

## Project Plan Report

### M/32 Terrace Homes Project Plan



Edith Cowan University

School of Engineering

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Name	Student ID	Contribution
Syed Ismail Hussain Shah	10502143	20%
Ali Haider	10528749	20%
Muhammad Ali	10522543	20%
Syed Ramish Kazmi	10521915	20%
Haris Sohail	10521888	20%

## **Executive Summary**

This project plan provides a vivid description of the proposed M/32 Terrace Homes project in North Coogee, which entails the development of 23 contemporary three-storey terrace home offerings for residential purposes. The project is located in 500m from the beach at the visionary Shoreline Precinct within the parkland landscape. The project plan also includes the development of shops, schools, cafes, as well as public open spaces, which will be used by communities at the coastal place. To achieve the objective of this report, various tools including work breakdown structure (WBS), PERT charts, Gantt charts, cost analysis and management methods are employed. The first part, which explores the current practices and specifics, further discusses the project's introduction and execution strategy. The project's summary, purpose, importance, cost, timetable, and anticipated results are all covered in the second section.

The WBS and six key project deliverables (pre-construction, initial works, sub-structure, super structure, MEP work, and finishes) are included in the third section's in-depth examination. This construction is expected to be completed in approximately 260-day. The total cost of the project has been estimated at \$1,593,072 AUD. Additionally, Gantt charts and PERT charts were utilized to show the project's risk assessment, minimal time need, and overall expected length. Standard procedures, innovation, and approaches for project management were covered in the fourth segment.

A project conclusion and recommendation are presented in the fifth part of this study based on the methodology and details that were examined. The sixth and seventh parts of the project cover the difficulties encountered and professional competences attained during the drafting of the project plan. The implementation strategy for this project is described in terms of project planning practices and guidelines. Using Building Information Modeling (BIM) for

project planning can also be suggested as a successful project management method. Finally, as a group, we all affirmed that the report as a whole was produced by addressing the assigned project and demonstrating stage 1 capabilities as described in the Engineers Australia handbook.

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## **Introduction**

The main focus of this report is on the type D housing scheme, which is part of the M/32 Terrace Homes project in North Coogee. This report will specifically concentrate on the engineering management principles that were implemented to this project. Engineering management can be described as a methodical strategy for finishing engineering projects that employs strategies and procedures to produce the best outcomes. The organizational and management practices used by large and mid-sized engineering businesses are examined in this paper. The proposed project plan for this study's analysis is the building of homes. The group was selected for the task by imagining themselves as representatives of a young engineering team that supervises or manages the building of apartments. This project management is grounded in four essential ideas: creativity, accountability, excellence, and decency.

The report describes the project's scope, work plan, inclusion and exclusion, as well as the premises that were used to develop the project plan. The explanation of the different charts that were used in the report to convey crucial information comes next. Among the graphs and figures looked at are the Work Breakdown Structure (WBS), Gantt chart, PERT, and resource estimation tables. The next section will look at cutting-edge project management techniques and engineering best practices to assist businesses in successfully completing projects. The report's findings are then summarized, and non-binding recommendations are given to assist direct future efforts. A project charter is provided in the appendix to aid in determining and controlling risks all through the project because impacts might come from a variety of sources.

## Project Description

### Project Overview

This study is focused on the planned M/32 Terrace dwelling type D housing apartment's project execution plan, which is situated on Benella Lane. The M/32 Terrace apartments will be constructed in North Coogee, Anchorage Drive, Western Australia by March 2023. This apartment building contains 23 residential homes. The project plan for the construction of a type D M/32 residential housing program is also proposed in this report. Currently, the residential part of the project has been completed and the commercial part, which will include shops, cafes, offices, and spaces for public use are underway (Mgroup, 2022).



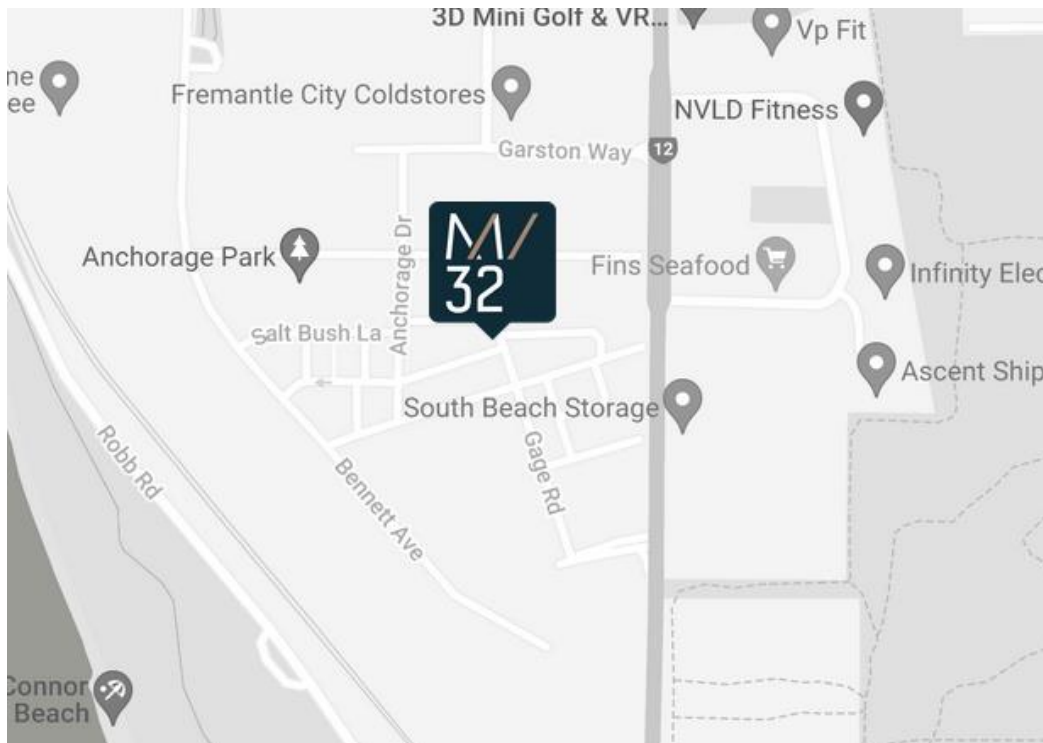
*Figure 1: A proposed view of M/32 housing scheme (Mgroup, 2022)*

The development of the houses is in such that each house will have three bathrooms, three bedrooms, a roof terrace, two garages, as well as other amenities, which will attract people to the homes.

### Purpose and Need

The objective of the project is to build a superior family home that will blend in with the neighborhood's architectural design. This will boost the worth of the nearby land and provide the

area more incentive to develop more housing. A high-quality home will help enhance the business's standing as a home builder, bringing in more customers. Along the edge of the river, the planned M/32 homes will be constructed. It will increase the artistic appeal of the housing plan. (Hekkert & Leder, 2008)



*Figure 2: Proposed location of the project (Mgroup, 2022)*

### **Business Drivers and Significance**

Two parties are often considered to be stakeholders. Specifically, the parties involved are the contractor and the client. The customer's party has designated a licensed engineer to function as the project's advisor and to evaluate the status and caliber of the building work. Added more architectural plans to improve visual value (Wrike, 2022). Award-winning chartered architect David Barr has already been selected to serve as the project's principal architect. The contractors' party consists of subcontractors for sewage, electrical installation, gardening, railing, and other

services. A possible third party in the approval procedure may be the government authorities (Wrike, 2022)

### **Costs and Benefits**

Based on the Mgroup (2022) website, a minimum of \$695,000 will be used as the selling price for a dwelling. If 4 dwellings are expected to cost approximately \$1,593,072, then it is possible that one dwelling will cost approximately \$398,000. This will result to a profit of approximately \$297,000 being achieved. Other costs are provided in table 1.

<b>Activities</b>	<b>Cost in \$</b>
Pre-construction	393,000
Preliminaries	32,000
Substructure	33,400
Superstructure and structural works	951,000
MEP Works	95,250
Finishing	156,050
Landscaping	87,500

*Table 1: estimated project cost.*

### **Implementation Methods**

From complete project anarchy to a stable, dependable project management environment, the whole project management methodology process of implementation is a lengthy endeavor. The customer has received a project execution plan, together with the associated fees. The initial phases of the project will involve building work that is done in compliance with established method statements (Rasnacis & Berzisa, 2017). Following the award, the assessor will assess the contractor. The total cost of the project is split into two sections. Each step is divided into a



number of phases, and the customer is liable for paying when each one is finished. If the project is pushed back as a result of the contractor's irresponsibility, the customers are entitled to demand a certain share from them (Rasnacis & Berzisa, 2017).

### **Project Timeline**

One of the most important parts of the project is the development schedule that is established when development on it starts. This kind of timeline is meant to make it easier to see the schedules for building on commercial or residential projects (Chai & Brush, 2022). The beginning of construction, conclusion of site installation, completion of foundation, conclusion of superstructure, conclusion of MEP works, conclusion of finishing work, and handing over are the crucial seven milestones that serve as a representation of the project's timetable. These benchmarks can be employed to evaluate both the cash flow and the state of the project. The project overview is given in the appendices section as a PERT activities chart that depicts the project's anticipated length. The Gantt chart that shows the project's overall duration, also includes the Work Breakdown Structure. The construction project is anticipated to be finished in 256 days, starting on Sept 12, 2021, and finishing on February 23, 2022 (Chai & Brush, 2022).

The cutoff date is in February 2022. The proposed schedule calls for a 44-day preparatory phase and a 26-day substructure phase. The estimated duration of construction is 135 days. The next step is to construct the superstructure within the limitations of 63 days. It will take up to 15 days to complete the roof slab, and less than a week to complete the basic structure. There have been 256 days. Together, the electrical and plumbing work are finished at every level of the project. Subcontractors are accountable for making frequent site visits and finishing tasks. The operator has the power to ask for an extension in the event of bad weather (Davis, 2021).

## **Requirements**

To properly complete the project, everyone who is involved as a stakeholder must offer everything they have. Stakeholders are regarded as important part of the project mainly because they help provide ideas, as well as other resources such as finances that are required to complete the project on time. It is important to ensure that all the materials and funds are provided beforehand to prevent project delays.

## **Project Outcome**

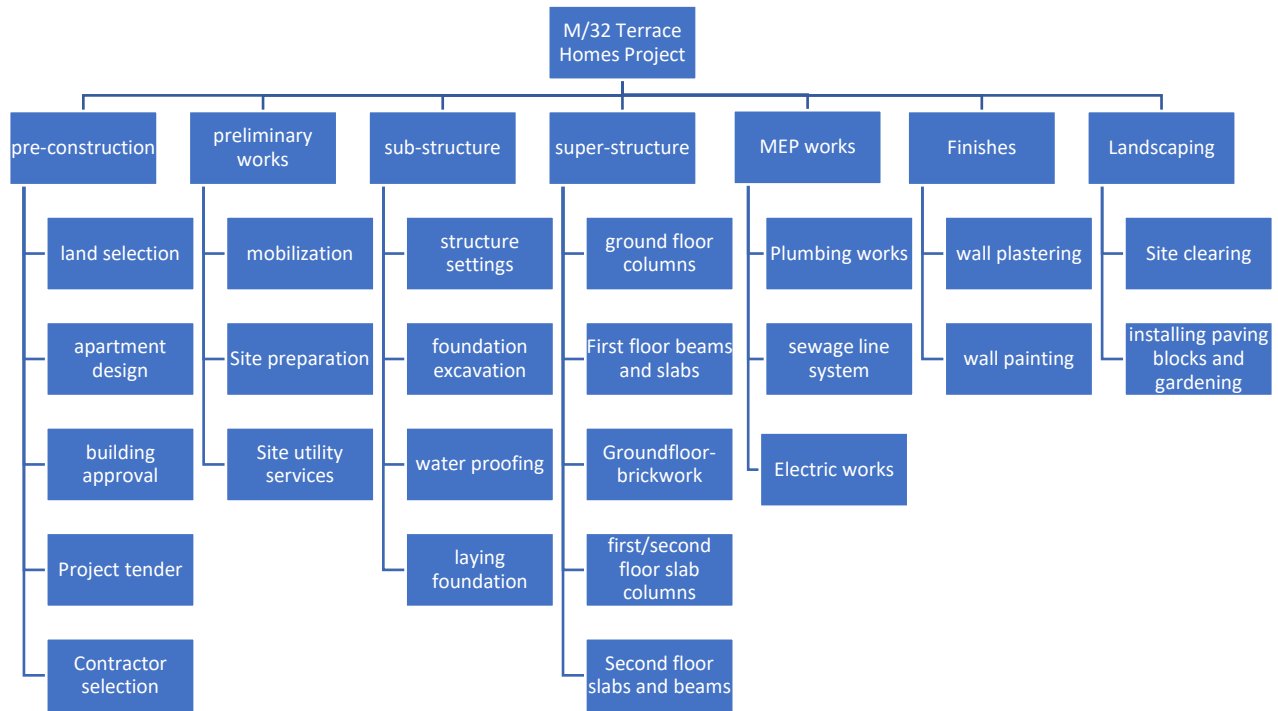
The project will be completed with successful construction of a home. The project comprises several aspects of building apartments, such as the foundation, framework, installation of flooring and walls the exterior of the house, and the last phase of development, which involves certification and cleaning along with the finishing of the landscaping.

## **Charts Analysis**

Various charts have been used in this project to analyse various aspects. These include Gantt chart, PERT chart, and other tools.

## **Work Breakdown Structure (WBS)**

To accomplish the project's goals and create the required deliverables, the development team must complete a sequential deconstruction of the entire scope of work known as WBS. The WBS for this project is broken down into three levels: tier 1, tier 2, and tier 3. The development of a 2 M/32type D, 3 storey building is described as the project's entire accomplishment in the first phase. The initial work, foundation, superstructure, MEP works, finishing works, and landscape works are some of the important elements. The level two stage contains a description of the six deliverables for this project. At the level 3 stage, each project task's needs were identified as a sub-task of the main project deliverable. The project's WBS is provided in figure 3.



**Figure 3: Work Breakdown Structure for the project**

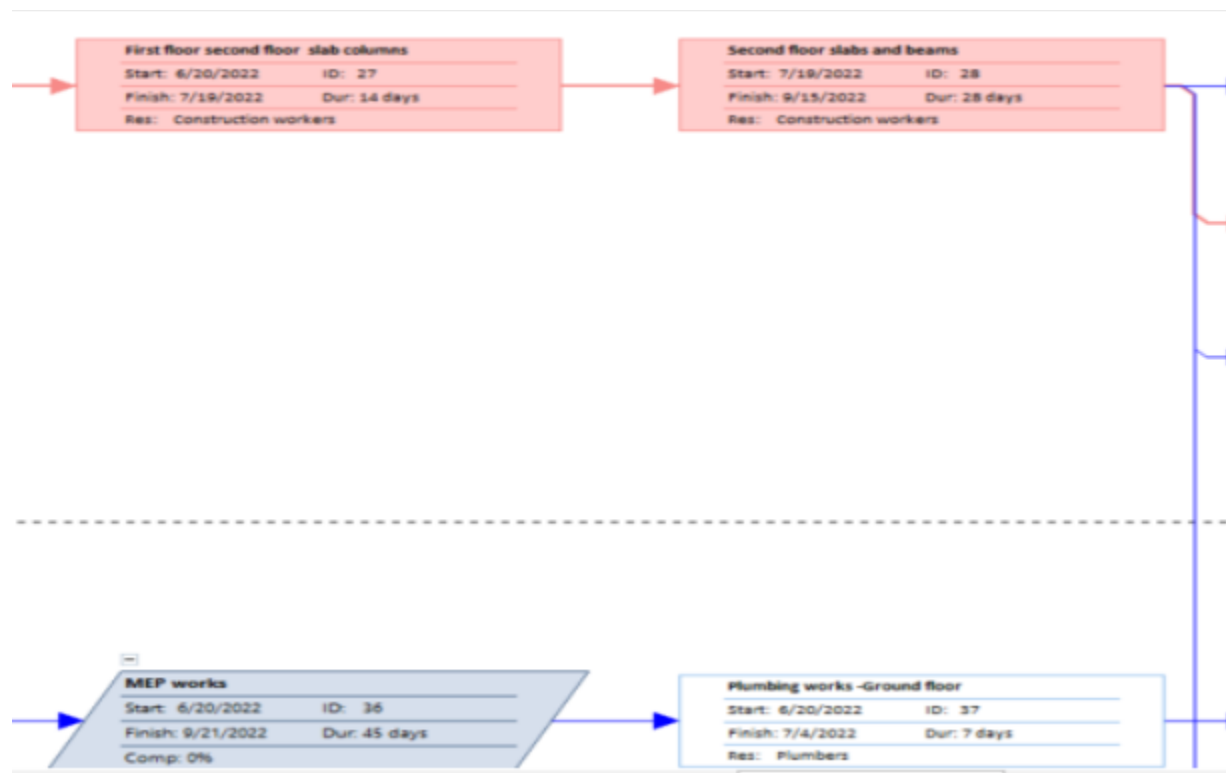
**Gantt Chart**

As a tool for project management, a Gantt Chart is a timetable that shows how the project will proceed. This gives a timeline for the entire project and lists all dependent and independent tasks. The essential path for the project is indicated in red, and the graphic shows stages such as preliminaries, pre-construction, substructure construction, superstructure construction, MEP works completion, finishing works completion, and final landscaping work. These are the same stages that are provided in the WBS provided in figure 3. The project's six primary deliverables are also given the summary tasks as shown in Appendix 1.

**PERT Analysis**

PERT has emerged as one of the best tools, which are employed by project managers to schedule, coordinate, organize, and even estimate project tasks. The bare minimum time needed

to complete this task can be calculated using the chart below. This chart can be used to investigate task correlations in addition to the dangers associated with specific tasks. By eliminating bottlenecks, this also guarantees that the project's scope was properly determined in conformity with the project's needs. The floating time for various project tasks is displayed figure 4. In Appendix 2, critical tasks are emphasized in red while non-critical tasks are emphasized in blue.



**Figure 4: Sample PERT chart for the project**

The second-story slabs and beams must be started once the first and second floor columns are finished. These two are therefore on the vital path. All of the aforementioned obligations cannot be put off.

## **Engineering and Project Management Approaches Discussion**

The effective operation of a project's budget, performance, scale, and function is the emphasis of the specialist service known as construction project management. By utilizing project management techniques, managers should concentrate on the timely and effective completion of the building project. At various phases of the project, such as the planning phase, the executing phase, the controlling phase, and the project closing phase, project management strategies will be needed. Consequently, the next section describes project management procedures.

### **Engineering Best Practices**

#### ***PERT***

In the 1950s, the US Navy created the Project Evaluation Review Technique (PERT) to oversee the submarine missile program for Polaris. PERT allows for the grouping of tasks according to time priority. Where the system aids in the scheduling and organization of tasks for a specific project. PERT also allows for the tracking of activity progress (Chai & Brush, 2022). Due to PERT's emphasis on time frame for specific tasks, administrators will be able to recognize crucial activities, concentrate on budget and job delegation possibilities, and more. Irrespective of how positive or negative it is, estimation is a crucial component of every project. However, implementing a PERT can produce encouraging estimation results.

#### ***Benefits and Drawbacks of PERT***

Some of the benefits of this tool include:

- It allows the maximization of resources
- Projects can be arranged in a manner that is manageable
- Scheduling the project is possible despite the lack of data from the previous schedule.
- This tool enables activities and deadlines to be forecasted realistically.

Some of the drawbacks of this tool are:

This tool can be difficult to implement in projects that are complex.

It is difficult to modify, update and even maintain this tool.

Only experienced personnel are capable of using this tool effectively.

### ***Critical Path Method (CPM)***

The critical path method (CPM) is a resource-efficient scheduling technique for project activities (East, 2015). The following qualities would be necessary for the CPM to construct the model. Some characteristics of this tool include the following:

- All tasks play a significant role in the completion of the project
- Interconnected and interdependence of each action
- Each activity in the project has a certain duration.

With this knowledge, CPM would be able to pinpoint the critical activities, which would comprise the steps that would have the biggest influence on the project's success. The projects' critical path activities are those that cannot be postponed since they directly affect when the project will be finished. The entire operation will be delayed if a crucial task is postponed.

Therefore, CPM would offer a critical path that contained important tasks, enabling management to plan work flow without endangering the project's deadline. Additionally, it is possible to identify which tasks must be given greater priority and which are crucial using this strategy.

With the help of this technique, responsibilities can be delegated promptly and resources can be used effectively to wastage of resources. Some of the benefits of CPM include:

- Visual interpretation
- The ability to identify activities with a greater impact of the project's success.

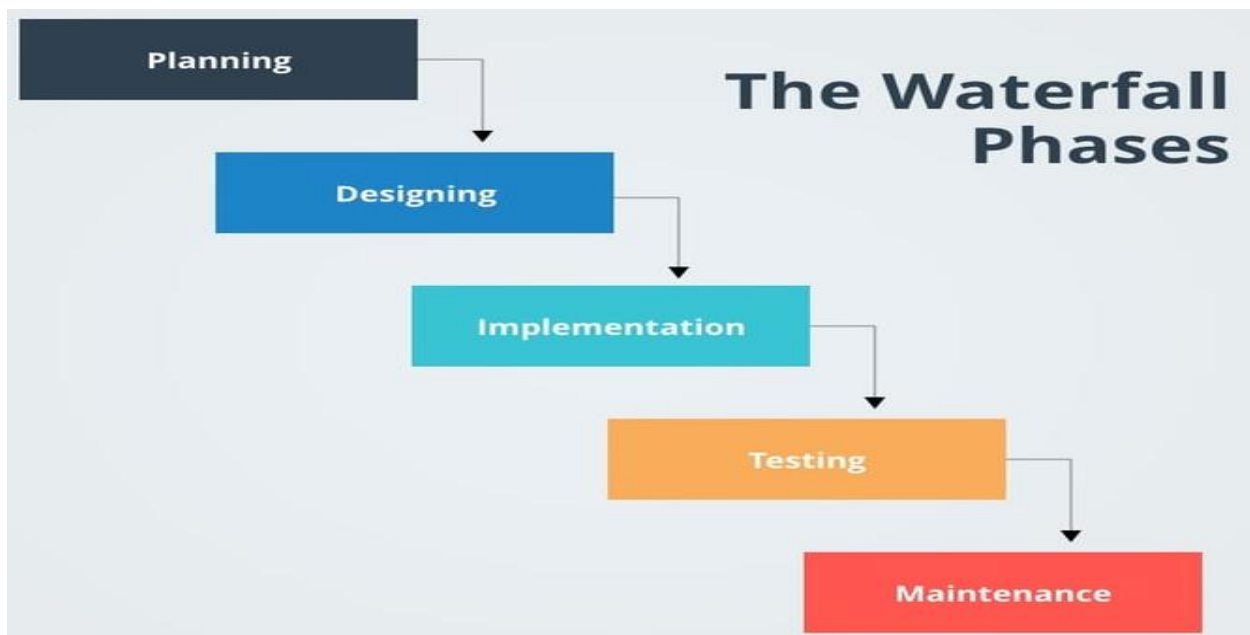
- Easier to identify both conflicts and delays in the project.
- It makes the use of tools such as MS project easy to use in a project management.

However, there are some disadvantages of this tools, which include the following.

- CPM is mostly employed by more qualified personnel.
- The development of a critical path can be time demanding.

### ***Waterfall Method***

Using the waterfall project management method, a project is divided into stages that are completed one at a time. This strategy is also sequential and linear, which makes it simpler for the audience to comprehend (Dillon, 2021). This strategy requires that one work be finished before proceeding on to the next. The following is a list of steps that must be taken while using the waterfall method of project management.



***Figure 5: Waterfall model of project management (Dillon, 2021)***

Some of the advantages of Waterfall method include:

- It requires project documentation to be done during the beginning of the project.
- Tasks are effectively designated to teams since knowledge is shared at the beginning of the project.
- It helps to reduce inputs that are required from different stakeholders as the project progresses since all the requirements are provided at the initial stages of the project.
- It helps to make project evaluation easy mainly because each task has its own duration.

Some of the disadvantages of this method include:

- Making changes to the project can be significantly difficult.
- Errors can occur during the requirements especially since this is the phase that is more important.
- Postponement of one activity will require all other activities to be postponed.
- The system does very little to take unexpected issues into account.

### ***The Agile Method***

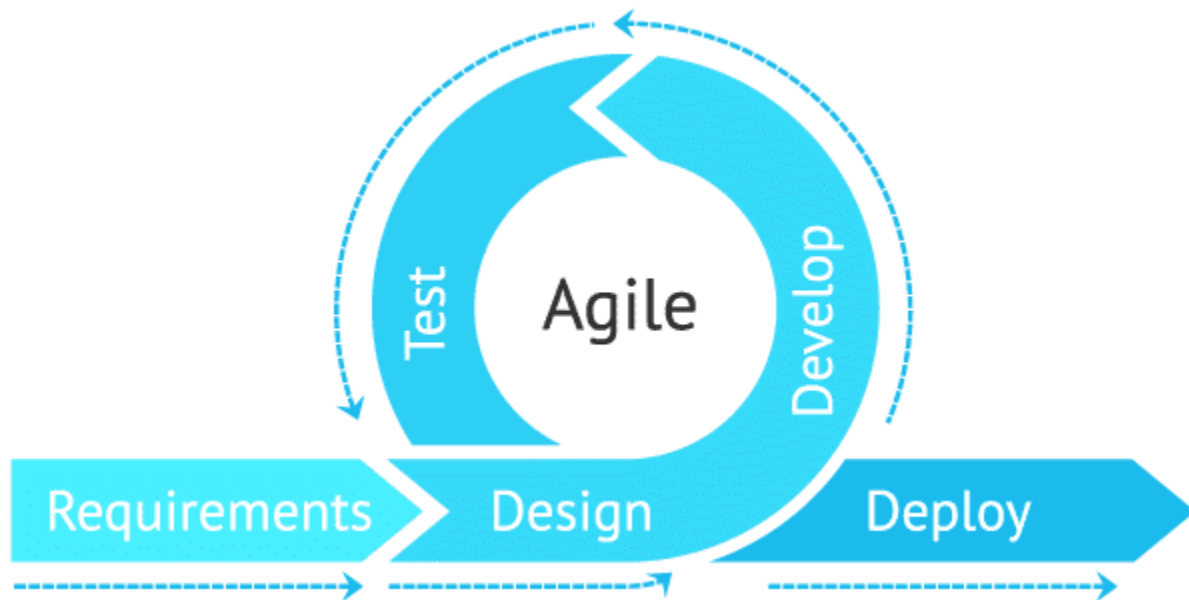
The agile project technique is a popular project management approach that emphasizes flexibility and brief iterative cycles (Layton, 2012). The four components of agile project management are as follows:

- Focuses on the interactions and individuals rather than instruments and processes.
- Relies on software-based applications and not extensive documentation.
- The project team collaborates mostly with the project client.
- This method is adaptive to change.

In order to provide results, agile methodology has been interpreted as a combination of a particular software approach and client collaboration. Additionally, frameworks like Scrum,



Kaizen, rapid application development, and adaptable project framework were developed in order to implement the agile project management technique. Agile method takes the following form.



*Figure 6: an example of agile methodology (Goff, 2022)*

Each framework is made to help the client understand the program's aims and objectives from the inside. The outcomes are reevaluated at the end of each iteration cycle in order to modify the deliverables so that they satisfy the client's requirements. Additionally, each framework is created with clients within the group in order to achieve the goals of the consumers.

### **Project Management and Innovative Engineering**

Making sure the building project is finished on time and at a professional level is the aim of project management. As a result, numerous strategies might be applied to achieve this objective. The aforementioned tactics are intended to help you reach your stated objective of customer happiness. Each plan would be centered on finishing the job and based on finishing the complete project within the predetermined time period without sacrificing quality. The use of a

method of project management would increase efficiency by regularly monitoring and improving each activity. Additionally, utilizing the performed plan, an evaluation is required to find the mistakes and make improvements in the project's subsequent stages. Therefore, team input and customer cooperation are crucial to the project's success.

It goes without saying that management techniques will help the management function succeed, but in a building project, new engineering will be needed to ensure the productivity and efficiency of the housing construction.

Additionally, modern technologies would reduce the amount of time needed for building while maintaining the level of craftsmanship. By studying the structure with the materials and forecasting the results before to the start of construction, structural analysis software would lower the risk of failure. In order to gather the needs of the client before the project begins, 3D visualization tools can be used to design 3D buildings and landscapes (Brock, 2018). Additionally, system frame would save time and money throughout the construction phase in comparison to conventional plywood molds. Saving both time and money is made possible by the system formwork's pre-designed construction, which just needs to be put together on the working site.

Utilizing such a material would be economical and environmentally responsible. In addition, modern concrete alternatives to traditional concrete solutions, such as waterproof cement, fiber cement, and coarse aggregates, could be used during the concreting process, giving the consumer the anticipated advantages (Bormann, Konig & Koch, 2018). To succeed in all activities and, ultimately, to please clients via timely, premium, and high-quality construction work, inventive design and project management must be employed in tandem in the construction industry.

## **Conclusion and Recommendation**

Ultimately, this document serves as an illustration of the planning and execution techniques used by a management team, demonstrating outstanding step-by-step approaches for exactly calculating the precise investments needed for a project. It was crucial to collect the data for this study in accordance with current project management best practices. The project's broad goals, deliverables, conditions, and boundaries were included in a thorough scope, along with information about how the program will advance the aims of the business. The six unique phases for the actual completion of the residential development are pre-construction, foundation, construction, completing works, MEP works, and landscape works, as illustrated in the WBS chart.

The expected lengths of the specific project package timelines for these different milestones were shown on the Gantt chart, which resulted in an overall project duration of 250–260 days. The PERT chart that was created from a Gantt chart, showed that following the checkpoints in the previously described order was the most effective strategy for finishing this project. This project's costs were estimated effectively; the total cost of the home construction project was anticipated to be \$1,593,072 after all work packages were combined together.

According to this report's suggestions, this junior management group could use new and improved techniques to increase the effectiveness, adaptability, and versatility of its current project administration procedures. Examples of these techniques include the use of prioritization diagrams, performance improvement processes, and BIM.

## **Challenges Faced**

In compliance with the task, prepare a report. The first difficulty we ran upon was a rubric. In order to develop a high-quality report, we must follow rules that are based on the task

that must be done. Important facts are simple to miss when writing a report. For the purpose of prevention Create headings and subheadings depending on the information you outlined for the essential points. Additionally, submit the report on time and ask each group member to review it. The same as with the challenge, it was discovered. Create subheadings and headings depending on the information you outlined for the essential points.

The second difficulty was distributing assignment work among group members equally based on their individual skill sets. Members would experience stress and produce ineffective reports as a result of an unequal workload distribution. In order to generate a high-quality output, the labor should be divided strategically and evenly, with individuals who are excellent in a particular area receiving that percentage. Consequently, it is recognized that evenly dispersed effort produces effective and high-quality output.

Project selection presented another difficulty because the report needed to include a thorough analysis of financial information, technical information, and project management approaches. As a result, sufficient data on the project scope should be collected to create an excellent report. In fact, the projects that contained the most information were chosen after being compared to the team and other projects with information. Prior to choosing, it was determined that each project needed to be carefully examined.

Choosing the right tools to prepare the report's content presented another issue. Because Microsoft Excel is typically used to construct Gantt charts, which is a laborious and unattractive process. Because of this, a precise and exact method was used to create the Gantt with Microsoft Project, which can also be used to perform various management tasks like resource allocation and work scheduling. As a consequence, it was determined that such a report would benefit from having software knowledge in a number of applications.

During the documentation process, specific data was acquired from the internet. Finding reliable and accurate information was therefore difficult. In actuality, information was gathered from reliable sources like books, respectable websites, and journal articles. As a result, in order to create high-quality report work, the significance of precise data and the procedure for find it was emphasized. The handling of scholarly research was another problem that arose while this study was being prepared. Since there was still to be accomplished on the other themes in addition to this one. In actuality, additional research beyond this report is required. As a result, each work was scheduled in a schedule and finished in the allocated amount of time.

#### **Demonstration of Engineers Australia Stage 1 Professional Competencies**

<b>Competency</b>	<b>Description</b>
PE 1.5 (Knowledge of contextual factors impacting the engineering discipline)	Application of engineering skills were learned while this task was being completed. The aforementioned competency is what project planning, resource allocation, and building projects management are based on.
PE 1.6 (Understanding of the scope, principles, norms, accountabilities and bounds of sustainable engineering practice in the engineering discipline)	This ability clarified the value of producing high-quality work that meets customer requirements. The construction sector needs to prioritize safety, integrity, standards, and sustainable engineering techniques in order to build a better culture. This also demonstrate how effectively building project management operates.
PE 2.4 (Application of systematic approaches to the	The project that had the most information available was carefully chosen in order to acquire this capability.

conduct and management of engineering projects)	To effectively finish this project, the tasks are then split and carefully segregated.
PE 3.4 (Professional use and management of information)	To develop this competency, research was done using accurate and trustworthy data that was gathered from reputable books, websites, and journal articles.  The references used throughout this investigation were noted using the APA 7th Version citation style.
PE 3.5 (Orderly management of self, and professional conduct)	Despite obstacles like resource shortages, time restraints, and a lack of project management expertise, the team was able to present a competent report.

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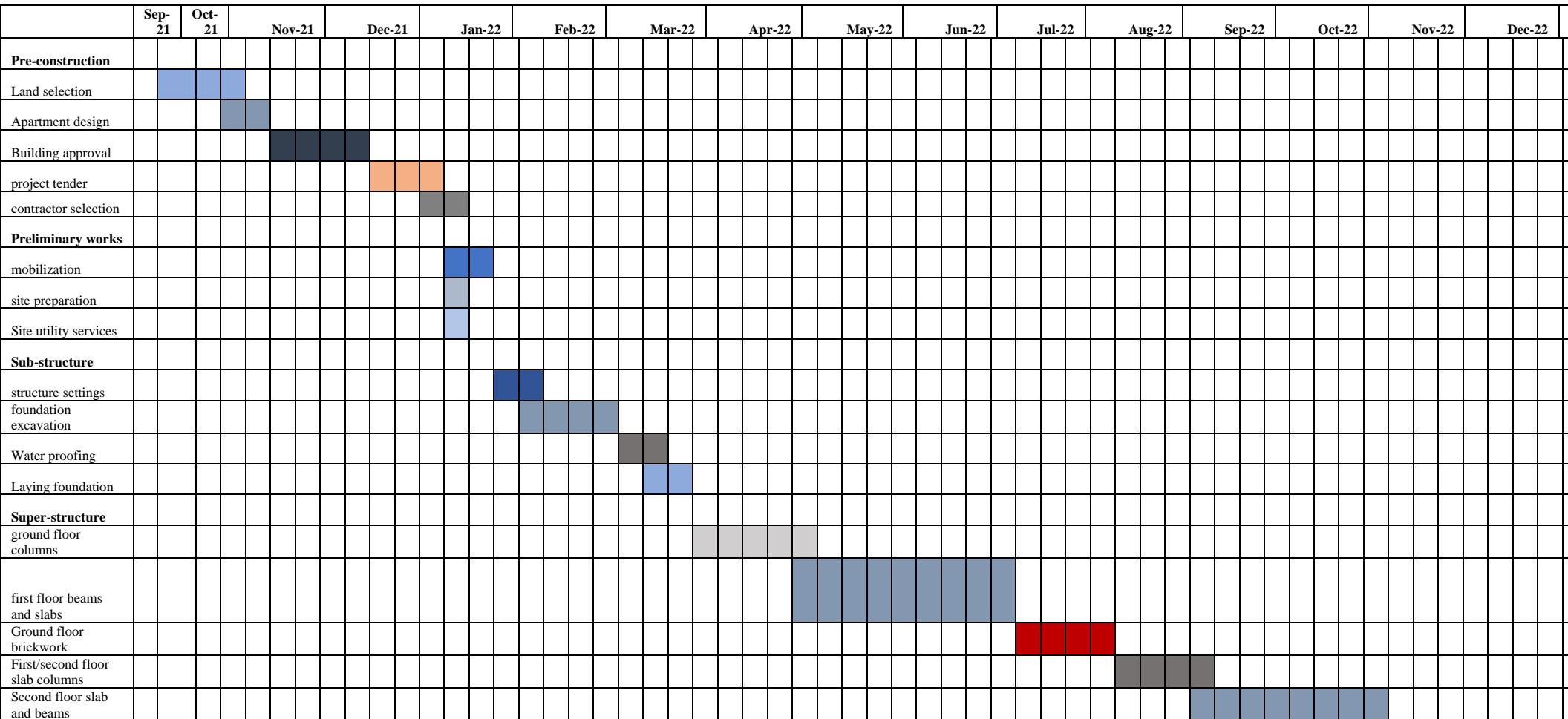
Management Software | Wrike. <https://www.wrike.com/project-management->

[guide/faq/what-is-a-stakeholder-in-project-management/](https://www.wrike.com/project-management-guide/faq/what-is-a-stakeholder-in-project-management/)



## Appendix

### Appendix 1: Gantt Chart for the Project

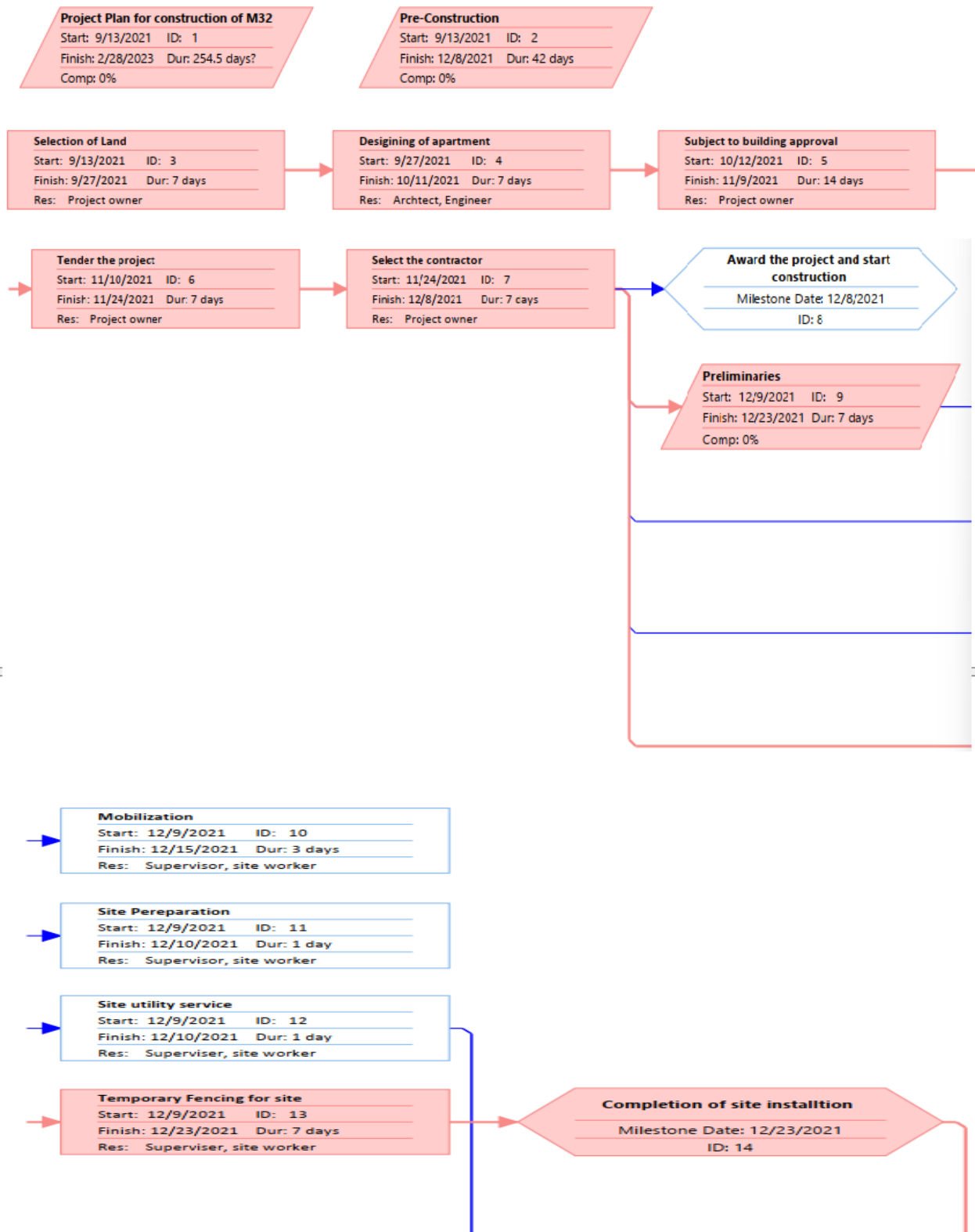




# (Sample) Project Charter

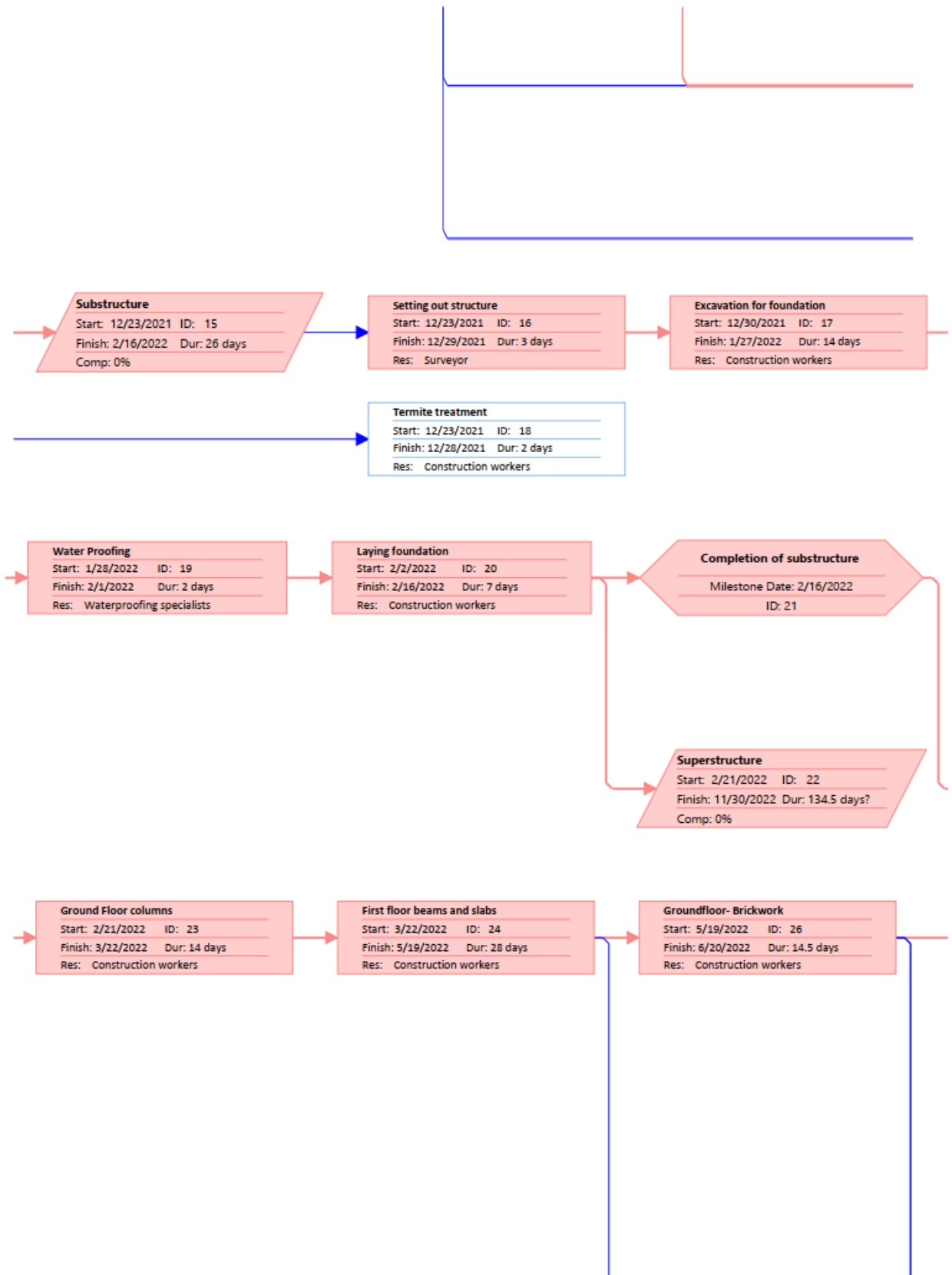
Project Management: Principles, Processes and Practice

## Appendix 2: PERT Chart



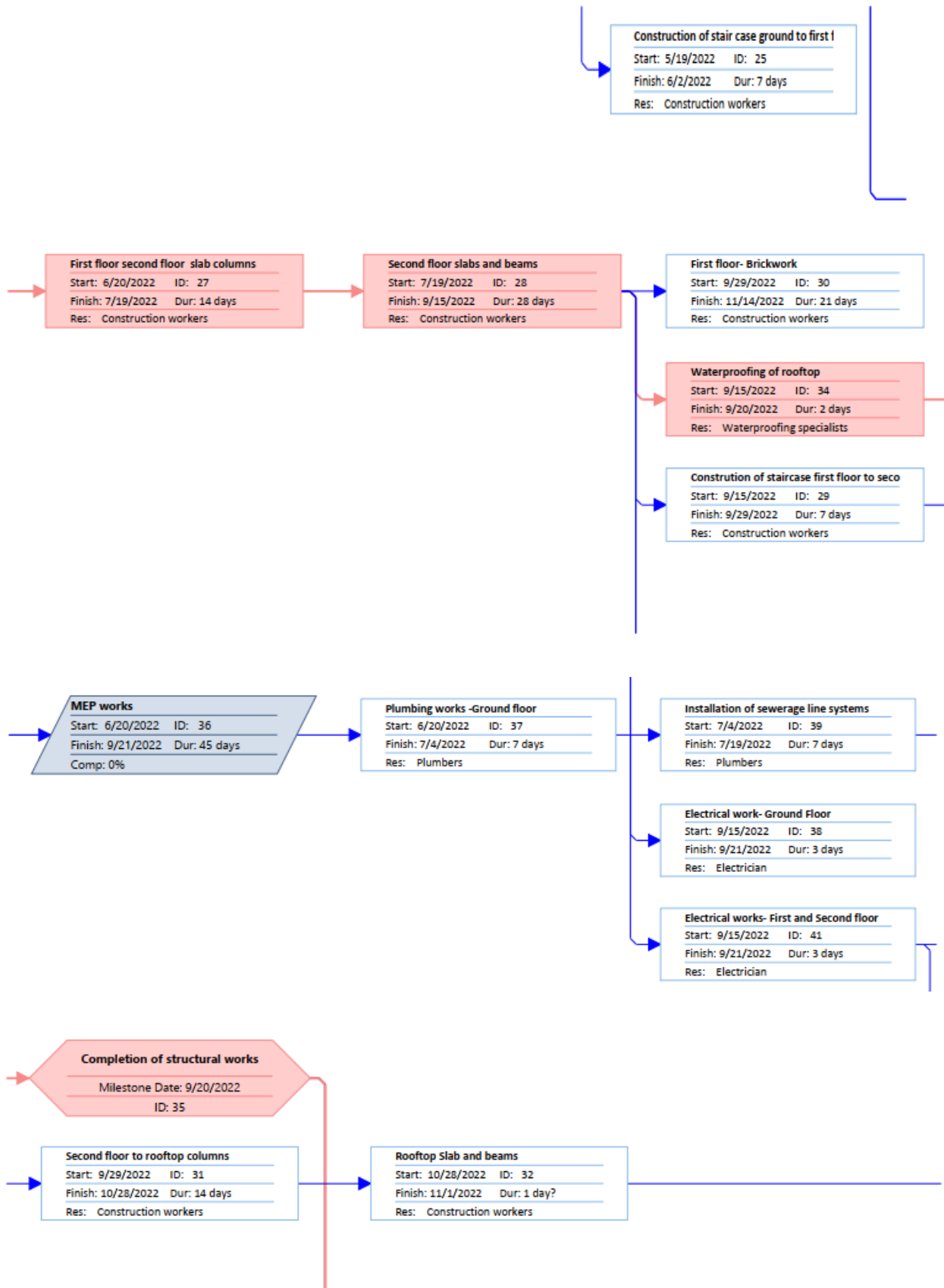
# (Sample) Project Charter

Project Management: Principles, Processes and Practice



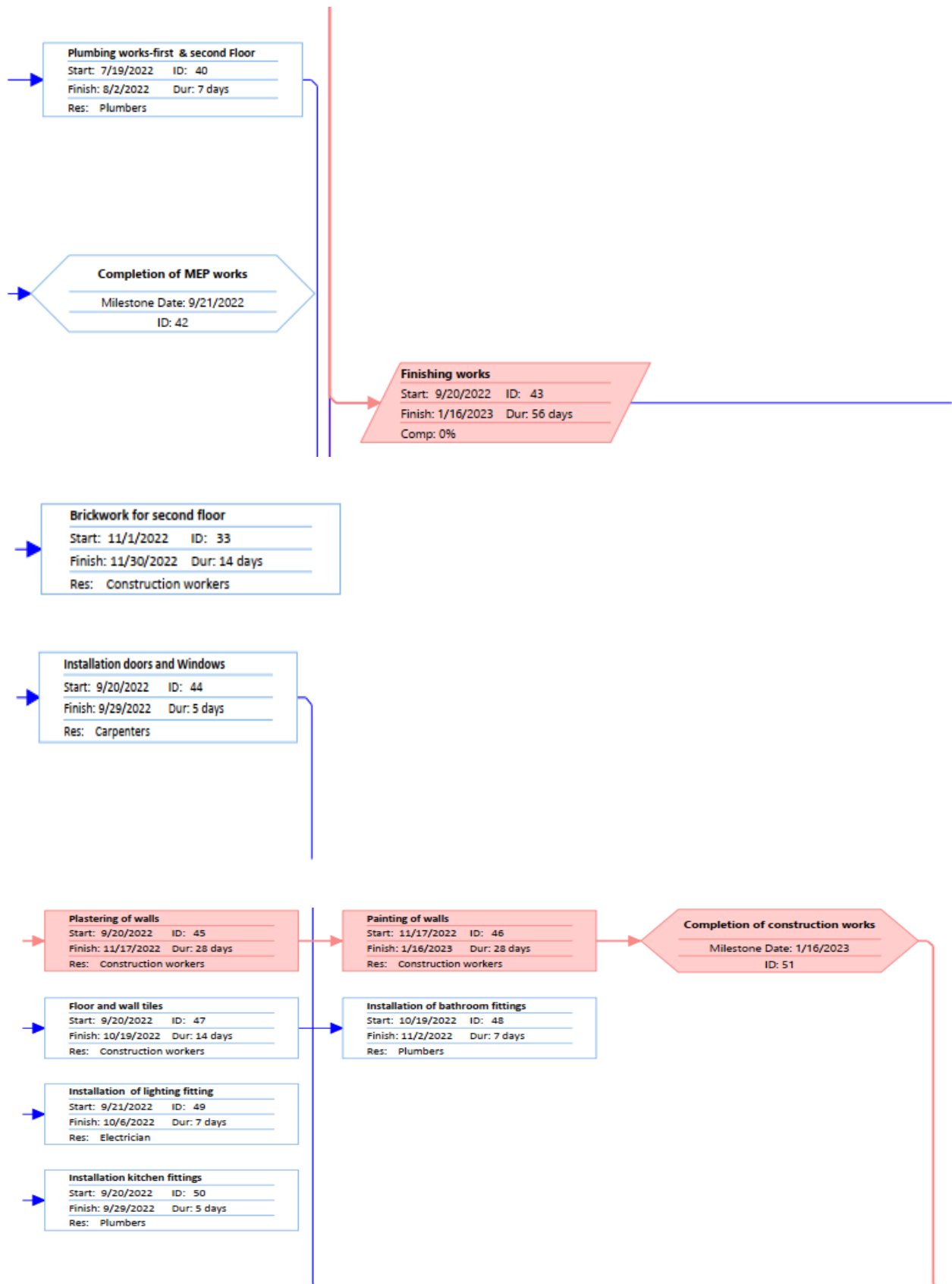
# (Sample) Project Charter

Project Management: Principles, Processes and Practice



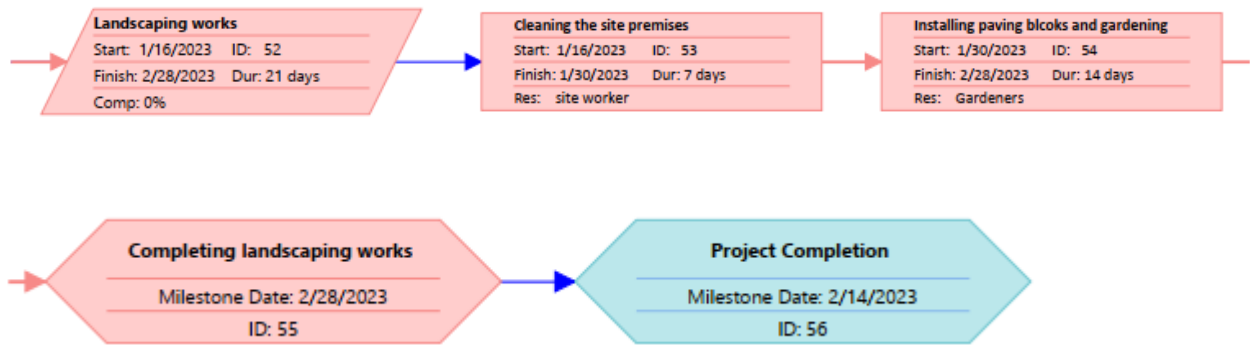
# (Sample) Project Charter

Project Management: Principles, Processes and Practice



# (Sample) Project Charter

Project Management: Principles, Processes and Practice



## Appendix 3: Project Charter Document Management

### Distribution List

Record the details of all project stakeholders accessing this document.

Name	Position	Signature	Date

### Version Control

Record all approved changes to this document.

Revision #	Change Description	Approval Date	Author

### Project Registration

**Project Name: M/32 Terrace Homes Project**

**Project #132**

**Creation Date: September 12<sup>th</sup>, 2021**

**Sponsor/Client: Mgroup**

**Project Manager: John Doe**

## **Executive Summary**

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### **1 Rationale**

The objective of the project is to build a superior family home that will blend in with the neighborhood's architectural design. This will boost the worth of the nearby land and provide the area more incentive to develop more housing. A high-quality home will help enhance the business's standing as a home builder, bringing in more customers. Along the edge of the river, the planned M/32 homes will be constructed. It will increase the artistic appeal of the housing plan.

### **2 Business Drivers**

Two parties are often considered to be stakeholders. Specifically, the parties involved are the contractor and the client. The customer's party has designated a licensed engineer to function as the project's advisor and to evaluate the status and caliber of the building work. Added more architectural plans to improve visual value. Award-winning chartered architect David Barr has already been selected to serve as the project's principal architect. The contractors' party consists of subcontractors for sewage, electrical installation, gardening, railing, and other services. A possible third party in the approval procedure may be the government authorities.

### **3 Justification Criteria PI**

- |                                                           |                                                                 |                                                              |                                                 |
|-----------------------------------------------------------|-----------------------------------------------------------------|--------------------------------------------------------------|-------------------------------------------------|
| <input checked="" type="checkbox"/> <b>Customer Value</b> | <input checked="" type="checkbox"/> <b>Regulated Compliance</b> | <input checked="" type="checkbox"/> <b>Improved Capacity</b> | <input type="checkbox"/> Efficiency Improvement |
| <input type="checkbox"/> Investment Return                | <input type="checkbox"/> Organisational Impact                  | <input type="checkbox"/> Strategic Alignment                 | <input type="checkbox"/> Operating Necessity    |



Executive Directive

Profit Growth

Product Extension

Other

## 4 Proposed Solution

The Sponsors have agreed to expand the location by including more apartments through the M32 project.

## 5 Options Evaluated

The clients did not have any other alternatives other than the development of the apartments.

## 6 Key Objectives

The project comprises several aspects of building apartments, such as the foundation, framework, installation of flooring and walls the exterior of the house, and the last phase of development, which involves certification and cleaning along with the finishing of the landscaping.

## 7 Priority Status

Critical

Urgent

Important

On-hold

## 8 Benefits

- Increase the number of dwellings in the place.
- Increase the market for residential houses in the region
- Improve the surrounding by developing world class apartments.

## 9 Impacts

The main impact of this project is improved surrounding, as well as increased profits for the client. This project will also result in increased houses for people in this region.

## 10 Stakeholders

Stakeholder	Role	Communication strategy
Client	Sponsor the project	Email, phone call, documentation.
Project members	Carryout project tasks	Team meetings, emails, documentation.
Government	Provide standards for the project	Documentation
Community members	Concerned about the project's success	New briefings
Customers	Concerned about the project's success	Website, burners, etc.

## Project Scope

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### 11 Deliverables

- Cost breakdown
- Analysis of the project using various tools.
- Project scope
- WBS
- Chart analysis

### 12 Inclusions

- Analysis of the project
- Produce a documentation for all the project objectives.

- Using various tools to analyse the project’s success.

### 13 Exclusions

- This project does not consider the actual development of the M32 homes.

### 14 Milestones

Activity	Completion date
Pre-construction	12/8/2021
Preliminaries	12/23/2021
Substructures	2/16/2022
Superstructures	11/30/2022
MEP Works	9/21/2022
Landscaping	2/28/2023

### 15 Indicative Schedule

The construction project is anticipated to be finished in 256 days, starting on Sept 12, 2021, and finishing on February 23, 2022. The cutoff date is in February 2022. The proposed schedule calls for a 44-day preparatory phase and a 26-day substructure phase. The estimated duration of construction is 135 days. The next step is to construct the superstructure within the limitations of 63 days. It will take up to 15 days to complete the roof slab, and less than a week to complete the basic structure. There have been 256 days. Together, the electrical and plumbing work are finished at every level of the project.

### 16 Indicative Budget

Based on the Mgroup (2022) website, a minimum of \$695,000 will be used as the selling price for a dwelling. If 4 dwellings are expected to cost approximately \$1,593,072, then it is possible that one dwelling will cost approximately \$398,000. This will result to a profit of approximately \$297,000 being achieved.

## 17 Indicative Resource Capability

Resources have been recorded based on various activities as shown below.

Activities	Cost in \$
Pre-construction	393,000
Preliminaries	32,000
Substructure	33,400
Superstructure and structural works	951,000
MEP Works	95,250
Finishing	156,050
Landscaping	87,500

## Issues and Obstacles

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### 18 Constraints

- Poor project management may affect the success of the project.
- Some members falling sick will affect the amount of work other members will be required to do.
- If the client does not provide funds on time, it will affect the project deliverable.
- If the project does not comply with government and environmental laws it will not be accepted.

## 19 Assumptions

- Funds will be provided on time.
- All team members will have the required knowledge for the project.
- The ground on which this project is taking place has been analysed effectively.
- No new laws will be developed during the construction of the houses, which will affect the completion of the project on time.

## 20 Potential Issues

- Bad weather during the project will affect deliverables.
- New construction laws will require that all the project requirements to be checked again.

## 21 Dependencies

- Dependencies in this project will be regarded as the activities and how they depend on each other. The activities will be carried out based on the start to finish project dependencies, which means one activity will not begin until another one has been completed.

## 22 Risk

- Changing price of construction materials during the project will affect the project budget.
- Changes in project scope will affect the project deliverables.
- Lack of enough skilled project team members
- Bad weather will delay the project.

## Authorisation

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## 23 Recommendation

- The use of new and improved techniques to increase the effectiveness, adaptability, and versatility of its current project administration procedures. Examples of these techniques include the use of prioritization diagrams, performance improvement processes, and BIM.

## 24 Approval

Record the decision that has been made on the project.

**Approved**

Postponed

Cancelled

Review

**25 Sign off** Record the name, signature and date of all appropriate stakeholders (sponsor/client, project manager, project steering group ...) signing this document.

## 26 Appendices

- PERT chart
- Gantt Chart