

**ASSESSMENT OF CONSTRUCTION
PLANNING OF NEW PROJECT: MEDAN
IKAN BAKAR CASE STUDY**

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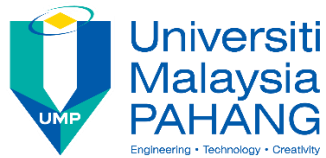
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ASSESSMENT OF CONSTRUCTION PLANNING OF NEW PROJECT:
MEDAN IKAN BAKAR CASE STUDY

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ABSTRAK

Projek pembinaan dianggap berjaya apabila dapat diselesai pada masa yang dijadualkan, mengikut kos yang dianggarkan, dan menepati spesifikasi kualiti yang ditetapkan. Semasa pelaksanaan projek, kelewatan dalam menyiapkan projek adalah merupakan satu kegagalan yang biasanya berlaku dalam industri pembinaan, yang menyebabkan pelanjutan masa di mana projek itu tidak dapat diselesaikan mengikut perancangan. Objektif utama kajian ini adalah memberi tumpuan kepada penilaian perancangan pembinaan projek baru Medan Ikan Bakar. Pelan perancangan sedia ada projek Medan Ikan Bakar telah dianalisis dan didapati bahawa terdapat kelewatan berlaku semasa pelaksanaan projek. Hal yang demikian, pelan perancangan semula bagi projek Medan Ikan Bakar telah dilaksanakan dengan mempertimbangkan bilangan hari hujan dan juga cuti umum. Oleh itu, bilangan hari bekerja yang optimum dapat diperolehi dan projek juga dapat diselesaikan mengikut perancangan supaya pengguna tidak akan menghadapi kerugian dari segi penggunaan atas kelewatan penyediaan projek tersebut yang tidak mengikut tempoh masa yang telah ditetapkan. Selepas memperoleh hari kerja yang optimum dalam perancangan pembinaan, beberapa cadangan dapat diwujudkan untuk pembangunan strategi dengan tujuan untuk memperbaiki amalan perancangan pembinaan dan boleh menjadi garis panduan untuk kajian masa hadapan dalam merancang projek pembinaan.

ABSTRACT

A construction project is commonly acknowledged as successful when it is completed on time, within budget, in accordance with specifications and to stakeholder satisfaction. During the project execution, delay in the project is one of the failures that usually occurred in the construction industry, which leads to extension of time where the project cannot be completed according to the plan. The objective of this study was focused on assessment of construction planning of new project Medan Ikan Bakar. The existing plan of the Medan Ikan Bakar project is analysed and it has been identified that the delay was occurred during the project execution. Due to the extension of time that occurred in the project, the reschedule plan of the Medan Ikan Bakar project is carried out by considering the number of rainy days and the public holidays. Hence, the optimum working days is obtained and the project could be completed according to the plan so that the users may not face the lost in the term of the operation of the building where the completed project is beyond the expected date. After acquiring the optimum working days in construction planning, several suggestions could be created for the development of strategies with the purpose in improving construction planning practices and can be as a guideline for future study in planning the construction project.

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LIST OF ABBREVIATIONS

GDP	Gross Domestic Product
MYR	Malaysia Ringgit
MP	Malaysia Plan
JKR	Jabatan Kerja Raya
PLC	Project Life Cycle
RMP	Risk Management Plan
RM	Risk Management
P-I	Probability-Impact

CHAPTER 1

INTRODUCTION

1.1 Introduction

Construction industry plays very important role and known as highly dynamic sector in the development of country in Malaysia. The industry is a distinct sector of the economy which makes its direct contribution to economic growth like all the other sectors such as agriculture, manufacturing and services. It is a vital contributor to the gross domestic product (GDP) growth and produces the built environment that supports other sectors of the economy in most part of the world (Oladapo, 2015; NELF, 2013). According to the Department of Statistics, Malaysia (2017), GDP From Construction in Malaysia increased to 13838 MYR Million in the third quarter of 2017 from 12892 MYR Million in the second quarter of 2017. GDP from Construction in Malaysia averaged 10038.16 MYR Million from 2010 until 2017, reaching an all-time high of 13838 MYR Million in the third quarter of 2017 and a record low of 6464 MYR Million in the first quarter of 2010.

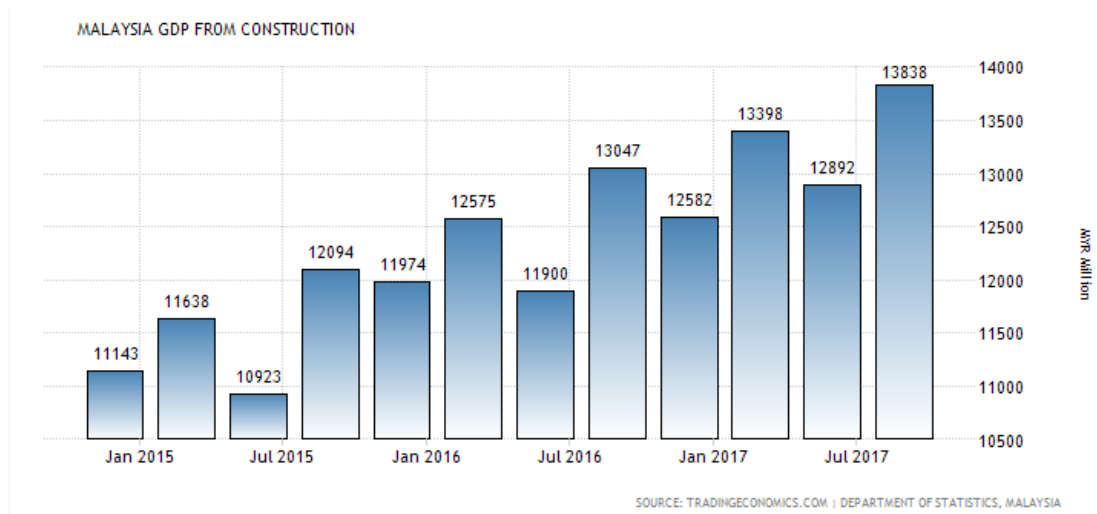


Figure 1.1 Malaysia GDP from Construction

In GDP of construction in Malaysia, Malaysia Plan are one of the biggest contribution towards the economic growth for the construction sector. Based on the Malaysia Plan report, the construction sector is growing rapidly from year to year with the increasing number of projects awarded in Malaysian Plan. In 9th Malaysia Plan (9MP), Kementerian Kerja Raya constructing 542 projects for road and buildings and its rose to 5095 projects in 10th Malaysia Plan (10MP) with the increasing amount allocated for all the projects from 21.47 MYR Billion to 470 MYR Billion.

Based on 9MP and 10MP, not all of the projects are completed according to the Malaysia Plan. In 9MP, there are consists of 221 numbers of projects that are facing delay issue which cannot be completed due to several factors while in 10MP, the same issue happened where 770 projects by JKR are delayed. For instance in 2006 under 9MP, Putrajaya was forced to spend an extra RM800 million to build the East Coast Highway largely due to delays by the Public Works' Department (JKR)'s contractors.

According to the audit, JKR had performed poorly in its task to build roads measuring 139.4km in total for the highway's second phase, with the government department missing both its March 2009 deadline and RM2.09 billion budget. Other factors that contributed to the higher cost included the hike in building materials' prices and additional facilities. The cost was mainly due to the increase of construction materials that caused the tender prices for the re-tendering of a few packages to rise drastically. Other factors that contributed to the cost increase is the additional payment for land acquisition, increase of design costs and security, the construction of toll plazas and additional components (Malay Mail Online, 2013).

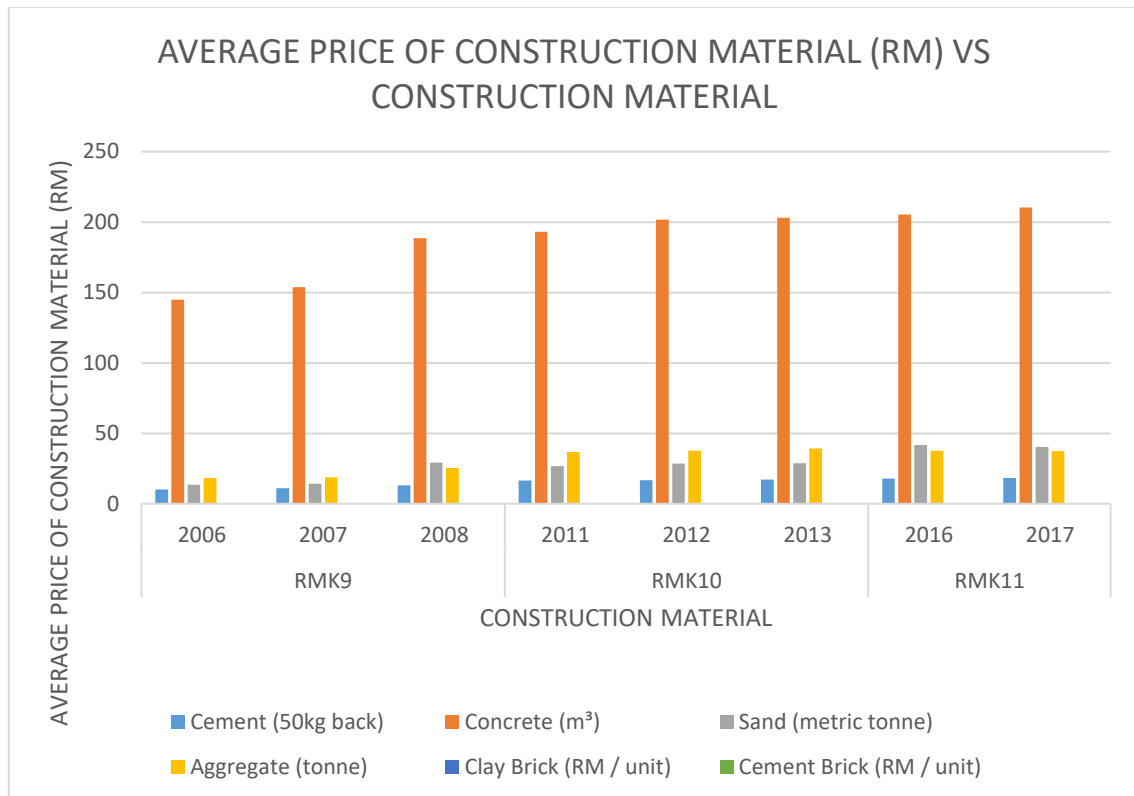


Figure 1.2 Average price of construction material

Based on the Figure 1.2 provided above, it is proven that building material's prices is one of the factor contribution towards the delay occurred in East Coast Highway project. This can be seen from the graph where the price for concrete rose by years from 145 MYR in 2006 of 9MP to 210 MYR in 2017 of 11MP. Besides that, there are also another factors that may leads to delay in construction project.

Table 1.1 Factors of delay in project

No	Factors of delay in project	Critical	Not critical
1	General		
1.1	Weather	√	-
1.2	Poor planning of work execution	√	-
1.3	Poor facilities at construction site	-	√
1.4	Natural disaster	-	√
2	Lack of Labours		
2.1	Professional management	√	-
2.2	Skilled workers	√	-

2.3 General workers	√	√
3 Material Sources		
3.1 Lack of construction building materials	√	-
3.2 Increase in material price	√	-
4 Source of Income		
4.1 Lack of budget	√	-
4.2 Delay of payment from contractor to sub-contractor	√	-
4.3 Problem with bank loan	-	-
5 Client Needs		
5.1 Changing scope of design	√	-
5.2 Changing design and structure that been constructed	√	-
5.3 Delay in approving the changes in works	-	√
6 Machinery Sources		
6.1 Shortage of machineries	-	√
6.2 Defective machineries	-	√

Source: Idris (2006).

From the factors listed in Table 1.1, it can be seen that weather and lack of labours are classified as critically contribution towards the delay occurred in construction industry. Hence, it is very important to have the good planning where it is strictly necessary in construction planning to avoid uncertainty from occur especially delays in project.

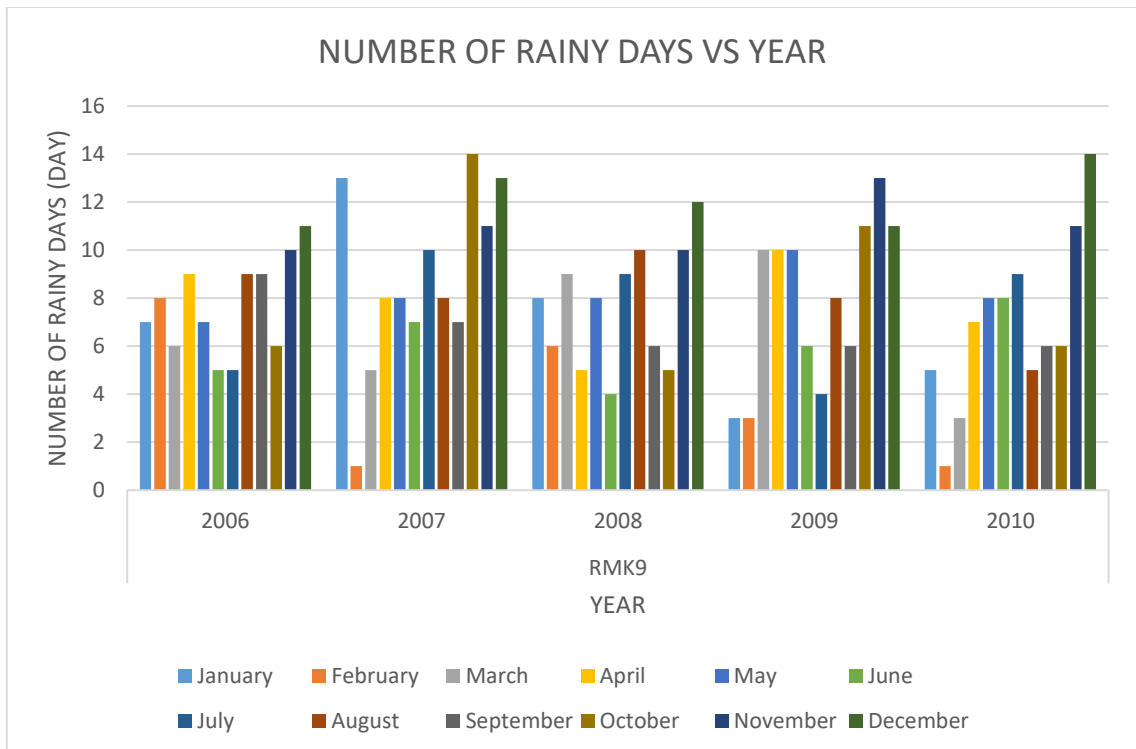


Figure 1.3 Number of rainy days

Number of rainy days must be considered during the planning phase of construction work execution so that the project could be completed within the optimum time according to the plan. This is because the number of rainy days are fluctuated through the months where it can't be predicted and categorised as uncertainty that may leads to extension of time in construction process.

Moreover, increase in local worker wages rate also contribute to the shortage of labour. This is proven based on the Figure 1.4 where the wages rate of concreter, brick layer, plasterer and etc. are increasing from years in 9MP, 10MP and 11MP. Shortage of labour happened because most of the contractor are preferred to choose moderate wages rate of construction worker to avoid exceeding of budget for the construction project. Figure 1.4 showed the workers wage rates with selected occupations for local and foreign workers in 9MP, 10MP and 11MP.

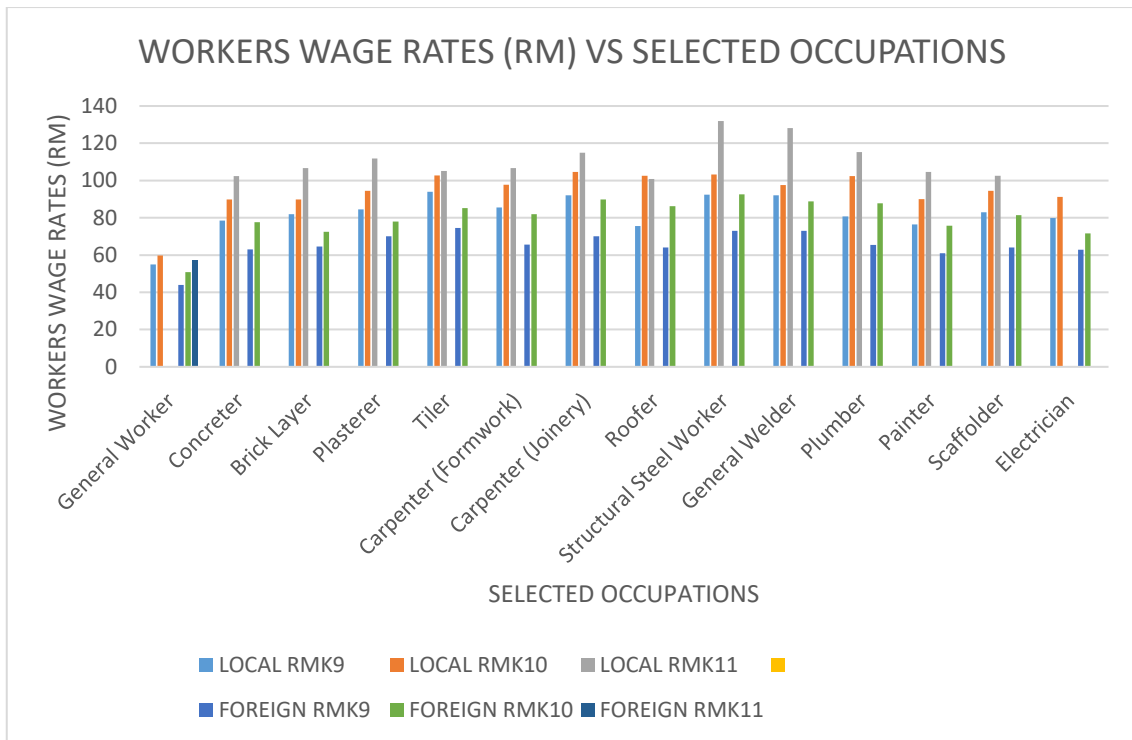


Figure 1.4 Workers wage rates

In construction industry, construction time, cost and quality of the project are major considerations in project management and also known as most important parameters for measuring the successful of the project. The need to monitor and control these three variables evolved is so that there is no compromise on either of them. Good project management is to ensure that all the three variables meet the standards defined in the original commitment (Vector Consulting Group, 2015).

1.2 Problem Statement

During the project execution, delay in the project is one of the failure that usually occurred in construction industry which leads to extension of time where the project cannot be completed according to the plan. Delays and disruptions are commonly known as the challenges that must be faced by people and organization who are involving in construction industry. It may give an effects towards the cost of the budget, time to complete the project and quality of the work production.

Therefore, the extension of time in construction project could be avoided by considering the risks that may occurred in construction phase. As a consultant, it is crucial to have the good planning of duration estimation for construction work to be executed before open tendering process. The good planning must be established before carrying

out the construction work by considering the main important criteria for example by considering the number of rainy days and public holidays in construction. This initiative must be done in order to produce the good performance in the mean of time, quality and cost of the project.

1.3 Aim and Objectives

The study is focused on assessment of construction planning of new project. In order to ensure the objective is achieved, the specific objectives are created as a guideline to complete the studies. The specific objectives of the studies were:

- a) To determine the typical number of rainy days and the public holidays.
- b) To identify the effective number of days in construction planning.

1.4 Scope of Study

In order to achieve the objectives for this study, the scope of the study will be focusing on:

- a) The study is focused on the Medan Ikan Bakar project.
- b) The study is focused on establishing the good planning in construction considering the important factors which are the rainy days and public holidays.
- c) The study will carried out by comparing the existing planning of Medan Ikan Bakar project with the new planning and obtaining the more optimum working days.

1.5 Importance of Study

Based on the other research and the related issues, the major aim of this research is to establish a system which will help to enhance the performance of building construction projects in developing countries, without cost and time exceeding the initial plan while achieving optimal quality. The good performance of construction project could be establish by considering the risk factors that may occurred so that the building operation could be used in time without late of completion. The users also may gain the benefits or profits potentially through the use of the completed project and in the same time produce work that meets the client's expectation and satisfaction.

1.6 Thesis Structure

This chapter comprises of five chapters. The first chapter consists of introduction section. It states the background, problem statement, aim and objectives, scope of study and lastly importance of study. For chapter two, the key terms in-purpose for this research are described and also the literature review that related and suitable for this research. Chapter three explains the research methodology for research data collected and the method of data analysis to be employed. For chapter four, the results obtained from study area and year of study were presented and the analysis from the results obtained from study area and year of study were presented and the analysis from the result was discussed. Finally, chapter five comprises the conclusion from the overall chapter and relates some recommendations for future work on research field.

CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

Construction planning is known as a fundamental and challenging activity in the management and execution of construction projects. The definition of work task, the choice of technology, the duration for individual tasks and the estimation of the required resources, and the identification of any interactions among the different work task are involving in the construction planning. A good construction plan is important for the budget estimation and for the scheduling of work. Conducting a construction plan is a critical task in construction management, neither the plan is formally recorded nor not written.

In recent times, construction works are still faced with problems of working capital, poor management and lack of good organization (Oladapo, 2015). These inefficiencies often causes to disruption of work and productivity loss, and extension of time for completing the building projects. The construction industry is not shaped to respond quickly to the needs of the clients which in most cases take far longer than expected and frequently fail to meet the target technical performance (Choughry and Iqbal, 2013). At the same time, distortions in prices and the shortage of materials and other inputs tend to cause al locative inefficiencies which make the works in hand economically more costly than they should be (The World Bank, 1984). In general, it can be said that risk management in developing countries is inadequate, lacks a systematic and formal approach, and its performance is not measured (Serpell et al, 2015).

In order to reduce many problems related to duration in construction project, a research should be carry out to make a better understanding on how the construction project planning is important to produce the good performance of work execution while

conducting the project, in the same time meets the client needs by the mean of time, cost and quality of the project. We need to make a good start by effectively and efficiently planning and scheduling in order to achieve our ultimate goal in the project life cycle.

2.2 Project Life Cycle

In business domain regardless of the area, each activity or process has a beginning and an end. In the engineering world, it's the similar concepts used to systemize projects over time. To improve a project's performance, the term of project life cycle is used as a management tool. The scope of life cycles differs among industries and diverse terminology with a various number of phases is used depending on the sectors. However, several terms are often used within one particular sector even though a number of phases can vary (Smith et al., 2006). Therefore, it is hard to systemize and serve one common scope and definition of a project life cycle.

For construction projects, for instance, the PLC model can consist of eight succeeding phases including pre-feasibility, feasibility, design, contract/procurement, implementation, commissioning, handover and operation (Smith et al., 2006). The most widely used framework which Pinto and Prescott (1988) present a four stage PLC developed by Adams and Brandt, and King and Cleland where conceptualization, planning, execution and termination are the main phase. The principal project steps which also known as a similar model is used by Westland (2006) who identifies initiation, planning, execution and closure.

Moreover, Ward and Chapman (1995) develop another model which sets up concept, planning, execution and termination to constitute PLC. The same authors in another publication make a further division of each of the four phases into another number of stages and steps. Such fragmentation of the activities provides easier and more accurate potential risk identification and makes risk management processes more effective (Chapman and Ward, 2003). PLC requires adjustments and an individual approach due to the variety of project types. Depending on its scope and structure, the number of further stages within each phase should be adjusted to a particular project. A framework used in one project can turn out to be completely inapplicable in another since each project is unique. As the one proposed by Chapman and Ward (2003) that is shown in Table 2.1, the model should be used as an example and not as ready-made template.

Table 2.1 Phases, stages, and steps in the PLC

Phases	Stages	Steps
Conceptualization	Conceive	Trigger event
	The product	Concept capture Clarification of purpose Concept elaboration Concept evaluation
Planning	Design	Basic design
	The product strategically	Development of performance criteria Design development Design evaluation
	Plan	Basic activities and resources basic plan
	The execution strategically	Development of targets and milestones Plan development Plan evaluation
	Allocate	Basic design and activity-based plan detail
	Resources tactically	Development of resource allocation criteria Allocation development Allocation evaluation
Execution	Execute	Co-ordinate and control
	Production	Monitor progress Modification of targets and milestones Allocation modification Control evaluation
Termination	Deliver	Basic deliverable verification
	The product	Deliverable modification Modification of performance criteria Deliver evaluation

Review	Basic review
The process	Review development
	Review evaluation
Support	Basic maintenance and liability
The product	perception
	Development of support criteria
	Support perception development

Source: Chapman and Ward (2003).

Based on the literature emerges, the most common PLC model is consists of four main project phases. The scope of presented examples of PLC can be adjusted depending on the industry and applicable to a general project concept. Some authors describe PLC's which are typical for a certain industry or sector to make a project planning in the PLC more convenient.

A PLC framework which is typical for construction projects is presented by Bennet (2003). For the construction project, the framework differs from those general models mentioned above, and distinguishes phases and steps characteristics. Its graphic illustration is presented in Figure 2.1 which is consist of six phases of different lengths and starts with Pre-project phase followed by Planning and design, Contractor selection, Project mobilization, Operations, and Close-out and Termination phase. The construction industry requires a special approach due to the complexity of projects undertaken and thus such modified PLC should bring benefits to project management and its performance (Bennett, 2003).

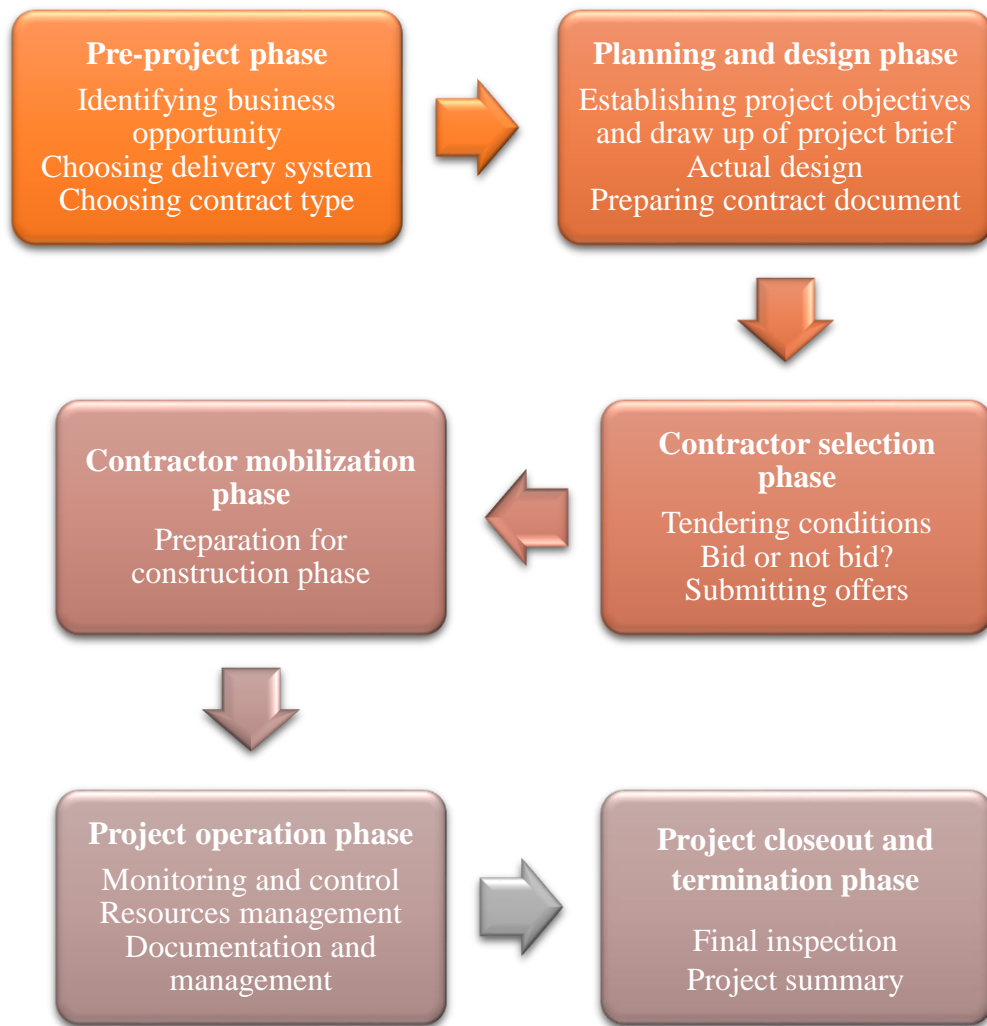


Figure 2.1 PLC for a construction project

2.2.1 Pre-project phase

The purpose of the initial phase in a PLC is to develop an idea for a potential project (Bennett, 2003). This step is described by Westland (2006) in more detail as developing a business opportunity which includes identification of a subject matter or problem which could be further developed into a project. In creating a project idea, the number of assessments and discussions are required in order to identify the business opportunities. Initial problem description, its scope, time frames and an outline of a plan for activities and steps in next phases of the PLC, are some of the factors which should be determined by the time the proposal is presented to a potential sponsor (Westland, 2006).

Furthermore, a project delivery system is chosen in the pre-project phase. The relationships between main actors in the project which is the owner, the designer and the construction organization are established. It indicates that there is a relation between the factors where other researches show that the choice of procurement system has a great impact of how risks are managed in the construction industry. Chege and Rwelamila (1999) emphasized the relationship between risk response in the RMP and the procurement system.

2.2.2 Planning and design phase

Bennet (2003) presented the second phase in the PLC, where the planning and design phase are relatively longer than the others. For more convenient phase completion and project delivery, the project development process consists of three sequential stages.

Project organization starts to be formulated in the first step. Main actors in the project and their roles are defined along with competences which are assigned to each position in particular (Bennett, 2003). A project brief is written which in details describes the scope of the project and its objectives after the project team is appointed. In a construction project, first the needs of the stakeholders must be identified and then the design team makes initial sketches of each idea separately (Bennett, 2003). It helps to recognise potential risks associated with proposed solutions. As a result of this examination, all identified ideas are ranked and the most feasible one is chosen for further development (Westland, 2006).

Further on, site investigation and constructability analysis should be undertaken in the planning phase. A number of potential sites in respect to soil conditions, topography, location and price should be examined. A proposed structure is determined by the constructability analysis whether it is easy to build and what effect will it have on schedule, budget or safety. It is vital to determine in a planning phase whether potential investment is financially feasible. Thus the cost estimator should prepare a preliminary budget of a project where all types of possible costs and the price per unit or activity are determined (Bennett, 2003).

The project team chooses the best alternatives when all options in the feasibility study are analysed and proceeds to the next step in the PLC which is the design process. All assumptions made in previous stages are put into practice. In other words, the actual detail plans are developed from schematic drawings drawn up under planning phase. A small specialized group of engineers are developed every technical aspect such as structure calculation or accessory planning. A clear vision of the investment emerges as a result of the whole design process.

Development of a contract document is the last activity in the planning and design phase. Technical specifications, up-front documents and drawings are included in the contract document. By various institutions such as FIDIC, its format can be based on standards issues which is a standard widely used in international projects. This document sets forms as well as invitation to tender and instructions. Established tendering processes enable the project team to proceed to the next stage which is contractor selection (Bennett, 2003).

2.2.3 Contractor selection phase

In this stage a contractor is selected (Bennett, 2003). However it is not always price which decides who will be awarded the contract (Potts, 2008). The number of criteria in the selection process are taken into consideration such as qualifications, resources held or bid price and compiled in a criteria matrix. Such collected data are evaluated and if no other criteria have been set, the offer which scores highest is usually awarded the contract. For the selection phase to be completed, a legally bidding contract agreement is signed between the owner and contractor (Bennett, 2003).

2.2.4 Project mobilization phase

There is a number of activities which need to be considered in between choosing contractor and beginning of construction. To apply for any type of necessary permits and licenses prior to construction works initiations, it is in the contractor's responsibility. Moreover, detail schedule is developed with the help of computer software in this phase where it is initially drawn up in the planning phase. It is further used to plan employment and other resource utilities over time (Bennett, 2003).

2.2.5 Project operation phase

There are three key activities in addition to the construction itself during the operation phase, which are monitor and control, resource management, and documentation and management. Monitor and control covers supervision of, among others, time, cost and quality (Bennett, 2003). The person who undertakes this management process to keep track of undergoing activities is usually the project manager. Time, cost and quality as previously mentioned are key aspects of each project and hence managing them is an important activity. To log actual time spent for execution of certain task, time management is used. It also helps to allocate resources more effectively and control schedule of performing works (Westland, 2006).

The actual schedule and work progress is compared to the schedule drawn up in previous phases. If any discrepancies are detected, a person responsible should take an appropriate action in order to bring the project back into conformance (Bennett, 2003). Other key issues, finances and quality are possible to manage by keeping track of the time aspect. To record all actual expenses within the project, the cost control is used and it gives control over a budget and out-of-pocket expenditures. Whereas quality monitoring is performed in order to deliver what was promised to the client (Westland, 2006), it also controls whether the work performed is in compliance with technical requirements stated in tender documentation (Bennett, 2003).

Undertaking the second activity which is resource management results in the better project performance. Personnel supervision is to ensure that workers perform their tasks in a right manner and comply with officially set working hours. Other resources like materials or equipment need to be tracked along with personnel. Any irregularity in these matters may negatively impact the schedule, budget or quality, causing delays or cost overruns (Bennett, 2003).

Document management is the last activity in the operation phase, but its importance should not be ignored because it treats communication within the project and grandness of other documents. As in previous examples, proper management of this matter will make the project proceed in a timely, cost-effective and quality assurance manner (Bennett, 2003).

2.2.6 Project close-out and termination phase

At the execution phase, most of PLC's end up where the final product is handed over after being accepted by the client. Performing a project summary requires additional resources, time and money, which investors tend to prefer to spend on new investments instead (Westland, 2006). However, from a legal perspective, project close-out and termination is important among others. There are still activities which must take place before installation works can be considered as completed. The main ones are final clean up, inspections, handover to the owner and project closure (Bennett, 2003).

As suggested by Westland (2006), the final procedure in the PLC is to review the project completion. The overall project assessment is performed in this step. To improve their performance, it gives possibility to draw conclusions for next projects. The completed activities are compared with all initially planned activities such as budget, schedule or scope to assess how the product was delivered in comparison to the plan. Such a review can be performed some time after the project handover in order to be able to assess all benefits (Westland, 2006).

2.2.7 Risks in the PLC

One common definition should be drawn up for the purpose of the particular project to make sure that everybody connected with a project is aware what a risk is. Westland (2006) uses a tool where likelihood of occurring risk is rated to quantify identified risks. When risk plan is completed the risk management process execution starts, which is a tool to track and control previously identified risks (Westland, 2006).

Risks are associated with every project and in order to avoid negative impacts on the overall performance, it should be identified. Many problems which are faced in later phases of the PLC result from unmanaged risks from the earlier stage (Chapman and Ward, 2003). It can be prove where it is very important to carry out accurate analysis especially in an initial phase of a project. Raz *et al.* (2002) sees RM as a process which starts at project definition and continues through planning, execution, control and closure phase. However, Lyons and Skitmore (2002) conducted a study proves that planning and execution are the two phases where RM is most widely used. In contrast, Elkington and

Sallman (2002) figure out that the conceptualization phase is the most important in the RMP.

It has been identified by Westland (2006) that project steps where more attention should be directed toward risk management. The feasibility study is undertaken in the initial project phase which is a thorough analysis of a project proposal. A number of solutions are identified and assessed at this stage and the study is conducted to identify potential risks associated with proposed solutions. A risk plan is drawn up further in the planning phase where potential risks related to project planning are identified. All the stakeholders must contribute in drawing up this plan to ensure that every potential risk has been identified. The risk plan assigns the type of action which should be taken in addition to identifying risk in order to respond to a particular problem. Performing this stage in the planning phase aims at mitigating risk before the execution phase, during which any occurring risk is very costly if no action is taken in advance (Westland, 2006).

It has been suggested by Westland (2006) that risk assessment should be performed during the review of each phase of the PLC. A high level of uncertainty is expected at the beginning of a project which decrease along with project progress. It is necessary to go back and revise controversial issues from their origin where doubts are rise at any point. There is a procedure where required to go back to previous steps and discussing them with the new assumptions. There is also a need for adjustments in previous steps while making decisions when moving further in the PLC. In other words, changing concepts of steps further up in the PLC which were made at the initial phase may occurred where there are decisions made at a certain point of time.

Monitoring and control are performed in the execution phase of the PLC in order to make sure that the process is going according to the plan and all identified risks are being handled. Starting with the point in time when the risks were recognized, such monitoring should be done under the whole project process. The project's objectives, benefits and deliverables are evaluated where the whole project is summarized at the project closure. All activities or risks which were not fully managed within the project will be listed by the all parties. Those unmanaged risks can be a subject of further discussion and be used as warning for next projects (Westland, 2006).

2.3 Risk Management Process for Construction Projects

Risk management is a cyclical process where it is made up of critical steps and the number of risk management processes is proposed. Risk management is the effort to optimize decisions in order to reduce uncertainty about future events when the information is incomplete, unclear or under discussion (Jafari, Rezaeenour, Mazdeh and Hooshmandi, 2011). Previous studies on risk management had outlined different approaches to risk management. For instance, Chapman and Ward (1997) listed out a generic project risk management process which consists of nine phases:

- Define the key aspects of the project
- Focus on a strategic approach to risk management
- Identify where risks might arise
- Structure the information about risk assumptions and relationships
- Assign ownership of risks and responses
- Estimate the extent of uncertainty
- Evaluate the relative magnitude of the various risks
- Plan responses and
- Manage by monitoring and controlling execution.

A process that consists of identification, analysis, assessment and control also been suggested by Akintola and Macleod (1997). However, it has been recognized by the construction industry that a systematic risk management is essential to manage the risk affecting construction projects. There are four well-known approaches to risk management which have been propagated by the following institutes (Jafari et al, 2011). These are; PMBOK (2004), Project Risk Analysis and Management (PRAM) (APM, 2004), Management of Risk (MOR) (Office of Government Commerce, 2007) and the standard AS/NZS4360:2004 (Standard Australia/standards New Zealand, 2007), however, there is no major difference between them. All these approaches are presenting the key steps of planning, identification, qualitative and quantitative analysis, reaction to risk, and controlling.

Jia, Ni, Chen, Hong, Chen, Yang and Lin (2013), presents Figure 2.2 that illustrates six processes and their relationships. Risk management planning is the starting point of the entire risk management procedure among these processes. To regulate and

promote four successive processes in the core risk management, it is very useful and besides it's also to roll forward with management system oriented self-improvement in the whole project development flow from project inception through design and construction to project completion. In the entire risk management procedure, risk management reporting is the finishing point. It is very useful for organizations to understand current situations and take corresponding measures in their risk management practice. Besides, it also helps to summarize the risk management with regular outputs with regard to predefined risk control points.

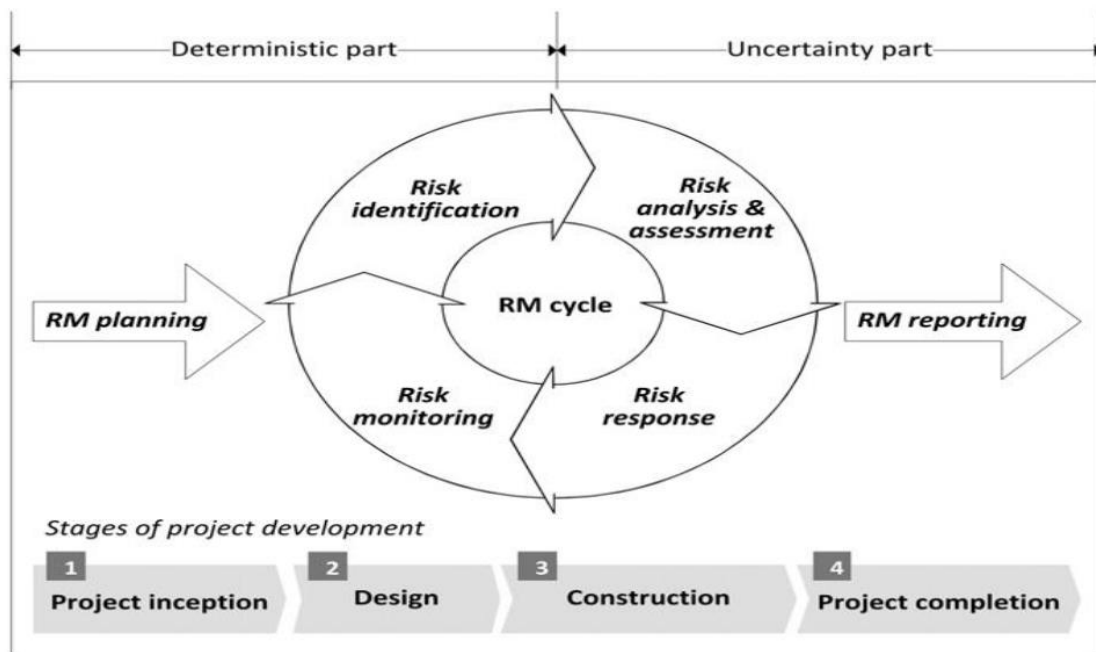


Figure 2.2 Risk management process for construction projects

Source: Jia et al (2013).

Hence, this cycle of risk management process also agree with the definitions of construction with the related professional institutions for example, Association of Project Management (APM, 2004), Institution of Civil Engineers (ICE, 2015) and the Construction Industry Research and Information Association (CIRIA, 5015). These construction institutions believe that a structured and systematic risk management is necessary to manage the risk affecting construction projects.

2.3.1 Definition of Risk Management Objective

The objectives of the risk identification and assessment process can be clearly defined at the first stage of the risk management process. This stage is important because

it shows the scope and margin for the extensive risk identification and assessment procedures (Issac, 1995).

2.3.2 Risk Identification

Tchankova (2002) states that risk identification is the beginning of the process of risk management which develops the basis for the next steps of analysis, assessment and control. It ensures risk management effectiveness if it is done correctly. Consequently, it illustrates that risk identification must be seen in a broader way and not just be seen as what can be insured or mitigated (Tchankova, 2002). Risk identification should start with the basic question like;

- How can the project resources be threatened?
- What adverse effect can prevent the project from achieving its goals?
- What favourable possibility can be revealed?

The identification process at start enables a good basis for the implementation of the project and does not put up any barrier about the type of risk that would be identified or the resources that can be influenced (Tchankova, 2002). Risk identification reveals and determines the possible project risk as well as conditions (Williams et al, 1998). The project managers able to study activities and places where resources are exposed to risk through risk identification. Risk identification, presented by Tchankova (2002), can be describe based on these elements;

- **Sources of risk:** these are the elements of the project environment that can bring some positive or negative outcome.
- **Hazard:** it is a condition or a circumstance that increases the chances of losses or gains and their severity.
- **Peril:** this is a circumstance that is close to risk and has negative, non-profitable results. Peril can happen at any time and cause unknown, predictable losses. Peril is the cause of losses.
- **Exposure to risk:** this is an object facing possible loss or gain. They will be affected if the risk occurs.

Risk identification is a continuous process. It is not possible to identify risk as a one off activity (Tchankova, 2002). Basically, to thoroughly identify the critical risks

affecting a building construction project, the techniques used include but is not limited to;

- i. **Brainstorming:** This is the commonly used method (APM, 2004). The technique used to identify and assess risk in a building construction project is by bringing together all interested and relevant parties or personnel. The purpose of this technique is to identify a large quantity of potential risks affecting a project. Accordingly, this process encourages the identification of risk concerns in a non-critical way and not ascribing blame to the identified risk (Banes, 2000). In order to gain an effective brainstorming session, it must include individuals of knowledge, experience and expertise in risk management with an optimum size of twelve members (Chapman, 1997; Smith and Bohn, 1999).
- ii. **The Delphi Technique:** This is involving a process where the questionnaires are used to identify risks or the impact estimation, and even the probability of previously identified specified risks towards the qualified people by consultation and ask. The opinions given anonymously to allow the technique to be carried out remotely. The responses are summarized and the estimates are drawn out by the risk coordinator based on the results. This information is re-circulated for a repeat session. The process will continue until a stable opinion is reached (Banes, 2000). This technique is more time consuming and expensive compared to the brainstorming technique (Chapman 1998). The lack of interaction and communication is one of the shortage of this technique because the respondents may encounter difficulties in interpreting the questions and results.
- iii. **Interviews:** As a follow-up to the group-oriented techniques previously described, the interviews may be used. To assess risk parameters, identify possible mitigation and contingency measures and to elicit data, the interview is held towards the individuals with expertise relevant to a particular risk issue. This is a precursor to any quantitative analysis that maybe required (Banes, 2000). This technique is about the time consuming. The question must be properly structured in order to effectively gather the required information due to time limitations. Vague and confusing questions should be avoided so that the feedback gained from the interviewees is not misleading (Chapman, 2001). Another disadvantage of this technique is that the information gathered is based on expert's subjective judgement which may not be free from bias.

- iv. **Experiential knowledge:** This is a process where individuals obtain information through their experience in the construction industry (Clear Risk, 2015). It is important to understand that knowledge based information acquired in this kind of process must be relevant and applicable to the existing building construction project.
- v. **Outputs from Risk-oriented Analysis:** Clear Risk report (2015) describes that there are numerous types of risk oriented analysis. For instance, there are the fault tree analysis and event tree analysis. These approaches are top down analysis approach that intends to determine what event, conditions or faults that could lead to an undesirable or unacceptable event. These events can be associated to a risk in a construction project. (Odimabo, 2016).
- vi. **Risk Register:** Risk register consists of standard format that will be used to record risk information gathered using the risk identification techniques previously describe. It records various data for each individual risk issue, including a description, potential causes, ownership, probability, impacts, mitigation and fall-back plans and status (Banes, 2000). In its detailed form it may even include an identification of secondary risks, contingency plans and quantitative parameters (Banes, 2000). Nevertheless, the use of checklists to initiate the risk identification process is not advisable since they may constrain the identification of new risks (ICE et al., 2005).

2.3.2.1 Sources of Construction Risks

A direct relationship between effective risk management and project success is acknowledged since risks are assessed by their potential impact on the project objectives (Balio and price, 2003). Hence, engaging effective risk management techniques to manage risk associated with variable construction activities has never been more important for the successful delivery of projects (Zou et al. 2007).

In managerial practice, different definitions and classifications can be used in managerial practice. Tchankova (2002), states that general classification may use physical, social and economic sources. However, an in-depth investigation of the problem of risk identification may need classification that can cover all types of risk in more detail (Tchankova, 2002). Thus, depending on the construction environment, the sources of risk can be represented.

Many approaches are suggested for classifying risk. It has been presented by El-Sayegh (2008) the list of several factors in the terms of owners, design, contractors, sub-contractors, suppliers, political, social and cultural, economic and natural. Nieto-Morote and Ruz-Vila (2011) presented four ways of classifying risk which are project management, engineering, execution and supplier's risk. Kuo and Lu (2012) group risk into five sub-sets which are engineering design, construction management, construction safety-related, natural hazards, socio and economic. Moreover, Dikmen et al (2007) categorised risk into eight ways which are technical, managerial, resource, productivity, design, payment, client and subcontractor's risk. To classify the risks, many ways can be used associated with construction projects.

2.3.3 Qualitative Risk Analysis

Qualitative risk analysis is regarded as the most useful part of the risk management process as the results gained from the analysis will be used extensively in the subsequent stages (Smith, 1999). The requirement at this stage is the important information about risks for example the likelihood of occurrence, the risk severity, and risk ownership. Risk are usually assessed by using Probability-Impact (P-I) Grids.

- i. Probability-Impact (P-I) Grids** – known for assessing and ranking risks by using a tabular format. The rows and columns of the grid are formed from these two attributes which are the probability of occurrence and risk impact as seen in Table 2.3. The advantage of using probability-impact grids is their simplicity, and risks can be assessed conveniently without precisely specifying their impacts and probabilities of occurrence (Ward, 1999).

Impact	V High					
	High					
	Med					
	Low					
	V Low					
		V Low	Low	Med	High	V High
	Probability					

Figure 2.3 Example of a P-I table

Source: Vose (2008).

The estimates of likelihood of events and consequence of events for each risk characteristics can be assigned qualitatively, for instance High, Medium and Low etc. as shown in Table 2.3. Besides, each of these verbal scales can be related to a scale value. The P-I score for each cell in the grid can be determined as the result of the multiplication of probability and impact scale values; an arbitrary value; or an alphabet (Ward, 1999). Consequently, it is necessary to achieve a consistent quantification of risk likelihood of occurrence and the magnitude of the risk by using a common language in describing them as been suggested by Tah and Carr (2001).

2.3.3.1 Risk Exposure

Fraser and Simkins (2010), states that risk exposures as the extent to which the situation where one is exposed to risk. It is describing as the potential impact of a risk event and its probability of occurrence. These potential risk events however can impact on a construction organization in achieving its goals (Fraser and Simkins, 2010). Accordingly, risk exposure is used to quantify and compare then decide how to respond to them if more than two events may occur.

It has been presented by Lock (2013), the use of four main quadrants for risk exposure which are:

- High chance – High impact
- High chance - Low impact

- Low chance – High impact
- Low chance – Low impact

Low chance-low impact is known as the least important type of risk, while high chance-high impact is known as the most important type of risk. The purpose of describing risk assesses qualitatively is to determine their likelihood and potential effect on project objectives. Besides, Hillson (2002) describes that the Probability-Impact Matrix is useful where it is involving rotating opportunity half as shown in Figure 2.4. By focusing on the “Arrow of Attention”, this allows key threats and opportunities to be visualised. If the organisation is more risk-adverse or if more effort is available for risk management, the size of this wedge can be increased.

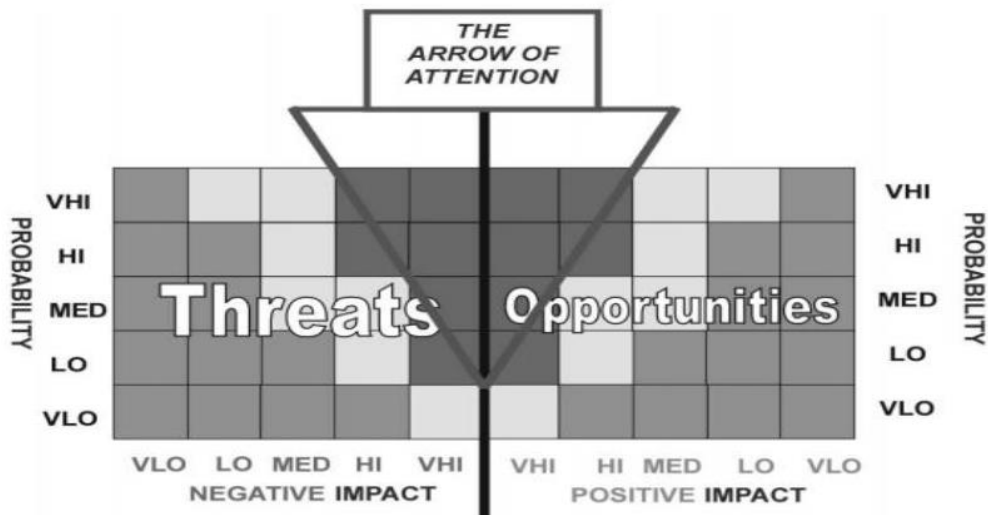


Figure 2.4 Probability-Impact Matrix for opportunities and threats

Source: Hillson (2002).

Based on Figure 2.4, the probability and impacts of each risk are assessed against defined scales, and plotted on a two-dimensional grid. Position on the matrix represents the relative significance of the risk, and high/ medium/low zones may be defined, allowing risks to be ranked (Odimabo, 2016).

2.3.3.2 Risk Acceptability

Godfrey (2006) suggests that individual risk can be classified depending on the amount of risks an organization might be facing as:

- i. **Unacceptable** – intolerable must be eliminated or transferred.
- ii. **Undesirable** – to be avoided if reasonably practical, detailed investigation of cost justification is required, top level approval is needed, monitoring is essential.
- iii. **Acceptable** - can be accepted provided that the risk is managed.
- iv. **Negligible** - no further consideration needed.

2.3.4 Quantitative Risk Analysis

This process is made easier with the creation of a model, which represents the project being studied (Banes, 2000). The model may then be modified to quantify impacts on the project of the specific risks identified using qualitative techniques (Banes, 2000). It also explains the effect of general uncertainty on the project (Banes, 2000). The model that will be constructed is based on an activity network, spread sheet, or a diagrammatic tool. Whichever modelling method is used, it will include all those elements comprising the undertaking (tasks, costs, durations etc.), which are relevant to the risk analysis (Eaton, 2010). Against these elements, uncertainty variables can be entered rather than deterministic values, in order to reflect areas of significant uncertainty (Eaton, 2010).

- i. **Decision tress:** A decision tree is a graphical method of modelling a project, showing the possible effects of individual risks requiring project decisions and immediate-planned courses of action to the overall outcome (Eaton, 2010). The probability of occurrence for each outcome is assigned and it allowed the most probable outcome to be determined. Alternative actions can be explored within the model in order to identify the most beneficial expected outcome of the project or activity (Banes, 2000).
- ii. **Influence Diagrams:** The influence diagram was first defined as an aid to formulating problems prior to decision-making (Banes, 2000). Odimabo Otobo (2016) states that influence diagrams allow the construction of models representing the influences upon a project goal or target. The model exposes the key influences and allows the effect of uncertainty to be determined. These models can become very complex, leading to the need for effective graphical presentation as well as computational efficiency (PRAM, 2004).
- iii. **Probability Analysis:** This is a statistical method, which calculates the impact of every single risk factor, or the impacts of all risk factors on the project (Boothroyd and Emmett, 1996). In this technique, Optimistic, Most Probable, and Pessimistic

time and cost estimates are given for each activity, or for the project as whole (Eaton, 2010).

- iv. **Sensitivity Analysis:** This technique seeks to examine the sensitivity of a risk model to individual risk (Banes, 2000). This analysis could be done by doing a repetitive calculation of the effect on the project outcome through the range values of the variables. The project outcome is usually considered in terms of time of construction, or the final cost of a project (Eaton, 2010).
- v. **Monte Carlo Simulation:** This is a technique where single value estimates (of duration, resource, cost, and logic) are replaced by a distribution to reflect the perceived uncertainty of those estimates (Banes, 2000). Then it is generating a random number and a corresponding value sampled from the distribution. A single value is calculated for each target for e.g. time and cost overruns once samples have been taken from all variables in the model. To get the possible outcomes from the distribution, the process must be repeated in many times.
- vi. **Simple Assessment:** This is a relatively simple mathematical method that investigates the significant risks separately by inspecting their probable effect on total project time/cost (Boothroyd and Emmett, 1996). The evaluation is based on the expected impact calculated from every significant risk. The total impact is used as foundation for a contingency plan once the impacts are added up.
- vii. **Criticality Analysis:** Usually in project planning, the duration of each project task is given in a single value which it is most likely for the duration of the project. The tasks which is the analysis is performed to determine the critical path where it will directly determine the duration of the project. Criticality analysis allows the project manager to determine which activities could become critical if risks are not being effectively managed. Besides, it also indicates the subcritical paths which could be monitored alongside the main project critical path (Odimabo, 2016). Particular attention should be paid to tasks with a high criticality index, especially if they also have significant risks associated with them (Banes, 2000).

In the quantitative risk analysis phase, Sodhi and Tang (2012), figured out expected outcomes for risk analysis in construction. This is so that it can be used to define the expectations to be supported by risk model as to:

- Understand the nature of threats and other risks to help counter these better
- Support risk measures for informing their stakeholders,

- Help management focus on specific areas and
- Support allocation of risk management efforts and budget to different risk mitigations such as to answer the question of who should make such an investment (contractors, subcontractors or its clients) in construction industries.

In order fulfil the defined purposes of the building construction risk analysis, the selected model should be able to provide the outcomes.

2.3.5 Risk Response and Monitoring

The risks that have been identified and analysed are not neglected in the implementation phase of construction projects. The result of risk analysis helps the responsible parties to understand the risk impacts, afterwards plan and undertake effective risk mitigation actions to control the effect before or when they occur.

Based on the previous research, (Odimabo, 2016), states that some organisations prepare to cope with uncertainty by different strategies and this can affect the building construction process system. How much the effects of adverse events can disrupt the building project performance depends on how well the current mitigating actions are implemented. The interaction of risk mitigating policies for different aspects has also been shown through the concept of risk-reward relationship (Chopra and Sodhi, 2004). The understanding of possible risk mitigating actions is important as it is defined as the key concept for systematic risk modellers. It has been clearly explained by Vose (2008) in Figure 2.5 on general risk mitigating actions especially in terms of implementing different risk mitigating strategies in different situations.

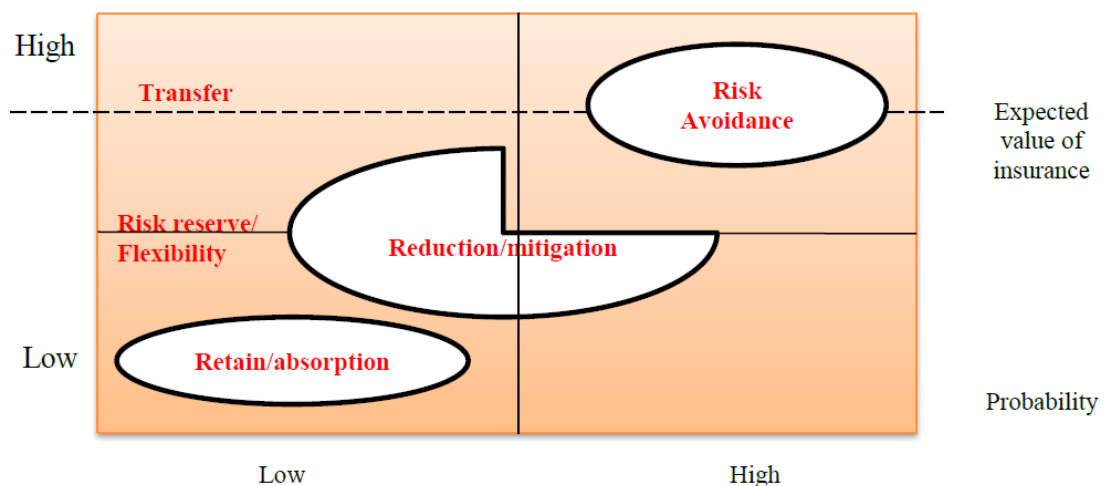


Figure 2.5 Mapping risk mitigation strategies with levels of probability and consequence

Source: Vose (2008).

According to Vose (2008) the responses for threats are:

1. Risk avoidance changing some aspect of the project so that the threat either cannot have an impact anymore or can no longer happen.
2. Risk transfer is another form of “reduce” response for reducing the impact only, and it is mostly only the financial impacts (a third party takes this responsibility). Common practice in risk transfer is to sign contracts that guarantee a certain level of performance and set penalties for when the contractor fails to meet it. Insurance is an attractive option when the adverse event that will happen is above the expected cost of insurance.
3. Risk reduction is a proactive action taken to either reduce the probability of the event occurring or to reduce the impact of it. However, this needs to be done at the strategic level because relevant high level of cost is involved. This option is suitable for any level of risk that is not severe (high probability and high impact) by trading off between benefits and costs.
4. Risk reserve/flexibility aims to increase responsiveness by adding some reserve (buffer) to cover risks or using redundancy policy. This risk reserved option is suitable for small or medium impact risks.
5. Risk retention/absorption/acceptance can be called self-insurance, because some risks are not critical so the cost of insuring against those risks may be higher than the cost of the loss if the adverse event happens. In other words, it is a conscious decision taken for retaining the threats. This option is suitable for risks that are not significant because they have both low likelihood and impact, compared with the cost of control.

And the responses for opportunities are:

1. Exploit: Grasping an opportunity to make sure it will happen and its impact will be realized.
2. Enhance: A proactive action taken to enhance the probability of the event occurring or to enhance the impact of it.

3. Reject: A deliberate decision taken for not exploiting or enhancing the opportunity.
4. Share: Parties sharing the gain (within pre-agreed limits), normally when the cost is less than the cost plan.

In practice, decision maker may be satisfied with their current level of risk with respect to the risk-reward trade-off where higher risk is associated with greater probability of higher return and lower risk with a greater probability of smaller return. In other words some decision makers may think that they have spent too much on resources (money, time, etc.) for managing risks which may not necessarily happen, so they may want to reduce their level of risk protection (Vose, 2008). However, it may adversely affect the organisation's reputation and image because this option can lower the public credibility of the construction organisation. Another option is gathering more data to reduce uncertainties of unknown (epistemic uncertainties) in order to make a robust decision (Ellegaard, 2008; Vose, 2008). Besides the direct strategy to manage risks, knowledge creation is useful as it can help to reduce either probability or the effects of risk effectively (Ellegaard, 2008).

2.4 Risk Factors in Construction Project

Wet weather can be a problem for a number of different types of construction jobs, roofing, excavating, and even concrete (Ida May, 2017). Heavy rain can also reduce visibility for the drivers of vehicles and equipment aside from being extremely unpleasant to work in. It poses its own risks for the safety of the workers where it can turn the ground on the site into mud. Wet weather can cause more problems, big delays, and increased costs. Wet weather is frequently the reason contractors use to request increased contract time or money (Joseph L., 2005).

Paul Netscher (2016) states that if the rain is 500mm in 3 months it will almost certainly disrupt the project. In many places, heavy rains can cause the ground to become sodden and the water tables to rise causing problems with excavating for utilities or basements. Heavy rains can cause problems even for completed construction jobs. Flood waters can erode roads to the point where they break and get swept away by the flow. Wet weather is especially dangerous and difficult when it comes to working on roofs. Even the most skilled worker can potentially get injured (Ida May, 2016).

Besides, there are many public holidays, which also cause the suspension of work (M. Haseeb, 2012). If public holidays and/or the annual builders' holidays fall into this 'extended' period, the contractor is entitled to extend this period further by the working days lost to holidays (Uwe Putlitz, 2016). Extension of time required when the public holidays are not considered in project planning because the work cannot be proceeded due to unavailability of workers during public holidays.

Malaysia, as a multi-racial country, multi-festivals are celebrated each year. This resulted in a high number of public holidays. These holidays can sometimes last for a week or two, or even more, depending on individual organisations. This situation affects projects as multiple organisations (consist of multiple races) are involved and they depend on each other to progress. If any of them is missing in action, it would certainly affect others. This situation, if not accounted for properly would lead to huge project delay (Salman Riazi, 2013).

CHAPTER 3

METHODOLOGY

3.1 Introduction

This chapter describes the research methodology used to identify how the duration estimation was done and to develop the optimum planning for construction project. In this chapter, it will discuss in detail about the methodology and procedures that will be applied in order to achieve all the data needed in this research. It will describe orderly manner in the aspect on how the data will be collected, where the sources of data obtained and the last one do the data management process and representing the result. Figure 3.1 below shows the methodology flow chart.

Methodology or research design is known as plan or framework which act as a guideline to complete a research. This chapter discusses the procedure which the research is conducted by using a chosen approach to achieve the research aim and objective. In this chapter, it consists of three parts which are data collection techniques, research materials and data analysis. Hence, every data collected must be related and applicable with the topic of study. Two approaches are taken into this research to gather all the reliable and relevant data which are the literature review and case study.

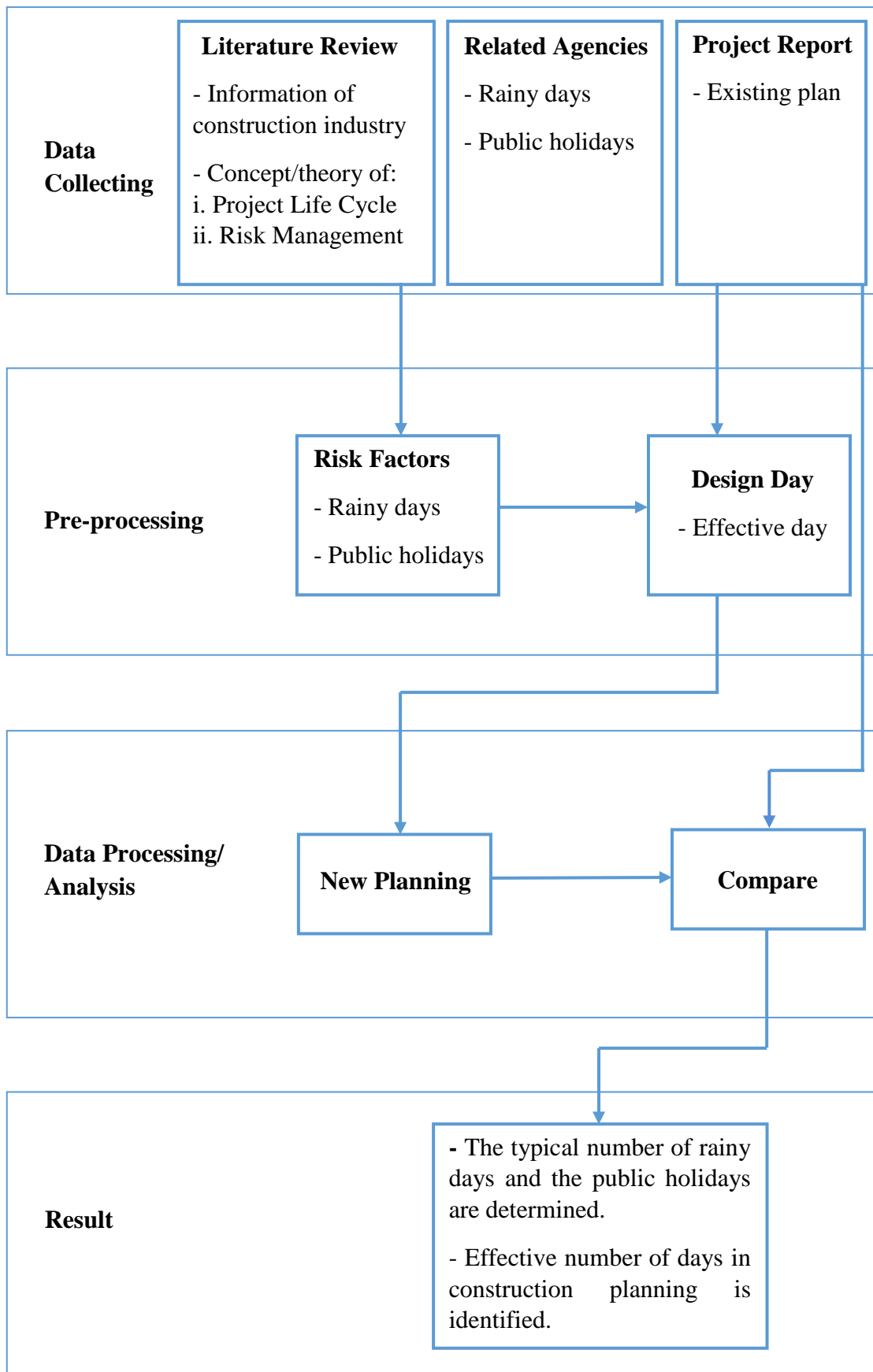


Figure 3.1 Research Methodology Flowchart

3.2 Data Collecting

The important stage in obtaining all required information from the fundamental is known as data collection where the purpose is to achieve objectives of the research. All related data are collected in accordance with the objectives as stated which to determine the typical number of rainy days and the public holidays, and to identify the effective number of days in construction planning.

3.2.1 Primary Data Collection

Primary data are collected from the literature review. Data collections for this research are all regarding to planning and scheduling process in order to estimate the duration process for a construction project. The primary data for this study were gathered through literature review of thesis, journals and textbook regarding the planning and scheduling process in construction industry by identifying the factor that may causes the extension of time for construction work. More information on the subject of planning and scheduling process are gathered. This primary data also functioned as a guideline for secondary data collection.

3.2.1.1 Literature Review

The comprehensive literature review had been carried out through variety information sources, which include journal, articles, research papers, information from the internet, newspaper and reference book. All this information given more understanding in:

- i. Planning and scheduling process in construction project
- ii. The duration estimation activity in construction project
- iii. Planning and scheduling by using Microsoft Project

3.2.2 Secondary Data Collection

Secondary data are based on the data that have been collected from related agencies for instance to determine the number of rainy days in Kuantan for each month. Secondary data are needed to obtain the optimum planning for construction project. After the secondary data are collected, the number of effective days are obtained and the planning and scheduling process could be proceed.

3.2.2.1 Related Agencies

The number of rainy days and public holidays are required for this research to obtain the optimum working days of this Medan Ikan Bakar project. The number of rainy days could be obtain by getting the data from the website such as Wunderground where all the weather forecast and reports could be acquired. Thus, the working day estimation could be produced along with the presence of data of public holidays in Malaysia. The public holidays possibly obtained from calendar where it consists of all the public holidays and for surely will help the process of working day estimation.

3.2.3 Tertiary Data Collection

Tertiary data are a data that gained from a research problem then with using a procedure that fit the research problem best. An often method of data collection used is case study and conducting interview. A case study is just like puzzles that have to be solved. Case study research brings an understanding of a complex issue or object and can extend experience or add strength to what is already known through previous research. (Nor Hashimah, 2016).

3.2.3.1 Project Report

For the case study, ‘Cadangan Pembangunan Anjung Makanan Laut dan Kompleks Hasil Laut’ which also known as ‘Medan Ikan Bakar’ is selected in order to achieve the objectives of the research. This study focus on this Medan Ikan Bakar project that have been constructed and fully finished in 2016. From the case study, data that need to gathered are such as the planning and scheduling of the project, weekly progress report, tender, duration estimation of the project and date of completion.

The Medan Ikan Bakar project report has been analysed and studied. The main construction program of Medan Ikan Bakar project has been studied in order to identify on how the project activities is planned and scheduling, linking activities for the whole project and the factors that will affect the duration of the project completion. By comparing the scheduling of the Medan Ikan Bakar report, the lacking and imperfectness of the scheduling prepared in the reports are analysed. For this research, we are focusing on the number of rainy days and public holidays.

The project reports covered for all the buildings that have been constructed in Medan Ikan Bakar and the budget cost for the project. The reports that had been analysed are listed below:

- i. Weekly Progress Report (January 2016): Cadangan Projek Pembangunan Anjung Makanan Laut dan Kompleks Hasil Laut Daerah Pekan, Pahang Darul Makmur.
- ii. Tender of Medan Ikan Bakar project (2016)

Based on the case study of the two reports mentioned above, each report will be analysed separately in term of their preparation of the planning and scheduling.

3.3 Pre-processing

Based on each case study, the scheduling for the main programmed will be studied. Data gathered will clarify the steps that include in the duration estimation process as to meet the objectives. The high risk factor that affects the construction work is identified and the understanding of risk management in construction industry is studied. For this research, we are focusing on the number of rainy days and the public holidays for the risk factors in this construction project.

These factors that are obtained from the literature review process are then proceed by figuring out the effective days that the construction project this Medan Ikan Bakar must produce in order to obtain the optimum planning. The design day could be done by obtaining the data from previous process which data collecting where the data are collected from the related agencies.

3.4 Data Processing/Analysis

The data processing which also known as analysis is the process where the new planning is produced based on the data collected from the previous process. This data processing could be done after the design day is produced. The summary of the project's planning is tabulated and comparison is done to the existing plan. The comparison is done in order to figure out the most optimum planning of construction work execution.

3.5 Result

After data processing or analysis is completed, the result could be obtained where the typical number of rainy days and the public holidays are determined and the effective

number of days in construction planning is identified. Hence, the discussion from the result obtain could be made by elaborating the weakness and the missing items for the project that does not have the good and optimum planning. Besides, suggestion for the proposed preliminary guidelines is proposed to enhance the better performance of the building construction projects without extension of time.

CHAPTER 4

RESULT AND DISCUSSION

4.1 Introduction

This chapter will analyse and discussed all the result based on the case study. In terms of presentation, the analysed data will be recorded in corresponding figure and table with interrelated explanation.

From the study, the existing and reschedule of Medan Ikan Bakar project planning are gathered and created. All data obtained from the Weekly Progress Report (January 2016) of Cadangan Projek Pembangunan Anjung Makanan Laut dan Kompleks Hasil Laut Daerah Pekan, Pahang Darul Makmur and tender of Medan Ikan Bakar project (2016) will be analysed. With the purpose of gaining data from the weekly progress report and tender of Medan Ikan Bakar project, the project will be rescheduled to obtain the optimum working days by considering the number of rainy days and public holidays due to the extension of time that occurred.

Finally, the result came out in line with the determined objectives. In this chapter therefore will explain in detail on the data gathered. Below are the background and scope of works for the case study project that are being studied in this research.

Case Study: Existing plan

- Project Title: “Cadangan Projek Pembangunan Anjung Makanan Laut dan Kompleks Hasil Laut Daerah Pekan, Pahang Darul Makmur”
- Start date: 02/02/2015
- End date: 01/01/2016

Case Study: Reschedule plan

- Project Title: “Cadangan Projek Pembangunan Anjung Makanan Laut dan Kompleks Hasil Laut Daerah Pekan, Pahang Darul Makmur”
- Start date: 02/02/2015
- End date: 01/02/2016

Scope of Works

- | | |
|------------------------------------|---|
| 1) Main Buildings | - Restoran Ikan Bakar
- Gerai Pengumpulan Hasil Laut
- Industri Hasil Laut |
| 2) Ancillary Buildings | - Surau
- Tandas Awam
- Wakaf |
| 3) External Works | - Site Preparation & Earthwork
- Surface Water Drainage
- Roads and Parking
- Water Reticulation System
- Sewerage System |
| 4) Mechanical and Electrical Works | - Sanitary Plumbing Services
- Fire Fighting Installation
- Electrical Installation |
| 5) Provisional Sum | - Hard and Soft Landscape
- Rubbish Bin
- Children Playground
- Signages |

4.2 Factors Affecting Duration Estimation Process

Preparation of a construction planning for any project is a very complex process. Process of a construction planning contains many variable factors. Every variable has to be correctly estimated based on proper study, past experience and research to produce the effective planning with good performance of work.

There are many factors which affect the construction duration estimation and have significant impact on project duration where it will cause the project to delay and required extension of time. In this study, there are two factors that we considered during the

duration estimation process. The two factors affecting construction duration as shown are the most significant factors. These factors were listed and explained as follows:

- i. Number of rainy days
- ii. Number of public holidays

4.2.1 Number of rainy days

Weather conditions can also have an effect on how long the duration of the construction project needed to be completed. Some tasks cannot be completed due to the rain. This means that the project may be put on hold until the weather passes and at the same time can slow down the construction project where it will cause delay.

Malaysia faces two monsoon winds seasons, the Southwest Monsoon from April to September, and the Northeast Monsoon from October to March. Between October and the end of March the climate at the eastern side of the peninsula is affected by the rainy season or monsoon season. It is known as the Northeast Monsoon which involving the Pahang, Terengganu and Kelantan. The Northeast Monsoon brings in more rainfall compared to the Southwest Monsoon.

It can be seen where the average number of rainy days in Kuantan is slightly higher during the end of the year starting in October. The average number of rainy days in Kuantan is presented in the table as follows:

Table 4.1 Average number of rainy days in Kuantan

Month	Number of rainy days
January	7
February	4
March	5
April	6
May	8
June	6
July	6
August	8
September	7
October	9
November	10
December	12

For the Medan Ikan Bakar project, the project starts to slow down during the end of the year. It can be related to the weather condition where Kuantan is having the monsoon season that causes the project to slow down or put on hold. This is the reason why the number of rainy days needs to be considered during the planning of the project, where it could affect the completion of the work progresses.

4.2.2 Number of public holidays

The number of public holidays must be considered in the construction industry because some of the issues of delay that happens in construct project are regarding to the public holidays. This can be seen where some of the project manager did not include public holiday in the duration of construction and it will cause delay. Extension of time required when the public holidays are not considered in project planning because the work cannot be proceeded due to unavailability of workers during public holidays.

In this study, the number of public holidays for year 2015 and 2016 are presented as follows:

Public **National Holidays** and State Holidays

Date	Holiday	Applicable to
1 Jan (Thu)	New Year	All except Johor, Kedah, Kelantan, Perlis & Terengganu
3 Jan (Sat)	Prophet Muhammad's Birthday (Maulidur Rasul)	National
14 Jan (Wed)	Yang di-Pertuan Besar Negeri Sembilan's Birthday	Negeri Sembilan only
18 Jan (Sun)	Sultan of Kedah's Birthday	Kedah only
1 Feb (Sun)	Federal Territory Day	Federal Territory of Kuala Lumpur, Labuan & Putrajaya only
3 Feb (Tue)	Thaipusam	Kuala Lumpur, Putrajaya, Johor, Kedah, Negeri Sembilan, Perak, Penang & Selangor only
19 Feb (Thu)	Chinese New Year	National
20 Feb (Fri)	Chinese New Year (2nd Day)	National
4 Mar (Wed)	Anniversary of Installation of Sultan of Terengganu	Terengganu only
23 Mar (Mon)	Coronation of Sultan Ibrahim Ibni Almarhum Sultan Iskandar of Johor	Johor only
3 Apr (Fri)	Good Friday	Sabah & Sarawak only
15 Apr (Wed)	Declaration of Malacca as a Historical City	Malacca only
26 Apr (Sun)	Sultan of Terengganu's Birthday	Terengganu only
1 May (Fri)	Labour Day	National
3 May (Sun)	Vesak Day	National
7 May (Thu)	Hari Hol Pahang	Pahang only
16 May (Sat)	Israk & Mikraj	Kedah, Negeri Sembilan & Perlis only
17 May (Sun)	Raja Perlis' Birthday	Perlis only
30 May (Sat)	Harvest Festival	Sabah & Labuan only
31 May (Sun)	Harvest Festival	Sabah & Labuan only
1 Jun (Mon)	Hari Gawai	Sarawak only
2 Jun (Tue)	Hari Gawai	Sarawak only
6 Jun (Sat)	Agong's Birthday	National
18 Jun (Thu)	Awal Ramadan *	Johor, Kedah & Malacca only
4 Jul (Sat)	Nuzul Al-Quran	Kelantan, Pahang, Perak, Perlis, Penang, Selangor, Terengganu and Federal Territories (Kuala Lumpur, Putrajaya and Labuan) only
7 Jul (Tue)	Georgetown World Heritage City Day	Penang only
11 Jul (Sat)	Penang Governor's Birthday	Penang only
17 Jul (Fri)	Hari Raya Puasa *	National
18 Jul (Sat)	Hari Raya Puasa *	National
31 Aug (Mon)	National Day	National
12 Sep (Sat)	Sarawak Governor's Birthday	Sarawak only
16 Sep (Wed)	Malaysia Day	National
24 Sep (Thu)	Hari Raya Haji *	National

25 Sep (Fri)	Hari Raya Haji (2nd Day) *	Kedah, Kelantan, Perlis & Terengganu Only
3 Oct (Sat)	Sabah Governor's Birthday	Sabah only
9 Oct (Fri)	Malacca Governor's Birthday	Malacca only
14 Oct (Wed)	Awal Muharram (Maal Hijrah)	National
24 Oct (Sat)	Sultan of Pahang's Birthday	Pahang only
10 Nov (Tue)	Deepavali	National except Sarawak
11 Nov (Wed)	Sultan of Kelantan's Birthday	Kelantan only
12 Nov (Thu)	Sultan of Kelantan's Birthday	Kelantan only
18 Nov (Wed)	Hari Hol Almarhum Sultan Johor	Johor only
22 Nov (Sun)	Sultan of Johor's Birthday	Johor only
27 Nov (Fri)	Sultan of Perak's Birthday	Perak only
11 Dec (Fri)	Sultan of Selangor's Birthday	Selangor only
24 Dec (Thu)	Prophet Muhammad's Birthday (Maulidur Rasul)	National
25 Dec (Fri)	Christmas	National

Figure 4.1 Public National Holidays and State Holidays in 2015

Source: One Stop Malaysia (2015).

Public **National Holidays** and State Holidays

Date	Holiday	Applicable to
1 Jan (Fri)	New Year	All except Johor, Kedah, Kelantan, Perlis & Terengganu
14 Jan (Thu)	Yang di-Pertuan Besar Negeri Sembilan's Birthday	Negeri Sembilan only
17 Jan (Sun)	Sultan of Kedah's Birthday	Kedah only
24 Jan (Sun)	Thaipusam	Kuala Lumpur, Putrajaya, Johor, Kedah, Negeri Sembilan, Perak, Penang & Selangor only
1 Feb (Mon)	Federal Territory Day	Federal Territory of Kuala Lumpur, Labuan & Putrajaya only
8 Feb (Mon)	Chinese New Year	National
9 Feb (Tue)	Chinese New Year (2nd Day)	National
4 Mar (Fri)	Anniversary of Installation of Sultan of Terengganu	Terengganu only
23 Mar (Wed)	Sultan of Johor's Birthday	Johor only
25 Mar (Fri)	Good Friday	Sabah & Sarawak only
15 Apr (Fri)	Declaration of Malacca as a Historical City	Malacca only
26 Apr (Tue)	Sultan of Terengganu's Birthday	Terengganu only
1 May (Sun)	Labour Day	National
5 May (Thu)	Israk & Mikraj	Kedah, Negeri Sembilan & Perlis only
7 May (Sat)	Hari Hol Pahang	Pahang only
17 May (Tue)	Raja Perlis' Birthday	Perlis only
21 May (Sat)	Vesak Day	National
30 May (Mon)	Harvest Festival	Sabah & Labuan only
31 May (Tue)	Harvest Festival	Sabah & Labuan only
1 Jun (Wed)	Hari Gawai	Sarawak only
2 Jun (Thu)	Hari Gawai	Sarawak only
4 Jun (Sat)	Agong's Birthday	National
6 Jun (Mon)	Awal Ramadan *	Johor, Kedah & Malacca only
22 Jun (Wed)	Nuzul Al-Quran	Kelantan, Pahang, Perak, Perlis, Penang, Selangor, Terengganu and Federal Territories (Kuala Lumpur, Putrajaya and Labuan) only
6 Jul (Wed)	Hari Raya Puasa *	National
7 Jul (Thu)	Hari Raya Puasa *	National
7 Jul (Thu)	Georgetown World Heritage City Day	Penang only
9 Jul (Sat)	Penang Governor's Birthday	Penang only
31 Aug (Wed)	National Day	National
10 Sep (Sat)	Sarawak Governor's Birthday	Sarawak only

12 Sep (Mon)	Hari Raya Haji *	National
13 Sep (Tue)	Hari Raya Haji (2nd Day) *	Kedah, Kelantan, Perlis & Terengganu Only
16 Sep (Fri)	Malaysia Day	National
1 Oct (Sat)	Sabah Governor's Birthday	Sabah only
2 Oct (Sun)	Awal Muharram (Maal Hijrah)	National
14 Oct (Fri)	Malacca Governor's Birthday	Malacca only
24 Oct (Mon)	Sultan of Pahang's Birthday	Pahang only
29 Oct (Sat)	Deepavali *	National except Sarawak
6 Nov (Sun)	Hari Hol Almarhum Sultan Iskandar	Johor only
11 Nov (Fri)	Sultan of Kelantan's Birthday	Kelantan only
12 Nov (Sat)	Sultan of Kelantan's Birthday	Kelantan only
27 Nov (Sun)	Sultan of Perak's Birthday	Perak only
11 Dec (Sun)	Sultan of Selangor's Birthday	Selangor only
12 Dec (Mon)	Prophet Muhammad's Birthday (Maulidur Rasul)	National
25 Dec (Sun)	Christmas	National

Figure 4.1 Public National Holidays and State Holidays in 2016

Source: One Stop Malaysia (2016).

4.3 Planning and Scheduling

Planning in construction plays the very important role in the construction management. Planning of construction activities is crucial in order to help engineers to complete the project on time, within the budget and good quality. In the management and execution of construction projects, construction planning is known as a fundamental and challenging activity where it involves the choice of technology, the definition of work tasks, the estimation of the required resources and durations for individual tasks. A good construction plan is the basis for developing the budget and the schedule for work.

For this study, the existing plan of Medan Ikan Bakar project has been analysed and it has been identified that the project is delayed. Based on the tabulated graph below, the percentage of actual progress is slightly higher than the percentage of planned for the first seven months of the project. Unfortunately, the project begins to slow down on the ninth month of the project which is during October. On January 2016 where the project supposed to be completed, the percentage of actual progress only reaches 89%, while it is supposed to be 100% completed within the period. This required extension of time in order to finish up the project.

Table 4.2 Percentage of work progress of planned and actual of Medan Ikan Bakar project

Month	Feb-15	Mar-15	Apr-15	May-15	Jun-15	Jul-15	Aug-15	Sep-15	Oct-15	Nov-15	Dec-15	Jan-16
Monthly	558,382.50	1,240,850	1,985,360	2,729,870	3,288,252.50	3,846,635	4,405,017.50	4,901,357.50	5,397,697.50	5,956,080	6,142,207.50	6,204,250
Cumulative	0	0	801,580.69	801,580.69	1,687,695.22	2,094,060.25	2,094,060.25	2,773,509.10	3,450,109.40	3,450,109.40	3,450,109.40	4,044,762.05
Planned (%)	9	20	32	44	53	62	71	77	85	96	98	100
Actual (%)	17	30	42	55	61	63	72	77	83	85	88	89

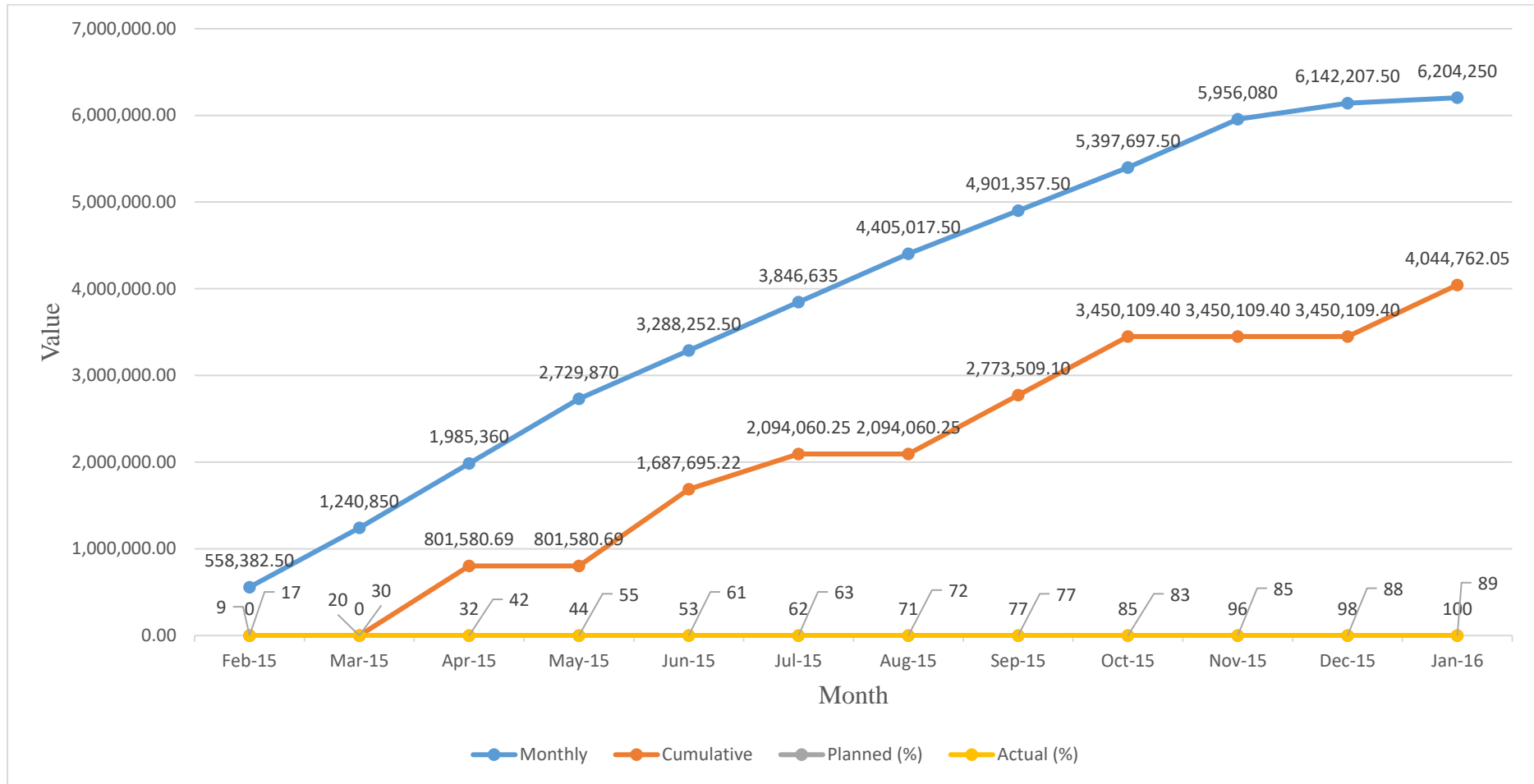


Figure 4.2 Percentage of work progress of planned and actual of Medan Ikan Bakar project

This situation can be related to the weather condition in Malaysia where the average number of rainy days is slightly higher during the end of the year. Besides, the number of public holidays may also affect the duration to execute the construction work. This can be related where the effective planning is very important in project management to produce the effective number of working days. This initiative is to ensure that the users may not face the lost in the term of the operation of the building where the completed project is beyond the expected date.

Hence, the reschedule plan of Medan Ikan Bakar project has been made to produce the effecting planning with the effective number of working days without having the extension of time. The existing plan and reschedule plan are tabulated in the table according to the tasks as follows:

Table 4.3 Medan Ikan Bakar project

No	Task	Existing – Duration (days)	Reschedule – Duration (days)
1	Membina dan Menyiapkan Sebuah Pusat Pembangunan Anjung Makanan Laut Dan Kompleks	240 days	252 days
2	Start	0 days	1 day
3	Mobilisation On Site	3 days	3 days
4	Water & Power Temporary Supply	28 days	28 days
5	Site Office Set-Up	28 days	28 days
6	Surveying Work	14 days	14 days
7	Site Preparation & Earthwork	56 days	56 days
8	Clear The Site	14 days	14 days
9	Imported Earth / Sand Zone A	14 days	14 days
10	Imported Earth / Sand Zone B	28 days	28 days
11	External Work 1	14 days	14 days
12	Wash Through/Silt Trap	14 days	14 days
13	Water Tank 200 Gallon	14 days	14 days
14	External Work 2	123 days	127 days
15	Temporary Paving	14 days	14 days
16	Gabion Wall	115 days	119 days

Table 4.4 Kompleks Hasil Laut

No	Task	Existing – Duration (days)	Reschedule – Duration (days)
17	Building Work	313 days	192 days
KOMPLEKS HASIL LAUT			
18	Kompleks Hasil Laut	112 days	113 days
19	Preparation On Site	1 day	1 day
20	Setting Out	1 day	1 day
21	Work Below Floor Level	9 days	9 days
22	Column Stump	9 days	9 days
23	Re-bar	2 days	2 days
24	Formwork	2 days	2 days
25	Concreting	2 days	2 days
26	Striking Formwork	3 days	3 days
27	Backfilling	1 day	1 day
28	Ground Floor Slab & Ground Beam	24 days	24 days
29	Ground Beam	15 days	15 days
30	Excavation	1 day	1 day
31	Lean Concrete	3 days	3 days
32	Formwork	3 days	3 days
33	Re-bar	2 days	2 days
34	Concreting	2 days	2 days
35	Striking Formwork	3 days	3 days
36	Backfilling	1 day	1 day
37	Ground Slab	10 days	10 days
38	Termite Treatment	2 days	2 days
39	DPM Sheet	1 day	1 day
40	BRC	2 days	2 days
41	Formwork	2 days	2 days
42	Concreting	1 day	1 day
43	Striking Formwork	3 days	3 days
44	GF Column	9 days	9 days
45	Re-bar	3 days	3 days
46	Formwork	3 days	3 days
47	Concreting	1 day	1 day
48	Striking Formwork	2 days	2 days
49	Roof Beam & Slab	43 days	43 days
50	Formwork	14 days	14 days
51	Re-bar	4 days	4 days
52	Concreting	1 day	1 day
53	Striking Formwork	3 days	3 days
54	Roof	21 days	21 days
55	R.C Slab & Roof Truss System	14 days	14 days
56	Clay Roof Tile	7 days	7 days
57	Brick Work And Partition	10 days	10 days
58	External Wall (Ground Floor)	10 days	10 days
59	Internal Wall (Ground Floor)	10 days	10 days
60	Window, Door & Ironmongeries	42 days	43 days
61	Windows	3 days	3 days

62	Outer Frame	3 days	3 days
63	Inner Frame & Glass Panel	3 days	3 days
64	Doors	3 days	3 days
65	M.S Steel	3 days	3 days
66	Door Frame	3 days	3 days
67	Door Leaf	3 days	3 days
68	Internal Wall	28 days	29 days
69	Plastering	14 days	14 days
70	Tiling Work	14 days	14 days
71	Painting Work	14 days	15 days
72	Pebble Work	7 days	7 days
73	Internal Floor	14 days	14 days
74	Rendering	2 days	2 days
75	Tiling Work	14 days	14 days
76	Internal Ceiling	7 days	7 days
77	External Finishing	14 days	14 days
78	Plastering	14 days	14 days
79	Tiling Work	14 days	14 days
80	Ceiling Finishing	7 days	7 days
81	Plumbing Work	7 days	8 days
82	Electrical Work	7 days	8 days
83	Mechanical Work	7 days	8 days
84	Sanitary Fitting	7 days	8 days
85	Apron	7 days	8 days

Table 4.5 Restoran Ikan Bakar

No	Task	Existing – Duration (days)	Reschedule – Duration (days)
RESTORAN IKAN BAKAR			
86	Restoran Ikan Bakar	204 days	145 days
87	Preparation On Site	1 day	1 day
88	Setting Out	1 day	1 day
89	Work Below Floor Level	10 days	10 days
90	Column Stump	10 days	10 days
91	Re-bar	2 days	2 days
92	Formwork	2 days	2 days
93	Concreting	2 days	2 days
94	Striking Formwork	3 days	3 days
95	Backfilling	1 day	1 day
96	Ground Floor Slab & Ground Beam	0 days	26 days
97	Ground Beam	15 days	15 days
98	Excavation	1 day	1 day
99	Lean Concrete	3 days	3 days
100	Formwork	3 days	3 days
101	Re-bar	2 days	2 days
102	Concreting	2 days	2 days
103	Striking Formwork	3 days	3 days

104	Backfilling	1 day	1 day
105	Ground Slab	11 days	12 days
106	Termite Treatment	2 days	2 days
107	DPM Sheet	1 day	2 days
108	BRC	2 days	2 days
109	Formwork	2 days	2 days
110	Concreting	1 day	1 day
111	Striking Formwork	3 days	3 days
112	GF Column	9 days	9 days
113	Re-bar	3 days	3 days
114	Formwork	3 days	3 days
115	Concreting	1 day	1 day
116	Striking Formwork	2 days	2 days
117	Roof Beam & Slab	196 days	45 days
118	Formwork	14 days	14 days
119	Re-bar	4 days	4 days
120	Concreting	1 day	1 day
121	Striking Formwork	3 days	3 days
122	Roof	0 days	23 days
123	R.C Slab & Roof Truss System	14 days	14 days
124	Clay Roof Tile	7 days	9 days
125	Brick Work And Partition	0 days	11 days
126	External Wall (Ground Floor)	10 days	11 days
127	Internal Wall (Ground Floor)	10 days	11 days
128	Window, Door & Ironmongeries	0 days	44 days
129	Windows	0 days	4 days
130	Outer Frame	3 days	4 days
131	Inner Frame & Glass Panel	3 days	4 days
132	Doors	0 days	4 days
133	Door Frame	3 days	4 days
134	Door Leaf	3 days	4 days
135	Internal Wall	0 days	16 days
136	Plastering	14 days	16 days
137	Cement Render	7 days	7 days
138	Painting Work	14 days	16 days
139	Internal Floor	0 days	14 days
140	Rendering	7 days	7 days
141	Tiling Work	14 days	14 days
142	Roof Truss Painting	7 days	10 days
143	Wet Kitchen Painting	7 days	10 days
144	External Finishing	14 days	16 days
145	Plastering	14 days	16 days
146	Timber Treatment	14 days	16 days
147	Plumbing Work	7 days	10 days
148	Electrical Work	7 days	10 days
149	Mechanical Work	7 days	10 days

Table 4.6 Gerai Hasil Laut

No	Task	Existing – Duration (days)	Reschedule – Duration (days)
GERAI HASIL LAUT			
150	Gerai Hasil Laut	79 days	89 days
151	Preparation On Site	1 day	1 day
152	Setting Out	1 day	1 day
153	Work Below Floor Level	8 days	8 days
154	Column Stump	8 days	8 days
155	Re-bar	2 days	2 days
156	Formwork	2 days	2 days
157	Concreting	1 day	1 day
158	Striking Formwork	2 days	2 days
159	Backfilling	1 day	1 day
160	Ground Floor Slab & Ground Beam	21 days	22 days
161	Ground Beam	10 days	10 days
162	Excavation	1 day	1 day
163	Lean Concrete	1 day	1 day
164	Formwork	2 days	2 days
165	Re-bar	2 days	2 days
166	Concreting	1 day	1 day
167	Striking Formwork	2 days	2 days
168	Backfilling	1 day	1 day
169	Ground Slab	12 days	13 days
170	Termite Treatment	1 day	1 day
171	DPM Sheet	1 day	1 day
172	BRC	2 days	2 days
173	Formwork	2 days	2 days
174	Concreting	1 day	1 day
175	Striking Formwork	2 days	2 days
176	Apron	3 days	4 days
177	GF Column	8 days	8 days
178	Re-bar	2 days	2 days
179	Formwork	2 days	2 days
180	Concreting	1 day	1 day
181	Striking Formwork	3 days	3 days
182	Roof Beam & Slab	27 days	27 days
183	Formwork	7 days	7 days
184	Re-bar	2 days	2 days
185	Concreting	1 day	1 day
186	Striking Formwork	3 days	3 days
187	Roof	14 days	14 days
188	R.C Slab & Roof Truss System	7 days	7 days
189	Clay Roof Tile	7 days	7 days
190	Brick Work And Partition	7 days	7 days
191	External Wall (Ground Floor)	7 days	7 days
192	Internal Wall (Ground Floor)	7 days	7 days
193	Window, Door & Ironmongeries	21 days	30 days
194	Windows	3 days	3 days

195	Outer Frame	3 days	3 days
196	Inner Frame & Glass Panel	3 days	3 days
197	Doors	3 days	3 days
198	Roller Shutter	3 days	3 days
199	Door Frame	3 days	3 days
200	Door Leaf	3 days	3 days
201	Internal Wall	14 days	23 days
202	Plastering	7 days	7 days
203	Tiling Work	7 days	7 days
204	Painting Work	7 days	9 days
205	Internal Floor	7 days	9 days
206	Rendering	1 day	1 day
207	Tiling Work	7 days	9 days
208	Internal Ceiling	3 days	3 days
209	External Finishing	1 day	1 day
210	Plastering	1 day	1 day
211	Cement Render	1 day	1 day
212	Pebble Work	1 day	1 day
213	Tiling Work	1 day	1 day
214	Ceiling Finishing	1 day	1 day
215	Plumbing Work	7 days	10 days
216	Electrical Works	7 days	10 days
217	Mechanical Works	7 days	10 days
218	Builder's Work In Connection	1 day	1 day
219	Apron	7 days	7 days

Table 4.7 Public Toilet

No	Task	Existing – Duration (days)	Reschedule – Duration (days)
PUBLIC TOILET			
220	Public Toilet	114 days	116 days
221	Preparation On Site	1 day	1 day
222	Setting Out	1 day	1 day
223	Work Below Floor Level	9 days	9 days
224	Column Stump	9 days	9 days
225	Re-bar	2 days	2 days
226	Formwork	2 days	2 days
227	Concreting	1 day	1 day
228	Striking Formwork	3 days	3 days
229	Backfilling	1 day	1 day
230	Ground Floor Slab & Ground Beam	28 days	30 days
231	Ground Beam	11 days	11 days
232	Excavation	1 day	1 day
233	Lean Concrete	1 day	1 day
234	Formwork	2 days	2 days
235	Re-bar	2 days	2 days

236	Concreting	1 day	1 day
237	Striking Formwork	3 days	3 days
238	Backfilling	1 day	1 day
239	Ground Slab	18 days	20 days
240	Termite Treatment	1 day	1 day
241	DPM Sheet	1 day	1 day
242	BRC	2 days	2 days
243	Formwork	3 days	3 days
244	Concreting	1 day	1 day
245	Striking Formwork	3 days	3 days
246	Apron	7 days	9 days
247	GF Column	9 days	9 days
248	Re-bar	2 days	2 days
249	Formwork	3 days	3 days
250	Concreting	1 day	1 day
251	Striking Formwork	3 days	3 days
252	Roof Beam & Slab	42 days	42 days
253	Formwork	14 days	14 days
254	Re-bar	3 days	3 days
255	Concreting	1 day	1 day
256	Striking Formwork	3 days	3 days
257	Roof	21 days	21 days
258	R.C Slab & Roof Truss System	14 days	14 days
259	Clay Roof Tile	7 days	7 days
260	Brick Work And Partition	14 days	14 days
261	External Wall (Ground Floor)	14 days	14 days
262	Internal Wall (Ground Floor)	14 days	14 days
263	Window, Door & Ironmongeries	45 days	45 days
264	Doors	3 days	3 days
265	Door Frame	3 days	3 days
266	Door Leaf	3 days	3 days
267	Internal Wall	28 days	28 days
268	Plastering	14 days	14 days
269	Tiling Work	14 days	14 days
270	Painting Work	7 days	7 days
271	Internal Floor	7 days	7 days
272	Rendering	2 days	2 days
273	Tiling Work	7 days	7 days
274	Internal Ceiling	7 days	7 days
275	External Finishing	14 days	14 days
276	Plastering	14 days	14 days
277	Cement Render	1 day	1 day
278	Pebble Work	7 days	8 days
279	Tiling Work	7 days	8 days
280	Ceiling Finishing	7 days	8 days
281	Plumbing Work	7 days	10 days
282	Electrical Works	7 days	10 days
283	Mechanical Works	7 days	10 days
284	Sanitary Fitting	7 days	10 days

Table 4.8 Surau (Musholla)

No	Task	Existing – Duration (days)	Reschedule – Duration (days)
SURAU (MUSHOLLA)			
285	Surau (Musholla)	91 days	106 days
286	Preparation On Site	1 day	1 day
287	Setting Out	1 day	1 day
288	Work Below Floor Level	10 days	10 days
289	Column Stump	10 days	10 days
290	Re-bar	2 days	2 days
291	Formwork	3 days	3 days
292	Concreting	1 day	1 day
293	Striking Formwork	3 days	3 days
294	Backfilling	1 day	1 day
295	Ground Floor Slab & Ground Beam	28 days	29 days
296	Ground Beam	12 days	12 days
297	Excavation	1 day	1 day
298	Lean Concrete	1 day	1 day
299	Formwork	3 days	3 days
300	Re-bar	2 days	2 days
301	Concreting	1 day	1 day
302	Striking Formwork	3 days	3 days
303	Backfilling	1 day	1 day
304	Ground Slab	17 days	18 days
305	Termite Treatment	1 day	1 day
306	DPM Sheet	1 day	1 day
307	BRC	2 days	2 days
308	Formwork	2 days	2 days
309	Concreting	1 day	1 day
310	Striking Formwork	3 days	3 days
311	Apron	7 days	8 days
312	GF Column	9 days	9 days
313	Re-bar	2 days	2 days
314	Formwork	3 days	3 days
315	Concreting	1 day	1 day
316	Striking Formwork	3 days	3 days
317	Roof Beam & Slab	35 days	35 days
318	Formwork	7 days	7 days
319	Re-bar	3 days	3 days
320	Concreting	1 day	1 day
321	Striking Formwork	3 days	3 days
322	Roof	21 days	21 days
323	R.C Slab & Roof Truss System	14 days	14 days
324	Clay Roof Tile	7 days	7 days
325	Brick Work And Partition	7 days	7 days
326	External Wall (Ground Floor)	7 days	7 days
327	Internal Wall (Ground Floor)	7 days	7 days
328	Window, Door & Ironmongeries	35 days	29 days
329	Windows	3 days	3 days

330	Outer Frame	3 days	3 days
331	Inner Frame & Glass Panel	3 days	3 days
332	Doors	1 day	1 day
333	Door Frame	1 day	1 day
334	Door Leaf	1 day	1 day
335	Internal Floor Finishes	21 days	21 days
336	Plastering	14 days	14 days
337	Tiling Work	7 days	7 days
338	Painting Work	7 days	7 days
339	Internal Floor Finishes	8 days	8 days
340	Rendering	1 day	1 day
341	Tiling Work	7 days	7 days
342	Internal Ceiling	7 days	7 days
343	External Finishing	28 days	28 days
344	Plastering	14 days	14 days
345	Tiling Work	7 days	7 days
346	Ceiling Finishing	7 days	7 days
347	Plumbing Work	7 days	10 days
348	Electrical Works	7 days	10 days
349	Mechanical Works	7 days	10 days

Table 4.9 External Works

No	Task	Existing – Duration (days)	Reschedule – Duration (days)
EXTERNAL WORKS			
350	External Works	135 days	162 days
351	Surface Water Drainage	116 days	147 days
352	Drain, Box Concrete	60 days	70 days
353	900mm x 1000mm	60 days	70 days
354	900mm x 900mm	60 days	70 days
355	Others	90 days	90 days
356	Roadworks & Pavements	45 days	51 days
357	Interlocking	21 days	24 days
358	Roadworks	30 days	33 days
359	Road Furniture	15 days	18 days
360	Water Reticulation	44 days	47 days
361	Pipe line	30 days	33 days
362	Pipe Fittings	30 days	33 days
363	JBA - Meter Speed	14 days	14 days
364	Sewerage (Septic Tank)	14 days	14 days
365	Fencing & Railings	21 days	21 days
366	Fencing	21 days	21 days
367	Railing	21 days	21 days
368	Electrical Services	40 days	40 days
369	LV Cable	40 days	40 days
370	Compound Lighting	40 days	40 days
371	TESTING AND COMMISSIONING	20 days	20 days

372	FINAL INSPECTION	1 day	1 day
373	HANDING OVER	1 day	1 day

This Medan Ikan Bakar project is rescheduled based on the factors that affects the duration estimation process which are the number of rainy days and public holidays to produce the effective working days. From the table, it can be seen that the total duration of reschedule plan is 12 days longer than the existing plan. This is because some of the tasks in the existing plan are not considering the public holidays for instance National Day and Malaysia Day. Hence, the rearrange of the duration of work progress has to be made to ensure that the task could be completed according to the plan without delay occur. Besides, it can be seen that the project starts to slow down at the end of the year, which is during the rainy season or monsoon season that occur on the eastern side of the peninsula.

By considering the public holidays and the number of rainy days, the effective number of working days is be produced and the extension of time to construct the work progression is avoided. Furthermore, the operation of the Medan Ikan Bakar project also could be used on time right after completion of the project, and at the same time the losses of the client due to the late completion and operation of the project could be avoided.

4.4 Duration Estimation Process

The duration estimation process is the activity duration estimating to quantify the amount of time that is required for the activity will take to complete. The duration estimation process is needed to be done before the project takes place and the right duration estimation is important so that there is no extension of time required to finish up the project. Therefore, accurately estimating that activity's duration is required to describe its different aspects and the effect of each one on the activity's length.

4.4.1 Tasks of Gerai Hasil Laut

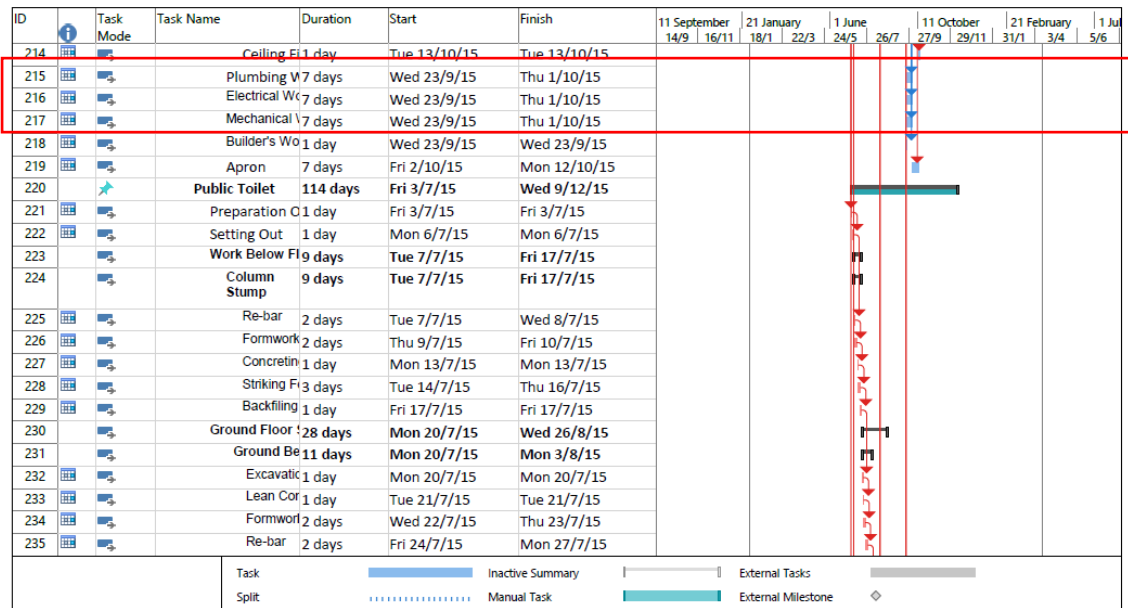


Figure 4.4 Existing plan of Gerai Hasil Laut

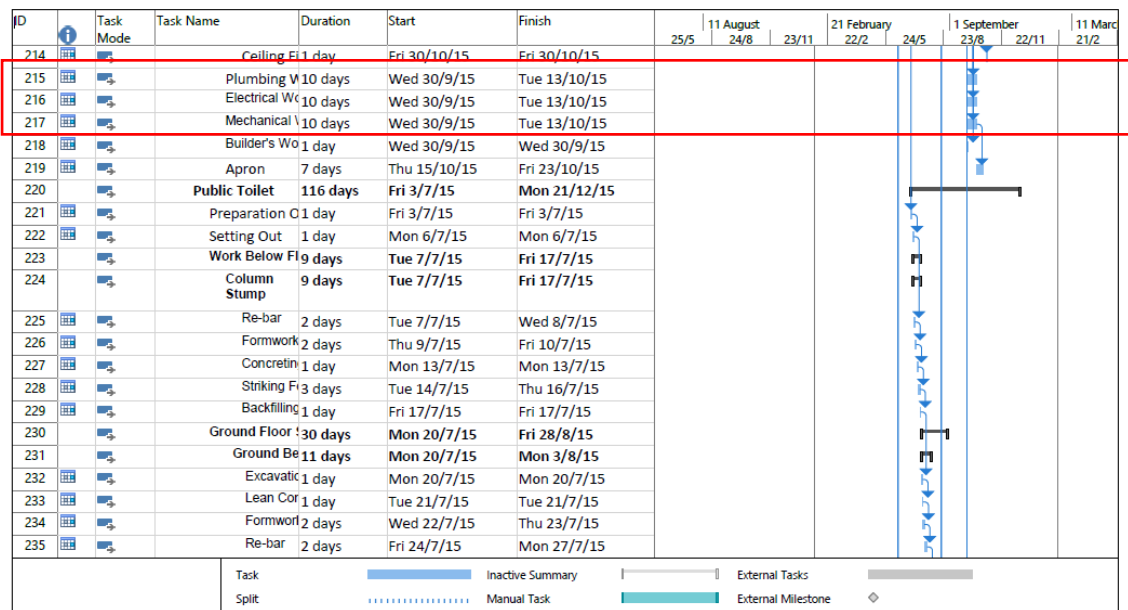


Figure 4.5 Reschedule plan of Gerai Hasil Laut

The figures above are showing the duration of the Plumbing Work, Electrical Work and Mechanical Work under the construction of the Gerai Hasil Laut. Based on the existing schedule, the project cannot be completed according to the plan where the percentage of work completed is still not achieve 100%. It is clearly proven that the tasks are dragging out and will cause the project to delay. In order to improve and produce the

better planning, the duration of work progression should be increased from 7 days to 10 days, so that there is no delay occurring in the project and at the same time the tasks can be completed within the time given and also according to the plan.

For the reschedule of the project, 3 days are added to the duration of these three work tasks. According to the existing plan, the duration of the tasks to be completed is not enough. This is because there are public holidays during the duration given in those work progression which is the Hari Raya Haji that occurred on 24th and 25th of September 2015. The construction work couldn't be proceeded during public holiday and for sure will affect the work progression of the project. In this case, extra days need to be added for the duration of the work to ensure enough time is given to the workers to complete the tasks. By including the public holidays, 10 days of work duration are given to complete these Plumbing, Electrical and Mechanical Work.

4.4.2 Tasks of Public Toilet

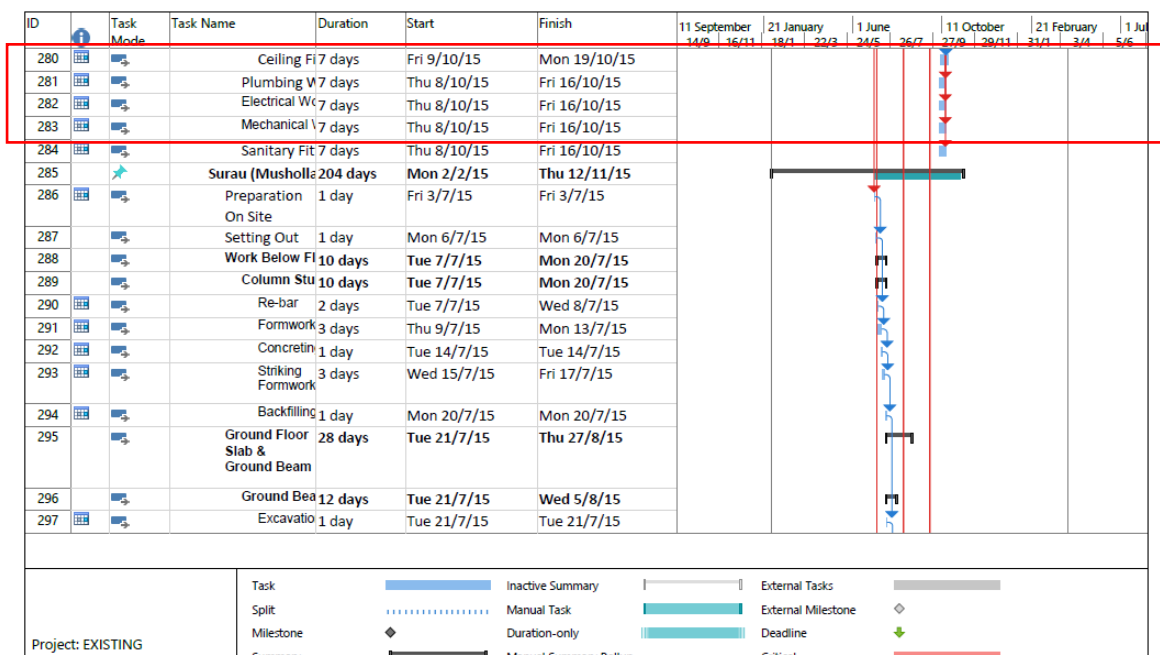


Figure 4.6 Existing plan of Public Toilet

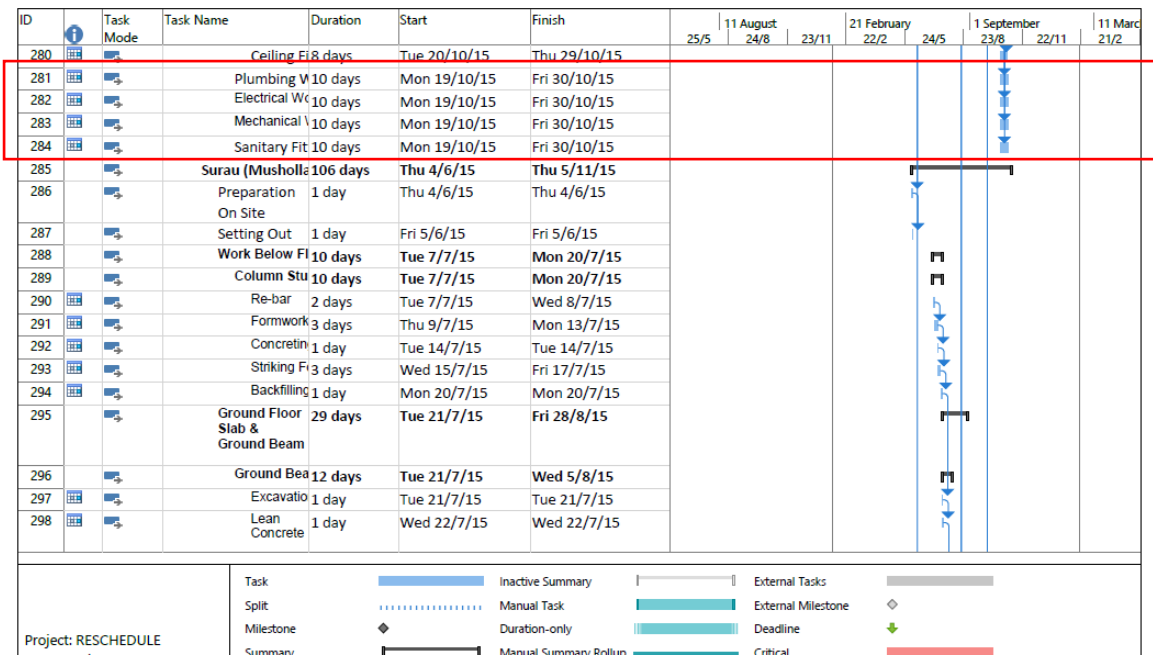


Figure 4.7 Reschedule plan of Public Toilet

The figures above are representing the duration of Plumbing Work, Electrical Work, Mechanical Work and Sanitary Fitting for the construction of the Public Toilet. Based on the existing schedule, the work cannot be completed according to the plan because the day provided to finish up the Public Toilet for the works mentioned is not enough. This is because the public holiday which is occurring on 14th October during the construction period is not counted. The construction work cannot be proceeded on 14th October due to the national public holiday which is Awal Muharram.

Hence, the extra 3 days are added for the duration of this construction work by considering the public holiday and also the number of rainy days. The number of rainy days needs to be counted and extra days must be added due to the high probability of number of rains at the end of the year. It has been calculated that the average number of rainy days during October is 9 days per month, which is high compared to the other month. So, the extra 2 days are added for this duration of work progression as the precaution and preparation in case the work progression cannot be proceed due to the rainy days.

4.4.3 Tasks of Surau

4.4.3.1 Ground floor column

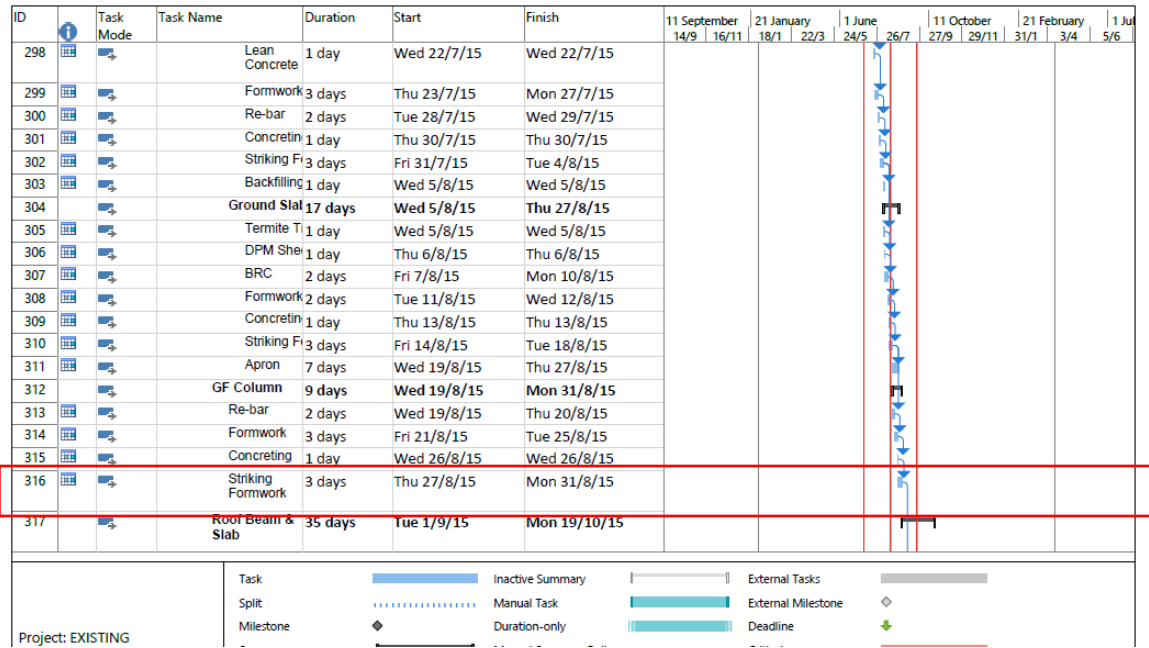


Figure 4.8 Existing plan of Surau

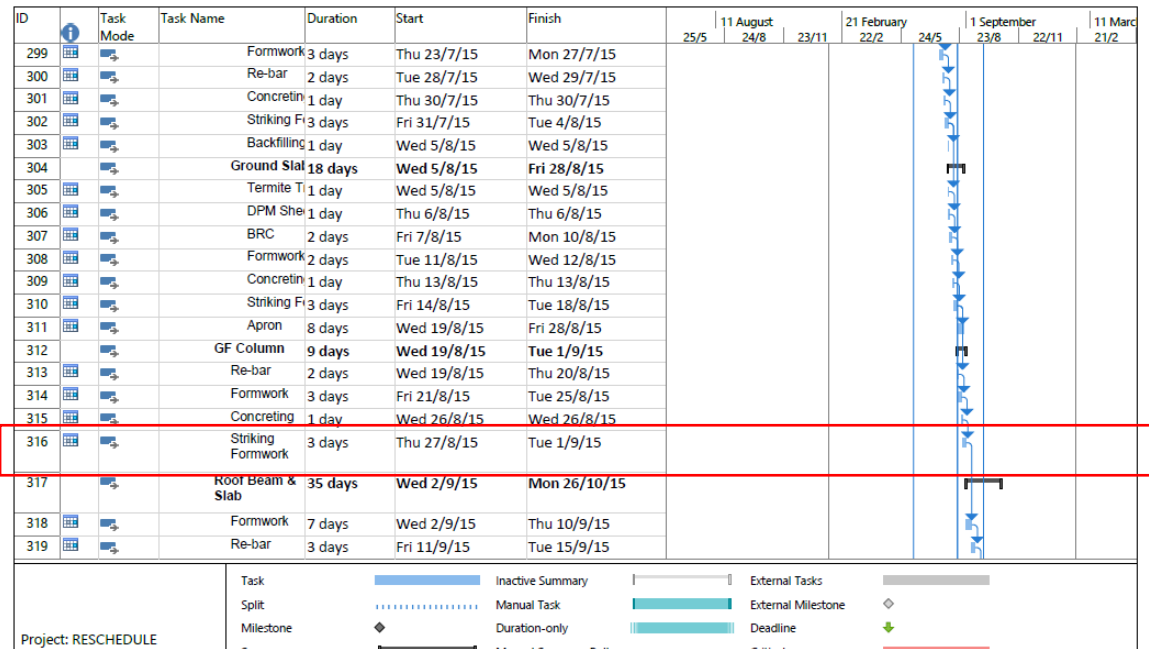


Figure 4.9 Reschedule plan of Surau

The figures for existing and reschedule of Medan Ikan Bakar Project planning above are showing the striking formwork of ground floor column for the construction of

Surau. On the existing schedule, it is shown that the working days to conduct the striking formwork are including the public holiday which is on 31st August, the Malaysia National Day. So, the reschedule and proper planning need to be done to ensure that the enough number of days is provided to execute the work.

4.4.3.2 Roof beam and slab

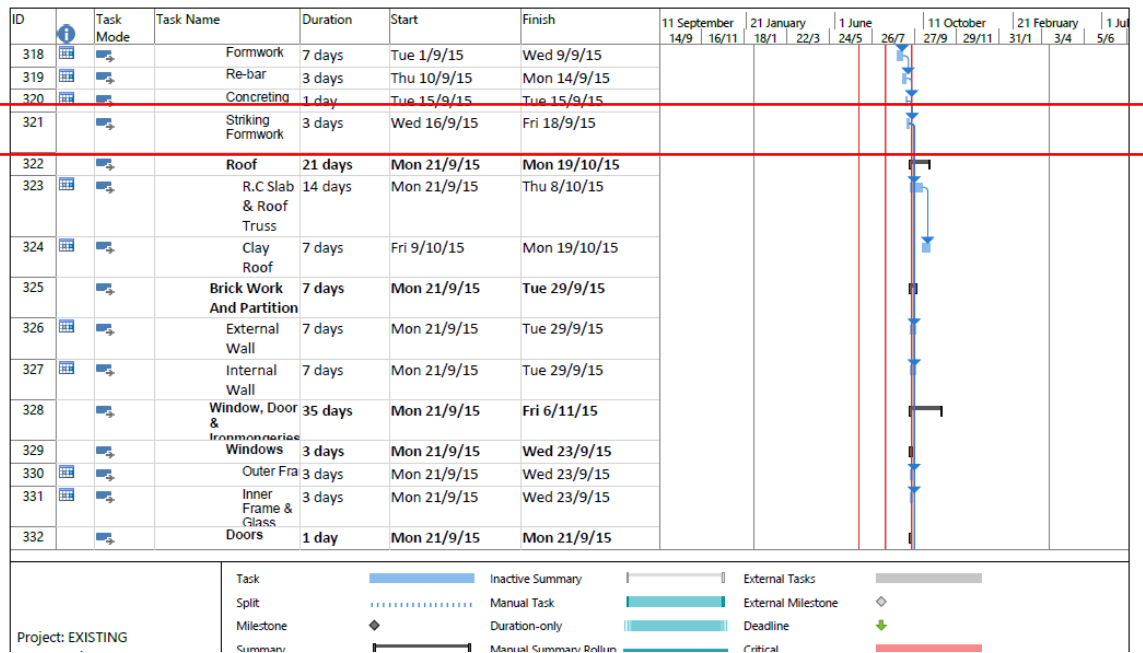


Figure 4.10 Existing plan of Surau

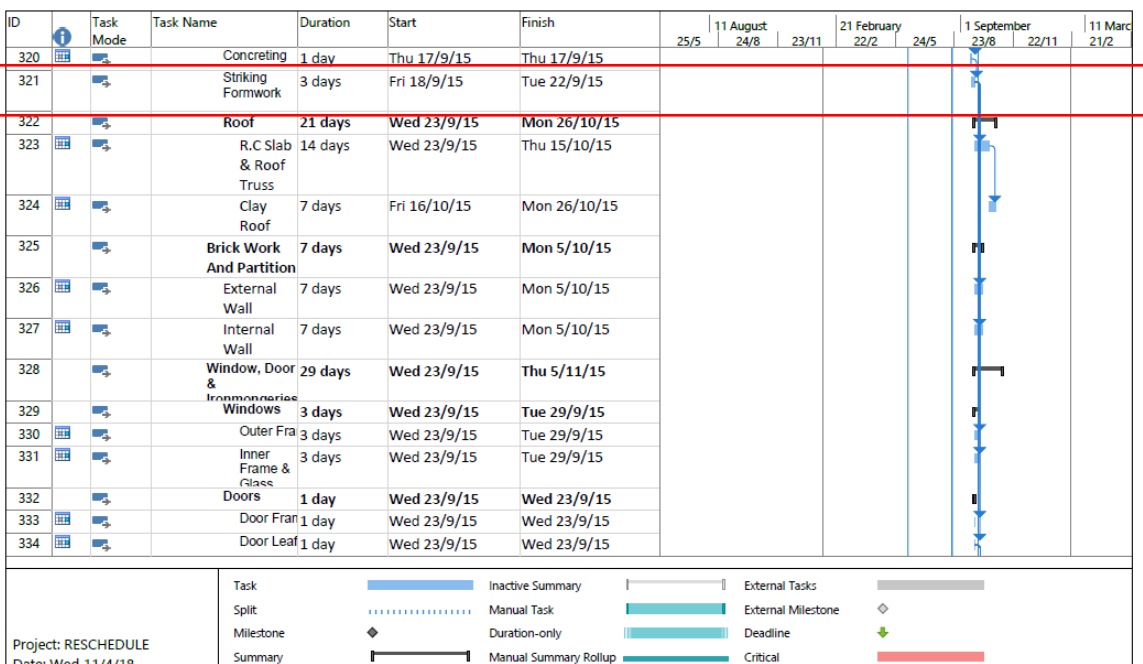


Figure 4.11 Reschedule plan of Surau

The figures above are showing the plan for work execution of Surau where the duration needed to conduct work task of striking formwork for roof beam and slab are three days. From the existing plan, it is shown that the duration to complete the striking formwork is including the national public holiday where 16th September is the public holiday for Malaysia which is Malaysia Day. In this case, the right and proper planning must be executed so that the work task could be completed according to the plan.

The error of project planning could affect the duration of time to finish up the project. Hence, the extension of time for the project could occur. It is very important to have the right planning by considering the number of rainy days and public holidays in Malaysia to avoid the unforeseen circumstances that may occur.

4.5 Summary of the chapter

In this study, the analysis regarding to the existing plan of Medan Ikan Bakar project has been done. From the analysis, it has been identified that the project is facing delay where the extension of time is required to finish the project. Hence, the reschedule of the project has been produced to obtain the effective working days for the project.

The two factors that may affect the duration of the estimation process for the project planning is being considered for this reschedule plan which are the number of rainy days and public holidays. Therefore, the reschedule plan is produced and the result is tabulated in the table and figure by comparing the existing plan and the reschedule plan with associated explanation. The rescheduled plan with effective number of working days is produced. Hence, all the aim and objectives for this study were achieved.

CHAPTER 5

CONCLUSION AND RECOMMENDATION

5.1 Introduction

In this study with the intention of obtaining result related, there are literature study and case study involved. After the data is being analysed, the assessment result was made. The main aim of this research focuses on assessment of construction planning of new project. From the main aim, there are two highlighted in producing the construction planning of new project according to the specific objectives and the objectives of this study are:

- i. To determine the typical number of rainy days and the public holidays.
- ii. To identify the effective number of days in construction planning.

In this study, the analysis of the existing plan of Medan Ikan Bakar project has been done. The extension of time of the project has been identified during the work execution progress where it causes the delay in the project completion. After that, the existing plan of Medan Ikan Bakar project is rescheduled by considering the number of rainy days and the number of public holidays to produce the effective working days. The plan finally being rescheduled and the results are presented in tables and figures with associated explanation. Recommendation for better future study also will be discuss in this chapter.

5.2 Conclusion

In construction projects, project planning is an important process to ensure that the buildings perform according to the design and to the owner's operational requirements. Construction projects are always changing, and the uncertainty can often bring conflict to project terms. This is the reasons why doing the project planning is

crucial where the goals is to complete the project within the time and cost, while maintaining quality for the success of projects.

Based on the aim and objectives for this study as explained in chapter 1, there are several conclusion has been made. The results of this study indicate that from the case study, there are delay occurred in the existing on Medan Ikan Bakar project. The project is going smoothly for the first seven months where the percentage of actual progress is slightly higher than the percentage of planned. The project begins to slow down on the ninth month of the project which is during October. The project is supposed to be completed on January 2016 but the extension of time is required due to the uncompleted of work progression where the percentage of work completed is only 89% instead of 100%. We can relate this delay with these two main factors that we are considering for this study, which are the number of rainy days and public holidays.

As we know in Malaysia, we are facing two monsoon winds seasons and for this project, the project happens to slow down at October which is during the Northeast Monsoon. Weather condition for sure will affect the duration of the construction project where the construction work cannot be proceeded or put on hold due to the heavy rain for instance. Besides, the number of public holidays also causing the project to delay. The Medan Ikan Bakar project happens to face delays because some of the public holidays were not included in the project plan. Hence, the extension of time required when the public holidays are not considered in project planning because work cannot be proceeded due to unavailability of workers during public holidays.

Therefore, the reschedule of Medan Ikan Bakar project has been made with the objectives of determining the typical number of rainy days and the public holidays, and producing the effective number of days in construction planning. These objectives are achieved by considering the two important factors which are the rainy days and public holidays. The duration of existing plan and reschedule plan of Medan Ikan Bakar project are tabulated as follows:

Table 5.2 The duration of existing plan and reschedule plan of Medan Ikan Bakar project

No	Task	Existing – Duration (days)	Reschedule – Duration (days)
1	Membina dan Menyiapkan Sebuah Pusat Pembangunan Anjung Makanan Laut Dan Kompleks	240 days	252 days
2	Kompleks Hasil Laut	112 days	113 days
3	Restoran Ikan Bakar	204 days	145 days
4	Gerai Hasil Laut	79 days	89 days
5	Public Toilet	114 days	116 days
6	Surau (Musholla)	91 days	106 days
7	External Works	135 days	162 days

From the table, it can be seen that the total duration of reschedule plan is 12 days longer than the existing plan. This reschedule plan is produced after considering the two important factors in this study. By considering these two factors of delay in project, the typical number of rainy days and the public holidays are determined and the effective number of days in construction planning are produced. Therefore, the extension of time to complete the work progression is avoided where the delay will not occur and the client may not face losses due to the operation of the building that could be proceeded according to the initial plan. From this study, the consultant and also the project owner could use this outcome as a guide to do the project planning. Hence, the good performance of construction work is produced in the mean of time, cost and quality of the project.

5.3 Recommendation

This study, while specifically concentrated on the case study project, is only limited to this where the only factors that being considered in this planning are the number of rainy days and public holidays. Based on findings, several recommendations could be made in order to obtain a better understanding in construction project planning that being practiced nowadays. However, regarding to this study, there are some improvements that could be done in order to obtain better result for future study. For further study, it is suggested that a recommendation to improve the result is by considering the other factors that causes delay in the project. The other factors that may lead to delay in construction projects are tabulated in table as follows:

Table 5.2 Factors of delay in project

No	Factors of delay in project	Critical	Not critical
1	General		
	1.5 Weather	√	-
	1.6 Poor planning of work execution	√	-
	1.7 Poor facilities at construction site	-	√
	1.8 Natural disaster	-	√
2	Lack of Labours		
	2.1 Professional management	√	-
	2.2 Skilled workers	√	-
	2.3 General workers	√	√
3	Material Sources		
	3.1 Lack of construction building materials	√	-
	3.2 Increase in material price	√	-
4	Source of Income		
	4.1 Lack of budget	√	-
	4.2 Delay of payment from contractor to sub-contractor	√	-
	4.3 Problem with bank loan	-	-
5	Client Needs		
	5.1 Changing scope of design	√	-
	5.2 Changing design and structure that been constructed	√	-
	5.3 Delay in approving the changes in works	-	√
6	Machinery Sources		
	6.1 Shortage of machineries	-	√
	6.2 Defective machineries	-	√

Source: Idris (2006).

Factors of delay in project that are categorized as critical should be considered for future study in construction planning. This can be seen, for instance the weather, lack of labours, material sources and source of income are contributed as critical for the delay

happens in construction project. Hence, the proper project planning in construction is crucial to produce the effective working days and effective planning so that there is no extension of time required to finish up the project. The good performance in construction projects in the mean of time, cost and quality could be produced for future study by considering the factors of delay that occurred in construction.

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APPENDIX A
MICROSOFT PROJECT FOR EXISTING PLAN OF MEDAN IKAN BAKAR
PROJECT

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
1		Membina dan Menyiapkan Sebuah Pusat Pembangunan Anjung Makanan Laut Dan Kompleks Hasil Laut	240 days	Mon 2/2/15	Fri 1/1/16											
2		Start	0 days	Mon 2/2/15	Mon 2/2/15											
3		Mobilisation On Sit	3 days	Tue 3/2/15	Thu 5/2/15											
4		Water & Power Temporary Supply	28 days	Fri 6/2/15	Tue 17/3/15											
5		Site Office Set-Up	28 days	Fri 6/2/15	Tue 17/3/15											
6		Surveying Work	14 days	Tue 10/2/15	Fri 27/2/15											
7		Site Preparation & Earthwork	56 days	Wed 18/3/15	Wed 3/6/15											
8		Clear The Site	14 days	Wed 18/3/15	Mon 6/4/15											
9		Imported Earth / Sand Zone A	14 days	Tue 7/4/15	Fri 24/4/15											
10		Imported Earth / Sand Zone B	28 days	Mon 27/4/15	Wed 3/6/15											
11		External Work 1	14 days	Tue 7/4/15	Fri 24/4/15											
12		Wash Through/Silt	14 days	Tue 7/4/15	Fri 24/4/15											
13		Water Tank 200 Gallon	14 days	Tue 7/4/15	Fri 24/4/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
14		External Work 2	123 days	Wed 15/4/15	Fri 2/10/15											
15		Temporary Pavir	14 days	Wed 15/4/15	Mon 4/5/15											
16		Gabion Wall	115 days	Mon 27/4/15	Fri 2/10/15											
17		Building Work	313 days	Mon 2/2/15	Wed 13/4/16											
18		Kompleks Hasil	112 days	Mon 27/4/15	Tue 29/9/15											
19		Preparation O	1 day	Mon 27/4/15	Mon 27/4/15											
20		Setting Out	1 day	Tue 28/4/15	Tue 28/4/15											
21		Work Below Fl	9 days	Tue 28/4/15	Fri 8/5/15											
22		Column Stu	9 days	Tue 28/4/15	Fri 8/5/15											
23		Re-bar	2 days	Tue 28/4/15	Wed 29/4/15											
24		Formwork	2 days	Thu 30/4/15	Fri 1/5/15											
25		Concretin	2 days	Mon 4/5/15	Tue 5/5/15											
26		Striking F	3 days	Wed 6/5/15	Fri 8/5/15											
27		Backfilling	1 day	Wed 6/5/15	Wed 6/5/15											
28		Ground Floor Slab & Ground Beam	24 days	Thu 7/5/15	Tue 9/6/15											
29		Ground Beam	15 days	Thu 7/5/15	Wed 27/5/15											
30		Excavatio	1 day	Thu 7/5/15	Thu 7/5/15											
31		Lean Con	3 days	Fri 8/5/15	Tue 12/5/15											
32		Formwork	3 days	Wed 13/5/15	Fri 15/5/15											
33		Re-bar	2 days	Mon 18/5/15	Tue 19/5/15											
34		Concretin	2 days	Wed 20/5/15	Thu 21/5/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
35		Striking Formwork	3 days	Fri 22/5/15	Tue 26/5/15											
36		Backfilling	1 day	Wed 27/5/15	Wed 27/5/15											
37		Ground Slab	10 days	Wed 27/5/15	Tue 9/6/15											
38		Termite Treatment	2 days	Wed 27/5/15	Thu 28/5/15											
39		DPM Sheet	1 day	Thu 28/5/15	Thu 28/5/15											
40		BRC	2 days	Fri 29/5/15	Mon 1/6/15											
41		Formwork	2 days	Tue 2/6/15	Wed 3/6/15											
42		Concreting	1 day	Thu 4/6/15	Thu 4/6/15											
43		Striking Formwork	3 days	Fri 5/6/15	Tue 9/6/15											
44		GF Column	9 days	Wed 10/6/15	Mon 22/6/15											
45		Re-bar	3 days	Wed 10/6/15	Fri 12/6/15											
46		Formwork	3 days	Mon 15/6/15	Wed 17/6/15											
47		Concreting	1 day	Thu 18/6/15	Thu 18/6/15											
48		Striking Formwork	2 days	Fri 19/6/15	Mon 22/6/15											
49		Roof Beam & Slab	43 days	Tue 23/6/15	Thu 20/8/15											
50		Formwork	14 days	Tue 23/6/15	Fri 10/7/15											
51		Re-bar	4 days	Mon 13/7/15	Thu 16/7/15											
52		Concreting	1 day	Fri 17/7/15	Fri 17/7/15											
53		Striking Formwork	3 days	Mon 20/7/15	Wed 22/7/15											
54		Roof	21 days	Thu 23/7/15	Thu 20/8/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
55		R.C Slab & Roof Truss	14 days	Thu 23/7/15	Tue 11/8/15											
56		Clay Roo	7 days	Wed 12/8/15	Thu 20/8/15											
57		Brick Work And Partition	10 days	Mon 20/7/15	Fri 31/7/15											
58		External Wall	10 days	Mon 20/7/15	Fri 31/7/15											
59		Internal Wall	10 days	Mon 20/7/15	Fri 31/7/15											
60		Window, Door & Ironmongeries	42 days	Mon 3/8/15	Tue 29/9/15											
61		Windows	3 days	Mon 3/8/15	Wed 5/8/15											
62		Outer Fra	3 days	Mon 3/8/15	Wed 5/8/15											
63		Inner Frame & Glass	3 days	Mon 3/8/15	Wed 5/8/15											
64		Doors	3 days	Mon 3/8/15	Wed 5/8/15											
65		M.S Stee	3 days	Mon 3/8/15	Wed 5/8/15											
66		Door Fra	3 days	Mon 3/8/15	Wed 5/8/15											
67		Door Leaf	3 days	Mon 3/8/15	Wed 5/8/15											
68		Internal W	28 days	Fri 21/8/15	Tue 29/9/15											
69		Plasterin	14 days	Fri 21/8/15	Wed 9/9/15											
70		Tiling Wc	14 days	Thu 10/9/15	Tue 29/9/15											
71		Painting	14 days	Thu 10/9/15	Tue 29/9/15											
72		Pebble W	7 days	Thu 10/9/15	Fri 18/9/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
73		Internal Floor	14 days	Thu 10/9/15	Tue 29/9/15											
74		Renderin	2 days	Thu 10/9/15	Fri 11/9/15											
75		Tiling Wc	14 days	Thu 10/9/15	Tue 29/9/15											
76		Internal Cei	7 days	Thu 10/9/15	Fri 18/9/15											
77		External Fir	14 days	Thu 10/9/15	Tue 29/9/15											
78		Plasterin	14 days	Thu 10/9/15	Tue 29/9/15											
79		Tiling Wc	14 days	Thu 10/9/15	Tue 29/9/15											
80		Ceiling Fi	7 days	Thu 10/9/15	Fri 18/9/15											
81		Plumbing W	7 days	Mon 3/8/15	Tue 11/8/15											
82		Electrical W	7 days	Mon 3/8/15	Tue 11/8/15											
83		Mechanical	7 days	Mon 3/8/15	Tue 11/8/15											
84		Sanitary Fit	7 days	Mon 3/8/15	Tue 11/8/15											
85		Apron	7 days	Mon 3/8/15	Tue 11/8/15											
86		Restoran Ikan Bakar	204 days	Sat 4/7/15	Wed 13/4/16											
87		Preparation O	1 day	Thu 4/6/15	Thu 4/6/15											
88		Setting Out	1 day	Fri 5/6/15	Fri 5/6/15											
89		Work Below Floor Level	10 days	Mon 6/7/15	Fri 17/7/15											
90		Column Stu	10 days	Mon 6/7/15	Fri 17/7/15											
91		Re-bar	2 days	Mon 6/7/15	Tue 7/7/15											
92		Formwork	2 days	Wed 8/7/15	Thu 9/7/15											
93		Concretin	2 days	Fri 10/7/15	Mon 13/7/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
94		Striking F	3 days	Tue 14/7/15	Thu 16/7/15											
95		Backfilling	1 day	Fri 17/7/15	Fri 17/7/15											
96		Ground Floor Slab & Ground Beam	0 days	Mon 2/2/15	Mon 2/2/15			2/2								
97		Ground Beam	15 days	Fri 17/7/15	Thu 6/8/15											
98		Excavatio	1 day	Fri 17/7/15	Fri 17/7/15											
99		Lean Con	3 days	Mon 20/7/15	Wed 22/7/15											
100		Formwork	3 days	Thu 23/7/15	Mon 27/7/15											
101		Re-bar	2 days	Tue 28/7/15	Wed 29/7/15											
102		Concretin	2 days	Thu 30/7/15	Fri 31/7/15											
103		Striking F	3 days	Mon 3/8/15	Wed 5/8/15											
104		Backfilling	1 day	Thu 6/8/15	Thu 6/8/15											
105		Ground Slab	11 days	Thu 6/8/15	Thu 20/8/15											
106		Termite T	2 days	Thu 6/8/15	Fri 7/8/15											
107		DPM She	1 day	Mon 10/8/15	Mon 10/8/15											
108		BRC	2 days	Tue 11/8/15	Wed 12/8/15											
109		Formwork	2 days	Thu 13/8/15	Fri 14/8/15											
110		Concretin	1 day	Mon 17/8/15	Mon 17/8/15											
111		Striking F	3 days	Tue 18/8/15	Thu 20/8/15											
112		GF Column	9 days	Fri 21/8/15	Wed 2/9/15											
113		Re-bar	3 days	Fri 21/8/15	Tue 25/8/15											
114		Formwork	3 days	Wed 26/8/15	Fri 28/8/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
115		Concreting	1 day	Mon 31/8/15	Mon 31/8/15											
116		Striking Form	2 days	Tue 1/9/15	Wed 2/9/15											
117		Roof Beam & S	196 days	Mon 2/2/15	Mon 2/11/15											
118		Formwork	14 days	Thu 3/9/15	Tue 22/9/15											
119		Re-bar	4 days	Wed 23/9/15	Mon 28/9/15											
120		Concreting	1 day	Tue 29/9/15	Tue 29/9/15											
121		Striking Form	3 days	Wed 30/9/15	Fri 2/10/15											
122		Roof	0 days	Mon 2/2/15	Mon 2/2/15											
123		R.C Slab & Roof Truss	14 days	Mon 5/10/15	Thu 22/10/15											
124		Clay Roo	7 days	Fri 23/10/15	Mon 2/11/15											
125		Brick Work And Partition	0 days	Mon 2/2/15	Mon 2/2/15											
126		External Wall	10 days	Mon 5/10/15	Fri 16/10/15											
127		Internal Wall	10 days	Mon 5/10/15	Fri 16/10/15											
128		Window, Door & Ironmongeries	0 days	Mon 2/2/15	Mon 2/2/15											
129		Windows	0 days	Mon 2/2/15	Mon 2/2/15											
130		Outer Fra	3 days	Mon 19/10/15	Wed 21/10/15											
131		Inner Frame & Glass	3 days	Mon 19/10/15	Wed 21/10/15											
132		Doors	0 days	Mon 2/2/15	Mon 2/2/15											

Project: EXISTING
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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
133		Door Frame	3 days	Mon 19/10/15	Wed 21/10/15											
134		Door Leaf	3 days	Mon 19/10/15	Wed 21/10/15											
135		Internal Work	0 days	Mon 2/2/15	Mon 2/2/15											
136		Plastering	14 days	Tue 3/11/15	Fri 20/11/15											
137		Cementing	7 days	Tue 3/11/15	Wed 11/11/15											
138		Painting	14 days	Tue 3/11/15	Fri 20/11/15											
139		Internal Floor	0 days	Mon 2/2/15	Mon 2/2/15											
140		Rendering	7 days	Mon 23/11/15	Tue 1/12/15											
141		Tiling Work	14 days	Mon 23/11/15	Thu 10/12/15											
142		Roof Truss	7 days	Mon 23/11/15	Tue 1/12/15											
143		Wet Kitchen	7 days	Mon 23/11/15	Tue 1/12/15											
144		External Finishing	14 days	Mon 23/11/15	Thu 10/12/15											
145		Plastering	14 days	Mon 23/11/15	Thu 10/12/15											
146		Timber Work	14 days	Mon 23/11/15	Thu 10/12/15											
147		Plumbing Work	7 days	Mon 23/11/15	Tue 1/12/15											
148		Electrical Work	7 days	Mon 23/11/15	Tue 1/12/15											
149		Mechanical	7 days	Mon 23/11/15	Tue 1/12/15											
150		Gerai Hasil Laut	79 days	Fri 3/7/15	Wed 21/10/15											
151		Preparation	1 day	Fri 3/7/15	Fri 3/7/15											
152		Setting Out	1 day	Fri 3/7/15	Fri 3/7/15											
153		Work Below Floor Level	8 days	Mon 6/7/15	Wed 15/7/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
154		Column Stud	8 days	Mon 6/7/15	Wed 15/7/15											
155		Re-bar	2 days	Mon 6/7/15	Tue 7/7/15											
156		Formwork	2 days	Wed 8/7/15	Thu 9/7/15											
157		Concreting	1 day	Fri 10/7/15	Fri 10/7/15											
158		Striking Formwork	2 days	Mon 13/7/15	Tue 14/7/15											
159		Backfilling	1 day	Wed 15/7/15	Wed 15/7/15											
160		Ground Floor Slab & Ground Beam	21 days	Thu 16/7/15	Thu 13/8/15											
161		Ground Beam	10 days	Thu 16/7/15	Wed 29/7/15											
162		Excavation	1 day	Thu 16/7/15	Thu 16/7/15											
163		Lean Concrete	1 day	Fri 17/7/15	Fri 17/7/15											
164		Formwork	2 days	Mon 20/7/15	Tue 21/7/15											
165		Re-bar	2 days	Wed 22/7/15	Thu 23/7/15											
166		Concreting	1 day	Fri 24/7/15	Fri 24/7/15											
167		Striking Formwork	2 days	Mon 27/7/15	Tue 28/7/15											
168		Backfilling	1 day	Wed 29/7/15	Wed 29/7/15											
169		Ground Slab	12 days	Wed 29/7/15	Thu 13/8/15											
170		Termite Treatment	1 day	Wed 29/7/15	Wed 29/7/15											
171		DPM Sheet	1 day	Thu 30/7/15	Thu 30/7/15											
172		BRC	2 days	Fri 31/7/15	Mon 3/8/15											
173		Formwork	2 days	Tue 4/8/15	Wed 5/8/15											
174		Concreting	1 day	Thu 6/8/15	Thu 6/8/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
175		Striking Formwork	2 days	Fri 7/8/15	Mon 10/8/15											
176		Apron	3 days	Tue 11/8/15	Thu 13/8/15											
177		GF Column	8 days	Fri 14/8/15	Tue 25/8/15											
178		Re-bar	2 days	Fri 14/8/15	Mon 17/8/15											
179		Formwork	2 days	Tue 18/8/15	Wed 19/8/15											
180		Concreting	1 day	Thu 20/8/15	Thu 20/8/15											
181		Striking Formwork	3 days	Fri 21/8/15	Tue 25/8/15											
182		Roof Beam & Slab	27 days	Wed 26/8/15	Thu 1/10/15											
183		Formwork	7 days	Wed 26/8/15	Thu 3/9/15											
184		Re-bar	2 days	Fri 4/9/15	Mon 7/9/15											
185		Concreting	1 day	Tue 8/9/15	Tue 8/9/15											
186		Striking Formwork	3 days	Wed 9/9/15	Fri 11/9/15											
187		Roof	14 days	Mon 14/9/15	Thu 1/10/15											
188		R.C Slab & Roof Truss	7 days	Mon 14/9/15	Tue 22/9/15											
189		Clay Roof	7 days	Wed 23/9/15	Thu 1/10/15											
190		Brick Work And Partition	7 days	Mon 14/9/15	Tue 22/9/15											
191		External Wall	7 days	Mon 14/9/15	Tue 22/9/15											
192		Internal Wall	7 days	Mon 14/9/15	Tue 22/9/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
193		Window, Door & Ironmongeries	21 days	Wed 23/9/15	Wed 21/10/15											
194		Windows	3 days	Wed 23/9/15	Fri 25/9/15											
195		Outer Frame	3 days	Wed 23/9/15	Fri 25/9/15											
196		Inner Frame & Glass	3 days	Wed 23/9/15	Fri 25/9/15											
197		Doors	3 days	Wed 23/9/15	Fri 25/9/15											
198		Roller Shutters	3 days	Wed 23/9/15	Fri 25/9/15											
199		Door Frames	3 days	Wed 23/9/15	Fri 25/9/15											
200		Door Leaves	3 days	Wed 23/9/15	Fri 25/9/15											
201		Internal Works	14 days	Fri 2/10/15	Wed 21/10/15											
202		Plastering	7 days	Fri 2/10/15	Mon 12/10/15											
203		Tiling Works	7 days	Tue 13/10/15	Wed 21/10/15											
204		Painting	7 days	Tue 13/10/15	Wed 21/10/15											
205		Internal Floor	7 days	Tue 13/10/15	Wed 21/10/15											
206		Rendering	1 day	Tue 13/10/15	Tue 13/10/15											
207		Tiling Works	7 days	Tue 13/10/15	Wed 21/10/15											
208		Internal Ceiling	3 days	Tue 13/10/15	Thu 15/10/15											
209		External Fire	1 day	Tue 13/10/15	Tue 13/10/15											
210		Plastering	1 day	Tue 13/10/15	Tue 13/10/15											
211		Cement Screed	1 day	Tue 13/10/15	Tue 13/10/15											
212		Pebble Wash	1 day	Tue 13/10/15	Tue 13/10/15											
213		Tiling Works	1 day	Tue 13/10/15	Tue 13/10/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
214		Ceiling Fi	1 day	Tue 13/10/15	Tue 13/10/15											
215		Plumbing W	7 days	Wed 23/9/15	Thu 1/10/15											
216		Electrical W	7 days	Wed 23/9/15	Thu 1/10/15											
217		Mechanical W	7 days	Wed 23/9/15	Thu 1/10/15											
218		Builder's Wo	1 day	Wed 23/9/15	Wed 23/9/15											
219		Apron	7 days	Fri 2/10/15	Mon 12/10/15											
220		Public Toilet	114 days	Fri 3/7/15	Wed 9/12/15											
221		Preparation O	1 day	Fri 3/7/15	Fri 3/7/15											
222		Setting Out	1 day	Mon 6/7/15	Mon 6/7/15											
223		Work Below Fl	9 days	Tue 7/7/15	Fri 17/7/15											
224		Column Stump	9 days	Tue 7/7/15	Fri 17/7/15											
225		Re-bar	2 days	Tue 7/7/15	Wed 8/7/15											
226		Formwork	2 days	Thu 9/7/15	Fri 10/7/15											
227		Concreting	1 day	Mon 13/7/15	Mon 13/7/15											
228		Striking F	3 days	Tue 14/7/15	Thu 16/7/15											
229		Backfilling	1 day	Fri 17/7/15	Fri 17/7/15											
230		Ground Floor	28 days	Mon 20/7/15	Wed 26/8/15											
231		Ground Be	11 days	Mon 20/7/15	Mon 3/8/15											
232		Excavatic	1 day	Mon 20/7/15	Mon 20/7/15											
233		Lean Cor	1 day	Tue 21/7/15	Tue 21/7/15											
234		Formworl	2 days	Wed 22/7/15	Thu 23/7/15											
235		Re-bar	2 days	Fri 24/7/15	Mon 27/7/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
236		Concreting	1 day	Tue 28/7/15	Tue 28/7/15											
237		Striking Formwork	3 days	Wed 29/7/15	Fri 31/7/15											
238		Backfilling	1 day	Mon 3/8/15	Mon 3/8/15											
239		Ground Slab	18 days	Mon 3/8/15	Wed 26/8/15											
240		Termite Treatment	1 day	Mon 3/8/15	Mon 3/8/15											
241		DPM Sheet	1 day	Tue 4/8/15	Tue 4/8/15											
242		BRC	2 days	Wed 5/8/15	Thu 6/8/15											
243		Formwork	3 days	Fri 7/8/15	Tue 11/8/15											
244		Concreting	1 day	Wed 12/8/15	Wed 12/8/15											
245		Striking Formwork	3 days	Thu 13/8/15	Mon 17/8/15											
246		Apron	7 days	Tue 18/8/15	Wed 26/8/15											
247		GF Column	9 days	Thu 27/8/15	Tue 8/9/15											
248		Re-bar	2 days	Thu 27/8/15	Fri 28/8/15											
249		Formwork	3 days	Mon 31/8/15	Wed 2/9/15											
250		Concreting	1 day	Thu 3/9/15	Thu 3/9/15											
251		Striking Formwork	3 days	Fri 4/9/15	Tue 8/9/15											
252		Roof Beam & Slab	42 days	Wed 9/9/15	Thu 5/11/15											
253		Formwork	14 days	Wed 9/9/15	Mon 28/9/15											
254		Re-bar	3 days	Tue 29/9/15	Thu 1/10/15											
255		Concreting	1 day	Fri 2/10/15	Fri 2/10/15											
256		Striking Formwork	3 days	Mon 5/10/15	Wed 7/10/15											
257		Roof	21 days	Thu 8/10/15	Thu 5/11/15											

Project: EXISTING
Date: Wed 11/4/18

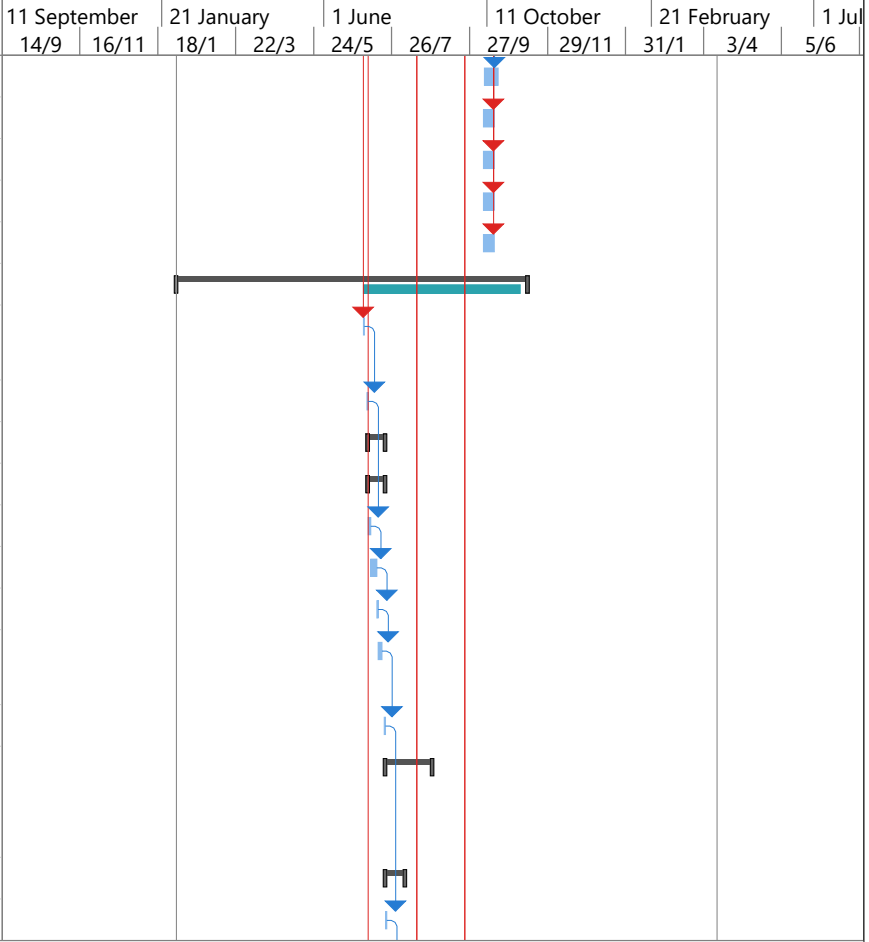
Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
258		R.C Slab	14 days	Thu 8/10/15	Tue 27/10/15											
259		Clay Roo	7 days	Wed 28/10/15	Thu 5/11/15											
260		Brick Work Ar	14 days	Thu 8/10/15	Tue 27/10/15											
261		External W	14 days	Thu 8/10/15	Tue 27/10/15											
262		Internal W	14 days	Thu 8/10/15	Tue 27/10/15											
263		Window, Door	45 days	Thu 8/10/15	Wed 9/12/15											
264		Doors	3 days	Wed 28/10/15	Fri 30/10/15											
265		Door Frame	3 days	Wed 28/10/15	Fri 30/10/15											
266		Door Leaf	3 days	Wed 28/10/15	Fri 30/10/15											
267		Internal W	28 days	Mon 2/11/15	Wed 9/12/15											
268		Plasterin	14 days	Mon 2/11/15	Thu 19/11/15											
269		Tiling Wc	14 days	Fri 20/11/15	Wed 9/12/15											
270		Painting	7 days	Fri 20/11/15	Mon 30/11/15											
271		Internal Fl	7 days	Fri 20/11/15	Mon 30/11/15											
272		Renderin	2 days	Fri 20/11/15	Mon 23/11/15											
273		Tiling Wc	7 days	Fri 20/11/15	Mon 30/11/15											
274		Internal Cei	7 days	Fri 20/11/15	Mon 30/11/15											
275		External Fir	14 days	Thu 8/10/15	Tue 27/10/15											
276		Plasterin	14 days	Thu 8/10/15	Tue 27/10/15											
277		Cement l	1 day	Thu 8/10/15	Thu 8/10/15											
278		Pebble W	7 days	Fri 9/10/15	Mon 19/10/15											
279		Tiling Wc	7 days	Fri 9/10/15	Mon 19/10/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
280		Ceiling Fi	7 days	Fri 9/10/15	Mon 19/10/15											
281		Plumbing W	7 days	Thu 8/10/15	Fri 16/10/15											
282		Electrical W	7 days	Thu 8/10/15	Fri 16/10/15											
283		Mechanical V	7 days	Thu 8/10/15	Fri 16/10/15											
284		Sanitary Fit	7 days	Thu 8/10/15	Fri 16/10/15											
285		Surau (Musholla)	204 days	Mon 2/2/15	Thu 12/11/15											
286		Preparation On Site	1 day	Fri 3/7/15	Fri 3/7/15											
287		Setting Out	1 day	Mon 6/7/15	Mon 6/7/15											
288		Work Below Fl	10 days	Tue 7/7/15	Mon 20/7/15											
289		Column Stu	10 days	Tue 7/7/15	Mon 20/7/15											
290		Re-bar	2 days	Tue 7/7/15	Wed 8/7/15											
291		Formwork	3 days	Thu 9/7/15	Mon 13/7/15											
292		Concretin	1 day	Tue 14/7/15	Tue 14/7/15											
293		Striking Formwork	3 days	Wed 15/7/15	Fri 17/7/15											
294		Backfilling	1 day	Mon 20/7/15	Mon 20/7/15											
295		Ground Floor Slab & Ground Beam	28 days	Tue 21/7/15	Thu 27/8/15											
296		Ground Bea	12 days	Tue 21/7/15	Wed 5/8/15											
297		Excavatio	1 day	Tue 21/7/15	Tue 21/7/15											



Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
298		Lean Concrete	1 day	Wed 22/7/15	Wed 22/7/15											
299		Formwork	3 days	Thu 23/7/15	Mon 27/7/15											
300		Re-bar	2 days	Tue 28/7/15	Wed 29/7/15											
301		Concreting	1 day	Thu 30/7/15	Thu 30/7/15											
302		Striking Formwork	3 days	Fri 31/7/15	Tue 4/8/15											
303		Backfilling	1 day	Wed 5/8/15	Wed 5/8/15											
304		Ground Slab	17 days	Wed 5/8/15	Thu 27/8/15											
305		Termite Treatment	1 day	Wed 5/8/15	Wed 5/8/15											
306		DPM Sheet	1 day	Thu 6/8/15	Thu 6/8/15											
307		BRC	2 days	Fri 7/8/15	Mon 10/8/15											
308		Formwork	2 days	Tue 11/8/15	Wed 12/8/15											
309		Concreting	1 day	Thu 13/8/15	Thu 13/8/15											
310		Striking Formwork	3 days	Fri 14/8/15	Tue 18/8/15											
311		Apron	7 days	Wed 19/8/15	Thu 27/8/15											
312		GF Column	9 days	Wed 19/8/15	Mon 31/8/15											
313		Re-bar	2 days	Wed 19/8/15	Thu 20/8/15											
314		Formwork	3 days	Fri 21/8/15	Tue 25/8/15											
315		Concreting	1 day	Wed 26/8/15	Wed 26/8/15											
316		Striking Formwork	3 days	Thu 27/8/15	Mon 31/8/15											
317		Roof Beam & Slab	35 days	Tue 1/9/15	Mon 19/10/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
318		Formwork	7 days	Tue 1/9/15	Wed 9/9/15											
319		Re-bar	3 days	Thu 10/9/15	Mon 14/9/15											
320		Concreting	1 day	Tue 15/9/15	Tue 15/9/15											
321		Striking Formwork	3 days	Wed 16/9/15	Fri 18/9/15											
322		Roof	21 days	Mon 21/9/15	Mon 19/10/15											
323		R.C Slab & Roof Truss	14 days	Mon 21/9/15	Thu 8/10/15											
324		Clay Roof	7 days	Fri 9/10/15	Mon 19/10/15											
325		Brick Work And Partition	7 days	Mon 21/9/15	Tue 29/9/15											
326		External Wall	7 days	Mon 21/9/15	Tue 29/9/15											
327		Internal Wall	7 days	Mon 21/9/15	Tue 29/9/15											
328		Window, Door & Ironmongeries	35 days	Mon 21/9/15	Fri 6/11/15											
329		Windows	3 days	Mon 21/9/15	Wed 23/9/15											
330		Outer Frame	3 days	Mon 21/9/15	Wed 23/9/15											
331		Inner Frame & Glass	3 days	Mon 21/9/15	Wed 23/9/15											
332		Doors	1 day	Mon 21/9/15	Mon 21/9/15											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
333		Door Fran	1 day	Mon 21/9/15	Mon 21/9/15											
334		Door Leaf	1 day	Mon 21/9/15	Mon 21/9/15											
335		Internal Floor Finishes	21 days	Wed 30/9/15	Wed 28/10/15											
336		Plasterin	14 days	Wed 30/9/15	Mon 19/10/15											
337		Tiling Wc	7 days	Tue 20/10/15	Wed 28/10/15											
338		Painting	7 days	Tue 20/10/15	Wed 28/10/15											
339		Internal Floor Finishes	8 days	Wed 30/9/15	Fri 9/10/15											
340		Renderin	1 day	Wed 30/9/15	Wed 30/9/15											
341		Tiling Wc	7 days	Thu 1/10/15	Fri 9/10/15											
342		Internal Cei	7 days	Mon 12/10/15	Tue 20/10/15											
343		External Fir	28 days	Wed 30/9/15	Fri 6/11/15											
344		Plasterin	14 days	Wed 30/9/15	Mon 19/10/15											
345		Tiling Wc	7 days	Tue 20/10/15	Wed 28/10/15											
346		Ceiling Fi	7 days	Thu 29/10/15	Fri 6/11/15											
347		Plumbing W	7 days	Wed 30/9/15	Thu 8/10/15											
348		Electrical Wc	7 days	Wed 30/9/15	Thu 8/10/15											
349		Mechanical W	7 days	Wed 30/9/15	Thu 8/10/15											
350		External Works	135 days	Tue 7/7/15	Mon 11/1/16											
351		Surface Water	116 days	Tue 7/7/15	Tue 15/12/15											

Project: EXISTING
Date: Wed 11/4/18

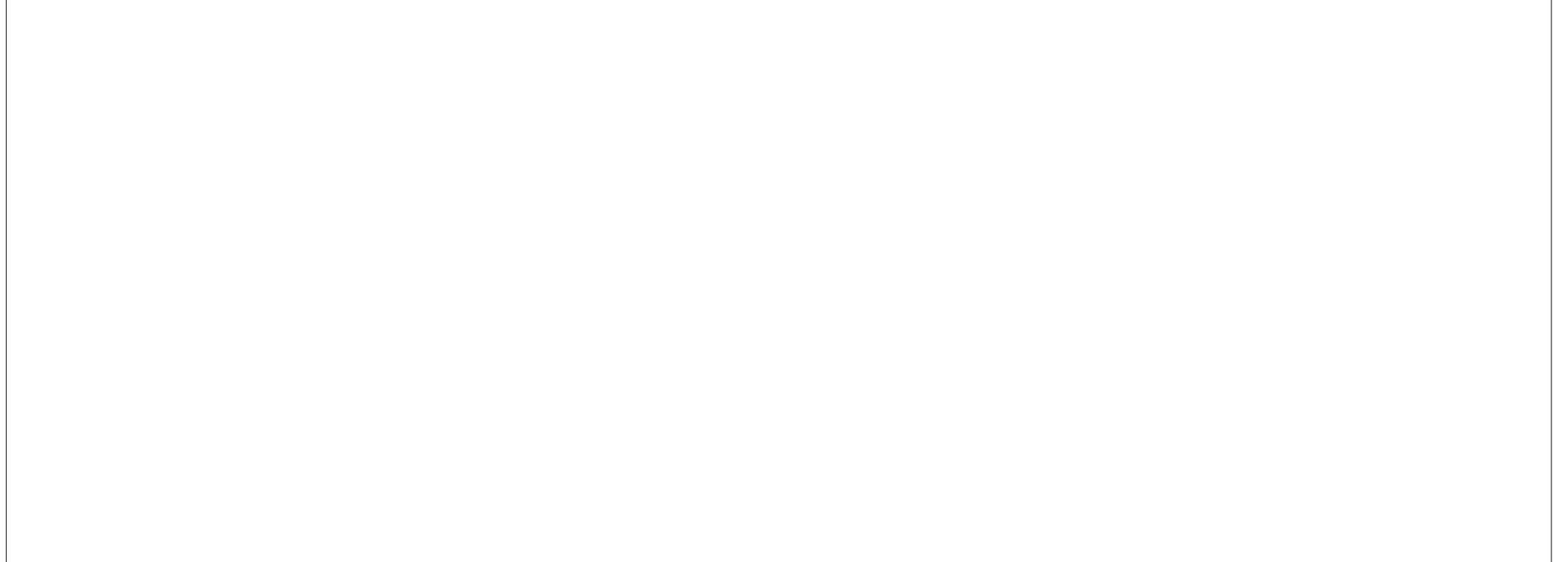
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Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
352		Drain, Box Concrete	60 days	Wed 23/9/15	Tue 15/12/15											
353		900mm	60 days	Wed 23/9/15	Tue 15/12/15											
354		900mm	60 days	Wed 23/9/15	Tue 15/12/15											
355		Others	90 days	Tue 7/7/15	Mon 9/11/15											
356		Roadworks & Pavements	45 days	Tue 10/11/15	Mon 11/1/16											
357		Interlocking	21 days	Tue 10/11/15	Tue 8/12/15											
358		Roadworks	30 days	Tue 10/11/15	Mon 21/12/15											
359		Road Furnit	15 days	Tue 22/12/15	Mon 11/1/16											
360		Water Reticula	44 days	Fri 7/8/15	Wed 7/10/15											
361		Pipe line	30 days	Fri 7/8/15	Thu 17/9/15											
362		Pipe Fittings	30 days	Fri 7/8/15	Thu 17/9/15											
363		JBA - Meter	14 days	Fri 18/9/15	Wed 7/10/15											
364		Sewerage (Septic Tank)	14 days	Fri 18/9/15	Wed 7/10/15											
365		Fencing & Railings	21 days	Tue 10/11/15	Tue 8/12/15											
366		Fencing	21 days	Tue 10/11/15	Tue 8/12/15											
367		Railing	21 days	Tue 10/11/15	Tue 8/12/15											
368		Electrical Serv	40 days	Tue 10/11/15	Mon 4/1/16											
369		LV Cable	40 days	Tue 10/11/15	Mon 4/1/16											

Project: EXISTING
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

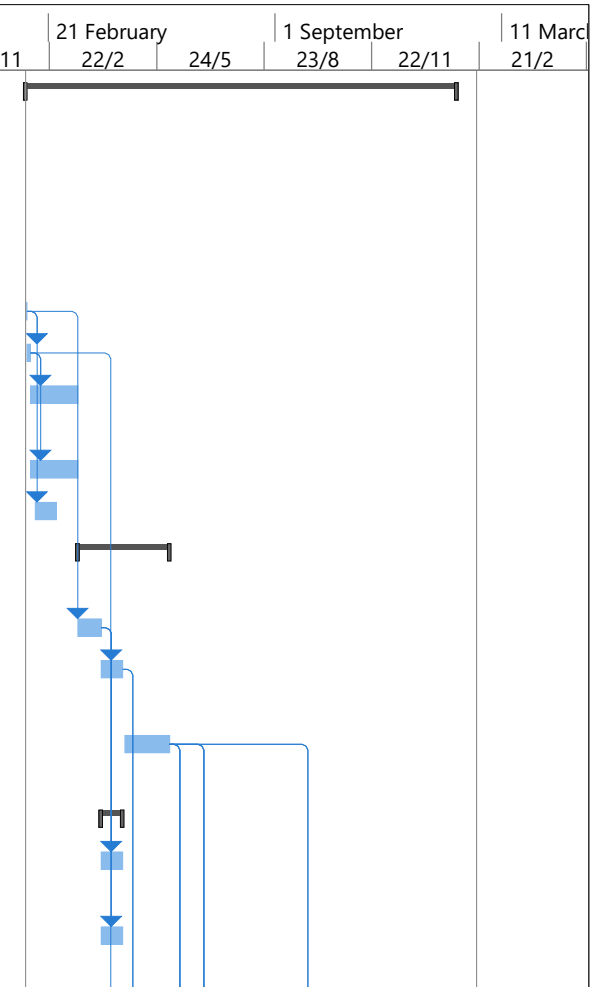
ID	Task Mode	Task Name	Duration	Start	Finish	11 September		21 January		1 June		11 October		21 February		1 Jul
						14/9	16/11	18/1	22/3	24/5	26/7	27/9	29/11	31/1	3/4	5/6
370		Compound	40 days	Tue 10/11/15	Mon 4/1/16											
371		TESTING AND COMMISSIONING	20 days	Tue 5/1/16	Mon 1/2/16											
372		FINAL INSPECTION	1 day	Tue 2/2/16	Tue 2/2/16											
373		HANDING OVER	1 day	Wed 3/2/16	Wed 3/2/16											



Project: EXISTING Date: Wed 11/4/18	Task		Inactive Summary		External Tasks	
	Split		Manual Task		External Milestone	
	Milestone		Duration-only		Deadline	
	Summary		Manual Summary Rollup		Critical	
	Project Summary		Manual Summary		Critical Split	
	Inactive Task		Start-only		Progress	
	Inactive Milestone		Finish-only		Manual Progress	

APPENDIX B
MICROSOFT PROJECT FOR RESCHEDULE PLAN OF MEDAN IKAN
BAKAR PROJECT

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
1		Membina dan Menyiapkan Sebuah Pusat Pembangunan Anjung Makanan Laut Dan Kompleks Hasil Laut	252 days	Mon 2/2/15	Mon 1/2/16								
2		Start	1 day	Mon 2/2/15	Mon 2/2/15								
3		Mobilisation On Sit	3 days	Tue 3/2/15	Thu 5/2/15								
4		Water & Power Temporary Supply	28 days	Fri 6/2/15	Tue 17/3/15								
5		Site Office Set-Up	28 days	Fri 6/2/15	Tue 17/3/15								
6		Surveying Work	14 days	Tue 10/2/15	Fri 27/2/15								
7		Site Preparation & Earthwork	56 days	Wed 18/3/15	Wed 3/6/15								
8		Clear The Site	14 days	Wed 18/3/15	Mon 6/4/15								
9		Imported Earth / Sand Zone A	14 days	Tue 7/4/15	Fri 24/4/15								
10		Imported Earth / Sand Zone B	28 days	Mon 27/4/15	Wed 3/6/15								
11		External Work 1	14 days	Tue 7/4/15	Fri 24/4/15								
12		Wash Through/Silt	14 days	Tue 7/4/15	Fri 24/4/15								
13		Water Tank 200 Gallon	14 days	Tue 7/4/15	Fri 24/4/15								



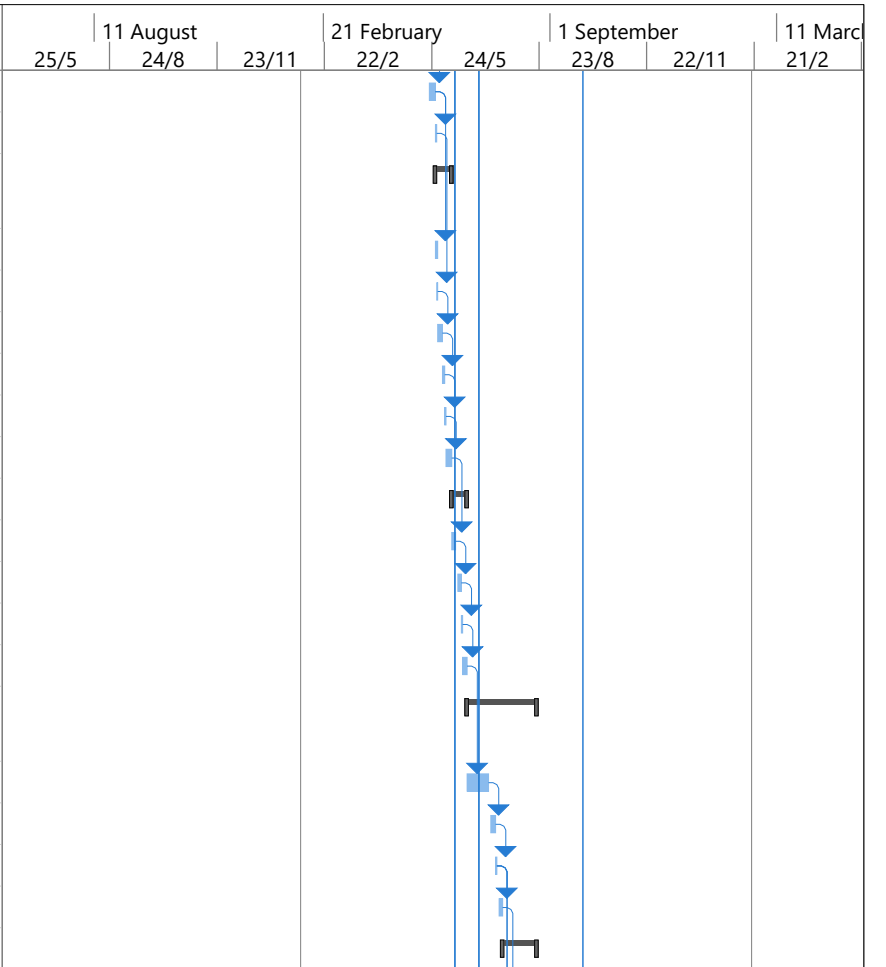
Project: RESCHEDULE Date: Wed 11/4/18	Task		Inactive Summary		External Tasks	
	Split		Manual Task		External Milestone	
	Milestone		Duration-only		Deadline	
	Summary		Manual Summary Rollup		Critical	
	Project Summary		Manual Summary		Critical Split	
	Inactive Task		Start-only		Progress	
	Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
14		External Work 2	127 days	Wed 15/4/15	Thu 15/10/15								
15		Temporary Pavir	14 days	Wed 15/4/15	Mon 4/5/15								
16		Gabion Wall	119 days	Mon 27/4/15	Thu 15/10/15								
17		Building Work	192 days	Mon 27/4/15	Mon 1/2/16								
18		Kompleks Hasil	113 days	Mon 27/4/15	Tue 6/10/15								
19		Preparation O	1 day	Mon 27/4/15	Mon 27/4/15								
20		Setting Out	1 day	Tue 28/4/15	Tue 28/4/15								
21		Work Below Fl	9 days	Tue 28/4/15	Fri 8/5/15								
22		Column Stu	9 days	Tue 28/4/15	Fri 8/5/15								
23		Re-bar	2 days	Tue 28/4/15	Wed 29/4/15								
24		Formwork	2 days	Thu 30/4/15	Fri 1/5/15								
25		Concretin	2 days	Mon 4/5/15	Tue 5/5/15								
26		Striking F	3 days	Wed 6/5/15	Fri 8/5/15								
27		Backfilling	1 day	Wed 6/5/15	Wed 6/5/15								
28		Ground Floor Slab & Ground Beam	24 days	Thu 7/5/15	Tue 9/6/15								
29		Ground Beam	15 days	Thu 7/5/15	Wed 27/5/15								
30		Excavatio	1 day	Thu 7/5/15	Thu 7/5/15								
31		Lean Con	3 days	Fri 8/5/15	Tue 12/5/15								
32		Formwork	3 days	Wed 13/5/15	Fri 15/5/15								
33		Re-bar	2 days	Mon 18/5/15	Tue 19/5/15								
34		Concretin	2 days	Wed 20/5/15	Thu 21/5/15								

Project: RESCHEDULE
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
35		Striking Formwork	3 days	Fri 22/5/15	Tue 26/5/15								
36		Backfilling	1 day	Wed 27/5/15	Wed 27/5/15								
37		Ground Slab	10 days	Wed 27/5/15	Tue 9/6/15								
38		Termite Treatment	2 days	Wed 27/5/15	Thu 28/5/15								
39		DPM Sheet	1 day	Thu 28/5/15	Thu 28/5/15								
40		BRC	2 days	Fri 29/5/15	Mon 1/6/15								
41		Formwork	2 days	Tue 2/6/15	Wed 3/6/15								
42		Concreting	1 day	Thu 4/6/15	Thu 4/6/15								
43		Striking Formwork	3 days	Fri 5/6/15	Tue 9/6/15								
44		GF Column	9 days	Wed 10/6/15	Mon 22/6/15								
45		Re-bar	3 days	Wed 10/6/15	Fri 12/6/15								
46		Formwork	3 days	Mon 15/6/15	Wed 17/6/15								
47		Concreting	1 day	Thu 18/6/15	Thu 18/6/15								
48		Striking Formwork	2 days	Fri 19/6/15	Mon 22/6/15								
49		Roof Beam & Slab	43 days	Tue 23/6/15	Thu 20/8/15								
50		Formwork	14 days	Tue 23/6/15	Fri 10/7/15								
51		Re-bar	4 days	Mon 13/7/15	Thu 16/7/15								
52		Concreting	1 day	Fri 17/7/15	Fri 17/7/15								
53		Striking Formwork	3 days	Mon 20/7/15	Wed 22/7/15								
54		Roof	21 days	Thu 23/7/15	Thu 20/8/15								



Project: RESCHEDULE
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
55		R.C Slab & Roof Truss	14 days	Thu 23/7/15	Tue 11/8/15								
56		Clay Roo	7 days	Wed 12/8/15	Thu 20/8/15								
57		Brick Work And Partition	10 days	Mon 20/7/15	Fri 31/7/15								
58		External Wall	10 days	Mon 20/7/15	Fri 31/7/15								
59		Internal Wall	10 days	Mon 20/7/15	Fri 31/7/15								
60		Window, Door & Ironmongeries	43 days	Mon 3/8/15	Tue 6/10/15								
61		Windows	3 days	Mon 3/8/15	Wed 5/8/15								
62		Outer Fra	3 days	Mon 3/8/15	Wed 5/8/15								
63		Inner Frame & Glass	3 days	Mon 3/8/15	Wed 5/8/15								
64		Doors	3 days	Mon 3/8/15	Wed 5/8/15								
65		M.S Stee	3 days	Mon 3/8/15	Wed 5/8/15								
66		Door Fra	3 days	Mon 3/8/15	Wed 5/8/15								
67		Door Leaf	3 days	Mon 3/8/15	Wed 5/8/15								
68		Internal W	29 days	Fri 21/8/15	Tue 6/10/15								
69		Plasterin	14 days	Fri 21/8/15	Thu 10/9/15								
70		Tiling Wc	14 days	Fri 11/9/15	Mon 5/10/15								
71		Painting	15 days	Fri 11/9/15	Tue 6/10/15								
72		Pebble W	7 days	Fri 11/9/15	Tue 22/9/15								

Project: RESCHEDULE
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
73		Internal Floor	14 days	Fri 11/9/15	Mon 5/10/15								
74		Renderin	2 days	Fri 11/9/15	Mon 14/9/15								
75		Tiling Wc	14 days	Fri 11/9/15	Mon 5/10/15								
76		Internal Cei	7 days	Fri 11/9/15	Tue 22/9/15								
77		External Fir	14 days	Fri 11/9/15	Mon 5/10/15								
78		Plasterin	14 days	Fri 11/9/15	Mon 5/10/15								
79		Tiling Wc	14 days	Fri 11/9/15	Mon 5/10/15								
80		Ceiling Fi	7 days	Fri 11/9/15	Tue 22/9/15								
81		Plumbing W	8 days	Mon 3/8/15	Wed 12/8/15								
82		Electrical W	8 days	Mon 3/8/15	Wed 12/8/15								
83		Mechanical	8 days	Mon 3/8/15	Wed 12/8/15								
84		Sanitary Fit	8 days	Mon 3/8/15	Wed 12/8/15								
85		Apron	8 days	Mon 3/8/15	Wed 12/8/15								
86		Restoran Ikan Bakar	145 days	Thu 4/6/15	Tue 5/1/16								
87		Preparation O	1 day	Thu 4/6/15	Thu 4/6/15								
88		Setting Out	1 day	Fri 5/6/15	Fri 5/6/15								
89		Work Below Floor Level	10 days	Wed 8/7/15	Tue 21/7/15								
90		Column Stu	10 days	Wed 8/7/15	Tue 21/7/15								
91		Re-bar	2 days	Wed 8/7/15	Thu 9/7/15								
92		Formwork	2 days	Fri 10/7/15	Mon 13/7/15								
93		Concretin	2 days	Tue 14/7/15	Wed 15/7/15								

Project: RESCHEDULE
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 Marc
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
94		Striking F	3 days	Thu 16/7/15	Mon 20/7/15								
95		Backfilling	1 day	Tue 21/7/15	Tue 21/7/15								
96		Ground Floor Slab & Ground Beam	26 days	Tue 21/7/15	Tue 25/8/15								
97		Ground Beam	15 days	Tue 21/7/15	Mon 10/8/15								
98		Excavatio	1 day	Tue 21/7/15	Tue 21/7/15								
99		Lean Con	3 days	Wed 22/7/15	Fri 24/7/15								
100		Formwork	3 days	Mon 27/7/15	Wed 29/7/15								
101		Re-bar	2 days	Thu 30/7/15	Fri 31/7/15								
102		Concretin	2 days	Mon 3/8/15	Tue 4/8/15								
103		Striking F	3 days	Wed 5/8/15	Fri 7/8/15								
104		Backfilling	1 day	Mon 10/8/15	Mon 10/8/15								
105		Ground Slab	12 days	Mon 10/8/15	Tue 25/8/15								
106		Termite T	2 days	Mon 10/8/15	Tue 11/8/15								
107		DPM She	2 days	Wed 12/8/15	Thu 13/8/15								
108		BRC	2 days	Fri 14/8/15	Mon 17/8/15								
109		Formwork	2 days	Tue 18/8/15	Wed 19/8/15								
110		Concretin	1 day	Thu 20/8/15	Thu 20/8/15								
111		Striking F	3 days	Fri 21/8/15	Tue 25/8/15								
112		GF Column	9 days	Wed 26/8/15	Tue 8/9/15								
113		Re-bar	3 days	Wed 26/8/15	Fri 28/8/15								
114		Formwork	3 days	Tue 1/9/15	Thu 3/9/15								

Project: RESCHEDULE
Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
115		Concreting	1 day	Fri 4/9/15	Fri 4/9/15								
116		Striking Form	2 days	Mon 7/9/15	Tue 8/9/15								
117		Roof Beam & S	45 days	Wed 9/9/15	Tue 17/11/15								
118		Formwork	14 days	Wed 9/9/15	Thu 1/10/15								
119		Re-bar	4 days	Fri 2/10/15	Wed 7/10/15								
120		Concreting	1 day	Thu 8/10/15	Thu 8/10/15								
121		Striking Form	3 days	Fri 9/10/15	Tue 13/10/15								
122		Roof	23 days	Thu 15/10/15	Tue 17/11/15								
123		R.C Slab & Roof Truss	14 days	Thu 15/10/15	Tue 3/11/15								
124		Clay Roo	9 days	Wed 4/11/15	Tue 17/11/15								
125		Brick Work And Partition	11 days	Thu 15/10/15	Thu 29/10/15								
126		External Wall	11 days	Thu 15/10/15	Thu 29/10/15								
127		Internal Wall	11 days	Thu 15/10/15	Thu 29/10/15								
128		Window, Door & Ironmongeries	44 days	Fri 30/10/15	Tue 5/1/16								
129		Windows	4 days	Fri 30/10/15	Wed 4/11/15								
130		Outer Fra	4 days	Fri 30/10/15	Wed 4/11/15								
131		Inner Frame & Glass	4 days	Fri 30/10/15	Wed 4/11/15								
132		Doors	4 days	Fri 30/10/15	Wed 4/11/15								

Project: RESCHEDULE
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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
133		Door Fran	4 days	Fri 30/10/15	Wed 4/11/15								
134		Door Leaf	4 days	Fri 30/10/15	Wed 4/11/15								
135		Internal Work	16 days	Wed 18/11/15	Wed 9/12/15								
136		Plasterin	16 days	Wed 18/11/15	Wed 9/12/15								
137		Cement l	7 days	Wed 18/11/15	Thu 26/11/15								
138		Painting	16 days	Wed 18/11/15	Wed 9/12/15								
139		Internal Fl	14 days	Thu 10/12/15	Thu 31/12/15								
140		Renderin	7 days	Thu 10/12/15	Fri 18/12/15								
141		Tiling Wc	14 days	Thu 10/12/15	Thu 31/12/15								
142		Roof Truss	10 days	Thu 10/12/15	Wed 23/12/15								
143		Wet Kitchen	10 days	Thu 10/12/15	Wed 23/12/15								
144		External Fir	16 days	Thu 10/12/15	Tue 5/1/16								
145		Plasterin	16 days	Thu 10/12/15	Tue 5/1/16								
146		Timber T	16 days	Thu 10/12/15	Tue 5/1/16								
147		Plumbing W	10 days	Thu 10/12/15	Wed 23/12/15								
148		Electrical W	10 days	Thu 10/12/15	Wed 23/12/15								
149		Mechanical	10 days	Thu 10/12/15	Wed 23/12/15								
150		Gerai Hasil Laut	89 days	Fri 3/7/15	Thu 12/11/15								
151		Preparation O	1 day	Fri 3/7/15	Fri 3/7/15								
152		Setting Out	1 day	Fri 3/7/15	Fri 3/7/15								
153		Work Below Floor Level	8 days	Mon 6/7/15	Wed 15/7/15								

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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 Marc
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
154		Column St	8 days	Mon 6/7/15	Wed 15/7/15								
155		Re-bar	2 days	Mon 6/7/15	Tue 7/7/15								
156		Formwork	2 days	Wed 8/7/15	Thu 9/7/15								
157		Concretin	1 day	Fri 10/7/15	Fri 10/7/15								
158		Striking F	2 days	Mon 13/7/15	Tue 14/7/15								
159		Backfilling	1 day	Wed 15/7/15	Wed 15/7/15								
160		Ground Floor Slab & Ground Beam	22 days	Thu 16/7/15	Fri 14/8/15								
161		Ground Bea	10 days	Thu 16/7/15	Wed 29/7/15								
162		Excavatio	1 day	Thu 16/7/15	Thu 16/7/15								
163		Lean Con	1 day	Fri 17/7/15	Fri 17/7/15								
164		Formwork	2 days	Mon 20/7/15	Tue 21/7/15								
165		Re-bar	2 days	Wed 22/7/15	Thu 23/7/15								
166		Concretin	1 day	Fri 24/7/15	Fri 24/7/15								
167		Striking F	2 days	Mon 27/7/15	Tue 28/7/15								
168		Backfilling	1 day	Wed 29/7/15	Wed 29/7/15								
169		Ground Slab	13 days	Wed 29/7/15	Fri 14/8/15								
170		Termite T	1 day	Wed 29/7/15	Wed 29/7/15								
171		DPM She	1 day	Thu 30/7/15	Thu 30/7/15								
172		BRC	2 days	Fri 31/7/15	Mon 3/8/15								
173		Formwork	2 days	Tue 4/8/15	Wed 5/8/15								
174		Concretin	1 day	Thu 6/8/15	Thu 6/8/15								

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Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
175		Striking Formwork	2 days	Fri 7/8/15	Mon 10/8/15								
176		Apron	4 days	Tue 11/8/15	Fri 14/8/15								
177		GF Column	8 days	Mon 17/8/15	Wed 26/8/15								
178		Re-bar	2 days	Mon 17/8/15	Tue 18/8/15								
179		Formwork	2 days	Wed 19/8/15	Thu 20/8/15								
180		Concreting	1 day	Fri 21/8/15	Fri 21/8/15								
181		Striking Formwork	3 days	Mon 24/8/15	Wed 26/8/15								
182		Roof Beam & Slab	27 days	Thu 27/8/15	Thu 8/10/15								
183		Formwork	7 days	Thu 27/8/15	Mon 7/9/15								
184		Re-bar	2 days	Tue 8/9/15	Wed 9/9/15								
185		Concreting	1 day	Thu 10/9/15	Thu 10/9/15								
186		Striking Formwork	3 days	Fri 11/9/15	Tue 15/9/15								
187		Roof	14 days	Thu 17/9/15	Thu 8/10/15								
188		R.C Slab & Roof Truss	7 days	Thu 17/9/15	Tue 29/9/15								
189		Clay Roof	7 days	Wed 30/9/15	Thu 8/10/15								
190		Brick Work And Partition	7 days	Thu 17/9/15	Tue 29/9/15								
191		External Wall	7 days	Thu 17/9/15	Tue 29/9/15								
192		Internal Wall	7 days	Thu 17/9/15	Tue 29/9/15								



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Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
193		Window, Door & Ironmongeries	30 days	Wed 30/9/15	Thu 12/11/15								
194		Windows	3 days	Wed 30/9/15	Fri 2/10/15								
195		Outer Frame	3 days	Wed 30/9/15	Fri 2/10/15								
196		Inner Frame & Glass	3 days	Wed 30/9/15	Fri 2/10/15								
197		Doors	3 days	Wed 30/9/15	Fri 2/10/15								
198		Roller Shutters	3 days	Wed 30/9/15	Fri 2/10/15								
199		Door Frames	3 days	Wed 30/9/15	Fri 2/10/15								
200		Door Leaves	3 days	Wed 30/9/15	Fri 2/10/15								
201		Internal Works	23 days	Fri 9/10/15	Thu 12/11/15								
202		Plastering	7 days	Fri 9/10/15	Tue 20/10/15								
203		Tiling Works	7 days	Wed 21/10/15	Thu 29/10/15								
204		Painting	9 days	Fri 30/10/15	Thu 12/11/15								
205		Internal Finishes	9 days	Wed 28/10/15	Mon 9/11/15								
206		Rendering	1 day	Fri 30/10/15	Fri 30/10/15								
207		Tiling Works	9 days	Wed 28/10/15	Mon 9/11/15								
208		Internal Ceiling	3 days	Fri 30/10/15	Tue 3/11/15								
209		External Finishes	1 day	Fri 30/10/15	Fri 30/10/15								
210		Plastering	1 day	Fri 30/10/15	Fri 30/10/15								
211		Cement Screed	1 day	Fri 30/10/15	Fri 30/10/15								
212		Pebble Screed	1 day	Fri 30/10/15	Fri 30/10/15								
213		Tiling Works	1 day	Fri 30/10/15	Fri 30/10/15								

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Date: Wed 11/4/18

Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
214		Ceiling Fi	1 day	Fri 30/10/15	Fri 30/10/15								
215		Plumbing W	10 days	Wed 30/9/15	Tue 13/10/15								
216		Electrical W	10 days	Wed 30/9/15	Tue 13/10/15								
217		Mechanical W	10 days	Wed 30/9/15	Tue 13/10/15								
218		Builder's Wo	1 day	Wed 30/9/15	Wed 30/9/15								
219		Apron	7 days	Thu 15/10/15	Fri 23/10/15								
220		Public Toilet	116 days	Fri 3/7/15	Mon 21/12/15								
221		Preparation O	1 day	Fri 3/7/15	Fri 3/7/15								
222		Setting Out	1 day	Mon 6/7/15	Mon 6/7/15								
223		Work Below Fl	9 days	Tue 7/7/15	Fri 17/7/15								
224		Column Stump	9 days	Tue 7/7/15	Fri 17/7/15								
225		Re-bar	2 days	Tue 7/7/15	Wed 8/7/15								
226		Formwork	2 days	Thu 9/7/15	Fri 10/7/15								
227		Concreting	1 day	Mon 13/7/15	Mon 13/7/15								
228		Striking F	3 days	Tue 14/7/15	Thu 16/7/15								
229		Backfilling	1 day	Fri 17/7/15	Fri 17/7/15								
230		Ground Floor	30 days	Mon 20/7/15	Fri 28/8/15								
231		Ground Be	11 days	Mon 20/7/15	Mon 3/8/15								
232		Excavatic	1 day	Mon 20/7/15	Mon 20/7/15								
233		Lean Cor	1 day	Tue 21/7/15	Tue 21/7/15								
234		Formworl	2 days	Wed 22/7/15	Thu 23/7/15								
235		Re-bar	2 days	Fri 24/7/15	Mon 27/7/15								

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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
236		Concreting	1 day	Tue 28/7/15	Tue 28/7/15								
237		Striking Formwork	3 days	Wed 29/7/15	Fri 31/7/15								
238		Backfilling	1 day	Mon 3/8/15	Mon 3/8/15								
239		Ground Slab	20 days	Mon 3/8/15	Fri 28/8/15								
240		Termite Treatment	1 day	Mon 3/8/15	Mon 3/8/15								
241		DPM Sheet	1 day	Tue 4/8/15	Tue 4/8/15								
242		BRC	2 days	Wed 5/8/15	Thu 6/8/15								
243		Formwork	3 days	Fri 7/8/15	Tue 11/8/15								
244		Concreting	1 day	Wed 12/8/15	Wed 12/8/15								
245		Striking Formwork	3 days	Thu 13/8/15	Mon 17/8/15								
246		Apron	9 days	Tue 18/8/15	Fri 28/8/15								
247		GF Column	9 days	Tue 1/9/15	Fri 11/9/15								
248		Re-bar	2 days	Tue 1/9/15	Wed 2/9/15								
249		Formwork	3 days	Thu 3/9/15	Mon 7/9/15								
250		Concreting	1 day	Tue 8/9/15	Tue 8/9/15								
251		Striking Formwork	3 days	Wed 9/9/15	Fri 11/9/15								
252		Roof Beam & Slab	42 days	Mon 14/9/15	Tue 17/11/15								
253		Formwork	14 days	Mon 14/9/15	Tue 6/10/15								
254		Re-bar	3 days	Wed 7/10/15	Fri 9/10/15								
255		Concreting	1 day	Mon 12/10/15	Mon 12/10/15								
256		Striking Formwork	3 days	Tue 13/10/15	Fri 16/10/15								
257		Roof	21 days	Mon 19/10/15	Tue 17/11/15								

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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
258		R.C Slab	14 days	Mon 19/10/15	Thu 5/11/15								
259		Clay Roo	7 days	Fri 6/11/15	Tue 17/11/15								
260		Brick Work Ar	14 days	Mon 19/10/15	Thu 5/11/15								
261		External W	14 days	Mon 19/10/15	Thu 5/11/15								
262		Internal W	14 days	Mon 19/10/15	Thu 5/11/15								
263		Window, Door	45 days	Mon 19/10/15	Mon 21/12/15								
264		Doors	3 days	Fri 6/11/15	Wed 11/11/15								
265		Door Frame	3 days	Fri 6/11/15	Wed 11/11/15								
266		Door Leaf	3 days	Fri 6/11/15	Wed 11/11/15								
267		Internal W	28 days	Thu 12/11/15	Mon 21/12/15								
268		Plasterin	14 days	Thu 12/11/15	Tue 1/12/15								
269		Tiling Wc	14 days	Wed 2/12/15	Mon 21/12/15								
270		Painting	7 days	Wed 2/12/15	Thu 10/12/15								
271		Internal Fl	7 days	Wed 2/12/15	Thu 10/12/15								
272		Renderin	2 days	Wed 2/12/15	Thu 3/12/15								
273		Tiling Wc	7 days	Wed 2/12/15	Thu 10/12/15								
274		Internal Cei	7 days	Wed 2/12/15	Thu 10/12/15								
275		External Fir	14 days	Mon 19/10/15	Thu 5/11/15								
276		Plasterin	14 days	Mon 19/10/15	Thu 5/11/15								
277		Cement l	1 day	Mon 19/10/15	Mon 19/10/15								
278		Pebble W	8 days	Tue 20/10/15	Thu 29/10/15								
279		Tiling Wc	8 days	Tue 20/10/15	Thu 29/10/15								

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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
280		Ceiling Fi	8 days	Tue 20/10/15	Thu 29/10/15								
281		Plumbing W	10 days	Mon 19/10/15	Fri 30/10/15								
282		Electrical Wc	10 days	Mon 19/10/15	Fri 30/10/15								
283		Mechanical V	10 days	Mon 19/10/15	Fri 30/10/15								
284		Sanitary Fit	10 days	Mon 19/10/15	Fri 30/10/15								
285		Surau (Musholla	106 days	Thu 4/6/15	Thu 5/11/15								
286		Preparation On Site	1 day	Thu 4/6/15	Thu 4/6/15								
287		Setting Out	1 day	Fri 5/6/15	Fri 5/6/15								
288		Work Below Fl	10 days	Tue 7/7/15	Mon 20/7/15								
289		Column Stu	10 days	Tue 7/7/15	Mon 20/7/15								
290		Re-bar	2 days	Tue 7/7/15	Wed 8/7/15								
291		Formwork	3 days	Thu 9/7/15	Mon 13/7/15								
292		Concreting	1 day	Tue 14/7/15	Tue 14/7/15								
293		Striking Fc	3 days	Wed 15/7/15	Fri 17/7/15								
294		Backfilling	1 day	Mon 20/7/15	Mon 20/7/15								
295		Ground Floor Slab & Ground Beam	29 days	Tue 21/7/15	Fri 28/8/15								
296		Ground Bea	12 days	Tue 21/7/15	Wed 5/8/15								
297		Excavatio	1 day	Tue 21/7/15	Tue 21/7/15								
298		Lean Concrete	1 day	Wed 22/7/15	Wed 22/7/15								

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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
299		Formwork	3 days	Thu 23/7/15	Mon 27/7/15								
300		Re-bar	2 days	Tue 28/7/15	Wed 29/7/15								
301		Concreting	1 day	Thu 30/7/15	Thu 30/7/15								
302		Striking Formwork	3 days	Fri 31/7/15	Tue 4/8/15								
303		Backfilling	1 day	Wed 5/8/15	Wed 5/8/15								
304		Ground Slab	18 days	Wed 5/8/15	Fri 28/8/15								
305		Termite Treatment	1 day	Wed 5/8/15	Wed 5/8/15								
306		DPM Sheet	1 day	Thu 6/8/15	Thu 6/8/15								
307		BRC	2 days	Fri 7/8/15	Mon 10/8/15								
308		Formwork	2 days	Tue 11/8/15	Wed 12/8/15								
309		Concreting	1 day	Thu 13/8/15	Thu 13/8/15								
310		Striking Formwork	3 days	Fri 14/8/15	Tue 18/8/15								
311		Apron	8 days	Wed 19/8/15	Fri 28/8/15								
312		GF Column	9 days	Wed 19/8/15	Tue 1/9/15								
313		Re-bar	2 days	Wed 19/8/15	Thu 20/8/15								
314		Formwork	3 days	Fri 21/8/15	Tue 25/8/15								
315		Concreting	1 day	Wed 26/8/15	Wed 26/8/15								
316		Striking Formwork	3 days	Thu 27/8/15	Tue 1/9/15								
317		Roof Beam & Slab	35 days	Wed 2/9/15	Mon 26/10/15								
318		Formwork	7 days	Wed 2/9/15	Thu 10/9/15								
319		Re-bar	3 days	Fri 11/9/15	Tue 15/9/15								

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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 Marc
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
320		Concreting	1 day	Thu 17/9/15	Thu 17/9/15								
321		Striking Formwork	3 days	Fri 18/9/15	Tue 22/9/15								
322		Roof	21 days	Wed 23/9/15	Mon 26/10/15								
323		R.C Slab & Roof Truss	14 days	Wed 23/9/15	Thu 15/10/15								
324		Clay Roof	7 days	Fri 16/10/15	Mon 26/10/15								
325		Brick Work And Partition	7 days	Wed 23/9/15	Mon 5/10/15								
326		External Wall	7 days	Wed 23/9/15	Mon 5/10/15								
327		Internal Wall	7 days	Wed 23/9/15	Mon 5/10/15								
328		Window, Door & Ironmongeries	29 days	Wed 23/9/15	Thu 5/11/15								
329		Windows	3 days	Wed 23/9/15	Tue 29/9/15								
330		Outer Frame	3 days	Wed 23/9/15	Tue 29/9/15								
331		Inner Frame & Glass	3 days	Wed 23/9/15	Tue 29/9/15								
332		Doors	1 day	Wed 23/9/15	Wed 23/9/15								
333		Door Frame	1 day	Wed 23/9/15	Wed 23/9/15								
334		Door Leaf	1 day	Wed 23/9/15	Wed 23/9/15								

Project: RESCHEDULE
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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
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Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	

ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
335		Internal Floor Finishes	21 days	Fri 2/10/15	Mon 2/11/15								
336		Plasterin	14 days	Fri 2/10/15	Thu 22/10/15								
337		Tiling Wc	7 days	Fri 23/10/15	Mon 2/11/15								
338		Painting	7 days	Fri 23/10/15	Mon 2/11/15								
339		Internal Floor Finishes	8 days	Fri 2/10/15	Tue 13/10/15								
340		Renderin	1 day	Fri 2/10/15	Fri 2/10/15								
341		Tiling Wc	7 days	Mon 5/10/15	Tue 13/10/15								
342		Internal Cei	7 days	Thu 15/10/15	Fri 23/10/15								
343		External Fir	28 days	Mon 28/9/15	Thu 5/11/15								
344		Plasterin	14 days	Mon 28/9/15	Fri 16/10/15								
345		Tiling Wc	7 days	Mon 19/10/15	Tue 27/10/15								
346		Ceiling Fi	7 days	Wed 28/10/15	Thu 5/11/15								
347		Plumbing W	10 days	Fri 2/10/15	Fri 16/10/15								
348		Electrical Wc	10 days	Fri 2/10/15	Fri 16/10/15								
349		Mechanical V	10 days	Fri 2/10/15	Fri 16/10/15								
350		External Works	162 days	Mon 8/6/15	Mon 1/2/16								
351		Surface Water	147 days	Mon 8/6/15	Mon 11/1/16								
352		Drain, Box Concrete	70 days	Tue 29/9/15	Mon 11/1/16								
353		900mm >	70 days	Tue 29/9/15	Mon 11/1/16								






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Task		Inactive Summary		External Tasks	
Split		Manual Task		External Milestone	
Milestone		Duration-only		Deadline	
Summary		Manual Summary Rollup		Critical	
Project Summary		Manual Summary		Critical Split	
Inactive Task		Start-only		Progress	
Inactive Milestone		Finish-only		Manual Progress	





















ID	Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
						25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
354		900mm	70 days	Tue 29/9/15	Mon 11/1/16								
355		Others	90 days	Mon 8/6/15	Fri 16/10/15								
356		Roadworks & Pavements	51 days	Wed 18/11/15	Mon 1/2/16								
357		Interlocking	24 days	Wed 18/11/15	Mon 21/12/15								
358		Roadworks	33 days	Wed 18/11/15	Wed 6/1/16								
359		Road Furnit	18 days	Thu 7/1/16	Mon 1/2/16								
360		Water Reticula	47 days	Tue 11/8/15	Wed 21/10/15								
361		Pipe line	33 days	Tue 11/8/15	Wed 30/9/15								
362		Pipe Fittings	33 days	Tue 11/8/15	Wed 30/9/15								
363		JBA - Meter	14 days	Thu 1/10/15	Wed 21/10/15								
364		Sewerage (Septic Tank)	14 days	Thu 1/10/15	Wed 21/10/15								
365		Fencing & Railings	21 days	Wed 18/11/15	Wed 16/12/15								
366		Fencing	21 days	Wed 18/11/15	Wed 16/12/15								
367		Railing	21 days	Wed 18/11/15	Wed 16/12/15								
368		Electrical Serv	40 days	Wed 18/11/15	Fri 15/1/16								
369		LV Cable	40 days	Wed 18/11/15	Fri 15/1/16								
370		Compound	40 days	Wed 18/11/15	Fri 15/1/16								
371		TESTING AND COMMISSIONING	20 days	Mon 18/1/16	Tue 16/2/16								

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Task		Inactive Summary		External Tasks	
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ID		Task Mode	Task Name	Duration	Start	Finish	11 August			21 February		1 September		11 March
							25/5	24/8	23/11	22/2	24/5	23/8	22/11	21/2
372			FINAL INSPECTION	1 day	Wed 17/2/16	Wed 17/2/16								
373			HANDING OVER	1 day	Thu 18/2/16	Thu 18/2/16								



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	Split		Manual Task		External Milestone	
	Milestone		Duration-only		Deadline	
	Summary		Manual Summary Rollup		Critical	
	Project Summary		Manual Summary		Critical Split	
	Inactive Task		Start-only		Progress	
	Inactive Milestone		Finish-only		Manual Progress	