



اَبُو سَيِّدِي تَكْنُوْلُوْجِي مَارَا
UNIVERSITI
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DEPARTMENT OF BUILDING

FACULTY OF ARCHITECTURE, PLANNING AND SURVEYING

UNIVERSITI TEKNOLOGI MARA

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APRIL 2015

It is recommended that the report of this practical training provided

By

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Entitled

**The Important Factor of Construction Site Management: Case Study of Doubles Storey
Bungalow Project Darulaman Lakehome Phase 2**

Accepted in partial fulfillment of requirement has for obtaining Diploma in Building.

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DEPARTMENT OF BUILDING
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(PERAK)

APRIL 2015

STUDENT'S DECLARATION

I hereby declare that this report is my own work, except for extract and summaries for which the original references stated herein, prepared during a practical training session that I underwent at Kedah Sato Sdn Bhd for duration of 5 months starting from 16 November and ended 2 April 2015. It is submitted as one of the prerequisite requirement of DBN307 and accepted as a partial fulfillment of the requirements for obtaining the Diploma in Building.

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ABSTARCT

The construction industry has been built on the need to economic growth and provides a lot of opportunities. Site management is a very important in construction project, where it includes of the planning, control and coordination of the project. These are the most important factor in the site management and will cause many problems happen in the construction project if it not delivered properly. This is due to the contractor or management team do not have the capacity of technical know-how, lack of experience and site management skill in the related project. The main purpose of this study is to identify the important factor of site management for the project at Lakehome phase 2 Bandar Darulaman. From observation through the practical training, the aspect of site management that can contribute to the delay or uncompleted project such as cost, time, supplier and manpower. Hence, cooperation from all parties between client, contractor and local authorities will minimize the problem of site management in the construction project.

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CHAPTER 1.0

PREFACE

1.1 Introduction

Management is the process of reaching organizational goals by working with and through people and other organizational resources. In construction industry, management is very valuable for the construction companies in order to make sure the project that currently running can be completed successfully. Construction management is about overseeing everything that involved in a construction project, whether it's residential, commercial or industrial.

Site management is the important element in the building construction. Most construction sites that run into trouble because of the improper site management. So, site management is the important thing in realizing what is the implied in the paper of construction work. With the good management, it will get satisfactory results to achieve.

A major benefit to the construction is the project may be phased or fast-tracked whereby the design and construction period are overlapped to permit an earlier start and completion of construction. The site management is relating to construction cost, completion schedule and quality work to maximize owner's value. In construction, management is the items that can be proceed by follow the schedule. The construction will achieve the goals by managing the management in site. Then, the construction can get the quality of work, time to complete the project on time and cost is reasonable.

Nowadays management is very important in any field, especially in matters that involving the public or community. Good site management can reduce the wastage of material, labor, time or

activities in site. This will help to reduce the delay work if the team follows the schedule of management. The delay will affect the time and loss of profit and could not achieve the objective. So, the site management is important thing in the construction project. Site management is a process of continuing and related activities. The basic management functions that make up the management process are:

a. Planning

The planning activities focus on attaining goals and can be highly specialized based on organization goals, division goals, department goals and team goals. In this step the managers will create a detailed action plan and find the best method to how to achieve the proper management. The planning is concerned with the success of the organization in the short term as well as in the long term.

b. Organizing

The second basic management function is organizing. This step requires the manager to determine how to distribute resources and organize the site management according to the plan. Organizing is to create a mechanism to put plans into action. Based on the organizing, the management team can establish and carry out various routes of the specified work that have been marks.

c. Influencing

The third function is influencing. In this function, it goes beyond simply managing tasks; rather, it referred to motivating, leading or directing. It also can be defined as guiding the activities of organization members in the direction that helps the organization move towards the fulfillment of the goals or objective. The team work is necessary to collect or share the information and resources that be related in management. The team work is very important thing to achieve the objective.

d. Controlling

The controlling is the final function of the basic management. The controlling is an ongoing process. Once a plan has been carried out, the manager should evaluate the results against the goals. If the planning not achieves the goals, the manager should take any necessary corrective action to continue the work to get the goals or objective.

1.1.1 Advantages of site management

1. Construction cost are identified and predicted reliably during the design phase.
2. Can produce the good planning and scheduling for the project.
3. Help the project complete on time successfully.

1.1.2 Disadvantages of site management

1. Should have a proper planning and scheduling.
2. Duplication of some supervision and contractors' mark-ups.

1.2 Objective

The objective is to find out and learn more about the critical factor in site management. There are several objectives:

- 1.2.1 To understand the important of site management in the construction.
- 1.2.2 To identify how to managethe proper site management.
- 1.2.3 To identify the problem and solution of site management that has in that project.

1.3 Scope of Study

In general, site management in construction consists of various processes and stages need to be implemented from the beginning to the end project. There are many resources and parties involve in the management to be managed properly to achieve the target or objective of the organization.

Besides that, it also explains about planning, monitoring, and work control that have in construction where it involves the management of labor, materials, machinery and capacity. In construction, the contractor should ensure it is managed in accordance with the cost, time and quality. This study is focus on the important factor of site management that occurs at project Darulaman Lakehome and to identify how the contractor at that site or project manages their management. The scope of study includes:

1. How the contractor manages the site through the method of planning and controlling that have been designed or specified.
2. The construction works that covering the aspect of site management such as cost, time, labor and quality.
3. The action that taken by the contractor or the management team in the planning process.

1.4 Method of Study

There are several methods that are using to complete this report:

1.4.1 Book

The information and theoretical aspect of site management are collected and study. This method allows understanding and imagining how the management team or contractor manages their site management.

1.4.2 Electronic media

The reference through the electronic media also the important method to completed this report. Besides that, the information of management can get in a shortest time and the data is relevant. The example of electronic media is internet.

1.4.3 Observation

From the observation through the actual site location, several important aspects of method and step or flow of site management has been identified. Observation is that there is an alternative in collecting information or other data collection questionnaire.

1.4.4 Interview

Based on interview, the information can get clearly and accurately from the workers that expert in the management, such as site supervisors, engineers, and project manager.

CHAPTER 2.0

COMPANY BACKGROUND

2.1 Introduction of Company

Kedah Sato is a specialized General and Turnkey Contracting Company incorporated in Malaysia in 1982. The Company was formed through a joint venture between Perbadanan Kemajuan Negeri Kedah (PKNK) and Sato Kogyo Company Ltd. (SKCL).

Kedah Sato is now a wholly owned subsidiary of Bina Darulaman Berhad (BDB), a company listed on the Main Board Bursa Malaysia (formerly known as Kuala Lumpur Stock Exchange).

Kedah Sato is widely recognized in the field of Civil Engineering and Building Construction with experience ranging from airports, jetties, roadwork, waterworks, bridges, industrial buildings, and residential as well as commercial properties. Kedah Sato has completed projects with revenues exceeding RM 1 billion since its inception.

The company offers professional and technical expertise across the whole spectrum of construction related activities, through project identification, evaluation, financing, planning, design, implementation and maintenance.

- Construction services
- Design- build services

It is also committed to Total Quality Management System and awarded with ISO9001:2008 Certification.

2.2 Company Profile



Figure 2.1: Company Logo

Sources: Kedah Sato Sdn Bhd (2015)

2.2.1 Corporate information

Name : Kedah Sato Sdn. Bhd.

Type of Company : Sendirian Berhad

Date of : 24th March 1982

Incorporation

Capital Structure : Authorized Capital : RM5,000,000.000

: Paid-Up Capital : RM5,000,000.000

Shareholder : Bina Darulaman Berhad

(Bursa Malaysia)

Authorized Capital : RM100,000,000.00

Paid-Up Capital : RM72,815,856.00

Board of Directors

Chairman : Y.Bhg. Dato' Paduka Hj. Mohd Saad bin
Endut

Directors : Y.Bhg. Dato' Abdul Rahman bin Ibrahim

- : Ir. Tuan. Hj Shedy Abd. Latef bin Shahidan
- : Noor Rosli bin Mohd Ali
- Offices : Registered Office
 Level 9, Menara BDB,
 88 Lebuhraya Darulaman,
 05100 Alor Setar, Kedah Darulaman.
- : Head Office
 Level 8, Menara BDB,
 88 Lebuhraya Darulaman,
 05100 Alor Setar, Kedah Darulaman.
- MS ISO 9001:2008 : Provision of Management of Design And
 Construction Services For Building And
 Civil Engineering Works.
- Registrations : PKK : Class A
 CIDB : Grade 7,
 Category B, CE & ME
 PETRONAS : RHQ-82740-W
 Category SC2
 MAB : 70389
 SPNB : SPNB/C/A/G7/07/26/1256
 PLUS : A0784
 UUM : 2773/C 10964
 SPAN : IPA C1 (Pembentungan)
 IPA c2 (Bekalan Air)
 IIUM : IIUM 04397
 SIRIM : Kelas A
 Kepala I,II&IV

Principal Bankers : AFFIN ISLAMIC BANK BERHAD
NO.147 & 148, Susuran Sultan Abdul Halim 8
Kompleks Sultan Abdul Halim Fasa 2,
Persiaran Sultan Abdul Hamid,
05000 Alor Setar, Kedah Darulaman.
: BANK ISLAM MALAYSIA BERHAD
No.1. Kompleks Perniagaan Utama,
Jalan Sulatanah Sambungan,
05150 Alor Setar, Kedah Darulaman

Company Secretary : PUAN KHAIRULMUNA ABD. GHANI
(I.S 0008190)
Bina Darulaman Berhad
Level 9, Menara BDB,
88 Lebuhraya Darulaman,
05100 Alor Setar, Kedah

Auditor : ERNST & YOUNG
Level 23A, Menara Millenium,
Jalan Damanlela,
Pusat Bandar Damansara,
50490 Kuala Lumpur.

2.3 Organization Chart

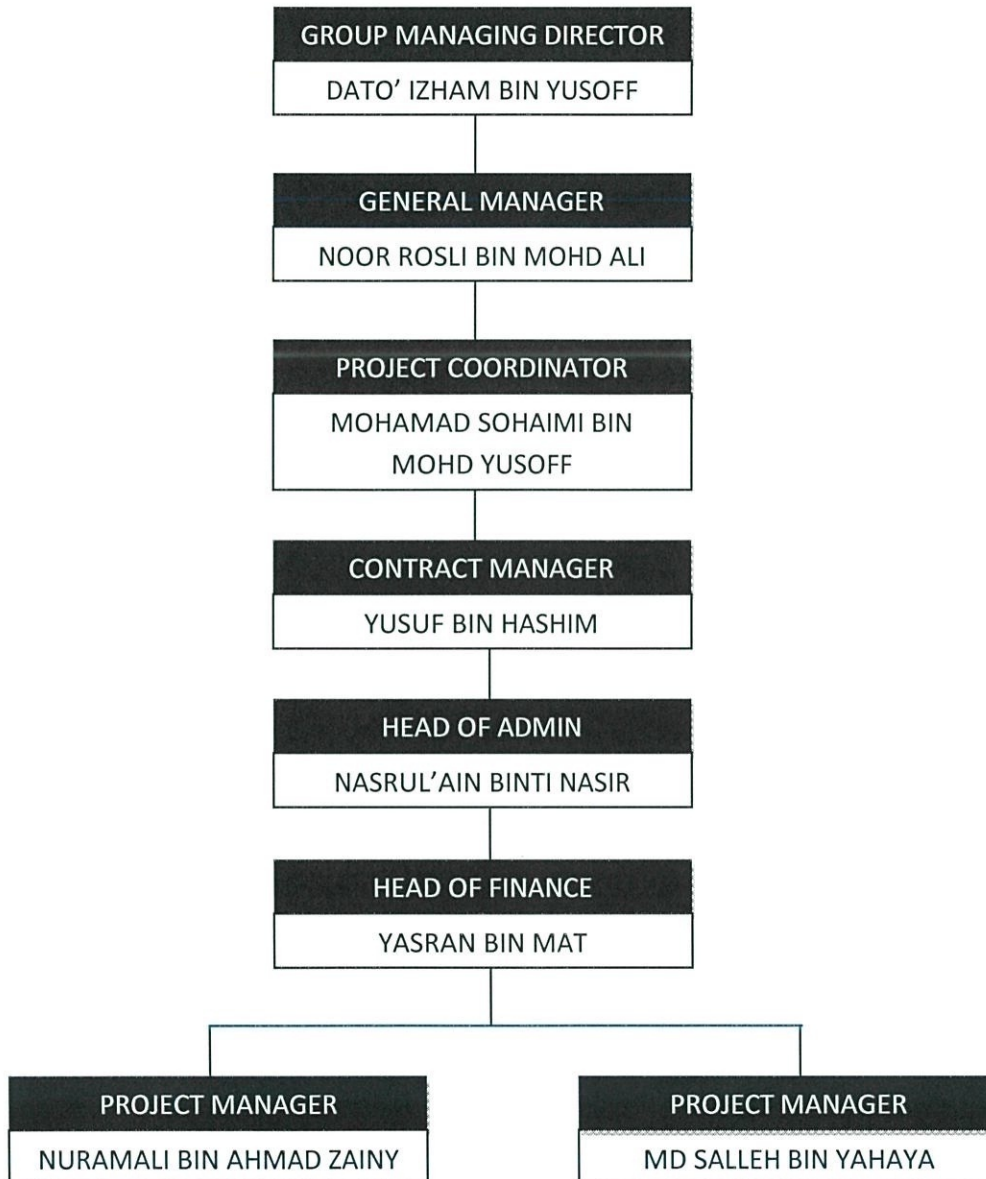


Figure 2.2: Kedah Sato Organization Chart

Sources: Company profile Kedah Sato (2014)

2.4 List of Project

2.4.1 Completed Project

Table 2.1: List of Completed Project

Bil	Project	Date/Year complete	Client	Amount of Project
1.	Proposed to construct and complete of Royal Villa at Peranginan Gunung Jerai, Kedah Darulaman	Aug-2011 - Apr-2012	PKNK	1,000,000.00
2.	Proposal to build permanent campus of Kolej Universiti Insaniah (KUIN), Kedah	Sep-2009 - Feb-2013	UPEN	330,000,000.00
3.	Proposal to build and complete of 87 unit residential on the Lot PT 441, Taman Tunku Sarina 3, Bandar Darulaman, Daerah Kubang Pasu, Kedah Darulaman (AIRIS2)	Jan-2013 - Oct-2014	Darulaman Realty Sdn Bhd	24,300,000.00
4.	Proposal to build and complete of 60 units of 2-storey terraced houses superlink 'SAFIYYA' on PT 2525-2584, Taman Tunku Sarina 3, Bandar Darulaman, Mukim Jitra,	Apr-2013 - Sept-2014	Darulaman Realty Sdn Bhd	12,000,000.00

	Daerah Kubang Pasu, Kedah Darulaman (AIRIS2)			
5.	Proposal to complete the abandoned bridge project at Jalan Segambut, Kuala Lumpur	Nov-2000 - Nov-2001	DBKL	4,579,831.75
6.	Proposed Upgrading of Infrastructure Work and Building facilities At Sultan Abdul Halim Airport, AlorSetar, Kedah.	Jan-2009 - Nov-2009	MASB	5,133,309.26
7.	Cadangan Sistem Bekalan Air Ke Kawasan Perumahan Di Ladang Bukit Perak Di Atas Lot 2640, 2641, 2643 & 1627, Mukim Padang Peliang, Daerah Pendang, Kedah Darulaman.	Jun-2013 - Apr-2014	PKNK	1,927,500.00
8.	The Procurement, Construction and Commissioning of Shoreline Protection Works and Boat Launching Platform at PDB Bulk Depot, Pulau Langkawi, Kedah	Dec-2001 - Mar-2002	Petronas Dagangan Bhd	479,860.00

Source: Company Profile Kedah Sato (2015)

2.4.2 List of Current Project

Table 2.2: List of Current Project

Bil	Project	Date/Year complete	Client	Amount of Project (RM)
1.	Proposal to build Darulaman Lakehome phase 2, Bandar Darulaman Yang that consist 8 unit double storey bungalow (Type A) and 13 unit double storey bungalow (Type B) Bandar Darulaman, Daerah Kubang Pasu, Kedah Darulaman.	1/3/2014-31/5/2015	Darulaman Realty Sdn Bhd	11,600,000.00
2.	Proposal to build and complete housing schemethat consist: i) 12 unit single-storey house. ii) 14 unit double-storey detached houses. iii) 28 unit single-storey detached house. iv) 56 unit double-	6/11/2013-5/3/2015	Bertam Properties Sdn Bhd	28,979,538.39

	storey terrace houses. And the relevant work at lot 9115, Bertam Perdana 2 Fasa 2B, Mukim 6, Kepala Batas, Seberang Perai Utara, Pulau Pinang.			
3.	Proposal to build and complete the design and build the infrastructure works for the housing project at Lot PT 94346, Mukim Sungai Petani, Kedah Darulaman.	1/4/2015-15/2/2015	Perbadanan Kemajuan Negeri Kedah	5,880,000.00
4.	Water supply Sik (Package B) supply and install M.S pipe diameter 600mm, 350mm, and 300mm from Tank Jeniang to water tank Gurun and also to Padang Lembu and from water tank Belimbing to water tank Kg. Bukit Sebelah and the relevant work..	1/9/2013-28/2/2015	Syarikat Air Darulaman Sdn Bhd	40,300,000.00
5.	Proposal to build and complete 436 unit double-		Darulaman Realty Sdn Bhd	70,544,922.01

	storey terrace house and 126 unit affordable terrace house, at PT 6930, Taman Insaniah Fasa ii, Mukim Tawar, Daerah Baling, Kedah Darulaman. i) 112 Unit ii) 323 Unit	10/11/2011- 30/6/2014 28/2/2015		
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Source: Company Profile Kedah Sato (2015)

CHAPTER 3.0

CASE STUDY

3.1 Introduction of Project



Photo 3.1: Project signboard

The construction project entitle is a ‘Cadangan Pembangunan Darulaman Lakehome Phase 2, Bandar Darulaman yang Mengandungi: 1) 8 Unit Rumah Banglo 2 tingkat (Type A) 2) 13 Unit Rumah Banglo 2 tingkat (Type B) Bandar Darulaman, Daerah Kubang Pasu, Kedah Darulaman’. This project is strategically located in a tropical setting with easy accessibility. It also nested near the natural peaceful serenity of Darulaman Lake Park and Darulaman Golf &

Country Club. According to the plan of this proposed project they have two type of design bungalow which is type A (8 unit) and type B (13 units).

The client of this project is Darulaman Realty Sdn Bhd and the consultant that involve are Rushdan Architect, Perunding Timur (engineer), Sarjana Jurutera Perunding (electrical engineer) and RHQS Consultant (quantity surveyor). The contract value of the construction project is considered off more than 11 million for all of them. In addition, the period to complete the construction of this project starts from 1/3/2014 until 30/5/2015.

3.1.1 Site Organization Chart

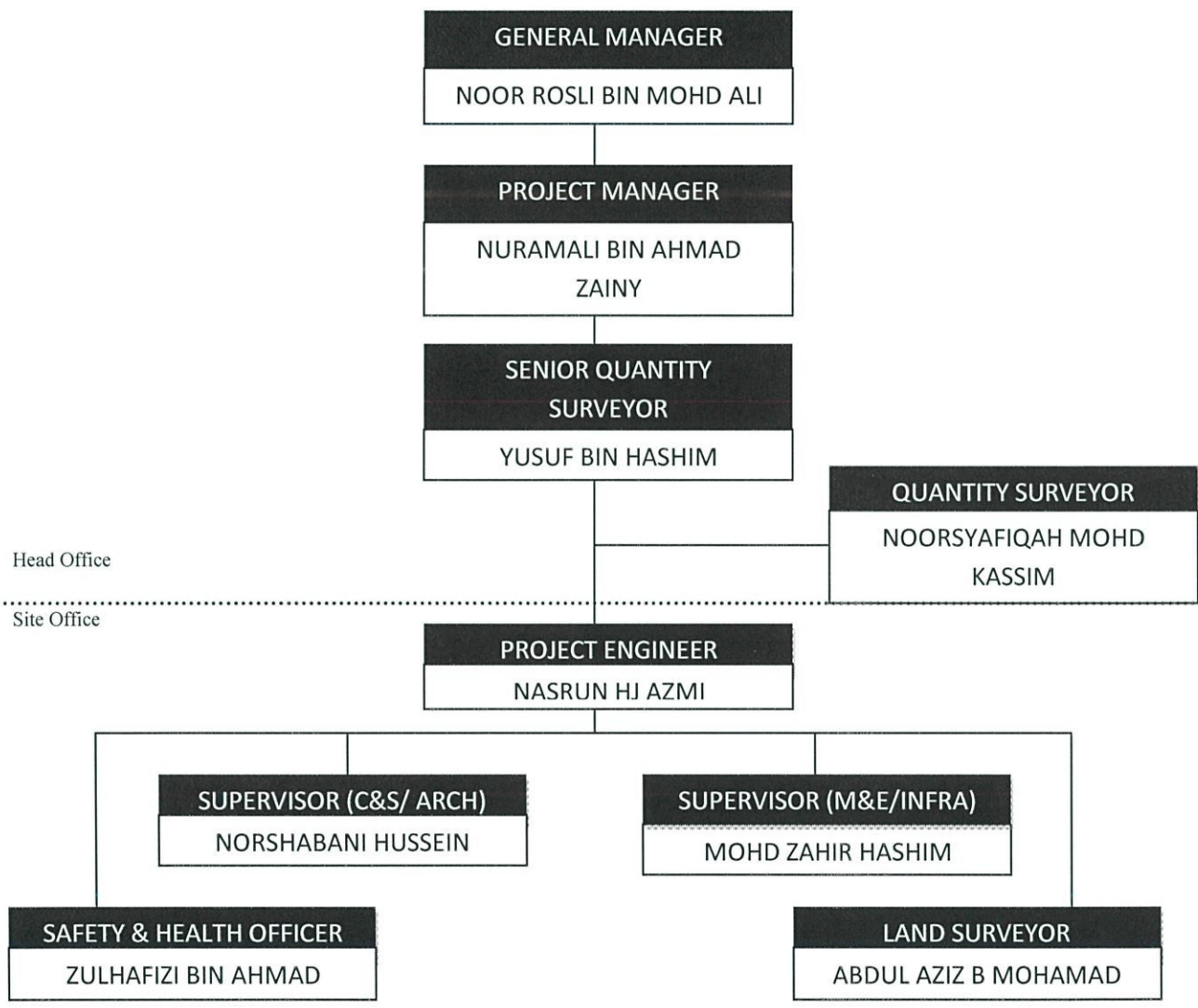


Figure 3.1 Site Organization chart

Source: Site Office Kedah Sato (2015)

3.2 Case Study

3.2.1 Introduction of Case Study

The site management that involve is the project that faces with several risk from start until completion. The construction management is the team that involves the process undertaken by the contractor that manages the contract and site from the process of entering the tender offer until the completion of the project and submission of closure. The site management, it involves planning, organizing, influencing and controlling to work at the site which involves the management of resources of labor, material, machinery and capacity.

3.2.2 The basic management functions that practice in construction

This project practice the same basic management function of a construction project. When, the contractor or management team use this basic it will help the site management going smooth. The basic management functions that are apply in this site construction:

3.2.2.1 Planning

The project manager in this project has planned to focus on the objective to lead the project team for successful implementation and timely completion of project. Besides that, the managed to plan out the overall project budget for efficient project control and to manage and guide subordinates to perform their required duties.

3.2.2.2 Organization

The project manager requires to determine how to organize the management team in the construction site. So, the project manager needs to identify different role and ensure that the team will carry out the plan. The organization of this management team can be referring the site organization chart, (figure 3.1 page 18). The project manager also needs to assign work and provide the direction to the management team.

3.2.2.3 Influencing

In this step, the project manager spends time connecting with the management team. It is involves of communication, motivation, inspiration and encourage the team towards a higher productivity of site management. The team will follow the direction of the project manager to fulfill the goals. If in the site have the case of conflicting demand, the project manager and the team should use the influencing skill to develop or to find the solution to the project.

3.2.2.4 Controlling

The project manager was able to take any necessary corrective actions to continue the work toward the goal and objective if the goal is not being met. The project manager and the management team will do the meeting to know the progress and the problem that happen in the construction project. After that, the team will discuss the solution of the problem and give the proposal or ways to avoid the problem.

3.2.3 The important factor of site management

3.2.3.1 Design

The cost of project will be the first factor that leads in the uncompleted of the project or the delayed of the project. This factor will cause a lot of problem to the construction project. Without the proper planning the construction company may lost a lot of profit from the project and this situation may cause the project cannot finished on the time. For this project, the client does not want the variation order because it will effect to the addition of cost. Variation order is the alteration to the scope of works such as design, material and other in the construction contract in the form of addition, omission or substitution from the original scope of work. So the construction work that has the variation order willbe delay. So, the contractor and parties that involved were forced to make a new design that related with the original cost. For example, in this project have 14 unit of the bungalow delay the glass canopy work because of the variation order. These 14 units forced to redesign the structure of glass canopy because the base of structure located above the perimeter drain.

3.2.3.2 Surrounding factors

The time scheduling also is the major factor that lead to the delayed or the uncompleted of this project. The construction company is facing a tough challenge in the time planning of the project because without the proper planning the time factor will cause loss of the profit to the company. The construction companies which are planning their time for the project should concern about the surrounding factor when doing the planning. For example, one unit of bungalow at the plot 1745 could not be continued the construction work because of there has the existing pipe from Syarikat Air Darul Aman Sdn Bhd (SADA) at the boundary. So, the client take time to settle that problem and it will cause the construction work delayed such as road site

drain, concrete imprint, sub-soil drain pipe, brick fencing, 'wakaf' and other. These delayed works can refer at the appendix N.

3.2.3.3 Material Supply

Material supply also is the one of the important factor in the site management that occurs the delay work. In this project, the installation door cannot be installed because the supplier could not supply the door. This problem happens because the stock at factory that the suppliers order is out of stock. Besides that, the supplier which does not comply with the specification and requirement of door that have been order also will cause the uncompleted project. Only a few unit of bungalow have been complete the installation. This had caused the time to complete the work take longer time. It refers to the appendix J the table of outstanding work of door leaf.

Next, the material supply also can make the delay of roof structure that cause by the short supply of galvanized batten. This problem can cause the roof structure delay because of the galvanized batten take time to arrive at the site and it also cause the work forward such as plastering work become delay.

3.2.3.5 Manpower

The lack of manpower is also can cause the uncompleted project or the project become delay. This project should give the priority to the plasterer because one unit of house takes time between a week and two week to completed plaster. This problem can be observed when the brickwork for the all unit have been completes about one month ago. Refer to the appendix I.

Besides that, workers that lack of knowledge, skills and exposure are also can cause the problem in the site management. This will cause the work become delay and the quality of the work is

unsatisfactory. Next, there are some of workers who are reluctant to use the equipment or facilities that are provided.

3.2.5 Solution For Critical Factor of Site Management

The contractor or management team should find the solution to get the good site management in the constructions. There is several solution of critical factor in the site management:

3.2.5.1 Cost planning

The construction company should plan the project cost by looking for the future if anything situation that may lead to the increasing of the material price occur. The cash flow or financial management will help how to make the construction work will be progress same with the schedule work. This will help the contractor to control the money that they spent to avoid any wastage. Besides that, quantity surveyor should estimate the overall project cost and do not overlook the elements in the construction. Therefore, the contractor also use planning the s-curve in this project before starting their project to budget amount of money that they want to use and make as a references when the project is starting. The s-curve is a powerful project management control and it is display of cumulative costs, labor hours or others quantities against time. The s-curve can help to check the budget with the right decision or not in the construction project. So, it will make the contractor easy to trace and control the cost that has been use in the construction.

3.2.5.2 Time

Time control is an important aspect to the development of the construction site because this project can complete in the short period and does not exceed the allocated cost and expected quality. The time management goal is want the project can complete on time or before the expected time and it also want to reduce the risk of the project to the lowest level possible. This aspect is needed to control any eventuality that may occur such as weather, material, machineries, supplier and efficiency of site supervisor. The contactor uses the critical path method to establish a model of the project that includes a list of activities in the construction site, the time duration and the dependencies between the activities.

3.2.5.3 Supplier

A supplier relationship is one in which a reseller buys from a supplier for the propose of reselling and making a profit. In this aspect, organizations are invited to review how well the suppliers are set up to deliver excellent services to their client. In this project, the supplier of clay brick is deliver the on the time and it can make the process of brickwork work become smooth and can complete on time. By always focusing on delivering exactly what the client wants, the supplier establish trusting interdependencies that can lead to greater continuity of work and growth.

3.2.5.4 Manpower

In the construction, manpower can be dividing into the some category such as skilled workers, semi-skilled workers and unskilled workers. The contractor should manage their workers to complete the work based on their skilled. This will help by the safety officer to control their activity area at the site with give them a safety equipment. Safety officer should ensure the

workers follow the instruction. Besides that, the contactor should provide a more professional management system. In this project, the management team should take more skilled workers to prevent the project become delay and the work in the construction site can move smoothly. The additional of workers is important because it will affect the work in the construction site and can make this project delay.

3.2.5.5 Site Meeting

Site meeting is held to know the progress of work. In site meeting, the delay or uncompleted work can be traces and the contractor, consultant or sub-contractor will discuss the solution to handle the problem. Site meeting is very important because the schedule of progress site can be trace and know the problem, delay work and find the solution. It is held once a month in accordance with the requirements of the parties that involved. In this project, the teams do the site meeting to trace or to know the problem that happen in the construction work and find the best way solution to solve. For example, there are the delay works of installation of door leaf. So, the project manager and the team do the site meeting to trace why the installation of door leaf become delay and find the way to make sure that work can complete on time.

3.2.6 Strategic Action Plan

There are several proposals:

1. Ensure that the provision is sufficient before the project start.
2. The consultant must act quickly in responding of solution or answer to avoid the delay.
3. The manager or management team should find the solution of the problem to ensure that this site management achieves their goals.

Table 3.1: Strategic action plan

No.	Objectives	Action/ strategic	Who
1.	On time delivery of project	<ul style="list-style-type: none"> • All staffs must follow schedule • Ensure sufficient site staff & resources • Proper planning 	<ul style="list-style-type: none"> • Head of Construction • Project Manager • Site Engineer • Site Staff
2.	Ensure Customer satisfaction	<ul style="list-style-type: none"> • Ensure project spec are strictly adhered to requirement • Good finishing to completed structure • On time delivery • Good liaison with customer rapport 	<ul style="list-style-type: none"> • Head of Construction • Project Manager • Site Engineer • Site Staff
3.	Compliance to statutory & regulatory	<ul style="list-style-type: none"> • Ensure all requirement fulfill/ followed • Liaison with statutory or 	<ul style="list-style-type: none"> • Head of Construction • Project


	requirement	regulatory body information <ul style="list-style-type: none"> • Good Rapport with statutory & regulatory officers 	Manager <ul style="list-style-type: none"> • Site Engineer • Site Staff
4.	Ensure smooth project operation	<ul style="list-style-type: none"> • Carry out preventing main on equipment machineries • Close supervision of Site staff • Competent machine operator 	<ul style="list-style-type: none"> • Project Engineer • Site Engineer

Sources: Project quality plan (2014)

3.3 Method Statement

Table 3.2: Method Statement of Site Management

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
1.	Introduction	The management team should strive to achieve the management goal and objective in line of the site management procedure.				The communication and difference opinion between the team.
2.	Management team	The Successful of site management depends on the team roles in the site management.		1.Project manager 2.Project engineer 4.Supervisor 5.Safety Officer 6.Land Surveyor 7.Quantity Surveyor		Low commitment between the team.

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
3.	Type of management 1. Site Layout	Site layout should be arranged with the efficient before a construction project will be started because the limited space in the purpose the construction activity is smooth and followed the schedule.		1. Building/ structure 2. Main equipment 3. Stores 4. Site office 5. Sanitary and welfare room 6. Temporary road 7. Electric supply 8. Water supply		Material stack wrongly located. 1. too far from the work area 2. Stocked over a drainage line and near the edge of excavation.


No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
4.	Material Management	<p>To ensure that the material in the good received and properly handled.</p> <p>The material is needed to be supplied at one time required or at a certain time period.</p>				<p>Material delay to the site.</p> <p>Receiving error. Example: order door type A receives door type B.</p>



No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
5.	Manpower Management	<p>There is having some type of workers in the construction such as skilled workers, semi-skilled workers and unskilled workers.</p> <p>Refer to the contractor how to manage their workers at the construction site.</p>		<p>1.Skilled workers</p> <p>2.Semi-skilled workers</p> <p>3.Unskilled workers</p>		Less of skilled workers



No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
6.	Machineries Management	To ensure conformity to product requirement through determining, providing, and maintaining the necessary infrastructure.				Need to do the maintenance of machineries.
7	Time and Cost Control	The central of development of the construction project. Very important to reduce doubles work cost and deliver the project to the client. <ul style="list-style-type: none"> • Cpm • S-curve • Bar chart 				The price of material and plant depend on the market condition.


No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
8.	Site Clearing	<ol style="list-style-type: none"> 1. equipment 2. ensure equipment functionality 3. check site levelness/location 4. excavation & leveling (cut & fill) 5. Compacting 6. Testing 		Excavator Lorry Bulldozer Rammer Water tanker Back pusher Backhoe Fuel	2 weeks	Weather. Clearing work become delay
9.	Survey Work	<ol style="list-style-type: none"> 1. equipment 2. ensure equipment functionality 3. check plan 4. safety equipment 5. Start survey 6. Log book/ Data Record 		<ol style="list-style-type: none"> 1. Timber 2. Nail 3. EDM 4. Dumpy level 5. Stave 6. Measuring tape 7. Tripod 	3 days	The leveling nor accurate

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
10.	Piling work	<ol style="list-style-type: none"> 1. check position of peg with reference to drawing 2. check pile are pitched accurately as per drawing 3. Vertically & distance check 4. Integrity test & pile per blow 5. check for the welded joint with reference to drawing 6. final set (pass/not pass) 7. take a graft set 		<ol style="list-style-type: none"> 1. Piling 2. Dumpy Level 3. Pile record 4. Welding set 5. Anti-rush paint 6. Dolly 7. R.C Pile 	6 days	Piles driving out of alignment

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
11.	Structure	<ol style="list-style-type: none"> 1. Mobilized machine 2. ensure equipment functionality 3. check site levelness/ setting out 4. excavation/formwork/lean concrete 5. rebar 6. Concreting 7. Remove formwork 		<ol style="list-style-type: none"> 1. Crane 2. Air compressor 3. Water jet 4. Bar bending machine 5. Vibrator poker 6. Bar cutting Machine 	1 weeks	<p>Weather</p> <p>Concreting work delay</p>

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
12.	Bricklaying	<ol style="list-style-type: none"> 1. Mobilized machine 2. ensure equipment functionality 3. check wall layout/ setting out/ level 4. prepare mortar 5. lay mortar/ bricks 		<ol style="list-style-type: none"> 1. concrete mixer 2. backhoe 3. wheel barrow 4. scoop/spoon 5. concrete pail 6. crane 	5 days	Less skilled workers
13.	Roofing	<ol style="list-style-type: none"> 1. Mobilized machine/ material 2. ensure equipment functionality 3. check roof profile/ drawing 4. install timber trusses 5. install aluminum foil/ chicken wire netting and roof tiles 6. install roof tile 		<ol style="list-style-type: none"> 1. crane 2. chain hand saw 3. hammer 4. roof tile 5. steel/timber 6. nail 7. fascia board 	1 weeks – 2 weeks	Galvanized batten delay

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
14.	Plastering	<ol style="list-style-type: none"> 1. Mobilized machine 2. ensure equipment functionality 3. check wall layout/ setting out/ level 4. prepare mortar 5. lay mortar/ bricks 		<ol style="list-style-type: none"> 1. concrete mixer 2. backhoe 3. wheel barrow 4. scoop/spoon 5. concrete pail 6. crane/ material hoist 	10 days	<p>Roofing delay</p> <p>Less skilled workers</p> <p>Wiring work slow</p>
15.	Ceiling	<ol style="list-style-type: none"> 1. Equipment 2. ensure equipment functionality 3. check site levelness/ location 4. start work/ install ceiling 		<ol style="list-style-type: none"> 1. wood cutter 2. hammer 3. ladder 4. scaffolding/ platform 5. ceiling board 6. HW Timber 7. nails 	3 days	

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
16.	Tiling	<ol style="list-style-type: none"> 1. Mobilized machine / material 2. ensure equipment functionality 3. Check floor profile/ drawings. 4. install floor tile 		<ol style="list-style-type: none"> 1. tile cutter 2. spoon 3. cement 4. Sand 5. tiles 	1 weeks	Wall tiling delay because of less workers.

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
17.	Door and Window	<ol style="list-style-type: none"> 1. Mobilized machine / material 2. ensure equipment functionality 3. Check location setting out 4. install door leaf/ glazing 		<ol style="list-style-type: none"> 1. hammer 2. drilling machine 3. glazing 4. nail/screw 5. timber/ aluminum 	1 weeks	<p>Outstanding work of door</p> <p>The door delay to the site</p>
18.	Painting	<ol style="list-style-type: none"> 1. Equipment 2. ensure equipment functionality 3. Paint mixed 4. check color scheme/ location 5. start painting 		<ol style="list-style-type: none"> 1. spray pump 2. roller paint 3. paint brush 4. fuel 5. paint 	1 weeks	On time

No	Operation	Method	Sequence Diagram	Plant & Manpower	Duration	Issues/ Problems
18.	Concrete imprint	<ol style="list-style-type: none"> 1. Mobilized machine 2. ensure equipment functionality 3. check site levelness/ setting out 4. concreting 5. imprinted mould 6. apply coloring semen 		<ol style="list-style-type: none"> 1. crane 2. concrete lorry 3. wheel barrow 4. vibrator poker 5. imprinted mould 6. dumpy level 	2 days	Need to wait the skilled workers from the other site construction.

CHAPTER 4

CONCLUSION

Site management is a very important in the construction project. Without proper site management planning and control, the production would not be effectively and efficiently deliver. From this case study, we can learn about the progress, problem, solution and effectiveness of the site management. It will help the management in site management achieved the goal and objectives.

In the site management, the implementation of the work should be planned in detail to avoid any risk that might occur. The site management needs to take care of the movement arrangement of the project whether it is large or small project. Without the proper management, a construction project will not be successful and complete on the time of construction period.

There are many benefits to the construction project if the site management is under control and within scheduled. Team player in the organization is also important in moving the company's objectives and become the role model. The distribution of duties and the flexible responsibilities between the members of organization is needed to ensure the effectiveness of management in the construction site.

Therefore, the planning of site management is very useful to avoid risks that may occur. The contractors have the responsibilities to understand and practice the good site management aspects in order to achieve successful of a construction project.

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APPENDIX

Appendix A: Front Elevation



Sources: Site Office Kedah Sato (Lakehome 2) (2014)

Appendix B: Right Elevation



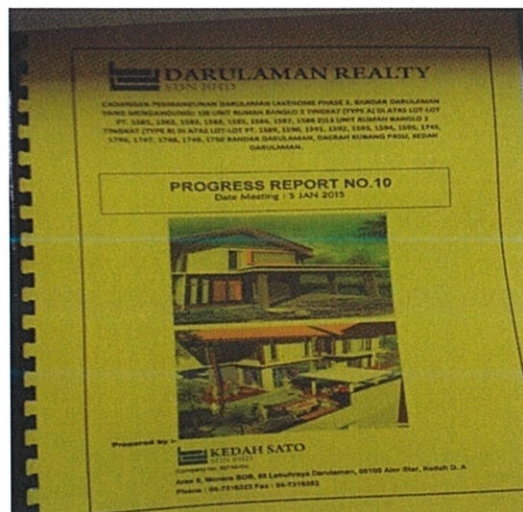
Sources: Site Office Kedah Sato (Lakehome 2) (2014)

Appendix C: Safety singboard



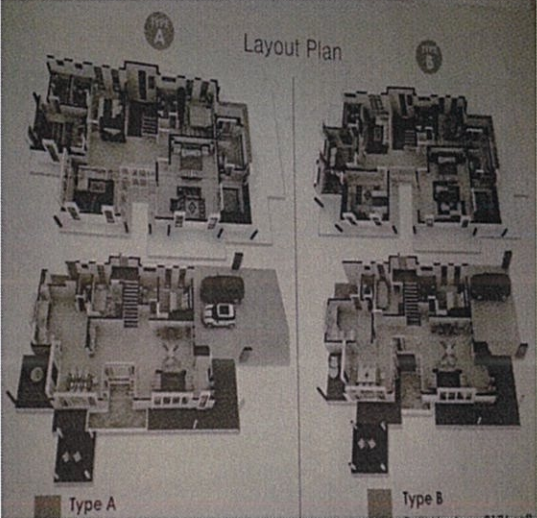
Sources: Site Lakehome 2 (2014)

Appendix D: Progress Report



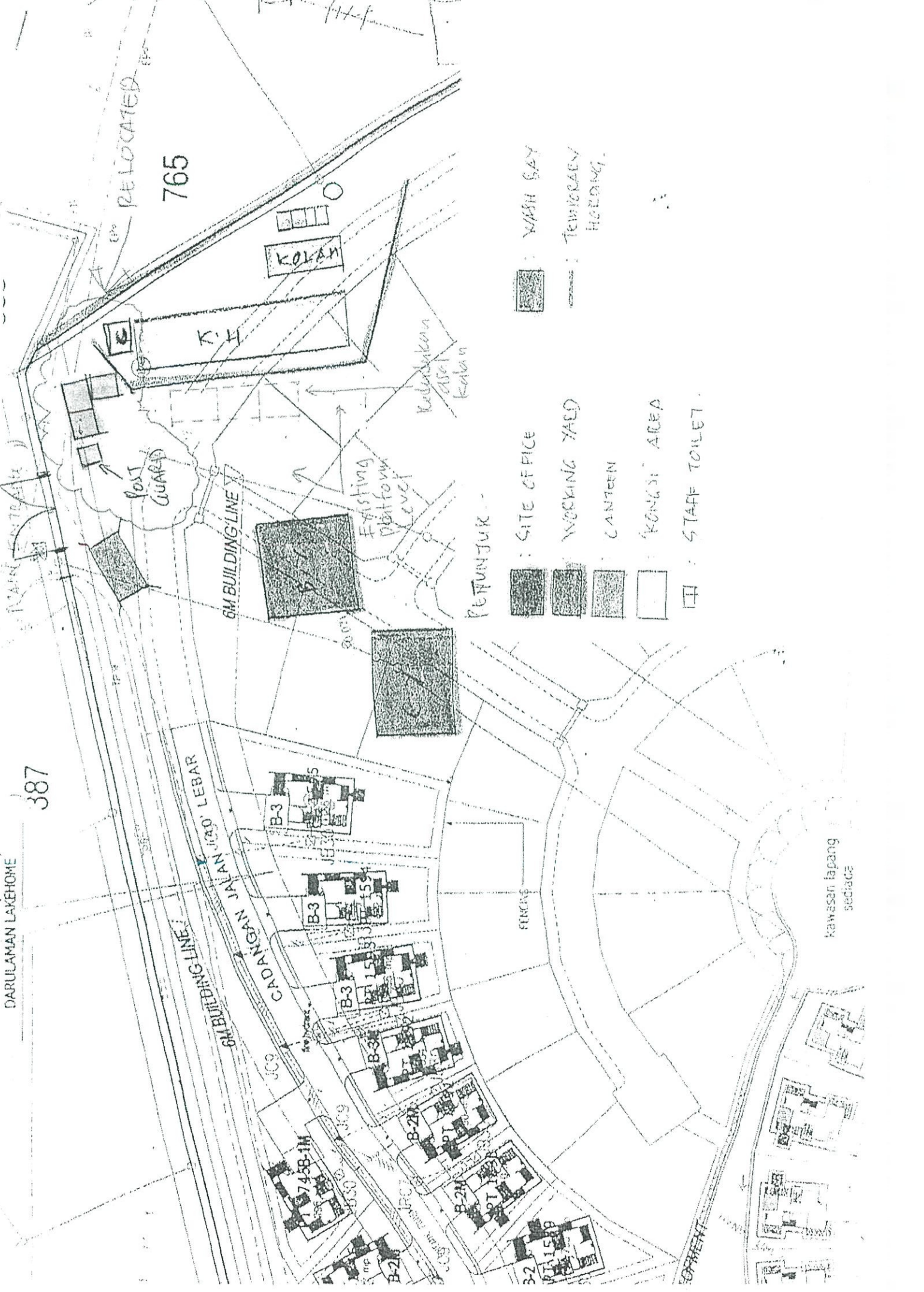
Sources: Site Office Lakehome 2 (2015)

Appendix E: Layout Plan Type A and B



Sources: Site Office Lakehome 2 (2015)

Appendix F



RELOCATED 765

KOLAH

POST GUARD

6M BUILDING LINE

Existing Platform Level

Kedudukan Asas Kabin

PETUNJUK

WASH BAY

TEMPORARY HOLDING

SITE OFFICE

WORKING YARD

CANTEN

KONGSI AREA

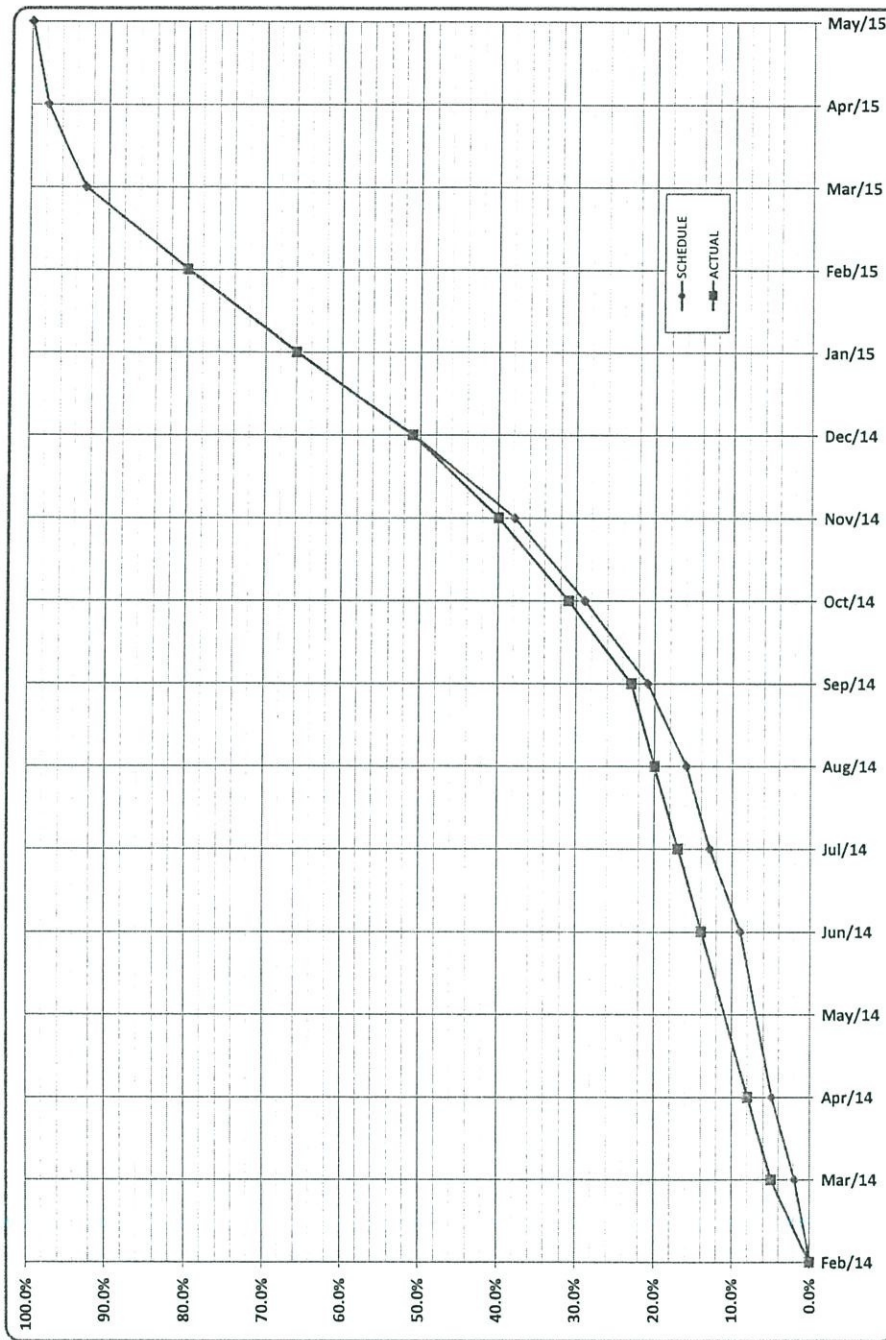
STAFF TOILET

Kawasan lapang sepiase

Appendix G

CADANGAN PEMBANGUNAN DARULAMAN LAKEHOME FASA 2, MUKIM JITRA,
 BANDAR DARULAMAN, DAERAH KUBANG PASU, KEDAH DARUL AMAN.

PHYSICAL S-CURVE

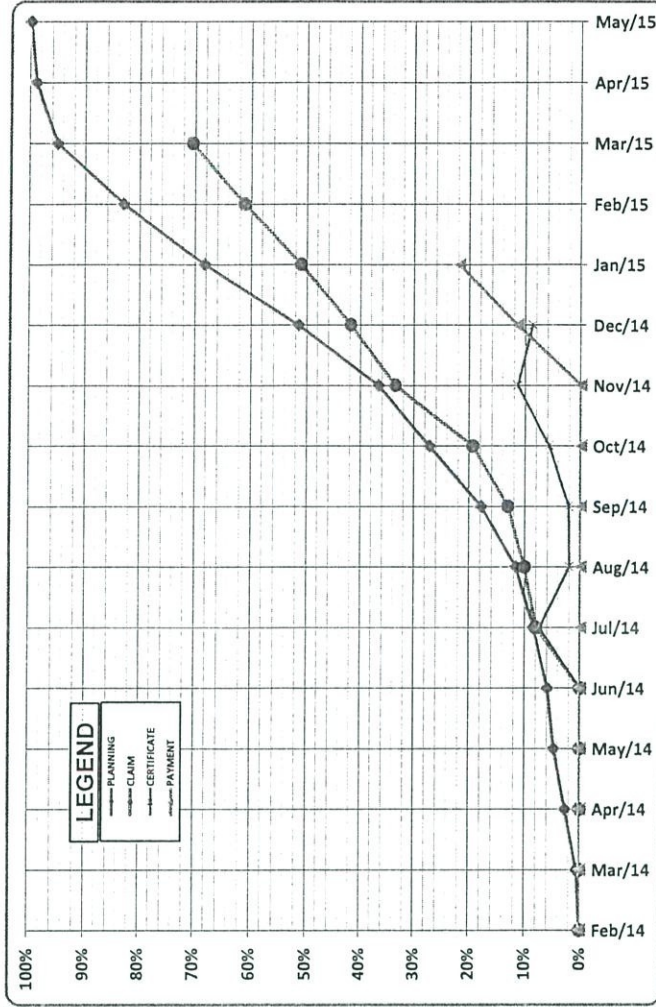


MONTHS	SCHEDULE	ACTUAL
28/02/14	0.0%	0.0%
31/03/14	2.0%	5.0%
30/04/14	5.0%	8.0%
31/05/14	7.0%	11.0%
30/06/14	9.0%	14.0%
31/07/14	13.0%	17.0%
31/08/14	16.0%	20.0%
30/09/14	21.0%	23.0%
31/10/14	29.0%	31.0%
30/11/14	38.0%	40.0%
31/12/14	51.0%	51.0%
31/01/15	66.0%	66.0%
28/02/15	80.0%	80.0%
31/03/15	93.0%	98.0%
30/04/15	98.0%	98.0%
31/05/15	100.0%	100.0%

Appendix H

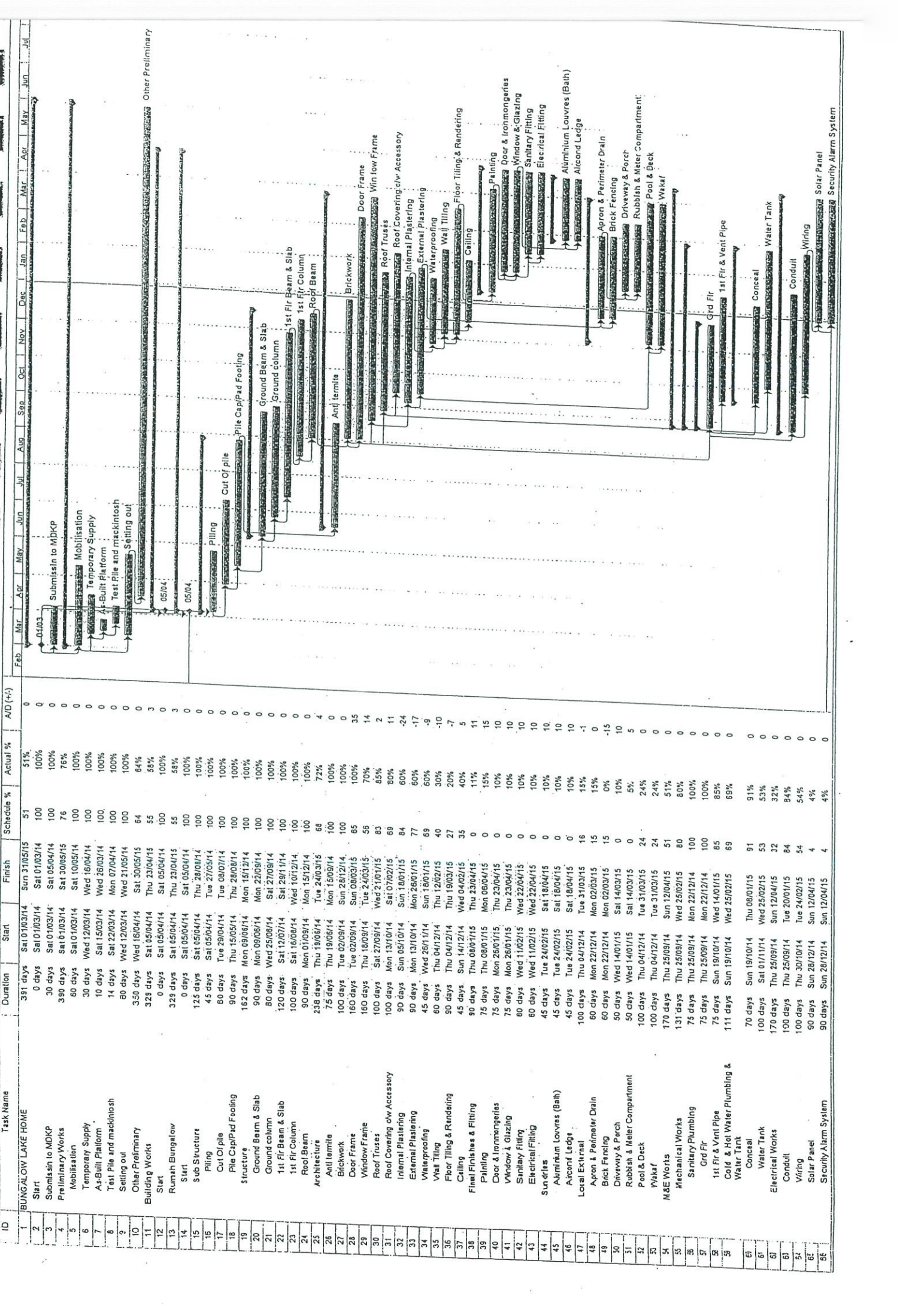
**CADANGAN PEMBANGUNAN DARULAMAN LAKEHOME FASA 2, MUKIM JITRA,
BANDAR DARULAMAN, DAERAH KUBANG PASU, KEDAH DARULAMAN.**

COST PLANNING S-CURVE



MONTHS	PLANNING		PLANNING BY DRSB		CLAIM		CERTIFICATE		PAYMENT	
	(RM)	(%)	(RM)	(%)	(RM)	(%)	(RM)	(%)	(RM)	(%)
28/02/14	-	0%	-	0%	-	0%	-	0%	-	0%
31/03/14	76,931.93	1%	76,931.93	0%	-	0%	-	0%	-	0%
30/04/14	321,179.46	3%	244,247.53	0%	-	0%	-	0%	-	0%
31/05/14	561,551.13	5%	240,371.67	0%	-	0%	-	0%	-	0%
30/06/14	693,529.19	6%	131,978.06	0%	-	0%	-	0%	-	0%
31/07/14	994,685.72	9%	301,156.53	8%	921,348.82	7%	853,510.00	0%	-	0%
31/08/14	1,356,072.74	12%	361,387.02	10%	1,171,085.53	2%	235,699.00	0%	-	0%
30/09/14	2,081,659.02	18%	725,586.28	13%	1,514,427.63	2%	251,070.00	0%	-	0%
31/10/14	3,164,565.46	27%	1,082,906.44	19%	2,249,112.75	6%	665,564.00	0%	-	0%
30/11/14	4,265,780.74	37%	1,101,215.28	34%	3,890,679.27	11%	1,321,205.00	0%	-	0%
31/12/14	5,992,928.99	52%	1,727,148.25	42%	4,856,684.61	9%	1,012,931.00	12%	1,340,279.00	12%
31/01/15	7,938,580.36	68%	1,945,651.37	51%	5,924,385.78	51%	-	22%	2,548,866.15	22%
28/02/15	9,648,993.11	83%	1,710,412.75	61%	7,105,934.27	61%	-	-	-	-
31/03/15	11,044,931.99	95%	1,395,938.88	71%	8,179,130.68	71%	-	-	-	-
30/04/15	11,549,142.93	99%	504,210.94	-	-	-	-	-	-	-
31/05/15	11,600,000.00	100%	50,857.07	-	-	-	-	-	-	-

Appendix I



ID	Task Name	Duration	Start	Finish	Schedule %	Actual %	ADU (+/-)	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	
67	CCTV	90 days	Sun 28/12/14	Sun 12/04/15	4	4%	0																				
68	End	0 days	Sun 12/04/15	Sun 12/04/15	0	0%	0																				
69	External Works	170 days	Thu 13/1/14	Sun 31/05/15	15	8%	-7																				
70	Start	0 days	Mon 01/12/14	Mon 01/12/14	100	100%	0																				
71	Sewerage	65 days	Thu 13/1/14	Wed 28/01/15	71	25%	-48																				
72	Excavation	45 days	Thu 13/1/14	Mon 05/01/15	93	25%	-68																				
73	Laying pipe & Manhole	45 days	Tue 25/1/14	Sat 17/01/15	71	25%	-46																				
74	Backfill	45 days	Sun 07/12/14	Wed 28/01/15	49	25%	-24																				
75	Retaining Wall	30 days	Sun 28/12/14	Sun 01/02/15	13	13%	0																				
76	Drainage	70 days	Sun 07/12/14	Thu 26/02/15	28	28%	0																				
77	Excavation	80 days	Sun 07/12/14	Sun 15/02/15	36	36%	0																				
78	Precast Concrete Drain	60 days	Thu 18/12/14	Thu 26/02/15	20	20%	0																				
79	Water Rectification	61 days	Tue 30/12/14	Wed 11/03/15	3	0%	-3																				
80	Main Pipe	45 days	Tue 30/12/14	Sat 21/02/15	4	0%	-4																				
81	Water Stand & Connection	30 days	Wed 04/02/15	Wed 11/03/15	0	0%	0																				
82	Roadworks & Road Furniture	80 days	Sun 11/01/15	Tue 14/04/15	0	0%	0																				
83	Excavation	30 days	Sun 11/01/15	Sun 15/02/15	0	0%	0																				
84	Crusher Run Base	30 days	Thu 22/01/15	Thu 26/02/15	0	0%	0																				
85	Road Kerb	30 days	Tue 03/02/15	Tue 10/03/15	0	0%	0																				
86	Binder Course	30 days	Sun 15/02/15	Sun 22/03/15	0	0%	0																				
87	Wearing Course	30 days	Thu 26/02/15	Thu 02/04/15	0	0%	0																				
88	Road Marking	30 days	Thu 22/01/15	Tue 14/04/15	0	0%	0																				
89	Street Lighting	75 days	Thu 22/01/15	Mon 20/04/15	0	0%	0																				
90	Cabling	60 days	Thu 22/01/15	Thu 02/04/15	0	0%	0																				
91	Lighting Poles	45 days	Thu 26/02/15	Mon 30/04/15	0	0%	0																				
92	Telecom	60 days	Sun 11/01/15	Sun 22/03/15	0	0%	0																				
93	Excavation	45 days	Sun 11/01/15	Wed 04/03/15	0	0%	0																				
94	JC9	30 days	Sun 15/02/15	Sun 22/03/15	0	0%	0																				
95	CCTV Surveillance	65 days	Sun 11/01/15	Sat 28/03/15	0	0%	0																				
96	Cabling	45 days	Sun 11/01/15	Wed 04/03/15	0	0%	0																				
97	Equipment	30 days	Sat 21/02/15	Sat 28/03/15	0	0%	0																				
98	General Cleaning	50 days	Sun 22/03/15	Tue 19/05/15	0	0%	0																				
99	Testing Commissioning	46 days	Tue 07/04/15	Sun 31/05/15	0	0%	0																				
100	Finish	0 days	Sun 31/05/15	Sun 31/05/15	0	0%	0																				



Appendix J

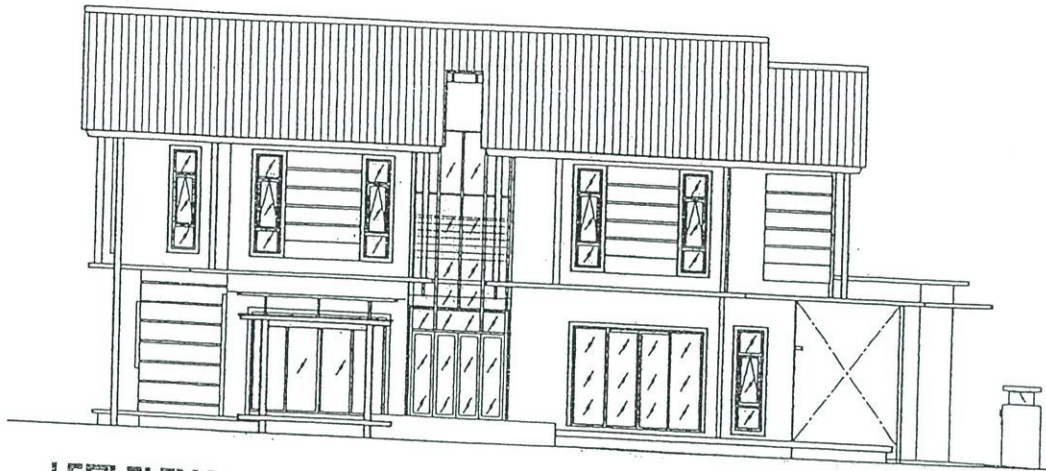
Glass Canopy - Wakaf

Update: 4/5/2015

Plot	Structure	Painting	Glass	
PT1581	X	X	X	V.O
PT1582	X	X	X	V.O
PT1583	X	X	X	V.O
PT1584	√	√	√	
PT1585	√	√	√	
PT1586	√	√	√	
PT1587	√	√	X	
PT1588	√	√	X	
PT1589	X	X	X	V.O
PT1590	X	X	X	V.O
PT1591	X	X	X	V.O
PT1592	X	X	X	V.O
PT1593	X	X	X	V.O
PT1594	X	X	X	V.O
PT1595	X	X	X	V.O
PT1745	X	X	X	
PT1746	X	X	X	V.O
PT1747	X	X	X	V.O
PT1748	X	X	X	V.O
PT1749	X	X	X	V.O
PT1750	√	√	√	
Percentage				

Appendix K

Appendix L



LEFT ELEVATION



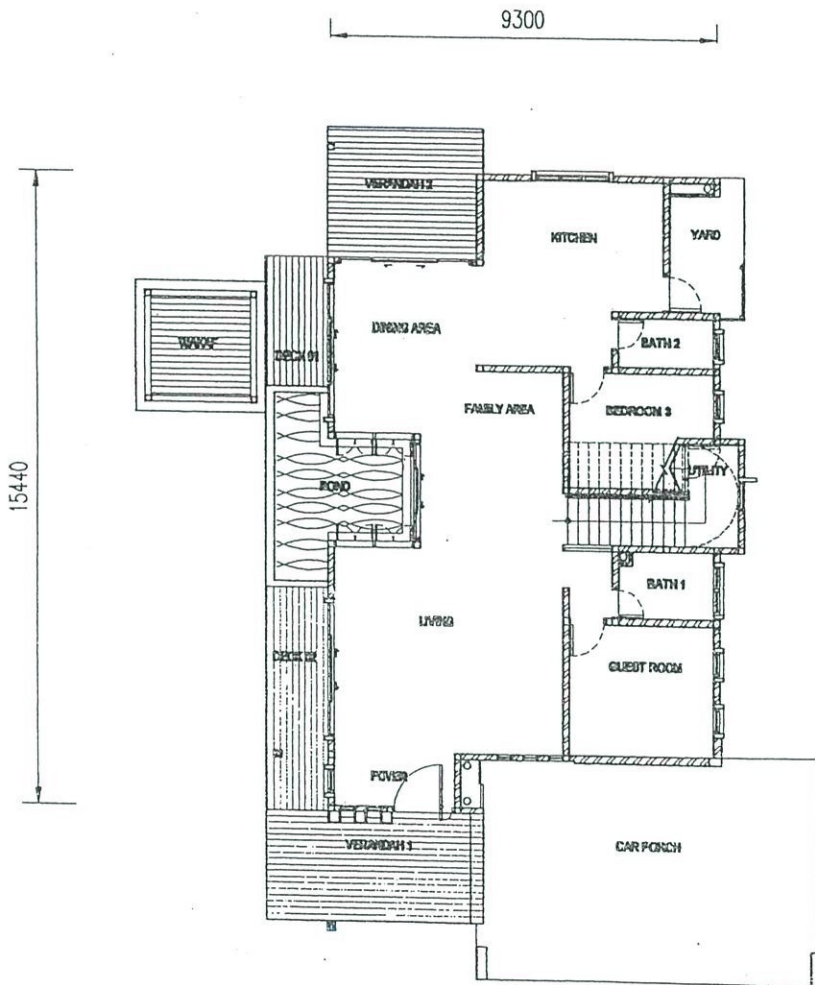
RIGHT ELEVATION

LAKEHOME TYPE A

LOT NO : PT 1581, PT 1582, PT 1583, PT 1584,
PT 1585, PT 1586, PT 1587, PT 1588



DARULAMAN REALTY SDN BHD.
LOT 4, DINDING DAMAI, JAMAR, P.O. BOX 91,
62007 JYTA, NEGARA BRUNEI DARUSSALAM.
TEL: 22-8171922 FAX: 22-8772022



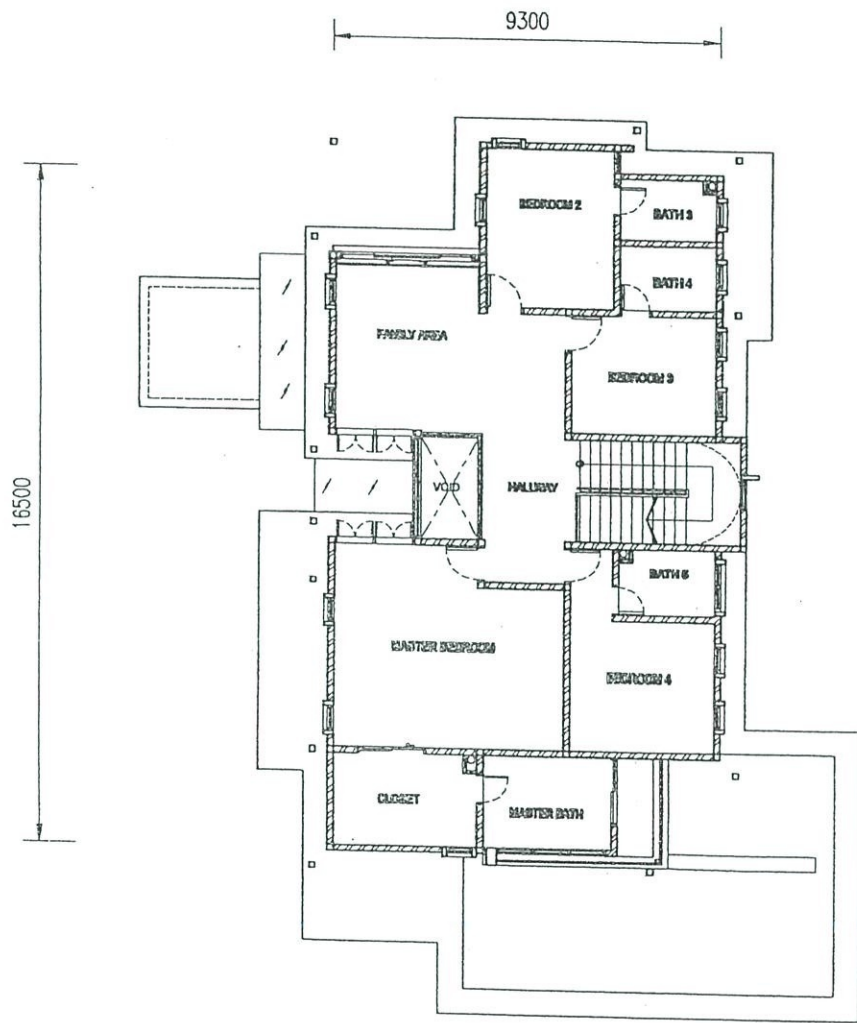
GROUND FLOOR PLAN

LAKEHOME TYPE A

LOT NO : PT 1581, PT 1582, PT 1583, PT 1584,
PT 1585, PT 1586, PT 1587, PT 1588



DARULAMAN REALTY SDN BHD.
LOT 1, BUKIT DUA, JALAN, P.O. BOX 12,
GAGAI 2790, KEDAH MALAYSIA.
TEL: 04-8712522 FAX: 04-8712527

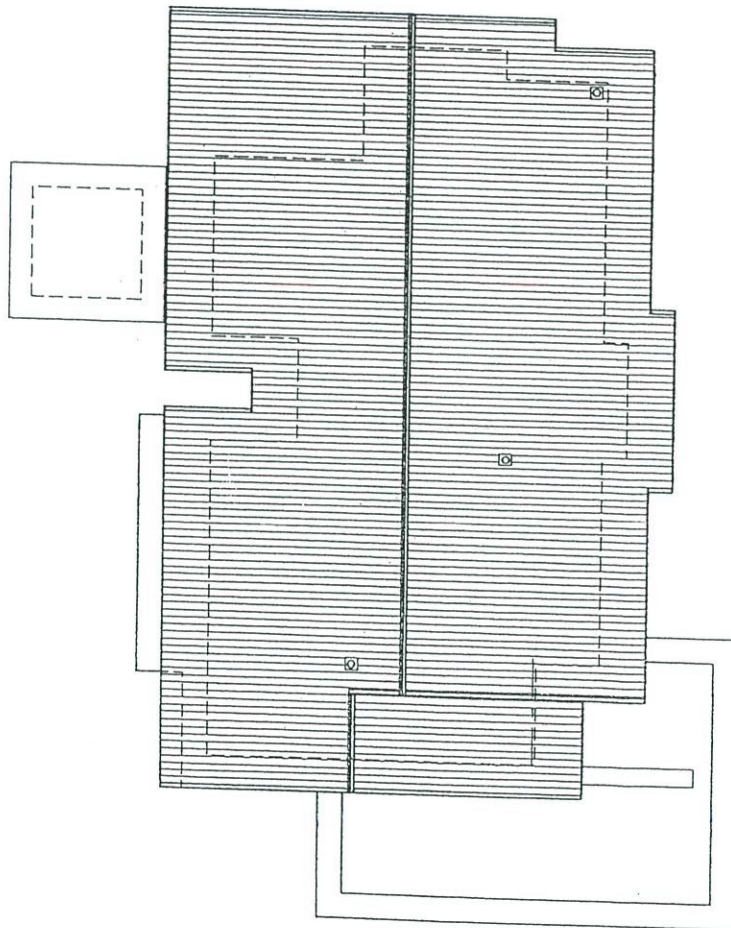


FIRST FLOOR PLAN

LAKEHOME TYPE A
 LOT NO : PT 1581, PT 1582, PT 1583, PT 1584,
 PT 1585, PT 1586, PT 1587, PT 1588



DARULAMAN REALTY SONBER ID.
 LOT 1, BUKIT DARULAMAN, P.O. BOX 15,
 KEDAH JETIAH, KEDAH DARULAMAN
 TEL: 04-9111222 FAX: 04-9172337



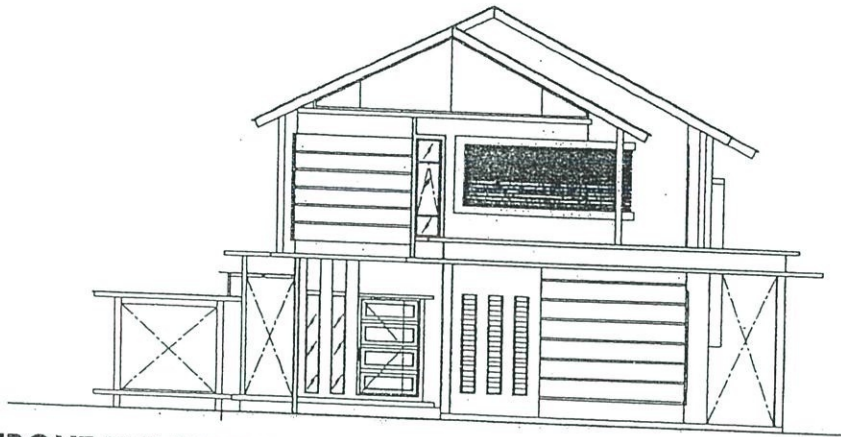
ROOF PLAN

LAKEHOME TYPE A

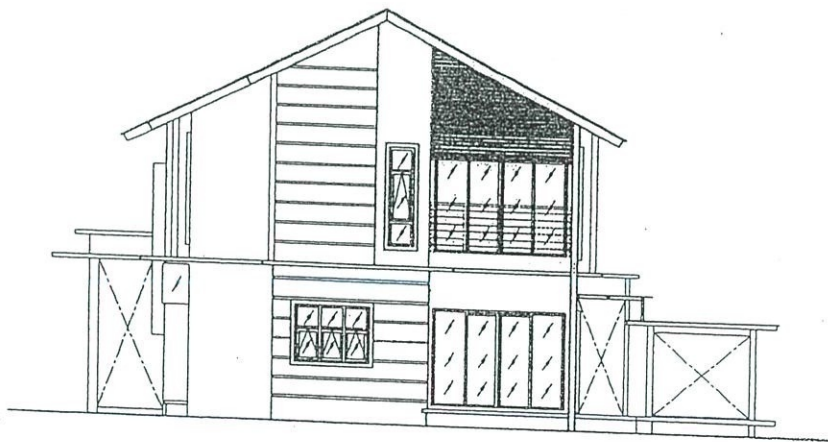
LOT NO : PT 1581, PT 1582, PT 1583, PT 1584,
PT 1585, PT 1586, PT 1587, PT 1588



DARULAMAN REALTY BDN. SDN. BHD.
LOT 1, BANGUN DARI, JENAR, P.O. BOX 62
DISTRICT ATTRA, DEKAMUNDA, JENAR
TEL : 04 - 9179622 FAX : 04 - 9179621



FRONT ELEVATION



REAR ELEVATION

LAKEHOME TYPE A

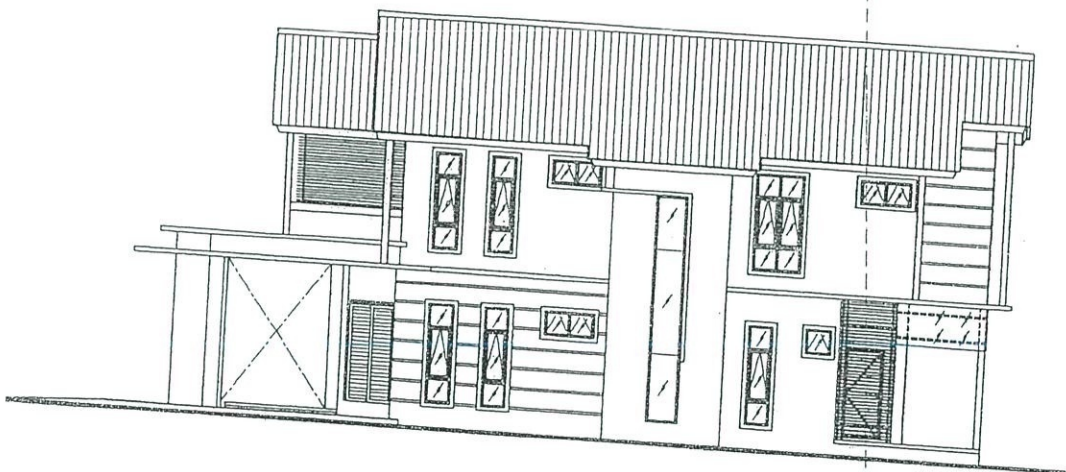
LOT NO : PT 1581, PT 1582, PT 1583, PT 1584,
PT 1585, PT 1586, PT 1587, PT 1588



DARULAMAN REALTY SDN.BHD.
LOT 1, BUKIT DARI, AMAN, P.O. BOX 12,
JENAY JAYA, NEGARA SELANGOR,
TEL: 03-87111111 FAX: 03-87111111



LEFT ELEVATION



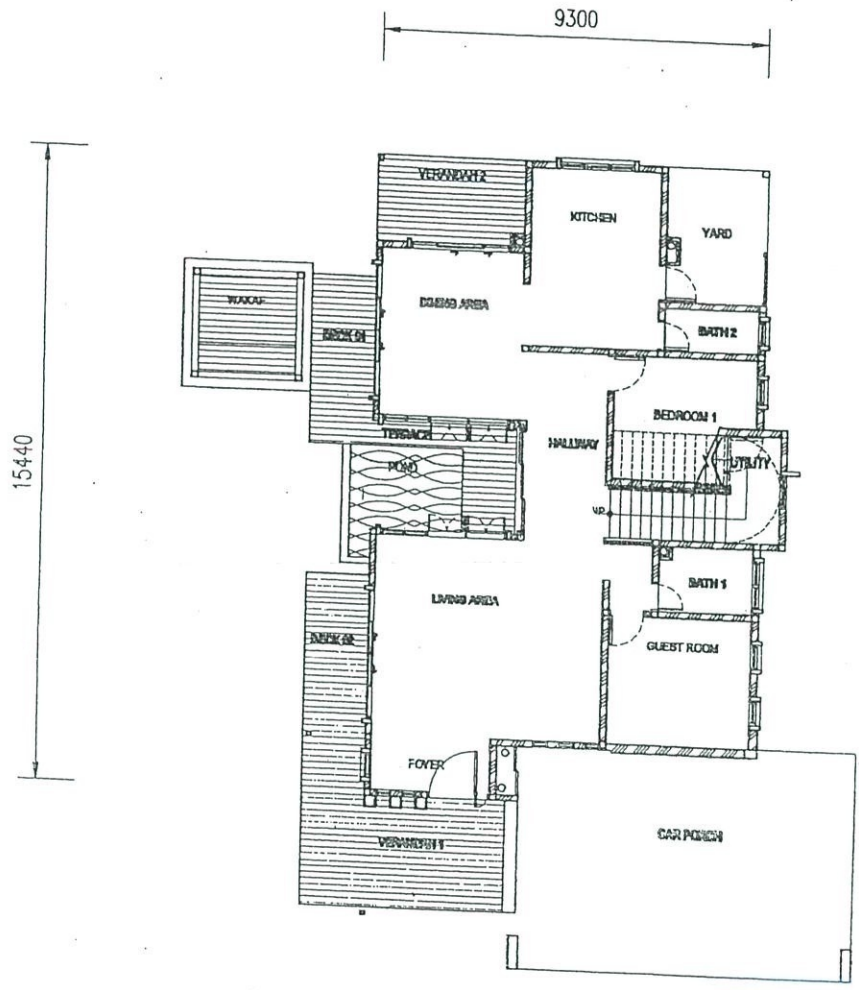
RIGHT ELEVATION

LAKEHOME TYPE B

LOT NO : PT 1589, PT 1590, PT 1591,
PT 1592, PT 1593, PT 1594, PT 1595, PT 1745,
PT 1746, PT 1747, PT 1748, PT 1749, PT 1750



DARULAMAN REALTY SDN. BHD.
LOT 1, BANGSA DARULAMAN, P.O. BOX 12,
09001 Jitra, Kedah Darul Aman
TEL. 04-9171602 FAX 04-9172537

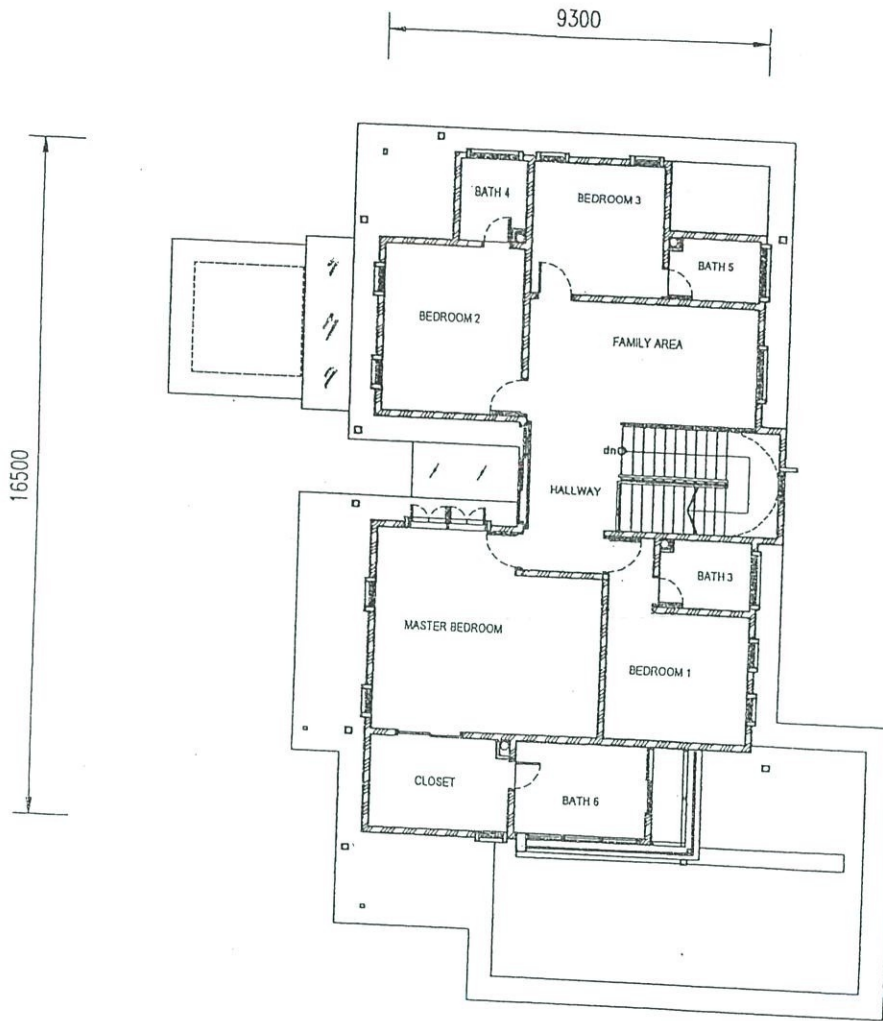


GROUND FLOOR PLAN

LAKEHOME TYPE B

LOT NO : PT 1589, PT 1590, PT 1591,
 PT 1592, PT 1593, PT 1594, PT 1595, PT 1745,
 PT 1746, PT 1747, PT 1748, PT 1749, PT 1750

DARULAMAN REALTY SDN.BHD.
 LOT 1, BANDAR DAMAI, AMAN, P.O. BOX 12,
 05057 SITKA, KEDAH DARULAMAN
 TEL: 04-9771002 FAX: 04-977022

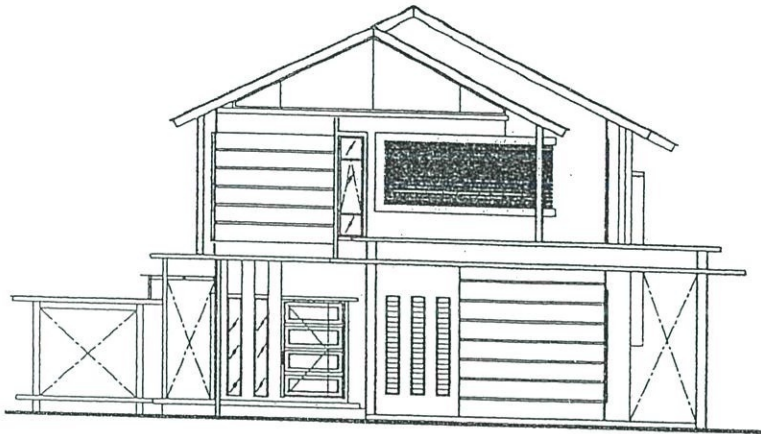


FIRST FLOOR PLAN

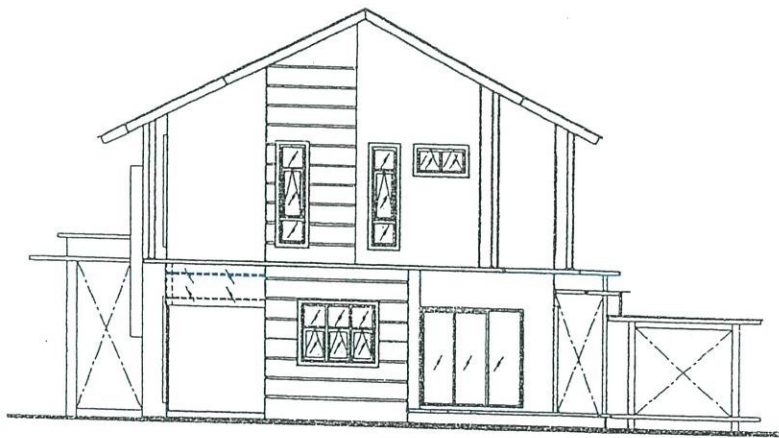
LAKEHOME TYPE B

LOT NO : PT 1589, PT 1590, PT 1591,
 PT 1592, PT 1593, PT 1594, PT 1595, PT 1745,
 PT 1746, PT 1747, PT 1748, PT 1749, PT 1750


 DARULAMAN REALTY SDN. BHD.
 LOT 1, BANDAR DARULAMAN, P.O. BOX 12,
 06007 Jitra, Kedah Darul Aman.
 TEL: 04-9171602 FAX: 04-9173037



FRONT ELEVATION



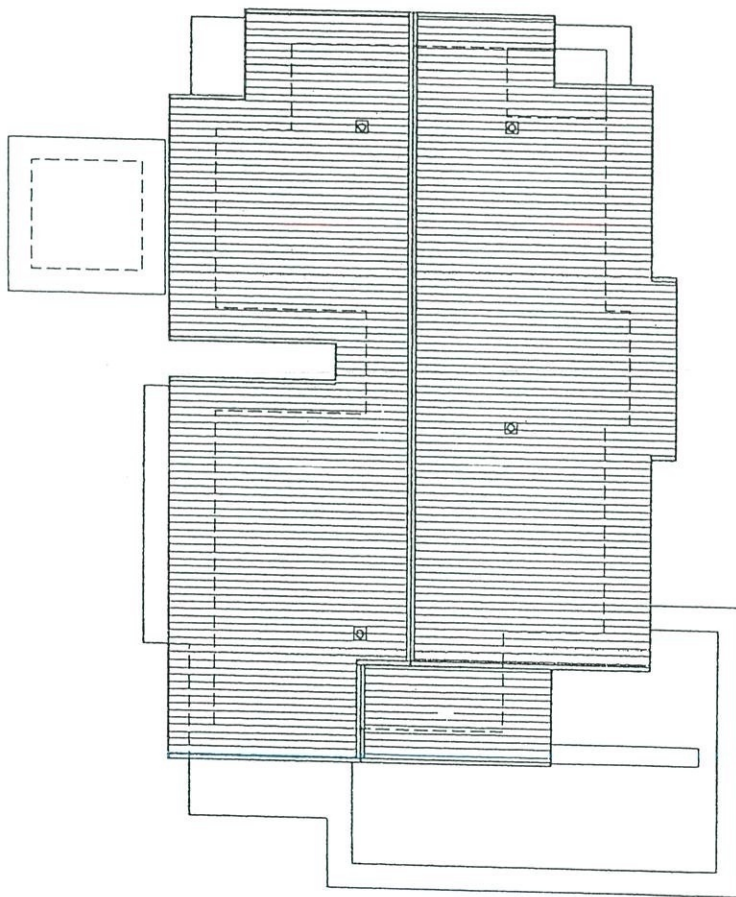
REAR ELEVATION

LAKEHOME TYPE B

LOT NO : PT 1589, PT 1590, PT 1591,
PT 1592, PT 1593, PT 1594, PT 1595, PT 1745,
PT 1746, PT 1747, PT 1748, PT 1749, PT 1750



DARULAMAN REALTY SDN BHD
LOT 1, BANGKAR DARULAMAN, ALOR SETAR, PERAK, MALAYSIA
30000 ALOR SETAR, PERAK, MALAYSIA
TEL: 04-9171822 FAX: 04-9172297



ROOF PLAN

LAKEHOME TYPE B

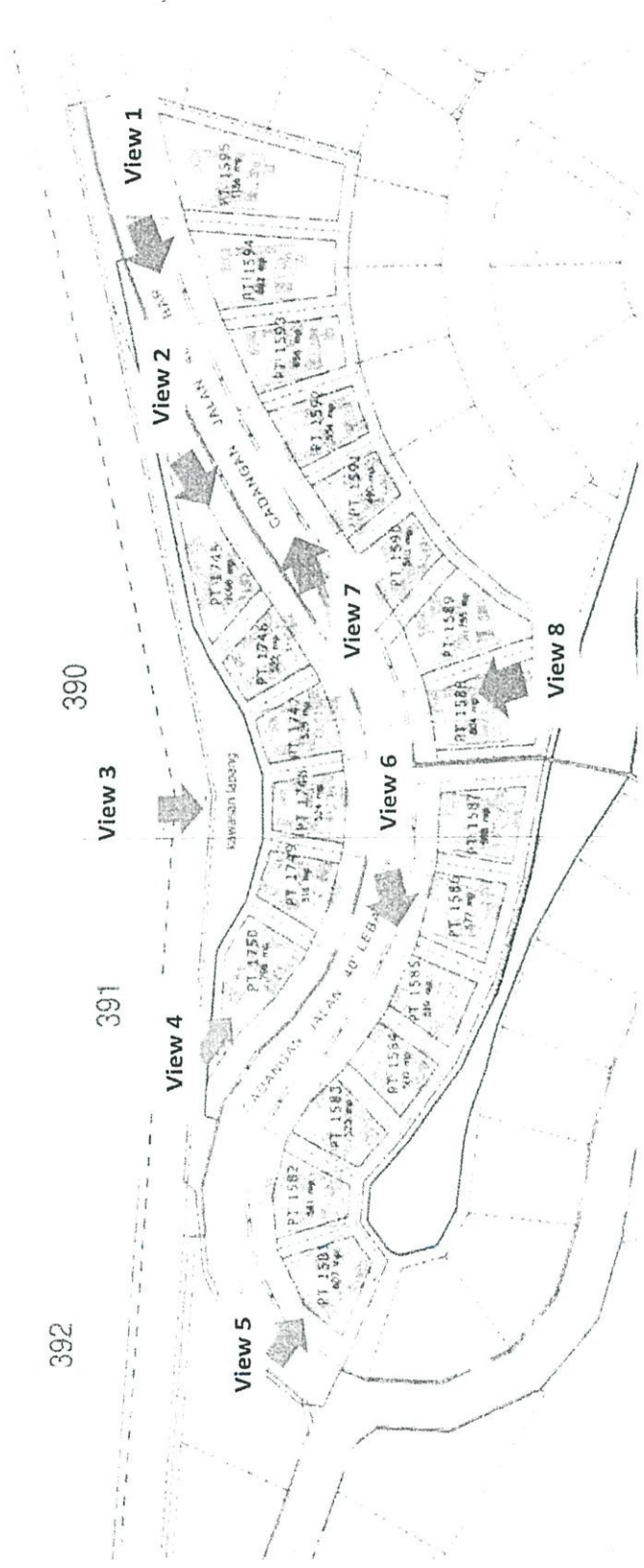
LOT NO : PT 1589, PT 1590, PT 1591,
PT 1592, PT 1593, PT 1594, PT 1595, PT 1745,
PT 1746, PT 1747, PT 1748, PT 1749, PT 1750



DARULAMAN REALTY SDN BHD
LOT 1, BANDAR DUNIA, AMAK, P.O. BOX 12,
GROUPT JAYRA, NEGAIAN ORKLA, 80101
TEL: 04-9771802 FAX: 04-9771857

Appendix M

**Layout Plan 21
Unit LakeHome 2**



Appendix N

PROJECT : CADANGAN PEMBANGUNAN DARULAMAN LAKEHOME 2, BANDAR DARULAMAN, DAERAH KUBANG PASU, KEDAH DARULAMAN

UPDATE PROGRESS: 31-MAR-15

TASK	DATE START															
	1581/A	1582/A	1583/A	1584/A	1585/A	1586/A	1587/A	1588/A	1589/B	1590/B	1591/B	1592/B	1593/B	1598/B	1599/B	1600/B
37 METER STAND	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
36 GLASS RAILING	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
35 GUTTER AT POND	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
34 S-STEEL RAILING	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
33 SUN LOUVERS	100%	80%	100%	100%	100%	100%	100%	100%	50%	100%	100%	100%	100%	100%	100%	100%
32 GLASS CANOPY	50%	50%	50%	50%	50%	50%	50%	50%	50%	50%	20%	20%	50%	50%	60%	100%
31 BRICK FENCING	100%	95%	90%	90%	90%	90%	90%	90%	70%	60%	50%	50%	50%	50%	50%	90%
30 ROAD WORKS	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%	40%
29 COMPARTMENT	100%	80%	80%	80%	80%	80%	80%	80%	80%	60%	60%	50%	50%	50%	80%	80%
28 HOUSE MANHOLE	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
27 SUB SOIL DRAIN	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
26 JC9 (TELECOM)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
25 WATER REC. (M.S)	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
24 CONCRETE IMPRINT	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
23 ROAD SITE DRAIN	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
22 SEWERAGE PIPE	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
21 PLUMBING FITTING	100%	60%	60%	60%	60%	60%	60%	60%	40%	40%	40%	5%	5%	5%	60%	100%
20 ELECTRICAL FITTING	100%	50%	100%	100%	100%	100%	100%	90%	90%	95%	95%	100%	100%	100%	80%	100%
19 WINDOW LEAF	100%	95%	95%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
18 DOOR LEAF	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
17 PAINTING	100%	85%	85%	85%	85%	85%	85%	75%	70%	70%	70%	70%	70%	70%	70%	85%
16 FLOOR TILE	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
15 WALL TILING	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
14 WATERPROOFING	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
13 CEILING	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
12 ROOF	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
11 PLASTERING	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
10 M&E CONDUIT	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
9 WINDOW FRAME	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
8 BRICK WORK	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
7 ROOF BEAM	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
6 1ST COLUMN	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
5 1ST SLAB & BEAM	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
4 GROUND COLUMN	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
3 GROUND SLAB	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
2 GROUND BEAM	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
1 PILE CAP	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
TYPE/PLOT	1581/A	1582/A	1583/A	1584/A	1585/A	1586/A	1587/A	1588/A	1589/B	1590/B	1591/B	1592/B	1593/B	1598/B	1599/B	1600/B