



PROGRAMME IN BUILDING SURVEYING  
DEPARTMENT OF BUILT ENVIRONMENT STUDIES AND TECNOLOGY  
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING  
UNIVERSITI TEKNOLOGI MARA  
PERAK BRANCH  
SERI ISKANDAR CAMPUS

**THE USING OF COMPUTERISES MAINTENANCE MANAGEMENT  
INFORMATION SYSTEM (CIMMS) IN FACILITY MANAGEMENT AT  
BANGUNAN PERSEKUTUAN PERSIARAN JUBLI EMAS KANGAR,  
PERLIS.**

NURUL AINAA AFIFAH BINTI AHMAD BASRI

(2018225748)

BACHELOR OF BUILDING SURVEYING (HONS)

PRACTICAL TRAINING REPORT

JANUARY 2022

PROGRAMME IN BUILDING SURVEYING  
DEPARTMENT OF BUILT ENVIRONMENT STUDIES AND TECNOLOGY  
FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING  
UNIVERSITI TEKNOLOGI MARA  
PERAK BRANCH  
SERI ISKANDAR CAMPUS

**THE USING OF COMPUTERISES MAINTENANCE MANAGEMENT  
INFORMATION SYSTEM (CIMMS) IN FACILITY MANAGEMENT AT  
BANGUNAN PERSEKUTUAN PERSIARAN JUBLI EMAS KANGAR,  
PERLIS.**

JANUARY 2022

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

PREPARE BY

NAME : NURUL AINAA AFIFAH BINTI AHMAD BASRI

SIGNATURE :

SUPERVISING LECTURER

NAME :

SIGNATURE :

DATE :

## **ACKNOWLEDGEMENT**

ALHAMDULILLAH praise to Allah S.W.T for HIS bless and mercy. I managed to complete this thesis within the time given. With the mercy from HIM, I got strength and confidence to complete this practical training report even had through many challenges, obstacles and problem that I need to face to complete this report since it is compulsory to be completed.

Firstly, I would like to show my gratitude to my supervisor, Muhammad Zahir Zulkernain for giving me a good guideline, monitoring and constant encouragement throughout this practical training. To my parents that always pray non-stop and help in financial way also for their tireless sacrifice and advice that always become a morale-boosting for me. I grateful for them.

My appreciation also goes to all staff of THP Utara Bangunan Persekutuan Jubli Emas Kangar who have given me the time, space and support to complete my report and also my internship either directly or indirectly. All the helps that I get are never will be forgotten.

Thank you.

## TABLE OF CONTENT

### Table of Contents

ACKNOWLEDGEMENT.....	ii
TABLE OF CONTENT .....	iii
CHAPTER 1: INTRODUCTION.....	1
1.0 INTRODUCTION.....	1
1.1 ORGANISATION PROFILE .....	2
1.2 ORGANISATION BACKGROUND .....	3
1.3 FACILITY MANAGEMENT IN TH PROPERTIES.....	4
1.4 VISION, MISSION AND VALUE.....	4
1.5 ORGANISATION CHART OF TH PROPERTIES UTARA BANGUNAN PERSEKUTUAN KANGAR.....	5
1.6 RESPONSIBLE OF THE STAFF IN FACILITY DEPARTMENT AT BANGUNAN PERSEKUTUAN KANGAR PERSIARAN JUBLI EMAS (BPJE).....	6
1.7 LOCATION PLAN OF BANGUNAN PERSEKUTUAN KANGAR PERSIARAN JUBLI EMAS 7	
1.7.1 KEY PLAN OF BANGUNAN PERSEKUTUAN KANGAR.....	7
1.7.2 LOCATION PLAN OF BANGUNAN PERSEKUTUAN KANGAR .....	8
1.7.3 SITE PLAN OF BANGUNAN PERSEKUTUAN KANGAR. ....	8
CHAPTER 2 : LITERATURE REVIEW .....	9
2.0 INTRODUCTION.....	9
2.1 MANAGEMENT INFORMATION SYSTEM.....	10
2.2 STRATERGIES OF MAINTENANCE MANAGEMENT SYSTEM .....	10
2.3 INFORMATION SYSTEM FOR MAINTAINANCE MANAGEMENT .....	11
2.4 WORK ORDER IN MAINTAINANCE .....	11
2.4.1 PRIORITIZATION OF WORK ORDER.....	12
2.4.2 MANAGING WORK ORDER USING MAINTAINANCE SOFTWARE.....	12
CHAPTER 3.0: CASE STUDY / PROJECT .....	14

3.0	THE USING OF COMPUTERISE MAINTENANCE MANAGAEMENT SYSTEM AT BPJE. 14	
3.1	SOFTWARE OF CMMIS AND HANDLING OF THE SYSTEM.....	15
3.2	JOB ORDER AND SYSTEM OF MAINTENACE AT BPJE.....	16
3.2.1	SCHEDULE FOR WORK ORDER .....	17
3.2.2	CONTRACT WORK.....	18
3.2.3	NON-CONTRACT WORK.....	18
3.2.4	HANDLING REPORT .....	18
3.3	MONTHLY REPORT (CUT-OFF) AND DATA ANALYSIS.....	19
	CHAPTER 4: PROBLEM AND RECCOMENDATION .....	20
4.0	INTRODUCTION.....	20
4.1	PROBLEM AND RECOMMENDATION IN USING CMMS.....	20
	CHAPTER 5: CONCLUSION .....	22
5.0	CONCLUSION .....	22
	REFERENCE.....	23

## **CHAPTER 1: INTRODUCTION**

### **1.0 INTRODUCTION**

Students in selected programmes at all levels of higher education at the Institute of Higher Learning must complete industry training (IPT). The curriculum was designed to empower industrial training competency necessary in order to raise the level of work of graduate. Same goes to Universiti Teknologi MARA (UiTM) the student must undergo the industrial training to gain knowledge and experience.

Students receive exposure and experience in technological development, effective communication, collaborative methods, rules, processes, and regulations, professional viewpoint, and reporting through industrial training. Students' passion and proactive attitude will grow as a result of industrial training, as will their confidence in their ability to be a great coach.

In general, Uitm student especially in Building Survey Programme will undergo industrial training at the last semester. Industry training is done for four months in a firm or organization that has been selected by the student or his assigned. Students are exposed to a variety of activities in the field of duties during the training period, even if the job is not entirely done by students for the purpose of security or regular students were briefed and clear guidance and useful enough as a general knowledge, as well as exposed to the real working environment and can learn social skills such as communication and social relationships.

## 1.1 ORGANISATION PROFILE

Company Profile of TH Properties.



Company Name	: TH PROPERTIES SDN BHD
Company Address	: Level 20, Menara TH Selborn, 153, Jalan Tun Razak, 50400 Kuala Lumpur, Malaysia.
Company Office Phone Number	: 03-26873333
Fax	: 03-26873322
Email	: <a href="mailto:info@th-properties.com">info@th-properties.com</a>
Website	: <a href="http://www.th-properties.com">www.th-properties.com</a>

## **1.2 ORGANISATION BACKGROUND**

TH Properties is a company that specialises in property management, project development, and asset and facility management. The Group focuses on four primary areas of business, namely property development, construction, project management, and facilities management, based on established technical and commercial experience and competence.

The Group was formed in 2010 when Lembaga Tabung Haji (the Pilgrims' Fund Board) merged TH Properties Sdn Bhd and TH Technologies Sdn Bhd, the Pilgrims' Fund Board's property development and construction divisions, respectively.

More recently, the Group has moved into the asset and facilities management industry, and now manages nearly 4 million square feet of office space in less than two years. Total facility management services, custodial services, housekeeping and chambermaid services, cleaning services, landscaping maintenance, passenger trolley operations and maintenance, and car park operations are among the services provided to both public and private sector clients.

The Group has also been tasked with supporting Lembaga Tabung Haji in overseeing the development of the latter's operating facilities and investment assets, from conception to completion.



### **1.3 FACILITY MANAGEMENT IN TH PROPERTIES**

TH Properties' Facility Management department focuses on the full range of Assets and Facility Management services. It was established to guarantee that all assets under its control are managed and maintained to a World Class standard, with the primary goal of serving the interests of its different stakeholders and clients both locally and globally.

The Facility Management Unit has handled more than 14 million square feet of workplaces, commercial spaces, and hotels across Malaysia since its beginnings. With a vision to lead the facility management business in Malaysia, TH Properties' Facility Management division has already made a name for itself among industry participants by winning several Facility Management bids and contracts around the country.

### **1.4 VISION, MISSION AND VALUE**

#### **➤ VISION**

- To be a Preferred Provider for Property Development, Projects and Services.

#### **➤ MISSION**

- Maximise stakeholders' value
- Innovate solutions of the highest quality
- Build a lasting brand
- Live a culture of excellence
- Bring out the best in our people

#### **➤ VALUE**

- Passion
- Integrity
- Professionalism
- Innovation
- Teamwork

**1.5 ORGANISATION CHART OF TH PROPERTIES UTARA BANGUNAN PERSEKUTUAN KANGAR.**

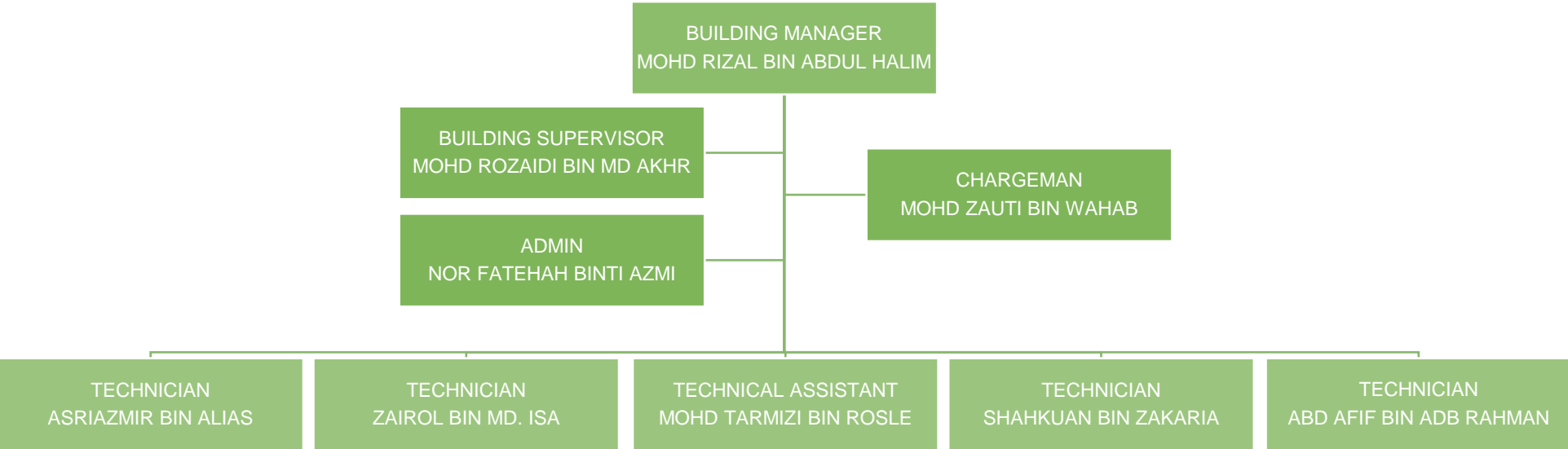


Figure 1: Organisation Chart in Facility Management Department at Bangunan Persekutuan Kangar Persiaran Jubli Emas, Kangar.

**1.6 RESPONSIBLE OF THE STAFF IN FACILITY DEPARTMENT AT  
BANGUNAN PERSEKUTUAN KANGAR PERSIARAN JUBLI EMAS (BPJE)**

Building Manager	<ul style="list-style-type: none"> <li>• Managing and monitor appointed staff and contractor activity and work in the building.</li> <li>• Prepare monthly report base on the contract.</li> <li>• Responsible in internal correspondent.</li> <li>• Work validation for payment.</li> </ul>
Building Supervisor	<ul style="list-style-type: none"> <li>• Prepare monthly report about the mechanical system, electrical system and civil.</li> <li>• Help to assist building manager in managing the building facilities.</li> </ul>
Chargeman	<ul style="list-style-type: none"> <li>• Responsible for the electrical systems in a plant.</li> <li>• Helps to plan, operate and carry out any work that's related to electrical safety precautions and preventive maintenance.</li> <li>• Carries out predictive and repair maintenance for high voltage powers located in switch rooms and power generators.</li> </ul>
Admin	<ul style="list-style-type: none"> <li>• Responsible in recording the in-out letter and postal affair.</li> <li>• Responsible in office inventory</li> <li>• Prepare process document contract service charge (BAK) and purchase (PO) and other payment.</li> <li>• Responsible in all document and file about Computerise Information Management System (CIMS).</li> <li>• Manage petty cash.</li> </ul>
Technical Assistant and Technician	<ul style="list-style-type: none"> <li>• Inspect the standby generator set.</li> <li>• Find the cause of the defect that occur in the building and repair the damage.</li> </ul>

Table 1: Responsible of staff in facility management department of Bangunan Persekutuan Kangar

## 1.7 LOCATION PLAN OF BANGUNAN PERSEKUTUAN KANGAR PERSIARAN JUBLI EMAS



Figure 2: Bangunan Persekutuan Kangar.

This facilities management office was located in Bangunan Persekutuan Kangar Persiaran Jubli Emas, Kangar Perlis. This office was located at ground level of the building.

### 1.7.1 KEY PLAN OF BANGUNAN PERSEKUTUAN KANGAR.

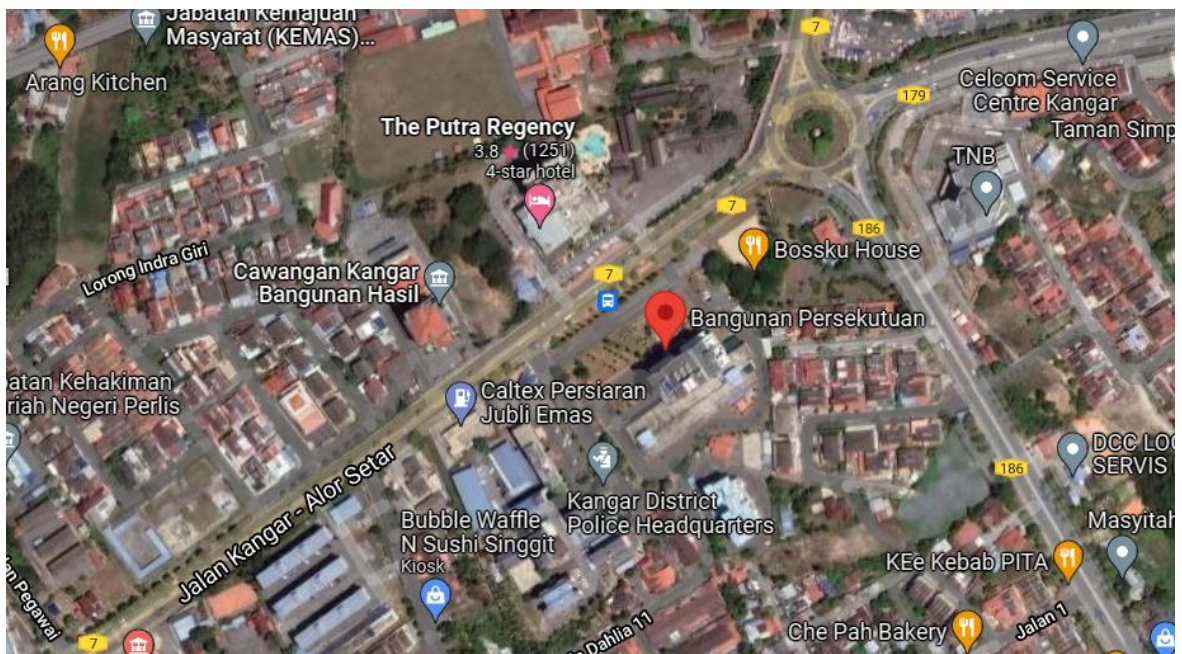


Figure 3: Key Plan of Bangunan Persekutuan Kangar.

### 1.7.2 LOCATION PLAN OF BANGUNAN PERSEKUTUAN KANGAR

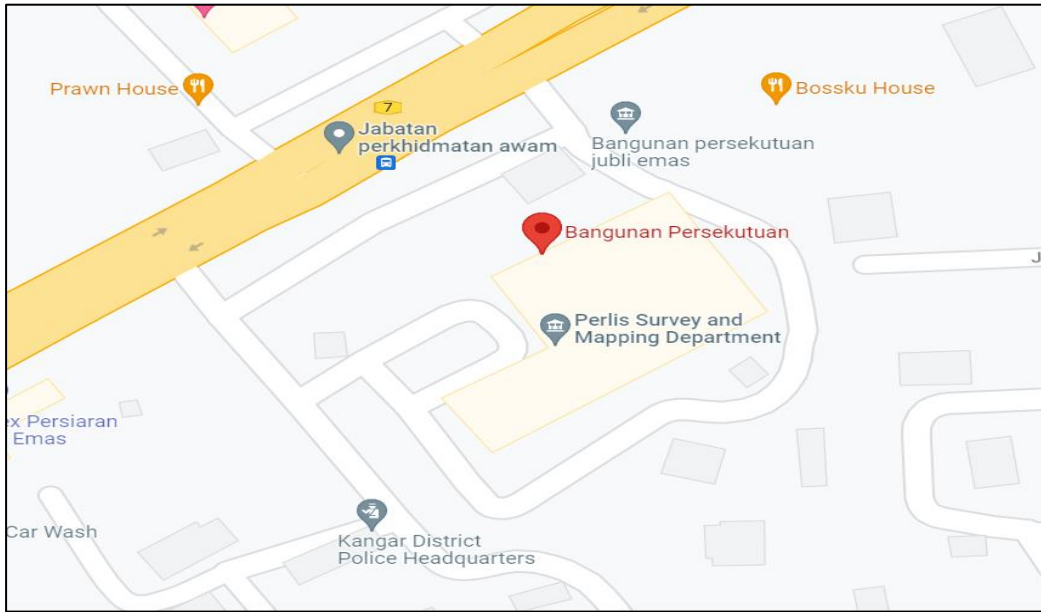


Figure 4: Location Plan of Bangunan Persekutuan Kangar.

### 1.7.3 SITE PLAN OF BANGUNAN PERSEKUTUAN KANGAR.

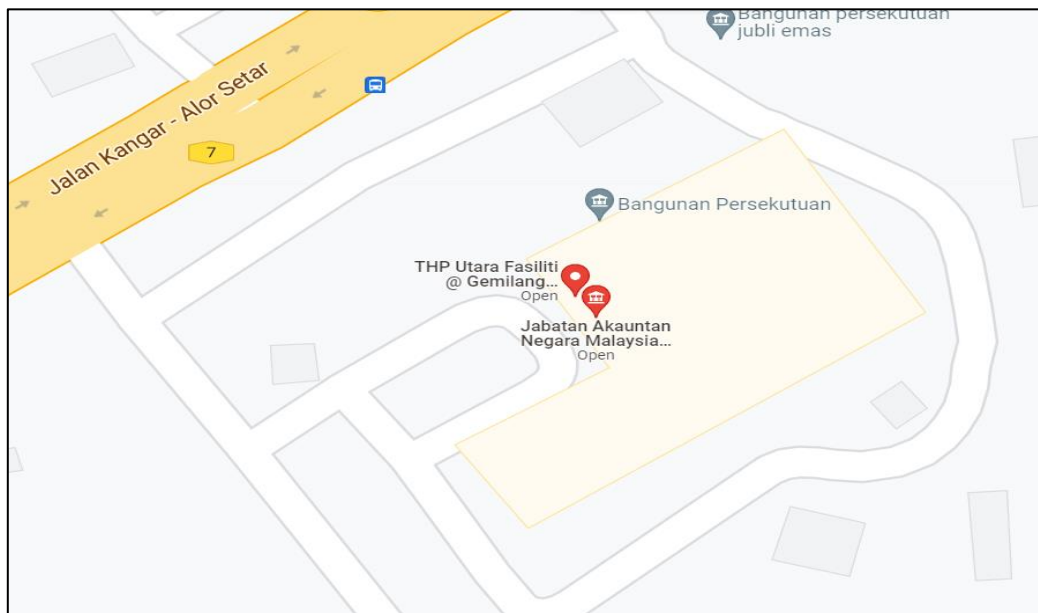


Figure 5: Site Plan of Bangunan Persekutuan Kangar.

## **CHAPTER 2 : LITERATURE REVIEW**

### **2.0 INTRODUCTION**

This chapter follows on from the previous one. This chapter explains certain facts and terms that are relevant to the subject. Literature reviews are based on readings from earlier research that may be found in books, other publications, and on the internet. To demonstrate where the sources came from, the citation must be mentioned. One of the most crucial parts was the literature review, which served as a roadmap for achieving the report's goals. This chapter will cover all of the points and keywords that will be included in the report.

## **2.1 MANAGEMENT INFORMATION SYSTEM.**

Technical system maintenance must guarantee that all systems perform their functions with as little downtime as possible, resulting in a longer life cycle and lower maintenance costs. Surroundings are undoubtedly a production, commercial, or other process or system in which the maintenance system is built (housing facilities, communication etc.). Benchmarking real estate performance is a widely utilised method in the effective and long-term maintenance of existing buildings. (MEDAKOVIĆ & MARIĆ, 2018)

To support stakeholders' primary business and maintenance initiatives, performance must be assessed and monitored. Many of the real estate performance metrics are based on the size of the maintained property. Maintenance is described as a series of actions taken to replace, repair, and service an identifiable set of manufacturing components in order for the facilities to continue to function at a specific level of availability for a stated period of time. (MEDAKOVIĆ & MARIĆ, 2018)

The growing importance of technical system maintenance in the late twentieth and early twenty-first centuries is linked to mass automation, computerization, and robotization in all areas of industry, as well as the need for reliable operation of such systems as a prerequisite for an organization's competitive ability. In several industries, the number of personnel working in maintenance has long outnumbered those working in production, and they have a higher degree of professional technical expertise. (MEDAKOVIĆ & MARIĆ, 2018)

Furthermore, maintenance expenditures, together with energy costs, can make up the majority of any operational budget. However, the major difficulty that maintenance management faces is whether its product is generated more effectively, in terms of contribution to business earnings, and efficiently, in terms of people and materials used. (MEDAKOVIĆ & MARIĆ, 2018)

## **2.2 STRATERGIES OF MAINTENANCE MANAGEMENT SYSTEM**

The kind and substance of the process inside the system's maintenance determines the maintenance technique to be used (selection of the best models of maintenance). The maintenance of the system is ineffective without a good strategy and the proper functioning of all process parts. It is predicted that the system's goal will not be met. (MEDAKOVIĆ & MARIĆ, 2018)

Many businesses have invested heavily in the development and implementation of enterprise resource planning (ERP) systems during the last decade. Only a handful of these systems that have been built or implemented have considered maintenance techniques. (MEDAKOVIĆ & MARIĆ, 2018)

Maintenance is a complicated process that is triggered by scheduled or planned periodic repairs, equipment malfunction, or degradation as indicated by a monitored parameter (unplanned or emergency maintenance). This procedure involves resource planning, scheduling, monitoring, quality assurance, and deployment (workshop, manpower, machines, equipment, tools, spare parts, materials). (MEDAKOVIĆ & MARIĆ, 2018)

### **2.3 INFORMATION SYSTEM FOR MAINTAINANCE MANAGEMENT**

Maintenance management information systems are a critical "tool" for maintenance management. One of the most crucial roles of comprehensive logistic support (integrated logistics) industrial companies is maintenance. If the right and applicable IT is used, information technology (IT) may be a powerful instrument for improving maintenance efficiency and effectiveness. (MEDAKOVIĆ & MARIĆ, 2018)

Information is a valuable resource for setting and attaining management objectives. Its role inside the company is crucial since it contributes in the growth of knowledge and the evaluation of the company's overall performance. As a result, information systems (IS) are no longer used to support business operations or to collect and analyse data during repair. (MEDAKOVIĆ & MARIĆ, 2018)

### **2.4 WORK ORDER IN MAINTAINANCE**

The appropriate and timely processing of work orders is known as work order management. It may appear simple and straightforward, but it may be a complicated procedure that would take many hours and reams of paper to complete by hand. These operations are automated and work orders are streamlined from start to finish using computerised maintenance management software (CMMS) or enterprise asset maintenance (EAM) systems (Wienker et al., 2016) . Some tasks that are handled by a CMMS work order management system are:

- ❖ Processing work requests
- ❖ Craft/Resource availability and assignment
- ❖ Part availability and assignment
- ❖ Warranty tracking
- ❖ Downtime tracking



- ❖ Scheduled job information – frequency by time, hours, meter; detailed job steps including safety requirements; craft/resources needed including job estimates; parts and special tools needed; required downtime.
- ❖ Creation of scheduled and non-scheduled work orders
- ❖ Open work order tracking
- ❖ Closure of work orders including entry of labor, parts, miscellaneous costs, condition tracking and documentation
- ❖ Inventory management
- ❖ Extensive data mining

Each of these tasks can be broken down into smaller tasks. The exact work order management system needed can be created or targeted for the type of business using it. (Wienker et al., 2016)

#### **2.4.1 PRIORITIZATION OF WORK ORDER.**

The production of work orders is the first step in work order management, and these orders must be prioritised. It's an order for maintenance services to be completed, either as a request from inside an organisation or as a recurrent planned operation to keep equipment, buildings, grounds, or vehicles in good working condition. These work orders might be anything from a request for a lighting modification to a big roof repair for a facilities management. (Wienker et al., 2016)

The criticality of the service to be done (emergency vs routine maintenance) as well as the criticality of the equipment determine the priority of work orders. For each sort of repair as well as each piece of equipment, criticality may be determined in advance, making the scheduler's or manager's job easier when deciding the priority for daily tasks. When this is done correctly, the most critical work is completed first, and if there are any backlogs, they will be for non-essential tasks. (Wienker et al., 2016)

Work order management and maintenance software work together to break down the procedures and activities that must be completed in order to complete each work order in the most effective and productive manner feasible.

#### **2.4.2 MANAGING WORK ORDER USING MAINTAINANCE SOFTWARE**

Maintenance managers might receive benefit from work order management software. It substantially simplifies work order planning and

assignment by taking into account all parameters, such as resource availability, part availability, tool availability and ordering if necessary, as well as safety and plant/equipment shutdown requirements. It also enables for the construction of comprehensive task phases, removing the guesswork from how each job should be completed. This is crucial information to keep track of for insurance and regulatory purposes. It enables the planning of scheduled work in the future so that components are available when needed, and craft and resource planning can be done ahead of time since the time for each task stage can be calculated. (Wienker et al., 2016)

Bringing these many elements together effectively without maintenance software is very difficult. Using software to track scheduled maintenance, as well as the reason for unplanned maintenance when it occurs, reduces unplanned repairs and down time. This not only saves time and money, it improves equipment uptime and safety. The ability to look at an organization's equipment as a whole and create a well thought out plan of action for preventive maintenance is imperative. The alternative is to "fix it when it's broken" or to have a labor-intensive paper system with limited history. (Wienker et al., 2016)

## CHAPTER 3.0: CASE STUDY / PROJECT

### 3.0 THE USING OF COMPUTERISE MAINTENANCE MANAGAEEMENT SYSTEM AT BPJE.

Computerized maintenance management system (CMMS), also known as computerized maintenance management information system (CMMIS), is a software package that maintains a computer database of information about an organization's maintenance operations. This information is intended to help maintenance workers do their jobs more effectively (for example, determining which machines require maintenance and which storerooms contain the spare parts they need) and to help management make informed decisions.

CMMIS data may also be used to verify regulatory compliance. To properly control the maintenance of a facility, information is required to analyse what is occurring. Manually, this requires a tremendous amount of effort and time. A CMMIS also allows for record keeping, to track completed and assigned tasks in a timely and cost-effective manner. In recognition of this, companies have started using CMMIS extensively to better control and organize maintenance management. The different steps of implementing a CMMIS plan have been described in the diagram.

A CMMIS offers multiple core maintenance functionalities. It is not limited to manufacturing but expands to facilities, utilities, fleet, hospitals, sports arenas and more where any type of equipment/assets are subject to repair and need maintenance. With improved technology and increasing competition, more and more companies are switching to CMMIS vs using manual methods to track and organize information. The different components of a CMMS include but are not limited to:

- ❖ Equipment data management
- ❖ Preventive maintenance
- ❖ Predictive maintenance
- ❖ Labour
- ❖ Work order system
- ❖ Scheduling/planning
- ❖ Vendor management
- ❖ Inventory control
- ❖ Purchasing
- ❖ Budgeting
- ❖ Asset tracking

As for Bangunan Persekutuan Kangar, they have been using the CMMIS for a decade even before THP properties take over the maintenance department from other concession. However, starting 2018 THP properties have introduced more sufficient and systematic software toward the maintenance department. This system has been helping the maintenance department to have more systematic work order and keep the building well maintained.

### 3.1 SOFTWARE OF CMMIS AND HANDLING OF THE SYSTEM

Computerized Maintenance Management Information System is a system that only can be accessed by the maintenance department staff for job order and handling maintenance complaints. All of the maintenance staff department were given an account to access the website. The link to the website is <https://thputaraapps.com/cmisis/LoginV2.aspx>. Password and user ID were given by the THP Utara for them to access.



Figure 6: CMIS login site.

Figure below shows the dashboard of the CMIS website for TH Properties maintenance. This dashboard shows all the bills and work orders or maintenance that need to be done by the staff members. The need to check it everyday to make sure that all the complaints and work orders are done according to the schedule. In BPJE maintenance department there is a schedule for staff on duty to make sure that the work order is complete for the day. There are also Building Energy Index meters on this website to monitor the usage of electrical energy in this building. The technician in charge also needs to update the meter readings everyday to track the usage of electrical in the

building. All the maintenance work that has been done by the technician need to be update in this system including the contract and non-contract maintenance.

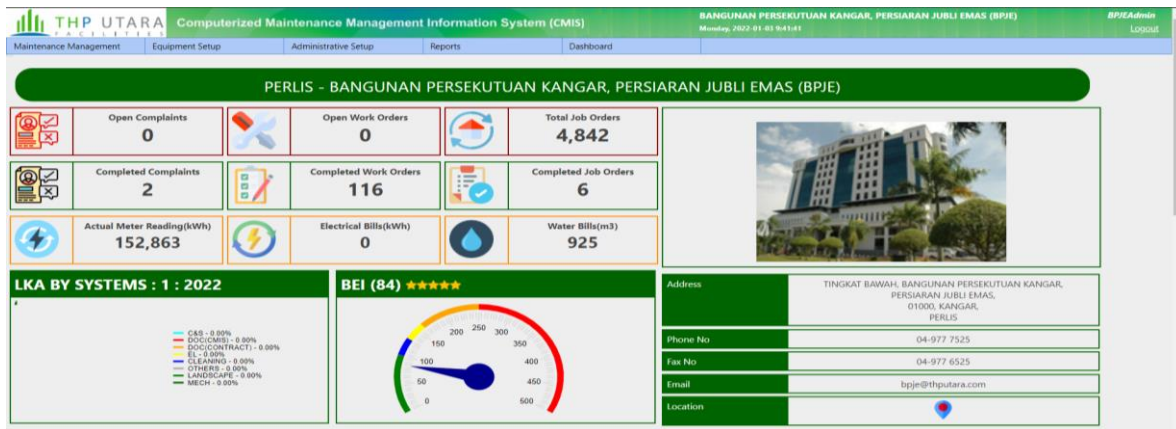
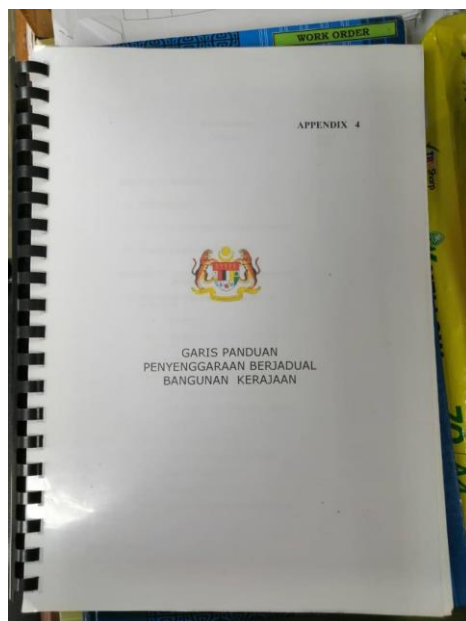


Figure 7: CMIS website dashboard.

### 3.2 JOB ORDER AND SYSTEM OF MAINTENANCE AT BPJE

Before TH Properties getting a contract by Bahagian Pengurusan Hartanah di Jabatan Perdana Menteri they need to hand over a guidelines for the scheduled maintenance of government buildings. This guideline contain the all of the maintenance work that they will do if the building maintenance operate by THP. The maintenance include all the maintenance of electrical system, building services, fire-fighting, lift, civil and structure, and air conditioner.



SCHEDULE 2  
PART 3  
SCOPE OF WORKS ON MECHANICAL AND ELECTRICAL


F. MECHANICAL WORK SCHEDULE

NO.	SUB ITEM	DESCRIPTION	FREQUENCY	STANDARD
1.0		<b>Air Conditioning System</b>		
	1.1	<b>Chiller</b>		
	a)	Inspect Chiller and take reading for voltage, current, pressure, temperature, oil level	Three Time a day	Operable
	b)	Check all seals, gaskets and pipe line for leakage	Monthly	No leak
	c)	Check oil pressure	Monthly	40 ± 5 psig
	d)	Check crankcase heaters	Monthly	Operating
	e)	Check compressor hold down bolts	Monthly	Tight
	f)	Check pressure drop across chilled and condenser water pipes	Monthly	Difference
	g)	Check all controls, safety devices and switches	3 Monthly	Operable
	h)	Check purge unit operation	3 Monthly	Operable
	i)	Drain and flush purge unit. Replace Oil	Annually	No foreign particles
	j)	Check condenser and cooler water tube for leakage	6 Monthly	No leak
	k)	Clean condenser tube	Annually	Pressure drop 10 psig

Figure 8: Example of guidelines for the scheduled maintenance of government building.

### 3.2.1 SCHEDULE FOR WORK ORDER

All the job order for every month will be print out by the staff in charge and given to the other staff to complete their job. Then need to do the to do an inspection base on the job order that has been schedule for them. Every staff member were assign their job base on the level of the building. So, every level of the building have one specific technician in-charge to do the inspection to keep the building well operate and function.



THP UTARA FACILITIES SDN BHD

**JOB ORDER**  
MONTHLY JOB ORDER December 2021

Job No : 1175324	Equipment : AIR COOLED SPLIT UNIT
Machine Id : RCACACPRBT08KGD1	Schedule Date : 20/12/2021
Schedule No : 6	Last Service : 30/09/2021
Schedule Name : 12-1 : BENGARAAAN BULANAN	Job Code : 12-1
Frequency Service : 1	Location : KESELURUHAN TINGKAT
Service Date : _____	Contractor : _____
Tech/Team : BPUE575	

JOB DESCRIPTION			
1.0	Air Conditioning System		12-1
1.12	Air Cooled Split Unit / Air Cooled Package Unit		
No.	Description	Standard	STATUS
1	i) Inspect and clean all air filters	Clean & no choke	YES/NO/NA
2	ii) Inspect leakage or clogging at drain pan and drain line. Clean, flush, repair/replace as necessary	No leak	YES/NO/NA
3	iii) Inspect refrigerant leaks at joint, fittings and piping. Repair and top up refrigerant as necessary	No leak	YES/NO/NA
4	i) Inspect the suction and discharge pressures of all refrigerant compressors. Recharge as necessary	In operation range	YES/NO/NA
5	ii) Inspect refrigerant leaks at joints, piping and compressors. Repair or recharges necessary	No leak	YES/NO/NA
6	iii) Inspect all fans and motors, bracket/hanger. Repair as necessary	Functioning	YES/NO/NA
7	iv) Inspect condensing coil. Repair or replace as necessary	No leak	YES/NO/NA
8	v) Inspect filter dryer. Replace as necessary	Functioning	YES/NO/NA
9	vi) Inspect compressor unit. Replace as necessary	Functioning	YES/NO/NA
10	ix) Inspect bracket/hanger. Repair or replace as necessary	No defect, faded & crack	YES/NO/NA

Catatan :

---

Technician Sign \_\_\_\_\_
Changaman/Supervisor Check \_\_\_\_\_

Figure 9: Example of job order for air conditioning system.

In this job order it contain the list of work that they need to do when do and inspection of the system or part of the building.

### **3.2.2 CONTRACT WORK**

Contract work is a work or job that have been assign by the out sources company to do and maintenance work on the specific part of the building. TH Properties has assign them in contract to do a maintenance of some part of the building system for example:

- ❖ M S Elevators Sdn. Bhd. : Lift and elevator.
- ❖ Entohygiene Services Sdn Bhd : Pest control.
- ❖ Rentokil Initial (M) Sdn. Bhd : Women sanitary and air freshener.
- ❖ Roscom Security Sdn.Bhd : Security guard.
- ❖ Tunas Prima Holdings Sdn Bhd : Cleaning.
- ❖ Ricoh (Malaysia) Sdn Bhd : Photostat machine.
- ❖ ME Technical Services : Genset and electrical system.

This contract company need to complete their work as they were assign according to the schedule. Then the technician need to update the complete work in the CMMIS website.

### **3.2.3 NON-CONTRACT WORK**

Non contract work can be an unplanned work or planed work. For planned work the maintenance department at BPJE need to open a RW sheet and make an application toward the HQ for maintenance work that can cost a high amount of money. For example the headquarters have been approve for PAK project to replace the critical asset at the building such as electrical wiring and fire fighting system in this building last year.

For unplanned work that only cost small amount of money they only need to open the RW sheet and buy the repair tools and make a claim (use petty cash) and lastly do the maintenance work before update in the CMMIS website.

### **3.2.4 HANDLING REPORT**

As a maintenance department in a building, receiving a complain from the building user about the damage of defect of the building is a common thing, especially now there is an ongoing project on replacement of critical asset of the building. The technician need to be alert and immediately repair the damage or the defect. The technician must solve the complain in about 30 minute within the compliant receive.

The building occupant that want to make a complaint they need to make a phone call to the THP Utara office at BPJE and tell about the damage, level and location of the defect. Then the office admin will inform about the complaint to the technician that involve. Then the technician will be going to the located area and inspect the defect and start to plan a maintenance work needed. Then the technician will get the tools that needed and start the repairing work. After all the maintenance or repairing is done the technician need to update their work in the CMMIS website and if needed they must inform to the complainer that the damage has been repair.

### **3.3 MONTHLY REPORT (CUT-OFF) AND DATA ANALYSIS**

Every end of the month the building supervisor and admin staff need to do a monthly report (cut-off) about all of the repair work that has been done that month and sent it to the HQ. All of the repair work that has been done by building inspection and complaint by the building occupant will be put in the report. This monthly report will be sent to Kementerian Kerja Raya (KKR). There are 3 manuscripts in this report :

- Manuscript 1: Repair work on service schedule.
- Manuscript 2: Other repair work and pictorial report.
- Manuscript 3: Payment Bill on water and electric and job order.

For data analysis, need to be done quarterly of the year. This data analysis include the building performance, complaint report and budget for next year maintenance work. This data analysis only to be keep at THP BPJE as a documentation if there any audit or visit from KKR, BPH or HQ.



## CHAPTER 4: PROBLEM AND RECCOMENDATION

### 4.0 INTRODUCTION

Although the CMMIS software is not a new develop software, however there are some problem that occur that can be a hassle toward the technician and admin staff. There are a lot of improvement that can be made in order to make the system more systematic. When it comes to CMMIS implementation, a lot of emphasis is placed on computing abilities, but what needs to be emphasised is the need to understand why the system is being utilised. Maintenance employees will only input data that is significant and useful after they understand how the data being stored is being utilised or will be used in the future. It is also essential that those inputting the data based on actual events are also concerned with decision-making while ordering spare parts or newer machinery.

### 4.1 PROBLEM AND RECOMMENDATION IN USING CMMS

Problem	Recommendation
<p><b>1. Hassle in handling complaint from building occupant.</b></p> <p>when the building occupant want to made a complain they need to call the office first to made the complaint. They cannot asses the CMMS website to knew if the problem have been solve or who is responsible for the problem. Sometime some problem that occur need a lot of time to be solve.</p>	<p>For the recommendation, the building occupant is provided an account for them to make a complain. In that site they can see which technician that is responsible for their complain, why the problem take a lot of time to be solve (in case the technician need to buy material first before starting the pairing work). They also provide with the contact number of the technician that responsible for their complain.</p>
<p><b>2. Various job order that need to be print out.</b></p> <p>There are more that 200 job order that need to be print out every week. And every job order there is no specific name or technician that responsible for each job. This can be a hassle toward the technician that in-charge that week to print out the job order and divide to all of the technician. This can cause some of</p>	<p>In recommendation, the system have already setup the name for each technician for their specific work that they will be dome. So when the technician print out the job order it also have contain the name of the technician that responsible for the work. The work order will be divided equally for each technician.</p>

<p>the job order is miss out or some technician get a lot of work.</p>	
<p><b>3. Printing job order can cost a lot of money.</b>  As stated above weekly there a lot of job order that need to be print out. This can cause a lot of waste and cost a lot of money for to buy paper and print ink.</p>	<p>For recommendation, the CMMIS website provide a site for the job order that can be asses by the technician. They only need to put their name and all of the job order is state out. There no need to print out the job order. When the work is done they only need to tick and sign in the website. This can save a lot of money for paper and print ink.</p>

Table 2: Problem and recommendation.

## CHAPTER 5: CONCLUSION

### 5.0 CONCLUSION

It is vital to have robust tools to assist the complicated process of maintenance management in an effective manner, to provide information that identifies critical maintenance issues that influence hidden costs to enhance overall company performance, and so on. A CMMIS software is one instrument that may provide this assistance. World-class maintenance is impossible to do without such a system. For the successful implementation of such a system it is mandatory to ensure that the organization has already moved from a reactive to a proactive maintenance strategy with the associated policies and procedures implemented. THP Utara are aware that a CMMIS system is not only a tool but also a maintenance strategy. Senior management recognises the value that a CMMS system will provide and is willing to support the project throughout its deployment. There is a well-thought-out change management approach in place.

## REFERENCE

- MEDAKOVIĆ, V., & MARIĆ, B. (2018). A model of management information system for technical system maintenance. *Acta Technica Corvininensis - Bulletin of Engineering*, 11(3), 85–90. <http://search.ebscohost.com/login.aspx?direct=true&db=a9h&AN=131028257&lang=es&site=ehost-live>
- Wienker, M., Henderson, K., & Volkerts, J. (2016). The Computerized Maintenance Management System an Essential Tool for World Class Maintenance. *Procedia Engineering*, 138, 413–420. <https://doi.org/10.1016/j.proeng.2016.02.100>