original proposal (advantages & disadvantages, cost implication, innovativeness, risks and constraints) iii. Evaluate shortlisted ideas for determining best solutions	● ○ ○		● (Lab team members)	● (Lab team members)		- Development Phase template - Sketches - Diagrams - Calculations - Explanation - Illustrations	- Detail evaluation of ideas
c	Obtain consensus on the best solutions	i. Present and obtain consensus on the best solutions as recommended ideas	○		● (Lab team members)			- Briefing / presentation - Discussion / feedback	Recommended ideas
d	Summarize all recommended ideas and study findings	i. Summarize optimization of all recommended ideas and study findings ii. Review study model(s) - Space / Cost / Quality (or others)	○ ●		● (Lab team members) ○ (Lab team members)			- Cost Summary template (if using cost model) - SOA / GFA format (if using space model) - Needs / performance / quality statements format (if using quality model)	- Summary of optimization - Reviewed model(s)

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Lab Stage - Development Phase

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B5	DEVELOPMENT PHASE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others*		
e	Develop Action Plan for post lab activities	i. Identify task, target date and responsible parties ii. Discuss and obtain agreement from lab team members and responsible parties.	○ ●		● (Lab team members) ○ (Lab team members)			- Action plan template - Discussion / feedback	Agreed Action Plan
f	Review achievement of VE Study objectives	i. Assess achievement against the predetermined VE Study objectives ii. Identify lessons learned and improvements (where applicable) iii. Sharing of VE Study achievements and lessons learned	● ● ●				○ (Lab team members)	- Briefing / presentation - Discussion / feedback	- Statements of VE Study achievement - Lessons learned

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Lab Stage - Presentation Phase

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B6	PRESENTATION PHASE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others		
a	Brief on Presentation Phase	i. Conduct briefing on Presentation Phase and including Post Lab Stage (purpose, activities, expected outputs)	●					- Briefing / presentation	Explanation of Presentation Phase and Post Lab Stage activities
b	Presentation of VE Study recommendations and findings	Prepare and present VE Study recommendations and findings focusing on (not limited to): VE Study Objectives Project Information eg. Project Objectives, Project Team, Location. VE Study Model(s) Client Value System Project functions VE Study Scope Summary of recommended ideas and other lab findings Reviewed VE Study Model(s) Action Plan Achievement of VE Study Objectives Lessons Learned	●					- Presentation	Presented findings
c	Obtain acceptance from lab team members / stakeholders (wherever applicable)	Obtain consensus from lab team members / stakeholders on the VE Study recommendations and findings	●	○ (Lab team members)				- Feedback	Input for VE Study Report

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VALUE ENGINEERING METHODOLOGY MATRIX (VEMM)

Post Lab Stage

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C	POST LAB STAGE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others*		
a	Document VE Study outputs	i. Consolidate VE Study outputs ii. Prepare VE Report. iii. Present VE Report (as required) iv. VE Study Report sign off (as required)	● ● ● ○	●	○			- Reporting - Presentation - Sign Off	VE Study Report
b	Disseminate VE Study Report	i. Submit VE Study Report to Client ii. Disseminate VE Report to relevant parties	●	●				- Distribution	VE Study Reports disseminated
c	Follow up Agreed Action Plan	i. Monitor implementation of Action Plan ii. Update status of Action Plan iii. Assess Action Plan compliance and propose improvement. iv. Take necessary action to improve Action Plan.	● ●		● ○ ○ ●			- Meeting / discussion - Feedback - VE Post Lab Compliance Report template	VE Post Lab Action Plan Report

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Post Lab Stage

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C	POST LAB STAGE ACTIVITIES	Work Process TASKS	Faci	Lab Team Members				Tools & Techniques	Outputs
				Client	PM	Designer	Others*		
d	Monitor and assess implementation on VE Study recommendations and findings.	i. Implement recommended ideas and findings in project ii. Update implementation status of recommended ideas and other findings. iii. Assess compliance of recommended ideas and other findings.	● ●	○	● ○ ○	○		- Meeting / discussion - Feedback - VE Post Lab Compliance Report template	VE Post Lab Compliance Report
e	Assess performance of VE Study implementation	i. Assess overall performance of VE Study ii. Communicate assesment of VE Study performance and lessons learned iii. Propose improvement of VE Study implementation	● ● ●	○ ○	○ ○			- Reporting - Feedback - Discussion	VE Study Performance Report

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VALUE ENGINEERING LIST OF FORMS / TEMPLATES

NO	GENERAL FORMS	FORMS
1	Attendance List	JKR.VE.Am.02
2	<i>Surat Aku Janji</i>	JKR.VE.Am.03
3	<i>Maklumbalas Lab Kejuruteraan Nilai</i>	JKR.VE.Am.04

NO	PRE LAB FORMS	FORMS
1	VE Study Pre Requisite	JKR.VE.Pre.01
2	VE Study Pre Lab Checklist	JKR.VE.Pre.02
3	VE Lab Participant Identification (A.C.I.D Test)	JKR.VE.Pre.03

NO	LAB TEMPLATES	TEMPLATES
1	List of Group Participants	JKR.VE.Lab.01
2	Information Phase	JKR.VE.Lab.02
3	Function Analysis Phase (Sheet 1)	JKR.VE.Lab.03a
4	Function Analysis Phase (Sheet 2)	JKR.VE.Lab.03b
5	Creative Phase and Evaluation Phase	JKR.VE.Lab.04
6	Development Phase	JKR.VE.Lab.05
7	Summary of Recommended Ideas	JKR.VE.Lab.06

NO	POST LAB FORMS	FORMS
1	VE Post Lab Action Plan Report	JKR.VE.Post.01
2	VE Post Lab Compliance Report	JKR.VE.Post.02




VALUE ENGINEERING

Attendance List

Reference : JKR.VE.Am.02
Page No : 1
Issue No : 1
Revision No : 1
Date : AUGUST 2013

PROJECT			
CLIENT		HOPT	
VENUE		DATE	

NO	NAME	POSITION / AGENCY	TELEPHONE / EMAIL	SIGNATURE
1				
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25				
26				

	VALUE ENGINEERING Surat Akujanji	Reference : JKR.VE.Am.03 Page No : 1 Issue No : 1 Revision No : 1 Date : AUGUST 2013

Nama Projek Dirujuk: _____

Saya/ kami seperti Nama dan No. Kad Pengenalan (Awam/Tentera/Polis) tertera di bawah adalah dengan sesungguhnya dan sebenarnya mengisytiharkan bahawa:-

1. Saya/kami tidak akan mendedahkan apa-apa maklumat sulit berkaitan perolehan Kerajaan kepada mana-mana pihak selaras dengan Akta Rahsia Rasmi 1972 [Akta 88];
2. Saya/kami dengan ini mengisytiharkan bahawa tiada mana-mana anggota atau ahli keluarga terdekat yang mempunyai apa-apa kepentingan dalam mana-mana urusan perolehan yang dikendalikan oleh saya;
3. Saya/kami tidak akan melibatkan diri saya/kami dalam mana-mana amalan rasuah dengan mana-mana pihak yang terlibat sama ada secara langsung atau tidak langsung dalam tender tersebut;
4. Saya/kami tidak akan bersubahat dengan mana-mana pihak sehingga boleh menjejaskan ketelusan dan keadilan semasa proses perolehan;
5. Sekiranya ada sebarang percubaan rasuah daripada mana-mana pihak, saya akan membuat aduan dengan segera ke pejabat Suruhanjaya Pencegahan Rasuah Malaysia (SPRM) atau balai polis yang berhampiran. Saya sedar bahawa kegagalan saya berbuat demikian adalah satu kesalahan di bawah Akta Suruhanjaya Pencegahan Rasuah 2009 [Akta 694]; dan
6. Saya/kami sesungguhnya faham bahawa jika saya melanggar mana-mana terma dalam surat akuan ini, saya boleh dikenakan tindakan di bawah Peraturan-peraturan Pegawai Awam (Kelakuan dan Tatatertib) 1993 – jika berkenaan.

(i) Nama :	(ii) Nama :
No. K/P :	No. K/P :
Tandatangan :	Tandatangan :
Jawatan :	Jawatan :
Tarikh :	Tarikh :

(iii) Nama :	(iv) Nama :
No. K/P :	No. K/P :
Tandatangan :	Tandatangan :
Jawatan :	Jawatan :
Tarikh :	Tarikh :

	<p align="center">VALUE ENGINEERING</p> <p align="center"><i>Maklumbalas Lab Kejuruteraan Nilai</i></p>	Reference : JKR.VE.Am.04 Page No : 1/2 Issue No : 1 Revision No : 1 Date : AUGUST 2013
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PROJEK :

TEMPAT LAB :

TARIKH LAB:

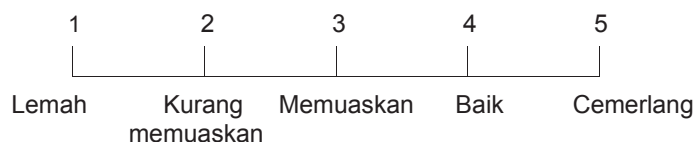
AGENSI : Klien/ HODT/ HOPT/ Konsultan/ Agensi Kerajaan Luar/ Pembekal/
Lain- lain:.....

ARAHAN :

Sila bulatkan mengikut skala penilaian yang bersesuaian

Contoh : 1 2 3 4 **5**

Skala Penilaian



A. OBJEKTIF DAN AGENDA LAB

1	Pencapaian objektif lab	1	2	3	4	5
2	Susunan agenda lab	1	2	3	4	5
3	Keberkesanan Metodologi lab yang dijalankan	1	2	3	4	5
4	Tempoh lab	1	2	3	4	5

B. FASILITATOR LAB (KESELURUHAN)

1	Penerangan dan teknik penyampaian	1	2	3	4	5
2	Interaksi dengan peserta	1	2	3	4	5
3	Tahap kepakaran fasilitator	1	2	3	4	5
4	Ketepatan masa	1	2	3	4	5

	<p align="center">VALUE ENGINEERING</p> <p align="center"><i>Maklumbalas Lab Kejuruteraan Nilai</i></p>	Reference : JKR.VE.Am.04 Page No : 2/2 Issue No : 1 Revision No : 1 Date : AUGUST 2013
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C. PENGURUSAN LAB

1	Keselesaian ruang	1	2	3	4	5
2	Kualiti template/ lab kit	1	2	3	4	5
3	Penyediaan kelengkapan lab dan alat pandang dengar (cth: Printer, Flipchart, Whiteboard dll)	1	2	3	4	5

D. KEURUSETIAAN

1	Urusetia dan penyelarasan lab	1	2	3	4	5
2	Urusan jemputan dan penyampaian maklumat	1	2	3	4	5
3	Makanan dan minuman	1	2	3	4	5
4	Kemudahan lain (cth: penginapan, pengangkutan, internet) Nyatakan.....	1	2	3	4	5

E. FAEDAH PELAKSANAAN

*	Peningkatan nilai <i>Value for Money</i> kepada projek	Tidak setuju	Neutral	Setuju
*	Peningkatan kefungsiian projek	Tidak setuju	Neutral	Setuju
*	Peningkatan keupayaan membuat keputusan (robust decision making)	Tidak setuju	Neutral	Setuju
*	Peningkatan komunikasi antara <i>stakeholder</i> projek	Tidak setuju	Neutral	Setuju
*	Peningkatan kepuasan pelanggan	Tidak setuju	Neutral	Setuju
*	Lain-lain : Nyatakan ()	Tidak setuju	Neutral	Setuju

F. ULASAN

G. CADANGAN PENAMBAHBAIKAN

	VALUE ENGINEERING VE Study Pre Requisite	Reference : JKR.VE.Pre.01
		Page No : 1
		Issue No : 1
		Revision No : 1
		Date : AUGUST 2013


PROJECT :	RMK: / RP:
MINISTRY / CLIENT / EPU SECTION:	
HOPT :	
HODT : IN -HOUSE / CONSULTANT	

NO.	ITEMS	YES	NO	REMARKS
1	Reports on Value Assessment (VA) has been reviewed by HOPT / HODT (if VA implemented)	<input type="checkbox"/>	<input type="checkbox"/>	
2	Client Brief was submitted by Client	<input type="checkbox"/>	<input type="checkbox"/>	
3	Design Brief and SOA (Building) has been prepared	<input type="checkbox"/>	<input type="checkbox"/>	
4	Preliminary work has been carried out (eg Survey, SI, etc.)	<input type="checkbox"/>	<input type="checkbox"/>	
5	CONVENTIONAL			
	● Buildings - Design Concept has been prepared and reviewed	<input type="checkbox"/>	<input type="checkbox"/>	
	● Roads - Preliminary Design has been prepared and reviewed	<input type="checkbox"/>	<input type="checkbox"/>	
6	DESIGN & BUILD			
	● Need Statement has been prepared and reviewed	<input type="checkbox"/>	<input type="checkbox"/>	
7	Preliminary cost estimates have been prepared and reviewed	<input type="checkbox"/>	<input type="checkbox"/>	
8	If the VA study has been done;			
	● Compliance to the VA for the scope of the project and GFA (Building) * Specify the scope of the difference (if any)	<input type="checkbox"/>	<input type="checkbox"/>	
	● Compliance to the VA for the provision of Project Cost (RM) * State the total variance (RM) (if any), and * State the percentage of variance (%) (if any)	<input type="checkbox"/>	<input type="checkbox"/>	RM: %:
	Note: The scope/ cost of the project should be reviewed if different/ more than the cost determined by VA			
9	Tender date has been set; indicate the date	<input type="checkbox"/>	<input type="checkbox"/>	Date:
10	Others:			

REMARKS:

1. Readiness to implement VE Lab: READY / NOT READY
2. Proposed date of VE Lab:

REVIEWED BY:	DATE:
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	VALUE ENGINEERING VE Study Pre Lab Checklist	Reference : JKR.VE.Pre.02
		Page No : 1/4
		Issue No : 1
		Revision No : 1
		Date : AUGUST 2013

PROJECT :	
HOPT :	DATE:

NO.	ITEMS	LIST	RESPONSIBILITY	REMARKS
1.	Obtain approval of Project Management Plan (PMP)	<input type="checkbox"/>	Facilitator	
2.	Propose suggestions, discuss and get Client / HOPT consent:			
2a.	VE Pre Lab meeting - date, place, time, etc.	<input type="checkbox"/>	HOPT / Facilitator	
2b.	VE Study Objectives	<input type="checkbox"/>	Facilitator	
2c.	VE Lab duration and tentative agenda (if any)	<input type="checkbox"/>	Facilitator	
2d.	Date / Venue / Cost of VE Lab	<input type="checkbox"/>	Client / HOPT	
2e.	VE Lab participants	<input type="checkbox"/>	HOPT / Facilitator	
2f.	Level and Scope of VE Study	<input type="checkbox"/>	Facilitator	
2g.	Feasibility of VE findings	<input type="checkbox"/>	Facilitator	
2h.	Requirements for further VE Lab	<input type="checkbox"/>	Facilitator	
2i.	Identify issues / implications / constraints	<input type="checkbox"/>	Client / HOPT / Facilitator	
2j.	Others:			
3.	Collate Information / Documents / Drawings:			
3a.	Value Assessment Report (VA) (if any)	<input type="checkbox"/>	Client / Facilitator	
3b.	Total Budget & Ceiling Approved	<input type="checkbox"/>	Client / HOPT	
3c.	Approved Project Brief (Latest)	<input type="checkbox"/>	Client / HOPT	
3d.	Schedule of Accommodation (SOA) – Building Project	<input type="checkbox"/>	Client / HOPT	
3e.	Statistical data and user requirements	<input type="checkbox"/>	Client / HOPT	
3f.	Concept Design Drawings (Latest)	<input type="checkbox"/>	HOPT / HODT	
3g.	Bills of Quantities / Price Summary (if any)	<input type="checkbox"/>	HOPT / HODT	
3h.	Specification	<input type="checkbox"/>	HOPT / HODT	
3i.	Identify Local Authority requirements	<input type="checkbox"/>	HOPT/HODT	
3j.	Preliminary Detailed Abstract (PDA) (Latest)	<input type="checkbox"/>	HOPT	
3k.	Estimation Cost (If any)	<input type="checkbox"/>	HOPT / HODT (QS)	
3l.	Work Program Schedule (Latest)	<input type="checkbox"/>	HOPT	
3m.	Risk Management Plan (If any)	<input type="checkbox"/>	HOPT	
3n.	Others:			




VALUE ENGINEERING
VE Study Pre Lab Checklist

Reference : JKR.VE.Pre.02
Page No : 2/4
Issue No : 1
Revision No : 1
Date : AUGUST 2013

NO.	ITEMS	LIST	RESPONSIBILITY	REMARKS
4	Visit Site (if necessary)	<input type="checkbox"/>	HOPT / Facilitator	
5	Commence Initial Study and Prepare Proposals:			
5a	Project Objectives	<input type="checkbox"/>	Facilitator	
5b	Client Value System (CVS)	<input type="checkbox"/>	Facilitator / Client	
5c	Cost Model / Other Study Model(s)	<input type="checkbox"/>	Facilitator / HODT	
5d	Project Functions	<input type="checkbox"/>	Facilitator	
5e	Others:			
6	Prepare Programme and Arrange Logistics:			
6a	Prepare Lab Agenda	<input type="checkbox"/>	Facilitator	
6b	Appoint Facilitation Team	<input type="checkbox"/>	Facilitator	
6c	Identify Lab Participants	<input type="checkbox"/>	HOPT / Facilitator	
6d	Circulate Invitation letter	<input type="checkbox"/>	HOPT	
6e	Form working groups dan set scope of work	<input type="checkbox"/>	Facilitator	
6f	Set-up Lab Arrangement and Logistic; • Refer to VE Lab Requirement List • Refer to VE Lab Furniture Layout	<input type="checkbox"/>	Client / HOPT / Facilitator	
6g	Prepare Lab Kit	<input type="checkbox"/>	Facilitator	
6h	Prepare for stationery / tools / ICT equipment	<input type="checkbox"/>	HOPT / Facilitator	
6i	Others:			
7	Conduct Orientation Session (If necessary)			
7a	VE Pre Lab Meeting / Briefing to Facilitator	<input type="checkbox"/>	Facilitator	
7b	VE Pre Lab Meeting / Briefing to Participants	<input type="checkbox"/>	Facilitator	
7c	Others:			

REVIEWED BY :	DATE :
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	<p style="text-align: center;">VALUE ENGINEERING</p> <p style="text-align: center;">VE Study Pre Lab Checklist</p>	Reference : JKR.VE.Pre.02 Page No : 3/4 Issue No : 1 Revision No : 1 Date : AUGUST 2013
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VE LAB EQUIPMENT LIST

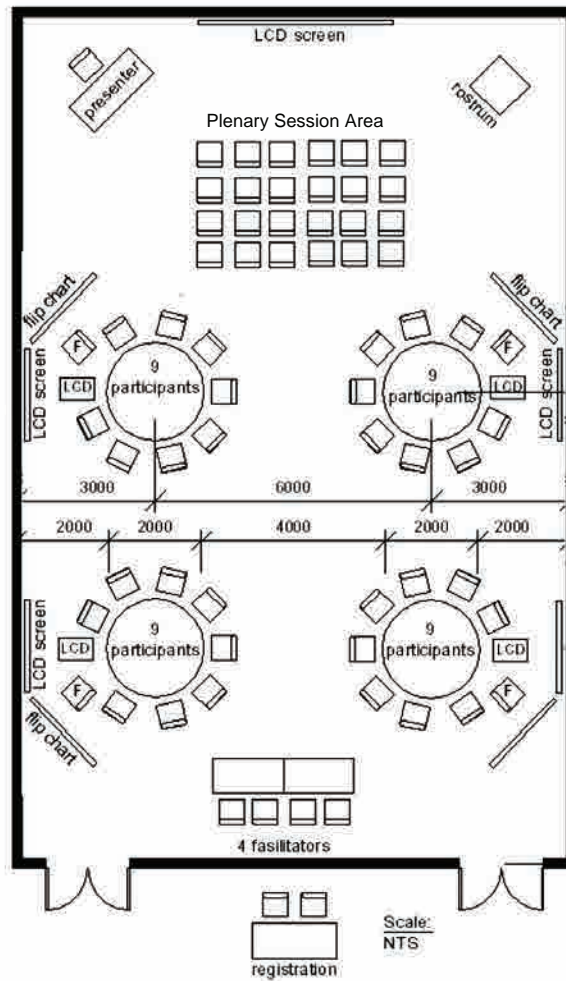
NO.	REQUIRED ITEM	LIST	QUANTITY	REMARKS
1	Printer	<input type="checkbox"/>		
2	Flip chart (1 set for each group)	<input type="checkbox"/>		
3	Marker Pen (3 types of colour for each group)	<input type="checkbox"/>		
4	Whiteboard Eraser (1 no. for each group)	<input type="checkbox"/>		
5	Round Table (large size) with 8-9 seats (one set for each group)	<input type="checkbox"/>		
6	Microphone and sound system (Wireless / dynamic)	<input type="checkbox"/>		
7	LCD Projector (one set for each group)	<input type="checkbox"/>		
8	Laptop (one set for each group)	<input type="checkbox"/>		
9	Screen Projector complete with Tables (one set for each group)	<input type="checkbox"/>		
10	Registration table complete with 2 no. of chairs	<input type="checkbox"/>		
11	Rostrum for opening / sign off ceremony	<input type="checkbox"/>		If required
12	Table and chair for Facilitator	<input type="checkbox"/>		
13	VIP seats (if required)	<input type="checkbox"/>		
14	Extension Cable for Electricity Socket	<input type="checkbox"/>		Proper Cable Management



VALUE ENGINEERING
VE Study Pre Lab Checklist

Reference : JKR.VE.Pre.02
Page No : 4/4
Issue No : 1
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VE LAB ROOM LAYOUT





A - "AUTHORIZE"	Entities with executive authority to take decisions or resolve issues in lab
C - "CONSULT"	Experts who have to be consulted on particular aspects during lab
I - "INFORM"	Entities who have to be informed on lab decisions (not to participate)
D - "DO"	Entities who have to carry out major tasks of lab recommendations

[illegible]



VALUE ENGINEERING
List of Group Participants

Reference : JKR.VE.Lab.01
Page No : 1
Issue No : 1
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Date : AUGUST 2013

PROJECT :			
GROUP :	DATE :	PAGE :	

NO	SCOPE DESCRIPTION	POSITION	AGENCY	TELEPHONE/ EMAIL
	TEAM LEADER :			
1				
	TEAM MEMBERS:			
2				
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16				
17				
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19				
20				
	FACILITATORS:			
1				
2				



VALUE ENGINEERING

Information Phase

Reference : JKR.VE.Lab.02
Page No : 1
Issue No : 1
Revision No : 1
Date : AUGUST 2013

PROJECT :	GROUP :
LEVEL : PROJECT / SPACE/ ELEMENT / COMPONENT	PAGE :
SCOPE :	DATE :

REF.	ISSUES ADDRESSED	REMARKS




VALUE ENGINEERING
Function Analysis Phase (Sheet 1)

Reference : JKR.VE.Lab.03a
Page No : 1
Issue No : 1
Revision No : 1
Date : AUGUST 2013

PROJECT :	GROUP :
LEVEL : PROJECT/ SPACE/ELEMENT/ COMPONENT	PAGE :
SCOPE :	DATE :


REF.	SCOPE DESCRIPTION	FUNCTION			AREA (m ²)	USER CAPACITY	REMARKS
		VERB	NOUN	TYPE	COST (RM)	SPECIFICATION	

Notes:
FUNCTION -TYPE: B - BASIC FUNCTION
S - SECONDARY FUNCTION
RS - REQUIRED SECONDARY FUNCTION

	<p style="text-align: center;">VALUE ENGINEERING</p> <p style="text-align: center;">Function Analysis Phase (Sheet 2)</p>	Reference : JKR.VE.Lab.03b Page No : 1 Issue No : 1 Revision No : 1 Date : AUGUST 2013
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PROJECT :	GROUP :
LEVEL : PROJECT/ SPACE / ELEMENT / COMPONENT	PAGE :
SCOPE :	DATE :

REF.	SCOPE DESCRIPTION	USER	USER FLOW/ OPERATIONAL PROCESS	REMARKS
		SPACE ADJACENCY		REMARKS

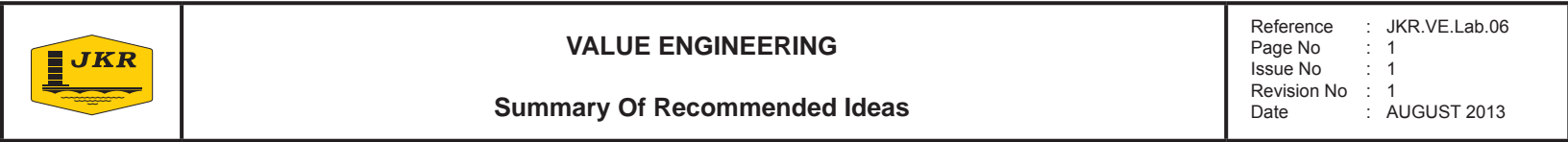
	<p style="text-align: center;">VALUE ENGINEERING</p> <p style="text-align: center;">Creative Phase & Evaluation Phase</p>	Reference : JKR.VE.Lab.04 Page No : 1 Issue No : 1 Revision No : 1 Date : AUGUST 2013
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PROJECT :	GROUP :
LEVEL : PROJECT / SPACE / ELEMENT / COMPONENT	PAGE :
SCOPE :	DATE :

REF.	CREATIVITY PHASE	EVALUATION PHASE					REMARKS
	GENERATED IDEAS	Client acceptability	Functional suitability	Technical feasibility	Economical feasibility	(E) - EVALUATE (I) - INFORMATION (D) - DISCARD	

	VALUE ENGINEERING Development Phase	Reference : JKR.VE.Lab.05 Page No : 1 Issue No : 1 Revision No : 1 Date : AUGUST 2013
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PROJECT :			GROUP :	RECOMMENDATION: YES/ NO NO:
EVALUATED IDEA NO:			PAGE :	
			DATE :	
ORIGINAL DESIGN / SKETCH			COST BREAKDOWN	
EVALUATED IDEA / SKETCH			COST BREAKDOWN	
ADVANTAGES / INNOVATION	DISADVANTAGES / RISK	COST IMPLICATION		
		ORIGINAL DESIGN COST (RM)		
		EVALUATED IDEA COST (RM)		
		NETT SAVING OR EXTRA COST (RM)		



VALUE ENGINEERING

Summary Of Recommended Ideas

Reference : JKR.VE.Lab.06
Page No : 1
Issue No : 1
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Date : AUGUST 2013

Reference : JKR.VE.Lab.06
Page No : 1
Issue No : 1
Revision No : 1
Date : AUGUST 2013

Page No : 1

Issue No : 1

Revision No : 1

Date : AUGUST 2013

PROJECT :

GROUP :

LEVEL : PROJECT / SPACE / ELEMENT / COMPONENT

PAGE :

SCOPE :

DATE :

NO	RECOMMENDED IDEAS	SAVING	EXTRA
NETT SAVING / EXTRA			

	VALUE ENGINEERING	Reference : JKR.VE.Post.01 Page No : 1 Issue No : 1 Revision No : 1 Date : AUGUST 2013
	VE Post Lab Action Plan Report	

PROJECT :	
VENUE (VE LAB) :	DATE (VE LAB):

NO.	AGREED ACTION PLAN	OUTPUT	RESPONSIBILITY	TARGET COMPLETION DATE	ACTUAL COMPLETION DATE	STATUS	REMARKS

PREPARED BY:	DATE:	SIGNATURE:
REVIEWED BY:	DATE:	SIGNATURE:

	VALUE ENGINEERING VE Post Lab Compliance Report	Reference : JKR.VE.Post.02 Page No : 1 Issue No : 1 Revision No : 1 Date : AUGUST 2013

PROJECT :	
VENUE (VE LAB) :	DATE (VE LAB):

NO.	RECOMMENDED IDEAS	SAVING / EXTRA	COMPLIANCE			REMARKS
			YES	PARTIAL	NO	

PREPARED BY:	DATE:	SIGNATURE:
REVIEWED BY:	DATE:	SIGNATURE: