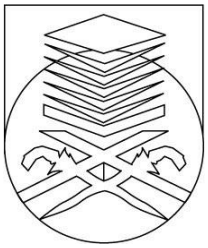

PROGRAMME IN BUILDING SURVEYING

DEPARTMENT OF BUILT ENVIRONMENT STUDIES AND TECHNOLOGY

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

PERAK BRUNCH

SERI ISKANDAR CAMPUS

MAINTENANCE WORKS AT RUMAH PERANGINAN PERSEKUTUAN (RPP) TASIK KENYIR, TERENGGANU

NUR AZMAH AFIQAH BINTI SAIDI

(2018680104)

BACHELOR OF BUILDING SURVEYING (HONS.)

PRACTICAL TRAINING REPORT

OCTOBER 2021

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OCTOBER 2021

This practical training report is fulfilment of the practical training course.

PREPARED BY

NAME : NUR AZMAH AFIQAH BINTI SAIDI

SIGNATURE : .....

SUPERVISING LECTURER

NAME : SR. MARIATY BINTI MOHD BAHARI

SIGNATURE : .....

DATE : .....

ACKNOWLEDGEMENT

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CHAPTER 1

INTRODUCTION

1.1 INTRODUCTION

The training program for students in their final semester is known as practical training. This training is an initial training for students on the work environment. Practical training is defined as study in a company or enterprise, and it is also necessary to complete all the courses taken to graduate from the University. Every student can benefit from this training, which implies that the work environment can give students an understanding of how work is done in the real world, which can be useful in the future. Therefore, a total of 16 weeks with seven (7) credit hours that beginning on 11 October 2021 until 30 January 2022 was allocated for the practical training chosen by the students.

In addition, students can use all the techniques, strategies, skills and abilities learned in class last semester. These technologies and skills can be used for their training, which helps improve the company's performance. Students have no restrictions on the training locations they can choose, and they can be placed in two departments which are either public or private companies that perform work such as building monitoring, construction and evaluation work, facilities management and maintenance, construction development and management, heritage and building conservation, or insurance/risk management.

Each student in the organization is supervised by experienced employees who are responsible for instructing students as well as overseeing their attendance, discipline and performance throughout the internship period. Accordingly, this matter will be recorded in the university student assessment report.

1.2 OBJECTIVES OF INDUSTRIAL TRAINING

The objectives of industrial training are

i. To provide pre-professional work experiences with specific assignments and responsibilities.
ii. To build effective interaction and communication capabilities at all levels
iii. To establish the University–Industry collaboration.
iv. To acquire working experience and develop intellectual knowledge

1.3 OBJECTIVES OF THE REPORT

Objectives of the report are state as below

i. To identify the definition of maintenance work
ii. To identify the type of maintenance work that used for the project

1.4 OVERVIEW OF PUBLIC WORK DEPARTMENT (PWD) HULU TERENGGANU

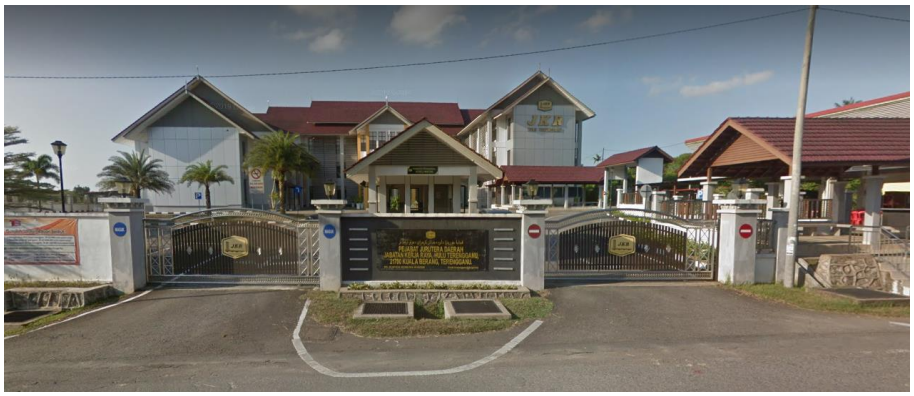

Figure 1.1: Overview of JKR Hulu Terengganu

The Public Works Department was established in 1872 and has provided better infrastructure and environment for daily life. The Terengganu Public Works Department (PWD) has been established since 1921 and functions as a technical agency to the Terengganu Government. PWD Terengganu has the role of implementing infrastructure development and maintenance projects to various departments, statutory bodies and state governments such as roads, buildings, airports, ports and jetties.

JKR Hulu Terengganu Office is located at Pejabat Jurutera Daerah, JKR, 21700 Kuala Berang, Terengganu and is also located in a strategic area located in Kuala Berang, Hulu Terengganu near the main route from Bandar Kuala Berang to Kuala Terengganu. The distance from Kuala Terengganu is about 30 Kilometers. Adjacent to Hulu Terengganu District Hospital and also has a good transportation network that is close to the East Coast Highway (LPT).

Figure 1.2: PWD Official Logo

1.4.1 FUNCTION, OBJECTIVE, VISION, AND MISSION

1.4.1.1 Function

i. Function as a strategic partner to our clients in achieving government policy outcomes
ii. To be a leader in the field of asset management, project management and engineering excellence for the country
iii. Provide state infrastructure

1.4.1.2 Objective

Deliver products and perform maintenance services that are on time, quality and cost set to achieve optimal asset benefits.

1.4.1.3 Vision

To be a world-class service provider and center of excellence in asset management, project management and engineering services for the development of the country's infrastructure through creative and innovative human capital and the latest technology.

1.4.1.4 Mission

PWD contributes to the development of the country through:

i. Assist clients in delivering policy outcomes and services through strategic partner collaboration
ii. Standardization of processes and systems for consistent delivery of results
iii. Provide effective and innovative asset and project management
iv. Strengthen existing engineering competencies
v. Develop human capital and new competencies
vi. Adhere to integrity in delivering services
vii. Build a harmonious relationship with the community
viii. Preserve the environment in service delivery

1.4.2 Client Charter

Below is the client charter that had apply for the Public Work Department.

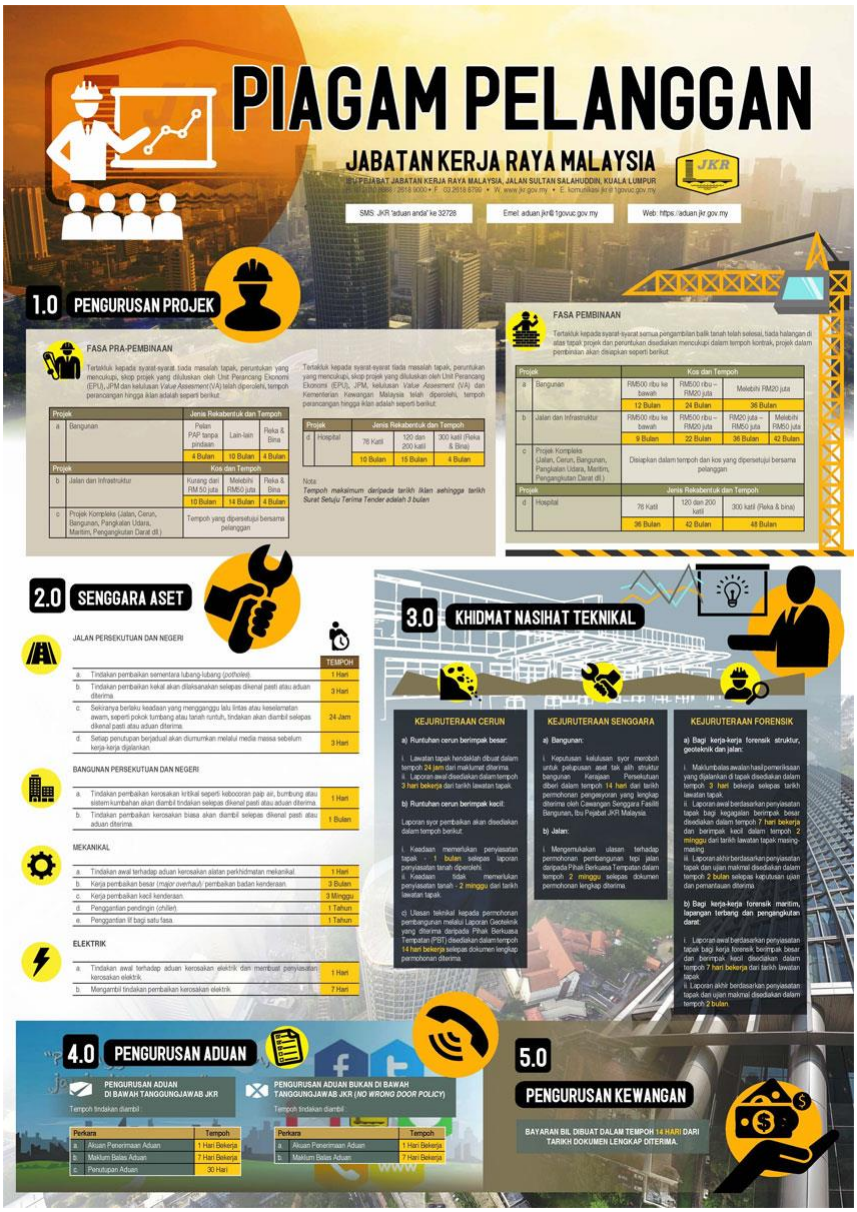

Figure 1.3: Client Charter for Public Work Department.

1.4.3 Key Plan of PWD Hulu Terengganu

Below is the key plan of PWD Hulu Terengganu, Terengganu.

Figure 1.4: Key Plan of PWD Hulu Terengganu, Terengganu

1.4.4 Location Plan of PWD Hulu Terengganu

PWD Hulu Terengganu office is located at Pejabat Jurutera Daerah, JKR, 21700 Kuala Berang, Terengganu.

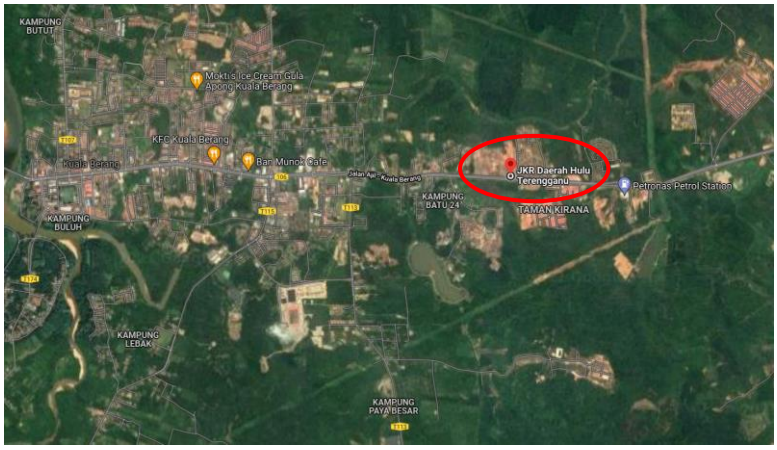

Figure 1.5: Location Plan of JKR Hulu Terengganu, Terengganu

1.5 ORGANIZATION STRUCTURE

1.5.1 Organization Structure of Ministry of Work

Below is the ministry of work for organization structure

Figure 1.6: Organization Structure of Ministry of Work

1.5.2 Organization Structure of Hulu Terengganu Public Work Department

Below is the Hulu Terengganu Public Work Department organization structure

Figure 1.7: Organization Structure of Hulu Terengganu Public Work Department

1.5.3 Organization Structure of Building Division

Below is the function and organization structure of Building Division Hulu Terengganu Public Work Department

Functions:

- Plan, control and supervise building design work.
- Plan, control and supervise the construction of buildings.
- Technical advisory services to government departments and agencies.
- Maintain government buildings.
- Documentation management.
- Responsible for all matters related to electrical work for all development projects as well as maintenance of buildings and roads.
- To plan, control and supervise electrical related design work.

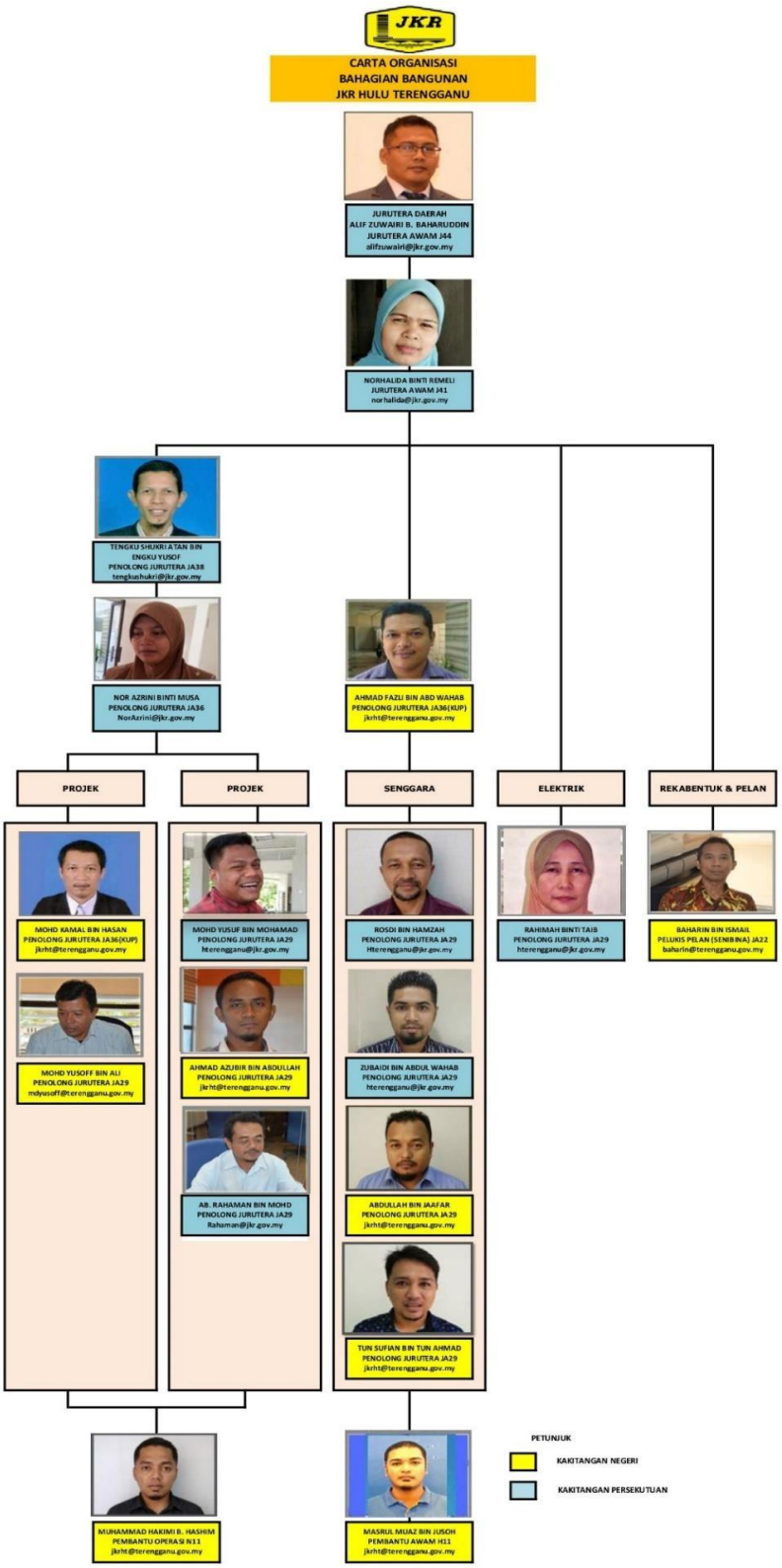

Figure 1.8: Organization Structure of Building Division Hulu Terengganu Public Work Department

1.5.4 Organization Structure of Maintenance Building Department

Below is the organization structure of maintenance building department of Hulu Terengganu Public Work Department.

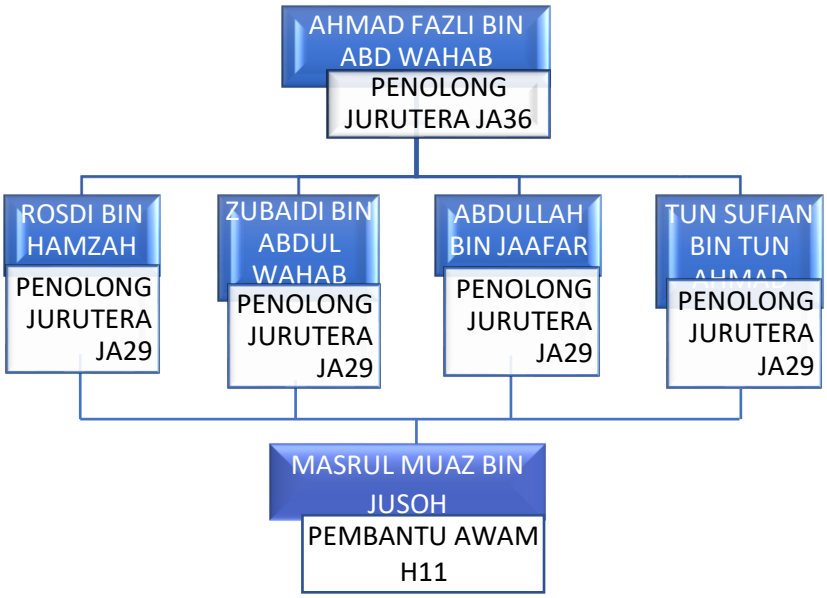

Figure 1.9: Maintenance Building Department Organization

Throughout 16-week internship, I was allocated at PWD Hulu Terengganu in the Maintenance Department, which is part of the Building Department. The Maintenance Department was led by Mr. Ahmad Fazli bin Abd Wahab, and is in responsible for planning and directing the work of a group of individuals and monitor their work and takes corrective actions when necessary.

1.6 SCOPE OF WORK

The scope of work of the building division is to manage and coordinate the implementation of state & federal building projects, coordinate the maintenance work of state & federal government buildings, carry out minor works requested by other departments and provide technical advisory services to government departments others. While industrial training is placed in the maintenance department which has a scope of work such as maintenance and upgrading of buildings, ports and jetties as well as infrastructure and utilities such as roads, water pipeline supply, electrical and etc.

1.7 MAJOR PROJECTS

1.7.1 Federal Projects Under Construction

Below is the list of major projects for federal projects that under construction.

Table 1.1: Federal Project Under Construction

No.	Title	Contractor	Price	Commencement Date/ Completion Date
1.	Pembinaan 2 Blok Gantian 6 Bilik Darjah Dan Lain-Lain Kemudahan Di Sekolah Menengah Kebangsaan Tengku Ampuan Intan, Kuala Berang, Hulu Terengganu, Terengganu	ERAT TEMURUN SDN BHD	RM 15,425,750.30	30/01/2020 – 06/10/2021
2.	Tender Semula Pembinaan Kompleks Sukan Hulu Terengganu, Terengganu	IMMALITE SDN. BHD	RM 5,398,749.70	26/02/2019 – 30/06/2021

1.7.2 State Projects Under Construction

Below is the list of major projects for state projects that under construction**.**

Table 1.2: State Project Under Construction

No	Title	Contractor	Price	Commencement Date/ Completion Date
1.	Membina Dan Menyiapkan Sebuah Bangunan Masjid Dan Lain-Lain Kerja Berkaitan Di Pekan Ajil, Hulu Terengganu, Terengganu	M.O. JAYA SDN.BHD	RM 10,944,336.18	14/05/2018 – 21/02/2021
2.	Cadangan Pembangunan Pusat Komersil Dan Perkhidmatan Di Kawasan Pertumbuhan Baru Kuala Ping, Telemong, Hulu Terengganu, Terengganu.	PAMIN CONSTRU-CTION SDN. BHD	RM 26,606,000.00	20/02/2017 – 19/12/2020

3.	Cadangan Membina Dan Menyiapkan Kompleks Sukan Yang Mengandungi: A)1 Unit Gelanggang Tertutup B)1 Unit Astaka(Padang Bola Sepak) C)1 Unit Astaka(Padang Hoki) D)1 Unit Pondok Pengawal E)1 Unit Tnb Sub Stesen F)2 Unit Rumah Sampah G)1 Unit Rumah Pam Dan Lain-Lain Kemudahan Di Atas Lot 51646 Kawasan Paya Besar,Mukim Kuala Berang,Daerah Hulu Terengganu, Terengganu Darul Iman.	TIME FUTURE CONSTRU-CTION (M) SDN.BHD	RM 46,010,674.61	21/09/2015 – 05/03/2021

4.	Merekabentuk, Membina Dan Menyiapkan Kompleks Perniagaan, Hotel Dan Dataran Di Masjid Sultan Mahmud, Kuala Berang, Hulu Terengganu, Terengganu. (Secara Reka Dan Bina Serta Rundingan Terus Dengan Kaedah Bayaran Berjadual)	MSI VISION SDN. BHD	RM 25,480,000.00	21/11/2016 – 28/03/2021
5.	Cadangan Pembangunan Reka Dan Bina Bagi Kerja-Kerja Penambakan Tanah, Infrastruktur, Dewan Serbaguna Dan 4 Unit Rumah Kedai Di Kg. Menerong, Ajil, Hulu	PETRONINE (M) SDN. BHD	RM 9,415,000.00	29/08/2016 – 26/06/2019

	Terengganu, Terengganu.			

1.8 CHAPTER OUTLINE

The general purpose of this result was study on maintenance work. Below is the summary for purposed chapter.

Chapter 1: Introduction to Industrial Training

Chapter 1 provides the whole picture of the industrial training which are the introduction of industrial training, both objectives of industrial training and the report, overview of PWD Hulu Terengganu, function, objective, vision, and mission, key plan and location plan of PWD Hulu Terengganu, organization structure of PWD, scope of work, major project under construction and also the chapter outline of the report.

Chapter 2: Literature Review

In Chapter 2 covers a review of the literature pertinent for this research. This chapter start with a definition and concepts of maintenance work, followed by the type of maintenance work, maintenance policy, maintenance planning, maintenance strategy and it ends with benefit of maintenance work for chapter 2.

Chapter 3: Case Study

Maintenance Process Works at Rumah Peranginan Persekutuan (RPP) Tasik Kenyir, Terengganu

Chapter 3 initiate with an introduction of project. Then follow up with background of project which is Rumah Peranginan Persekutuan (RPP) Tasik Kenyir, site location, scope of work, parties involved in the project and the photos of site visit. The process or problem identification will be discussed in Chapter 4.

Chapter 4: Process and Problem Maintenance Work

Then, chapter 4 was the discusses more details about the maintenance work base from the case study to achieve the objective of the report and the problem happened during the maintenance work.

Chapter 5: Conclusion and Recommendation

Chapter 5 concludes the report based on the analyzed data as well as stating whether the objectives of the study were achieved or not. It also covers all problems that arise throughout the study, as well as recommendations and suggestions for further improvement in this report.

CHAPTER 2

MAINTENANCE WORK

2.1 DEFINITION AND CONCEPTS OF MAINTENANCE WORK

Generally, maintenance means to hold, keep, sustain or preserve the building or structure to an acceptable standard which is defined as one which sustains the utility and value of the facility. Building maintenance is expensive in terms of both financial and environmental costs, such as operating costs, real estate management, administration, debtors' work and legal services, as well as climate change, greenhouse emissions, and energy efficiency measures. Maintenance is often described as a set of activities carried out to maintain a building's structure and services in order to ensure that they operate as planned during its life cycle.

Base on definition of BS 3811, it defines maintenance as a special task embarked on in sequence to remain or reinstate each amenity such as, each part of a site, building, and contents to a satisfactory benchmark (Mydin, 2016). In addition, BS 3811 also defines maintenance as work undertaken in order to keep or restore every facility for example every part of the site, building, and contents to an acceptable standard. According to BS 3811, 1964 the term of maintenance refers to a set of actions taken to keep or restore an item to an acceptable state or standard. However, in 1987, BS3811 upgraded the definition to a combination of all technical and administrative actions, including supervision actions. (Rani et al., 2015)

2.2 TYPE OF MAINTENANCE WORK

2.2.1 Planned Maintenance

Planned maintenance is a proactive approach to maintenance in which maintenance work is scheduled to take place on a regular basis. The type of work to be done and the frequency varies based on the equipment being maintained, and the environment in which it is operating. The primary objective of scheduled maintenance is to optimize building efficiency by keeping it going as long as possible without it deteriorating or experiencing unplanned outages.

2.2.2 Unplanned Maintenance

Unplanned maintenance is any maintenance task that occurs unexpectedly. This situation happens when there is no formal strategy in place to address a repair, replacement, or inspection until it is required. Building failure that was not anticipated is a frequent cause of unplanned maintenance. Unplanned maintenance is distinct from unscheduled maintenance in that the latter might have been planned for a certain fiscal year but not yet scheduled for a specific day.

2.2.3 Preventative Maintenance

Preventive maintenance is scheduled maintenance of a building that is intended to extend the life of the building and avoid the need for unplanned maintenance. In order to extend the life of a building, preventive maintenance includes painting, lubrication, cleaning, adjusting, and minor component replacement.

Preventive maintenance was created to overcome the disadvantages of corrective maintenance by reducing the risk of failure and preventing unexpected failure. Preventive maintenance is performed in accordance with a predetermined plan at predetermined times, which could be dependent on for example an operating period. Preventive maintenance has some benefits over corrective maintenance in that it can be planned ahead of time and carried out when it is most convenient for the building's occupants. (MYDIN, 2016)

2.2.4 Corrective Maintenance

Corrective maintenance is the maintenance carried out subsequent to the breakdown that has occurred and projected to reinstate an item to a state in which it can execute its necessitated purpose. Corrective maintenance is a set of technical activities aimed at repairing or replacing building failures. This method of maintenance is used to repair errors in a building that needs to be serviced in order to get it back to its original state. (MYDIN, 2016)

2.3 MAINTENANCE POLICY

Maintenance policy is a tool for maintenance workers to plan their effective maintenance plans. However, before a maintenance programmed is prepared, maintenance staff and top management are expected to agree on maintenance strategy because it needs strategic directions, as well as funding. The maintenance strategy consists of five main components, and from these components various maintenance techniques are created. Maintenance operations would be in a hazardous order without specifying this policy. The Five Shows

- The period for their present use to be maintained.
- The buildings' living requirements and their equipment and utilities.
- The norm to be maintained by the building and its utilities.
- The time taken for reactions between the occurrence of a defect and the fix.
- Civil and legal conditions are therefore to be taken into account.

2.4 MAINTENANCE PLANNING

Maintenance planning is often described as a comprehensive process that identifies potential problems and outlines plans to resolve them ahead of time. For example, maintenance planning can determine the equipment and services needed for the job. It also ensures that they are readily available and laid out wherever they are needed. A planner's role is to identify the steps involved in completing a project. Some of the key areas to consider in a maintenance plan are parts handling, ordering, staging, breakdown management, and quality control.

To put it another way, maintenance planning means figuring out what work needs to be done, what tools or supplies will be used, and how the work will be completed in a timely and cost-effective manner. The Maintenance Planner's job is to increase workforce to improve the productivity and quality of the workforce by anticipating and eliminating the possibility of delays through the planning and coordination of workers, parts and materials, and access to equipment while working. Other than that, the management can make more accurate and good planning to carry out maintenance work. It requires a professionally trained Maintenance Planner to plan and schedule work carefully in order to maintain the reliabilities of the planned equipment. The Maintenance Planner job plans are designed to ensure or extend the life of equipment resulting in a reduction in overall maintenance costs and improved product quality.

2.4.1 Short Term

Short-term planning is determined by organizational characteristics such as employee skills. Thus, we can see that in the workplace, the managers will devise strategies on how to improve these characteristics in the short term to meet long-term goals. For instance, problems with company equipment such as computers or the quality of content provided by employees need to be addressed to meet the short-term time set by management. In addition, short -term planning can see from the current company characteristics and devise strategies to improve them such as employee skills and

attitudes. However, the condition of production equipment or product quality problems are also a short -term concern.

Normally short-term maintenance plans are fixed in many aspects. There are set times and dependent operations. The specifications for spare parts and special tools are set, and it is possibly too late to order longer lead time spare parts or book specialized tools in the short term. From a day or two to a month or two into the future, the short-term looks at everything. All the materials and spare parts required to carry out the work orders and projects would have been ordered, or at least the delivery date requirement would have been specified so that the material requirements planning could select these requirements and produce material purchase orders. Sub-contractors were informed of the specifications for the job. Work is assigned to particular individuals and credentials are reviewed.

2.4.2 Middle Term

The middle term is usually between a month or 2 and a year or two into the future. A medium-term view of any maintenance reliability will be implemented and the findings included in the short -term plan. The project manager is able to develop a comprehensive plan for the approved project in a long-term plan. The details of scheduling for closures will also be done. However, the maintenance estimates will be developed to support these estimates based on the historical or zero budget principle and work orders will be well generated. For example, you probably won't be able to adjust the size of your staff or the equipment you're operating with in the long term, however you would be able to change the expected dates and, most likely, any dependent activities to optimize the schedule around other constraints.

2.4.3 Long Term

The long-term is far enough into the future to be able to change any of the factors which could cause a constraint when we get there. The plan is something that basically all the owners or users agree to on how the building is going to be maintained in the future. For maintenance planning, this could imply increasing the number of people you hire, changing the types of equipment you use, outsourcing some of your maintenance, preparing for corporate strategic goals or legislative requirements, or any of a number of other factors with a long lead time. This maintenance plan usually was planned in the period of 10 years. There will be a huge maintenance within 10 years to prevent the building from major defects. For example, once a year a building generally needs a building wash and this maintenance involves proper budget and costs. Then in a couple of years, depending on the type of cladding, the owner may want to paint the building to change the vibes of the building. In 20 years', time the roof needs to be redone, or in 30 years' time the lift needs to be reconditioned. To manage long-term maintenance, shutdown, and project requirements, a company will typically use Strategy Management or Project and Portfolio Management tools

2.5 MAINTENANCE STRATEGY

For maintenance management, the maintenance strategy covers all aspects. A maintenance program such as corrective maintenance, preventive maintenance, condition related maintenance, scheduled and unplanned maintenance can be developed from the maintenance strategies. But we have to make sure that the maintenance program we have developed is really effective for the maintenance strategy, to make it effective, they use the Key Performance Indicator and benchmarking process to monitor the contractor's actions. For the contractors who are lacking, their work will be given a penalty by the management.

Maintenance policy is concerned with maintenance approach, quality of maintenance and maintenance tools, which are categorized as the main components of maintenance policy formulation. Until introduction, it has to be accepted and is a management tool for both maintenance staff and top management. The maintenance strategy is based on techniques that are corrective, preventive and conditional. Various styles of structures, facilities and fittings require various kinds of approaches to maintenance. However, the common factors influencing maintenance strategy are health and safety, and are fit for use, law, value and quality.

Selecting a successful maintenance strategy requires a good understanding of the concepts and standards of maintenance management, as well as knowledge of specific facility performance. For maintenance strategy selection, there is no right formula and, more often than not, the selection process requires a combination of various maintenance strategies to accommodate the particular performance and conditions of the facility. An effective maintenance strategy is concerned with maximizing equipment uptime and facility performance while balancing the associated resources expended and ultimately the cost. We need to ensure that we are getting sufficient return on our investment. A maintenance strategy defines the rules for the sequence of planned maintenance work. It contains general scheduling information, and can therefore be assigned to as many maintenance tasks lists and maintenance plans as required.

2.5.1 Maintenance Strategy Implementation

The implementation purpose of the Maintenance strategy is to have the highest level of building maintenance. There are two types of maintenance, namely planned maintenance and unplanned maintenance. Therefore, planned maintenance is divided into two parts, namely Preventive Maintenance and Corrective Maintenance and unplanned maintenance is divided into one part only, namely Corrective Maintenance. The use of maintenance strategies needs to be used properly to get quality work and customer satisfaction.

2.6 BENEFITS OF MAINTENANCE WORK

Below is the benefit if the building or facilities are applying the maintenance work

2.6.1 Lengthen asset lifespan

Maintenance work is important to make sure the lifespan of an asset can last longer and can further reduce costs. Therefore, the implementation of building maintenance work should be done periodically to allow planning preventive maintenance in a timely manner, catching equipment before damage (S. Laubach, 2020).

2.6.2 Lower risk of breakdowns

Decreased risk of damage is another major benefit of preventive maintenance. Most of the benefits listed here occur primarily as a result of a reduced risk of damage. Waiting to perform maintenance until failure puts your facility at risk of losing productivity and a damaged reputation. Damage that occurs from mechanical failure is due to problems that can be avoided with a good preventive maintenance plan. By proactively scheduling maintenance, the risk of asset damage can be reduced (S. Laubach, 2020).

2.6.3 Promote health and safety

Accurately tracking and performing maintenance can also improve the health and safety of a facility. In the context of maintenance, health and safety are often considered a concern especially in facilities with hazardous equipment, but health and safety are important in every facility especially office and school buildings. Therefore, using a system such as a computerized maintenance management system (CMMS) will enable the monitoring of all equipment on assets and store important security information in one digital hub. Using CMMS software also simplifies security audits as by using a few clicks on a smartphone, a complete maintenance history and security protocol for all equipment items will be available. Preventive maintenance and CMMS software can help ease work with fire safety readiness (S. Laubach, 2020).

2.6.4 Boost customer satisfaction

Practicing preventive maintenance to prevent damage and maintain the quality of the goods produced ensures customer satisfaction with the product, thereby strengthening the brand image. Even in facilities that do not produce goods for sale, “customers” can be staff or students working on site. In office and school spaces, a comfortable environment is proven to increase productivity because preventative maintenance can ensure productivity is never lost to a faulty HVAC unit (S. Laubach, 2020).

CHAPTER 3

CASE STUDY

MAINTENANCE WORKS AT RUMAH PERANGINAN PERSEKUTUAN (RPP) TASIK KENYIR, TERENGGANU

3.1 INTRODUCTION OF PROJECT

Figure 3.1: Rumah Peranginan Persekutuan Tasik Kenyir

Rumah Peranginan Persekutuan (RPP) Tasik Kenyir is located in Kuala Terengganu that has holiday homes, cabins and resorts. Rumah Peranginan Persekutuan Tasik Kenyir is situated nearby to Pulau Sah Kecil, and northwest of Pulau Dula.

Rumah Peranginan Persekutuan (RPP) Tasik Kenyir is one of the facilities provided to civil servants as a token of government gratitude and appreciation to civil servants and government retirees for their efforts and hard work in developing the country. Its position in a strategic location makes it an option for civil servants whether for holiday purposes or official accommodation while attending official courses.

RPP management section, Property Management Division as manager to RPP throughout Malaysia, London and also Singapore is always committed to:

- Provide resort-standard accommodation that is conducive to government employees and retirees;
- Ensure that each RPP is well maintained so that the services and facilities offered always provide comfort to visitors; and
- Practicing excellent governance so that the RPP can continue to be developed strategically so that it can be enjoyed by more civil servants and government retirees in accordance with its status as a sign of appreciation to members of the Malaysian civil service.

3.2 BACKGROUND OF PROJECT

Below are the details of background maintenance project at Rumah Peranginan Persekutuan Tasik Kenyir, Hulu Terengganu, Terengganu.

Table 3.1: Details of Maintenance Project

Description	Detail
Project's Title	Repair And Maintenance Works of The Jetty, Quarters, Hostel, Surau and Its Surroundings and Related Works at The Rumah Peranginan Persekutuan Tasik Kenyir, Hulu Terengganu, Terengganu
Ref. No.	JKR.HT.BS/123/115
Site Visit	28 October 2021
Period of Work	One (1) year
Validity Period	One (1) year
Defect Liability Period (DLP)	Six (6) months from the Date of Completing
Contractor	Jati Bina Kualiti Enterprise

3.3 SITE LOCATION

Below is the site location for the Rumah Peranginan Persekutuan Tasik Kenyir, Terengganu

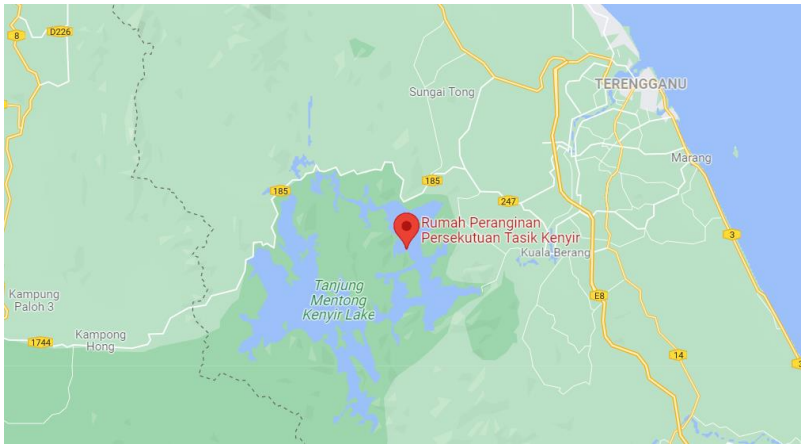

Figure 3.2: Key Plan of Project Site

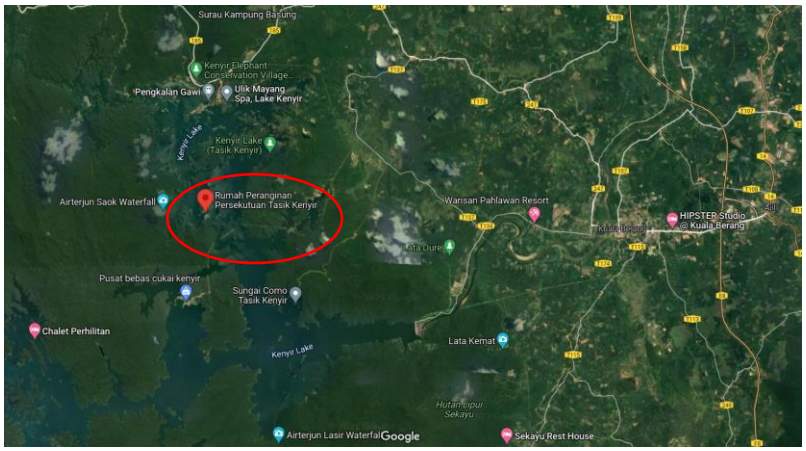

Figure 3.3: Location of Project Site

Figure 3.4: Site Area of RPP Tasik Kenyir

3.4 SCOPE OF WORK

This project scope of work includes the construction, completion, testing, and commissioning of all requirements and structure specified in the scope of work and specifications, including but not limited to all necessary temporary works, repairing, civil works, and other relevant utilities. All the work shall be in accordance to the specification, bill of quantities, and work order in the sum of RM 300,000.00 which include the following:

A. Maintenance of Jetty

i. Floor maintenance at kayak storage stores
ii. Office floor maintenance
iii. Maintenance of wooden floors on the jetty lobby
iv. Awning maintenance
v. Floating maintenance
vi. Supply and install signage on counters

B. Maintenance of Quarters, Surau, Dormitory and Hall Buildings

Quarters

i. Opened the original door and replaced it with a new door

Surau

i. Opened the original wooden railing fence and replaced it with new hardwood including a paint finish

Dormitory

i. Opened the original wooden railing fence and replaced it with new hardwood including a paint finish
ii. Opened the damaged original wood floor and replaced it with new hardwood including a paint finish
iii. Opened the original door and replaced it with a new door

Hall Building

i. Opened the original door and replaced it with a new door

C. Others work

i. Maintenance of drain building

3.4.1 Parties Involved in The Project

Below are the details of the parties that have been involved in the project.

Table 3.2: Client Details

CLIENT	
Name	Jabatan Perdana Menteri
Address	Block B8, Prime Minister's Department Complex, Federal Government Administrative Centre, 62502, Wilayah Persekutuan Putrajaya
Tel.	03-8000 8000
Fax.	03-8888 3904

Table 3.3: Contractor Details

CONTRACTOR	
Name	Jati Bina Kualiti Enterprise
Address	No. 25-B, Kampung Bukit Kolam 21800 Ajil, Terengganu
Tel.	011-37544580
E-mail	Jatibina.kualiti@gmail.com

3.5 SITE PHOTO

On 28th october 2021, the site visit was conducted by Mr. Ahmad Fazli bin Abd Wahab and Mr. Zubaidi bin Abdul Wahab to see the progress of work that has been carried out according to the schedule and items of work done according to the requirements that have been stated. A “Contractor Site Daily Report” is used by construction companies and workers to 'check in' on site conditions and progress.

3.5.1 Site Visit Before Start Maintenance Works

Figure 3.5: Jetty RPP

Figure 3.6: Rotten Floor Jetty

Figure 3.7: Office Floor

Figure 3.8: Kayak Storage Floor

Figure 3.9: Jetty Counter Signage

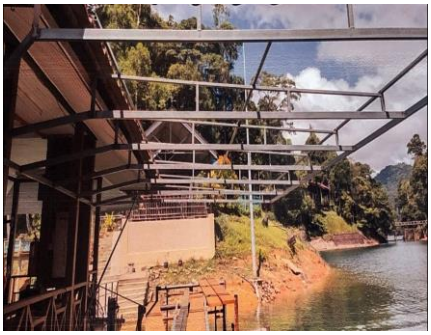

Figure 3.10: Jetty Awning

Figure 3.11: Rotten Floor Hostel

Figure 3.12: Rotten Railing Fence

CHAPTER 4

PROCESS AND PROBLEM

MAINTENANCE WORKS AT RUMAH PERANGINAN PERSEKUTUAN (RPP) TASIK KENYIR, TERENGGANU

4.1 INTRODUCTION

This chapter will explain about the process of maintenance work and the problems happen during the maintenance process is carried out. This maintenance work is carried out to ensure that the assets are always in good condition. It is also in the interest of building users in conjunction with the lifespan of the building so that the building can stand longer in good condition. Before the maintenance work is carried out, an inspection of the condition of the building should be done and any defects or damage that occurs will be recorded and reported. After that, all the details that need to be done maintenance will be handed over to the appointed contractor which is Jati Bina Kualiti Enterprise for the repairing work.

4.1.1 Corrective Maintenance

This project uses the corrective maintenance method, which is maintenance work done to identify, isolate, correct and repair damaged systems and equipment in order to perform the function of the asset and also increase the life span of an asset. Corrective maintenance can be synonymous with breakdown or reactive maintenance and can also be associated with troubleshooting, disassembly, adjustment, repair, replacement and realignment.

4.2 MAINTENANCE WORK

The maintenance works involved with the RPP Tasik Kenyir, Terengganu project include maintenance of Jetty, maintenance of Quarters, Surau, Dormitory and Hall Buildings and also other works involved there. All work that needs to be done must be in accordance with the bill of quantities and also the instructions of the authorities to ensure that all work is done correctly and completed within the contract period of time and the contract

price rate set without any problems. The following is a list of maintenance work that has been carried out at RPP Tasik Kenyir, Terengganu.

4.2.1 Maintenance of Jetty

1) Floor maintenance at kayak storage stores

Figure 4.1: Kayak Storage Store Before Maintenance

Figure 4.2: Kayak Storage Store During Maintenance

Figure 4.3: Kayak Storage Store After Maintenance

- For kayak storage stores floor maintenance work, the work of removing all kayak equipment and other items is done before starting work and these items will also be moved back to the original place after completion of work. Related work will also be done as directed by the superintendent.

- After that, the work to open the original wooden floor of the jetty was done and replaced with 3mm thick stainless steel checker plate on the floor and install hollow steel as a beam with the existing size (Area: 6,000mm x 9,000mm)

- Works to supply and install stainless steel railings for stairs, right and front fences and doors (1,000mm x 900mm).

- Floating opening works for kayak drop off, scraping and painting with new paint using marine coating/ anti fouling type and re-installing in original place.

Figure 4.4: Kayak Floating Before Maintenance

Figure 4.5: Kayak Floating During Maintenance

2) Office floor maintenance

Figure 4.6: Office Floor Before Maintenance

- The work of opening and removing the original laminate floor and opening the floor and the original wood beams, then replaced with new ones of the same size and type.

3) Maintenance of wooden floors on the jetty lobby

Figure 4.7: Wooden Floor on Jetty Lobby Maintenance

- The work opened up the original floor and timber beams and replaced them with new ones like the original.

- After the installation work is completed, it will be painted and repair other items in case of defects on other surfaces as well as related work as instructed by the commissioning officer.

4) Awning maintenance

Figure 4.8: Awning Before Maintenance

Figure 4.9: Awning During Maintenance

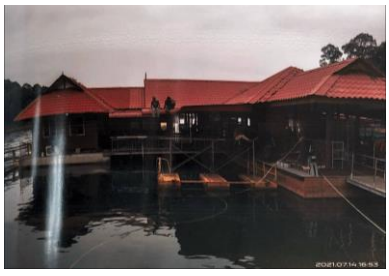

Figure 4.10: Awning After Maintenance

- To open and remove the original awning and built with a new awning that is more suitable and sturdier.

5) Floating maintenance

Figure 4.11: Floating Before Maintenance

Figure 4.12: Floating During Maintenance

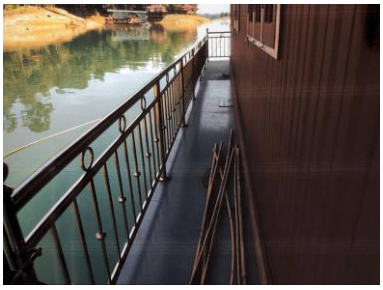

Figure 4.13: Floating After Maintenance

- Works to open and removing the railing fence before starting work and re-install in the original place after completion of work including repairing defects if any as well as related work.

- Pasting 6mm thick MS Plate in the floating room of the supervisor includes the work of opening and re-assembling the wood, welding, painting and repairing the damage that occurred as well as work related to it.

6) Supply and install signage on counters

Figure 4.14: Signage Before Maintenance

Figure 4.15: Signage During Maintenance

Figure 4.16: Signage After Maintenance

Figure 4.17: Signage “KAUNTER" After Maintenance

- Opening and removing the original signboard and replacing it with a new one and related work.

- Supply and install the national coat of arms logo and related work.

- Supply and install signboards with the word "KAUNTER" and related works as per the plan and instructions of the officer.

4.2.2 Maintenance of Quarters, Surau, Dormitory and Hall Buildings

1) Quarters

Figure 4.18: Door During Maintenance

Figure 4.19: Door After Maintenance

- Opening and removing the original door which has been damaged and replaced with a new door of two units of the same size and type including locking fittings, latches and paint finishes as well as work related thereto as directed by the superintendent.

2) Surau

Figure 4.20: Railing Before Maintenance

Figure 4.21: Railing During Maintenance

- Opening and removing the original wooden railing fence and replacing it with a new, stronger 1m long hardwood railing fence including paint finishing and related works as directed by the superintendent.

3) Dormitory

Figure 4.22: Railing Before Maintenance

Figure 4.23: Railing After Maintenance

- Opening and removing the original wooden railing and replacing it with a new, stronger hardwood railing fence including paint finishing and related works as directed by the superintendent.
  - Front section: 2.4m
  - Rear section: 5m

Figure 4.24: Floor Dormitory Before Maintenance

Figure 4.25: Floor Dormitory After Maintenance

- Open and removing the original wooden floor which has been damaged and rotted then replaced with new hardwood including paint finishing as well as related work as directed by the superintendent.
  - Front section: 5.8m²
  - Rear section: 3m²

Figure 4.26: Door Dormitory During Maintenance

Figure 4.27: Door Dormitory After Maintenance

- Opening and removing the original door which has been damaged and replaced with a new door of one unit of the same size and type including locking fittings, latches and paint finishes as well as work related thereto as directed by the superintendent.

4) Hall Building

- Opening and removing the original door which has been damaged and replaced with a new door of one unit of the same size and type including locking fittings, latches and paint finishes as well as work related thereto as directed by the superintendent.

4.2.3 Others Work

1) Maintenance of drainage building

Figure 4.28: Sump During Maintenance

Figure 4.29: Drainage During Maintenance

- Demolition works of the original and newly constructed sump made of brick bond measuring (600mm x 600mm) as well as the depth specified on the site including cover made of hardened steel, smooth cracks on all exposed surfaces and related works as directed by the officer authority. The following is the number of sumps built:
  - Kuarters Kakitangan : 9 unit
  - Banglo : 30 unit
  - Asrama : 2 unit
  - Dewan Sindikit : 2 unit
  - Dewan Makan : 2 unit
  - Rumah Memasak : 2 unit

4.3 ISSUES AND PROBLEMS

4.3.1 Safety of Maintenance Staff

According to observations, the majority of employees during the inspection did not wear Personal Protective Equipment (PPE) at all times. Among them is not wearing safety helmets, which causes their heads to not be covered in case anything happens, this can increase the chances of injury or fatal accident. Maintenance personnel may be experienced but incidents can still occur if missed steps or anything. Therefore, the practice of using PPE such as gloves and safety helmets must be observed to ensure that all conditions are under control. If an employee is unable to comply with safety rules, the security officer shall take action against the employee.

4.3.2 Incorrect Sump Installation

During the inspection of the completion of the work, it was found that the sump installation on the drain was not installed properly. The position of the water flow path out of the sump is at a high position which will cause a large reservoir of water in the sump because the water cannot come out completely. This will cause the sump to fail because it cannot function properly. Therefore, the contractor who made the sump is instructed to repair the error so that the condition of the sump is in good condition without any problems in the future.

CHAPTER 5

RECOMMENDATION AND CONCLUSION

MAINTENANCE PROCESS WORKS AT RUMAH PERANGINAN PERSEKUTUAN (RPP) TASIK KENYIR, TERENGGANU

5.1 INTRODUCTION

The purpose of this chapter is to conclude the findings and results that have been discussed in previous chapters. In this chapter, the information gathered will be summarized as a conclusion to restate the main problems and findings of this study. In addition, suggestions will also be made to provide useful opinions in the future. Lastly, this chapter also helps to reveal the overall conclusion of this study.

5.2 RECOMMENDATION

There are several recommendations have been made based on the observation from this case study. From that observation, it helps to have several recommendations about the issues and problems.

Any contractors and parties involved with maintenance work must always follow proper safety guidelines which is always apply Personal Protective Equipment (PPE) while performing their work. This aspect must be taken into account to ensure that everything runs smoothly without any serious accidents occurring while doing maintenance work. Any party who does not practice PPE will be charged to serious action, by apply this way they will be more disciplined and working conditions will also be more conducive.

Other than that, contractors are also advised to always be alert while doing the work so that there are no mistakes in completing their work. This situation is also to avoid the occurrence of delays or problems during the construction process. It is important for contractors to always adhere to work schedules so that they can be completed on time and avoid Extension

of Time (EOT) and penalties for work delays. Therefore, to ensure all work is done correctly, they must always comply with the specifications outlined in the bill of quantities.

5.3 CONCLUSION

Maintenance is one of the most important things in ensuring that an asset can be maintained, last longer and ensure that the function of the asset can be used continuously without any problems. For the selected study cases, the corrective maintenance method was used. Corrective maintenance is one of the important components of an overall asset maintenance program. Careful planning and observation must be done before starting the asset maintenance repair so that everything runs smoothly and according to the correct procedure to ensure that no spread of other faults will occur during and after performing the maintenance of an asset. All aspects must be followed and complied with, especially the aspects of safety and contract compliance.

In addition, during the industrial training at the Public Works Department (JKR) which has been placed under the Building Department, students have gained more knowledge and experience in various forms regarding the maintenance of building and also building construction. Exposure to such conditions and environments has benefited students and can hone more talents and new knowledge that can be applied in the world of work and the future.

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