Hospital Shah Alam

Project Lessons Learned Report

HSA Project Team, JKR Malaysia

Contents

1.0 Executive Summary

This report aims to summarize “lessons learned” from the Hospital Shah Alam project managed by JKR. The project, commenced on February 2007, was originally planned for completion in June 2011. The actual date of handover was in August 2015.

The targeted project cost was RM 8.7 million for the first package, comprising infrastructure and earthworks, and RM 482.6 million for building construction, installation and testing of all relevant equipment.

The project was delayed initially when the contractor’s employment was terminated due to no physical activity being undertaken at the site of the project from May 2010 till July 2010. A retender exercise was initiated in November 2010 and the tender for the project construction was awarded to Gadang Engineering (M) Sdn Bhd in September 2011, with the agreed date of completion of the project indicated as October 2013.

However, Extension of Time (EOT) was further three times, extending the targeted completion dates. The first EOT was issued in July 2013 for a period ofeleven months, the second issued in September 2014 for a period of six months and the third was issued in May 2015 for a period of three months.

Overall details of the project are indicated in Appendix A.

This report aims to ascertain three aspects of the project in general. They include:

1. What went well;
2. What could have been better; and
3. What are the lessons learned from this project.

Based on the findings of a survey questionnaire provided and feedback workshop sessions that were conducted on the 26th and 27th October 2015, it was established that there were a number of good practices adhered to in terms of methodology employed in the project, the way the project was planned and monitored as well as in the way the project was executed. In addition, there were also areas that could have been done better based on a reflective assessment of what transpired when the project was implemented.

2.0 Introduction

Hospital Shah Alam ("HSA") is the first major hospital in Shah Alam, Selangor. It was designed and developed to cater for people who need access to health services in the state and which could serve as a referral center for hospitals in the region.

The hospital was designed as a 300-bed hospital (with potential for a capacity of up to 500 beds) with residential quarters for medical support staff comprising:

- 30 units of Class D quarters;
- 40 units of Class E quarters;
- 60 units of Class F quarters;
- 100 units of Class G quarters;
- 42 units of Nurses Hostel; and
- 40 units of Housemen Hostel.

In addition, the project entailed the construction of an Engineering Block, an M&E plant Room, TNB Sub Station as well as Mechanical and Electrical Works including installation of Medical Equipment and External Works such as drainage, piping and water supply. The project includes overall maintenance of the premises for a period of 24 months.

The services offered included Comprehensive Secondary Care Level as well as Specialist Care for referred cases from outlying hospitals and clinics.

The project proposed also involved setting up a car park comprising parking bays for 1,269 cars and 561 motorcycles.

This report aims to identify lessons learned in this project and outlines the following:

1. The methodology adopted to establish good practices;
2. Preliminary survey and workshop session;
3. A summary of the good practices identified;
4. What went well with the project as a whole;
5. What could have been done better with the project as a whole;
6. Negative issues faced as a whole;
7. Key Lessons learnt as a whole;
8. Planning considerations that contributed to the success of the project;
9. Execution considerations that contributed to the success of the project; and
10. Monitoring considerations that contributed to the success of the project.

3.0 Methodology

The purpose of lessons learned is to bring together any insights gained together during a project that can be usefully applied to future projects. The lessons learned may be used as an important knowledge base for those involved in managing projects. There are many approaches that may be adopted in undertaking lessons learned from projects. These include:

1. Learning from project successes and failures;
2. Documenting the lessons learned;
3. Reflecting on events that transpired during the project; and
4. Undertaking a project audit.

The recommended process for undertaking lessons learned from projects is to first gather the input from relevant stakeholders involved, determine what caused the failure, validate what has been discussed and finally communicate the findings to all involved. In summary the steps are:

Step 1: Getting Input

This will involve soliciting opinions and viewpoints of all involved in the project to get a first hand account of exactly what happened. This should be obtained from those who were directly involved in the project. This may be done through a survey or focus group discussion.

Step 2: Determining Cause

After the inputs have been obtained, the causes for the failures and how these failures may be prevented have to be determined. This may be done in a variety of ways such as group based discussion, personal interviews as well as reviews on specific key events called “After Action Reviews”.

Step 3: Validate

Once a determination has been made, attempts should be made to validate the lesson learned with the same individuals that were responsible for providing input. The validation process could involve cross-checking information gathered with relevant documents and other information sources. The other viewpoints and opinions will help refine the determination and improve it in order for it to be more useful to future projects. The validation process undertaken enabled the key lessons which were learned to be summarized in this report

Step 4: Communicate

The last step is to communicate the lessons learned from the failure to all of the resources involved on the project and to the stakeholders and other decision makers. All of the information and conclusions gathered by the project manager should become part of the enterprise knowledge going forward for other projects that might encounter the same issues or problems.

The input was obtained through a presentation made by the Assistant Project Director as well as through a preliminary survey of the project. Based on the inputs obtained, a survey was carried out to solicit the other project team members opinions and viewpoints on the project. This was then followed by a process of determining the cause of the failures through an After Action Review as well as a Knowledge Café session.

The methodology adopted to identify lessons learned for the Hospital Shah Alam Project covers the key requirements for lessons learned as outlined above were derived from a Workshop Session Lessons Learned that was held as per detailed below

Workshop session

A three-day workshop session was held from the 26th to 28th October 2015. Details of the session are as per indicated below.

Venue	Hotel Pemiere, Klang
Name of Participants	1. Wan Mohd Saipallah bin Wan Kadir 2. Ir Dr Abdul Rahman bin Mohd Tasir 3. YM Sr Raja Zaiton binti Raja Adam 4. Sr Asilah Hanim binti Abdullah 5. Dr Hasli bin Ibrahim 6. Mohd Erwan Othman 7. Lilywati bin Manap 8. Ramlah binti Ahmad 9. Munira binti Mat Zain 10. Samraa Ahmad
Name of Facilitator	1. Dr Rumesh Kumar 2. Sr Roznita binti Othman
Secretariat	1. Khairil Hizar bin Md Khuzaimah 2. Wan Izayudin Izwan Wan Ahmad

The sessions were conducted to provide an opportunity for the project team members to share additional insights they had regarding the project in terms of lessons learned from it.

The session was conducted in two stages:

<u>Stage 1</u>

Overview of Knowledge Management and the importance of knowledge sharing to preserve key learning points for the benefit of JKR project teams as a whole.

An overview of the concept of Lessons Learned and how they apply for projects was presented to the project team members. This was done to enable them to understand the purpose and importance of project reviews. The areas covered in the presentation included the benefits of project review, the uses of different techniques to do the review as well as the overall end result of project reviews.

The key areas covered in the presentation was as follows:

1. Types of knowledge derived form projects
    a. Explicit Knowledge
    b. Implicit Knowledge
2. Process of managing knowledge
    a. Knowledge Creation
    b. Knowledge Sharing
    c. Knowledge Application
3. Techniques for sharing knowledge
    a. After Action Review
    b. Knowledge Café
    c. Brainstorming

Stage 2

The second stage involved the following:

(A) Getting Input

1. Presentation of the project by En. Wan Mohd Saipallah bin Wan Kadir.
2. Discussion on key areas of concern in the project based on the presentation made.
3. Conduct of a survey to determine perceptions of what went well and what did not go well.
4. Presentation of findings of the survey.

(B) Determining Cause

1. Team group discussion and summary documentation using "After Action Review".
2. Brainstorming session on causes of main problems faced.
3. Knowledge café session discussion.

(C) Validating Findings

1. A series of meetings and discussions were carried out with the project team to validate the findings and the draft report.

3.1.1 Overview of the project

The Wakil Pengarah Projek, En. Wan Mohd Saipallah, presented an overall briefing on the HSA project as per Appendix B.

The areas covered in the presentation included:

1. The background of the project;
2. The scope of work and implementation;
3. Challenges faced by the project team;
4. Good practices that were undertaken/have been followed to expedite project activities; and
5. The Progress Report.

Based on the presentation made, the following observations were noted:

1. The original project was terminated in September 2010, as only 27% of the physical work was completed, compared to 33.1% (6.1% delay) that should have been completed by then. There was no progress on site from May 2010 till August 2010. There were no workers except for a couple of watchmen.

2. *This indicated that the original contractor that was awarded the job was not competent to complete the job suggesting that the procurement procedure for procuring services for such jobs should be reviewed*.

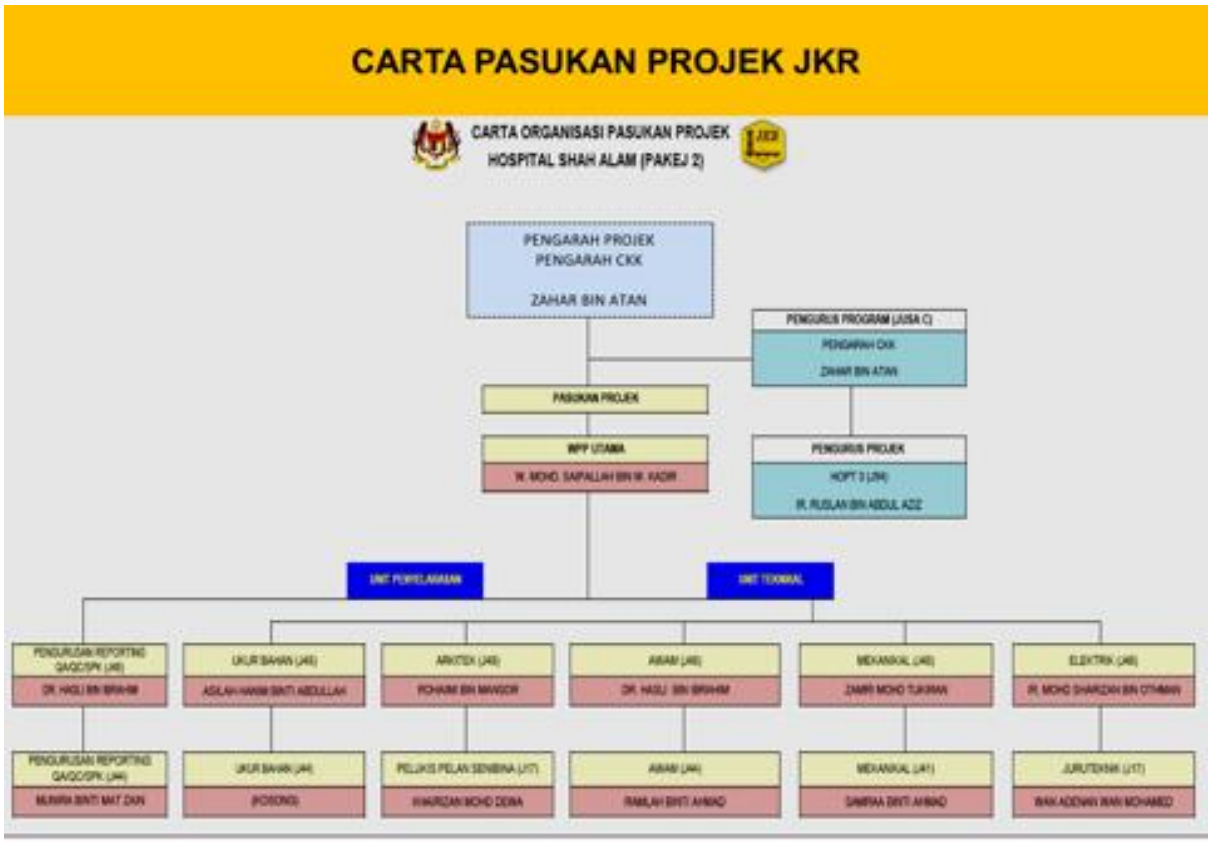
3. The two-year duration instructed for completing the remaining project work was based on an assumption that it was achievable.
   More detailed project planning should have been carried out, given that the duration proposed was considerably less than the normal duration for projects of such complexity.

4. Three Extensions of Times (EOT) were issued based on lack of room data, instruction from Jabatan Bomba, and late feedback/approval from pihak Istana.
   This suggests that a more detailed risk identification and assessment should have been conducted before the project commenced and this should have been an ongoing process throughout the project.

5. Unlike projects of similar complexity, no WPP Pakar was formally appointed because the WPP Utama chose to be fully accountable for all technical decisions made for the project.
   The decision making process for the project was expedited as a result of this arrangement.

6. The same set of consultants who were engaged by the previous contractor were retained. Based on the feedback provided by the Assistant Project Director, the consultants were not competent enough. The newly appointed contractor had difficulty working with the consultants.
   Serious repercussions occur when attempts are made to get consultants and contractors to work together in a "forced marriage" arrangement. It may have been better to use a conventional project management approach and not design and build approach when a project is terminated and has to be restarted using consultants involved in the terminated project.

7. Room data information that was completed in the earlier stage. However, when the project was terminated, the room data was not handed over to the new project team. This meant the room data compilation had to be redone all over again.
   The failure to obtain critical documents suggests that the handover process at the project termination was not done based on best practices of project / phase closeout procedure.



(A) Getting Input

Presentation of the project by En. Wan Mohd Saipallah

En. Wan Mohd Saipallah presented an overview of the project. He outlined the key milestones achieved, problems encountered as well as the successful aspects of the project. This was followed by a question and answer session in which issues that needed clarification were raised and clarified by him.

This was followed by a discussion on key areas of concern in the project, which broadly covered the following areas:

1. Competency of the main contractor and consultants involved;
2. Extremely tight timelines imposed for the project after the initial project was terminated; and
3. Poor adherence to project closure procedure relating to handover of documents.

3.1.2 Conduct of a survey to determine perceptions of what went well and what did not go well

A survey form called the 'lessons learnt questionnaire' was distributed to all project team members on the 26th October 2015. This survey aimed to establish the overall perception of the project team members on key aspects of the project in terms of how they perceived these aspects. The aspects were rated according from a scale of -5 to +5 with the scales defined as follows:

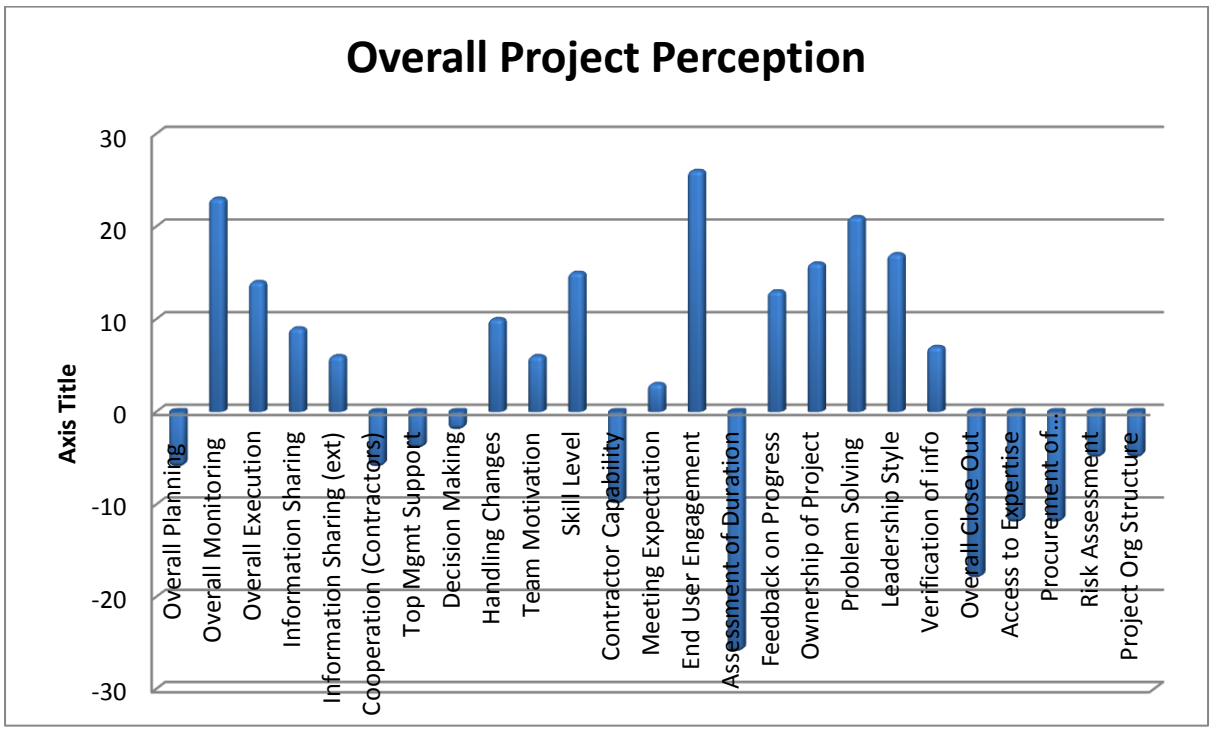
Scale	Description
-5	Disastrous
-4	Horrible
-3	Very Poor
-2	Quite Poor
-1	Can do with slight improvement
+1	Reasonably Good
+2	Good
+3	Very Good
+4	Excellent
+5	Amazing

Based on the overview presented when the session started, many problems faced were due to a lack of adherence to best practices in closing out a project, availability of required expertise, the competency of the main contractor as well as risk assessment and project organization structure. Hence to assess the perception of the project team on how these issues affected the project, the following aspects were included in the survey questionnaire:

1. Overall Closeout process;
2. Access to external expertise;
3. Procurement of contractor;
4. Risk Assessment; and
5. Project Organizational Structure.

The survey instrument used is in Appendix A of this report.

The overall results from the survey based on TOTAL SCORES obtained from all the respondents were as follows:



The aspects that recorded the lowest scores were:

1. Assessment of Duration of Project - 26
2. Overall Close Out Process - 18
3. Access to Expertise - 12
4. Procurement of Contractors - 12
5. Contractor Capability - 10

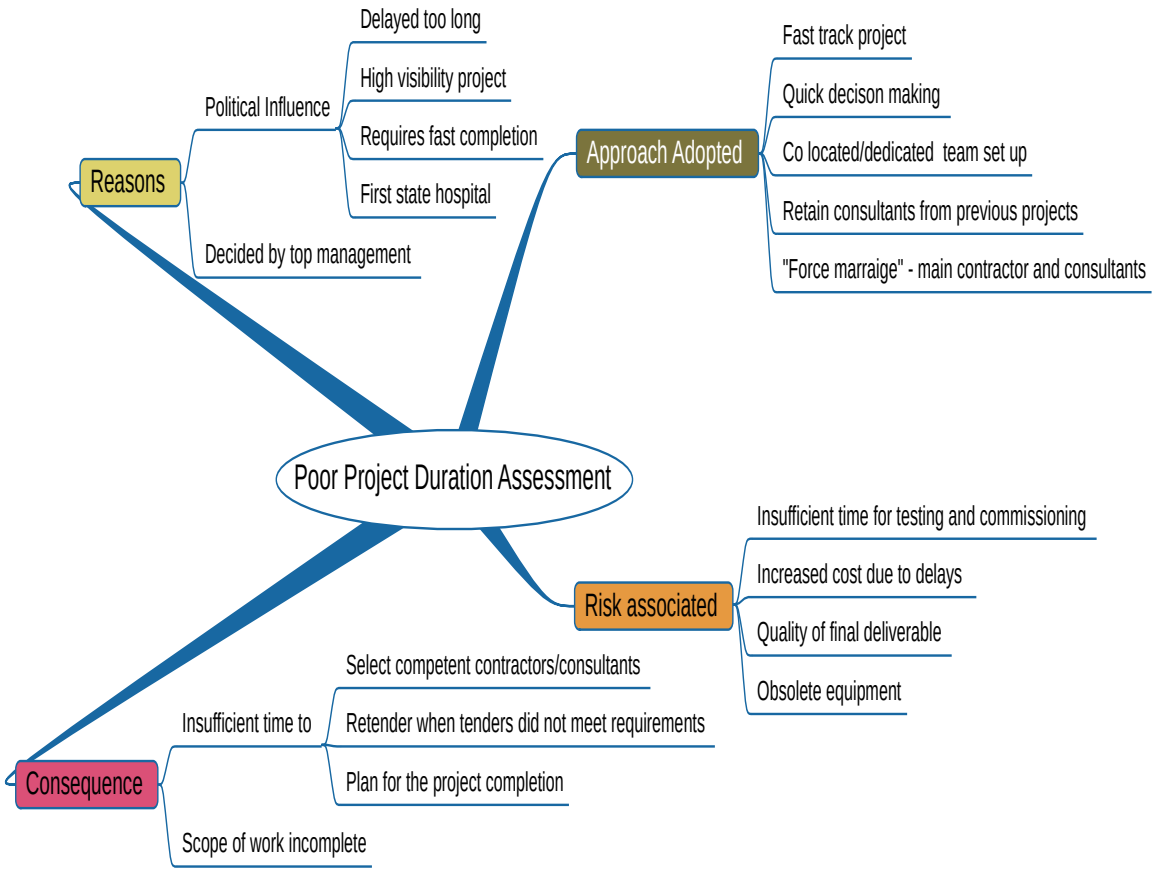
The aspects that recorded the highest scores were:

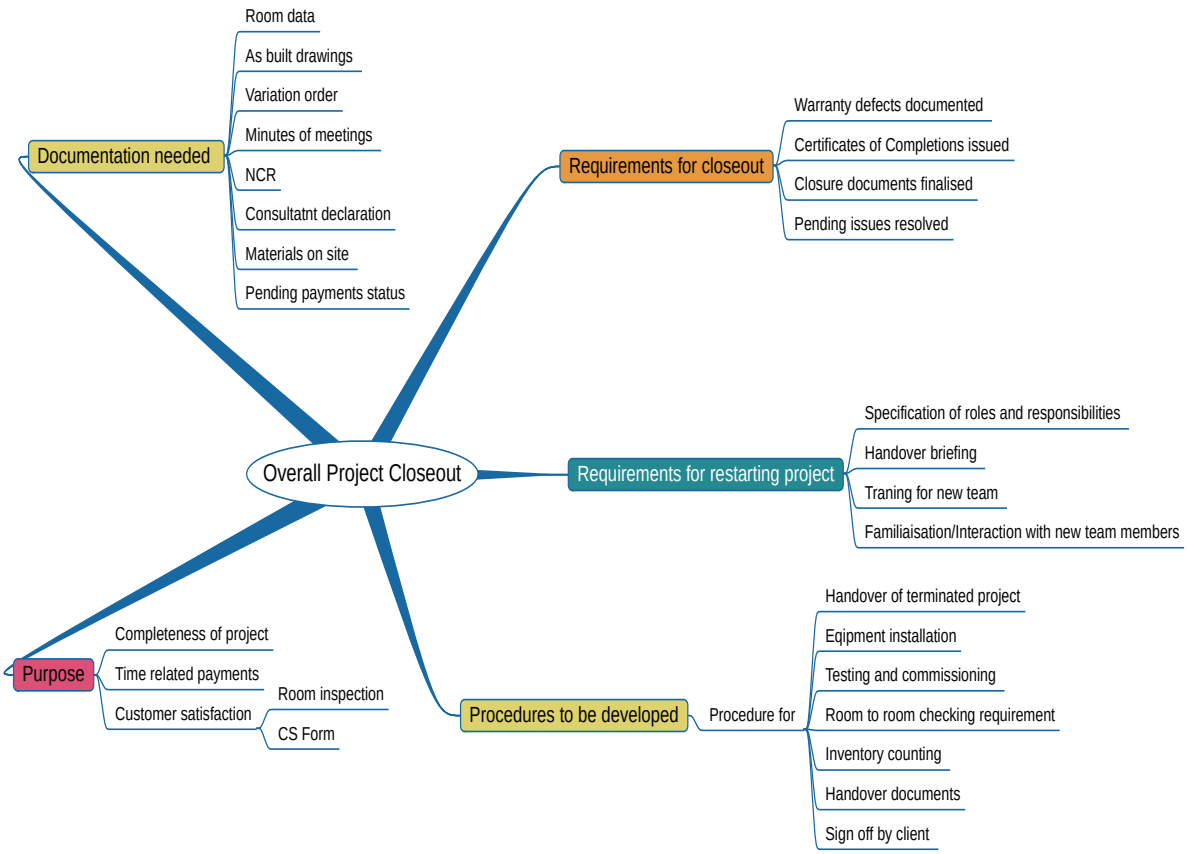
1. End User Engagement - 26
2. Overall Monitoring - 23
3. Problem Solving Capability - 21
4. Leadership Style - 17

3.2 Determining Causes

The findings of the brainstorming session were used to determine causes for:

1. Poor assessment of duration of the project; and
2. Overall closeout issues of the project.





3.2.1 Team group discussion and summary documentation using "After Action Review"

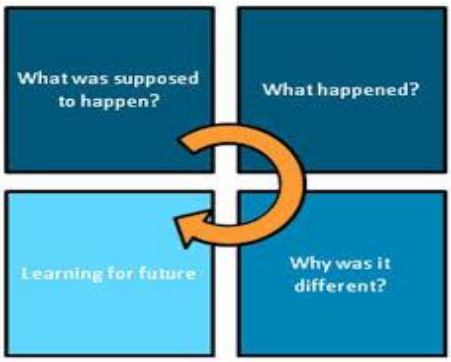
After the survey was conducted and the results analyzed, an attempt was made to determine the causes of the key events and critical lessons learned using an approach called "**After Actions Review**" (AAR).

An AAR is a structured review or de-brief process for analyzing *what* happened, *why* it happened, and *how* it can be done better by the participants and those responsible for the project or event. The review and debrief process may be used to ascertain key events in a project that had serious implications towards its success.

An AAR occurs within a cycle of establishing the intent, planning, preparation, action and review. An AAR is distinct from de-brief, in that it begins with a clear comparison of intended vs. actual results achieved. An AAR is also distinct from a post-mortem, in its tight focus on participant's own action where learning occurs. It is an excellent technique for focusing on what happened, what should have happened, the result as well as key lessons learned.

An AAR was conducted for a number of incidents that occurred during the implementation of the Hospital Shah Alam Project that the participants were required to recall in to analyze the incidents to determine:

- What happened;
- What should have happened;
- What was the result; and
- Key lessons learnt.



The findings were compiled and summarized in the form of charts that depicted the key categorizations relevant to the findings obtained for the different incidents reviewed.

The team reviewed a total of 13 such incidents. They included the following:

1. Instructions to complete the remainder of the project in very short time (2 years);
2. Consultants unaware of the requirements even though JKR informed the main contractor;
3. Many claims submitted for rectification due to previously issued NCRs;
4. Only two people, and no dedicated team, was assigned to be originally in charge of the project.
5. ICT Team informed of room and Mechanical and Electrical availability only after the design was finalized;
6. Reporting to top management done using SKALA which is based on past information and not real time information;
7. Jabatan Bomba revoked approval originally given for M&E and firefighting and requested for active fire fighting equipment to be installed in OT and MOT;
8. Equipment provided did not operate as specified. Lift stopped on 6th floor when it should have stopped on the 7th floor as required. This was due to a lack of coordination between the consultant and the contractor;
9. As built drawings were not made available during handing over as this was not included as clients checklist of documents to be submitted during hand over;
10. Needs statement for ICT works was changed but the change was not integrated with other briefs from other subunits of the project;
11. Evaluation criteria for the tender was relaxed when the tenders could not fully comply with the requirements of the project;
12. Room data review took around six months to finalize; and
13. Process for restarting a terminated complex project was unclear.

3.2.2.1 Short time given to complete projectWhat happened

1. Instructed to complete the project in very short time (2 years).

What should have happened

Given more time to plan and execute the project.

Effects / Results

- Incomplete work;
- Quality issues; and
- Increased cost.

Key Lessons Learned

1. Proper assumptions analysis should have been undertaken to analyze the assumption that the project could have been completed within the timeframe provided.
2. More time should have been provided for face to face discussion with relevant stakeholders before the project commenced.
3. Some members of the original JKR team should have been maintained in the new team assigned to do the project to maintain continuity and know how.
4. Direct access to relevant expertise was crucial to assist the JKR team to make key decisions that required hospital management expertise.
5. Early engagement of relevant stakeholders such as the ICT team.

3.2.1.2 Consultants unaware of requirements

What happened

2. Consultants did not follow up with the latest requirements and changes made by the local authorities (Pihak Berkuasa Tempatan). The consultants should have met with the local authorities when the project was retendered to determine if any changes have been made.

What should have happened

All key information / updates provided to be communicated to all the consultants in time.

Effects / Results

- Confusion;
- Lack of commitment; and
- Poor response time.

Key Lessons Learned

1. JKR to monitor the status of communication to all relevant stakeholders.
2. Main contractor to provide evidence of communication made to all the associated and relevant consultants.

3.2.1.3 NCR Claims submission

What happened

3. Many claims submitted by new contractor for rectification works on NCRs that were not closed by earlier contractor.

What should have happened

All pending NCRs should have been included in the scope the new contract.

Effects / Results

- Increased cost;
- Increased delays; and
- Messy contract administration.

Key Lessons Learned

1. Close out documents for project should include all outstanding NCRs.
2. All outstanding NCRs to be included in the scope of the new contract.

3.2.1.4 Manpower limitations on earlier project

What happened

4. Only two people and no dedicated team was assigned in the original contract as monitoring was done by HQ. The team monitoring the project was doing so on a sharing basis. This has been the practice for projects under RMK8 and RMK9.

What should have happened

Sufficient resources should have been assigned to projects based on the project requirements and complexity.

Effects / Results

- Insufficient monitoring;
- Poor visibility of project's progress; and
- Close out documents not collected when earlier project was terminated.

Key Lessons Learned

1. Resource requirement matrix to be developed to define resources required based on complexity of project covering the following considerations:
    a. Number of resources;
    b. Required expertise; and
    c. Timing of resource allocation.
2. Timeframe provided for procurement should be realistic and based on site and situation condition.
3. For terminated projects that have to be restarted, full information required should be provided to the incoming project team.
4. Procedures for selection of tenderers should be followed strictly and not be influenced by external factors.

3.2.1.5 ICT Team requirements

What happened

5. ICT Team of JKR informed of room and Mechanical and Electrical availability only after the design was finalized.

What should have happened

ICT team should have been involved before the design was finalized so that the the ICT requirements could have been incorporated with the mechanical and electrical requirements.

Effects / Results

- Re layout and redesign was carried out to accommodate the ICT requirements;
- Project delay;
- Increased cost; and
- Additional workload.

Key Lessons Learned

1. Early stage engagement is required for all specialized functions and this should involve all consultants to obtain their input before pre-bid document is finalized, so that this may be reviewed for the proper functioning of the facilities.

3.2.1.6 Use of SKALA

What happened

6. Reporting to top management done using SKALA, which is seems to indicate that the project is fine (bukan projek sakit) but on site it can be sense that the project is going to be “projek sakit”

What should have happened

Monitoring should be based on real time information using key monitoring data.

Effects / Results

- Ineffective decision making;
- Actual situation not clearly and accurately defined; and
- Additional workload.

Key Lessons Learned

1. List of key items monitored should be defined at the beginning of the project.
2. Monitoring mechanism to be defined and used during project for real time monitoring.
3. The monitoring should indicate an accurate measure of the overall project status projection or “feel”

3.2.1.7 Revocations of approvals given

What happened

7. Jabatan Bomba had originally approved the drawing plans based on requirements of the existing by laws. There was no requirement initially for active fire fighting. As such, smoke detectors were installed based on the original drawings that were approved. However around 2 weeks before the CCC was to be issued, Jabatan Bomba made the installation of active fire fighting compulsory due to a fire incident that happened in Hospital Sungai Buloh.

What should have happened

All prior approvals should be reconfirmed with local authorities and followed based on provisions originally provided.

Effects / Results

- Additional rework and renovations;
- Delay in project completion; and
- Contractor issued notice to claim

Key Lessons Learned

1. All approvals from local authorities are considered “tentative” and should be reconfirmed before commencing on related structural works.
2. Risk register should be updated accordingly.

3.2.1.8 Lift core specification

What happened

8. The lift core was not completed as specified. It was supposed to stop at 7th floor but could only stop at the 6th floor based on work done by the previous contractor. As such the flooring for the 7th floor had to be broken and reinstalled. This was due to lack of proper monitoring by the consultant. In the structural drawing, the lift core was supposed to reach the 7th floor. However, in the architectural drawing, it only reached the 6th floor.

What should have happened

Lifts should be installed to stop at the 7th floor as per the needs statement, which clearly stated this requirement.

Effects / Results

- Delay in project completion;
- Additional cost incurred; and
- Hack Floor Slabs.

Key Lessons Learned

1. All coordination drawings have to be developed strictly based on the needs statement.
2. Contractor to provide coordination meeting schedules and meeting minutes to JKR.

3.2.1.9 Availability of as built drawings

What happened

9. The client checklist included as built drawings as an item to be submitted during the handover process. However built in drawings were only supposed to be handed in around 3 months after the handover was made. The drawings were to be provided to the client gradually, with the last drawing submitted after the CPC was issued

What should have happened

The submission of as built drawings was to be made in stages, with the drawings for structure, building, piling and infra provided as and when the work was completed. The other drawings (for mechanical equipment, ICT etc.) could only be provided to the client 3 months after issuance of the CPC.

Effects / Results

- Client requested for the drawings based on the handover checklist but as per the contract the drawings could only be provided 3 months after issuance of the CPC. The requirements on the checklist were not the same as the requirements listed in the contract.

Key Lessons Learned

1. All projects/phase closeouts to have closure documents at the end of the phase (progressive closeout).
2. JKR should go through the client checklist with the client and advise the client on what can be provided at the end of the project.

3.2.1.10 Integration of needs statements

What happened

10. Needs statement for ICT works was changed but the change was not integrated with briefs from other subunits of the project before pre-bid document was finalized.

What should have happened

Any change made in one component must be communicated with the others and the pre-bid document has to be reviewed by all concerned if it is related to their work.

Effects / Results

- Potential conflicts; and
- Delays.

Key Lessons Learned

Overall Needs Statement has to be reviewed, approved and monitored by Head of Project Team (HOPT), and adjustments to the design incorporated into the pre-bid document. This is to ensure that all needs indicated are synchronized with one another.

3.2.1.11 Evaluation criteria for tender

What happened

11. Evaluation criteria for the tender was relaxed when the tenders could not fully comply with the requirements of the project.

What should have happened

The criteria should be maintained to ensure only tenders that meet the requirement are awarded the contract.

Effects / Results

- Selected contractor not sufficiently competent;
- Delays in project completion; and
- Rework and increased cost.

Key Lessons Learned

1. Recall tender if none of the contractors meet the technical requirements stipulated.
2. Be stricter in terms of meeting technical criteria for future projects.

3.2.1.12 Room data review

What happened

12. Room data interaction and review took around six months to finalise.
    - Room data interaction not furnished during handover
    - Done one year after DO possession of site (of 2nd project)
    - Documents not prepared by consultants after RDI

What should have happened

Room data review should have been finalised within two weeks to launch.

Effects / Results

- Delays; and
- Increased workload.

Key Lessons Learned

1. To review all HODT's must expedite to review
2. Consultants needs to be competent in preparing the room data
3. Adequate information must be furnished and coordinated

3.2.1.13 Restarting terminated project

What happened

13. Process for restarting a terminated complex project was unclear.

What should have happened

A clearly defined process for restarting a terminated complex project should be in place.

Effects / Results

- Delays;
- Increased work load; and
- Increased cost.

Key Lessons Learned

1. Get clarifications regarding detailed procedure from SME/urusetia for terminated projects that have to be restarted.

3.3 Validate Findings

3.3.1 Key Lessons Learnt

3.3.1.1 Main contractor and consultants competency

Issue

During the project execution, it was found that the main contractor as well as consultants was not sufficiently competent to undertake certain aspects of the project. There were project management, coordination and communication related issues that surfaced during the project. In addition, there were instances where the consultants appeared unsure on how to proceed when faced with problems during the project.

Proposed Change

The primary lesson learnt from the HSA project was that key considerations have to be made when a project is terminated and subsequently has to be fast tracked to ensure completion within a stipulated timeframe.

Selection of Contractors

When contractors are selected by MOF, it is necessary to prescreen the contractors beforehand to assess whether they have the required skills and competencies to undertake such projects. This is to be done before negotiating the terms of the project. A report on the results of the prescreening process should be submitted to the MOF indicating whether the contractor is suitable and the reasons for the disposition.

Present process

Proposed process

3.3.1.2

Review of project requirements before tendering process

Issue

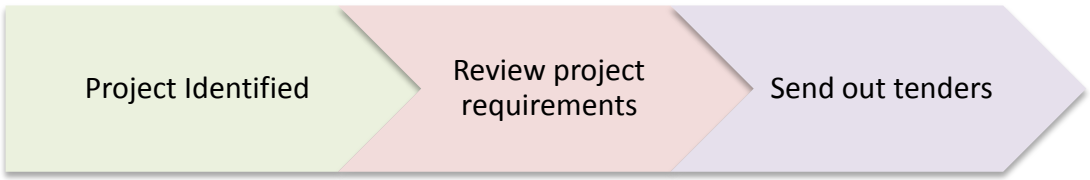
The retendering process was done almost immediately after project was terminated restarted. This was due to time pressures exerted as the Hospital Shah Alam was a high visibility project that was already delayed. As a result, the technical specifications and requirements listed in the retender document were not accurate and complete.

Proposed Change

When starting a project, **i**t is necessary to ensure there is sufficient time allocated between project inception and tendering stage to enable the project team to study the project requirements in detail before preparing the tender documents. Under no circumstances should the tendering be done without this preplanning stage, as this will compromise the quality of the tender document set up.

Present process

Proposed process



3.3.1.3 Testing and Commissioning of Medical Equipment

Issue

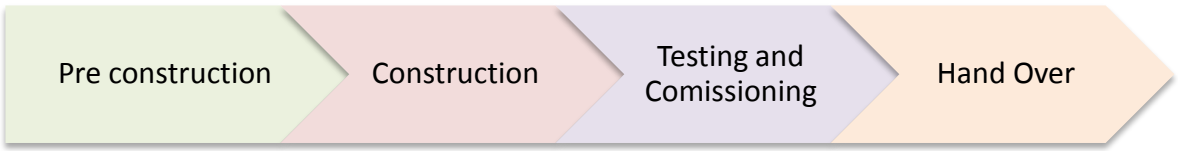
The time available for testing and commissioning at the end of the Hospital Shah Alam project was very short compared to what was the standard practice for testing and commissioning of medical equipment. The schedule was developed on the premise that testing and commissioning was “part of construction” and therefore delays in construction led to shortening of time available for testing and commissioning.

Proposed change

Before project close out, it is necessary to allocate sufficient time for testing and commissioning after construction is complete. The time allocated should commensurate with size and complexity of the project. The testing and commissioning phase should be different from the construction phase and not be considered as “part of construction”

Present process

Proposed process



3.3.1.4 Scope / Technical changes to project

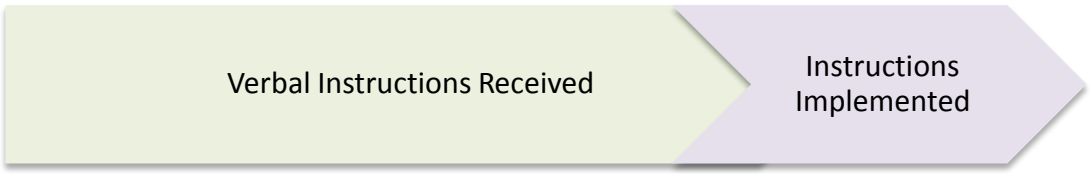
Issue

Many instructions were received verbally from external interested parties that had to be carried out. These instructions were not documented and as such it was difficult to trace the source of the changes made in the project. This made it difficult to monitor and control the project based on originally agreed scope.

Proposed change

When receiving instructions from external parties in matters relating to technical issues and scope changes, it is necessary for all such instructions to be documented and signed by the requestor.

Present process



Proposed process

3.3.1.5 Review of retendering procedure

Issue faced

It appears that the retendering process was done in a haphazard and hurried manner without proper supervision and oversight. Consequently, many associated problems were faced, such as:

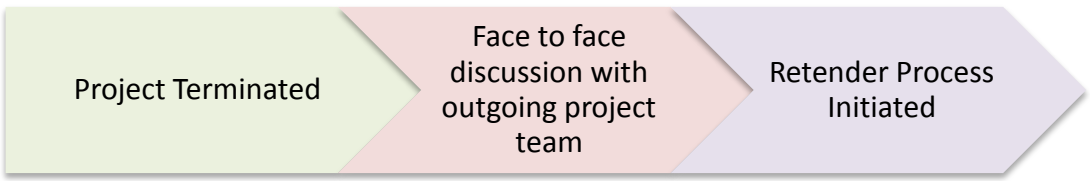
- Relevant drawings and documents not passed over to the project team that over the project;
- Room data information details was not available;
- List of Non Compliance Requests (NCR) that were not closed was not available;
- There was insufficient time for review of the project requirements before retendering; and
- The scope of work to be done was not well documented in the terminated project file.

Proposed change

In the light of the problems that surfaced during the retendering of the Hospital Shah Alam project, it is proposed that the procedure for retendering be reviewed and where possible changed so that retendering process may be undertaken in a more coordinated and structured manner in future.

Present process

Proposed process



3.3.1.6 Project Termination Closure Documents

Issue

Many delays occurred because of non-availability of important documents needed to continue the project from where it was left when the earlier project was terminated. Time was spent either in looking for these documents or developing the documents again. The room data, for example, had to be redone again although it was supposed to have been done before the project was terminated. This delayed the project by almost six months.

Proposed Change

When **terminating a project** it is necessary to:

1. Prepare a closure document that contains the following:
    a. List of outstanding work;
    b. List of Non Compliance Requests (NCRs) that are pending;
    c. Room data information that has been prepared;
    d. All technical drawings and specifications;
    e. All meeting minutes;
    f. Updated versions of all coordinated drawings; and
    g. Risk register.

2. Provide more time for face to face discussion with relevant stakeholders and between the incoming and outgoing project team in order to:
    a. Review;
    b. Enable JKR to develop a more complete and comprehensive retender document to be distributed for the remainder of the project;
    c. Obtain all relevant drawings and documents from the project consultants, such as:
        i. As built drawings;
        ii. Coordination drawings;
        iii. Risk Register; and
        iv. Updated needs statement.
    d. Determine what additional work planned for has not been completed; and
    e. Develop an overall master brief that contains latest versions of different needs statements relevant to the project.

3.3.1.7 Project Fast Tracking

Issue

Due to time pressures to complete the project, certain aspects of the project had to be fast tracked. These aspects included building, testing and commissioning as well as construction and development of room data. However this led to problems such as:

- Insufficient space for patients to do their physiotherapy as space available was taken up by the equipment; and
- Incompatibility of physical requirement with actual work done resulting in need for rework that had to be done on areas such as:
    - Wire ducting;
    - Door frames;
    - Lift core;
    - Catering department flooring; and
    - Piping.

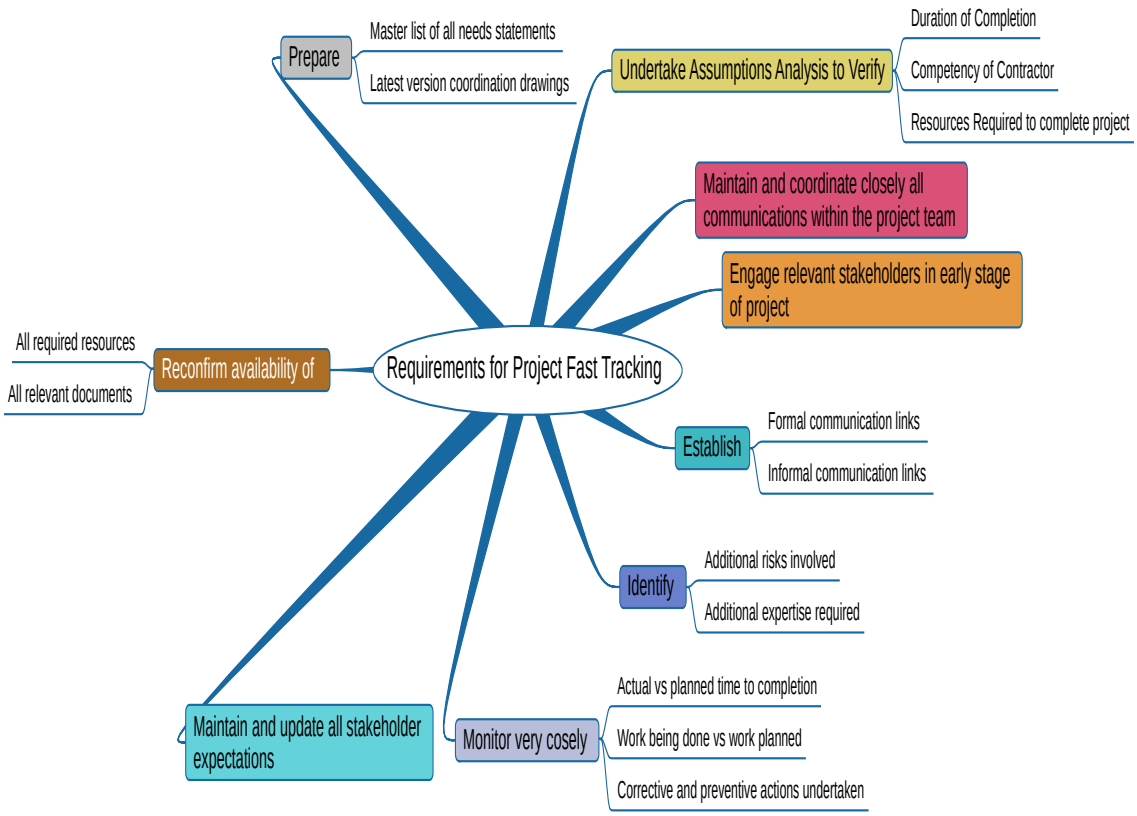
These led to further delays to the completion of the project requiring additional extension of time.

Proposed Change

When attempting to fast track a project it is necessary to:

- Undertake an assumptions analysis to verify assumptions made pertaining to:
    - Duration of completion;
    - Competency of the contractor and consultants engaged in the project; and
    - Resources required for the remaining project.
- Determine what aspects of the project may be fast tracked during planning stage;
- Identify additional risks associated within the fast tracking period and document in the risk register;
- Identify all internal and external stakeholders and all their expectations and document in a stakeholder register;
- Engage all relevant stakeholder involved in the project in the early stages of the project, especially when their approval, expertise is required for later stages of the project;
- Identify and include into the project team any additional expertise needed to complete the job within the fast track period proposed;
- Reconfirm availability of all required resources, documents and tools needed for the project;
- Establish formal and informal communication links between JKR, the contractor as well as all the associated consultants in the project;

- Prepare a master list of all needs statements and coordination drawings so that only the latest versions are being used;
- Identify one person who will be responsible for coordinating and maintaining records of communications with the main contractor, sub contractor as well as all the project consultants; and
- Identify one person to monitor very closely in real time basis the work being done during the fast track period. The monitoring should cover:
    a. Actual time to completion against planned schedule;
    b. Work being accomplished as per the scope of work agreed in the contract; and
    c. Implementation of corrective and preventive actions proposed as per agreed.



3.3.1.8 Technical Know How

Issue

For complex and specialized projects such as the building of a hospital as well as installation of all associated specialized fixtures and medical equipment, considerable in depth knowledge and expertise in medical equipment and associated requirements is needed. Although consultants specialized in this were part of the project, they did not have sufficient expertise to make recommendations as and when required.

JKR was also, at times, ill equipped to make the right decisions, as the expertise in such areas was not available.

Proposed Change

Specialized projects require careful selection of project team members that should have both project management as well as the required specialized know how. In this regard, the expertise of dedicated project teams who are specialized in construction as well as testing and commissioning of equipment should be retained by exposing them to similar projects instead of dispersing them to other projects and losing out on the expertise that has been acquired.

Conclusion

The Hospital Shah Alam project is an excellent case study. It reveals the importance of awareness in ensuring terminated projects are restarted and concluded as planned. Awareness of what needs to be done when retendering a project, what has been done in the terminated project, what needs to be done moving forward in the revived project and who has the required expertise is crucial. A lack of this awareness has been the root cause of the myriad issues and problems encountered. How to enhance this awareness especially under situations where projects are terminated and have to be retendered has to be established.

The overall causes for the project delays outlined in this report may be categorized under three key aspects. They include inadequate documentation prior to and during the project, insufficient risk identification and risk controls with respect to contractor and consultant selection, making unverified assumptions with regard to work load required and stakeholder expectations. Consequently, a host of related problems emerged during the project retendering process as well as during the implementation of the retendered project.

To enhance the level of awareness as well as to address the three primary causes indicated above, a number of initiatives have to be undertaken. They include managing the knowledge base relating to the project in a more structured manner, reviewing the existing procedures and policies relating to the terminating and tendering projects as well as to the selection of contractors and consultants, analyzing overall assumptions made and engaging more proactively with key stakeholders.

The key learning points from this project is the following:

1. Information and knowledge management plays a crucial role in project success. What data, information and knowledge base is required, how it is to be shared, where it should be retained and when it has to be retrieved and by whom should be predetermined and planned for as part of the Project Management Plan. This will help enhance the level of awareness of key information that is necessary for project continuity.
2. Risk Management considerations should include risks that the selected contractors and / or consultants are unable to undertake the tasks that they have been assigned. How this risk may be avoided, mitigated and managed should be seriously considered especially when undertaking a complex project. This risk should be indicated and response plans defined in the Risk Registers for all future projects.
3. Scoping a project from its original "idea" phase to the "planning" and subsequently "implementing" phase calls for assumptions to be made at some point. As the projects progresses these assumptions need to be documented and where possible verified on a continual basis. Undertaking an assumptions analysis as an ongoing activity would go a long way in terms of making assumptions that do not hold and have catastrophic consequences as a result.
4. Key stakeholders, both internal as well as external have to be engaged with proactively and productively. To do so effectively, it would be advisable to develop and maintain a stakeholder register and communications plan so that stakeholder expectations may be identified early and managed throughout the project. This would avoid delays arising from interference from external stakeholder interference or lack of involvement from internal stakeholders.
5. The existing procedures and processes in place for terminating and restarting terminated projects may need to be reviewed for suitability, sufficiency and implement ability. The Hospital Shah Alam project which had to be terminated and restarted under very trying circumstances has revealed that despite the procedures and processes in place, many process related problems emerged. This suggests that the existing procedures and processes defined may need to be reviewed particularly in the light of what has transpired. This will minimize hiccups that were experienced and hopefully enable JKR to terminate and restart projects better in the near future.

SURVEY FORM

Rate each of the statements below on a scale of -1 to -5 denoting a weakness, and from +1 to +5 denoting a strength in the area being assessed in an increasing scale.

No	Statement	-5	-4	-3	-2	-1	+1	+2	+3	+4	+5
1	Overall Planning of the Project / *Perancangan Projek Secara Keseluruhan*										
2	Overall Monitoring of the Project / *Pemantauan Projek Secara Keseluruhan*										
3	Overall Execution of the Project / *Perlaksanaan Projek Secara Keseluruhan*										
4	Information sharing among Project Team Members / *Perkongsian Maklumat (dalaman)*										
5	Information sharing with external stakeholders / *Perkongsian Maklumat (luaran)*										
6	Cooperation of the Main Contractors / *Kerjasama dengan Kotraktor*										
7	Support from Top Management / *Sokongan dari Pengurusan Atasan*										

8	Decision Making/ *Membuat Keputusan*										
9	Handling Changes / *Pengurusan Perubahan*										
10	Project Team Motivation / *Motivasi Ahli Projek*										
11	Project Team Skill Level / *Kemahiran Ahli Projek*										
12	Contractor Capability / *Kebolehan Kontraktor*										
13	Meeting Customer Expectation / *Memenuhi kehendak pelanggan*										
14	End User (Hospital Authorities) Engagement / *Penglibatan pihak Hospital*										
15	Assessment of Duration of Project / *Jangkaan masa untuk siap projek*										
16	Feedback regarding project progress / *Maklumbalas mengenai kemajuan projek*										
17	Ownership of project / *Tahap komitmen terhadap kejayaan projek*										

18	Problem Solving Capability / *Kebolehan menyelesaikan masalah*										
19	Project Manager's Leadership Style / *Gaya kepimpinan pengurus*										
20	Verification of Information Shared / *Pengesahan malumat yang dikongsi*										
21	Overall Closeout / *Penutupan Projek secara keseluruhan*										
22	Access to external expertise / *Akses kepada kepakaran yang diperlui*										
23	Procurement of contractor / *Pemilihan kontraktor*										
24	Risk Assessment / *Penilaian Risiko*										
25	Project Organizational Structure / *Struktur Organisasi Projek*										