

Office Building Construction

ABLE Construction

Project Sponsor: Brenda Kawana

Project Manager(s): Mohammad Abaan, Silas Hall, Shubham Rangra,
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Date: 1st August 2024

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1 Introduction

1.1 Background

ABLE construction is a company that deals with the set up and construction of buildings for multinational companies. They gain the approval of the council before starting any construction.

TSSA is a project management team which has been appointed for ABLE Construction's latest endeavour: building a new two-story office building for a multinational organization in Palmerston North. As a project management team, TSSA will develop and execute a comprehensive Project Management Plan (PMP) to ensure the successful delivery of this office building. Their responsibilities will include:

- Detailed project planning and scheduling
- Regular communication with the project sponsor to obtain information and clarify assumptions
- Coordination of all project activities and stakeholders
- Budget management and cost control
- Quality assurance and risk management
- Oversight of contractors hired for specialist tasks
- The successful handover of the completed office building

TSSA Project Management aims to deliver this project on time, within budget, and to the highest standards of quality.

1.2 Business Needs

ABLE Construction would like a 2-story office building for multinational organization to accommodate employees and create a friendly environment suited for work. The project should start on 22nd July and is required to finish by 3rd November 2024. The building is required to have the following; 12 offices both open and closed, each floor should have a kitchen/lunch area, the

necessary number of washrooms and few showers, reception area, canteen, each floor should have a conference/board room, and enough storage for office equipment.

- Make 12 offices (combination of both open and closed offices)
- Make A kitchen and lunch area on each floor
- Make a few washrooms with showers
- Make a reception and canteen
- Onsite Parking
- Storage area for office equipment
- Make sure the building is up to the safety and quality standards required by the council

2 Scope

- Define project scope and objectives
- Budget planning
- Project scheduling
- Resource planning
- Risk management planning
- Quality management planning
- Communication planning
- Design and Engineering
- Procurement planning
- Permitting and Approvals

2.1 Objectives

- Complete construction of a two-storey office building by 3rd November 2024.
- Ensure the building includes all specified facilities within the allocated budget of \$2,000,000 NZD.
- Find contractors for specialised tasks such as setting up electricity and water connections in the building (Time)

- Planning the internal layout of the building (Time)
- Maintain high standards of safety and compliance with all relevant regulations. (Time)
- Minimize disruptions to nearby businesses and residents during construction. (Time)
- Stakeholder satisfaction is achieved, with minimal conflicts or concerns raised during the project. (Time)

2.2 Deliverables

A fully constructed and functional building meets the requirements given.

- Site Preparation and Core Construction
- Interior Construction
- External Works
- Testing and Commissioning
- Handover and Project Closure

2.3 Success Criteria

- The project is completed by the end date of 3rd November 2024.
- The total expenditure is not exceeded (the allocated budget of \$2,000,000 NZD).
- The building meets all local building codes and regulatory standards.
- Layout and construction of the Internal rooms of the building is done according to requirements.
- All materials and services are procured on time and within budget, with no delays to the construction timeline.
- Zero accidents or safety incidents during the construction phase.
- The project complies with all environmental regulations, and the site is left clean and safe after construction. The building passes all required inspections and meets or exceeds industry quality standards.

2.4 Exclusions

- Procurement, installation, and arrangement of furniture, office equipment, and fixtures
- Maintenance and operational costs post-construction.
- Installation and setup of IT infrastructure, including networking, telecommunication systems, and audio-visual equipment.
- The installation of security systems such as CCTV, access control, and alarms.
- Training sessions or orientation for the client's staff on how to use the building facilities or systems are not included.

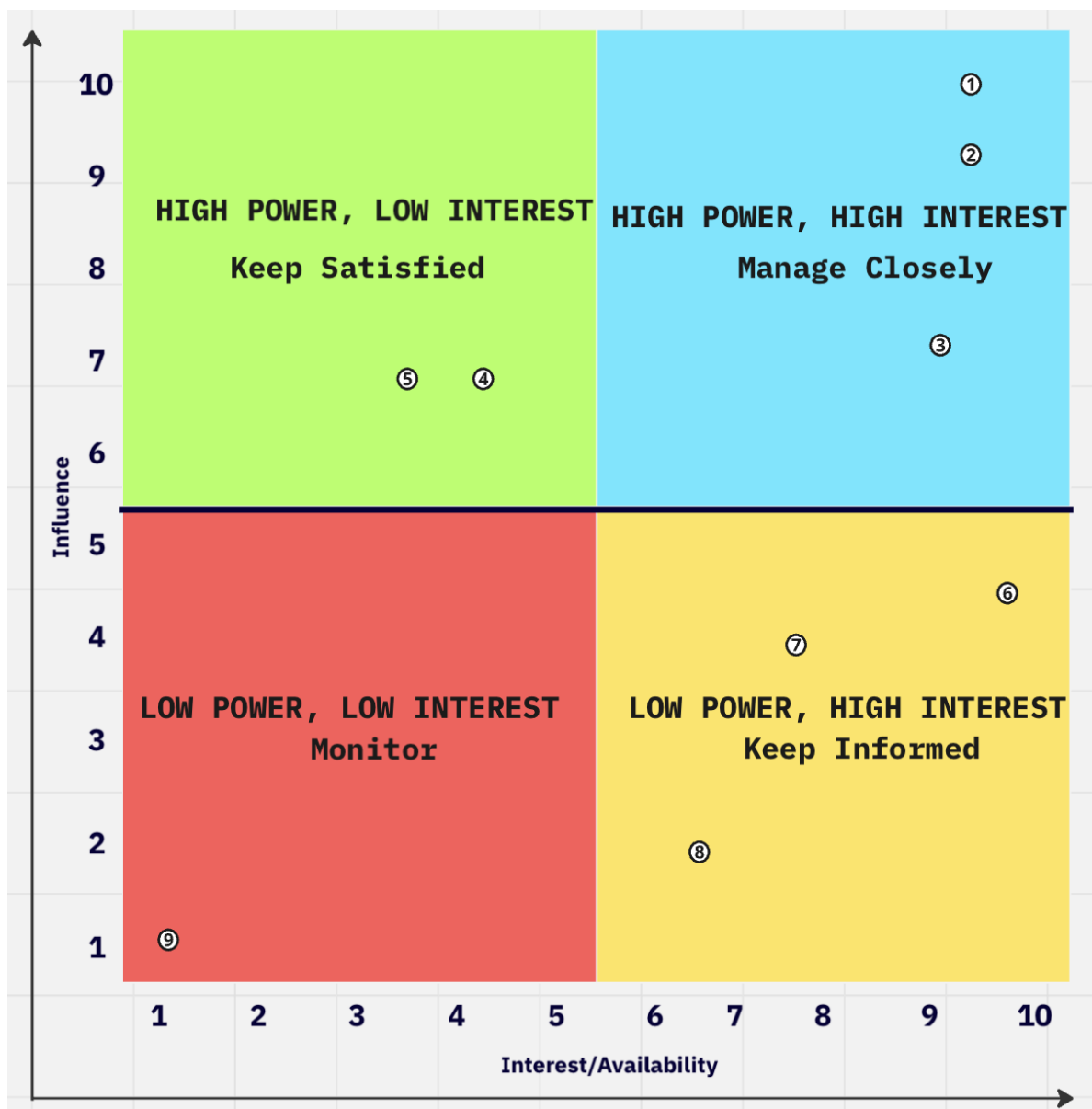
2.5 Restrictions

- The budget of \$2,000,000 NZD given to complete the whole project
- The timeframe for completing the project: 22nd July 2024 to 17th November 2024. (end jan 2025)
- A kitchen/lunch area and a conference room must be on each floor of the building
- Each office needs to be large enough to accommodate 3 people at the same time

2.6 Assumptions

- Land is already procured
- Authority to build
- Land needs work

3 Stakeholder Management Plan and Analysis



HIGH POWER, HIGH INTEREST (Manage Closely)

1. Owner- Cares a lot about how the project turns out since it affects their investment. Keep them in the loop with regular updates and involve them in key decisions.
2. Project Sponsor – Makes sure the project stays on track with its goals, budget, and timeline. It's important to keep them involved in decisions and update them regularly.

3. Board Members- have a strong influence on the project and are deeply invested in its success. Keeping them informed and involved in major decisions will ensure their continued support.

HIGH POWER, LOW INTEREST (Keep Satisfied)

4. City Council- has the power to impact the project but may not be interested in daily details. Keep them satisfied with occasional updates, focusing on how the project aligns with community goals.
5. Regulatory Body- Ensures that the project follows laws and regulations. While they may not need frequent updates, it's crucial to meet their requirements and keep them satisfied with compliance reports.

LOW POWER, HIGH INTEREST (Keep Informed)

6. Project Team Members- Highly involved in the day-to-day work. Keep them informed about the project's progress and any changes to make sure they stay motivated and aligned with the goals.
7. Staff Members- Highly involved in the day-to-day work. Keep them informed about the project's progress and any changes to make sure they stay motivated and aligned with the goals.
8. Suppliers- Provide essential materials or services. Keep them informed about timelines and any changes that could affect their role in the project.

LOW POWER, LOW INTEREST (Monitor)

9. Community- May be affected by the project but isn't deeply involved. Keep an eye on their concerns, but only provide updates if something directly impacts them.

3.1 Stakeholder Register

#	Stakeholder	Internal/ External	Involvement	Contact
	<i>Brenda Kawana</i>	<i>Internal</i>	<i>Project Sponsor</i>	<i>sam@ucol.ac.nz</i>
	<i>Telouwn Makope</i>	<i>Internal</i>	<i>Project Manager</i>	<i>24372680@studentmail.ucol.ac.nz</i>
	<i>Rana Mohammad Abaan Noon</i>	<i>Internal</i>	<i>Project Manager</i>	<i>22362311@studentmail.ucol.ac.nz</i>
	<i>Silas Hall</i>	<i>Internal</i>	<i>Project Manager</i>	<i>23364977@studentmail.ucol.ac.nz</i>
	<i>Shubham Rangara</i>	<i>Internal</i>	<i>Project Manager</i>	<i>20340432@studentmail.ucol.ac.nz</i>
	<i>ABLE Construction</i>	<i>External</i>	<i>Customer</i>	<i>Info@able.com</i>
	<i>Palmerston North City Council</i>	<i>External</i>	<i>Regulatory Body</i>	<i>info@pncc.govt.nz</i>
	<i>WorkSafe</i>	<i>External</i>	<i>Regulatory Body</i>	<i>Info@worksafe.govt.nz</i>
	<i>Environmental Protection Authority</i>	<i>External</i>	<i>Regulatory Body</i>	<i>Info@epa.govt.nz</i>
	<i>Suppliers</i>	<i>External</i>	<i>Provision of materials</i>	<i>sales@manawatuitm.co.nz</i>
	<i>Contractors</i>	<i>Internal</i>	<i>Execution of project</i>	<i>nik@islesconstruction.co.nz</i>
	<i>Architects</i>	<i>Internal</i>	<i>Design</i>	<i>palmerstonnorth@teamarchitects.co.nz</i>

	<i>Community</i>	<i>External</i>	<i>External impact</i>	-
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4 Schedule Baseline

4.1 Milestone Schedule

Project Milestone	Start Date	Completion Date
Site Preparation	22 July 2024	13 August 2024
Core Construction	14 August 2024	21 November 2024
Interior Work	22 November 2024	09 January 2025
External Construction	22 November 2024	12 December 2024
Testing and Commissioning	13 December 2024	16 January 2025
Handover to Client	17 January 2025	21 January 2025

Three-Point Estimation Method

To estimate the activity's, we used the Three-point method, this method used by breaking down each task into 3 scenarios.

- Most likely(**tm**)

Activity cost based on a realistic scenario, which the outcome should resemble

- Optimistic(**to**)

Activity cost based on a best-case scenario

- Pessimistic(**tp**)

Activity cost based on the worst-case scenario

$$\text{Estimate} = \text{to} + 4\text{tm} + \text{tp}$$

With a budget of 2,000,000 we estimate the overall cost of the project is going to be \$1,891,520 with the remaining amount of \$108,480

4.2 Project Cost Breakdown

Deliverable	Costs Involved	Estimated Cost
Site Preparation <ul style="list-style-type: none"> Land Clearing Land Grading Land Cleared for construction 	\$145,600 \$72,000 \$9,300	\$226,900
Core Construction <ul style="list-style-type: none"> Foundation Structural Framing Exterior Walling Roofing Electrical Plumbing Insulation HAV Installation 	\$244,800 \$201,600 \$72,800 \$124,800 \$42,000 \$28,000 \$72,000 \$13,440	\$799,440
Interior Construction <ul style="list-style-type: none"> Interior Walling Office Open Offices Closed Kitchen/Lunch Area on Each Floor Washroom Showers Reception Canteen Area Conference/Board Room on each floor Storage Rooms 	\$156,000 \$145,600 \$31,200 \$18,016 \$9,012 \$6,008 \$16,980 \$26,800 \$13,400 \$10,400	\$433,416

External Works <ul style="list-style-type: none"> • Parking Area • Landscaping • External Lighting 	\$72,800 \$19,360 \$4,680	\$96,840
Testing and Commissioning <ul style="list-style-type: none"> • Electrical Test • Plumbing Test • HAVAC Test • Safety Inspections 	\$5,500 \$4,800 \$2,680 \$246	\$13,226
Hand over <ul style="list-style-type: none"> • Final Walkthrough with Sponsor • Handover Documentation • Project Closure Meeting 	\$0 \$0 \$0	\$0

5 Quality Management Plan (QMP)

The Quality Assurance Table for ABLE Construction provides an overview of project activities, ensuring they meet quality standards and project requirements safely and effectively.

Deliverable	Internal Checks	External Checks
Site Preparation <ul style="list-style-type: none"> • Land Clearing • Land Grading • Land Cleared for construction 	<ul style="list-style-type: none"> • Land Clearing: Ensure that land clearing is thorough and follows specifications, removing all necessary vegetation and debris. • Land Grading: Check that grading levels are 	<ul style="list-style-type: none"> • Conduct a third-party inspection to ensure environmental compliance in land clearing. • Confirm grading standards with external surveyors,

	<p>correct and align with site plans.</p> <ul style="list-style-type: none"> • Land Cleared for Construction: Verify that the area is fully prepped and compliant for construction, with proper site boundaries marked. 	<p>including drainage and erosion prevention.</p> <ul style="list-style-type: none"> • Review external reports for soil stability to ensure construction site readiness.
<p>Core Construction</p> <ul style="list-style-type: none"> • Foundation • Structural Framing • Exterior Walling • Roofing • Electrical • Plumbing • Insulation • HAV Installation 	<ul style="list-style-type: none"> • Foundation: Inspect depth, alignment, and materials to confirm they meet design specs. • Structural Framing: Verify framing alignment, material strength, and adherence to structural plans. • Exterior Walling: Ensure walling meets design, is secure, and matches insulation requirements. • Roofing: Inspect roofing materials, alignment, and waterproofing. • Electrical: Review wiring plans, conduit 	<ul style="list-style-type: none"> • Conduct independent testing of foundation strength, soil settlement, and alignment. • Have a structural engineer review framing to verify stability and safety. • Perform external audits on walling and roofing for durability and weather resistance. • Confirm electrical and plumbing installations meet local codes with certified inspectors. • Perform external insulation assessment for thermal efficiency and environmental standards.

	<p>placement, and safety codes.</p> <ul style="list-style-type: none"> • Plumbing: Check pipe installation, materials, and alignment with water flow plans. • Insulation: Confirm insulation placement, material specifications, and thermal efficiency. • HAV Installation: Ensure that HVAC systems are installed per plans and functionality specs. 	<ul style="list-style-type: none"> • Obtain third-party HAVC performance testing for energy efficiency and compliance.
<p>Interior Construction</p> <ul style="list-style-type: none"> • Interior Walling • Office Open • Offices Closed • Kitchen/Lunch Area on Each Floor • Washroom • Showers • Reception • Canteen Area • Conference/Board Room on each floor • Storage Rooms 	<ul style="list-style-type: none"> • Interior Walling: Check placement, alignment, and soundproofing as per design. • Office Areas (Open & Closed): Verify that open and closed office spaces align with layout, accessibility, and space utilization. • Kitchen/Lunch Area on Each Floor: Inspect kitchen installations, water flow, and electrical hookups. • Washrooms & Showers: Ensure plumbing, water pressure, and tile installation meet standards. • Reception: Confirm reception area is set up as per design with appropriate access. 	<ul style="list-style-type: none"> • External inspections for walling for durability and safety standards. • Confirm that kitchen and lunch areas meet health and safety standards. • Verify washrooms are in compliance with local plumbing and safety codes. • Conduct external checks for electrical, AV, and accessibility requirements in board rooms.

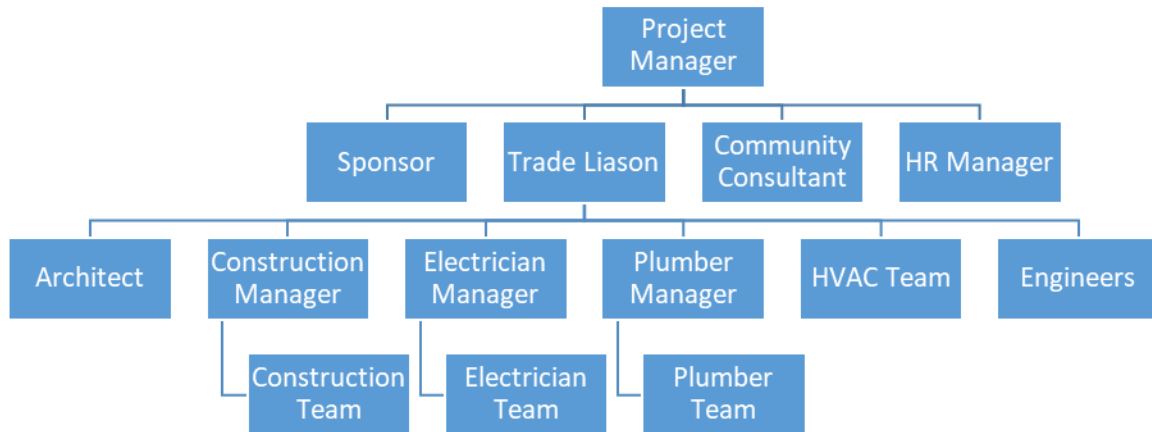
	<ul style="list-style-type: none"> • Canteen Area: Inspect canteen equipment, seating, and flow efficiency. • Conference/Board Rooms on Each Floor: Verify layout, electrical outlets, and AV installations in each room. • Storage Rooms: Confirm space allocation and shelving installations meet requirements. 	
External Works <ul style="list-style-type: none"> • Parking Area • Landscaping • External Lighting 	<ul style="list-style-type: none"> • Parking Area: Check surface grading, markings, and signage for adherence to design. • Landscaping: Inspect landscaping layout, plant selection, and irrigation. • External Lighting: Ensure lighting placement, brightness levels, and energy efficiency. 	<ul style="list-style-type: none"> • Conduct external assessment of parking design, including accessibility and traffic flow. • Perform environmental check on landscaping for ecological compliance. • Verify that lighting meets local standards and energy regulations.
Testing and Commissioning <ul style="list-style-type: none"> • Electrical Test • Plumbing Test • HAVAC Test • Safety Inspections 	<ul style="list-style-type: none"> • Electrical Test: Test electrical systems for functionality, load capacity, and safety compliance. • Plumbing Test: Ensure water pressure, drainage, and leak-proofing. • HVAC Test: Confirm heating and cooling systems function within set parameters. • Safety Inspections: Perform in-depth checks of safety equipment, exits, and fire alarms. 	<ul style="list-style-type: none"> • Independent testing on electrical systems to confirm compliance with standards. • External audit of plumbing systems to ensure durability and code compliance. • HVAC assessment by a certified third party for energy compliance. • External safety audit for building code adherence.

Hand over <ul style="list-style-type: none"> • Final Walkthrough with Sponsor • Handover Documentation • Project Closure Meeting 	<ul style="list-style-type: none"> • Final Walkthrough with Sponsor: Confirm all aspects of the project meet the sponsor's expectations. • Handover Documentation: Ensure all documentation, including permits, licenses, and warranties, is prepared. • Project Closure Meeting: Verify that all final deliverables are signed off and approved by stakeholders. 	<ul style="list-style-type: none"> • <ul style="list-style-type: none"> ○ Obtain sponsor's signature on all necessary documents as proof of handover. ○ Have an external review of final documentation to confirm completeness. ○ Collect final third-party approval for the project's closure and client satisfaction.

Quality Checklist

Deliverable / Component	Peer Review	Sponsor Sign off
Site Preparation and Core Construction	✓	✓
Interior Construction	✓	✓
External Works		
Testing and Commissioning		
Handover and Project Closure		
Resource Management Plan	✓	✓
Project Plan	✓	✓

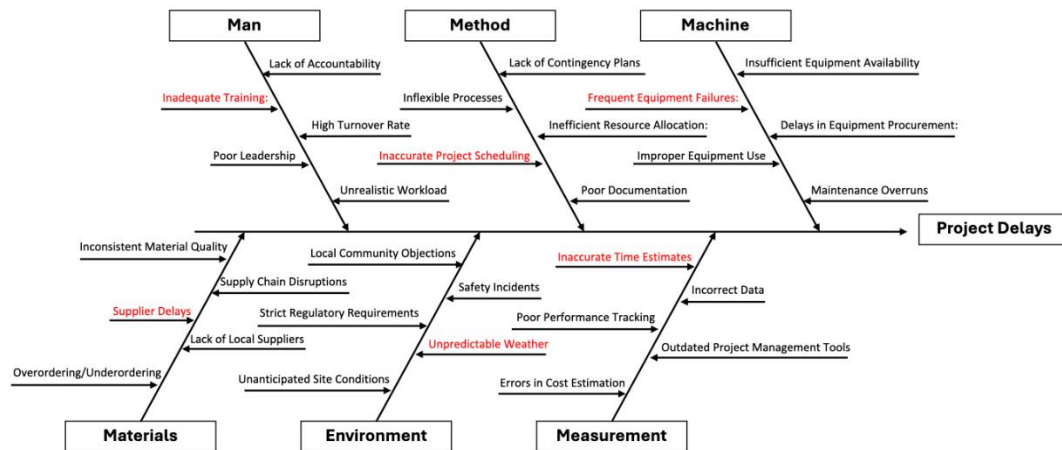
6 Resource Management Plan



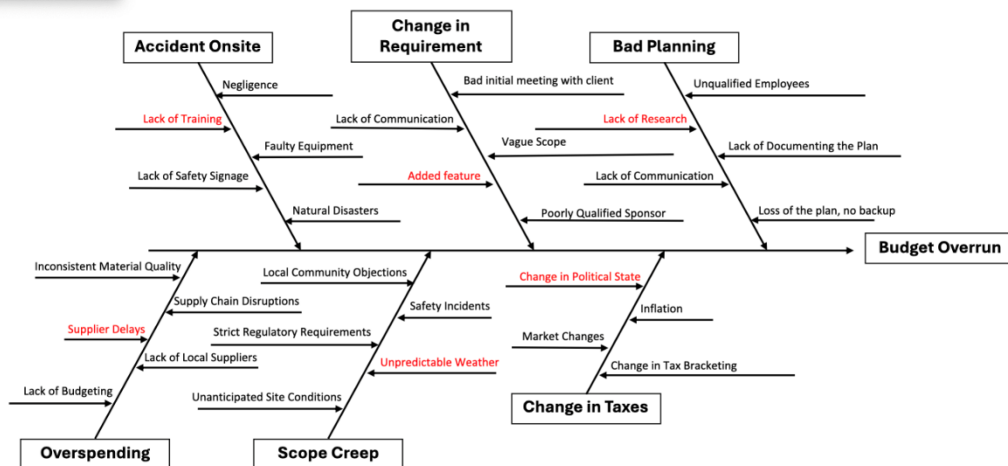
RACI Chart

R = Responsible; A = Accountable; C = Consult; I = Inform

Section	Telouwn	Silas	Shubham	Abaan
Site Preparation	R	A	C	I
Core Construction	A	R	I	C
Interior Construction	I	A	A	R
External Works	A	I	R	A
Testing and Commissioning	I	R	A	C
Handover	I	A	R	I



Office on the web Frame



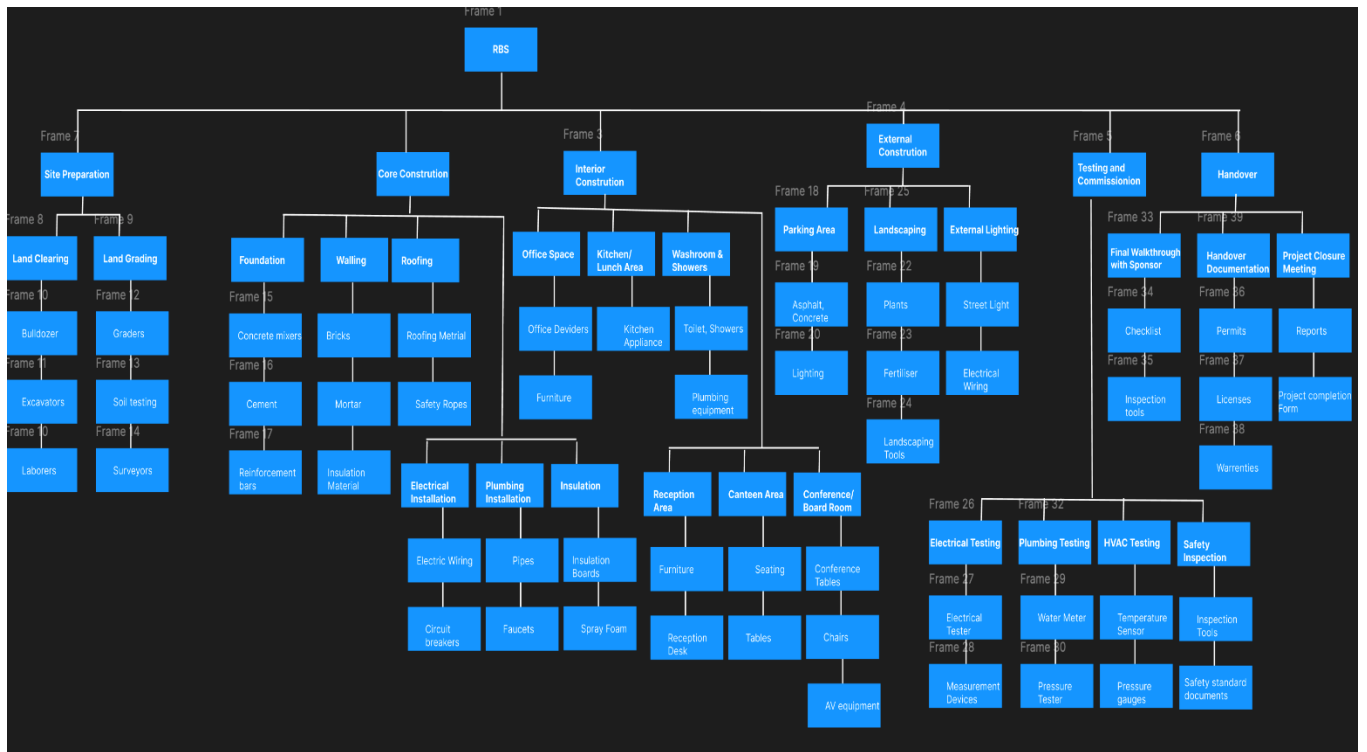
6.1 Roles & Responsibilities Table

Role	Responsibility	When Required
Project Manager	Oversee the construction project/planning and assign responsibilities/tasks to subordinates. Approve Land grading, safety inspections, Final walkthrough, Handover	Site Preparation Testing and Commissioning Handover

	documentation and carry out Project meetings.	
Sponsor	Keep updated and suggest improvements with the construction project progression.	Handover
Trade Liaison	Communicate with the public and other organisations impacting the construction project. Approve Land grading, safety inspections, Final walkthrough, Handover documentation and carry out Project meetings under the Project Manager.	Site Preparation Testing and Commissioning Handover
Community Consultant	help plan, implement, and evaluate the construction project stages. Assist in Land grading, safety inspections, Final walkthrough, Handover documentation and carry out Project meetings under the Project Manager.	Site Preparation Testing and Commissioning Handover
HR Manager	Handle staff disputes/issues and hire required staff and workers.	Site Preparation Core Construction Interior Construction External Works
Architect	Work on the landscaping.	External Works
Construction Manager	Handle the construction workers and the building construction. Carry out land clearing, build foundation, structural framing, exterior walling, roofing, Insulation, interior walling, rooms, parking and lighting	Site Preparation Core Construction Interior Construction External Works
Construction Team Member	Carry out land clearing, build foundation, structural framing, exterior walling, roofing, Insulation, interior walling, rooms, parking and lighting	Site Preparation Core Construction Interior Construction External Works

Electrician Manager	Handle the Electrician team and electrical installations in the building. Install Electrical wiring, electricity in the rooms and testing the connections in the building	Core Construction Interior Construction Testing and Commissioning
Electrician Team Member	Install Electrical wiring, electricity in the rooms and testing the connections in the building	Core Construction Interior Construction Testing and Commissioning
Plumbing Manager	Handle water connections and bathroom equipment installations as well as a plumbing test. Making sure the plumbing team follows correct procedures.	Core Construction Interior Construction Testing and Commissioning
Plumbing Team Member	Handle water connections and bathroom equipment installations as well as a plumbing test.	Core Construction Interior Construction Testing and Commissioning
HVAC Team	install various HVAC equipment and commercial refrigeration systems, including, heating and air conditioning systems, heat pumps, ventilation systems, and refrigeration units as per the need of the project.	Core Construction Testing and Commissioning
Engineer	Carry out the foundation construction and structural farming	Core Construction

6.2 Resource Breakdown Structure



7 Communication

Refer to our diagram in appendix

7.1 Communication Register (CR)

Sender	Receiver	What	Detail	How	When
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Project Manager	Sponsor	Project Updates	Ongoing and completed stages of the project	Meetings	At the end of each project phase
Sponsor	Project Manager	Suggestion and Improvements	Changes and improvements to the project and planning	Meetings	At the end of each project phase
Trade Liaison	Construction Manager	Overall Construction	Discussing price dealings and how the construction will be carried out	Face-to-Face meetings	Site Preparation Core Construction Interior Construction External Works
Community Consultant	Project manager, Trade liaison, Sponsor, HR manager	Scheduling meetings	Helping decide project meeting date and times.	Email, phone calls	Each phase of the project
HR Manager	Construction staff	Recruitment	Recruitment process and work details	Interview and phone calls	Before the start of the Project
Construction Manager	Construction Team Member	Tasks	Construction tasks and rules/regulations to follow	Face-to-face Meetings	Site Preparation Core Construction Interior Construction External Works

8 Risks

8.1 Risk Register

Risk Description	Probability H-M-L	Impact Perf – Cost- Time	Risk Response Proactive	Risk Response Reactive
Loss of Contractor	High	Low	Ensure all contracts have a clause ensuring they provide a replacement. Ensure there is a shortlist of backup contractors.	Call backup contractor to replace them. Assess workload not completed. Adjust plan accordingly.
Slip and fall hazards on floors/stairs	Medium	Medium	Install non-slip surfaces, clear walkways, signage for wet floors. Ensure med-kits are always available on site.	Assess damage, applying first aid. Call ambulance if necessary. Call replacement if necessary.
Severe weather (storm, flooding, earthquake)	Low	High	Strengthening of building exterior, installation of sump pumps, emergency preparedness plans	Evacuate the building if it's unsafe. - Assess and address any immediate damage caused by the storm or earthquake (e.g., broken windows, flooding). - Engage emergency services for further assistance.
Budget Overruns	High	Med	Develop a comprehensive budget, including contingency funds for unexpected costs.	If the budget is exceeded, identify areas where funds can be reallocated from lower-priority items to critical tasks.
Fire hazard	High	High	Ensure insurance covers fire damage. Provide fire safety equipment onsite and ensure staff are	Evacuate the building immediately and call emergency services. Use fire extinguishers to contain small fires if safe to do so.

			trained on the fire safety procedures.	Perform fire damage repairs after the incident.
Structural Failure	Low	High	Hire qualified engineers with experience in similar projects to work with architect.	Evacuate Site, assess damage to building. Bring in engineers to design a plan to fix the issue moving forward.
Utility Relocations	Med	Low	Plan ahead with utility companies to ensure all utility exit locations are known and agreed upon beforehand.	Confer with Architect, Engineers, and the required contractors to move the outlet to the desired locations.
HVAC Failure	Low	Low	Install redundant HVAC system if feasible. Regular preventive HVAC maintenance.	Have maintenance staff on call for urgent repairs. Repair or replace HVAC Components as necessary

9 Procurement

9.1 Procurement Register

Activity Number	What	Why	When	Approved by
Task No.	Type of resource	Eg. Land clearing	execution	Project manager etc.
4	Fixed Cost/Service Builder fees	Land Grading	Site Preparation	Project Manager
5	Fixed Cost Building levy payment	Government Levies	Site Preparation	Project Manager

34	Fixed Cost/Service Electricians' fees	Electrical Testing	Testing and Commissioning	Project Manager, Electricians
35	Fixed Cost/Service Plumbers' fees	Plumbing Test	Testing and Commissioning	Project Manager, Plumbers
36	Fixed Cost/Service HVAC Engineer fees	HVAC Test	Testing and Commissioning	Project Manager, HVAC Engineers
37	Fixed Cost/Service Building inspector fees	Safety Inspection	Testing and Commissioning	Project Manager
3	Resource/Labour Builders	Land Clearing	Site Preparation	Project Manager
7	Resource/Labour Engineers Builders	Foundation Construction	Core Construction	Project Manager
11	Resource/Labour Electricians	Electrical wiring	Core Construction	Project Manager
12	Resource/Labour Plumbers	Plumbing	Core Construction	Project Manager
14	Resource/Labour HVAC Engineers	HVAC Installation	Core Construction	Project Manager
30	Resource/Labour Architects Builders	Landscaping	External Works	Project Manager

9.2 Procurement Management Plan

In this project, we aim to efficiently manage the procurement process for constructing a high-quality office building while optimizing costs and ensuring timely delivery. The primary goal of the

procurement management plan is to secure all necessary resources—including materials, labour, and equipment—through a combination of contracting and direct purchasing. Our procurement approach prioritizes not only the budget and schedule but also the quality and reliability of materials and labour sources.

The procurement plan will address all stages of construction, from foundational work to finishing touches, ensuring that every element of the structure meets design specifications and safety standards. The objectives of this plan include identifying suppliers and contractors that align with our quality and timeline requirements, managing contracts effectively, and balancing cost against the benefits of outsourcing certain tasks.

Procurement Breakdown:

We will be hiring contractors that agree to contracts that cover the cost of materials used in the construction of the office. While this allows us to complete our project faster, we need to strictly monitor the quality of resources sourced by contractors.

To avoid being in a situation where the contracted company cannot supply the agreed upon resources, we will opt for contracting with larger organisations such as Naylor Love.

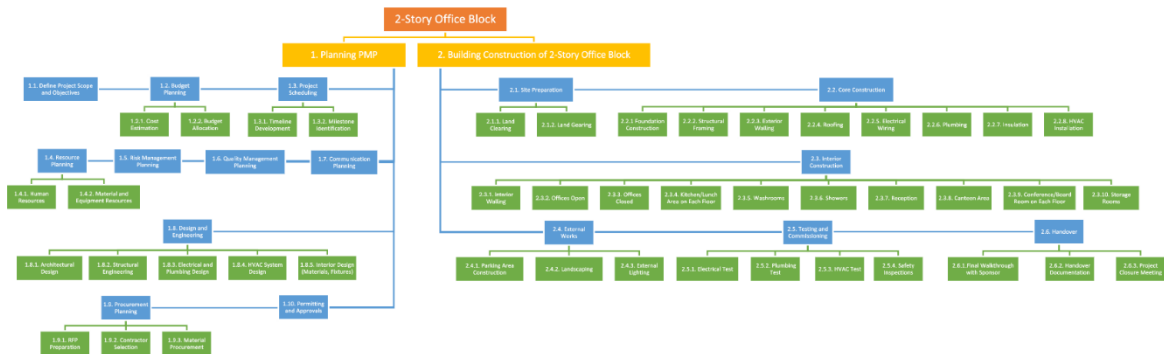
We have multiple fixed costs, mainly stemming from the need for many tests and government levies.

Make VS Buy Analysis of Structural Framing Sections:

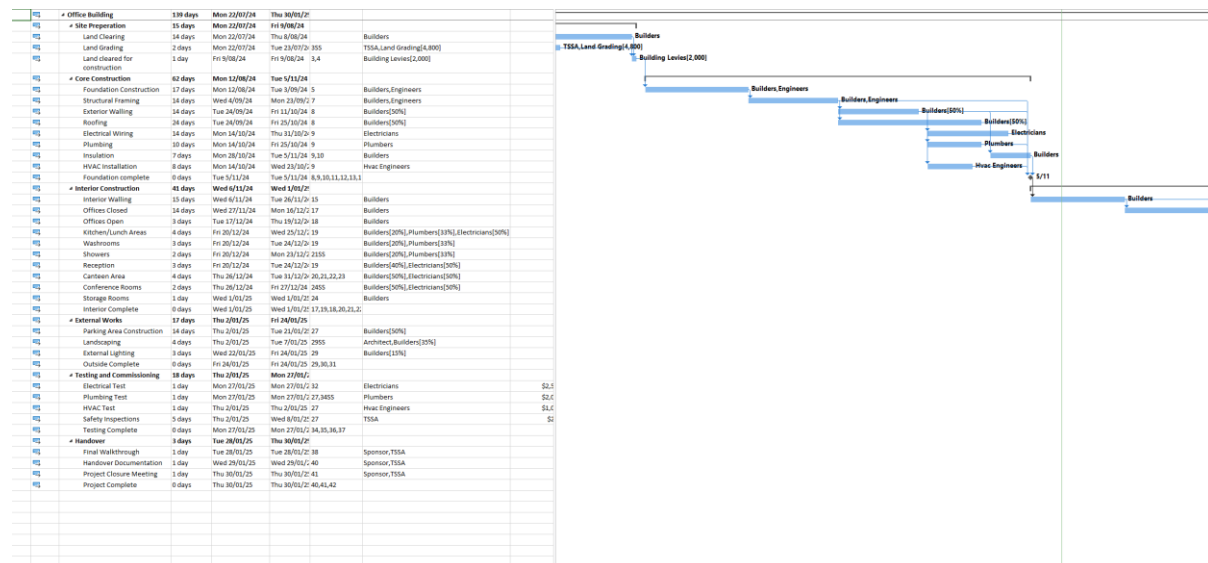
Buying a structural framework prefabricated to our designs will save us a lot of time early on. But this is more expensive than buying full lengths and assembling them onsite.

Seeing as we are currently nearing our budget on this project and need to keep excess available in case of emergencies, we will be purchasing full lengths and having our builders construct them onsite.

10.1 Work breakdown Structure



10.2 GANTT Chart



10.3 Change Request Form

Project Change Request Form

<i>Date of Request</i>	<i>Requested by</i>	<i>Change Request No.</i>

Part of the project change relates to (please tick one):

Scope	Schedule	Quality	Risk
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Change Request Description
Change Description:
Reason for Request change:
Priority (please circle one):
High Medium Low
Project benefit from change:
Possible outcomes of not implementing changes:
Possible alternative to change:

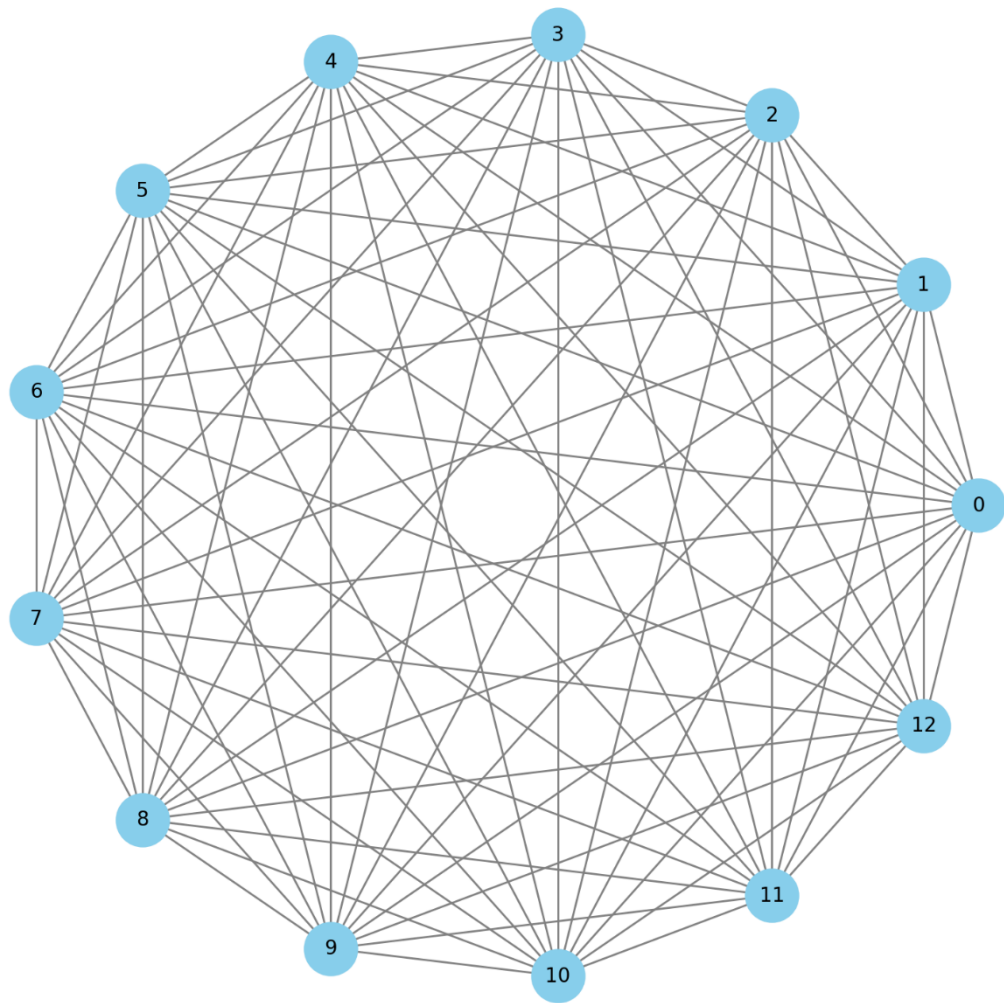
<i>Project Manager Signature:</i>	<i>Project Sponsors Signature:</i>

10.4 Cost Breakdown

Name	Cost
Land Clearing	\$145,600.00
Land Grading	\$72,000.00
Land cleared for construction	\$9,300.00
Foundation Construction	\$244,800.00
Structural Framing	\$201,600.00
Exterior Walling	\$72,800.00
Roofing	\$124,800.00
Electrical Wiring	\$42,000.00
Plumbing	\$28,000.00
Insulation	\$72,800.00
HVAC Installation	\$13,440.00
Foundation complete	\$0.00
Interior Walling	\$156,000.00
Offices Closed	\$145,600.00
Offices Open	\$31,200.00
Kitchen/Lunch Areas	\$18,016.00
Washrooms	\$9,012.00
Showers	\$6,008.00
Reception	\$16,980.00
Canteen Area	\$26,800.00
Conference Rooms	\$13,400.00
Storage Rooms	\$10,400.00

Interior Complete	\$0.00
Parking Area Construction	\$72,800.00
Landscaping	\$19,360.00
External Lighting	\$4,680.00
Outside Complete	\$0.00
Electrical Test	\$5,500.00
Plumbing Test	\$4,800.00
HVAC Test	\$2,680.00
Safety Inspections	\$246.00
Testing Complete	\$0.00
Final Walkthrough	\$0.00
Handover Documentation	\$0.00
Project Closure Meeting	\$0.00
Project Complete	\$0.00
Total:	\$1,570,622.00

10.5 Communication Channel Diagram



10.6 Fishbone Diagram

