

UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

IMPLEMENTATION OF PROJECT MANAGEMENT METHODOLOGIES FOR GLEANS
CONSTRUCTION AND ENGINEERING LTD.

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DEDICATION

I dedicate this thesis to my precious daughter, Mia, whose smiles and laughter bring joy to my days and inspire me to strive for greatness. You are my greatest motivation, and I hope to instill in you the values that hard work and determination always pay off.

To my loving husband, Jason, thank you for your unwavering support and belief in me. Your patience and encouragement have been my anchors during this journey. Together, you and our daughter are my greatest treasures, and this work is a reflection of the love and strength we share as a family.

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ABSTRACT

This Final Graduation Project presents the development of a comprehensive project management methodology tailored for Glean's Construction & Engineering Co. The objective was to enhance project execution efficiency, improve quality control, and foster collaboration among multidisciplinary teams within the organization. The study identified critical challenges stemming from the lack of structured project management practices, which resulted in inconsistencies and inefficiencies in project delivery.

The research employed a mixed-methods approach, including literature reviews, interviews with industry experts, and case studies of successful projects. This methodology facilitated the creation of a robust framework that integrates both traditional and agile project management practices. This assessment also pinpointed inadequacies in current practices, aiding the customization of the project methodology.

The findings drawn from this project emphasized the importance of standardized processes in project management. The development of this methodology positions Glean's Construction to adapt to the evolving demands of the construction industry, ensuring continued success and operational excellence.

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ABBREVIATIONS AND ACRONYMS

BIM	Building Information Modeling
BNTF	Basic Needs Trust Fund
CBA	Cost-Benefit Analysis
EVM	Earned Value Management
FGP	Final Graduation Project
GC & E	Glean's Construction & Engineering
GPM	Green Project Management
HSE	Health, Safety, and Environment
IA	Implementing Agency
ISO	International Organization for Standardization
KPIs	Key Performance Indicators
LCA	Life Cycle Assessment
MPM	Master's in Project Management
NGD	Non-Governmental Development Organization
P5	People, Planet, Prosperity Framework
PMP	Project Management Professional
PMI	Project Management Institute
QC	Quality Control
QA	Quality Assurance
R&D	Research and Development
RBS	Resource Breakdown Structure
ROI	Return on Investment
SOP	Standard Operating Procedure

SDG	Sustainable Development Goals
SWOT	Strengths, Weaknesses, Opportunities, Threats
TQM	Total Quality Management

EXECUTIVE SUMMARY

Glean's Construction & Engineering Co., established in 1995, has distinguished itself as a prominent player in the Caribbean construction industry, renowned for its commitment to quality and timely project delivery. Despite its achievements, the company has faced significant challenges regarding project management, primarily stemming from an absence of structured methodologies. As projects became increasingly complex and the influx of new projects increased, the necessity for effective project management practices grew more pronounced.

The core problem identified was the inadequacy of formal project management methodologies within Glean's Construction, which hindered effective project execution and collaboration. Many employees, while skilled in their respective fields, lacked formal training in project management practices. This deficiency created a reliance on informal knowledge transfer, resulting in inconsistencies in project delivery and a fragmented approach to project execution. The justification for this project lies in the understanding that implementing structured methodologies could significantly enhance project outcomes, improve stakeholder satisfaction, and foster a culture of continuous improvement within the organization.

The Final Graduation Project's general objective was to create a comprehensive project management methodology that would adopt relevant industry standards and best practices, thereby improving and enhancing project execution and maximizing quality control timelines in Glean's Construction projects. The specific objectives included: proposing a robust project management methodology that encompasses templates, processes, procedures, definitions, and recommendations tailored for Glean's projects; developing a methodology for managing projects undertaken by Glean; demonstrating applications of the developed templates using a Glean's project; implementing structured feedback mechanisms and collaborative planning sessions within the selected methodologies to enhance project execution and address quality control challenges; and assessing the impact of the adapted methodologies on project timelines and deliverable quality through quantitative and qualitative performance metrics.

The methodology employed in this project involved a multifaceted approach that began with a thorough review of existing project management practices within Glean's Construction. This included conducting interviews with industry experts and stakeholders to gather insights into effective methodologies and common challenges faced in project execution. The research also involved the development of a project management framework that integrated both traditional and agile methodologies, ensuring that the proposed solutions were adaptable to the unique characteristics of construction projects. The use of qualitative and quantitative assessments allowed for a comprehensive evaluation of project performance metrics, stakeholder feedback, and case studies of successful projects, thereby grounding the proposed methodology in real-world applications and best practices.

Conclusions drawn from this project emphasized the critical need for a standardized project management methodology. The implementation of such a methodology leads to improved project coordination and communication among teams, resulting in enhanced delivery timelines and quality control measures. Furthermore, the establishment of structured feedback mechanisms fostered a collaborative environment, contributing to higher levels of stakeholder satisfaction. The alignment of project management practices with industry standards not only reinforced Glean's reputation as a leader in the construction sector but also positioned the organization to meet the evolving demands of clients effectively.

Recommendations derived from the project development process highlighted the importance of ongoing training for staff in project management practices to ensure the effective application of the new methodology. Establishing a centralized repository for project documentation and best practices would enhance knowledge sharing among team members and streamline project execution. Regular reviews of the project management processes, and performance metrics should be implemented to identify areas for improvement, allowing for adaptive methodologies that respond to the dynamic nature of the construction industry. Furthermore, fostering a culture of continuous feedback and learning will ensure that Glean's Construction remains agile and innovative in its approach to project management. By adopting these recommendations, Glean's Construction can solidify the gains achieved through this project and continue to thrive in a competitive landscape, ultimately leading to sustained success and improved project outcomes for clients and stakeholders alike.

1 INTRODUCTION

This Final Graduation Project (FGP) aims to develop a comprehensive project management methodology tailored for Glean's Construction and Engineering Ltd. The primary purpose of this research is to enhance project execution efficiency, improve quality control, and foster collaboration among multidisciplinary teams within the organization. Given the increasing complexity and demands of the construction industry, it is imperative to adopt structured methodologies that align with best practices and industry standards.

The motivation for this project arises from the notable challenges faced by Glean's Construction. These issues have been exacerbated by the lack of standardized processes and formal documentation, which hampers effective project management. By implementing a robust methodology, the organization can mitigate these challenges and promote a culture of continuous improvement and adaptability.

The foundations of this research are based on established project management principles and insights from recent studies on effective project management practices. The integration of both traditional and agile methodologies will provide a flexible framework that addresses the unique characteristics of construction projects, ensuring that Glean's Construction can meet the evolving needs of its clients while maintaining high standards of quality and efficiency.

This FGP seeks to create a structured approach that not only enhances project outcomes but also positions Glean's Construction as a leader in the Caribbean construction industry, capable of delivering projects on time, within budget, and to the highest quality standards.

1.1 Background

Founded in 1995, Glean's Construction & Engineering Co. is a 100% employee-owned firm that has established itself as a leading multi-disciplinary engineering and construction

company in Grenada and the Caribbean. The organization has built a solid reputation for delivering contracts consistently and safely, on time, on budget, and to exacting standards. This commitment to quality is reflected in the company's core belief that its success is directly tied to the caliber of its work. Glean's prides itself on providing optimum levels of service and first-class contract delivery, which has fostered long-lasting relationships with clients in both the public and private sectors.

Over the years, Glean's Construction & Engineering has developed a wealth of expertise in various sectors, including infrastructure development, building construction, sea defense systems, and environmental remediation. The organization has also been instrumental in devising coastal and flood protection strategies, road construction, and managing complex logistics for renewable energy projects. This diverse range of services positions Glean's as a versatile partner capable of addressing the unique challenges faced by clients in different industries.

The range of services offered by Glean's includes civil engineering design, structural engineering design, geotechnical engineering, architectural design, project management, appraisals and valuations, developmental advice, and environmental impact assessments. Each of these services is underpinned by a commitment to sustainability and regulatory compliance, ensuring that projects not only meet client specifications but also adhere to environmental standards and best practices.

The historical context of Glean's Construction & Engineering Co. is significant in understanding its current operations and strategic direction. Since its inception, the company has navigated various economic and environmental challenges, adapting its services to meet the evolving needs of clients. The Caribbean region, characterized by its unique geographical and infrastructural challenges, has necessitated innovative approaches in construction and

engineering practices. Glean's has responded to these challenges by investing in the latest technologies and methodologies, ensuring that its workforce is equipped with the skills and knowledge required to deliver high-quality results.

Furthermore, Glean's commitment to employee ownership has fostered a culture of accountability and dedication among its staff. This structure not only motivates employees to take pride in their work but also aligns their interests with those of the company and its clients. The emphasis on teamwork and collaboration within the organization has been a key factor in successfully completing projects and maintaining high standards of quality and safety.

As Glean's Construction & Engineering Co. looks to the future, the company aims to further enhance its methodologies and practices, particularly in project management. The proposed methodology will incorporate industry standards and best practices, focusing on improving multidisciplinary team collaboration, enhancing project execution, and maximizing quality control timelines. This initiative is crucial for ensuring that Glean's continues to deliver exceptional service while adapting to the challenges and opportunities presented by the ever-changing construction landscape in the Caribbean.

Glean's Construction & Engineering Co. stands as a testament to the potential of employee-owned enterprises in the construction and engineering sectors. By leveraging its extensive experience, commitment to quality, and innovative approaches, Glean's is well-positioned to maintain its status as a leader in the region. The ongoing development of a comprehensive project management methodology will not only enhance operational efficiency but also reinforce the company's dedication to delivering superior client outcomes.

1.2. Statement of the problem

The construction industry in Grenada, contributing approximately 14.95% to the country's GDP as of 2023, faces critical challenges due to the lack of structured project management methodologies within the firm. Despite the diversity of projects handled, ranging from residential constructions to large-scale infrastructure developments, there exists a significant gap in the formal training of staff in project management practices. Most employees are trained in specialized fields such as architecture and engineering, yet only a small percentage possess dedicated project management expertise. This deficiency creates a reliance on rudimentary methods and informal knowledge transfer among team members, which can result in inconsistent practices and inefficiencies in project delivery.

A major issue stemming from this lack of formalized methodologies is the absence of a centralized repository for documented processes and best practices related to project management. New project managers entering the organization face considerable obstacles in locating reliable guidelines and frameworks to guide their work. Without access to standardized procedures, these managers struggle to align their projects with the organization's strategic goals, often resulting in varied approaches that hinder collaboration and coherence. The fragmentation of project execution diminishes the efficiency of the teams, leading to potential project overruns and client dissatisfaction. As noted by Kerzner (2017), the implementation of standardized methodologies is crucial for ensuring that projects meet quality expectations and are completed within the designated timeframes.

In addition, the reliance on tacit knowledge transfer can be detrimental to the organization's growth. Employees learn from both successful and unsuccessful examples, but this informal learning process is inefficient and inconsistent. Less experienced staff often attempt

to replicate practices based on anecdotal evidence rather than established methodologies, which can lead to repeated mistakes and suboptimal outcomes. The lack of structured learning opportunities contributes to a culture of inconsistency, where project execution suffers due to the absence of a clear framework. Establishing a formalized repository would mitigate these issues by providing essential resources for all project managers, fostering a culture of shared knowledge and consistency in project execution.

Moreover, the absence of formal documented methodologies directly impacts the firm's ability to cultivate a collaborative work environment. When team members employ varied approaches to project management, it becomes challenging to maintain alignment and cohesion across projects. This fragmentation can lead to misunderstandings, miscommunication, and ultimately, inefficiencies that detract from the overall performance of the firm. Implementing a centralized repository of methodologies would not only streamline project execution but also enhance team collaboration, allowing for shared learning and improved project outcomes.

The firm's lack of formal project management methodologies poses significant challenges that must be addressed to improve project delivery and organizational performance. The establishment of a centralized repository for documented processes, coupled with training programs for staff, is essential for equipping project managers with the necessary tools and knowledge to succeed in their roles. As highlighted by the Project Management Institute (2021), effective project management practices are vital for achieving organizational objectives and ensuring client satisfaction. By addressing these gaps, the firm can enhance its capability to manage projects efficiently and effectively, ultimately leading to improved outcomes for clients and stakeholders.

1.3. Purpose

This study aims to investigate the deficiencies in project management practices that hinder the successful execution within the organization, focusing on the absence of formalized methodologies, documented processes, and centralized knowledge repositories. The investigation will assess how these gaps impact project delivery, quality, and stakeholder satisfaction, ultimately leading to project inefficiencies.

The project will be undertaken to address the critical need for enhanced project management practices in the firm. By implementing a structured methodology, the firm can improve its project capabilities. This initiative is essential not only for enhancing the firm's operational efficiency but also for fostering a culture of continuous improvement and professional development among employees. The study will also explore the potential for increased stakeholder engagement through standardized practices, which can enhance collaboration and communication across teams.

The expected benefits of implementing this project are numerous. First, establishing a centralized repository for documented methodologies and best practices will provide all project managers with essential resources, allowing for consistent application of project management principles across all projects. Second, formal training programs for staff will equip team members with the skills necessary to effectively manage projects, leading to improved project outcomes and reduced reliance on informal knowledge transfer. Third, the introduction of standardized procedures will enhance collaboration among teams, facilitating better communication and alignment with organizational objectives. This collaboration is crucial for minimizing misunderstandings and ensuring that all team members work towards a common goal.

Furthermore, improved project management practices are expected to enhance client satisfaction by delivering projects that meet quality standards and are completed within the agreed-upon timelines. A focus on quality assurance will help mitigate the risks of project and enhance the firm's reputation in the competitive construction market. Additionally, the implementation of these methodologies will support the firm's strategic goals by aligning project execution with broader organizational objectives, ultimately contributing to sustainable growth and profitability.

By documenting processes and encouraging the sharing of best practices, the firm can build knowledge that will benefit current and future employees. This culture will not only enhance individual capabilities but will also strengthen the overall performance of the organization.

1.4. General Objective

To create a comprehensive project management methodology that seeks to adopt pertinent industry standards and best practices, ensuring the improvement of multidisciplinary team collaboration, enhancing project execution, and maximizing quality control timelines in Glean's Construction and Engineering consulting projects. This methodology aims to provide a structured framework that aligns with industry standards, fostering efficient and effective project processes. By applying established project management methodologies, the organization will facilitate systematic execution, leading to timely and budget-compliant project delivery while enhancing communication and cooperation among diverse team members. Ultimately, this objective will improve client satisfaction and organizational reputation by implementing robust quality assurance processes that ensure all deliverables meet high standards.

1.5. Specific Objectives

1. To propose a robust project management methodology that includes templates, processes, and procedures tailored for Gleans Construction projects, addressing the unique characteristics of similar projects within the organization.
2. To demonstrate applications of the templates for the management of projects undertaken by Glean's, utilizing a pilot project case study.
3. To develop a Project Charter that will outline the project's purpose and objectives, ensuring a clear and shared understanding of the project's intentions.
4. To develop a Project Scope Management Plan that defines and documents the project scope, ensuring that all the work required and only the work required is included.
5. To develop a project schedule management plan that assesses the impact of the adapted methodologies on project timelines and schedules, deliverable quality through quantitative and qualitative performance metrics in the Glean's pilot project.
6. To develop a Project Stakeholder Management Plan that identifies and engages stakeholders, ensuring that their needs and expectations are managed throughout the project lifecycle. In addition to implementing structured feedback mechanisms and collaborative planning sessions with stakeholders to enhance collaboration and manage expectations.
7. To develop a resource management plan that outlines the processes for effectively acquiring, allocating, and managing project resources, including human resources, material, and equipment.

8. To develop effective communication and collaboration strategies, and methods to facilitate adequate information flow among all stakeholders and the multidisciplinary teams.
9. To develop a Procurement Management Plan that establishes guidelines for sourcing materials and services, including vendor selection, contract management, and performance evaluation.
10. To develop a comprehensive Cost Management Plan that outlines budgeting, cost estimation, and financial control processes, ensuring that project expenses are effectively monitored and controlled throughout the project lifecycle.
11. To develop a Quality Management plan, assurance, procedures, and performance metrics for systems to maintain high standards of system performance and reliability through project execution.
12. To develop risk management strategies that identify and mitigate potential project risks to minimize disruptions and ensure smooth progress toward project completion.

2 THEORETICAL FRAMEWORK

2.1 Company/Enterprise Framework

Founded in 1995, Glean's Construction & Engineering Co is a 100% employee-owned firm. Glean's Construction & Engineering Co is a multi-disciplinary engineering and construction company. The organization has been serving clients in the public and private sectors throughout Grenada and the Caribbean. The company has built a solid reputation for consistently and safely delivering contracts on time, on budget, and to exacting standards. We fully understand that our success depends on the quality of our work and pride ourselves in providing optimum levels of service and first-class contract delivery to our clients.

Incorporated in 1995, Glean's Construction & Engineering Co is amongst the region's leading consulting companies. Gleans have a wealth of expertise in developing infrastructure, buildings, sea defense, providing remediation, devising coastal and flood protection, road construction, and managing complex logistics for renewable energy.

The range of services include civil engineering design, structural engineering design, geotechnical engineering, architectural design, project management, appraisals & valuations, developmental advice, and environmental impact assessments.

Mission statement

At Glean's Construction & Engineering Co., our mission is to deliver exceptional construction and engineering services that meet the diverse needs of our clients while fostering sustainable development in our communities. We are committed to excellence, innovation, and safety, ensuring that every project is completed on time, within budget, and to the highest quality standards. Our passionate and dedicated team works collaboratively to build lasting relationships that inspire trust and satisfaction.

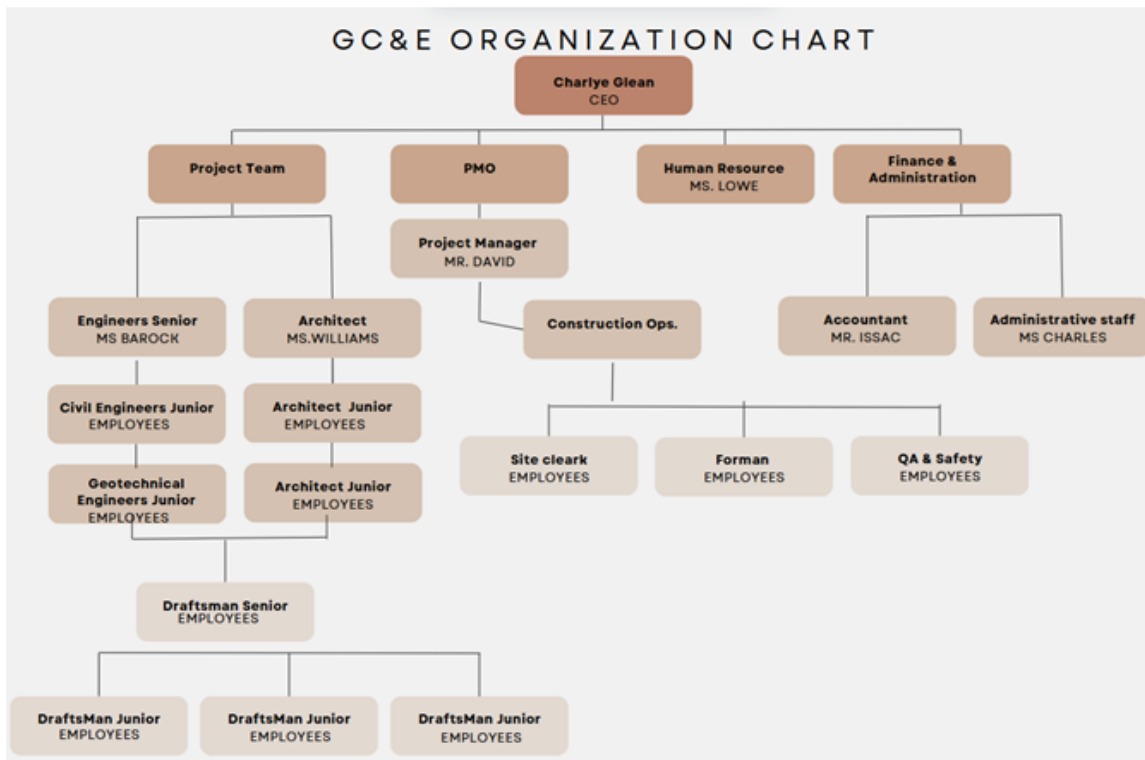
Vision statement

Our vision is to be the premier construction and engineering firm in the Caribbean, renowned for our commitment to quality, integrity, and sustainability. We aspire to lead the industry through innovative practices and by empowering our team to realize their full potential. By continuously pursuing new opportunities and embracing challenges, we aim to contribute to the growth and prosperity of the communities we serve, leaving a legacy of excellence for future generations.

Organizational structure

Glean's Construction & Engineering Co. operates with a structured organizational framework that is designed to promote operational efficiency, collaboration, and clear communication. At the helm is the CEO, Mr. Glean, who oversees the overall strategy and vision of the company. The Project Management Office (PMO) plays a vital role, with project managers leading individual projects and assistant managers supporting planning and execution. The engineering department consists of civil, structural, and geotechnical engineers who ensure the technical integrity of projects such as building bridges, etc., while architects develop design plans, produce reports, and maintain architectural quality. The drafting department collaborates closely with engineers and architects to produce detailed construction drawings. On-site, construction operations are managed by site clerks and foremen who supervise daily activities and ensure compliance with safety and quality standards. Additionally, quality assurance and safety personnel monitor processes and implement safety protocols, while the finance and administration team manage financial records and office operations. This cohesive structure allows Glean to deliver high-quality construction projects effectively while fostering collaboration and accountability.

Figure 1

GC&E Organization Chart

Note. Own work.

Services offered

With nearly three decades of experience, Glean’s has developed a wealth of expertise across various sectors, including:

- **Infrastructure development:** Specializing in the construction and rehabilitation of essential infrastructure, contributing to the growth and sustainability of communities.
- **Building construction:** Adept at delivering residential, commercial, and institutional buildings, tailored to the unique needs of our clients.

- **Coastal and flood protection:** Devise innovative solutions for coastal defense and flood mitigation, safeguarding communities against natural disasters.
- **Road construction:** Road construction projects enhance connectivity and accessibility, facilitating economic development in the region.
- **Renewable energy logistics:** Manage complex logistics for renewable energy projects, supporting the transition to sustainable energy sources.

Comprehensive range of services

The services encompass various engineering disciplines, ensuring a holistic approach to project delivery:

- **Civil engineering design:** Crafting robust designs that meet functional and aesthetic requirements.
- **Structural engineering design:** Ensuring the safety and stability of structures through meticulous engineering practices.
- **Geotechnical engineering:** Assessing soil and rock properties to inform safe and effective construction practices.
- **Architectural design:** Creating innovative and functional designs that enhance the built environment.
- **Project management:** Overseeing projects from inception to completion, ensuring efficiency and accountability.
- **Appraisals and valuations:** Providing accurate assessments to inform investment and development decisions.
- **Developmental advice:** Offering strategic guidance to optimize project outcomes.

- **Environmental impact assessments:** Evaluating the environmental implications of projects, ensuring compliance with regulations, and promoting sustainability.

2.2 Project Management Concepts

Throughout this chapter, project management principles from the PMBOK Guide will be applied to develop a tailored management concept for the Paradise School Project. This integration will create a structured approach to enhance efficiency, quality, and stakeholder engagement throughout the project lifecycle.

According to the Project Management Institute's (PMI) Guide to the Project Management Body of Knowledge (PMBOK Guide) - Seventh Edition, project management is defined as a systematic method for overseeing and directing projects to accomplish defined goals (PMI, 2021). The PMBOK Guide outlines essential principles and domains of project management, including stakeholder engagement, quality management, and risk management, all of which are crucial for ensuring project success.

The application of these concepts will establish a framework for the Paradise School Project, addressing current challenges and positioning it for future success. Stakeholder engagement will involve systematic identification and analysis of relevant parties—such as parents, educators, local authorities, and community representatives—fostering collaboration and trust through a robust communication plan. Quality management will focus on developing a detailed Quality Management Plan that defines standards and procedures, with regular inspections ensuring compliance and promoting continuous improvement through documentation. Proactive risk management will identify potential risks via collaborative brainstorming, resulting in a comprehensive risk register that categorizes risks by likelihood and

impact to facilitate effective prioritization and mitigation strategies. Integration management will be achieved through a project charter outlining objectives, scope, and key stakeholders, serving as a guiding document for alignment. An integrated project management plan will unify all aspects—scope, schedule, budget, and quality—into a cohesive framework. Finally, effective communication management will establish clear protocols for information dissemination and maintain detailed documentation, enhancing transparency and accountability, supported by project management software for real-time updates and collaboration. By applying these principles, the project aims for the highest quality standards, ultimately benefiting the organization.

2.2.1 Project management principles

The Project Management Institute (PMI) has identified 12 principles that serve as the foundation for effective project management. These principles are instrumental in developing a methodology for implementing projects at Glean’s Construction & Engineering Co. Here’s how each principle can be applied to enhance project execution:

1. **Be a diligent, respectful, and caring steward** - Emphasize ethical practices and accountability in all projects. By being a responsible steward, ensuring that resources are used effectively and that stakeholder interests are prioritized. Implementing transparency and accountability which are essential in any project activities.
2. **Create a collaborative project team environment** – Fostering a culture of collaboration among team members is key. This involves encouraging open communication, teamwork, and sharing ideas to enhance problem-solving and innovation.
3. **Engage stakeholders** - Actively involving stakeholders in the project lifecycle. Regular consultations and feedback sessions help ensure that stakeholder needs are understood

and addressed, leading to higher satisfaction and project success. Creating a stakeholder engagement plan will be essential.

4. **Focus on value** - The organization shall prioritize delivering value to clients through high-quality construction and innovative solutions. Glean shall assess project outcomes against client expectations to ensure that value is maximized.
5. **Recognize, evaluate, and respond to systemic interactions** - It is important to understand the interdependencies within project elements. By recognizing how changes in one area (e.g., design) can affect others (e.g., budget and schedule), the organization can make informed decisions that enhance overall project performance.
6. **Demonstrate leadership behaviors** - Demonstrating leadership which involves guiding teams, making decisive choices, and inspiring confidence. Leaders will promote a shared vision and motivate team members to achieve project goals effectively.
7. **Tailor based on context** - Customizing the project management approach based on the specific context of each project. Whether it's a residential building or a large commercial project, the methodology is adapted to meet unique challenges and stakeholder needs.
8. **Build quality into processes and deliverables** - Integration of Quality assurance throughout the project lifecycle. The organization can implement additional strict quality control measures to ensure that all deliverables meet established standards and regulations.
9. **Improve continuously** - Being committed to continuous improvement. After project completion, document lessons learned and analyzed to refine processes and enhance future project execution.

10. **Embrace uncertainty and adaptability** - In the dynamic construction environment, the importance of being adaptable. Preparing for uncertainties by developing risk management strategies that allow for quick adjustments when challenges arise.
11. **Optimize risk management** - Proactively identifying and assessing risks at every project stage. By implementing effective risk mitigation strategies, the organization minimizes potential negative impacts on project outcomes.
12. **Ensure transparency and accountability** - Transparency in communication and decision-making is a core value. Maintain clear records and provide regular updates to stakeholders, fostering trust and accountability throughout the project lifecycle.

2.2.2 Project management domains

The PMBOK Guide Seventh Edition outlines eight performance domains essential for effective project management. These domains are interactive, interrelated, and interdependent, working together to achieve successful project outcomes. (PMI, 2021). There are eight domains, and they are all relevant to the Final Graduation Project (FGP) as follows:

1. **Stakeholder engagement** - Engaging stakeholders effectively is crucial. This domain looks at the interaction with the stakeholders. This includes clients, regulatory bodies, teachers, the Ministry of Education, and community members. By identifying and addressing stakeholder needs and expectations early, ensuring support and collaboration throughout the project lifecycle, reducing conflicts, and enhancing satisfaction. A stakeholder management plan will be created to guarantee that all stakeholder needs and concerns are addressed.
2. **Team performance** - This domain emphasizes building high-performing teams. The methodology will include strategies that focus on building clear communication,

collaboration, and the development of team skills, which fosters a positive work environment. Effective team dynamics lead to improved productivity, innovation, and project success, especially in complex construction projects.

3. **Development approach and life cycle** - The domain involves the selection of an appropriate lifecycle. The hybrid project management approach, combining predictive and adaptive methodologies would be best for the Glean organization. This flexibility allows the organization to tailor its project management processes to the unique requirements of each project, whether it's a commercial, institutional, or residential building, enhancing responsiveness to changes.
4. **Planning** - Implementation of robust planning is fundamental. This domain will help the organization invest time in developing comprehensive project management plans that include scope, schedule, budget, and risk management. This thorough planning process ensures that all project aspects are aligned and that everyone has clear expectations.
5. **Project work** – This domain focuses on the efficient execution of project work, ensuring that construction activities are well-coordinated and aligned with the project plan. By prioritizing quality control and adherence to standards, the organization minimizes errors and rework, ultimately leading to timely project completion.
6. **Delivery** - This domain is critical as it emphasizes the importance of delivering project outputs that meet specified requirements. Glean will ensure maintaining high-quality standards throughout the construction process, ensuring that final deliverables satisfy client expectations and regulatory compliance.
7. **Measurement** - This entails monitoring performance and tailoring based on performance data. The use of the performance metrics can be utilized to assess project progress and

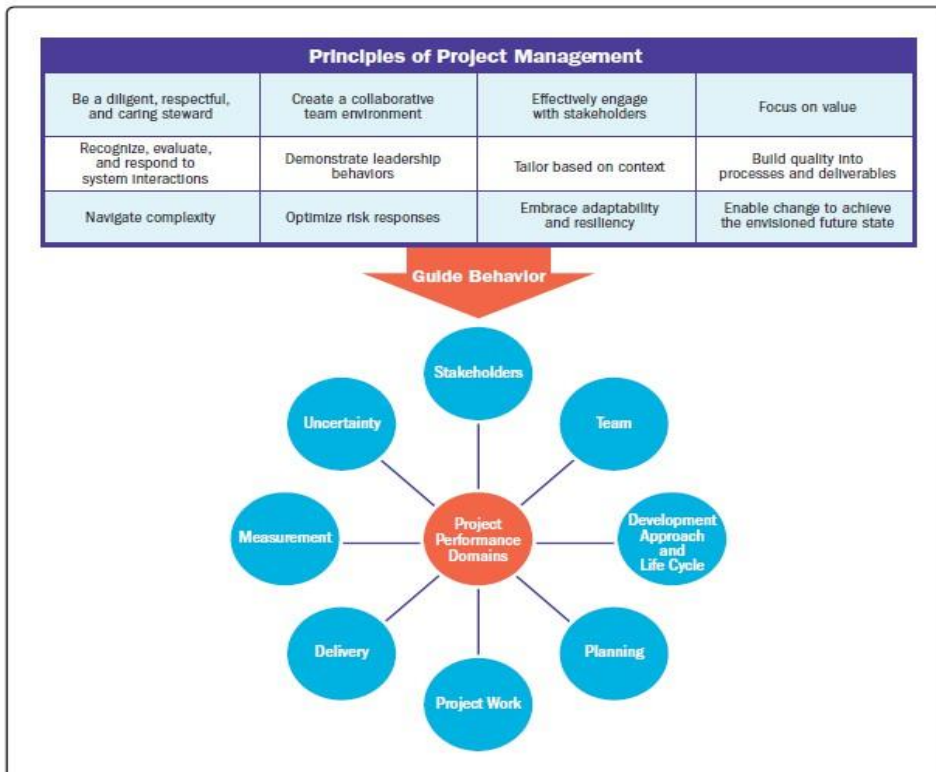
effectiveness. By utilizing key performance indicators (KPIs), the organization can monitor timelines, budget adherence, and quality standards, allowing for informed decision-making and timely interventions when necessary.

- 8. **Uncertainty** - This looks at the management of uncertainty, which is vital in construction projects, where unforeseen challenges can arise. Glean will proactively identify potential risks and implement mitigation strategies, allowing the organization to adapt to changes and maintain project momentum despite uncertainties.

Figure 2

Relationship between Project Management Principles and Project Performance

Domains



Note. Source: PMI, 2021

2.2.3 Predictive, Adaptive, and Hybrid Projects

The three fundamental project management approaches are termed Predictive, Adaptive, and Hybrid. Predictive projects are projects in which the requirements and outcomes are well understood, and there's a low likelihood of such changing. Projects such as construction and large-scale infrastructure fit into this category. It is characterized by initial detailed planning, which organizes deliverables into sequential phases. As mentioned previously, its scope is fixed, but it relies heavily on documentation, which is developed and needs to be adhered to by different stakeholders.

The adaptive approach can be viewed as the opposite of the predictive type of project approach. They are projects that are full of uncertainty and surprises. Further to this, they may also require higher and more frequent levels of stakeholder feedback. These projects, unlike predictive have evolving requirements during the life cycle. This approach is characterized by flexibility, responsiveness, iterative development, and stakeholder collaboration.

In cases where a project fails to fit into either predictive or adaptive approach, a hybrid approach is taken. Such an approach provides structures to promote and maintain stability, while still allowing flexibility. They are typically used in complex and changing projects. The right methodology is dependent on project requirements, the level of uncertainty, and most importantly, the stakeholder needs. A hybrid approach was taken for the pilot project used in the FGP.

2.2.4 Project Management

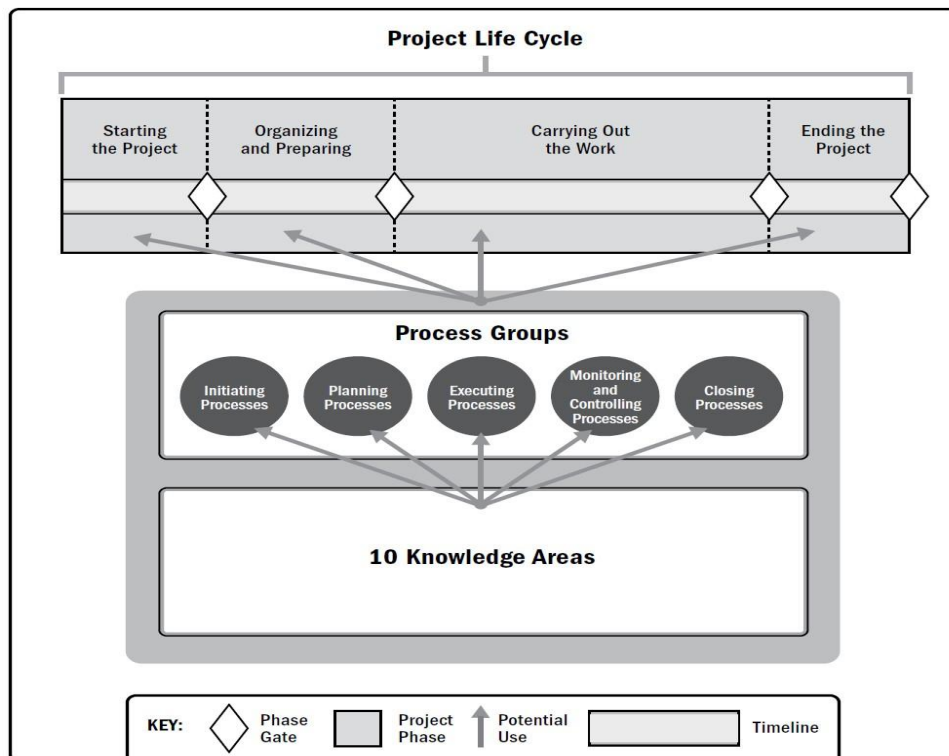
Project management involves utilizing knowledge, skills, tools, and techniques to carry out project activities to fulfill project requirements. It includes a lifecycle that consists of phases such as initiating, planning, executing, monitoring, and closing projects (PMI, 2021). The project management concept will provide the skills, tools, and knowledge to assist in the development of the methodology for the implementation project in the Green Construction and Engineering.

2.2.5 Project Management Knowledge Areas and Processes

According to the Group Process Guide for PMI, there are 10 knowledge areas, and it is crucial to understand and manage the processes effectively. Each knowledge area comprises a set of processes applied throughout the five process groups: initiating, planning, executing, monitoring, controlling, and closing. Below are the ten knowledge areas relating to the processes within these groups.

Figure 3

PMBOK® Guide Life Cycle, Process Groups and Knowledge Areas



Note. Reprinted from *A Guide to the Project Management Body of Knowledge (PMBOK® Guide) Sixth Edition*. Project Management Institute (PMI), 2017 Figure 1-5, p. 18 Copyright 2017 by PMI, Inc.

Project management processes

Based on PMI (2017), integration management entails ensuring that all elements of the project are correctly coordinated. It utilizes all five processes as follows:

- **Initiating:** To develop a project charter which is a formal short document that summarizes the project goals, objectives, resource requirements, preliminary schedule, cost, risk, and assumptions

- **Planning:** Develop a comprehensive Project Management Plan for the entire project that outlines how the project will be executed and monitored.
- **Executive:** Directing and managing project work
- **Monitoring and controlling:** Track project performance and make necessary adjustments.
- **Closing:** To close the project or phase; usually finalize all activities and formally close the project.

Project management knowledge areas

Project management knowledge areas are specialized fields commonly utilized in managing projects (PMI, 2017, p. 553). The PMBOK® Guide identifies 10 core project management knowledge areas, each linked to one of the five process groups. PMI (2017) categorizes the 49 processes across the five (5) process groups and the ten (10) knowledge areas. The following outlines the 10 knowledge areas, which will be fully developed to achieve specific project goals.

Project Integration Management

Ensures that project elements are properly coordinated.

- **Develop Project Charter:** Authorize the project and define objectives.
- **Develop Project Management Plan:** Create a comprehensive plan that outlines how the project will be executed.
- **Direct and Manage Project Work:** Oversee project execution and ensure deliverables are produced.

- **Manage Project Knowledge:** Utilize existing knowledge and create new knowledge to achieve project objectives.
- **Monitor and Control Project Work:** Track, review, and regulate the progress and performance of the project.
- **Perform Integrated Change Control:** Manage changes to the project scope, schedule, and costs.
- **Close Project or Phase:** Finalize all activities and formally complete the project or phase.

Project scope management

There are six (6) processes in the project scope management knowledge area that ensure all the work and only the work required to complete the project successfully is included.

- **Plan scope management:** Define how the scope will be managed.
- **Collect requirements:** Gather stakeholder needs and expectations.
- **Define scope:** Develop a detailed description of the project and its deliverables.
- **Create WBS (Work Breakdown Structure):** Break down the scope into manageable components.
- **Validate scope:** Ensure deliverables meet requirements.
- **Control scope:** Monitor project scope and manage changes.

Project schedule management

The project schedule management knowledge area includes the processes required to manage the timely completion of the project.

- **Plan schedule management:** Define how the schedule will be managed.
- **Define activities:** Identify specific tasks required to complete the project.

- **Sequence activities:** Determine the order of tasks and their dependencies.
- **Estimate activity durations:** Assess the time needed to complete each task.
- **Develop a schedule:** Create a project timeline.
- **Control schedule:** Monitor progress and adjust as needed.

Project cost management

There are various processes in the project cost management knowledge area, which involve planning, estimating, budgeting, financing, managing, and controlling costs to complete the project withing the approved budget.

- **Plan cost management:** Define how project costs will be managed.
- **Determine budget:** Establish a budget for the project.
- **Control costs:** Monitor expenditures and manage changes to the budget.

Project quality management

The project quality management knowledge area includes three (3) processes for incorporating the organization's quality policy to meet stakeholders' objectives.

- **Plan quality management:** Define quality standards and how they will be achieved.
- **Manage quality:** Ensure that project deliverables meet quality standards.
- **Control quality:** Monitor and measure project results to ensure compliance with quality standards.

Project resource management

The project resource management knowledge area includes six (6) processes to identify, acquire, and manage the resources needed for the successful completion of the project.

- **Plan resource management:** Define how resources will be managed.
- **Estimate activity resources:** Identify what resources are needed for project activities.

- **Acquire resources:** Obtain the necessary resources.
- **Develop team:** Enhance team skills and competencies.
- **Manage team:** Oversee team performance and resolve conflicts.

Project communication management

There are three (3) processes in the project communication management knowledge area that ensure that the information needs of the project and its stakeholders are met.

- **Plan communication management:** Define how project information will be communicated.
- **Manage communications:** Ensure timely and appropriate information dissemination.
- **Monitor communications:** Assess the effectiveness of communications.

Project risk management

There are seven (7) processes of conducting risk management in this knowledge area.

- **Plan risk management:** Define how risks will be managed.
- **Identify risks:** Determine potential risks that could affect the project.
- **Perform qualitative risk analysis:** Assess the impact and likelihood of risks.
- **Perform quantitative risk analysis:** Analyze the overall effect of risks on project objectives.
- **Plan risk responses:** Develop strategies to mitigate risks.
- **Monitor risks:** Track risks and implement response plans as needed.

Project procurement management

This knowledge area includes processes necessary to purchase or acquire products, services, or results needed from outside the project team.

- **Plan procurement management:** Define what needs to be purchased and how.

- **Conduct procurements:** Obtain goods and services from external sources.
- **Control procurements:** Manage procurement relationships and ensure compliance.

Project stakeholder management

The project stakeholder management knowledge area includes the processes required to identify people, groups, or organizations that could impact or be impacted by the project.

- **Identify stakeholders:** Determine who will be affected by the project.
- **Plan stakeholder engagement:** Develop strategies for engaging stakeholders.
- **Manage stakeholder engagement:** Communicate and work with stakeholders to meet their needs.
- **Monitor stakeholder engagement:** Assess stakeholder relationships and make adjustments as needed.

2.2.6 Project Life Cycle

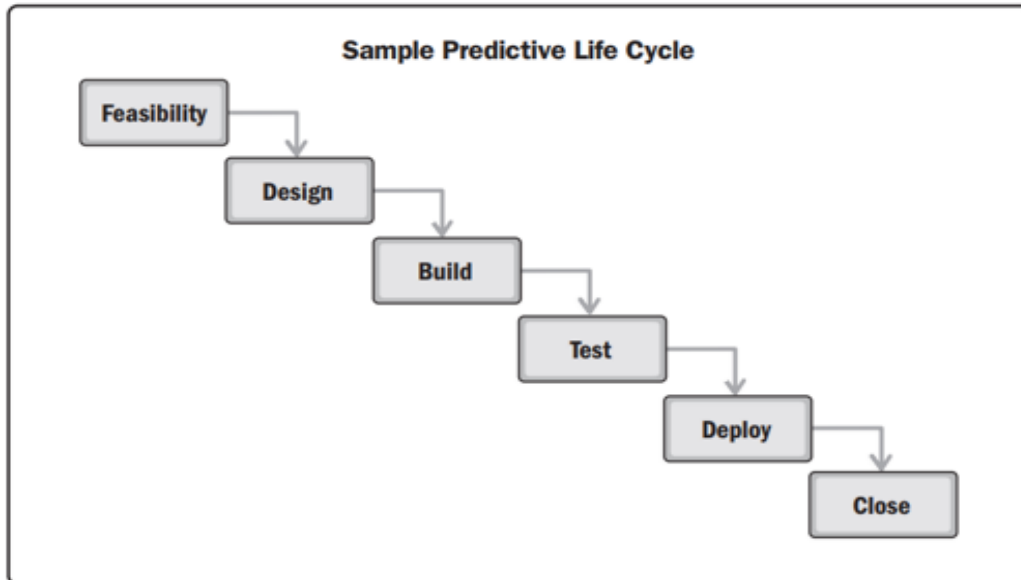
The project life cycle encompasses the efforts required at various stages of a project's duration, from initiation to closure. As a project advances, specific activities and deliverables must be completed before moving on to the next phase. Understanding these different life cycles is crucial, as they inform the most suitable approach for managing a project. The PMBOK Guide seventh edition (2021) identifies the primary types of project life cycles as Predictive, Iterative, Incremental, Adaptive, and Hybrid.

The predictive lifecycle, commonly referred to as the waterfall approach, is characterized by a linear and sequential method where the project's scope, timeline, and budget are determined early on (PMI, 2021). This entails extensive upfront planning, followed by adjustments as the project progresses. There is a defined path from beginning to end, with few changes along the way. The phases of the predictive lifecycle include initiation, planning,

execution, monitoring and controlling, and closing. Detailed planning typically occurs after the feasibility study is completed, as illustrated in Figure 4 below.

Figure 4

Sample Predictive Life Cycle



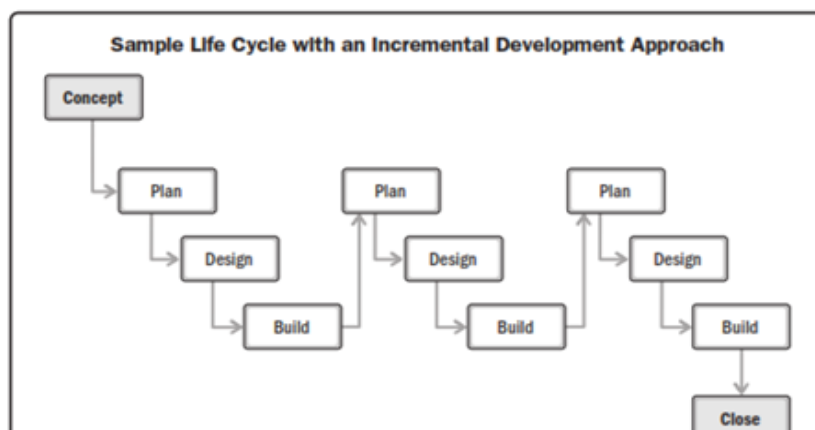
Note. Source: Project Management Institute. A Guide to the Project Management Body of Knowledge (PMBOK Guide) seventh edition, Project Management Institute, Inc. 2021, Figure 2-9, Page 43

The iterative life cycle differs from the predictive life cycle in that while the scope is defined early on, the estimates for time and cost may expand as the project advances, allowing for enhancements based on feedback. This process involves repeated cycles, or iterations, which can occur for each phase, potentially returning to phase two for replanning. An iterative life cycle is ideal for projects where requirements may evolve due to feedback and necessitate adjustments. The phases include initiation, planning, execution, feedback review, and replanning if necessary (PMI, 2021).

The incremental life cycle differs from the iterative approach in that it incorporates feedback while delivering the project in smaller, usable parts. In contrast to iteration, which produces a usable product only at the end, the incremental life cycle introduces functional components throughout the project's duration until it is fully finished (PMI, 2021). This method is particularly beneficial for projects with clearly defined requirements from the outset, allowing for the early delivery of project segments. The phases involved include initiation, increment planning, increment execution, increment delivery, and closing.

Figure 5

Life cycle with Incremental Development Approach



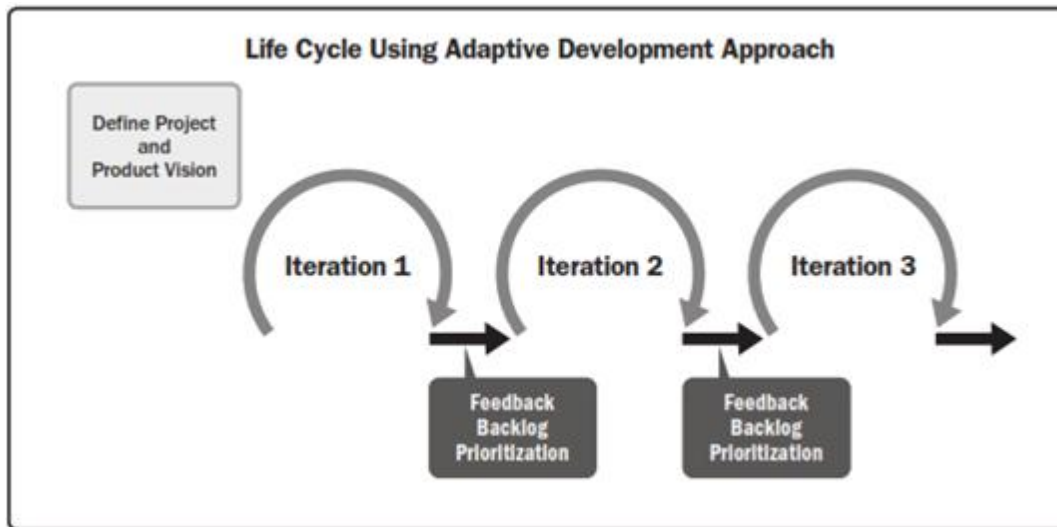
Note. Source: Project Management Institute. A Guide to the Project Management Body of Knowledge (PMBOK Guide) seventh edition, Project Management Institute, Inc. 2021, Figure 2-10, Page 44

The adaptive life cycle, commonly referred to as the agile approach, is particularly suited for projects characterized by significant uncertainty, rapidly changing requirements, and high levels of stakeholder engagement (PMI, 2021). This approach incorporates an iterative framework that allows for feedback while emphasizing prioritization and swift delivery through

short cycles or iterations. The phases include initiation, planning, iteration execution, iteration review and feedback, and adaptation.

Figure 6

Life Cycle Using Adaptive Development Approach



Note - Source: Project Management Institute. A Guide to the Project Management Body of Knowledge (PMBOK Guide), seventh edition, Project Management Institute, Inc. 2021, Figure 2-11, Page 45.

Hybrid life cycle as defined in the PMBOK Guide seventh edition (2021), is “A combination of two or more agile and non-agile elements, having nonagile results. It usually uses a predictive approach for well-defined parts of the project and an adaptive approach for areas with higher uncertainty. The phases are initiation, planning, mixed execution (Predictive and Adaptive), monitoring and controlling, and closing.

Key takeaway

Predictive Life Cycle

- All project requirements are defined upfront, and phases are completed one after another.

- Clear structure, well-defined scope, and predictable timelines make it suitable for projects with stable requirements.

Iterative Life Cycle

- This life cycle involves repeating phases to refine deliverables. Feedback from stakeholders is used to enhance outputs progressively.
- Flexibility to incorporate changes and improve quality over multiple iterations.

Incremental Life Cycle

- The project is delivered in smaller, manageable increments. Each increment builds on previous ones, adding value progressively.
- Allows for partial deliveries and early feedback, making it easier to adjust project direction based on stakeholder input.

Adaptive Life Cycle

- Also known as agile, this life cycle is highly flexible and responsive to change. It emphasizes collaboration and iterative progress through short cycles called sprints.
- Best suited for projects with high uncertainty and evolving requirements, allowing teams to adapt quickly.

Hybrid Life Cycle

- This approach combines elements of both predictive and adaptive life cycles. It allows for a structured framework while incorporating flexibility for certain project components.
- Tailored to specific project needs, making it versatile for various scenarios.

The Hybrid Project Life Cycle aligns well with Glean's Construction & Engineering Co.'s operational needs, providing a balance between structure and flexibility. This approach not only enhances project efficiency and quality but also ensures that stakeholder needs are met,

ultimately contributing to successful project outcomes in the dynamic construction environment. There are elements from the Predictive approach that can be applicable in addition to the Adaptive.

Complexity of Projects

Glean handles a diverse range of projects—commercial, institutional, and residential—which often have unique requirements and risks. A hybrid approach allows the company to apply predictive methods for stable components while using adaptive methods for areas that may require flexibility.

2.2.7 Company strategy, portfolios, programs and projects

The strategy of the company is aimed at generating a profit while ensuring that the projects delivered and worked on are sustainable, cost-effective, environmentally friendly, and beneficial to the community.

To achieve this, the company is structured to make use of resources most efficiently. Thus, by employing an arsenal of well-qualified and trained construction professionals, who in turn are deployed and used on multiple projects that fit in with their skillset, ensure that the projects are successful.

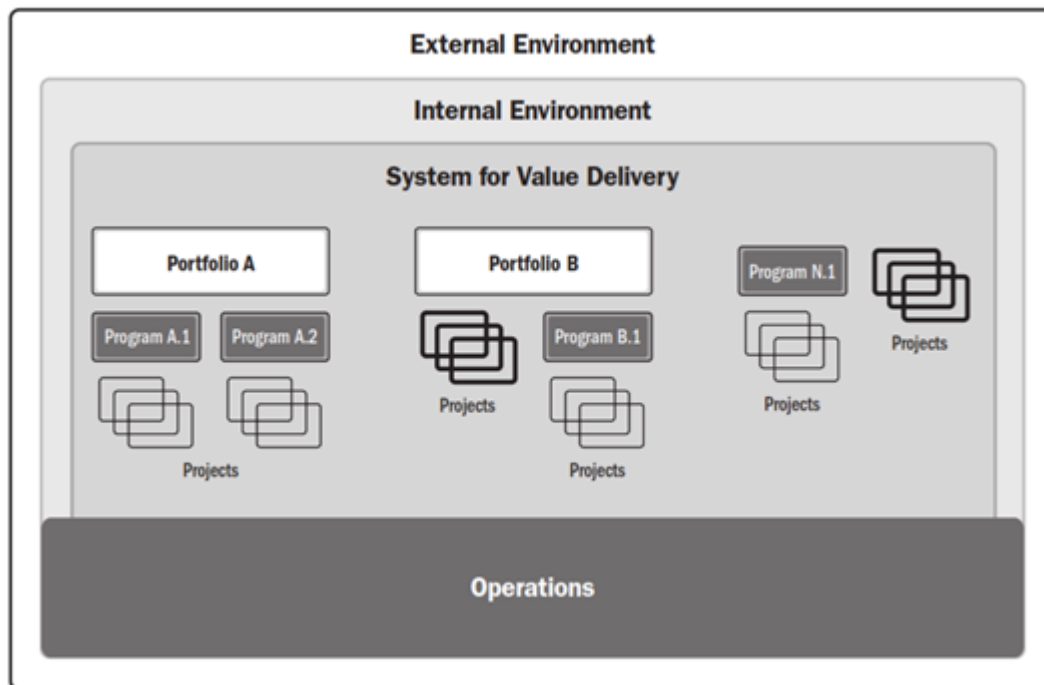
Further to this, by ensuring that there is a set of project-based KPIs instituted and tracked, all goes well for the overall strategy to achieve the company's primary objectives.

The company realizes that in order to ensure quality and continuum, the importance of developing and implementing standardized methodologies, approaches, procedures, etc., is also critical and strategic. These standardized tools will be rolled out across all project formats in the company.

The company's portfolios are broken into private and public sector works. As part of the private sector portfolio, programs are subdivided into residential, commercial, and industrial, with relevant projects falling under each category. Likewise, under the public sector portfolio, the programs are categorized as educational, health, and infrastructure works. Projects such as schools, health centers, clinics, roads and bridges are appropriately placed under their respective sections.

Figure 7

Components of a System for Value Delivery



Note - Source: Project Management Institute. A Guide to the Project Management Body of Knowledge (PMBOK Guide), seventh edition, Project Management Institute, Inc. 2021, Figure 2-2, Page 10.

2.3 Other Applicable Theory/Concepts Related to the Project Topic and Context

2.3.1 Current Situation of The Problem or Opportunity In Study

The construction industry in Grenada contributes to approximately 14.95% (2023) of the country's GDP. With projects ranging from as small as a typical home construction/renovation to the construction of multi-story apartment complexes and stadiums within the last decade, and as recently the ongoing upgrade to the island's lone International Airport. Undoubtedly, with greater investments being undertaken on the island by not only local firms and individuals, properly managing and delivering projects on time and on budget is critical. Hence, the importance of implementing methodologies.

At the firm, multiple projects are "managed" by trained construction professionals e.g. architects and engineers. However, only a minute amount has official training in Project management and are adept in the field. The limited knowledge of the staff on the proper methodologies is critical. In order to properly manage and ensure that projects are tracked and ultimately delivered to the client without overruns, it is imperative that staff become knowledgeable.

The staff currently relies on rudimentary methods to ensure that projects are kept in line. In addition to this, through the passage of tacit information, employees become aware of bad examples and good examples of the practice. With this limited knowledge, less experienced staff try to replicate the best practices of Project management of projects similar to others based on what was learned. However, this does not augur too well. Unfortunately, others learn by making mistakes.

The most glaring is the critical issue facing the firm is the absence of a centralized repository for documented methodologies, approaches, and procedures related to project

management. Despite the firm's active involvement in the field, this lack of formal documentation creates a significant barrier for young project managers who are entering the organization. Without a well-defined set of guidelines and best practices, there is a struggle to find consistent frameworks to guide their work, which can lead to inefficiencies. The absence of standardized procedures not only hampers the ability to execute projects effectively but also undermines the potential for collaboration across teams. This fragmentation can result in varied approaches to project execution, making it difficult to ensure cohesion and alignment with organizational goals. Establishing a central repository would not only provide essential resources for new project managers but also foster a culture of consistency and shared knowledge, enhancing the firm's capability to deliver successful projects.

The aim of these proposed methodologies is to:

- **Standardize Processes:** Establish uniform procedures for project planning, execution, and monitoring, ensuring that all team members follow a consistent approach.
- **Enhance Knowledge Sharing:** Create a centralized repository of best practices, lessons learned, and documented methodologies to facilitate knowledge transfer among staff, especially for new project managers.
- **Improve Project Tracking:** Implement tools and techniques that enable better tracking of project progress, budget adherence, and resource allocation, minimizing overruns and delays.
- **Foster Collaboration:** Encourage teamwork and communication across departments by providing a common framework that aligns everyone with the organization's goals and objectives.

- **Mitigate Risks:** Introduce risk management strategies to identify potential issues early in the project lifecycle, enabling proactive measures to mitigate risks effectively.
- **Increase Efficiency:** Streamline workflows and reduce redundancies by utilizing established methodologies, leading to improved productivity and project outcomes.
- **Support Continuous Improvement:** Establish mechanisms for regular review and updates of methodologies based on feedback and evolving industry practices, ensuring that the firm remains competitive and adaptive.
- **Resource Efficiency:** Streamline resource workflows and reduce redundancies by utilizing established methodologies for resource planning, allocation, and tracking, leading to improved productivity and project outcomes.
- **Cost Management:** that ensures accurate budgeting, effective cost control, and financial accountability throughout the project lifecycle, thereby minimizing cost overruns and enhancing overall project value. The establishment of clear procedures for cost estimation, tracking, and reporting to support informed decision-making.
- **Procurement Management:** that optimizes the sourcing of materials and services, ensuring timely delivery and cost-effectiveness while maintaining quality standards. The establishment of structured processes for vendor selection, contract negotiation, and performance monitoring fosters strong supplier relationships that contribute to project success.

2.3.2 Previous research done on the topic in the study

Three key pieces of research done on the topic are presented below:

Source 1: Conceptualising Project Management: A Caribbean Perspective on Planning, Execution, and Externalities (Pounder & Devonish, 2008)

With the aid of research conducted on more than 30 project managers in the region (English-speaking Caribbean), Pounder and Devonish (2008) explored the driving factors that restrict Project management performance in the region as well as various ways to strengthen. The entire Project cycle was examined, and recommendations were put forward on strengthening key areas. The highest-ranked Project management best practices were Project budgeting, cost management, and quality management. However, planning using the Project life cycle was ranked last in the survey.

Source 2: Project Management In Small To Medium-Sized Enterprises: Matching Processes To The Nature of The Firm (Turner, Ledwith, and Kelly, 2010)

Sometimes it's not a case of one size fits all. Hence, Turner et al (2010) examined the practicality of various project management styles in use in small to medium enterprises (SME) in European countries such as Sweden, Austria, and Romania as compared to much larger firms. They have found that all three sizes of companies prefer to have a less bureaucratic form of Project management and that laissez-faire styles of management were more appropriate in small and micro companies. However, in medium sized companies where there are more specialist positions, having a more rigid structure works best.

Source 3: What, When, Why, and How? A Comparison between Agile Project Management and Traditional Project Management Methods (Salameh, 2014)

Salameh (2014) examined Traditional Project Management Methods (TPM) with those of Agile Project Management (APM) in the five process groups and 10 knowledge areas set out in the Project Management Institute Book of Knowledge (PMBOK, 2013) and also examined key

management disciplines. The Agile method has grown significantly in popularity with some smaller firms and individuals gravitating to it because it enables better productivity and higher success when managing high risk and time sensitive projects as highlighted by Salameh (2014)

Having perused the three sources of research presented above, all were found to be adequate to be used as inputs in the FGP. Source 1 provided context on what is needed to better strengthen project management in the region and by extension Grenada and the firm examined. Source 2 gave insight into the manner to approach the implementation of the methodologies in small firms such as the one studied and Source 3 comparison and contrast of the agile and traditional methods is timely as it opens the door to examine the need to adapt to agile methodologies or remain along the lines of the traditional method.

2.3.3 Other theories related to the topic in the study

Source 4: Project Management Methodologies: A Comparative Analysis (Chin & Spowage, 2012)

The research conducted by the authors focused on exploring the diverse project management methodologies employed across different industries, academic settings, and geographical regions. They examined several prominent frameworks, including PMBOK, PRINCE, IBM Rational Unified Process (RUP), and PROPS, to understand their applicability and effectiveness in various contexts. By analyzing these methodologies, the authors aimed to identify commonalities and differences in how the five process groups are utilized across different sectors. Furthermore, the study delved into the associated toolkits and templates that accompany these methodologies, assessing how they facilitate project management practices and support project managers in their roles. This comparative analysis not only highlights the versatility and adaptability of project management approaches but also provides insights into best

practices that can be leveraged to enhance project outcomes across diverse environments.

Ultimately, the research underscores the importance of selecting the right methodology tailored to specific organizational needs and project requirements, promoting more effective project execution and stakeholder engagement.

Project Management Body of Knowledge (PMBOK) (PMI, 2021)

The PMBOK guide is highly relevant to the methodologies, processes, and procedures of an engineering firm, as it provides a structured framework that can be directly aligned with the complex nature of engineering projects. The ten knowledge areas outlined in PMBOK are essential for addressing the multifaceted challenges that are faced on the day-to-day projects, where technical specifications, regulatory requirements, and stakeholder expectations must be carefully managed. The five process groups offer a systematic approach to project management that can help the firm teams effectively navigate each phase of a project, from initial concept through to successful completion.

By integrating PMBOK principles into the firm's project management practices, the organization can establish standardized methodologies that enhance consistency and quality across projects. This is particularly important where precision and adherence to standards are critical for safety and compliance. The practical tools and techniques provided in the PMBOK guide can also support the development of tailored procedures that reflect the unique needs of the firm's projects, enabling teams to streamline workflows, enhance collaboration, and improve communication among stakeholders. Ultimately, leveraging the PMBOK framework can lead to more efficient project execution, reduced risks, and improved outcomes, thereby fostering a culture of excellence and continuous improvement within the firm.

3 METHODOLOGICAL FRAMEWORK

3.1 Information Sources

Information sources refer to the origins or channels from which individuals obtain data, facts, knowledge, or insights. These sources can be diverse and encompass various mediums and formats. Information sources are critical in shaping our understanding of the world, contributing to the foundation of knowledge and decision-making processes. Traditionally, sources of information include books, journals, newspapers, and other print media. However, with the advent of the digital age, information sources have expanded to include online platforms, databases, social media, audiovisual content, and more (Ashikuzzaman, 2018).

3.1.1 Primary sources

In developing methodologies for Gleans Engineering and Construction, several primary sources of information would be utilized to ensure that these methodologies are grounded in real-world practices and tailored to the specific needs of the firm.

The primary source to be utilized to develop the methodology is conducting interviews with industry experts and stakeholders, including experienced engineers and project managers in the construction sector, who can provide valuable firsthand insights into effective methods and common challenges faced in projects. Additionally, designing surveys and questionnaires to gather original data from team members and clients regarding their experiences with existing methodologies can help identify strengths and weaknesses in current practices, informing the development of new approaches. Analyzing project documentation from previous projects undertaken by Gleans, including proposals, reports, and evaluations, will highlight successful strategies and areas for improvement. Furthermore, conducting field observations during ongoing projects allows for the identification of practical challenges and opportunities that may not be

captured in written documents. Reviewing case studies of successful engineering projects, both from Gleans and other organizations, offer insights into effective methodologies and factors contributing to project success. Consulting government and regulatory documents will ensure compliance with industry standards and provide essential guidelines for quality assurance. Lastly, utilizing original research articles relevant to construction methodologies, including studies on project management, risk assessment, and innovative techniques specific to the context, will further enrich the development of robust methodologies.

3.1.2 Secondary sources

The secondary sources can provide valuable context, analysis, and interpretations that complement primary sources. Comprehensive literature reviews of existing research on construction methodologies, project management, and engineering practices can highlight trends, challenges, and best practices within the industry. Additionally, academic and professional textbooks covering various aspects of engineering and construction methodologies offer foundational knowledge and established theories relevant to the firm's objectives. Industry reports published by associations, consulting firms, or market research organizations analyze current trends, technologies, and practices in the construction sector, providing insights into the competitive landscape and emerging methodologies. Peer-reviewed journal articles that discuss theoretical frameworks, case studies, and analyses of engineering practices can offer critical evaluations of methodologies and their effectiveness in different contexts. Furthermore, conference proceedings featuring papers and presentations from industry conferences showcase innovative practices and new research findings, enriching the understanding of cutting-edge methodologies being adopted in the field. Guidelines and standards published by professional organizations and regulatory bodies outline best practices and standards for engineering and

construction, ensuring compliance with industry norms. Finally, news articles and industry magazines discussing recent developments, challenges, and innovations can provide current perspectives and highlight practical applications of methodologies.

Table 1

Information Sources

Objective	Primary Sources	Secondary Sources
1. Propose a robust project management methodology tailored for Glean's construction projects.	Internal project documents	PMBOK Guide, Agile methodology literature
2. Demonstrate applications of the templates for managing projects using a pilot project case study.	Case studies from Glean's projects	Best practice guides in project management
3. Develop a Project Charter outlining the project's purpose and objectives.	Existing project charters	Literature on project charter best practices
4. Develop a Project Scope Management Plan to define and document project scope.	Scope statements from past projects	Books on scope management and project planning. PMBOK® Guide (2017)
5. Develop a project schedule management plan assessing the impact on timelines and deliverable quality.	Project performance reports and progress reports	Industry benchmarks and performance metrics
6. Develop a Project Stakeholder Management Plan to identify and engage stakeholders.	Stakeholder analysis from previous projects	Research papers on stakeholder management. PMBOK® Guide (2017)
7. Develop effective communication strategies to facilitate information flow and manage communication with stakeholders.	Team meeting minutes and communication logs	Books on team collaboration and communication
8. Develop a Resource Management Plan that outlines the processes for effectively acquiring, allocating, and managing project resources, including human resources, materials, and equipment.	Interviews with project team members, Resource allocation records, Equipment and material inventory	PMBOK® Guide (2017), Resource Management Best Practice Guides, Articles on resource optimization
9. Develop a Cost Management Plan to manage and control costs. The	Technical report Interviews	Books Articles

Objective	Primary Sources	Secondary Sources
Implementation of the cost for the proposed project methodology	Emails Historical cost data	PMBOK® Guide (2017)
10. Develop a Procurement Management Plan that establishes guidelines for sourcing materials and services, including vendor selection, contract management, and performance evaluation. This plan will ensure that procurement processes.	Interviews Supplier performance data Internal procurement process documentation	PMBOK® Guide (2017) Procurement Best Practice Guides
11. Develop a Quality Management Plan with assurance procedures and performance metrics.	Quality assurance checklists from previous projects	Quality management literature
12. Develop risk management strategies to identify and mitigate project risks.	Risk management plans from past projects	Articles on risk management best practices
13. Research industry standards and best practices in project management.	Interviews with industry experts	Research papers on project management standards

Note. Own work.

3.2 Research Methods

Research methods refer to the techniques, tools, and procedures used to collect, analyze, and interpret data in a study. They provide a systematic approach to addressing research questions, which helps ensure that the findings are accurate, reliable, and relevant. Choosing the right research method is essential for the success of any project, as it determines how data is gathered and interpreted (Hassan, 2024). These methods can be a combination of qualitative and quantitative approaches, depending on the research question and the type of data needed. Descriptive and analytical methods can be employed to develop the approach and complete the final product.

3.2.1 Analytical method

An analytical method is a systematic approach used to examine data, processes, or phenomena to conclude, make decisions, or solve problems. These methods can vary significantly depending on the field of study, but they generally share several key components. Analytical methods typically involve problem-solving and data analysis, it's scientific and involves critical evaluation. It can either be a qualitative analysis, a quantitative analysis, or a combination of both qualitative and quantitative analyses.

3.2.2 Descriptive method

Descriptive research aims to accurately and systematically describe the characteristics of a population and the circumstances surrounding a phenomenon, focusing primarily on "what" rather than "why" or "how." Key methods used in descriptive research include surveys, case studies, and observations, which allow researchers to gather data by observing the variables without interfering with them.

Table 2

Research Methods

Objective	Analytical Method	Descriptive Method	Case Study Method
1. Propose a robust project management methodology tailored for Glean's construction projects.	Analyze existing methodologies to identify gaps and opportunities specific to Glean's projects.	Describe current project management practices at Glean through surveys and interviews.	Conduct a case study on a similar project within Glean to illustrate the proposed methodology in action.
2. Demonstrate applications of the templates for project management using a	Evaluate the effectiveness of existing templates using performance	Document templates currently utilized in Glean's projects.	Examine the pilot project to showcase the practical application of the developed

Objective	Analytical Method	Descriptive Method	Case Study Method
pilot project case study.	metrics from the pilot project.		templates.
3. Develop a Project Charter that outlines the project's purpose and objectives.	Analyze existing charters to identify best practices in defining project intentions.	Describe current practices for creating project charters at Glean.	Investigate a project that effectively used a charter to clarify its purpose and objectives.
4. Develop a Project Scope Management Plan to define and document project scope.	Assess historical project data to identify common scope challenges and successful strategies.	Document current scope management practices within Glean projects.	Analyze a project to develop a tailored scope management plan based on its outcomes.
5. Develop a project schedule management plan and assess the impact on timelines and deliverable quality.	Use quantitative analysis to compare project timelines before and after methodology implementation.	Document changes in project schedules and deliverables through observation and reporting.	Conduct a case study on the pilot project to evaluate the impact of the schedule management plan.
6. Develop a Project Stakeholder Management Plan to identify and engage stakeholders.	Analyze stakeholder data to identify needs and expectations throughout the project lifecycle.	Gather qualitative data on current stakeholder engagement practices.	Investigate a specific project to assess how stakeholder management strategies enhanced collaboration.
7. Develop effective communication strategies to facilitate information flow among stakeholders.	Analyze communication logs to identify gaps and effectiveness metrics.	Describe existing communication practices and their impact on collaboration.	Examine a project where enhanced communication strategies improved stakeholder interactions.
8. Develop a Resource Management Plan that outlines the processes for effectively acquiring, allocating, and managing project resources, including human resources, materials, and equipment	Analyze resource allocation data to identify inefficiencies and areas for improvement.	Resource management practices at Glean through interviews and surveys.	Investigate project with resources from previous projects to assess the resources plan utilized. Conduct a case study on a successful project that effectively managed resources to meet project goals.

Objective	Analytical Method	Descriptive Method	Case Study Method
9. Develop a Cost Management Plan to manage and control costs. The Implementation of the cost for the proposed project methodology	Analyze historical cost data to identify patterns in budgeting accuracy, variance management, and cost control effectiveness.	Document current cost management practices at Glean, including cost estimation methods and financial reporting procedures.	Conduct a case study on a project that successfully implemented a cost management plan, showcasing budgeting processes and financial performance metrics.
10. Develop a Procurement Management Plan that establishes guidelines for sourcing materials and services, including vendor selection, contract management, and performance evaluation. This plan will ensure that procurement processes.	Analyze procurement data to identify trends in vendor performance, costs, and contract compliance.	Document current procurement practices within Glean, including vendor selection criteria and contract management processes.	Investigate a project where effective procurement strategies were implemented to enhance project outcomes and resource availability.
11. Develop a Quality Management Plan, including assurance procedures and performance metrics.	Analyze quality metrics and historical data to identify areas for improvement.	Document existing quality assurance practices and their impact on project outcomes.	Conduct a case study on a project that successfully implemented quality management procedures.
12. Develop risk management strategies to identify and mitigate potential project risks.	Analyze risk data from past projects to identify common risks and effective mitigation strategies.	Document current risk management practices and their effectiveness in Glean projects.	Investigate a project that effectively managed risks to assess strategies and outcomes.

Note. Own work.

3.3 Tools

Project management tools can either take the form of physical resources or software. Once used correctly, they can assist Project managers or teams to plan, execute, and manage projects. They are crucial as they also assist in the streamlining of workflows and processes, allow for better decisions and assist in the tracking of projects to assist in keeping them on Schedule. The tools to be utilized on this Project are from the PMBOK Guide and are listed as follows:

The selected tools for the various objectives are listed in the table below.

Table 3

Table of Tools

Objective	Tools Utilized
1. Propose a robust project management methodology tailored for Glean's construction projects.	Templates: Standardized project documentation templates. Process Flowcharts: Visual representation of processes.
2. Demonstrate applications of the templates for managing projects using a pilot project case study.	Template Checklists: Ensure compliance with developed templates. Performance Metrics: Tools to measure template effectiveness. Pilot Project Documentation: Capture insights and outcomes. Lessons Learned Register: Document insights.
3. Develop a Project Charter outlining the project's purpose and objectives.	Charter Templates: Standardized formats for project charters.
4. Develop a Project Scope Management Plan to define and document project scope.	Work Breakdown Structure (WBS): Breakdown of project deliverables. Scope Statement Templates: Document the project scope comprehensively.
5. Develop a project schedule management plan to assess the impact on timelines and deliverable quality.	Gantt Charts: A Tool for scheduling and tracking timelines. Earned Value Management (EVM): Measure project performance against the plan. Performance Metrics: KPIs for evaluating deliverable quality. WBS: Break down the project into smaller manageable components. Microsoft projects: Planning the project schedule and identifying the critical path of project.
6. Develop a Project Stakeholder Management Plan to engage stakeholders effectively.	Stakeholder Analysis Tools: Identify and prioritize stakeholders. Feedback Forms: Standardized forms for gathering stakeholder insights. Collaboration Platforms: Tools for planning sessions/meetings (e.g., MS Teams, Zoom, etc.).

Objective	Tools Utilized
	<p>Stakeholder Input Forms: Gather insights from key stakeholders.</p> <p>Surveys: to gain feedback.</p>
7. Develop effective communication strategies to facilitate information flow.	<p>Communication Plans: Document communication strategies and protocols.</p> <p>Collaboration Tools: Platforms like Slack or MS Teams for real-time communication.</p>
8. Develop a Resource Management Plan that outlines the processes for effectively acquiring, allocating, and managing project resources, including human resources, materials, and equipment.	<p>Resource Allocation Templates: Standardized formats for documenting resource assignments.</p> <p>Resource Management Software: Tools for tracking and managing resource availability and allocation.</p>
8. Develop a Cost Management Plan to manage and control costs. The Implementation of the cost for the proposed project methodology	<p>Microsoft projects</p> <p>Cost Estimation Tools: Software or templates for estimating project costs accurately.</p> <p>Budgeting Software: Tools for creating and tracking project budgets.</p> <p>Variance Analysis Templates: Tools for analyzing differences between planned and actual costs.</p> <p>Financial Reporting Tools: Dashboards to visualize and report on project financials.</p> <p>Earned Value Management (EVM): To assess project performance in relation to cost and schedule.</p>
9. Develop a Procurement Management Plan that establishes guidelines for sourcing materials and services, including vendor selection, contract management, and performance evaluation. This plan will ensure that procurement processes	<p>Vendor Evaluation Criteria: Standardized criteria for assessing potential suppliers.</p> <p>Contract Management Software: Tools for tracking contract terms, performance, and compliance.</p> <p>Procurement Process Flowcharts: Visual representation of procurement steps and workflows.</p> <p>Supplier Performance Metrics: Tools to measure supplier reliability, quality, and delivery times.</p>

Objective	Tools Utilized
10. Develop a Quality Management Plan with assurance procedures and performance metrics.	Quality Management Plan Templates: Define quality standards and procedures. Quality Audits: Tools for evaluating adherence to quality processes. Checklists: Ensure quality control measures are in place.
11. Develop risk management strategies to identify and mitigate project risks.	Risk Register: Document and track risks throughout the project. Risk Assessment Tools: Qualitative and quantitative methods for assessing risk impact. Mitigation Strategy Templates: Define actions for identified risks.
12. Research industry standards and best practices in project management.	Benchmarking Tools: Compare with industry standards. Literature Review: Utilize academic and industry publications. SWOT Analysis: Identify strengths and weaknesses of practices.

Note. Own work.

3.4 Selected Tools for the FGP Descriptions

For the glean construction and engineering methodology to be implemented successfully, these tools were selected based on their applicability to the particular goal and their capacity to support efficient project management, data collection, and analysis during the implementation phase.

Below is a brief description of some of the key tools that were utilized:

- i. **Standardized Project Documentation Templates:** These templates provided a consistent format for project documentation, ensuring that all necessary information is captured uniformly. They help members quickly understand project requirements and expectations, leading to improved communication and reduced errors.

- ii. **Process Flowcharts:** Visual representations of processes are needed to illustrate the sequence of activities, decision points, and interactions involved in project execution. Flowcharts enhance clarity and understanding among team members, facilitating better adherence to processes and quicker identification of bottlenecks.
- iii. **Work Breakdown Structure (WBS):** A hierarchical decomposition of project deliverables into smaller, manageable components. The WBS aids in organizing project tasks, clarifying responsibilities, and providing a framework for estimating costs and timelines, ultimately improving project planning and execution.
- iv. **Gantt Charts:** A scheduling tool that visually represents project timelines, showing the start and finish dates of various tasks. Gantt charts help in tracking project progress, ensuring that team members are aware of deadlines and dependencies, thus enhancing overall time management.
- v. **Risk Management Tools Risk register and assessment Matrix:** These include risk assessment templates designed to identify, analyze, and prioritize risks. By systematically addressing potential risks, these tools help mitigate disruptions and ensure that projects stay on track, ultimately enhancing project success rates.
- vi. **Template Checklists:** These checklists ensure compliance with the developed templates by providing a step-by-step guide for team members. They improve consistency in documentation and help prevent omissions, thereby enhancing project quality and adherence to standards.
- vii. **Performance Metrics:** Tools used to measure the effectiveness of the templates and processes implemented. By analyzing performance metrics, teams can identify areas for improvement, optimize processes, and ensure that project objectives are being met.

- viii. **Feedback Forms:** Standardized forms designed to gather structured feedback from team members regarding project execution and processes. These forms facilitate open communication, allowing teams to identify areas for improvement and enhance project performance.
- ix. **Surveys:** Tools for gathering qualitative data from stakeholders to assess project satisfaction and gather insights on team dynamics. Surveys help in understanding stakeholder perspectives, which can inform future project adjustments and enhance collaboration.
- x. **Meeting Agendas:** Structured formats for feedback sessions that outline discussion points and objectives. Well-organized agendas ensure that meetings are productive, keeping discussions focused and allowing for efficient decision-making.
- xi. **Key Performance Indicators (KPIs):** Metrics used to assess the quality of deliverables and overall project performance. KPIs enable teams to track success against predefined goals, ensuring that projects meet quality standards and stakeholder expectations.
- xii. **Statistical Analysis Tools:** These tools facilitate quantitative evaluation of project data, enabling teams to identify patterns and trends. Statistical analysis aids in making data-driven decisions, thereby improving project outcomes.
- xiii. **Benchmarking Tools:** Instruments used to compare project performance against industry standards and best practices. Benchmarking helps identify gaps and opportunities for improvement, ensuring that Gleans Engineering remains competitive and effective.
- xiv. **SWOT Analysis:** A strategic planning tool used to identify strengths, weaknesses, opportunities, and threats related to project management practices. SWOT analysis is

needed it aids in strategic decision-making, allowing teams to leverage strengths and address weaknesses effectively.

- xv. **Process Mapping:** A visual tool that outlines the integration points between traditional and agile methodologies. Process mapping helps teams understand how different methodologies can work together, facilitating smoother transitions and improved project execution.
- xvi. **Communication Plans:** Documents that outline strategies for effective communication among project stakeholders. A well-defined communication plan ensures that information flows smoothly, fostering collaboration and reducing misunderstandings. These are in the format of progress reports, meeting schedules
- xvii. **Collaboration Tools (e.g., Slack, MS Teams):** Platforms that facilitate real-time communication and collaboration among team members. These tools enhance teamwork, allowing for efficient information sharing and problem-solving, which is crucial in multidisciplinary projects.
- xviii. **Stakeholder Analysis:** A stakeholder register is used to identify and understand the communication needs of stakeholders. Effective stakeholder analysis ensures that all parties are engaged appropriately, leading to improved satisfaction and project outcomes.
- xix. **Quality Management Plan:** A document that establishes quality standards and procedures for project execution. This plan ensures that all deliverables meet high-quality standards, enhancing client satisfaction and project credibility.
- xx. **Checklists:** Tools used to ensure that quality control measures are in place throughout project execution. Checklists promote thoroughness and consistency, leading to improved quality outcomes.

- xxi. **Earned Value Management (EVM):** A methodology that integrates scope, schedule, and cost variables to assess project performance. EVM tools help teams track progress and determine whether projects are on schedule and within budget.
- xxii. **Vendor Evaluation Criteria:** Standardized metrics used to assess potential suppliers based on quality, cost, and reliability. These criteria ensure that the best vendors are selected to meet project needs.
- xxiii. **Procurement Process Flowcharts:** Visual representations of procurement workflows that clarify steps, responsibilities, and interactions. These flowcharts enhance understanding and adherence to procurement processes.
- xxiv. **Resource Allocation Templates:** These templates help document the allocation of resources across various project tasks. They ensure that all team members are aware of their roles and responsibilities, optimizing resource utilization and minimizing conflicts over resource availability.

3.5 Assumptions and Constraints

A project assumption is used in project planning to define a factor that's true, real or certain, even if there isn't proof. You have to presume that there are certain truths to proceed with planning your project. An assumption in project management can be an event or circumstance that one expects to happen over the life cycle of the project. You can think of it as an educated guess. Project managers usually have years of experience and have learned lessons from previous projects. That gives their assumptions more credibility than some novices.

(William Malsam , 2022)

A project constraint is a limitation to the project. This can be anything from the budget to the schedule and resources that'll be needed to execute the project. According to the Project Management Institute's Project Management Book of Knowledge, (PMBOK), there are six constraints in projects: scope, quality, schedule, budget, resources and risk.

Table 4

Assumptions and Constraints

Objective	Assumptions	Constraints
1. Propose a robust project management methodology tailored for Glean's construction projects.	<ul style="list-style-type: none"> Stakeholders are open to adopting new methodologies. Existing templates are accessible for analysis. 	<ul style="list-style-type: none"> Limited budget for developing new methodologies. Time constraints for implementation.
2. Demonstrate applications of the templates for managing projects using a pilot project case study.	<ul style="list-style-type: none"> Teams will use the templates consistently. There are projects available for demonstration. 	<ul style="list-style-type: none"> Availability of resources to conduct the demonstration. Time limitations for project execution.

Objective	Assumptions	Constraints
3. Develop a Project Charter outlining the project's purpose and objectives.	<ul style="list-style-type: none"> • Team members understand the importance of a clear project charter. • Stakeholders are willing to provide necessary input. 	<ul style="list-style-type: none"> • Time constraints for gathering input and finalizing the charter. • Potential for misalignment among stakeholders.
4. Develop a Project Scope Management Plan to define and document project scope.	<ul style="list-style-type: none"> • Historical data is available for reference. • Team members understand scope management principles. 	<ul style="list-style-type: none"> • Resistance to change from team members. • Varying levels of experience among team members.
5. Develop a project schedule management plan assessing the impact on timelines and deliverable quality.	<ul style="list-style-type: none"> • Data is reliable and accurately reflects project performance. • Teams will adopt the new methodologies. 	<ul style="list-style-type: none"> • Difficulty in measuring qualitative impacts. • Data collection may be limited to certain projects.
6. Develop a Project Stakeholder Management Plan to identify and engage stakeholders.	<ul style="list-style-type: none"> • Stakeholders are available for engagement throughout the project lifecycle. • Feedback mechanisms are clearly defined. 	<ul style="list-style-type: none"> • Limited time for feedback sessions during project phases. • Potential bias in feedback received.
7. Develop effective communication strategies to facilitate information flow.	<ul style="list-style-type: none"> • Team members are open to collaboration and communication improvements. • Tools for communication are available. 	<ul style="list-style-type: none"> • Geographic dispersion of team members. • Varying communication preferences and styles.
8. Develop a Resource Management Plan that outlines the processes for effectively acquiring, allocating, and managing project resources, including human resources, materials, and equipment.	<ul style="list-style-type: none"> • Team members will be trained in resource management practices. 	<ul style="list-style-type: none"> • Budget constraints may limit resource allocation options. • Limited availability of skilled personnel.

Objective	Assumptions	Constraints
9. Develop a Cost Management Plan to manage and control costs. The Implementation of the cost for the proposed project methodology	<ul style="list-style-type: none"> • Historical cost data is available and reliable for accurate budgeting. • Team members are trained in cost management principles and practices 	<ul style="list-style-type: none"> • Potential for cost overruns due to unforeseen project variables. • Limited time for thorough financial analysis and reporting during project phases.
10. Develop a Procurement Management Plan that establishes guidelines for sourcing materials and services, including vendor selection, contract management, and performance evaluation. This plan will ensure that procurement processes.	<ul style="list-style-type: none"> • Stakeholders will support the procurement guidelines and processes. • There is access to up-to-date vendor information and performance data. 	<ul style="list-style-type: none"> • Budget limitations for procurement activities and supplier selection. • Time constraints for completing the procurement process before project initiation.
11. Develop a Quality Management Plan with assurance procedures and performance metrics.	<ul style="list-style-type: none"> • Quality standards are well-defined and understood by the team. • There is a commitment to quality from all stakeholders. 	<ul style="list-style-type: none"> • Resistance to quality control measures. • Limited time for quality assurance activities during the project.
12. Develop risk management strategies to identify and mitigate project risks.	<ul style="list-style-type: none"> • Risks can be identified and categorized effectively. • Team members are trained in risk management practices. 	<ul style="list-style-type: none"> • Unforeseen risks that cannot be anticipated. • Limited resources for risk mitigation strategies.

Note. Own work.

3.6 Deliverables

Considering the PMBOK® Guide (Seventh Edition), which defines a deliverable as an output, either tangible or intangible, that is created as a result of project effort. Deliverables can be in many different formats, such as reports, plans, presentation studies, and any written

materials produced during the Project life cycle. Deliverables are crucial for project success as they represent the outcomes that stakeholders expect from the project. The deliverables for the methodology for the implementation of Gleaning Engineering projects are outlined in the specific objectives.

Table 5

Table of Deliverables

Objective	Deliverables
1. Propose a robust project management methodology tailored for Glean's construction projects.	A comprehensive project management methodology document including templates, processes, and procedures.
2. Demonstrate applications of the templates for managing projects using a pilot project case study.	A case study showcasing the implementation of the templates in a Glean's project.
3. Develop a Project Charter outlining the project's purpose and objectives.	A Project Charter document that clearly defines the project's purpose, objectives, and stakeholder roles.
4. Develop a Project Scope Management Plan to define and document project scope.	A detailed Project Scope Management Plan that outlines the scope, deliverables, and boundaries of the project.
5. Develop a project schedule management plan assessing the impact on timelines and deliverable quality.	A project schedule management plan with performance metrics for assessing timelines and deliverable quality before and after methodology adaptation.
6. Develop a Project Stakeholder Management Plan to identify and engage stakeholders.	A Project Stakeholder Management Plan that details stakeholder identification, engagement strategies, and structured feedback mechanisms.
7. Develop effective communication and collaboration strategies.	A Communication Plan that outlines strategies and tools to enhance information flow among stakeholders and multidisciplinary teams.

Objective	Deliverables
8. Develop a Resource Management Plan that ensures effective allocation and utilization of resources.	A Resource Management Plan that outlines resource allocation strategies, roles, and responsibilities, including templates for resource usage etc.
9. Develop a Cost Management Plan to manage and control costs. The Implementation of the cost for the proposed project methodology	A Cost Management Plan that includes budget estimates, cost control methodologies, financial reporting formats, and variance analysis templates to monitor project expenses effectively.
10. Develop a Procurement Management Plan that establishes guidelines for sourcing materials and services, including vendor selection, contract management, and performance evaluation. This plan will ensure that procurement processes.	A Procurement Management Plan that outlines procurement processes, vendor selection criteria, contract management procedures, and performance evaluation metrics.
11. Develop a Quality Management Plan with assurance procedures and performance metrics.	A Quality Management Plan that includes assurance procedures and a performance metrics framework to ensure system reliability.
12. Develop risk management strategies to identify and mitigate project risks.	A Risk Management Plan detailing strategies for identifying and mitigating potential project risks to minimize disruptions.

Note. Own work.

4 RESULTS

4.1 Application of Methodology to Pilot Project

This chapter aims to provide a comprehensive overview of how the methodologies align with the specific objectives for the pilot project. By establishing a clear connection between strategies and the desired outcomes, we can effectively navigate the complexities of project execution for the Gleans engineering organization. The pilot project serves as a valuable case study, illustrating the practical application of theoretical frameworks in real-world scenarios. The pilot project is designed with specific objectives that address both immediate needs and long-term goals. The methodologies focus on enhancing communication, stakeholder engagement, and risk management, which are critical to achieving these objectives. For instance, effective communication ensures that all stakeholders are informed and aligned, minimizing misunderstandings and fostering collaboration. By implementing a structured communication matrix, we can define the information to be shared, its purpose, and the appropriate channels, thus streamlining our interactions.

Furthermore, stakeholder engagement is pivotal in ensuring that the voices of all relevant parties are heard and considered. Our approach emphasizes regular feedback loops and participatory meetings, allowing stakeholders to contribute to decision-making processes. This not only enhances the quality of outcomes but also strengthens relationships and builds trust.

The methodologies employed in the pilot project include a blend of agile practices and traditional project management principles. This hybrid approach allows for flexibility while maintaining a structured framework. For instance, we utilize iterative cycles to assess progress and adapt to changes in real-time, ensuring that we remain responsive to stakeholder needs and project dynamics.

Additionally, our risk management strategy is integral to the project's success. By identifying potential risks early and developing mitigation plans, we create a proactive environment that minimizes disruptions. Regular risk assessments ensure that we remain vigilant and prepared for any challenges that may arise.

The pilot project serves as a testing ground for these methodologies, providing a platform to evaluate their effectiveness in achieving project objectives. Through detailed documentation and analysis, we can capture lessons learned and best practices that will inform future initiatives. Each phase of the project will be examined, highlighting how our strategic alignment with the outlined objectives facilitates seamless execution and enhances overall performance.

This chapter will delve deeper into the critical components of our communication matrix, risk management strategies, and stakeholder engagement processes. By illustrating the direct correlation between our methodologies and the specific objectives of the pilot project, we aim to demonstrate the value of structured approaches in achieving successful project outcomes. This exploration will not only validate our current practices but also lay the groundwork for continuous improvement and innovation in future projects.

4.1.1 Pilot Project Summary Background

The rural community of Paradise is strategically located approximately 1 mile north of Grenville and 10 miles southeast of Sauteurs, easily accessible via the eastern corridor from Maurice Bishop International Airport (MBIA) and the town of St. George's, Grenada. The Paradise Pre-Primary School serves as the sole early childhood educational facility in the area, but it has become overpopulated due to the increasing number of families in the community. This overcrowding has created challenging learning conditions for young children, highlighting an urgent need for expanded educational infrastructure. To address this pressing issue, a proposal

has been developed to construct a new facility that will significantly enhance early childhood education in Paradise.

The proposed school will feature six classrooms designed to accommodate small class sizes, separate male and female washrooms, a dining and kitchen area for nutritious meals, and a sick bay for children who may become unwell during school hours. Additionally, the facility will include both indoor and outdoor play fields to support physical activity and recreational play, fostering holistic development. To further enhance accessibility and safety, the project also includes a paved parking lot and a chain link fence around the perimeter of the property. This pilot project aims to create an improved educational environment for the children of Paradise, addressing current overcrowding issues and promoting better learning outcomes, ultimately ensuring that the community's youngest members receive the quality education they deserve.

4.2 Standardized Templates / Documentation

Standardizing documentation/artifacts across an organization is essential for enhancing project outcomes and ensuring consistency. Templates provide a uniform structure for all the project documents, which helps team members quickly locate and understand critical details, thereby reducing confusion and miscommunication. By using predefined templates, project teams can save time, as they do not have to start from scratch for each document, boosting productivity and allowing members to focus on critical tasks instead of formulating and formatting.

Moreover, standardized templates facilitate better collaboration among team members and stakeholders, as everyone understands the format and content expectations, making it easier to share and review documents within the organization. This leads to more effective feedback and discussions. Additionally, templates help minimize errors by providing specific fields and

guidelines for inputting information, reducing the likelihood of missing critical components or including inconsistent data that could hinder project success.

For new team members, standardized documentation streamlines the onboarding process, enabling them to quickly adapt to the organization’s practices. This consistency also ensures that all necessary information is captured and maintained according to organizational policies and industry regulations, which is crucial for compliance checks. Furthermore, templates can embed best practices and lessons learned from previous projects, aiding continuous improvement in project management processes.

Ultimately, the use of standardized documentation templates leads to improved project outcomes. With clearer communication, reduced errors, and more efficient processes, projects are more likely to be completed on time, within budget, and to the satisfaction of stakeholders. By implementing and utilizing these templates, organizations can create a more effective framework for project management, fostering a culture of excellence and continuous improvement.

4.2.1 Project Charter Template

Table 6

Project Charter Template

Project Charter
Project Charter: Paradise Pre-Primary School Construction
Project Title: Paradise Pre-Primary School Construction
Project Start Date: 03/02/2025
Project End Date: 03/11/2025
Project Manager: Gleans Construction and Engineering
Project Purpose This project aims to construct a modern, safe, and functional pre-primary school in Grenada. This facility aims to enhance early childhood education by providing an environment conducive to learning, development, and engagement for young children.

<p>Project Charter</p>
<p>Project Justification</p> <p>The construction of the Paradise Pre-Primary School is critical to addressing the growing need for quality early childhood education facilities in Grenada. By investing in this project, the government aims to improve educational outcomes, support community development, and provide children with a foundation for lifelong learning.</p>
<p>Specific Objectives</p> <p>Complete Construction: Finish the construction of the school by 03/11/2025 within the allocated budget of XCD 1,930,707.42</p> <p>Quality Assurance: Achieve a minimum of 95% compliance with specified quality standards throughout the project lifecycle.</p> <p>Community Engagement: Conduct at least three community meetings during the project to gather input and feedback from local stakeholders.</p> <p>Sustainability: Incorporate environmentally friendly practices and materials, aiming for a minimum of 20% of the total materials to be sourced locally.</p>
<p>Project Deliverables</p> <p>Completed Building: A fully constructed pre-primary school building with classrooms, restrooms, and administrative offices.</p> <p>Utilities Installation: Functional plumbing, electrical, and communication systems.</p> <p>Safety Features: Installation of safety barriers, emergency exits, and compliance with fire safety regulations.</p> <p>Final Inspection Report: A detailed report documenting the completion and quality of construction for handover to the Government of Grenada.</p>
<p>Project Outputs</p> <p>Number of classrooms constructed (e.g., 6 classrooms).</p> <p>Installation of essential utilities (water, electricity).</p> <p>Completion of safety inspections and certifications.</p>
<p>Assumptions</p> <p>Adequate funding will be secured and disbursed in a timely manner.</p> <p>Local authorities will provide necessary permits and approvals without undue delays.</p> <p>Community support will remain positive throughout the project duration.</p>
<p>Constraints</p> <p>A limited project budget may restrict design options and material choices.</p> <p>Weather conditions could impact construction timelines.</p> <p>Availability of skilled labour may fluctuate, affecting project progress.</p> <p>The scope of the project may change.</p>

Project Charter
<p>Risks</p> <p>Delays in Material Procurement: Risk of delays in obtaining construction materials, impacting the project timeline.</p> <p>Weather-Related Disruptions: Adverse weather conditions could halt construction activities.</p> <p>Regulatory Changes: Changes in local regulations may require adjustments to the project scope or timeline.</p> <p>Community Opposition: Potential for community concerns or opposition to aspects of the project could arise.</p>
<p>Key Milestones</p> <p>Project Kick-off: 03/02/2025</p> <p>Completion of Site Preparation/set up: 18/02/2025</p> <p>Completion of Major Construction: 03/07/2025</p> <p>Installation of Utilities: 06/05/2025</p> <p>Final Inspection: 27/10/2025</p> <p>Project Handover: 03/11/2025</p>
Budget Summary
Total Budget: \$1,930,707.42
Funding Sources: Government of Grenada

Note. Own work.

Implementation Checklist

The following implementation checklist serves as a template to ensure that all key activities of the project are effectively tracked throughout its various phases: initiation, planning, execution, monitoring and control, and closing. Each phase is vital for overall project success, and while the execution, monitoring, and closing phases often receive more focus, all phases must be incorporated within the organization. In the initiation phase, it is essential to define the project scope, identify stakeholders, conduct a feasibility study, and develop a project charter. The planning phase requires creating a detailed project plan with tasks, timelines, a budget, and a risk management plan, alongside establishing performance metrics. During execution, teams should be mobilized, roles assigned, and communication maintained with stakeholders to ensure effective resource management. Continuous tracking of project progress in the monitoring and control phase is crucial, allowing for the identification of deviations and implementation of

corrective actions. Finally, in the closing phase, all activities must be finalized, project outcomes assessed, lessons documented, and resources released. This structured checklist guides project managers and teams through the project lifecycle, enhancing success and achieving desired outcomes.

Table 7

Implementation Checklist Template

No.	Phase	Context	Details	Values	Status
Phase 1: Initiation					
1	Phase 1: Initiation	Project Kickoff	Define project objectives and scope	Clear objectives and scope	Completed
2		Stakeholder Engagement	Identify and engage key stakeholders (teacher, Ministry of Education, government agencies, community, project team, etc.)	Stakeholders buy-in	In Progress
3		Feasibility Study	Conduct a feasibility analysis of the project.	Viable project plan	Completed
4		Inception Report	Prepare a report summarizing project feasibility.	Documented initial findings	Completed
5		Site Assessment	Perform an assessment of the proposed site, analyse the lot plan building to be built.	Informed site selection	Completed
6		Project Charter	Define the project charter outlining goals and objectives	Clear project direction	Completed
7		Preliminary Project Scope	Create a preliminary project scope	Defined project boundaries	Completed
8		Risk Assessment	Identify and assess potential risks	Comprehensive risk register	Completed
Phase 2: Planning					
9	Phase 2: Planning	Management Plan Development	Develop a comprehensive management plan	Clear project governance	In Progress
10		Project Management	Create a detailed project management	Structured project	In Progress

No.	Phase	Context	Details	Values	Status
		Plan	plan	execution	
11		Work Breakdown Structure (WBS)	Create detailed Work Breakdown Structure	Organized task identification	In Progress
12		Establish Project Schedule	Develop a timeline with milestones	Timely project delivery	In Progress
13		Resource Allocation Planning	Assign roles and resources	Efficient resource use	Not Started
14		Risk Management Planning	Develop strategies for identified risks	Proactive risk mitigation	Not Started
15		Stakeholder Communication	Establish communication protocols	Effective stakeholder updates	Not Started
16		Define Roles and Responsibilities	Clarify roles for team members	Clear accountability	Not Started
17		Quality Management Plan	Develop quality assurance measures	High-quality outcomes	Not Started
18		Finalize Budget Estimates	Refine budget and ensure alignment with scope	Accurate financial planning	Not Started
19		Obtain Necessary Approvals	Secure approvals from stakeholders	Project legitimacy	Not Started
Phase 3: Execution					
20	Phase 3: Execution	Mobilize Resources	Allocate and deploy project resources	Ready-to-go project team	Not Started
21		Conduct Stakeholder Meetings	Hold regular meetings with stakeholders	Ongoing engagement	Not Started
22		Implement Project Plan	Execute the project as per the plan	Project alignment	Not Started
23		Quality Control	Monitor and ensure quality standards	High-quality deliverables	Not Started
24		Manage Team Performance	Oversee team dynamics and productivity	Effective team management	Not Started
25		Implement Risk Responses	Execute risk mitigation strategies	Minimized impact of risks	Not Started
27		Engage with Community	Maintain communication with the local community	Positive community relations	Not Started
28		Engage with the Ministry of	Collaborate with educational authorities	Regulatory compliance	Not Started

No.	Phase	Context	Details	Values	Status
		Education			
Phase 4: Monitoring and Control					
29	Phase 4: Monitoring and Control	Track Project Performance	Regularly assess project progress against objectives	On-track performance	Ongoing
30		Conduct Quality Inspections	Perform inspections to ensure quality standards	High-quality deliverables	Ongoing
31		Manage Changes	Implement change management processes	Controlled project scope	Ongoing
32		Monitor Risks	Continuously assess and update risk register	Proactive risk management	Ongoing
33		Report Progress	Regularly communicate project status to stakeholders	Transparency in project status	Ongoing
34		Review Budget	Monitor expenses against the budget	Financial health	Ongoing
35		Facilitate Team Meetings	Hold regular team meetings to discuss progress	Team alignment	Ongoing
36		Monitor Stakeholder Engagement	Assess and enhance stakeholder involvement	Active stakeholder participation	Ongoing
37		Generate Progress Report	Prepare reports documenting project progress	Comprehensive updates	Ongoing
38		Document Lessons Learned	Capture key lessons for future projects	Continuous improvement	Ongoing
Phase 5: Close Off Project					
39	Phase 5: Close Off	Conduct Final Inspections	Perform final inspections to ensure completion	Quality assurance	Not Started
40		Obtain Project Acceptance	Secure sign-off from stakeholders on project completion	Formal project acceptance	Not Started
41		Complete Final Documentation	Prepare and finalize all project documentation	Comprehensive project records	Not Started
42		Conduct Post-Project Review	Evaluate project outcomes and performance	Lessons learned	Not Started
43		Release Project Resources	Release team members and resources back to the organization	Resource reallocation	Not Started
44		Close Out	Finalize and close all	Legal	Not

No.	Phase	Context	Details	Values	Status
		Contracts	project-related contracts	compliance	Started
45		Document Lessons Learned	Capture lessons learned from the project	Knowledge for future projects	Not Started

Note. Own work.

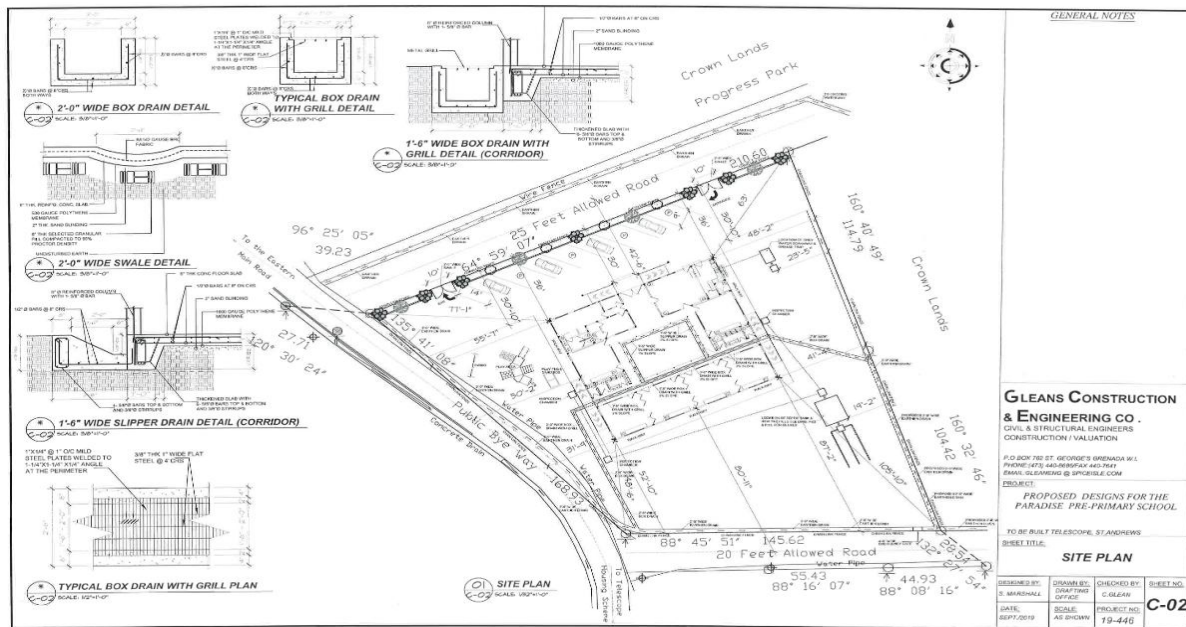
4.2.2 Design for the pilot project

Designing an integrated architectural and structural floor plan is crucial for helping contractors and project teams fulfill the scope of work effectively. A clear plan outlines spatial relationships, aiding stakeholders in understanding space usage. Incorporating structural elements ensures safety and compliance with building codes while minimizing conflicts among teams.

A detailed floor plan enhances resource allocation and scheduling, optimizing workflows and reducing timelines. It also aids in accurate cost estimation, preventing unexpected expenses. Additionally, a well-designed plan allows for future modifications, creating flexible spaces. In summary, an integrated floor plan is essential for project success, fostering clarity, safety, efficiency, and adaptability.

Figure 8

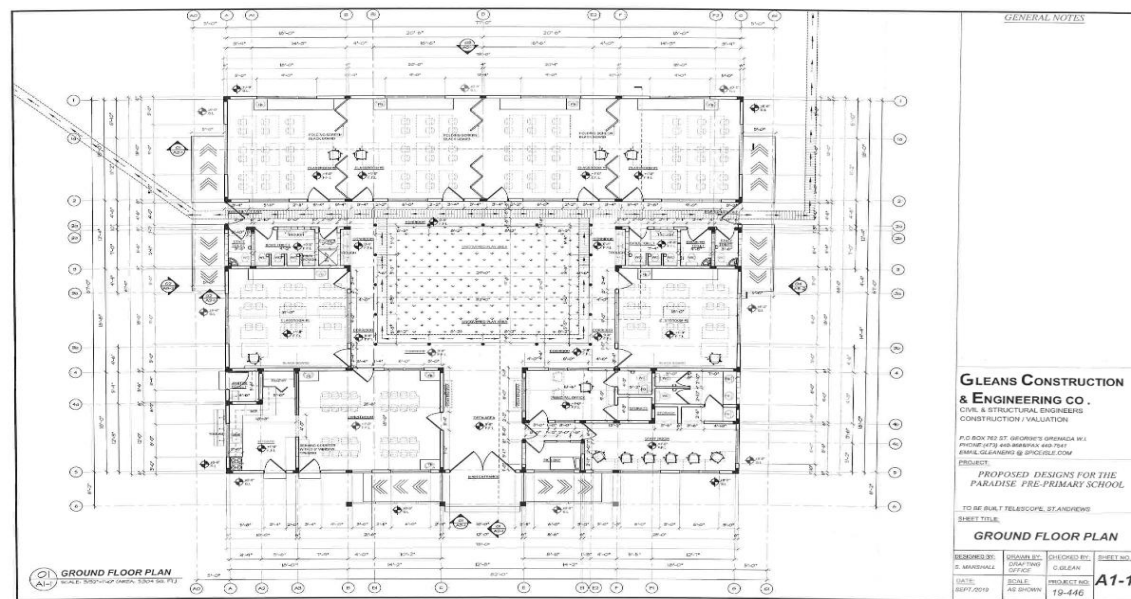
Project's Site Plan



Note. Own work.

Figure 9

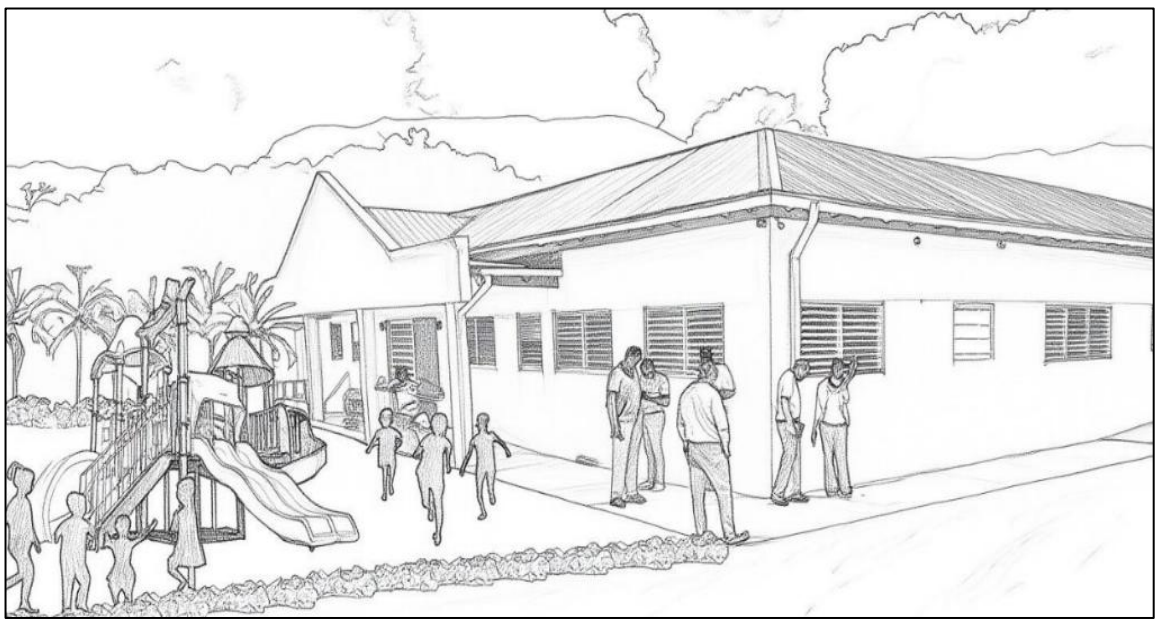
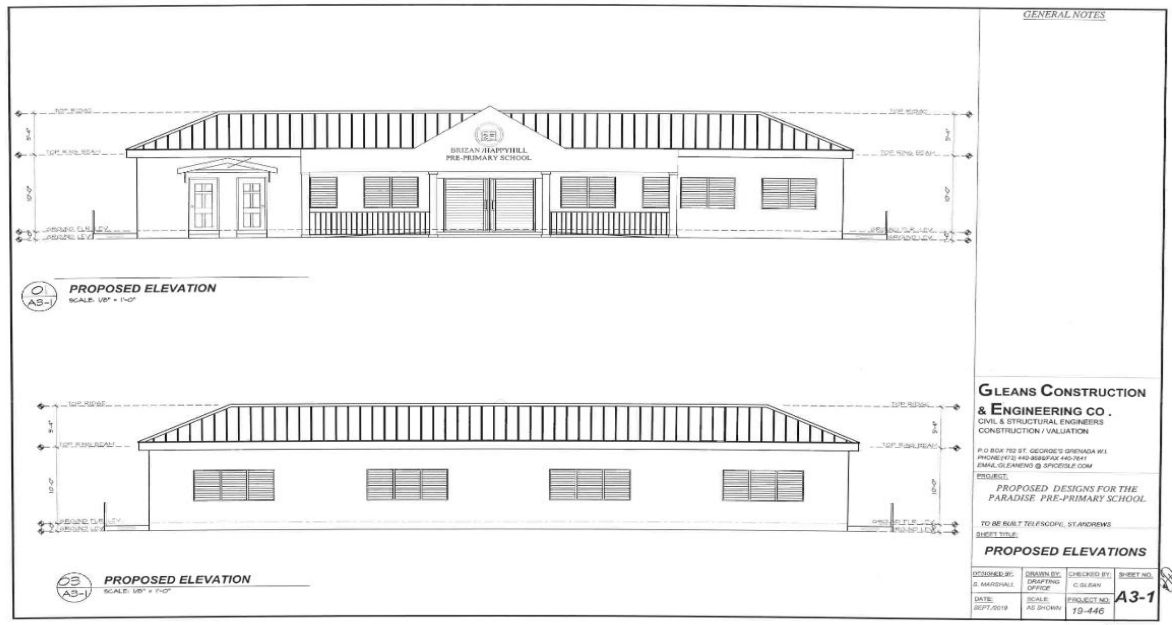
Project's Ground Floor Plan



Note. Own work.

Figure 10

Proposed Elevation of Building



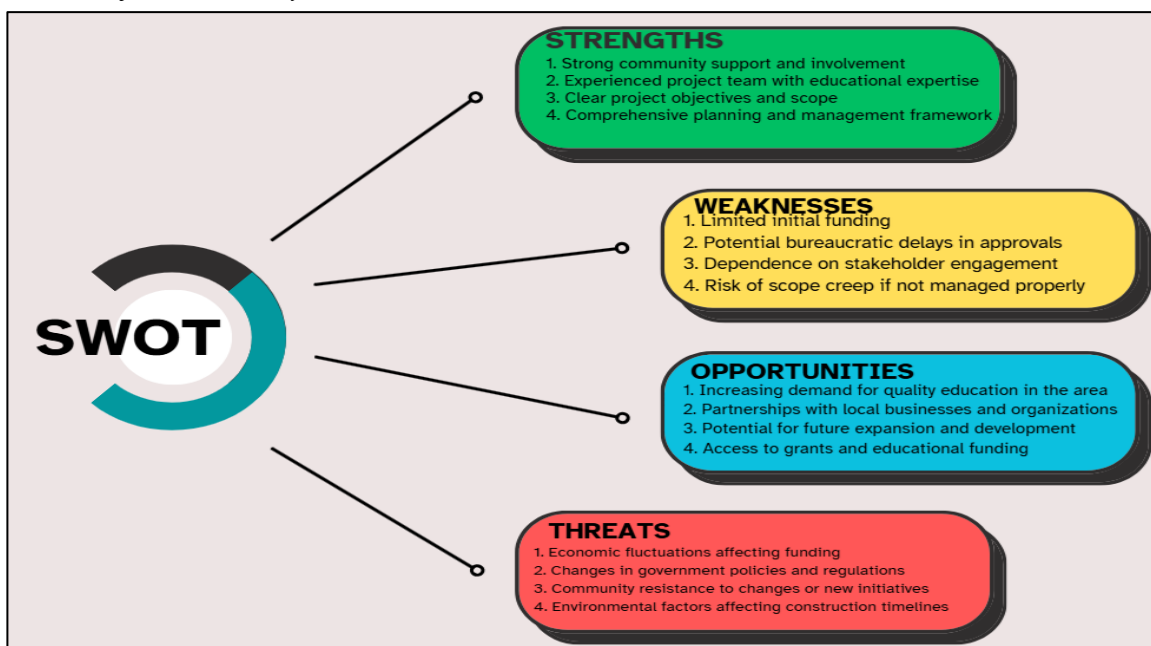
Note. Own work.

4.2.3 SWOT Analysis

The purpose of using a SWOT analysis for the Paradise School Project is to provide an evaluation of its internal strengths and weaknesses, as well as external opportunities and threats. This analysis enables the project team to capitalize on strengths, such as strong community support and experienced personnel, while also identifying areas for improvement, like limited funding and potential bureaucratic delays. By anticipating risks and recognizing opportunities, the team can develop proactive strategies that enhance the project's chances of success. Additionally, the SWOT analysis supports informed decision-making, fosters collaboration among stakeholders, and promotes continuous improvement by allowing the team to adapt strategies based on changing circumstances. Overall, it serves as a valuable tool for guiding strategic planning and ensuring effective project implementation.

Figure 11

Results of SWOT Analysis



Note. Own work.

4.2.4 Site inspection reporting template

A site inspection report is vital to the success of a project as it provides a detailed assessment of the site's current conditions and compliance with specifications. By documenting observations related to safety, quality of work, and adherence to regulations, the report helps identify potential issues early, minimizing risks and preventing costly delays. It ensures that all stakeholders are informed about the project's status and any challenges that may arise, facilitating timely decision-making. Additionally, the report serves as a formal record that can guide future inspections and actions, promoting accountability and continuous improvement throughout the project lifecycle. Ultimately, thorough site inspections and their accompanying reports enhance project visibility and contribute to achieving successful outcomes.

DAILY SITE INSPECTION REPORT

Project Name: The Paradise Pre Primary School

Date of Inspection (dd/mm/yy):.....

Time of Inspection: Start-End:.....(A.M/P.M.)

Name of inspector: _____

SITE INFORMATION

Weather Conditions: Rain [] No Rain []:

Sunny _____

Approximate number of persons on site: 5

Persons _____

Work Activities (Observation/comments)

(Please refer to checklist)

Levelling and compacting of site completed accordance to Eng. Specifications

Other Areas Inspected (Comments on past or future works)

None

Any Instruction (include questions and discussion with contractor/foreman)

None

General Remarks on Project

None

Note. Daily site inspection report template used by Glean's Construction and Engineering.

4.2.5 Details of Work Progress Template:

Weekly and monthly reporting are essential for effective project management. Weekly reports provide updates on completed tasks, upcoming activities, challenges faced, and team performance, promoting transparency and timely adjustments. Monthly reports offer a broader overview, including overall progress, budget analysis, risk assessment, stakeholder feedback, and strategic goals for the next month. Together, these reports enhance project visibility, accountability, and informed decision-making, ensuring all stakeholders remain engaged and aligned with project objectives.

Table 8

Work Progress Template

Item No.	Activity	Current %	Status	Comments
1.0	Preliminary			
1.1	Erection of shed and other temporary buildings	80	In progress	
1.2	Erection of workers toilet	50	In progress	
1.3	Hoarding	25	In Progress	
2.0	Earthworks			
2.1	Clear site and excavate	100	Completed	

Item No.	Activity	Current %	Status	Comments
2.2	Spread and compact fill material	100	Complete	
2.3	Excavation of foundation trenches together with the application of blinding and damp-proof membrane	5	In progress	
2.4	Foundation construction (Reinforcement, formwork and concrete)	0		
2.5	Box drain construction (reinforcement, formwork and concrete to base and side walls)	0		
3.0 Block and Concrete Works				
3.1	New 6-inch-thick external and internal hollow concrete block wall	0		
3.2	New 4-inch-thick internal hollow concrete block wall	0		
3.4	Installation of ventilation blocks as per drawings.	0		
3.5	Prepare for slab, lintels, capping beams and tie beams (reinforcement, formwork and casting)	0		
5.0 Door Installation				
5.1	Installation of door frame	0		
5.2	Installation of door and ironmongery	0		
6.0 Electrical Installations				
6.1	Installation of conduits and cables	0		
6.2	Installation of fixtures and fittings	0		
7.0 Plumbing Installations				
7.1	Sanitary fixtures installation	0		
7.2	Wastewater collection system installation	0		
7.3	Water supply system installation	0		
8.0 Roof construction				
8.1	Roof framing construction (rafters, purlins and plywood)	0		
8.2	Roof covering installation	0		
8.3	Roof drainage installation	0		
9.0 Finishes				

Item No.	Activity	Current %	Status	Comments
9.1	Floor (<i>screed and tile</i>)	0		
9.2	Wall (<i>plaster and tile</i>)	0		
9.3	Trough (<i>screed and tile</i>)	0		
9.4	Painting of walls (<i>internal and external</i>) and ceiling	0		
External works				
10.1	Construction of new drains (reinforcement, formwork and concrete)	0		
10.2	Carpark pavement construction (reinforcement, formwork and concrete)	0		
10.3	Installation of chain link fence and gates	5	In progress	
11.0 Clean-up				
11.1	Removal of shed, workers toilet, hoarding and other debris on site	0		

Note. Own work.

4.2.6 Daily site inspection reporting template.

DAILY CONSTRUCTION SITE INSPECTION REPORT	
<i>Project Name:</i> <u>The Paradise Pre-Primary School</u>	
<i>Date of Inspection (dd/mm/yy):</i> <u>04th March 2025</u>	
<i>Time of Inspection: Start-End:</i> <u>9:00 AM</u> <u>(A.M/P.M)</u>	
<i>Name of inspector:</i> _____	
<u>SITE INFORMATION</u>	
<i>Weather Conditions:</i> Rain <input type="checkbox"/> No Rain <input type="checkbox"/> : <u>Sunny</u>	
<i>Approximate number of persons on site:</i> <u>5 Persons</u>	
<i>Work Activities (Observation/comments)</i> <i>(Please refer to checklist)</i>	
<u>All fill (tiff) on site was compacted to Eng. Spec. Area compacted, building footprint & car parking, 10ft around building footprint for walkway & workspace during construction</u>	
<u>Compaction test was done by James Parke with a compaction density of 95% achieved</u>	
<u>Hight of fill (tiff) 3.11 ft after compaction</u>	
<i>Other Areas Inspected (Comments on past or future works)</i>	
<u>On Site: Security Booth, Site Office, One portable toilet, Electrical and water supply, first aid kit</u>	
<u>Not on Ste: Material/storage area, workshop, washroom for workers, welfare area, hoarding & entrance gate to be erected awaiting material from hardware supplier.</u>	
<i>Any Instruction (include questions and discussion with contractor/foreman)</i>	

<i>General Remarks on Project</i>	
<u>The Project is progressing good; the contractor is going according to the speciation out line in the contract.</u>	

<i>On site Photographs:</i>	
-Materials	
-Equipment	
-Facilities (hoarding, shed, toilet, other)	
Material on site level and Compacted	

<i>Construction Site Inspection Report</i> 1	

Note. Site inspection form used by Glean's Construction and Engineering.

4.2.7 Risk register template

A risk register is crucial for construction projects as it systematically identifies, assesses, and manages potential risks that could impact project success. By documenting risks along with their probabilities and potential impacts, project teams can proactively develop mitigation strategies to minimize negative outcomes. This structured approach not only enhances decision-making but also fosters accountability, as specific team members are assigned to monitor each risk. Regular updates to the risk register ensure that new risks are captured and existing ones are reassessed, promoting a culture of awareness and responsiveness. The application of risk should be applied to all projects and not be dependent on the size of the project. Ultimately, maintaining a comprehensive risk register helps safeguard project timelines, budgets, and overall quality, significantly contributing to successful project delivery.

Table 9

Risk Probability and Response Plan Template

Risk	Probability/Impact (Low, Medium, High)	Risk Response (Accept, Transfer, Mitigate, Avoid)	Risk Response Plan

Note. Source: Project Management Institute

4.2.8 Integrated change control process

The integrated change control process is a crucial aspect of project management. This process is a recurring process and can often overlap within the construction project activities. For the Paradise School Project, the process begins with stakeholders formally submitting change requests, which are initially reviewed for relevance and prioritized according to their importance, ranging from low to high. With regards to the Paradise School Project, a comprehensive impact analysis is conducted to assess how proposed changes will affect and be applied to the project scope, schedule, cost, and quality. For instance, if a change is requested to expand classroom facilities which is a change in scope, the analysis would evaluate how this impacts the project timeline and budget. The approval, rejection, or deferral of changes are evaluated by the Project Manager and in the event that changes are significant in scope, cost and time, their Project Steering Committee (comprising of various government and non-government stakeholders).

Once a change is approved, an implementation plan is developed that outlines the steps needed to execute the change and informs all relevant stakeholders. In this case, stakeholders might include teachers, parents, and local authorities. The project team then executes the change, while the project manager monitors progress to ensure alignment with overall project goals, such as enhancing educational quality and ensuring timely completion.

Finally, the effectiveness of the change is evaluated, enabling lessons learned to be documented for future reference. This thorough documentation helps maintain project integrity and provides insights for future projects, ensuring that the Paradise School Project remains on track to meet its educational objectives.

Table 10*Integrated Change Control Process*

Step	Description	Responsible Party	Key Actions
1. Change Request Submission	Formal submission of a change request by stakeholders or team members.	Project Stakeholder	Document the change request with details and rationale.
2. Initial Review	Preliminary assessment of the change request to determine if it should proceed for further analysis.	Project Manager	Conduct an initial review to check for completeness and relevance.
3. Impact Analysis	Comprehensive evaluation of the impact of the change on project scope, schedule, cost, and quality.	Project Manager / Project Steering Committee	Analyze how the change affects various project components, including risks and benefits.
4. Review Meeting	Convene stakeholders and the Change Control Board to discuss the change request and its implications.	Project Manager / Project Steering Committee	Facilitate a meeting to gather input and address concerns from all relevant parties.
5. Decision Making/ Approval	Decide on whether to approve, reject, or defer the change request.	Project Manager / Project Steering Committee	Document the decision and rationale for transparency and future reference.
6. Implementation Planning	Develop a detailed plan for how the change will be integrated into the project.	Project Manager	Create an action plan, including timelines, resources, and responsible parties for implementing the change.
7. Communication	Inform all stakeholders about the approved change and its implementation plan.	Project Manager	Disseminate information to ensure everyone is aware of the change and its implications.
8. Change Implementation	Execute the change according to the implementation plan.	Project Team	Carry out the change, ensuring compliance with the established plan.

Step	Description	Responsible Party	Key Actions
9. Monitoring and Control	Track the implementation process to ensure it aligns with the project goals and objectives.	Project Manager	Monitor progress and performance, addressing any issues that arise during implementation.
10. Review and Feedback	Evaluate the effectiveness of the change and gather feedback from the team and stakeholders.	Project Manager	Conduct a post-implementation review to assess the impact of the change.
11. Documentation	Record all details related to the change process, including requests, decisions, and outcomes.	Project Manager	Update project documentation to reflect the change and maintain a comprehensive record for future reference.

Note. Own work.

Table 11

Integrated Change Control Request Form

Control Request Form	
Project Name:	Paradise Pre-School Construction
Project Manager:	Glean Construction & Engineering
Date Submitted:	
Priority level:	High , Low , Medium
Change Request Details	
Change Request ID:	
Requested By:	
Date of Request:	
Type of Change:	<input type="checkbox"/> Scope <input type="checkbox"/> Schedule <input type="checkbox"/> Cost <input type="checkbox"/> Quality <input type="checkbox"/> Resources <input type="checkbox"/> Communication <input type="checkbox"/> Risk <input type="checkbox"/> Procurement
Description of Change	

Control Request Form
Description of Proposed Change:
Reason for Change:
Impact Analysis
Review and Approval
Initial Review Conducted By:
Date of Review:
Change Control Board Meeting Date:
Decision: <input type="checkbox"/> Approved <input type="checkbox"/> Rejected <input type="checkbox"/> Deferred
Reason for Decision:
Justification for Change
Implementation Plan
Implementation Date:
Responsible Team Members:
Action Steps:
Communication
Stakeholders Notified:
Date Notified:
Post-Implementation Review

Control Request Form
Date of Review:
Effectiveness of Change:
Comments and Lessons Learned:
Signatures
Project Manager:
Change Control Board Chair:

Note. Own work. Template to be used to capture change requests, their impacts and statuses.

Table 12

Change Log Template

Change Log						
Project Name		Updated On:				
Version No.		Review Date:				
Change No.	Change Request	Requested By:	Date of Request	Impact (High/Med./Low)	Status (In-process/Approved/Denied)	Comments
1						
2						
3						
4						
5						
6						

Note. Own work. Template to be used to capture change requests, their impacts, and statuses.

4.2.9 Lessons Learned Document template.

The purpose of the Lessons Learned Document for the Paradise School Project pilot is to capture valuable insights and experiences throughout the project lifecycle. This document serves

as a formal record of what worked well, what challenges were encountered, and how these lessons can inform future initiatives. By documenting successes and areas for improvement, the project team aims to enhance organizational knowledge and promote best practices for subsequent projects. Additionally, it allows the team to identify elements that should be retained or excluded in future endeavors, ensuring a more streamlined and effective approach. This reflective process not only aids in mitigating similar issues in the future but also fosters a culture of continuous improvement and accountability within the team. Ultimately, the Lessons Learned Document is intended to guide decision-making and ensure that the insights gained contribute to the long-term success of future initiatives.

Table 13

Lessons Learned Register

Project Name:	Prepared By:	Date:
Project Manager:	Project Type:	Project Sponsor:
PROJECT HIGHLIGHTS:		
Project Success	Factors that supported success	
SUMMARY OF LESSON LEARNED		
Project Background:		
Summary of Lessons Learned		
Overall Recommendations		

TECHNICAL PERFORMANCE

Project Experience
Recommended Process Improvements
Other Recommendations

SCHEDULE PERFORMANCE

Project Experience
Recommended Process Improvements
Other Recommendations

RISK MANAGEMENT

Project Experience
Recommended Process Improvements
Other Recommendations

TEAM MANAGEMENT

Project Experience
Recommended Process Improvements
Other Recommendations

STAKEHOLDER MANAGEMENT

Project Experience
Recommended Process Improvements

Other Recommendations
COMMUNICATION MANAGEMENT
Project Experience
Recommended Process Improvements
Other Recommendations

Approval:

Prepared By: _____
Project Manager

Approved By: _____
Project Sponsor

4.3 Scope Management

The scope management plan serves as a background for the Paradise Project, outlining the comprehensive approach to managing its scope throughout the project lifecycle. This plan meticulously documents the strategies for defining, verifying, and controlling the project scope, ensuring that all stakeholders have a clear understanding of their roles and responsibilities. The scope management plan chosen for this pilot project is tailored to enhance the project outcome for the organization in totality.

Scope management approach

The scope management approach delineates the processes for scope definition, which involve identifying and detailing all deliverables and requirements necessary for project success.

The plan establishes mechanisms for the development of the WBS, WBS dictionary, scope verification, ensuring that completed work meets the agreed-upon standards and expectations. Furthermore, it includes protocols for scope control, which are essential for managing changes and mitigating scope creep, thereby maintaining alignment with project objectives. By providing structured guidance on these elements, the scope management plan not only enhances communication and accountability among team members but also helps to ensure that the project remains on track and delivers its high-quality intended outcome.

4.3.1 Roles and responsibilities

One of the most important parts of the Paradise School project's scope management strategy is defining roles and responsibilities. A clear division of duties promotes accountability and cooperation by ensuring that each team member is aware of their particular responsibilities and their intended contributions. Through the assignment of roles according to project requirements and experience, the project team can improve overall project efficiency, control the scope, and streamline communication. By reducing the risks of ambiguity and overlap, this structured assignment will eventually result in a more well-organized and effective project execution.

Table 14*Scope Roles and Responsibilities*

No	Role	Responsibilities
1	Project Manager	<ul style="list-style-type: none"> • Oversee the entire project scope management process. • Ensure alignment of project objectives with deliverables. • Facilitate communication among stakeholders.
2	Construction Manager	<ul style="list-style-type: none"> • Manage on-site construction activities and ensure compliance with scope specifications. • Coordinate with subcontractors and labor teams.
3	Ministry of Education	<ul style="list-style-type: none"> • To provide guidelines for education requirements, guidelines, and standards.
4	Site Supervisor	<ul style="list-style-type: none"> • Oversee daily site operations and ensure adherence to safety and quality standards. • Report on progress and issues to the Project Manager.
5	Quality Assurance Officer	<ul style="list-style-type: none"> • Develop and implement quality assurance procedures. • Monitor compliance with quality standards during construction.
6	Procurement Officer	<ul style="list-style-type: none"> • Manage procurement of materials and equipment necessary for project completion. • Ensure that resources align with project scope and budget.
7	Stakeholder Liaison	<ul style="list-style-type: none"> • Engage with stakeholders to gather feedback and manage expectations. • Facilitate stakeholder meetings and communication regarding project progress.
8	Financial Officer	<ul style="list-style-type: none"> • Monitor project budget and expenditures related to scope deliverables. • Conduct financial analyses for change requests.
9	Design Team	<ul style="list-style-type: none"> • Develop and review architectural and engineering designs to ensure they meet project scope. • Collaborate with the construction team to address design-related issues.

No	Role	Responsibilities
10	Environmental Officer	<ul style="list-style-type: none"> • Ensure compliance with environmental regulations and sustainability practices throughout the project. • Monitor environmental impacts related to construction activities.
11	Community, parents, teachers, and the client	<ul style="list-style-type: none"> • Ensure all details are to the requirements of the facility

Note. Own work.

4.3.2 Scope definition

The Paradise Pre-Primary School construction project aims to build a modern educational facility that provides a safe, engaging, and conducive learning environment for young children. The project will encompass all necessary activities from site preparation to the final touches, ensuring all aspects meet the expectations of stakeholders.

Project scope statement

The project statement will consist of the major deliverables, exclusions, assumptions, and acceptance criteria.

Project objectives

Providing high-quality educational facilities is the main goal of the project objectives for the Paradise Pre-Primary School's construction. The key goals include making sure the site is well prepared, putting safety precautions in place, and creating the infrastructure that is up to standard, such as a site office and temporary utilities. Establishing a strong foundation and guaranteeing structural integrity through a variety of building operations will be the project's top priorities. It will also prioritize compliance and functionality by finishing the electrical, plumbing, and roofing systems. Improvements to the site's exterior will improve its overall

appearance, while interior finishes and furnishings will create a welcoming atmosphere. By following deadlines and financial restrictions, these goals seek to guarantee that the project satisfies community demands.

Scope/project deliverables

The scope of works under this pilot project is to supply all supervision, labor, material, equipment, tools, transportation, and construction aids to construct the Paradise Pre-Primary School, which includes:

- Site preparation – ensure that the road access is cleared and accessible for heavy equipment.
- Installation of hoarding and boundary fencing to ensure the preservation property and to establish construction zones.
- Erection of safety signs, barriers, temporary fence with an access gate to propose the work site.
- Mobilization of the site office and construct a workmen's shed.
- Installation of temporary electrical and water supply.
- Construction of hoarding to ensure the preservation of property and to establish construction zones.
- Setting out works/building footprint and establishing temporary benchmarks.
- Earthworks/ civil works.
- Reinforced concrete works.
- Masonry works.
- Roofing works.
- Plumbing and electrical works.

- Finishes, fixtures, and furnishings.
- External works

Acceptable criteria

For a pilot project to be considered successful, the following outcomes are required:

- **Quality Standards:** All construction work must meet or exceed local building codes and safety regulations. This includes structural integrity, finishes, and installations.
- **Timely Completion:** The project should be completed within the agreed-upon timeline, with all milestones achieved as scheduled.
- **Budget Adherence:** Total costs must remain within the approved budget, including all materials, labor, and unforeseen expenses managed through the change control process.
- **Stakeholder Satisfaction:** Positive feedback from stakeholders, including local authorities, community members, and project sponsors, indicating that the deliverables meet their expectations.
- **Compliance and Documentation:** All necessary permits and approvals must be obtained, and project documentation must be complete and accurate.
- **Functional Performance:** The completed school facility must be fully operational, serving its intended purpose without significant issues or deficiencies.

Project exclusions

The following items are to be excluded from the project to prevent scope creep:

- **Future Expansions:** Plans for additional facilities or expansions not outlined in the original scope will not be addressed in this project.

- Upgrades to Existing Utilities: Improvements or upgrades to existing utility services beyond what is necessary for the new construction will not be performed.
- Non-Essential Features: Any additional features, such as luxury finishes or optional amenities not specified in the initial scope, will not be included.
- Change Requests Without Approval: Any changes to the project scope must go through the formal change control process; unapproved changes will not be accommodated.

4.3.3 Work Breakdown Structure (WBS)

The construction project at Paradise Pre-Primary School relies significantly on the Work Breakdown Structure (WBS) for planning, scheduling, resource allocation, and progress tracking. The WBS guarantees that all relevant tasks are identified and helps prevent needless operations by segmenting the project into manageable components, such as site preparation, structural construction, and utilities installation. This simplification promotes a common understanding of the project scope, maximizes resource utilization, and enhances communication between team members and stakeholders. Ultimately, the WBS makes administration easier, allowing the team to monitor development and stay focused on creating a secure, useful learning environment.

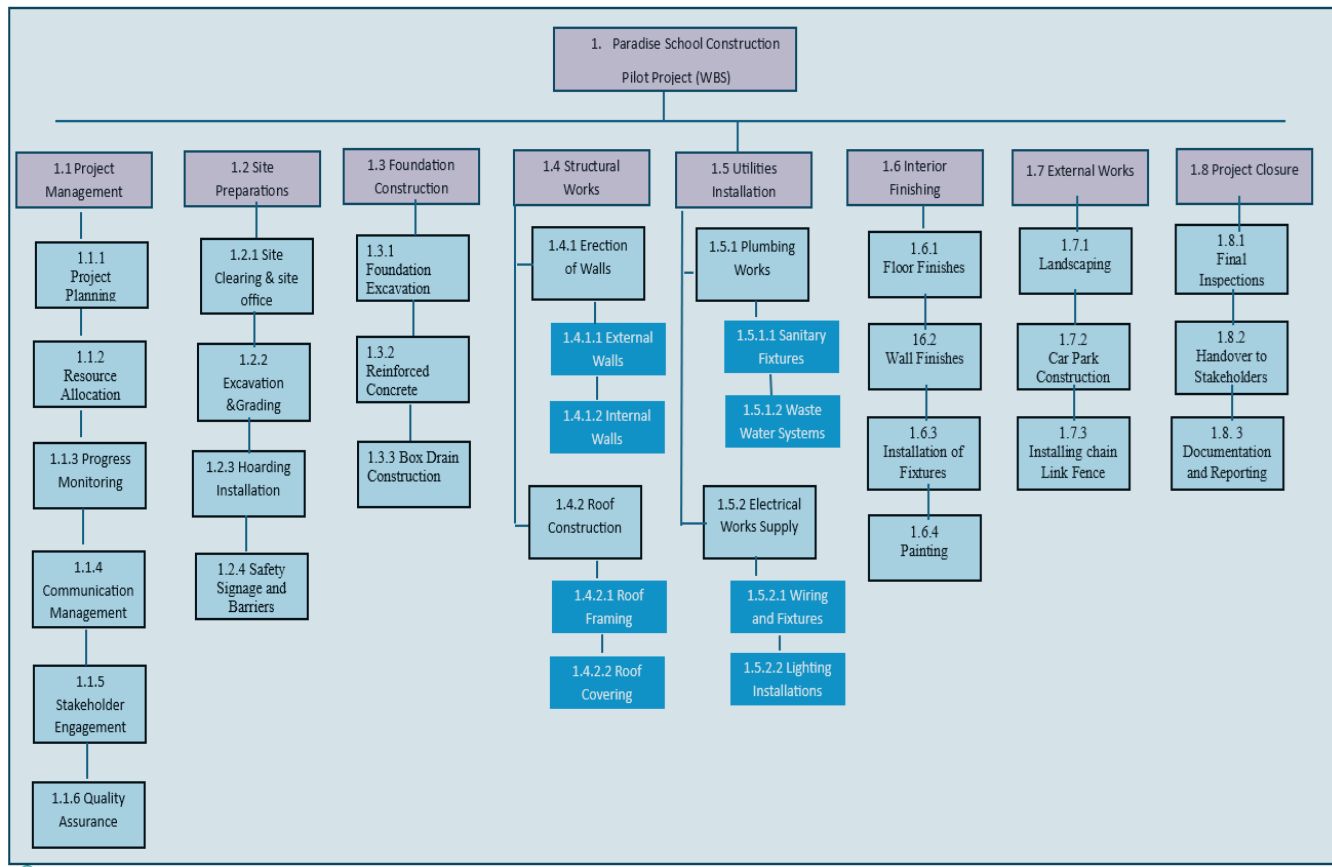
The WBS is organized into hierarchical levels, breaking down the project into manageable components. This pilot example will help facilitate future projects that are greater in size and complexity:

- Each major task is broken down into sub-tasks, allowing for better tracking and management.

- This structure helps clarify responsibilities and workflow, ensuring thorough project execution.
- Regular updates and reviews of the WBS can help keep the project on schedule and within budget.

Figure 12

Work Breakdown Structure



Note. Own work.

4.3.4 WBS Dictionary

Effective project management requires the use of a Work Breakdown Structure (WBS) dictionary, which offers thorough explanations of every WBS component. Standardization of terminology improves communication and reduces the possibility of miscommunication. Additionally, it provides a baseline for monitoring project performance, which facilitates progress monitoring and the implementation of remedial measures when needed by management. The WBS vocabulary is essential for project planning, documentation, and reporting because it offers a methodical framework that enables teams to assess the effects of changes in an efficient manner. All things considered, it is an essential tool that ensures that every part of the project is clearly specified and structured, improves cooperation, and expedites project execution.

Table 15

WBS Dictionary

WBS Code	WBS Name	WBS Description
1	Project Management	Overarching management activities to ensure project success, including planning, execution, and closure.
1.1	Project Planning	Develop detailed project plans outlining objectives, timelines, milestones, and resource allocation strategies.
1.2	Resource Allocation	Assign tasks and allocate resources (labor, materials, equipment) to team members to optimize efficiency.
1.3	Progress Monitoring	Track project milestones, conduct regular status meetings, and implement corrective actions as needed.
1.4	Communication Management	Establish communication protocols among stakeholders, including reporting structures and meeting schedules.
1.5	Governance and Roles	Establish a governance framework and define roles and responsibilities for project stakeholders.
1.6	Stakeholder Engagement	Identify and engage stakeholders to ensure their needs and concerns are addressed throughout the project.
1.6.1	Identify and Conduct Meetings	Organize and facilitate stakeholder meetings to gather input and provide updates on project progress.

WBS Code	WBS Name	WBS Description
1.6.2	Identify the Project Steering Committee	Form a committee to guide project decisions and ensure alignment with stakeholder interests.
1.7	Define Resource Requirements	Assess and document the resource needs for the project, including personnel, materials, and equipment.
1.8	Schedule Project Milestones	Develop a timeline for key project milestones to ensure timely delivery and accountability.
1.9	Legislative Updates	Monitor and implement any relevant legislative changes that may impact the project.
1.10	Propose Technical Standards	Develop and propose technical standards and specifications to guide project execution.
1.11	Technical Proposal	Prepare a detailed technical proposal outlining project approaches, methodologies, and compliance with regulations.
1.12	Contingency Planning	Identify potential risks and develop contingency plans to address unforeseen issues.
2	Site Preparation	Activities to prepare the site for construction, ensuring compliance with safety and zoning regulations.
2.1	Site Clearing	Remove vegetation, debris, and obstacles from the construction site to create a safe working environment.
2.2	Road Access Preparation	Ensure roads are graded and compacted for heavy equipment access, including any necessary permits.
2.3	Installation of Hoarding	Set up protective barriers (hoarding) to secure the construction area and protect surrounding properties.
2.4	Safety Signage and Barriers	Install safety signs, warning labels, and temporary barriers to guide and protect workers and visitors.
3	Infrastructure Setup	Development of essential infrastructure to facilitate ongoing construction activities.
3.1	Mobilization of Site Office	Set up a temporary site office equipped with necessary tools, plans, and communication devices.
3.2	Construction of Workmen's Shed	Build a shelter for workers, including changing rooms and storage for personal belongings and tools.
3.3	Installation of Temporary Utilities	Provide essential services such as electrical power and water supply to support construction operations.
3.3.1	Electrical Supply	Install temporary electrical connections, ensuring compliance with safety codes and regulations.
3.3.2	Water Supply	Establish temporary water sources for construction activities, including drinking water and site usage.
4	Earthworks and Civil Works	Activities related to preparing the ground and establishing foundational structures.
4.1	Excavation and Grading	Perform earthmoving activities, including excavation, grading, and compaction to prepare the site.

WBS Code	WBS Name	WBS Description
4.2	Setting Out of Works	Mark the layout of the building and other structures using stakes, strings, and measurements.
4.3	Establishing Temporary Benchmarks	Create reference points for measuring elevations and ensuring proper alignment during construction.
5	Structural Construction	Activities focused on building the structural elements of the school, ensuring safety and compliance.
5.1	Reinforced Concrete Works	Pour and set concrete for structural elements, including footings, slabs, and beams, using reinforcement bars.
5.2	Masonry Works	Construct walls and other structures using bricks, blocks, or stone, ensuring proper mortar application.
5.3	Roofing Works	Install roofing materials (shingles, tiles, or metal) to provide protection against weather elements.
6	Utilities Installation	Activities related to installing plumbing and electrical systems, ensuring compliance with building codes.
6.1	Plumbing Works	Install water supply and drainage systems, including piping, fixtures, and connections.
6.2	Electrical Works	Set up permanent electrical systems and fixtures, including wiring, outlets, and lighting installations.
7	Interior Construction	Activities to finish the interior of the building, creating a functional and appealing environment.
7.1	Finishes	Complete interior surfaces (painting, drywall installation, flooring) to enhance aesthetics and usability.
7.2	Fixtures	Install built-in furniture, cabinetry, and equipment for classrooms and common areas.
7.3	Furnishings	Provide movable furniture, such as desks, chairs, and decor, to create an inviting educational space.
8	External Works	Activities to improve the outdoor areas surrounding the building, enhancing usability and aesthetics.
8.1	Landscaping	Design and implement outdoor spaces, including gardens, play areas, and pathways, to enhance the environment.
8.2	Site Improvements	Enhance the overall appearance and functionality of the site, including grading and drainage systems.
9	Project Closure	Final activities to conclude the project, ensuring proper documentation and handover.
9.1	Final Inspections	Conduct thorough inspections to ensure all work meets quality standards and regulatory requirements.
9.2	Handover to Stakeholders	Transfer ownership and operational responsibility to the relevant authorities or school management.
9.3	Documentation and Reporting	Compile and submit all project documentation, including reports, warranties, and as-built drawings.

Note. Own work.

4.3.5 Scope verification

The process of scope verification will guarantee that the project deliverable is examined, verified, and approved while remaining in line with stakeholder expectations, quality standards, and the project's scope. At significant project milestones and regularly, the project manager will do scope verification to make sure that deliverables meet quality standards and acceptance criteria, and to match project goals. The main objectives are to formally accept each deliverable after the project manager arranges verification meetings, prepares monthly status reports, and compares each deliverable to the scope documentation.

Deliverable review

The deliverable review is a critical step in the scope validation process. It involves a systematic examination of each project deliverable to ensure it meets the specified requirements outlined in the project scope. This review assesses the quality, functionality, and completeness of the deliverables against established criteria. It may include checklists, inspections, and evaluations by the project team, stakeholders, and quality assurance personnel. The goal is to identify any discrepancies or areas for improvement before formal approval.

Weekly and monthly progress reports

Regular progress reporting is essential for tracking the project's status and ensuring transparency. Weekly progress reports provide short-term updates on tasks completed, challenges faced, and upcoming activities. Monthly status reports offer a more comprehensive overview, including metrics on project performance, budget adherence, and timeline compliance. These reports facilitate informed decision-making and allow stakeholders to stay engaged and aware of the project's trajectory, making it easier to address issues as they arise.

Approval and sign-off

The approval and sign-off process is the formal endorsement of each deliverable by the relevant stakeholders, usually facilitated by the project manager. This step confirms that the deliverables meet all acceptance criteria and align with stakeholder expectations. The sign-off typically involves documentation, where stakeholders acknowledge their satisfaction with the deliverable and agree to its acceptance. This process is crucial for maintaining accountability and ensuring that all parties are aligned before moving on to subsequent phases of the project.

Stakeholder Feedback

Collecting stakeholder feedback is an integral part of the scope validation process. Engaging stakeholders allows for the identification of any concerns or suggestions regarding the deliverables. This feedback can be gathered through meetings, surveys, or informal discussions and should be documented for future reference. By incorporating stakeholder feedback, the project team can make necessary adjustments, enhance satisfaction, and ensure that the project remains aligned with stakeholder needs and expectations throughout its lifecycle.

4.3.6 Scope change

The scope change management process is crucial for effectively handling modifications to project scope, particularly in the construction industry, where changes can frequently arise due to unforeseen site conditions, design alterations, or stakeholder requests. It begins with identifying the need for a change, followed by the formal submission of a change request that will document the proposed modification and its rationale. An assessment of the changes and how they may impact on project schedule, budget, etc. is then conducted, often involving relevant stakeholders such as community, architects, engineers, and contractors. The Board or General Manager will review the request and decide whether to approve, reject, or seek further information. If approved, an implementation plan is developed, detailing how the change will be

executed and communicated to all parties involved. The implementation phase follows, with careful monitoring to ensure that the change is executed effectively and does not disrupt the overall project timeline. After implementation, a review assesses the change's effectiveness, and lessons learned are documented to inform future projects. Finally, formal acceptance of the change is obtained from stakeholders, and all related documentation is archived for future reference, ensuring a structured approach to managing scope changes while minimizing disruptions in the construction process.

4.4 Project Schedule

4.4.1 Plan schedule management

The Management of the Schedule for the Gleans project is critical component. The timely completion of the project is vital, as it directly impacts budget adherence and project delivery. Delays can lead to increased costs due to extended labor, resource allocation, and potential penalties. By finishing the project on schedule, the team can better control expenditures and avoid budget overruns, ensuring that funds are allocated effectively and efficiently.

The Project management plan for the Paradise School Project provides a detailed outline for how the project team will manage and monitor the project schedule throughout the construction phase. It outlines a methodical approach for tracking progress and implementing necessary adjustments to the schedule after the initial baseline has been set, ensuring that the project remains on track.

Schedule management approach

The project schedule itself breaks down all required activities, deliverables, and milestones specific to the construction of the school, allowing for a clear visualization of the project timeline. By precisely defining task durations, resource allocations, and start and end

dates, the schedule not only simplifies the overall timeline but also facilitates better planning and resource management. This structured approach is essential for identifying critical paths and dependencies, enabling proactive decision-making to mitigate potential risks and delays. Moreover, the Schedule Management Plan emphasizes collaboration among stakeholders, fostering improved communication and coordination throughout the project. By keeping all parties informed on the timelines and responsibilities, the plan helps ensure that the Paradise School is constructed efficiently and completed on time, ultimately fulfilling the educational needs of the community it serves while maintaining financial integrity.

4.4.2. Define, Sequence, and Estimate Duration for Activities.

Defining, sequencing, and estimating the duration of activities are important steps. The first step involves breaking down the project into specific tasks, such as site preparation, foundation pouring, framing, electrical and plumbing installation, interior finishing, and landscaping, each clearly described with its objectives and required resources. Next, sequencing these activities is essential to determine the order in which tasks should be performed, considering dependencies; for instance, site preparation must be completed before foundation pouring can begin. Finally, estimating the duration of each activity entails predicting how long each task will take based on factors like resource availability, complexity, and historical data from similar projects. Techniques such as expert judgment, analogous estimating, and parametric estimating can be employed to derive realistic timeframes. By effectively defining, sequencing, and estimating activities, the project team can create a structured schedule that enhances project execution, ultimately increasing the likelihood of completing the Paradise School on time and within budget.

Activity list

Table 16

Activity List

WBS	Task Name	Duration	Start	Finish	Predecessors
	Construction of Paradise Pre-Primary School	196 days	Mon 03/02/25	Mon 03/11/25	
	Site Setup	12 days	Mon 03/02/25	Tue 18/02/25	
	Project Initiation/Commencement	0 days	Mon 03/02/25	Mon 03/02/25	
	Mobilise Plant,Materials and Labour to site	10 days	Mon 03/02/25	Fri 14/02/25	
	Site Clearance	5 days	Tue 04/02/25	Mon 10/02/25	4FS-9 days
	Site Clearance	0 days	Mon 10/02/25	Mon 10/02/25	
	Erect Temporary Premimeter Fence	5 days	Tue 11/02/25	Mon 17/02/25	5
	Grade Site to required Level	3 days	Tue 11/02/25	Thu 13/02/25	5
	Set up Site Facilities	10 days	Mon 03/02/25	Fri 14/02/25	4SS
	Erect Project Signboard	2 days	Mon 17/02/25	Tue 18/02/25	5
	Substructure	51 days	Mon 17/02/25	Mon 28/04/25	
	Cut and Bend Rebar	10 days	Mon 17/02/25	Fri 28/02/25	9
	Fabricate required formwork	10 days	Mon 17/02/25	Fri 28/02/25	9
	Excavate to Foundations	2 days	Wed 19/02/25	Thu 20/02/25	5,7,8,10
	Place and compact Granular Fill	5 days	Fri 21/02/25	Thu 27/02/25	14
	Excavate fill for groundbeam/slab thickenings	3 days	Fri 28/02/25	Tue 04/03/25	15
	Install under slab Plumbing & Electrical	3 days	Wed 05/03/25	Fri 07/03/25	16
	Apply Termite Treatment	1 day	Mon 10/03/25	Mon 10/03/25	17
	Install formwork	5 days	Tue 11/03/25	Mon 17/03/25	18,13
	Place and compact sand blinding	2 days	Tue 18/03/25	Wed 19/03/25	19
	Install 1000 gauge polythene	1 day	Thu 20/03/25	Thu 20/03/25	20

WBS	Task Name	Duration	Start	Finish	Predecessors
	Install rebar to beams,thickenings and slab	10 days	Fri 21/03/25	Thu 03/04/25	21,12
	set screed rails	2 days	Fri 04/04/25	Mon 07/04/25	22
	Pour concrete to beams,thickenings and slab	3 days	Tue 08/04/25	Thu 10/04/25	23
	Completion of concrete pour to beams, thickenings, and slab	0 days	Thu 10/04/25	Thu 10/04/25	
	Concrete Curing	7 days	Fri 11/04/25	Mon 21/04/25	24
	Install, formwork and rebar to access ramp slabs	5 days	Tue 22/04/25	Mon 28/04/25	26
	Superstructure	62 days	Tue 22/04/25	Wed 16/07/25	
	Install 6 blockwork (including Stiffners,rebar and filling	3 days	Fri 18/04/25	Tue 22/04/25	26
	Install 4 blockwork (including Stiffners,rebar and filling	3 days	Fri 18/04/25	Tue 22/04/25	26
	Install 1st fix electrical	15 days	Wed 16/04/25	Tue 06/05/25	29FS-5 days
	Completion of electrical 1st fix	0 days	Tue 06/05/25	Tue 06/05/25	
	Install 1st fix plumbing	15 days	Wed 16/04/25	Tue 06/05/25	29FS-5 days
	Completion of plumbing 1st fix	0 days	Tue 06/05/25	Tue 06/05/25	
	Install rebar and forms to Main Entrance columns	4 days	Fri 18/04/25	Wed 23/04/25	26
	Pour concrete to Main Entrance columns	2 days	Thu 24/04/25	Fri 25/04/25	35
	Install rebar and formwork to Circular columns	4 days	Mon 28/04/25	Thu 01/05/25	36
	Pour concrete to Circular columns	2 days	Mon 28/04/25	Tue 29/04/25	36
	Install formwork and rebar to top ring beam and tie beams	1 day	Fri 02/05/25	Fri 02/05/25	29,30,35,37,38
	Pour concrete to top ring beam and tie beams	5 days	Mon 05/05/25	Fri 09/05/25	39
	Install roof rafters	15 days	Mon 12/05/25	Fri 30/05/25	40,31,33
	Install purlins and roof sheeting	6 days	Thu 26/06/25	Thu 03/07/25	41
	Completion of roof covering	0 days	Thu 03/07/25	Thu 03/07/25	
	Install ridge cap, flashing, facia, boarding,guttering etc.	2 days	Fri 04/07/25	Mon 07/07/25	42
	Install Door Frames	5 days	Tue 08/07/25	Mon 14/07/25	44
	Finishes	61 days	Tue 22/07/25	Tue 14/10/25	
	Plaster to walls (internal and	15 days	Tue 22/07/25	Mon 11/08/25	45

WBS	Task Name	Duration	Start	Finish	Predecessors
	external)				
	Screeding to slab	15 days	Wed 06/08/25	Tue 26/08/25	47FS-5 days
	Install Window frames	5 days	Fri 15/08/25	Thu 21/08/25	47
	2nd Fix Electrical Works	10 days	Wed 06/08/25	Tue 19/08/25	47FS-5 days
	2nd Fix Plumbing works (including vanities)	10 days	Wed 06/08/25	Tue 19/08/25	47FS-5 days
	Install doors	10 days	Fri 29/08/25	Thu 11/09/25	47,48,49
	Install Storage Units and counters	10 days	Fri 29/08/25	Thu 11/09/25	47,48,50,51
	Install Wall Tiles	5 days	Fri 29/08/25	Thu 04/09/25	47,48,50,51
	Install Floor Tiles	10 days	Fri 29/08/25	Thu 11/09/25	48
	Install Handrails	5 days	Fri 29/08/25	Thu 04/09/25	48
	Painting	20 days	Fri 12/09/25	Thu 09/10/25	47,50,51,53,54
	Install Fixtures	5 days	Fri 03/10/25	Thu 09/10/25	57FS-5 days
	Final Fix Electrical	5 days	Fri 03/10/25	Thu 09/10/25	57FS-5 days
	Final Fix Plumbing	5 days	Fri 03/10/25	Thu 09/10/25	57FS-5 days
	Testing and Commissioning (Electrical)	3 days	Fri 10/10/25	Tue 14/10/25	59
	External Works	65 days	Tue 22/07/25	Mon 20/10/25	
	Install box drains,concrete & earthen swale drains	10 days	Tue 22/07/25	Mon 04/08/25	47FS-10 days
	Clean existng earthen drain, replace rip rap if required	2 days	Tue 12/08/25	Wed 13/08/25	63
	Install Rainwater down pipes	2 days	Sun 12/10/25	Mon 13/10/25	57
	Install Septic Tank	6 days	Thu 14/08/25	Thu 21/08/25	64
	Install Leach Field/Infiltration System	3 days	Sun 24/08/25	Tue 26/08/25	66
	Install Grease Trap	3 days	Wed 27/08/25	Fri 29/08/25	67
	Install Soak-Away Pit	2 days	Mon 01/09/25	Tue 02/09/25	68
	Install Manholes/Inspection Chambers	2 days	Wed 03/09/25	Thu 04/09/25	69
	Excavate trenches and install sewer pipes	4 days	Sun 07/09/25	Wed 10/09/25	70
	Completion of installation of waste wastewater system	0 days	Wed 10/09/25	Wed 10/09/25	
	Excavate trench and install water supply pipe	2 days	Thu 11/09/25	Fri 12/09/25	71
	Completion of installation of the	0 days	Fri 12/09/25	Fri 12/09/25	

WBS	Task Name	Duration	Start	Finish	Predecessors
	potable water system				
	Testing & Commissioning of all Plumbing Works	2 days	Mon 15/09/25	Tue 16/09/25	73
	Excavate to car park area	2 days	Wed 17/09/25	Thu 18/09/25	75
	Place granular Material and compact to carpark area	2 days	Sun 21/09/25	Mon 22/09/25	76
	Install rebar and formwork to carpark area	9 days	Tue 23/09/25	Fri 03/10/25	77
	Pour concrete to carpark area	3 days	Mon 06/10/25	Wed 08/10/25	78
	Concrete poured to carpark area	0 days	Wed 08/10/25	Wed 08/10/25	
	Excavate earthen and concrete lined v drains	3 days	Mon 06/10/25	Wed 08/10/25	79SS
	Remove temp. fencing and install chainlink fence	2 days	Thu 09/10/25	Fri 10/10/25	81
	Install entrance gates	3 days	Mon 13/10/25	Wed 15/10/25	82
	Landscape works to interior play area	2 days	Thu 16/10/25	Fri 17/10/25	83
	Termite treatment works	1 day	Mon 20/10/25	Mon 20/10/25	84
	Demobilise	6 days	Mon 27/10/25	Mon 03/11/25	
	Clean up site and remove all debri	3 days	Mon 27/10/25	Wed 29/10/25	85,59,60,58,61
	Remove all plant and materials fro site	3 days	Thu 30/10/25	Mon 03/11/25	87
	Final site clean-up	0 days	Mon 03/11/25	Mon 03/11/25	
	Project Complete	1 day	Mon 03/11/25	Mon 03/11/25	88
	Project Complete	0 days	Mon 03/11/25	Mon 03/11/25	

Note. Own work.

4.4.2 Tools and techniques to control the project schedule

The different tools and techniques to control the project schedule and the various activities are essential for ensuring that construction projects remain on track and within budget. Commonly used methods include Gantt charts, which provide a visual timeline of tasks and their durations, helping to identify critical paths and dependencies. Project management software, such as Microsoft Project, offers advanced features for tracking progress, resource allocation, and real-time updates. Additionally, techniques like earned value management (EVM) allow for assessing performance by comparing planned progress to actual outcomes. Regular progress meetings with teams and zooms, and status reports further facilitate communication among stakeholders, enabling prompt identification of issues and the implementation of corrective actions to keep the project on schedule.

Table 17*Project Schedule Control Tools*

Control Project Schedule	Techniques	Description	Tools
Schedule Monitoring	Earned Value Management (EVM)	Integrates scope, schedule, and cost to assess project performance and progress against the baseline.	Microsoft Project
Schedule Performance Analysis	Schedule Performance Index (SPI)	Measures efficiency by comparing the earned value to the planned value, indicating if the project is ahead or behind schedule.	Primavera P6
Critical Path Analysis	Control Critical Path	Identifies the longest sequence of dependent tasks, allowing project managers to focus on critical tasks that directly impact project completion.	Gantt Charts
Resource Leveling	Resource Allocation and Optimization	Balances resource workloads to avoid over-allocation and ensures that resources are available when needed for tasks.	Smartsheet
Variance Analysis	Schedule Variance (SV) and Performance Index	Analyzes differences between planned and actual progress, helping to identify deviations and necessary adjustments.	Excel
Progress Tracking	Milestone Tracking	Monitors key milestones in the project schedule to ensure that significant goals are achieved on time.	Trello
Change Control	Integrated Change Control Process	Establishes a formal method for managing changes to the project schedule, ensuring all changes are documented and approved.	Change Management Software

Control Project Schedule	Techniques	Description	Tools
Forecasting	Predictive Analysis and Trend Analysis	Uses historical data and current performance trends to predict future project performance and completion dates.	Project Management Software
Regular Status Meetings	Team Collaboration and Updates	Facilitates ongoing communication among team members to discuss progress, address issues, and adjust schedules as needed.	Zoom/Teams
Baseline Reviews	Comparison of Planned vs. Actual	Regularly reviews the project baseline against current performance to identify areas needing attention and corrective actions.	Project Management Software
Risk Management	Risk Impact Analysis	Assesses potential risks to the schedule and develops mitigation strategies to minimize their impact on project timelines.	Risk Management Tools

Note. Own work.

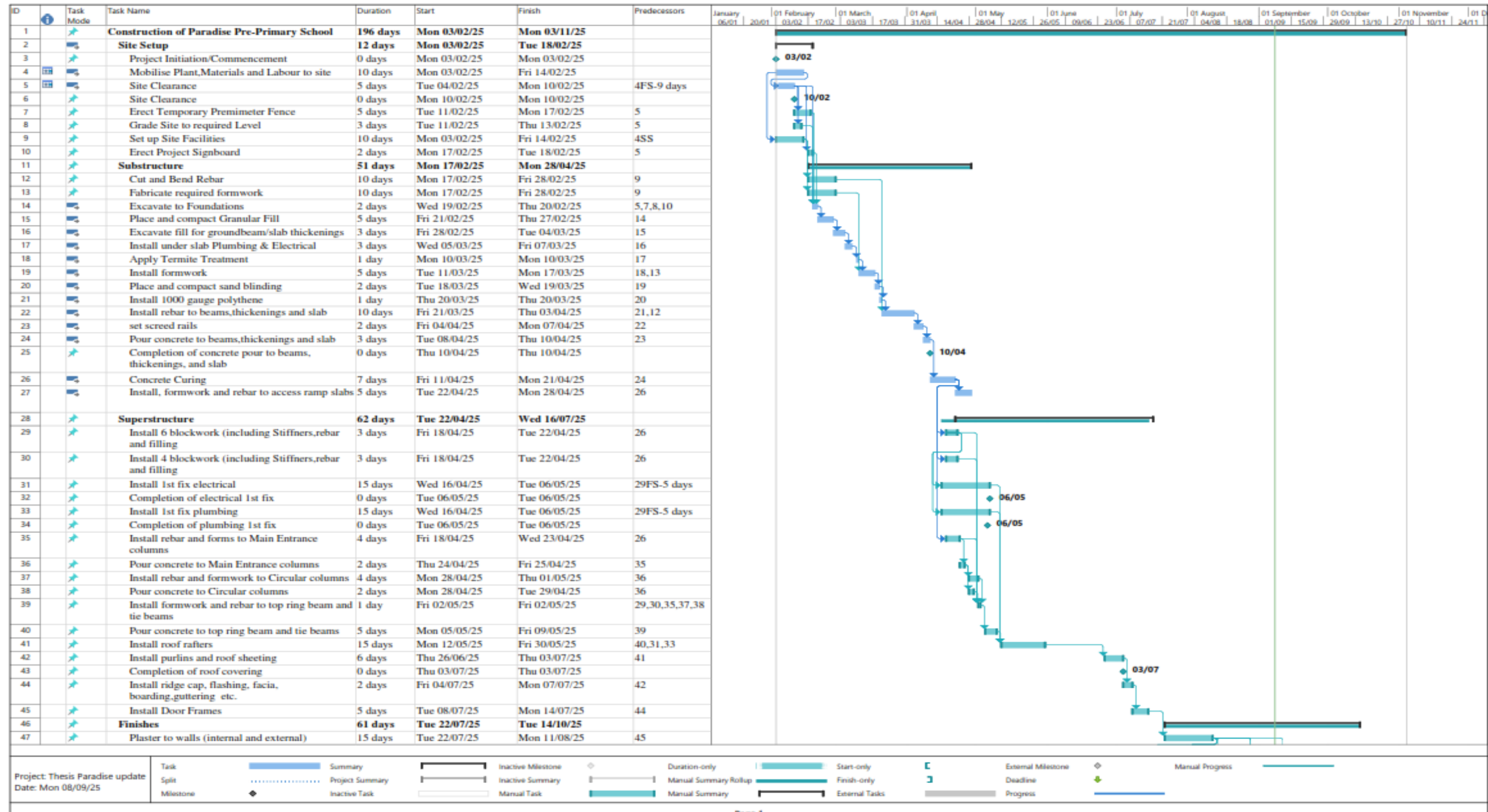
Gantt chart

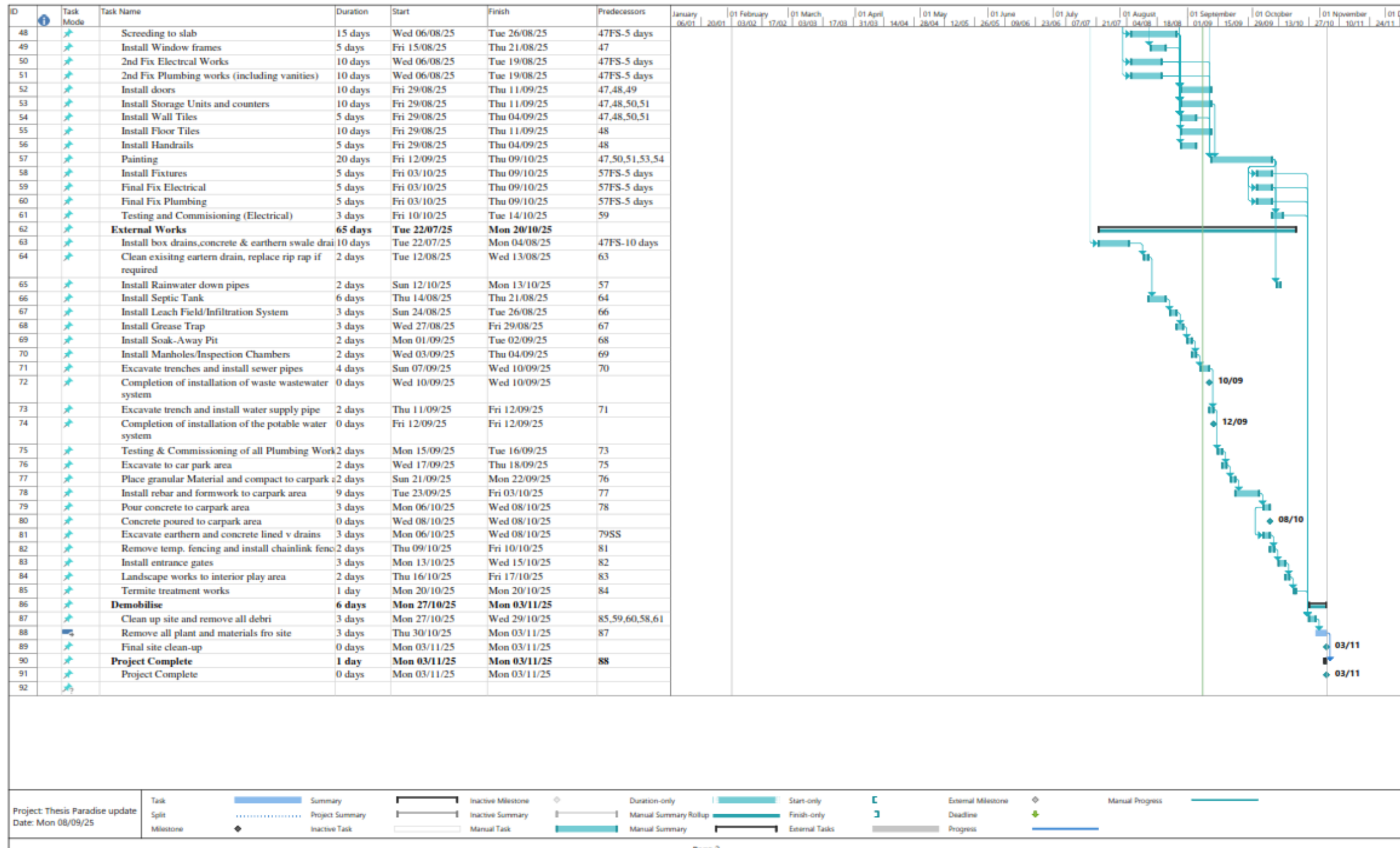
Gantt charts are invaluable tools in our organization; they provide a visual representation of project schedules that enhance planning and coordination. By displaying tasks along a timeline, Gantt charts allow for clearly outlining the sequence and duration of various activities involved in construction projects. This visibility helps to prevent potential bottlenecks, enabling proactive decision-making to keep the project on track.

In addition to facilitating task management, Gantt charts improve communication among stakeholders by providing a straightforward overview of project timelines, milestones, and deadlines. This transparency fosters collaboration between teams, subcontractors, and clients, ensuring everyone is informed about the project's progress. Furthermore, Gantt charts are useful for tracking progress against the baseline schedule, making it easy to identify delays and implement corrective measures quickly. By allowing for real-time updates, these charts support dynamic project management, enabling teams to adapt to changes and unforeseen challenges and risks effectively.

Figure 13

Project Gantt Chart





Note. Own work.

Milestone tracker report

A milestone tracker report is a tool that outlines key milestones, tasks, estimated completion dates, actual dates, status, and comments for various phases of a project. It is key for monitoring progress and ensuring that critical deadlines are met throughout the construction process. For the Paradise School Project, using a milestone tracker helps the project team maintain clarity and accountability, allowing them to quickly identify any delays or issues that may possibly arise during the construction. This proactive approach enables timely interventions and resource adjustments, ultimately facilitating the successful completion of the project on schedule. The importance of this tool lies in its ability to enhance communication among stakeholders, which will promote efficient project execution.

Table 18

Milestone Tracker Report

Milestone	Estimated Completion Date	Actual Completion Date	Status	Comments
Project Initiation/Commencement	Mon 03/02/25	Mon 03/02/25	Completed	
Site Clearance	Mon 10/02/25	Mon 10/02/25	Completed	
Completion of concrete pour to beams, thickenings, and slab	Thu 10/04/25	Thu 10/04/25	Completed	
Completion of electrical 1st fix	Tue 06/05/25	Tue 06/05/25	Completed	
Completion of plumbing 1st fix	Tue 06/05/25	Tue 06/05/25	Completed	
Completion of roof covering	Thu 03/07/25	Thu 03/07/25	Completed	
Completion of the installation of waste wastewater system	Wed 10/09/25		On-Schedule	
Completion of installation of the potable water system	Fri 12/09/25		On-Schedule	
Concrete poured in the carpark area	Wed 08/10/25		On-Schedule	
Final site clean-up	Mon 03/11/25		On-Schedule	

Milestone	Estimated Completion Date	Actual Completion Date	Status	Comments
Project Complete	Mon 03/11/25		On-Schedule	

Note. Own work.

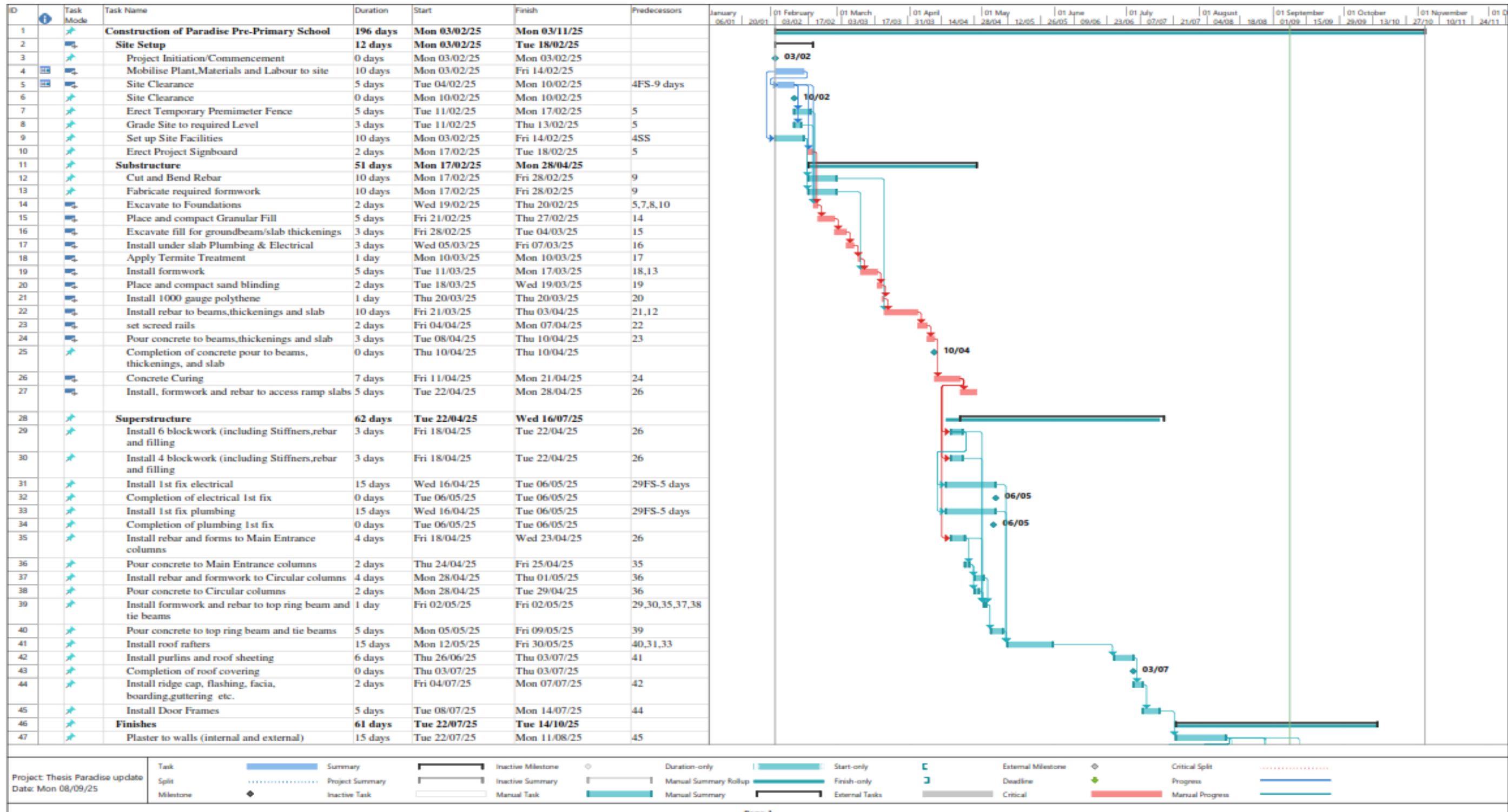
Critical Path

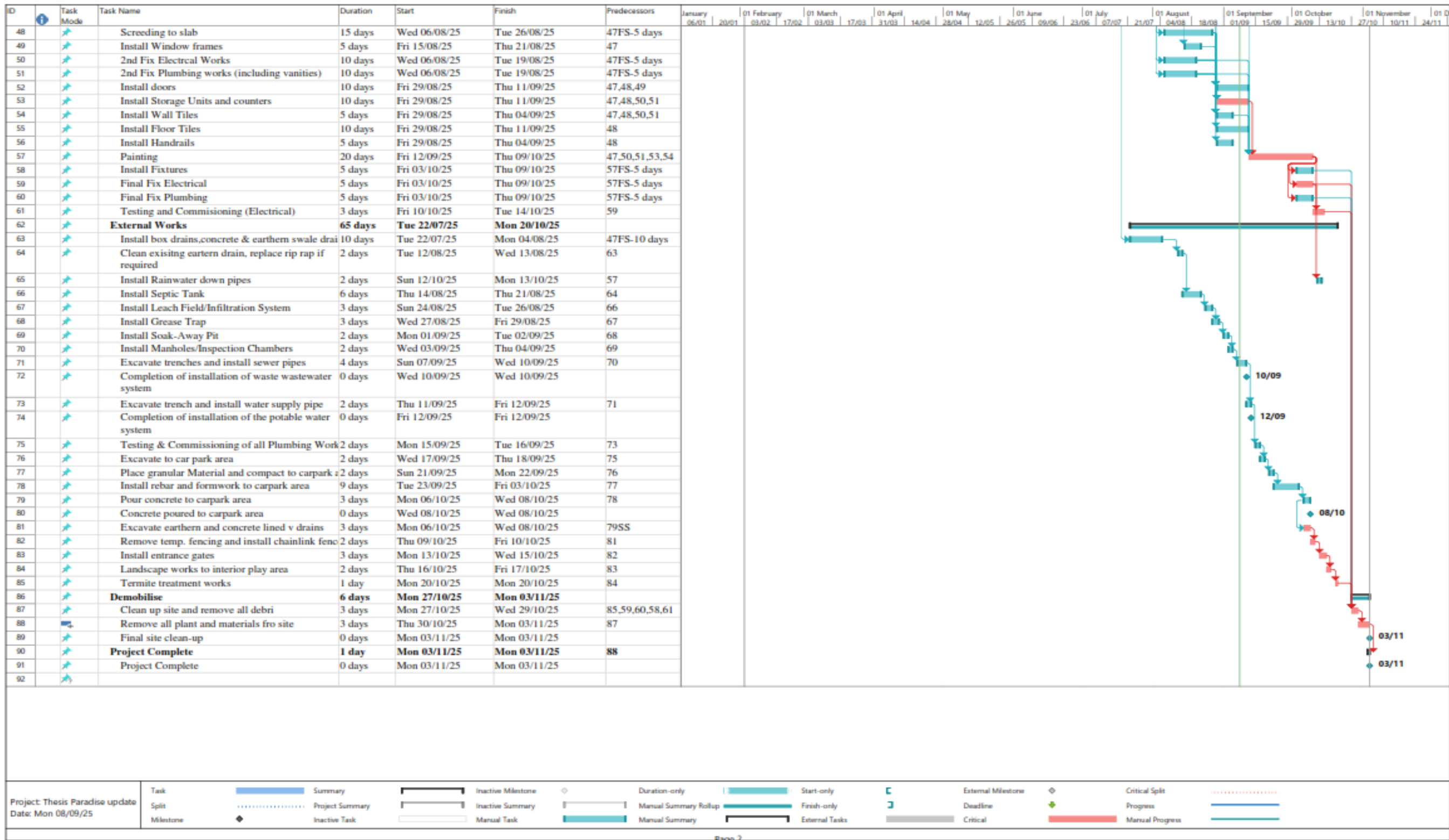
In managing projects, understanding the critical path and the implications associated by missing key activities on it is crucial. The critical path represents the minimum time that is required to finish a project. During the implementation of the project, the project management team must closely monitor the progress of works and the timely completion of activities on the path. Tasks on the critical path have no scheduling flexibility or leeway. If any task on the path goes beyond its schedule time, then the entire project is affected.

By actively monitoring the critical path and the tasks on it, schedulers and project managers can ensure that the project is delivered on time, resources are properly managed, and risks are mitigated against. For the pilot project, the greatest number of tasks that form the critical path are associated with the sub-structure/foundation phase of the project, with the second most being associated with the external works aspect. The critical path in the Gantt chart view was created with Microsoft Project. Alternatively, a network diagram can also be used. The critical path method will be utilized on all projects as part of the schedule management process.

Figure 14

Project Gantt Chart Displaying Critical Path





Note. Own Work.

Resource allocation

Resource allocation significantly impacts a project's timeline in terms of the number of personnel on a Project by determining how effectively tasks are completed and the overall flow of work. When resources—such as personnel, equipment, and materials—are allocated efficiently, tasks can be executed on schedule, minimizing delays. For example, if the erection of a wall takes two (2) weeks by double up on personnel it ultimately breaks down the time frame significantly. Inadequate or mismanaged resource allocation can lead to bottlenecks, where some tasks are delayed due to a lack of personnel or equipment, ultimately pushing back the entire project timeline. Furthermore, proper allocation ensures that critical tasks are prioritized and staffed appropriately, which is essential for meeting key milestones. In essence, effective resource allocation serves as the backbone of project scheduling, directly influencing the ability to adhere to planned timelines and deliverables.

Table 19

Resource Allocation

Resource Type	Key Task	Allocated Personnel
Construction Crew	Erection of a shed and other temporary building	5 Workers
Construction Crew	Erection of workers' toilet	3 Workers
Construction Crew	Hoarding	4 Workers
Excavation Team	Clear the site and excavate	4 Workers
Excavation Team	Spread and compact fill material	3 Workers
Excavation Team	Excavation of foundation trenches	4 Workers
Excavation Team	Foundation construction	5 Workers
Construction Crew	Box drain construction	3 Workers
Masonry Team	New 6-inch-thick external wall	4 Workers
Masonry Team	New 4-inch-thick internal wall	4 Workers
Masonry Team	Installation of ventilation blocks	3 Workers
Construction Crew	Prepare for slab, lintels, capping beams	4 Workers

Resource Type	Key Task	Allocated Personnel
Construction Crew	Installation of door frame	2 Workers
Construction Crew	Installation of door and ironmongery	2 Workers
Electrical Team	Installation of conduits and cables	3 Electricians
Electrical Team	Installation of fixtures and fittings	2 Electricians
Plumbing Team	Sanitary fixtures installation	2 Plumbers
Plumbing Team	Wastewater collection system installation	2 Plumbers
Plumbing Team	Water supply system installation	2 Plumbers
Roofing Crew	Roof framing construction	4 Workers
Roofing Crew	Roof covering installation	3 Workers
Roofing Crew	Roof drainage installation	3 Workers
Finishing Crew	Floor (screed and tile)	4 Workers
Finishing Crew	Wall (plaster and tile)	4 Workers
Finishing Crew	Trough (screed and tile)	3 Workers
Finishing Crew	Painting of walls and ceiling	3 Workers
External Works Crew	Construction of new drains	3 Workers
External Works Crew	Carpark pavement construction	4 Workers
External Works Crew	Installation of chain link fence and gates	3 Workers
Cleanup Crew	Removal of shed and other debris	3 Workers
Cleanup Crew	Final site clean-up	4 Workers
Project Manager	Overall project oversight	1 Project Manager
Engineer	Design and technical oversight	1 Engineer
Architect	Architectural design coordination	1 Architect
Quality Assurance Officer	Quality control and inspections	1 QA Officer

Note. Own work.

4.4.3 Schedule control

Schedule control ensures that timelines are adhered to and that any deviations are promptly addressed. The management of this process consists of the use of project management tools, such as Gantt charts and scheduling software, which provide visual representations of project timelines and progress. These tools facilitate real-time updates, which makes the control of each task easier to identify and prevents potential bottlenecks. Regular reviews and updates as the project develops are essential to monitor the schedule; conducting these reviews weekly or bi-weekly allows the project team to compare performance against the baseline schedule, track task completion, and identify delays. Efficient resource management is also crucial; ongoing

monitoring of resource availability ensures that the project stays on track and that any adjustments can be made promptly to avoid bottlenecks. Clear and regular communication among team members and stakeholders regarding any schedule changes or delays is vital.

Furthermore, a formal change control process should be established to manage any proposed changes to the project schedule, ensuring that their impact on timelines, resources, and costs is thoroughly evaluated before approval. Finally, developing contingency plans for critical tasks allows the project team to proactively address potential delays or issues. By integrating these components—use of tools, regular reviews, resource management, clear communication, and consistent updates—the Paradise School project team can effectively manage timelines, minimize disruptions, and enhance the likelihood of successful project completion within the planned timeframe.

4.5 Stakeholders Management Plan

4.5.1 Stakeholder Management Plan Approach

The management plan approach adheres to the PMBOK® guidelines, which include using a list to identify stakeholders, planning stakeholder engagement, managing stakeholder engagements, and keeping an eye on them. This management approach is essential for ensuring that all parties involved in the project are effectively engaged, informed, and aligned with project objectives. The approach begins with identifying stakeholders, which involves creating a comprehensive list of individuals, groups, and organizations affected by or involved in the project, followed by categorizing them based on their influence and interest.

Once stakeholders are identified, the next step is to analyze each one's level of power and interest using tools like the Power/Interest Grid, gaining insights into their needs, expectations, and potential impact on the project. This analysis informs the development of tailored

engagement strategies; for instance, high-power, high-interest stakeholders may require regular updates and involvement in decision-making, while low-power, low-interest stakeholders may need less frequent communication. Establishing a communication plan is crucial, outlining how information will be shared, including frequency and channels, to ensure transparency and build trust.

Actively involving stakeholders in relevant project activities, such as planning sessions and feedback discussions, encourages their input and addresses any concerns, fostering support and buy-in. Continuous monitoring of stakeholder engagement and satisfaction throughout the project allows for adjustments to strategies and communication methods based on feedback and changing circumstances. Finally, maintaining detailed records of stakeholder interactions and providing regular progress reports ensures that concerns are addressed and that stakeholders remain informed. By implementing this structured approach, project teams can enhance collaboration, mitigate risks, and ultimately improve project outcomes, aligning the project with the needs and expectations of all involved parties.

4.5.2 Stakeholder identification

Identifying stakeholders is a crucial first step in effective project management, as it helps to recognize all individuals, groups, and organizations that may affect or be affected by the project. This process begins by involving the project team to compile a comprehensive list of potential stakeholders, which should include team members, clients, suppliers, community members, and regulatory bodies. Once identified, stakeholders can be categorized based on their relationship to the project, distinguishing between internal stakeholders, such as project team members and management, and external stakeholders, like clients, suppliers, and community groups. Evaluating each stakeholder's level of power and interest using tools like the

Power/Interest Grid helps prioritize engagement efforts based on their potential impact on project success. Creating a stakeholder map can further visualize the relationships and influence of each stakeholder, aiding in understanding dynamics and ensuring that all relevant parties are considered in decision-making processes. It is also essential to maintain detailed documentation of all identified stakeholders, including their roles, responsibilities, interests, and preferred communication methods, as this will serve as a reference throughout the project lifecycle. Additionally, stakeholder identification should be viewed as an ongoing task, requiring continuous review and updates as the project progresses and new stakeholders emerge, or existing ones change their level of involvement or influence. By effectively identifying stakeholders, project managers can tailor their engagement strategies, ensuring that all relevant voices are heard and that the project aligns with stakeholder needs and expectations.

Table 20

Roles and Responsibilities

Stakeholder	Roles and Responsibilities
Project Manager	<ul style="list-style-type: none"> • Ensure the project is completed on time and within budget. • Manage risks and resolve issues promptly.
Site Supervisor	<ul style="list-style-type: none"> • Oversee daily operations and ensure compliance with safety standards. • Facilitate communication between workers and management.
Safety Officer	<ul style="list-style-type: none"> • Implement and monitor safety protocols to minimize accidents. • Conduct regular safety training for all personnel.

Stakeholder	Roles and Responsibilities
Quality Control Inspector	<ul style="list-style-type: none"> • Maintain high-quality construction standards through inspections. • Ensure materials and workmanship meet specified requirements.
Procurement Officer	<ul style="list-style-type: none"> • Secure materials and services at the best prices. • Ensure timely delivery of supplies to prevent delays.
Financial Analyst	<ul style="list-style-type: none"> • Monitor the project budget and financial health. • Provide financial forecasts and reports to stakeholders.
Environmental Officer	<ul style="list-style-type: none"> • Ensure compliance with environmental regulations and sustainability practices. • Promote eco-friendly construction method.
Stakeholder Liaison	<ul style="list-style-type: none"> • Engage with stakeholders to gather input and address concerns. • Keep stakeholders informed about project progress.
Human Resources Manager	<ul style="list-style-type: none"> • Manage workforce recruitment and training; ensure compliance with labor laws.
IT Support/ Drafts men	<ul style="list-style-type: none"> • Ensure technology systems are functional; provide technical assistance to project teams.
Teachers/Parents/community	<ul style="list-style-type: none"> • Advocate for features that support educational needs; provide feedback on design and functionality. • Ensure the project benefits the local community; advocate for transparency and communication.

Note. Own work.

4.5.3 Stakeholder Register

The stakeholder register will be used to manage stakeholders on the Paradise School project. The register categorizes stakeholders as either Direct (D) or Indirect (I) based on their involvement and impact on the school construction project. Direct stakeholders include individuals and groups directly affected by the project's execution and outcomes, such as the school administration, teachers, parents, and construction contractors. In contrast, Indirect stakeholders may not be directly impacted by the project results but can benefit from receiving updates and being informed about key developments, such as local community organizations and educational associations. This structured classification ensures clear communication, accountability, and transparency throughout the school construction project's lifecycle.

Table 21

Stakeholder Register

Stakeholder Name	Position	Category	Roles and Responsibilities	Power/Interest	Engagement Requirement	Objectives
Project Manager	Project Manager	Direct	Overall success of the project; risk management.	High/High	Weekly meetings, progress reports	Ensure project completion on time and within budget.
Site Supervisor	Site Supervisor	Direct	Oversee daily operations; facilitate team coordination.	High/High	Daily briefings	Ensure compliance with project plans and safety.
Construction Manager	Construction Manager	Direct	Optimize resources;	High/High	Weekly coordination	Maximize productivity

Stakeholder Name	Position	Category	Roles and Responsibilities	Power/Interest	Engagement Requirement	Objectives
			ensure schedule adherence.		on meetings	y and meet construction milestones.
Safety Officer	Safety Officer	Direct	Implement safety protocols; conduct safety training.	High/Low	Weekly safety meetings	Minimize accidents and promote safety awareness.
Quality Control Inspector	Quality Control Inspector	Direct	Ensure quality assurance; conduct regular inspections.	High/Low	Regular inspections and reports	Maintain high-quality construction standards.
Procurement Officer	Procurement Officer	Direct	Secure materials cost-effectively; ensure timely deliveries.	Low/High	Monthly procurement reviews	Obtain materials on schedule and within budget.
Project Coordinator	Project Coordinator	Direct	Facilitate communication; manage project documentation.	High/High	Daily updates and coordination meetings	Ensure clear communication and accurate documentation.
Financial Analyst	Financial Analyst	Direct	Monitor budget; provide financial reporting.	High/low	Monthly financial reviews	Ensure financial health and budget compliance.
Environmental Officer	Environmental Officer	Direct	Ensure sustainability practices; monitor compliance	Low/High	Periodic environmental assessments	Promote environmental stewardship and

Stakeholder Name	Position	Category	Roles and Responsibilities	Power/Interest	Engagement Requirement	Objectives
			.			compliance.
Stakeholder Liaison	Stakeholder Liaison	Direct	Engage with stakeholders; manage relationships.	Low/High	Regular updates and feedback sessions	Foster positive stakeholder relationships.
Human Resources Manager	Human Resources Manager	Direct	Manage workforce; facilitate training programs.	Low/Low	Monthly HR meetings	Ensure adequate staffing and skill development.
IT Support	IT Support	Direct	Ensure technology integration; provide technical assistance.	Low/Low	On-demand support	Ensure technology is functional and supportive.
Teachers/Parents/Ministry of Education	Teachers/Parents	Indirect	Provide input on educational needs; ensure quality environment.	Low/High	Surveys and meetings	Ensure facilities support a high standard of education.
Community	Community	Indirect	Foster community benefits; promote environmental stewardship.	Low/High	Community meetings and updates	Ensure project benefits the local community.

Note. Own work.

This table now reflects the direct or indirect involvement of each stakeholder in the project, along with their roles and objectives. Adjustments can be made as needed based on Gleans project dynamics.

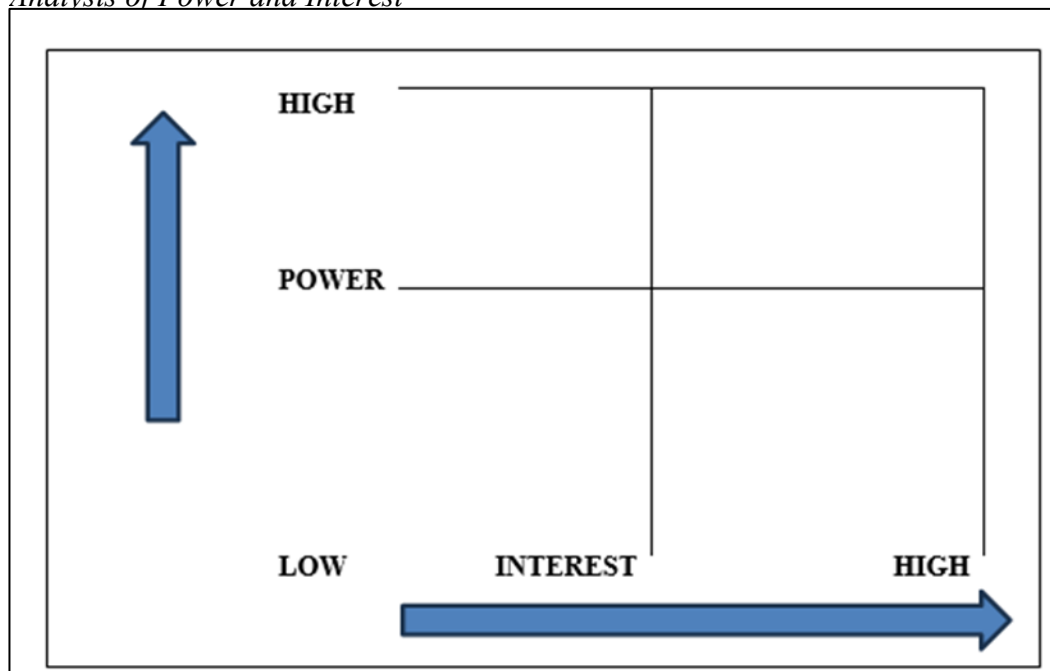
4.5.4 Stakeholder analysis

Analysis of power and interest

Power-Interest Analysis is instrumental in effectively managing stakeholder engagement for the Paradise School project. By assessing each stakeholder's level of power and interest, the project team can prioritize interactions. For instance, a construction manager, who possesses high power and high interest, falls into the "Manage Closely" category. These stakeholders require regular updates and active involvement in decision-making processes to ensure their support for the project.

Figure 15

Analysis of Power and Interest



Note. Own work.

In contrast, funding organizations may have high power but lower interest, placing them in the "Keep Satisfied" group. The project team should provide them with essential updates without overwhelming them with unnecessary details, ensuring their continued backing. Parents and community members, with low power but high interest, belong to the "Keep Informed" category. They should receive regular communication and updates to engage them and address their concerns about the school's development.

Lastly, stakeholders with low power and low interest, such as distant suppliers or external consultants like IT personnel, are classified as "Monitor." While they require minimal engagement, it's still important to keep them informed about relevant developments. By applying Power-Interest Analysis, the Paradise School project team can ensure that stakeholder engagement is tailored to the needs of each group, fostering strong relationships and enhancing the likelihood of project success.

Stakeholder Engagement Assessment Matrix

Table 22

Stakeholder Engagement Assessment Matrix

ID	Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
1	Project Manager					✓
2	Site Supervisor			✓		
3	Construction Manager				✓	
4	Safety Officer			✓		
5	Quality Control Inspector					✓
6	Procurement Officer			✓		
7	Project Coordinator			✓		
8	Financial Analyst					✓
9	Environmental Officer					✓
10	Stakeholder Liaison			✓		
11	Human Resources Manager					✓
12	IT Support			✓		

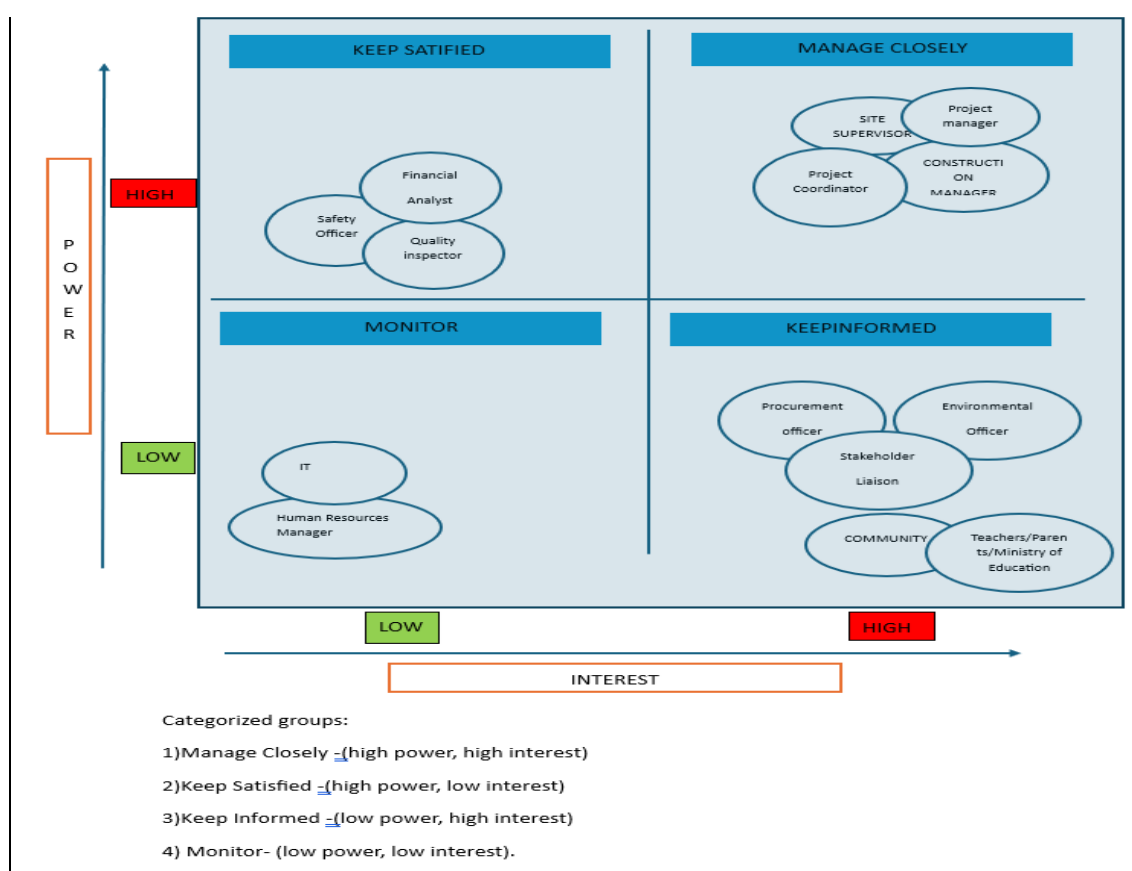
ID	Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
13	Teachers/Parents				✓	
14	Community	✓				

Note. Own work.

4.5.5 Stakeholder Management

Figure 16

Stakeholder Management Analysis



Note. Own work.

Manage stakeholders

Managing stakeholders effectively is vital for the success of the Gleans organization's project, it ensures that all parties are engaged with and informed of the project objectives. The management process begins with clear communication, which is essential for building trust and understanding among stakeholders. This involves establishing a communication plan that specifies how and when information will be shared, tailoring messages to meet the unique needs of different stakeholder groups.

Active engagement is another key aspect of stakeholder management. Involving stakeholders in relevant project meetings, feedback discussions, and decision-making processes, fosters a sense of ownership and commitment. Regular updates on project progress help keep stakeholders informed and address any concerns they may have, allowing for timely adjustments to strategies if necessary. Informing stakeholders through daily, weekly and monthly reporting in vital.

Monitoring stakeholder satisfaction throughout the project is crucial. This can be achieved through surveys, interviews, or informal check-ins to gauge their perceptions and gather feedback. By being responsive to stakeholder needs and concerns, project managers can mitigate risks and enhance collaboration.

The documentation of all interactions and decisions related to stakeholders is essential for accountability and transparency. This documentation provides a valuable reference for future projects and helps maintain a clear record of stakeholder engagement efforts. By implementing these strategies, project managers can effectively manage stakeholders, ensuring that their needs are met and that the project progresses smoothly toward its objectives.

4.5.6 Monitor stakeholders

Scheduled meetings with key stakeholders, including parents, teachers, and community representatives, will provide opportunities for open dialogue about project progress and any emerging issues. These meetings will also serve as a platform for stakeholders to voice their opinions and suggestions, fostering a collaborative environment.

In addition, a stakeholder engagement tracker will be maintained to document interactions, feedback, and any actions taken in response to stakeholder concerns. This will ensure that all engagement efforts are transparent and accountable, providing a reference point for future decisions.

Moreover, regular engagement and monitoring helps to mitigate risks by identifying potential conflicts or misunderstandings early on. By keeping stakeholders informed and involved, project teams can anticipate concerns and develop strategies to address them before they escalate. This proactive approach not only enhances stakeholder buy-in but also contributes to smoother project execution.

Stakeholder Feedback Mechanism: questionnaire for Paradise Preschool

Standardized documents, such as questionnaires, are multifaceted. Implementation of questionnaires ensures clarity and consistency, providing all stakeholders with a clear understanding of project goals and processes. A questionnaire actively engages parents, teachers, and community members, fostering a sense of ownership and collaboration that can enhance project outcomes. It also aids in assessing the key needs and expectations of the community, ensuring the preschool design is relevant and effective. Additionally, structured feedback mechanisms help identify potential concerns early, allowing for proactive risk management.

Documenting stakeholder input promotes continuous improvement by providing insights that inform future initiatives, while also enhancing accountability and transparency in decision-making. Furthermore, effective monitoring and evaluation are facilitated through well-documented processes, ensuring that stakeholder needs are met throughout the project lifecycle. Overall, utilizing a standardized questionnaire enhances communication between project managers and stakeholders, contributing significantly to the project's success.

Section 1: General Information

1. **Name (Optional):**
2. **Role/Relationship to the Preschool:**
 - Parent
 - Teacher
 - Community Member
 - Local Authority
 - Other: _____
3. **How did you hear about the preschool construction project?**
 - Community Meeting
 - Social Media
 - Word of Mouth
 - Other: _____

Section 2: Needs and Expectations

4. **What do you believe are the key needs for a preschool in our community?**
(Select all that apply)
 - Safe and secure environment
 - Quality educational programs
 - Outdoor play areas
 - Accessibility for all children

- Other: _____

5. **What features do you think are essential in the preschool design?** (Rank the following from 1 to 5, with 1 being the most important)

- Classrooms
- Playgrounds
- Restrooms
- Outdoor Learning Spaces
- Parking Facilities

Section 3: Concerns and Suggestions

6. **What concerns do you have regarding the construction of the preschool?**
(Select all that apply)

- Noise during construction
- Traffic congestion
- Environmental impact
- Safety during construction
- Other: _____

7. **Do you have any suggestions to improve the construction process or the design of the preschool?**

- _____

Section 4: Community Involvement

8. **How would you like to be involved in the preschool construction project?**
(Select all that apply)

- Attending community meetings
- Providing feedback through surveys
- Volunteering for events
- Other: _____

9. **Would you be interested in a follow-up meeting to discuss the project further?**

- Yes
- No

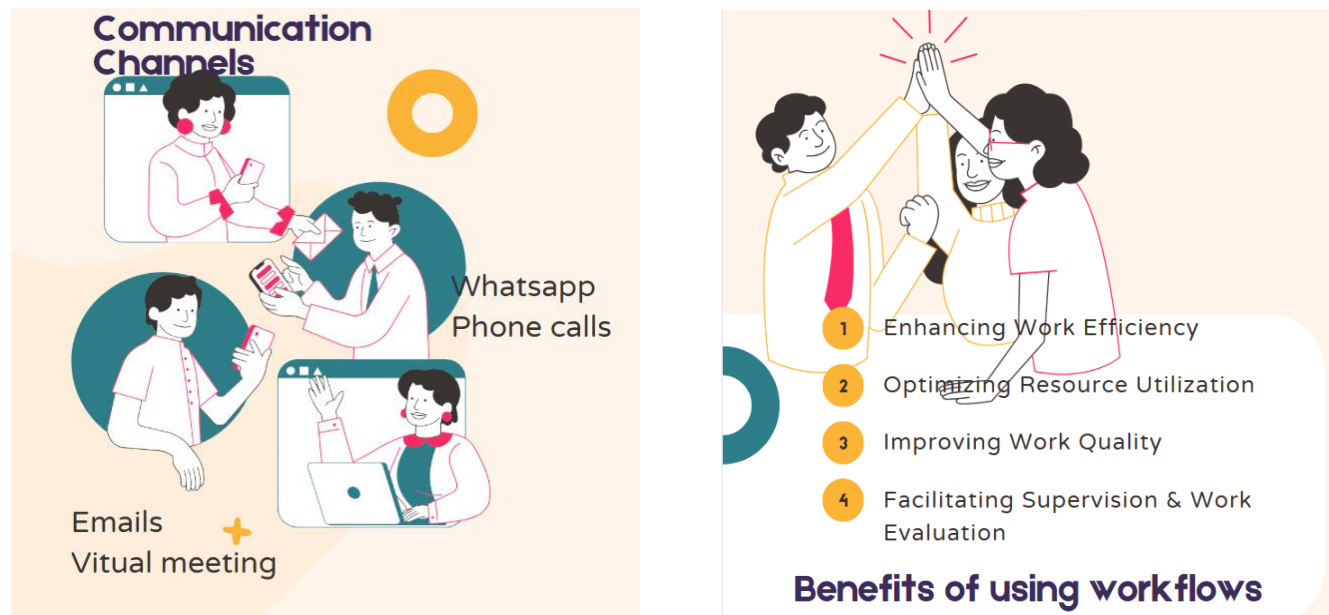
Section 5: Additional Comments

10. Please share any additional comments or feedback:

-
-

Collaborative Framework

The collaborative framework for the Paradise Pre-Primary School pilot project is designed to enhance teamwork and communication among all stakeholders involved, including project managers, contractors, community members, and educational authorities. This framework emphasizes the importance of regular engagement through structured meetings and feedback sessions, ensuring that diverse perspectives are considered throughout the project lifecycle. By fostering an environment of open dialogue and shared responsibility, the framework facilitates proactive problem-solving and encourages innovation, ultimately aligning project objectives with community needs. The use of collaborative tools, such as shared digital platforms for documentation and communication, further enhances coordination and transparency, allowing for real-time updates and efficient resource management. This approach not only strengthens relationships among stakeholders but also contributes to the overall success of the project, ensuring that it achieves its goals of providing quality education and fostering community development.

Figure 17*Collaborative Framework*

Note. Own work.

4.6 Communication Management Plan

4.6.1 Communication Management

It is imperative to implement effective communication management in the Paradise School Project to guarantee that all stakeholders are kept aware and connected throughout the project's tenure. Establishing defined communication protocols—such as utilizing project management software, regular site meetings, and structured reporting—facilitates streamlined information exchange and enhances transparency. Routine progress updates on key milestones and upcoming tasks are essential for maintaining project alignment, while targeted communication strategies for critical stakeholders ensure their specific requirements are addressed. Comprehensive documentation of all communications, decisions, and changes serves

as a definitive reference for the project team. Promoting a culture of open feedback fosters collaboration and employing visual tools like Gantt charts and progress graphs aids in conveying complex project data succinctly. Additionally, implementing a crisis communication plan allows for prompt responses to unforeseen challenges, thereby mitigating their potential impact on project timelines. By prioritizing these strategies, the project team can optimize collaboration and ensure the efficient advancement of the Paradise School Project toward successful completion.

4.6.2 Communication objectives

The communication objectives outline the specific goals that will promote effective communication and ensure information is disseminated, concisely, and in a timely manner. These objectives aim to inform stakeholders about project developments, engage the community in meaningful ways, and build trust through transparency. These objectives encourage teamwork and problem-solving. They help manage expectations regarding project timelines and deliverables while raising awareness about the benefits of the Paradise School project. Creating channels for feedback ensures that stakeholder voices are heard and considered in decision-making. Ultimately, these communication objectives serve to enhance relationships, promote stakeholder involvement, and contribute to the overall success of the project.

- i. **Inform stakeholders:** Provide timely and accurate information about project progress, milestones, and changes to keep all stakeholders informed.
- ii. **Engage the community:** Foster community involvement and support by sharing project updates, gathering feedback, and addressing concerns from parents, students, and local residents.
- iii. **Build trust:** Establish and maintain trust among stakeholders by being transparent about project challenges, successes, and decision-making processes.

- iv. **Facilitate collaboration:** Encourage collaboration among project team members, contractors, and stakeholders to enhance teamwork and problem-solving.
- v. **Manage expectations:** Clearly communicate project timelines, deliverables, and any potential delays to set realistic expectations among stakeholders.
- vi. **Promote awareness:** Raise awareness about the benefits and goals of the Paradise School project to garner support from the local community and stakeholders.
- vii. **Provide support and resources:** Ensure that stakeholders have access to the resources and information they need to engage effectively in the project.
- viii. **Gather feedback:** Create channels for stakeholders to provide feedback and input, ensuring their voices are heard and considered in decision-making.

4.6.3 Communication Type and Communication Methods/Artifacts

Table 23

Communication Type and Communication Methods/Artifacts

Communication Type	Communication Method
Interactive communication	<ul style="list-style-type: none"> • Phone Calls • Videoconferencing: Zoom, Microsoft Teams, Google Meet • Meetings: face-to-face • Instant Messaging/Chat Platforms: WhatsApp • Presentations
Push communication	<ul style="list-style-type: none"> • Letters • Reports • Emails • Press Releases
Pull communication	<ul style="list-style-type: none"> • SharePoint Intranet • Google Drive • Enterprise MS Project • Lessons learned database

Note. Own work.

Communication matrix template

The communication matrix is vital. Its importance lies in that information flows efficiently and effectively, minimizing the risk of misunderstandings and delays. By clearly defining communication elements, the matrix facilitates targeted interactions tailored to the needs of different stakeholders in each project. This structured approach enables the project team to maintain alignment on project goals, monitor progress, and address issues promptly.

Utilizing the communication matrix requires regular reviewing and updating it to reflect any changes in project dynamics or stakeholder involvement. It serves as a reference point for scheduling meetings and disseminating progress reports, thereby promoting accountability and transparency. In practice, the communication matrix ensures that critical information—such as design modifications, progress updates, and quality assurance findings—reaches the appropriate stakeholders in a timely manner. This proactive communication strategy not only enhances collaboration among team members but also fosters a culture of transparency that is essential for navigating the complexities of the various construction projects.

Table 24

Communication Matrix Template

	Information to be Shared	Purpose	Communication Type	Frequency	Audience
1	Kick-Off Meeting Agenda	Set project expectations and align the team	Meeting	At Project Start	All Stakeholders
2	Project Updates	Inform stakeholders of progress and milestones	Email	Weekly	All Stakeholders

	Information to be Shared	Purpose	Communication Type	Frequency	Audience
3	Technical Meeting Agendas	Discuss technical aspects and resolve issues	Meeting	Bi-Weekly	Project Team
4	Risk Assessment Reports	Share potential risks and mitigation strategies	Report	Monthly	Project Manager, Team
5	Budget Status	Inform on financial performance and forecasts	Report/Presentation	Bi-Monthly	Finance Team, Sponsors
6	Feedback from Stakeholders	Gather input and improve project outcomes	Survey/Meeting	After Major Milestones	All Stakeholders
7	Training Materials	Equip team members with necessary skills	Document/Workshop	As Needed	Project Team
8	Lessons Learned	Share insights for future projects	Report/Meeting	End of Project	All Stakeholders
9	Final Project Report	Summarize project outcomes and performance	Document	End of Project	All Stakeholders

Note. Own work.

4.6.4 Manage communication

The PMI PMBOK Guide 2017 defines manage communication as the process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring and the ultimate disposition of project information. This process is performed throughout the project life cycle and ensures that information flows between the project team and its stakeholders.

Effective communication management is essential for the success of the school project, involving a structured approach to ensure all stakeholders are informed, engaged, and aligned with project objectives. Comprehensive communication ensures that the methods of

communication details who will share what information, the frequency of updates, and the specific channels to be used, such as emails, newsletters, and meetings. Tailoring communication strategies to meet the specific needs of these stakeholder groups is crucial; for instance, parents may need updates on school facilities, while teachers may require information on curriculum developments, and the contractor may need a different set of information. Establishing clear channels for two-way dialogue, providing regular updates on project progress, and encouraging feedback through surveys or direct conversations help foster trust and engagement. Continuous monitoring of communication effectiveness allows for adjustments based on stakeholder feedback and changing circumstances. Maintaining documentation of all communications ensures transparency and accountability, serving as a reference for future interactions. By managing communication effectively, project teams can enhance stakeholder engagement and contribute to the overall success of the school project.

Table 25

Manage Communication Table

Step	Action	Description
1. Identify the Issue/ request.	Define the problem, issues, request etc.	Clearly articulate the communication issue based on stakeholder feedback and observations.
2. Assess the Impact	Evaluate effects	Determine how the communication issue affects stakeholder engagement and project progress.
3. Gather Feedback	Solicit input	Collect insights from affected stakeholders through surveys, discussions, or meetings.

Step	Action	Description
4. Develop a Response Plan	Create an action plan	Outline specific actions to improve communication, such as revising messages or increasing updates.
5. Implement Changes	Execute the plan	Put the response plan into action, informing stakeholders about the changes and their rationale.
6. Monitor Progress	Track effectiveness	Closely observe the situation and gather feedback to assess the success of the new strategies.
7. Adjust as Necessary	Make further changes	Be ready to modify communication strategies based on ongoing feedback and stakeholder needs.
8. Document the Process	Keep records	Maintain detailed documentation of the issue, actions taken, and outcomes for future reference.

Note. Own work.

4.7 Resource Management Plan

4.7.1 Plan Resource Management

The Project Management Institute (PMI) defines a Resource Management Plan as a component of the project management plan that outlines how resources are categorized, allocated, managed, and released (PMI, 2017, p. 318). The Resource Management Plan for the Paradise Pre-Primary School Project focuses on the systematic identification, acquisition, and utilization of both physical and human resources critical for the project's success. Its primary objective is to ensure the optimal allocation of resources while balancing cost considerations, efficiency, and overall effectiveness in achieving project goals. By clearly detailing the types and

quantities of resources required, the plan facilitates precise forecasting and budgeting, enabling the project team to proactively address potential shortages or surpluses. Scheduling the deployment of these resources is crucial for avoiding conflicts within the construction and ensuring that all team members and materials are available when needed, thereby minimizing downtime and enhancing productivity.

Additionally, the plan emphasizes the importance of continuous monitoring and adjustment, allowing for real-time responses to any challenges that may arise during the project lifecycle. This approach not only ensures that the project is completed on time and within budget but also upholds the highest quality standards. Overall, this provides a structured framework for effective resource management across all project phases, fostering collaboration and accountability among team members while ensuring alignment with the project's scope and strategic objectives.

4.7.2 Resource Identification

Identifying the team and resources for the Paradise School Project involves an approach that aligns with the project's specific goals and requirements. First, a thorough assessment of the project's scope and objectives is essential to determine the skills and expertise needed. This includes defining key roles such as project manager, site supervisor, engineers, and quality control inspectors, each of whom plays a critical part in the project's success. Next, the project manager collaborates with human resources to identify available personnel and recruit additional team members as needed, ensuring that all roles are filled with qualified individuals.

In parallel, a resource inventory is conducted to identify necessary materials, equipment, and tools required for construction. This includes sourcing local suppliers and evaluating their

ability to meet project timelines and budget constraints. Additionally, considering the project's sustainability goals, the team may prioritize eco-friendly, sustainable materials and practices. Regular communication with stakeholders and team members is vital to ensure that resource allocation is efficient and that any potential gaps or adjustments are promptly addressed. By following this structured approach, the project can effectively mobilize the right team and resources, setting a solid foundation for successful project execution.

Table 26

Resource Identification

Category	Resource
Human Resources	<ul style="list-style-type: none"> • Project Manager • Site Supervisor • Construction Crew • Quality Control Inspector • Community Liaison • HR Manager • Procurement Manager • Architect • Engineers
Materials	<ul style="list-style-type: none"> • Concrete • Steel • Bricks • Roofing Materials • Windows and Doors • Electrical Wiring • Plumbing Fixtures
Equipment	<ul style="list-style-type: none"> • Excavators • Cranes • Concrete Mixers • Scaffolding • Landscaping Tools

Category	Resource
	<ul style="list-style-type: none"> • Safety Equipment
Services	<ul style="list-style-type: none"> • Surveying Services • Electrical/Plumbing/AC etc • Legal and Compliance Services
Technology	<ul style="list-style-type: none"> • Project Management Software • Design Software (e.g., CAD) • Communication Tools

Note. Own work.

4.7.3 Roles and Responsibilities

Clearly defined roles and responsibilities within the resource management framework enable the project team to coordinate efforts efficiently, facilitating the optimal use of human, material, and equipment resources. Each role—ranging from the Project Manager overseeing overall strategy to the HR Manager handling recruitment and training—plays a vital part in ensuring resources are allocated, utilized, and managed effectively. By establishing a structured approach to resource management, the project can maintain quality standards, adhere to timelines, and respond promptly to any challenges that arise, ultimately contributing to the successful delivery of a high-quality educational facility for the community.

Table 27*Roles and Responsibilities - Resource Management*

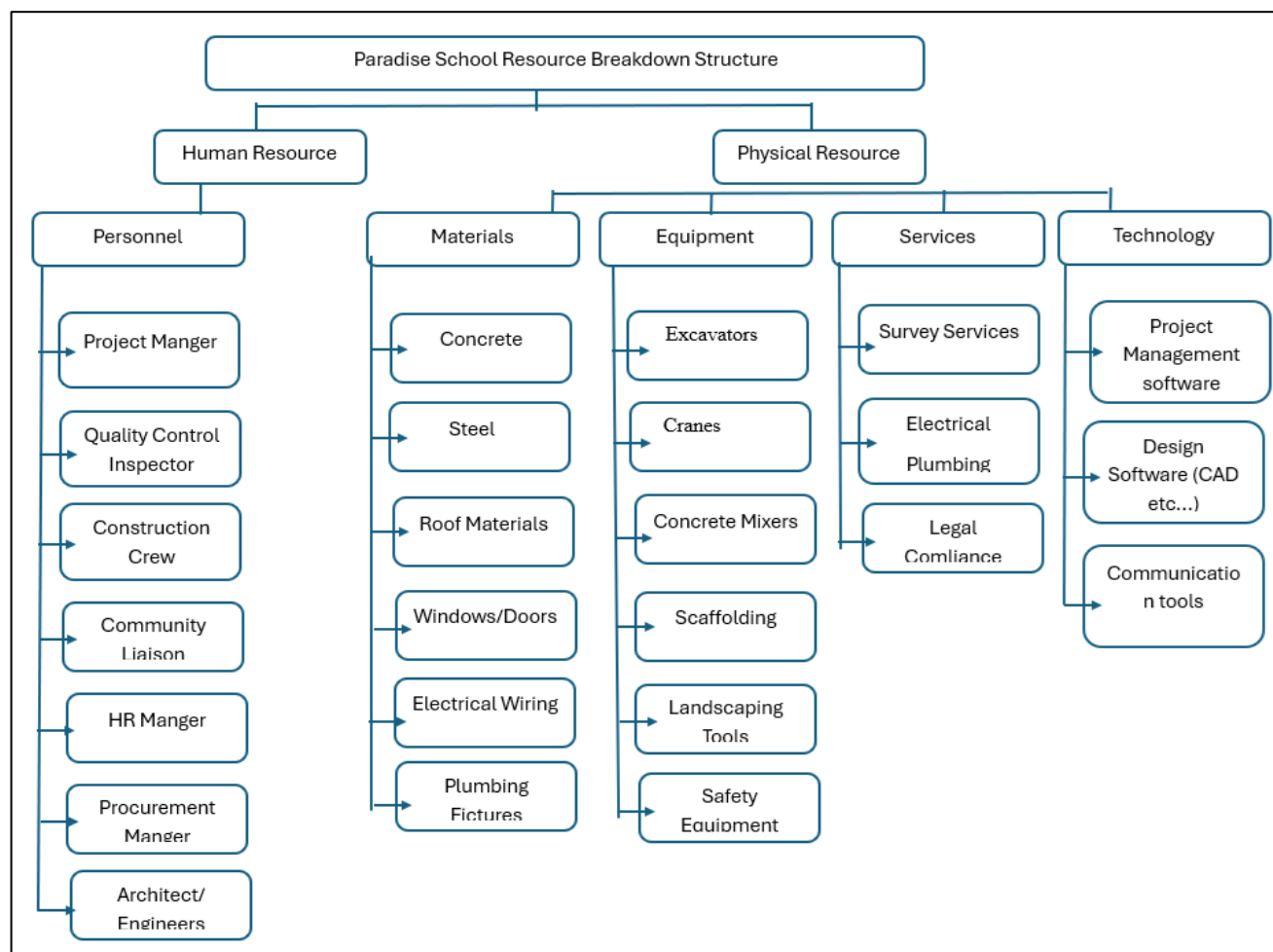
Role	Responsibilities
Project Manager	<ul style="list-style-type: none"> • Oversee the overall resource management strategy and ensure alignment with project objectives. • Monitor resource allocation and utilization throughout the project lifecycle. • Approve changes to resource allocations as necessary.
Procurement Manager	<ul style="list-style-type: none"> • Identify and procure services, materials, and equipment required for the project. • Establish and maintain relationships with suppliers, negotiating contracts and pricing. • Monitor inventory levels to prevent shortages or surpluses.
Site Supervisor	<ul style="list-style-type: none"> • Ensure that physical resources are available on-site as planned. • Coordinate the use of equipment and materials, ensuring they are utilized effectively. • Report any issues related to resource availability or condition.
Quality Control Inspector	<ul style="list-style-type: none"> • Monitor the quality of materials and compliance with specifications during procurement and use. • Conduct inspections to ensure that resources meet quality and safety standards.
HR Manager	<ul style="list-style-type: none"> • Manage training programs to enhance team skills related to resource utilization and safety. • Oversee the recruitment process to ensure the team is adequately staffed for project needs. • Ensure compliance with labor laws and company policies regarding employee relations and welfare.

Role	Responsibilities
Engineer	<ul style="list-style-type: none"> • Provide technical specifications for resources needed in construction and ensure compliance with standards. • Collaborate with the Project Manager to assess the impact of resource changes on project timelines.
Construction Crew	<ul style="list-style-type: none"> • Utilize resources efficiently to complete tasks on schedule, adhering to quality standards.
	<ul style="list-style-type: none"> • Report any issues with materials or equipment to the Site Supervisor.

Note. Own work.

4.7.4 Resource Breakdown Structure

One of the tools utilized for the paradise project as part of the Resource Management Plan is the Resource Breakdown Structure as it organizes all project resources into a clear hierarchical structure. This organization facilitates effective communication among team members and stakeholders by providing a visual representation of who is responsible for what resources. RBS aids in resource allocation, ensuring that the right personnel, equipment, materials, and resources are available when needed. By identifying all resources in advance, the RBS helps in anticipating potential risks related to resource shortages or delays, enabling the development of contingency plans. Furthermore, it serves as a benchmark for monitoring resource utilization and performance, enhancing accountability within the team. Overall, utilizing an RBS will be a great tool for Glean's improving project management effectiveness.

Figure 18*Resource Breakdown Structure*

Note. Own work.

4.7.5 Raci Matrix

An essential instrument for resource management in particular, the Responsibility Assignment Matrix (RAM) graphically depicts the connections between project team members and task packages, ensuring that roles and duties are understood. The RACI matrix, which

explicitly describes the participation of both internal and external team resources in various project tasks, will be the particular type of RAM used in the Paradise School Project.

The tool is assigned to each role across 4 categories, which are as follows:

- **R** = Responsible: The person or team responsible for executing the task.
- **A** = Accountable: The person ultimately accountable for the task's completion.
- **C** = Consulted: The individuals whose opinions are sought and who provide input.
- **I** = Informed: Those who are kept updated on progress and outcomes.

Table 28

Raci Matrix

Tasks/Activities	Project Manager	Site Supervisor	Architect	Engineers	Quality Control	Community Liaison	Construction Crew	Procurement Manager
Project Initiation	A	I	I	I	I	I	I	I
Project Planning	A	R	C	C	I	I	I	I
Design Development	C	I	A	R	I	I	I	I
Design Approval	C	I	A	C	I	I	I	I
Site Preparation	I	A	I	C	I	I	R	I
Permitting &	A	R	C	I	C	I	I	I

Tasks/Activities	Project Manager	Site Supervisor	Architect	Engineers	Quality Control	Community Liaison	Construction Crew	Procurement Manager
Compliance								
Construction	I	R	I	I	C	I	R	I
Utilities Installation	I	R	C	A	I	I	R	I
Quality Assurance	I	I	I	I	A	I	I	I
Material Procurement	I	I	I	I	I	I	I	A
Community Engagement	I	I	I	I	I	A	I	I
Safety Training	A	R	I	I	I	I	C	I
Final Inspection	A	R	C	C	R	I	I	I
Project Closure	A	R	I	I	I	I	I	I

Note. Own work.

4.7.6 Resource Acquisition Plan

The Resource Acquisition employs an approach to ensure that both personnel and materials are sourced efficiently and effectively. Personnel resources, such as the project manager, site supervisor, and construction crew, will primarily be acquired from internal staff,

with pre-assigned roles to ensure continuity and familiarity with project goals. Notably, both the architect and engineers will also be part of the internal team, facilitating seamless collaboration and integration of design and engineering solutions.

In the acquisition process, decision-making techniques such as multicriteria decision analysis will be utilized to evaluate potential resources. Criteria will be developed to rate or score various options, whether choosing between internal and external team resources or selecting physical project materials. These criteria will be weighted according to their relative importance, allowing for a tailored approach based on different resource types. Key selection criteria include availability, ensuring that resources can work within the required timeframes; cost, verifying that expenditures align with the project budget; and ability, confirming that team members possess the necessary capabilities.

For team resources specifically, unique criteria will be employed, such as experience, which assesses a member's relevant background; knowledge of similar projects and the specific project environment; skills related to the tools and processes used; and attitude, which gauges the ability to work cohesively within a team. Additionally, international factors, including team member location, time zone, and communication capabilities, will also be considered to optimize collaboration.

For material resources, including concrete, steel, and roofing materials, procurement will be conducted through local suppliers to support the project's budget and timeline while fostering community relationships. Equipment such as excavators and cranes will be rented from equipment rental companies, providing flexibility in resource management. The costs associated

with all these acquisitions will be detailed in the cost management plan, ensuring that financial resources are allocated appropriately and monitored throughout the project lifecycle.

Table 29

Resource Acquisition Plan

Resource	Source	Type of Acquisition	Category
Project Manager	Internal Staff	Pre-assigned	Personnel
Site Supervisor	External Firm	Contracting	Personnel
Construction Crew	External Firm	Contracting	Personnel
Quality Control Inspector	Internal Staff	Pre-assigned	Personnel
Community Liaison	Internal Staff	Pre-assigned	Personnel
HR Manager	Internal Staff	Pre-assigned	Personnel
Procurement Manager	Internal Staff	Pre-assigned	Personnel
Architect	Internal Staff	Pre-assigned	Personnel
Engineers	Internal Staff	Pre-assigned	Personnel
Landscaping Crew	External Firm	Contracting	Personnel
Concrete	Local Suppliers	Purchase	Material
Blocks	Local Suppliers	Purchase	Material
Roofing Materials	Local Suppliers	Purchase	Material
Windows and Doors	Local Suppliers	Purchase	Material
Electrical Wiring	Local Suppliers	Purchase	Material
Plumbing Fixtures	Local Suppliers	Purchase	Material
Excavators	Equipment Rental Company	Rental	Equipment
Cranes	Equipment Rental Company	Rental	Equipment
Concrete Mixers	Equipment Rental Company	Rental	Equipment

Resource	Source	Type of Acquisition	Category
Safety Equipment	Local Suppliers	Purchase	Material

Note. Own work

4.7.7 Team Management

Effective team management is essential for the success of the Paradise Pre-Primary School Project, as it directly influences project performance and outcomes. To begin with, project managers should establish clear roles and responsibilities for each team member, ensuring everyone understands their contributions to the project. This clarity helps to foster accountability and encourages collaboration. Regular team meetings should be scheduled to facilitate open communication, where team members can share updates, discuss challenges, and brainstorm solutions collectively.

Additionally, providing continuous feedback is crucial; it helps team members recognize their strengths and areas for improvement. Implementing conflict resolution strategies will also be vital in addressing any disagreements that may arise, ensuring a harmonious working environment. Recognizing and rewarding good performance can further motivate the team, boosting morale and commitment to project goals.

By focusing on building trust and collaboration within the team, project managers can create an environment that encourages high performance and adaptability. Ultimately, effective team management will enable the Paradise Project to achieve its objectives, delivering a quality educational facility that meets the needs of the community while enhancing the skills and cohesion of the project team.

4.7.8 Resource Control

Resource control for the Paradise Pre-Primary School Project is essential for managing human, material, and equipment resources effectively throughout the project's lifecycle. As outlined by PMI (2017), this involves thorough planning, monitoring, and adjustments to resource allocations to meet project objectives within budget constraints. The Control Resources process ensures that physical resources are available as planned and monitors their actual utilization, allowing for timely corrective actions. This continuous process focuses on ensuring resources are assigned and released at the right time and place, thus preventing delays.

Key benefits include monitoring resource expenditures, identifying and addressing shortages or surpluses promptly, and ensuring resources align with project needs. A RACI (Responsible, Accountable, Consulted, Informed) matrix will clarify roles and responsibilities, enhancing accountability and communication among team members. The acquisition plan will detail how resources will be procured, ensuring timely availability while maintaining budget adherence.

In managing human resources, the project manager will define job descriptions, conduct skills assessments, and provide tailored safety training. Regular performance evaluations will foster a motivated workforce through constructive feedback and goal setting. Equipment resources will be tracked centrally, with clear usage protocols and scheduled maintenance to prevent downtime.

By integrating these strategies and continuously monitoring resource utilization, the Paradise Project can optimize efficiency, enhance team performance, and deliver a high-quality

educational facility that meets community needs. This comprehensive approach ensures effective resource management and keeps the project on track to achieve its objectives.

4.8 Cost Management Plan

4.8.1 Cost Management Approach

This cost management approach governs the pilot project and can be adapted for use in other projects of a similar nature. The monitoring and control of costs to ensure the project remains on budget are critical in infrastructure projects, especially those funded by public donors.

The primary components are planning cost management, estimating cost, determining the budget and controlling cost. With various tools and techniques, the project estimate and budgets will be developed. Key to this is having good inputs, such as an accurate work breakdown structure and design drawings, along with other project documents.

Planning Cost Management

The typical inputs utilized for the planning of the cost management component are the project charter, project management plan, enterprise environmental factors, and organizational process assets.

In order to execute this aspect of the project, the tools and techniques that will be used are expert judgment and meetings. In the case of expert judgement, feedback will be sought as pertains to cost estimating, budgeting, and persons versed in earned value management. The meetings and working sessions will be held amongst the project manager, selected team members, stakeholders, and representatives from the clients and funders.

4.8.2 Estimate Costs

Cost estimation for the construction project combines multiple estimation techniques to ensure a realistic budget. Analogous estimating, parametric estimating, and bottom-up estimating were utilized to create realistic projections.

In addition to the aforementioned, expert judgment was sought for similar projects, cost estimating methods, and industry specific information.

4.8.3 Determining the Budget

In the project environment that Gleans operate in, i.e., as a design consultant, a fixed budget is submitted per project by the implementing agency, for the company to work it. Thus, all works, inclusive of preliminaries and contingency must fall within the given budget presented by the implemented agency. Thus, the preparation of designs and subsequently the corresponding WBS must be within budget.

The company, upon completion of design, will pass the design to a quantity surveyor/cost consultant who breaks down the works into different packages to form the WBS. Then the quantity surveyor working with this and other key inputs further develop the budget through cost aggregation.

The primary tools and techniques to be used in the creation of the budget are expert judgement, cost aggregation, historical information review, and financing. In the case of public projects, obtaining relevant financial information as it relates to the needs of the funding institution is critical.

The creation of the project budget is a multi-stage iterative approach. The work package estimates will be created by compiling the activity cost estimates, inclusive of an activity contingency reserve. Our control accounts are to be created by assigning a contingency reserve

to the work package cost estimates. The summation of the control accounts is equivalent to the cost baseline. The cost baseline will be utilized for EVM calculations and tracking. Finally, the project budget is the summation of a management reserve and that of the cost baseline.

WBS Code	Task Name	Cost (\$)	Feb-25	Mar-25	Apr-25	May-25	Jun-25	Jul-25	Aug-25	Sep-25	Oct-25	Nov-25
1.8.3	Documentation and Reporting	2,500.00										2500
	Project Estimate	1,598,876.02	197,450.00	117,700.00	207,645.62	204,969.99	98,053.64	109,470.39	168,395.47	302,052.95	109,387.95	83,750.00
	Contingency (4%)	63,955.04										
	Cost Baseline	1,662,831.06										
	Management Reserve	16,044.96										
	Total Project Budget	1,678,876.02										
	Value Added Tax (15%)	251,831.40										
	Total Project Cost	1,930,707.42										

Note. Own work.

4.8.4 Cost Control

The primary objectives of cost control are to track, monitor, and correct costs associated with the project. It entails primarily the comparison of funds utilized and the works done. It is imperative that key inputs, such as well-organized project documents, cost baselines, performance measurement baselines, cost control policies, guidelines, procedures, and tools, along with monitoring and reporting methods to be utilized, must be well established in order to have a successful cost control practice.

The use of expert judgment in the form of variance analysis, earned value analysis (EVA), forecasting and financial analysis will be the primary tools and techniques used to control cost on the pilot project, as well as others.

According to PMI (2021), EVA compares the performance measurement baseline to the actual schedule and cost performance. Glean's, through a working relationship with the contractor, obtains daily and weekly reports that allow for the performance of EVM via the work packages and control account.

The key metrics, as outlined by PMI (2021), that are to be monitored are as follows:

1. Planned value (PV) – it is defined as the authorized Budget assigned to the Schedule work and is synonymous with the physical work that should have been done.
2. Earned Value (EV) – is a measure of the work performed expressed in terms of the Budget authorized for that work or the planned value of all the work completed to a point in time.
3. Actual Cost (AC) – is defined as the realized cost incurred for the work performed on an activity during a specific time period. It is the actual cost of all work completed to a point in time.

4. Budget at Completion (BAC) – The sum of all budgets established for the work to be performed.

The use of variance analysis will also be critical in ensuring that the project team monitors, evaluate, control and makes timely decisions and actions as it pertains to costs. Schedule variance, cost variance, schedule performance index and cost performance index are calculated and monitored during the course of all projects.

The formulas and definitions of the variance metrics are as follows:

1. Schedule variance (SV) is the difference between the earned value and the planned value i.e., $SV = EV - PV$

2. Cost variance (CV) is the difference between the earned value and the actual cost, i.e., $CV = EV - AC$.

3. Schedule Performance Index (SPI) measures the Schedule efficiency and is the ratio between the earned value and the planned value i.e., $SPI = EV/PV$

4. Cost Performance Index (CPI) measures the cost efficiency of the budgeted resources of the project and is a ratio between the earned value and the actual cost i.e., $CPI = EV/AC$

In analyzing the SPI and CPI, it is imperative that the project's SPI and CPI are kept within a reasonable figure/range. A CPI value greater than 1.0 points to a cost underrun of performance for the reporting period. However, if the CPI ratio is less than 1.0, this indicates a cost overrun for the work done to date.

When looking at the SPI, a value less than 1.0 indicates that less work has been completed than what was scheduled. Whereas an SPI value greater than 1.0 points to more work

being completed than what was planned. Alarms and corrective responses will be enacted whenever the CPI and SPI fall below 1.0.

In addition to the other tools and techniques employed, reserve analysis is to be done. This entails the monitoring of the project's contingency and management reserves. The objective is to ensure that as the project progresses, there is controlled spending from the reserves to cover risks or unplanned activities if needs be. However, if there are savings realized, then these can be placed back to the contingency or counted as profit.

Forecasting should be a key tool in assisting the project management team in controlling cost and reigning in the project (PMI, 2021). To accomplish this, the estimate at completion (EAC) and estimate to completion (ETC) will need to be captured.

The EAC is the sum of the actual cost and the estimated time to complete, a bottom-up approach. This EAC is compared to other EACs calculated based on different scenarios, such as:

- EAC forecast for ETC work performed at the budgeted rate
- EAC forecast for ETC work performed at the present CPI
- EAC forecast for ETC work considering SPI and CPI factors

To ensure that all stakeholders are aware of the project's performance, the monthly reports generated must include work performance information. This will include comparisons on sums spent to date, variances, and key parameters such as CV, CPI, EAC, and TCPI. To further complement this, graphics in the form of charts illustrating PV, EV, AC, as well as the schedule and cost variance, will be utilized.

Additionally, in the event of changes, relevant project documents such as the assumption log, cost estimates, cost management plan, cost baseline, performance measurement baseline,

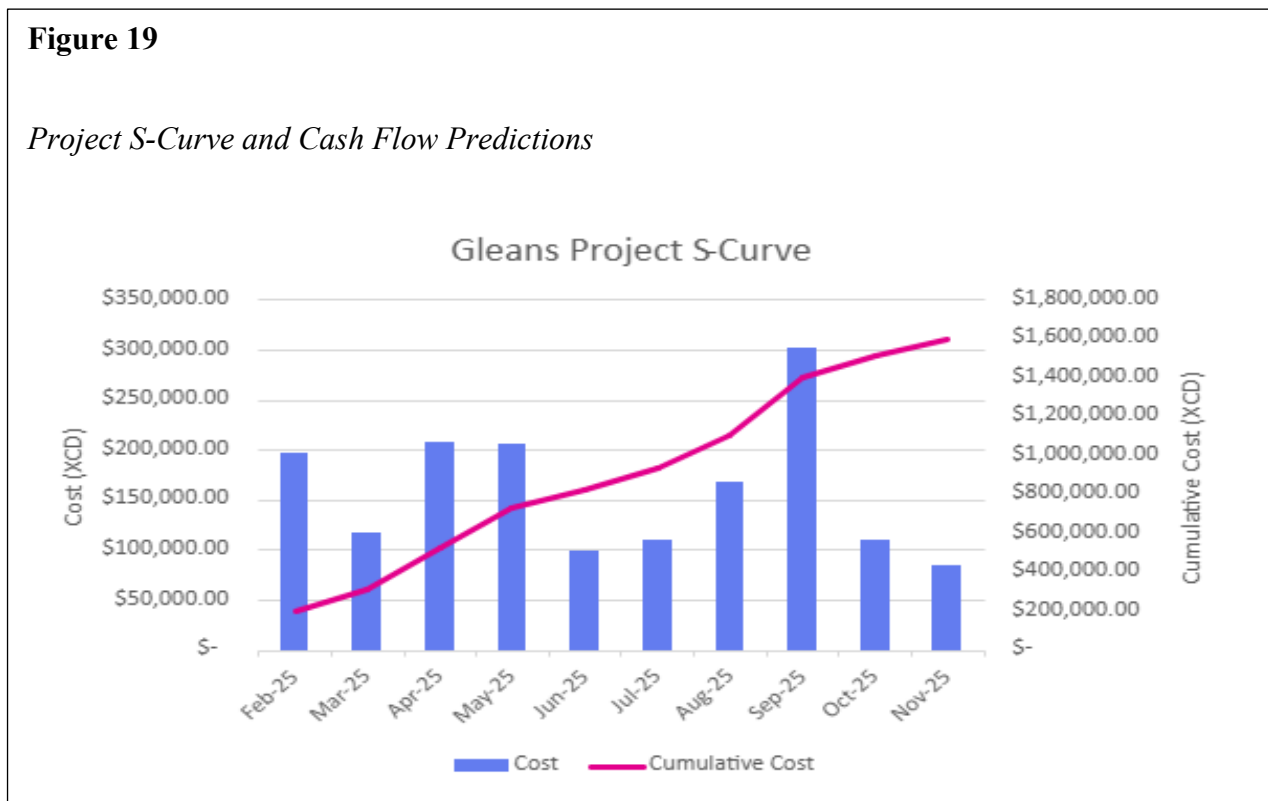
risk register, and lessons learned register will need to be updated to capture changes such as cost variances, etc., (PMI, 2021).

4.8.5 S-Curve and Project Budget

An S-curve, produced by summing all WBS aspects over the project life cycle, is essential for tracking and controlling project costs. It helps monitor and control performance, forecast cash flow, spot potential delays or issues, and improve communication with stakeholders by offering a clear visual of project status compared to the baseline plan. Project management software, like Microsoft Projects, or spreadsheets such as Excel, can produce such a curve, though the latter is more tedious.

Figure 19

Project S-Curve and Cash Flow Predictions



Note. Own work.

4.9 Procurement Management Plan

Procurement management encompasses the acquisition of goods, services, or works from external sources to achieve project objectives (Project Management Institute, 2017, p. 459).

Procurement management is essential for the effective acquisition of goods and services necessary for the successful execution of the Paradise project. This process involves the careful selection, specification, and management of materials, equipment, and services critical to the project's success. The project manager will prioritize the specification of appropriate materials, ensure compliance with relevant standards, and oversee the selection of suppliers. The team will collaborate closely with contractors and suppliers to guarantee that all purchases align with design requirements and project objectives.

The procurement approach will encompass various distinct phases. During the planning, the team will define project requirements, identify appropriate material, while in the tendering process, they will prepare detailed technical specifications for bids. Throughout the execution, the team will conduct inspections of materials to ensure quality and manage post-procurement documentation and compliance checks. Additionally, risk management will be a key focus, involving thorough assessments of material quality to mitigate the risk of structural failures. The team will also guide sustainable practices, recommending eco-friendly materials and energy-efficient systems to enhance overall project sustainability.

Key areas of focus will include technical specifications, compliance, vendor selection, quality control, risk management, cost optimization, and sustainability. By fostering

collaboration among stakeholders—clients, contractors, and suppliers—this approach will ensure that all procured items meet the necessary standards and regulations, including building codes and environmental laws. Moreover, during the construction phase, the team will effectively manage any substitutions for specified materials, ensuring that alternatives conform to design specifications. In summary, the procurement strategy will encompass the entire process, from initial planning and specifications through to quality assurance and compliance, ensuring that all goods and services align with the project's structural and safety requirements.

Procurement objectives

- Achieve cost savings and efficiency in procurement.
- Cost control during procurement.
- Ensure timely delivery of materials and services to meet project timelines.
- Maintain high-quality standards in all procured items.
- Foster strong relationships with reliable suppliers and subcontractors.
- Promote sustainability and ethical sourcing practices.

4.9.1 Procurement Management Roles and Responsibilities

The procurement management roles and responsibilities are essential for ensuring the efficient acquisition of goods and services within the project. Clearly defined roles facilitate effective collaboration among team members, enabling Glean Construction to meet project objectives while maintaining high standards of quality and compliance. Each role, from the Project Manager overseeing the procurement process to the Procurement Officer managing supplier relationships, contributes to a structured approach that enhances communication,

mitigates risks, and streamlines operations. By delineating these responsibilities, Glean Construction aims to optimize procurement activities, ensuring timely delivery and adherence to project specifications.

Table 31

Procurement Management Roles and Responsibilities

Role	Responsibilities
Project Manager	<ul style="list-style-type: none"> - Oversee the entire procurement process. - Define procurement objectives and scope. - Ensure alignment with project goals. - Review technical documents. - Monitor compliance with procurement management. - Approve Contract Document and expenses.
Site Supervisor	<ul style="list-style-type: none"> - Coordinate with suppliers on-site. - Ensure timely delivery of materials. - Monitor compliance with project specifications.
Construction Manager	<ul style="list-style-type: none"> - Manage supplier relationships. - Review and approve procurement plans. - Ensure materials meet quality standards.
Quality Control Inspector	<ul style="list-style-type: none"> - Inspect delivered materials for quality compliance. - Report any discrepancies or issues. - Collaborate with the Project Manager on quality assurance.
Procurement Officer	<ul style="list-style-type: none"> - Manage procurement activities and processes. - Evaluate supplier proposals and negotiate contracts. - Maintain procurement documentation, reports and records.

Note. Own work.

4.9.2 Procurement Process

The table below provides a comprehensive overview of the procurement process at Glean Construction, illustrating each critical step involved in acquiring essential services and materials,

such as electrical, plumbing, and HVAC (AC) systems, etc. This structured approach is designed to ensure efficiency and quality at every stage, beginning with procurement preparation, where requirements and budgets are defined. It continues through supplier identification, proposal solicitation, and evaluation, ultimately leading to supplier selection and contract negotiation. The process culminates in the execution of orders, thorough inspections upon delivery, and the coordinated installation of all components. By following this systematic process, Glean Construction aims to achieve successful project outcomes while maintaining high standards of quality and communication throughout.

Table 32

Stages of Procurement

Process Step	Process Description
1. Planning	
Needs Assessment Budgeting	Identify the materials, services, and subcontractors required for the project based on project specifications and timelines. Establish a procurement budget that aligns with the overall project budget, ensuring adequate funding for all procurement activities.
2. Supplier Identification	
Market Research Prequalification	Conduct research to identify potential suppliers and subcontractors, considering factors like reputation, experience, and product/service quality. Create a prequalification process where suppliers can submit credentials, past performance records, and financial stability information.
3. Publish Expression of Interest (EOI)	Upload EOI to relevant platforms. Engage with bidders to clarify requirements and answer questions.
4. Request for Proposals (RFPs) or	

Process Step	Process Description
Quotations (RFQs)	
Document Preparation Submission Period	Develop and issue RFPs or RFQs to selected suppliers, detailing the requirements, specifications, and evaluation criteria. Allow sufficient time for suppliers to prepare and submit their proposals or quotations.
5. Evaluation of Proposals	
Scoring Criteria Review Panel Shortlisting	Establish scoring criteria based on price, quality, delivery timelines, and supplier reliability. Form a review panel to evaluate proposals, ensuring diverse perspectives and expertise are included in the decision-making process. Shortlist suppliers based on evaluation scores and invite them for further discussions or negotiations if necessary.
6. Receive Technical and Price Proposals	Collect technical and price proposals from shortlisted vendors within the specified deadline. Ensure proper documentation and security of all submissions.
7. Negotiation	
Contract Terms Clarifications	Engage in negotiations with shortlisted suppliers to finalize terms related to pricing, delivery schedules, quality standards, and payment terms. Address any questions or clarifications needed by both parties to ensure mutual understanding.
8. Contract Award	
Contract Creation Formal Signing	Draft and finalize contracts that clearly outline the scope of work, obligations, performance expectations, and penalties for non-compliance. Ensure contracts are signed by both parties, and retain copies in a centralized procurement file for future reference.
9. Order Placement	

Process Step	Process Description
Purchase Orders (POs) Order Confirmation	Create and issue purchase orders to suppliers as per the agreed contracts. Ensure that all orders are documented properly. Confirm receipt of orders with suppliers to ensure mutual agreement on delivery timelines and quantities.
10. Delivery and Inspection	
Receiving Deliveries Quality Control	Coordinate the logistics for receiving materials and services on-site. Conduct inspections upon delivery to verify that the materials meet quality standards and specifications outlined in the contracts.
11. Performance Monitoring	
Supplier Performance Evaluation Regular Check-ins	Monitor supplier performance throughout the project using key performance indicators (KPIs) such as on-time delivery and quality compliance. Schedule regular meetings with suppliers to discuss performance, address any issues, and ensure alignment with project goals.
12. Change Management	
Change Orders Impact Assessment	Implement a formal process for managing change orders, ensuring any adjustments to scope, costs, or timelines are documented and approved. Evaluate the impact of changes on project timelines and budgets to maintain overall project control.
13. Contract Closure	
Final Inspection Documentation	Conduct a final inspection of deliverables to ensure all contractual obligations have been met. Compile all procurement documentation, including contracts, correspondence, and performance evaluations, for record-keeping.

Note. Own work.

Procurement Plan

One of the tools that will be utilized will be a procurement plan. See Table 27 below.

Table 33

Procurement Plan Table Template

WBS ID(s)	Description	Type (Works, Services or Goods)	Acquisition Type	Source Selection Method	Procurement Agreement	Allocated Budget (\$)	Approver
1.2.1	Site Clearing & Site Office	Works	Local Purchase	Least Cost	Fixed-Price Contract	56,200.00	Project Manager
1.2.5	Safety, Signage, and Barriers	Works	Local Purchase	Least Cost	Fixed-Price Contract	6,000.00	Project Manager
1.3	Foundation Construction	Works	Local Purchase	Least Cost	Fixed-Price Contract	255,324.18	Project Manager
1.3.1	Excavation of Foundation Trenches	Works	Local Purchase	Least Cost	Fixed-Price Contract	65,100.00	Project Manager
1.3.2	Reinforced Concrete Works	Works	Local Purchase	Least Cost	Fixed-Price Contract	140,000.00	Project Manager
1.3.3	Box Drain Construction	Works	Local Purchase	Least Cost	Fixed-Price Contract	50,224.18	Project Manager

WBS ID(s)	Description	Type (Works, Services or Goods)	Acquisition Type	Source Selection Method	Procurement Agreement	Allocated Budget (\$)	Approver
1.4	Structural Works	Works	Local Purchase	Least Cost	Fixed-Price Contract	317,444.63	Project Manager
1.4.1	Erection of Walls	Works	Local Purchase	Least Cost	Fixed-Price Contract	188,777.32	Project Manager
1.4.2	Roof Construction	Works	Local Purchase	Least Cost	Fixed-Price Contract	128,667.31	Project Manager
1.5	Utilities Installation	Works	Local Purchase	Least Cost	Fixed-Price Contract	295,774.17	Project Manager
1.5.1	Plumbing Works	Works	Local Purchase	Least Cost	Fixed-Price Contract	88,732.25	Project Manager
1.5.3	Electrical Works	Works	Local Purchase	Least Cost	Fixed-Price Contract	118,309.67	Project Manager
1.6	Finishes	Works	Local Purchase	Least Cost	Fixed-Price Contract	290,313.88	Project Manager
1.7	External Works	Works	Local Purchase	Least Cost	Fixed-Price Contract	210,819.16	Project Manager
n.n.

Note. Own work. Procurement plan template populated with sample data from project.

4.9.3 Procurement Control

Glean Construction will adopt a structured approach to controlling the procurement process throughout the construction project. Initially, the company will establish comprehensive procurement policies for all team members involved in procurement activities. This will be complemented by strategic sourcing practices, wherein Glean will conduct thorough market research to identify and prequalify suppliers, services, and materials based on their reliability, past performance, and ability to meet specific quality standards and project timelines.

To enhance efficiency, Glean will implement advanced procurement management software and programs that allow for real-time tracking of orders, contract management, and supplier performance analytics. This will facilitate regular monitoring and reporting, enabling the team to assess procurement activities against established budgets and timelines, while identifying any discrepancies early on. Quality control will be a priority, with stringent specifications set for all materials and services, alongside scheduled inspections upon delivery to ensure compliance with project requirements. These strategies will allow for the timely release of payments to the supplier.

Furthermore, Glean will proactively manage risks by conducting risk assessments to identify potential procurement-related challenges, such as supply chain disruptions or cost fluctuations, and developing corresponding mitigation strategies. Open communication channels will be maintained with all stakeholders, including project teams and suppliers, fostering collaboration and enabling swift resolution of any issues that may arise. Glean Construction will ensure that the procurement process is efficient, transparent, and aligned with the overall objectives of the construction project, ultimately contributing to its successful completion,

allowing for ensuring contract close-out for final inspection and payment can be made and formal completion documentation can be signed off.

4.9.4 Supplier Selection Criteria

- Assess the financial health of potential suppliers to ensure they can fulfill contract requirements.
- Evaluate suppliers based on their experience in similar projects and their reputation in the industry.
- Review quality certifications and past performance records to ensure compliance with project standards.
- Preference will be given to suppliers that demonstrate environmentally sustainable practices.

4.9.5 Contract Management

- Ensure all contracts outline clear terms regarding scope, quality standards, delivery schedules, payment terms, and penalties for non-compliance.
- Establish a formal process for managing changes to contracts, including documentation and approval mechanisms.
- Develop key performance indicators (KPIs) to monitor supplier performance, including on-time delivery rates, quality compliance, and responsiveness.
- Schedule regular performance reviews with suppliers to discuss performance metrics and address any issues.
- **Technical Specification Development**

- Define precise requirements for construction materials (e.g., steel grades, concrete mix ratios) to meet load-bearing and durability needs.
- Specify machinery (e.g., cranes, piling rigs) based on project scale and site constraints.
- Outline contractor qualifications for specialized tasks like geotechnical surveys or seismic retrofitting.

Compliance Assurance

- Ensure procured items adhere to local building codes (e.g., OECS Building COBE, CUBIC, ACI, IBC, etc.) and environmental regulations.
- Validate supplier certifications (e.g., ISO 9001 for quality management) and material test reports.
- Advise on eco-friendly alternatives, such as low-carbon concrete or recycled steel, to meet green building certifications (LEED, BREEAM, Etc).

Vendor Evaluation & Bid Support

- Assess contractor proposals for alignment with design intent, rejecting submissions with incompatible methodologies.
- Flag suppliers with histories of delayed deliveries or substandard materials during prequalification.
- Collaborate with clients to balance cost-efficiency and quality, e.g., recommending precast concrete panels over cast-in-situ to accelerate timelines.

Quality Control & Inspection during Procurement

- Conduct site visits or plants to verify manufacturing processes.
- Require third-party labs to perform slump tests for concrete or ultrasonic welding inspections.
- Reject defective shipments (e.g., corroded rebar) and enforce replacement protocols.

Post-Procurement Integration

- Verify that delivered materials are installed per design, e.g., ensuring proper lap lengths for rebar in seismic zones.
- Maintain traceability records for all procured items, critical for future maintenance or liability cases.
- Evaluate substitute material requests (e.g., switching from PVC to HDPE pipes) for technical equivalency.

4.10 Quality Management Plan

4.10.1 Quality Management

Quality control for the Paradise Pre-Primary School project will be implemented through a comprehensive framework designed to ensure that all construction activities meet established standards and specifications. This framework will encompass systematic inspection and testing at various stages of the project, including material procurement, construction processes, and final evaluations. Regular audits will be conducted to assess compliance with quality requirements, allowing for timely identification and resolution of any issues. The Construction Quality Supervisor will play a pivotal role in overseeing these activities, ensuring that all team members adhere to the prescribed quality management practices.

In addition to routine inspections, a robust documentation process will be established to maintain records of all quality control activities. This will include material test results, inspection reports, and corrective action documentation. By maintaining transparent and accurate records, the project team will facilitate continuous improvement and accountability. The emphasis on quality control will not only enhance the overall integrity of the construction but also contribute to stakeholder satisfaction by delivering a safe, functional, and high-quality educational facility that meets the needs of the community.

The Project Manager or the Contractor may require the other to attend a management meeting. The business of a management meeting shall be to review the plans for the remaining work and to deal with matters raised in accordance with the early warning procedure. 30.2 The Project Manager shall record the business of management meetings and provide copies of the record to those attending the meeting and to the Employer. The responsibility of the parties for

actions to be taken shall be decided by the Project Manager either at the management meeting or after the management meeting and stated in writing to all who attended the meeting.

4.10.2 Project Quality Management System

The Quality Management System (QMS) will include:

- Document and data control
- Procurement of materials and services
- Product identification and traceability
- Inspection and testing
- Control of inspection and measuring equipment
- Corrective and preventive actions
- Handling, storage, packaging, preservation, and delivery
- Control of quality records
- Internal quality audits
- Monitoring of construction progress

The Project Quality Plan (PQP) provides a description of the Project Quality Management System to be implemented within the project, with the aim of achieving the Employer's expectations and project objectives. The Project Quality Plan is drawn upon the following principles:

- The Contract requirements and the Contractor's Quality Management System are the basis for the establishment of this document.
- The Project Method Statement developed under the authority of the Project Manager describes the activities to be organized within the project to achieve the Contract requirements, goals and objectives.

4.10.3 Management structure

The following provides the functional organizational structure for the project, and illustrates the functional teams of the project, comprising of:

- The Employer
- The Project Manager – Gleans Construction and Engineering Co.
- The Contractor
- The Designated Quality Manager
- The Construction Quality Supervisor

4.10.4 Controls

The Quality Management system for the project is designed to apply controls as follows:

- Document and data control
- Procurement of Materials and Services
- Product Identification and Traceability
- Inspection and testing
- Control of inspection, measuring and test equipment
- Control of nonconforming products
- Corrective and preventive action
- Handling, storage, packaging, preservation and delivery
- Control of quality records
- Internal quality audits

Construction progress monitoring and control is an on-going process and will be undertaken by the Project Manager. Progress is monitored by comparing planned and

achieved man-hours or value and activities to ensure that the project's milestones and contractual completion dates will be met.

- Meetings will be conducted as necessary between Hanover Construction, Gleans Construction and Engineering Co. and the BNTF. These meetings shall include Safety, Quality, Environment, Schedule, Materials and Equipment and Financial matters. Minutes of these meetings shall be recorded.

4.10.5 Identification and Traceability

The philosophy for Product Identification and Traceability on this project is for positive material identification. Materials and items for permanent installation must be traceable to their source and to identify such with their respective material and test certificates. For rebar, structural steel, plates, piping and fittings traceability is achieved through the heat numbers to the material certificates. All concrete samples to be labelled properly and place in water bath 12-24hrs after concrete pour. Samples are to be documented and delivered to testing agency on time.

For surveying work, the following items form a major part of the QA process:

- Establishment of Control points
- Instrument calibration checks
- Surveying records

The Designated Quality Manager authorizes the Quality Program and accepts the ultimate responsibility for the overall Quality System and its operational effectiveness. The Manager will also appoint and assign QA/QC members the responsibility and authority to ensure that the Quality System is understood, implemented, and maintained. The Manager will visit the site and attend progress and management meetings.

The Construction Quality Supervisor is responsible for monitoring, evaluating and analyzing the quality of the work during construction implementation. He is required to monitor the quality program and report to the appropriate level of operational management.

The storage of materials and equipment is a key aspect of quality management in construction projects. Proper storage ensures that materials are safeguarded from environmental factors, damage, and contamination, which can compromise their integrity and usability also

being an island that is surrounded by sea water the sea blast can highly affect materials along with the strength and capacity of the materials. Effective storage practices help maintain the quality of construction materials, reducing the risk of defects and ensuring compliance with industry standards.

Additionally, organized storage systems facilitate easy access to materials and equipment, streamlining workflows and minimizing delays. When materials are stored correctly, it allows for efficient inventory management, helping to track stock levels and reducing waste due to spoilage or loss. Furthermore, maintaining a clean and orderly storage area contributes to overall site safety, reducing risks of accidents related to cluttered or hazardous conditions. By implementing robust storage protocols, project managers can enhance quality control measures and ensure that all materials meet the necessary specifications before use, ultimately contributing to the successful completion of the project and client satisfaction.

Test certificate

- All material test certificates shall be checked for compliance to purchase orders and project specification requirements and endorsed by the Construction Quality Supervisor and Project Manager.
- The test certificates will be allocated a unique number aligned to the purchase order or service provider and cross-referenced to the drawings. A register will be maintained to effect the traceability.
- Results will be charted to determine trending and provide early indicators of unacceptable strengths. Structural steelwork and accessories such as bolts will be ordered with a requirement to supply all mill certificates and test certificates.

Storage for materials

- Construction products shall be protected and safely secured to prevent any damage, deterioration and the risk of accidents during delivery. All other associated documentation shall accompany the product from the shop to the site.
- Storage facilities, where required (either at the shop or site location) shall be established to accommodate the various requirements for the product and its preservation. The Project Manager shall cater for storage facilities on site. The selection of storage facilities and locations shall consider the following, as appropriate for the product in question:
 - Storage Time
 - Available Space Location
 - Covering Storage Method (shelving, hanging, etc.)
 - Segregation
 - Ambient conditions (temperature, humidity, etc.)
 - Security Accessibility
 - Periodic Inspection Requirements
 - Uncovered storage areas shall be selected by the Site Supervisor to provide good drainage.
 - Where contact with the ground would be determined to product, elevated storage shall be used.
 - The area in which the product is located shall be readily accessible to allow for products to be stored, inspected periodically if necessary, and removed without being damaged.
 - Where material is to be stored over extended periods, periodic inspection shall be performed to ensure that product does not become unfit for use, and storage areas shall be selected with this under consideration.

- Necessary protection from the elements will be provided where required

Securing, handling, and packaging

The appropriate type of packaging material and the method of packaging to be utilized shall be determined by the supervisor and used at the time of delivery. Where no written customer requirements exist, and if the customer reserves the right to approve the method selected. The Construction Quality Supervisor will recommend the appropriate type of packaging on completion of the product. If the customer disapproves, then other recommendations are made and resubmitted until approved.

In making these recommendations, consideration shall be given to:

- Location
- Size
- Nature of the product to be delivered
- Delivery and inspection

The Site Supervisor is responsible for ensuring that proper handling and storage of the product is carried out and that the appropriate type and method of packaging is utilized, and they are also responsible for the arranging of periodic inspection. The Site Supervisor is also responsible for ensuring that the storage on receipt of product is carried out.

All records and results arising from the Inspection and Testing Process shall be transferred (where required) and maintained in accordance with Control of Records as proof of the process.

4.10.6 Documentation

Specifications – All material specifications shall be kept up to date and readily available to appropriate construction personnel.

Standards - Relevant ASTM, ACI and other applicable Standards shall be filed and be available to the construction team.

Drawings – All construction drawings are to be distributed to appropriate construction personnel. A master set of drawings shall be kept in the site office for reference. Drawing Registers listing all project drawings shall be kept and shall show all revisions and issue dates.

Inspection and Test Documentation - Records relating to the inspection of civil and building, structural steelwork, piping, etc. shall be maintained to support the application for turnover documentation.

Inspection and Test Procedures

- All inspection and testing are conducted in accordance with the project specifications and / or documented procedures. The specific procedures define the equipment to be used; the calibration and test techniques to be adopted; limitations on environmental conditions, if any, during the testing.
- All inspection shall be supported by adequate and fit for purpose procedures and technical data.
- All the inspection activities performed on the work shall be documented in reports on a regular basis. Originals of inspection reports shall be included in the final documentation package. The results of inspection and test are recorded on forms.
- Completed individual inspection and test reports/records will be filed by the Project Management dept. Copies of reports/records will be incorporated into the Final Report. The Report will be formally issued.

Competency and training

The Personnel employed on this project will be suitably experienced, qualified and trained for their individual work scope. This training will cover specific aspects of the work, directly related to a worker's tasks, as well as HSE training that will allow them to work within the operational constraints at the project site.

The Project Manager will determine the necessary competence for personnel performing work to ensure that the work is carried out safely, provide training or take other actions to satisfy these needs, evaluate the effectiveness of the actions taken, ensure that its personnel are aware of the relevance and importance of their activities and how they contribute to the achievement of the safety objectives, and maintain appropriate records of education, training, skills and experience

On a periodic basis, the Project Manager will assess the current and future operations to be carried out to identify training needs, prepare training program for the period ahead and, where appropriate, notify requirements to persons responsible for carrying out training. Formal training may be carried out by internal staff e.g. Supervisors or by competent external bodies. Personnel must be adequately trained prior to commencing an activity.

Materials handling

During the early stages of site establishment and following allocation of suitable area, the site Management shall plan layout for the storage of expected material within the confines of allotted areas. Particular consideration shall be given to the following aspects of material reception.

- Maintenance of clean open spaces at stores entrances and storage compounds for the off- loading, unpacking, inspection and checking of equipment and material.
- Adequate availability of packers, sleepers, duckboards, tarpaulins for weatherproof storage of items in open storage areas requiring protection.
- Access to all designated areas is restricted to authorized personnel only and it is the Stores Controllers responsibility to see that these security requirements are implemented.

4.10.7 Receipt and inspection

- Checking and inspection procedures shall be thorough and conducted immediately upon arrival at site/stores of equipment and material, in order that claims may be submitted for damaged, non-conforming items or short deliveries, without delay.

Steps to be taken on arrival are as follows:-

- Check delivery note for confirmation against reference Purchase Order.
- Care to be taken on removal of packing and exposure of materials, to prevent damage during the unpacking process.
- Items to be counted and checked off against Delivery Note for discrepancies or damages.

Materials not checked on delivery shall be noted as "Not Inspected" on the supplier's copy of the Delivery Note. Any material so received shall be checked as soon as possible, and any discrepancies found advised to the supplier on the Delivery Note within the supplier's discrepancies notification period with copies to Accounts.

The Site Supervisor shall advise the Project Manager officer that the materials have been received, together with supplier's or manufacturer's test or inspection certificates where applicable.

The Construction Quality Supervisor shall carry out regular inspections of all material in the stores and stores compound areas. Any significant deterioration or damage shall be reported to the Project Manager for a decision on what action should be taken.

All materials and components shall, as far as practicable, be inspected on receipt. Materials received but not inspected shall be clearly defined and held until such time as their status is cleared.

Stores administration

Stores personnel shall administer the recording of stocks and issuing of materials and carry out periodic balances of materials stock. To ensure a satisfactory reconciliation of major materials, the Stores supervisor shall complete the relevant sections of the Material Control Return which shall be passed to Project Manager.

The construction team shall make periodic checks to ensure materials are available in sufficient quantities to maintain the Works Program. Insufficient quantities or excessive stocks shall be advised to Project Manager.

Corrective and preventive action

Corrective action is taken to eliminate the causes of actual nonconformity and should be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered. The procedures for corrective action include:

- The effective handling of customer complaints and reports of product nonconformity.

- Investigation of the cause of nonconformity relating to product, process and quality system, and recording the results of the investigation.
- Determination of the corrective action needed to eliminate the cause of nonconformity; Application of controls to ensure that corrective action is taken and that it is effective.

Preventative action will be taken to eliminate the causes of potential nonconformity and should be to a degree appropriate to the magnitude of problems and commensurate with the risks encountered.

The procedures for preventive action include the use of appropriate sources of information such as processes and work operations which affect product quality, concessions, audit results, quality records, service reports and customer complaints to detect, analyze and eliminate potential causes of nonconformity; determination of the steps needed to deal with any problems requiring preventive action; initiation of preventive action and application of controls to ensure that it is effective; confirmation that relevant information on actions taken is submitted for management review contractor will implement and record any changes to the documented procedure resulting from corrective and preventive action.

4.10.8 Quality records

Quality records would be maintained to demonstrate conformance to specified requirements and the effective operation of the quality system. The following is a list of some of the records and documents that may be applicable:

- Contract documents
- Specifications
- Procurement documents
- Material qualification records

- Technical reports and photos
- Inspection and test records
- Non-conformance reports.
- Concrete mixture proportions and delivery tickets

Table 34*Quality Records*

Quality Objectives	Quality Requirement	Metric	Frequency
Compliance with Specifications	All work meets project specifications and standards	Percentage of compliance	Monthly
Zero Defects	No construction defects reported	Number of defects per inspection	Per inspection cycle
On-Time Delivery	Project milestones are met on schedule	Percentage of milestones met	Weekly
Material Traceability	All materials traceable to source	Percentage of materials with traceability	Bi-weekly
Employee Training	All personnel trained on quality practices	Percentage of trained personnel	At project start and quarterly
Customer Satisfaction	Positive feedback from stakeholders	Customer satisfaction score	After major milestones
Continuous Improvement	Regular audits conducted	Number of audits completed	Quarterly
Quality Record Maintenance	All quality records are complete and accessible	Percentage of records maintained	Monthly
Effective Communication	Clear communication channels established	Number of communication instances logged	Weekly
Risk Management	Risks identified and mitigated	Number of risks addressed	Monthly

Note. Own work.

4.11 Risk Management Plan

Risk management for the construction of Paradise school is a process that focuses on identifying, assessing, and mitigating risks that can impact the project outcomes. This approach is essential for ensuring safety, controlling costs, and maintaining project timelines. Key aspects include identifying various types of risks, such as safety hazards, environmental factors, project delays, budget overruns, and regulatory compliance issues, often with input from stakeholders like contractors, workers, and clients. Once risks are identified, they are assessed for their likelihood and potential impact, often using a risk matrix to prioritize them. Effective mitigation strategies are then developed, including implementing strict safety protocols, establishing contingency plans, and managing supplier relationships to address potential supply chain disruptions.

Continuous monitoring and review are crucial, involving regular risk assessments and open communication among stakeholders to ensure timely reporting of emerging risks. Additionally, thorough documentation of identified risks, assessments, and mitigation strategies helps inform future projects and improve overall practices. By systematically addressing risks, the construction of the Paradise can achieve the goals more reliably and with reduced uncertainty, ultimately fostering a culture of proactive problem-solving.

4.11.1 Risk management objectives

1. Identify and Categorize Potential Projects
2. Assess the Likelihood and Impact of Identified Risks
3. Develop Risk Response Strategies
4. Monitor, Review, and Update Risks Throughout the Project Lifecycle
5. Establish a Risk Communication Plan

6. Train the Project Team on Risk Management Practices
7. Integrate Risk Management with Project Planning and Execution
8. Evaluate External Risks
9. Document Lessons Learned

4.11.2 Roles and responsibilities

Table 35

Roles and Responsibilities

Staff	Means	Motives	Strategies
Project Manager	Leadership and coordination	Ensure project success and stakeholder satisfaction	Oversee project execution and communication
Safety Officer	Safety protocols and training materials	Maintain a safe working environment	Conduct regular safety training sessions and audits
Finance Officer	Budget management tools	Control project costs and ensure financial viability	Implement regular budget reviews and contingency planning
Community Liaison	Community engagement initiatives	Foster support and trust within the community	Organize community meetings and feedback sessions
Construction Team	Tools and equipment	Complete construction on time and to specifications	Follow project timelines and quality standards
Risk Manager	Risk assessment frameworks	Minimize project risks and enhance safety	Regularly assess risks and update mitigation strategies
Communication Officer	Communication platforms	Keep stakeholders informed and engaged	Develop and maintain clear communication channels
Procurement Officer	Supplier and contractor networks	Secure quality materials and services	Establish relationships with multiple suppliers

Note. Own work.

4.11.3 Risk identification

The process of risk identification and analysis for the Paradise School project involves steps aimed at uncovering potential risks that could impact project success. Initially, the project team conducts brainstorming sessions and engages diverse stakeholders, including project members, community representatives, and subject matter experts, to gather a wide range of perspectives. This collaborative approach helps identify risks related to various aspects of the project, such as construction delays, budget constraints, regulatory compliance, and community concerns.

Using a combination of methods for risk identification will significantly enhance the project's success and resilience. Conducting brainstorming with the project team and diverse stakeholders ensures comprehensive identification of potential risks. Reviewing historical data from similar construction projects provides valuable insights into common challenges, allowing the team to address these proactively. Utilizing checklists and backgrounds tailored to the construction sector streamlines the identification process, while site inspections reveal physical risks unique to the project location. Engaging subject matter experts adds depth to the analysis of technical and safety concerns, and stakeholder interviews uncover community-related risks that could affect project acceptance. Together, these methods create a robust framework for understanding and documenting risks, ultimately enabling the Paradise School project team to develop effective mitigation strategies and enhance overall project performance.

4.11.4 Risk analysis

Table 36

Rating Probability Scale for Assessing Risk for The Project

1-5 Probability	1-5 Impact	0-25 PI Scoring
5-very high	5-severe	21-25 %- Extremely likely
4- high	4- major	16-20%- High
3- moderate	3- moderate	11-15%-Medium
2-low	2-minor	6-10% -Low
1-very low	1-insignificant	0-5%-Unlikely

Note. Source: Procorus. Project Risk Management, Roland Wanner, 2013, Page 64

Probability rating scale for the project

- **5 (Very High Likelihood):** The risk is almost certain to occur. It is expected to happen frequently during the project lifecycle.
- **4 (High Likelihood):** The risk is likely to occur at some point. There is a strong chance it will affect the project.
- **3 (Moderate Likelihood):** There is a reasonable possibility that the risk might occur. It's not guaranteed, but it should be monitored closely.
- **2 (Low Likelihood):** The risk is unlikely to occur, but there is still a possibility, albeit small.

- **1 (Very Low Likelihood):** The risk is highly unlikely to occur. It is considered a rare event in the context of the project.

Table 37*Risk Strategy*

Cause	Risk	Consequence	Probability (1-5)	Impact (1-5)	Risk Rating	Owner	Strategy	Mitigation Measures
Inadequate training	Safety incidents	Injuries to workers	3	4	12	Safety Officer	Training and Protocols	Regular safety training sessions and audits
Budget overruns	Financial instability	Project delays and funding shortfalls	4	5	20	Finance Officer	Budget Monitoring	Implement regular budget reviews and contingency planning
Adverse weather	Construction delays	Schedule disruptions and increased costs	3	4	12	Project Manager	Contingency Planning	Use weather forecasts to plan construction activities
Delayed approvals	Regulatory hold-ups	Project delays	3	5	15	Project Coordinator	Early Engagement	Submit permits and applications well in advance
Community opposition	Public protests	Negative public perception	2	4	8	Community Liaison	Stakeholder Engagement	Organize community meetings to address concerns

Cause	Risk	Consequence	Probability (1-5)	Impact (1-5)	Risk Rating	Owner	Strategy	Mitigation Measures
Supplier issues	Material delivery delays	Construction delays	4	3	12	Procurement Officer	Supplier Management	Establish relationships with multiple suppliers
Design flaws	Rework required	Increased costs and project delays	3	4	12	Project Manager	Quality Assurance	Regular design reviews and checks during planning
Inefficient processes	Reduced productivity	Increased costs and project delays	3	3	9	Operations Manager	Process Improvement	Implement project management tools for efficiency

Note. Own work. Template populated with typical data.

Risk Register

- **Cause:** The underlying cause of the risk.
- **Risk:** The specific risk associated with the cause.
- **Consequence:** The potential consequences if the risk occurs.
- **Probability:** The likelihood of the risk occurring (1 = very unlikely, 5 = very likely).
- **Impact:** The potential impact of the risk (1 = low impact, 5 = high impact).
- **Owner:** Responsibility for managing the risk.
- **Strategy:** The overarching strategy for addressing the risk.
- **Mitigation Measures:** Specific actions to mitigate the risk.

Risk Matrix Template

Table 38

Risk Matrix Template

Risk Type	Cause	Risk Description	Effects
Safety Incidents	Inadequate training	Safety incidents due to a lack of training	Injuries to workers, potential project delays
Financial Instability	Budget overruns	Financial instability due to budget excess	Project delays, funding shortfalls
Construction Delays	Adverse weather	Delays in construction due to weather	Schedule disruptions, increased costs
Regulatory Hold-ups	Delayed approvals	Hold-ups in obtaining regulatory approvals	Project delays, potential legal complications
Public Protests	Community opposition	Protests against the project by local residents	Negative public perception, project reputation damage
Material Delivery Delays	Supplier issues	Delays in material delivery from suppliers	Construction delays, increased project costs
Rework Required	Design flaws	Need for rework due to design errors	Increased costs, project delays
Reduced Productivity	Inefficient processes	Decreased productivity from inefficient workflows	Increased costs, project delays

Note. Own work.

The risk matrix significantly enhances speedy decision-making and the development of effective mitigation strategies during the construction phase of the Paradise School Project. By clearly categorizing and detailing the various risks, the matrix allows project managers and team members to quickly identify which risks pose the greatest threat to project timelines, budgets, and overall objectives.

Moreover, the matrix facilitates real-time monitoring of risks, allowing for rapid adjustments to be made as conditions change, such as unexpected weather patterns affecting construction schedules. In such cases, the team can quickly refer to the matrix to determine

mitigation strategies—like adjusting project timelines or reallocating resources—ensuring that decisions are data-driven and responsive to the project's needs.

Additionally, having a centralized document that outlines risks and their corresponding mitigation measures fosters a culture of accountability and preparedness among team members. This means that when issues arise, everyone is already aware of the established strategies, allowing for faster execution and collaboration. Ultimately, the risk matrix streamlines the decision-making process, ensuring that the project can adapt quickly to challenges and maintain momentum, leading to timely project completion and enhanced quality outcomes.

4.11.5 Plan risk response

The risk response for the Paradise School Project is a proactive approach designed to identify, assess, and address potential risks that could impact project outcomes. By categorizing risks into various types, the plan outlines specific mitigation strategies tailored to each risk. Overall, this comprehensive risk response plan promotes a culture of preparedness, enabling the project team to respond swiftly and effectively to challenges, thereby facilitating the successful and timely completion of the school project.

The key risk strategies used are:

- **Avoid:** Eliminate the risk.
- **Mitigate:** Reduce the likelihood or impact of the risk.
- **Transfer:** Shift the responsibility to a third party.
- **Accept:** Acknowledge the risk without action, typically for low-impact risks.

Implement risk response

To effectively manage risks, incorporate key risk strategies—Avoid, Mitigate, Transfer, and Accept—into our risk response plan. The **avoid** strategy will be employed to eliminate risks entirely by adjusting the project plan, such as revising timelines to avoid construction during peak adverse weather seasons. For risks that cannot be avoided, we will **mitigate** them by implementing measures to reduce their likelihood or impact; for example, conducting regular safety training sessions to lower the chances of safety incidents. Additionally, we will **transfer** certain risks to third parties, such as engaging multiple suppliers to manage material delivery delays and incorporating contractual safeguards that assign liability for late deliveries. Finally, we will **accept** low-impact risks, acknowledging them without immediate action, like minor fluctuations in material costs, while monitoring them to prevent escalation. This structured approach to risk management not only enhances our ability to navigate challenges but also ensures that the project stays on track and within budget, ultimately contributing to its successful completion.

Risk response strategy

Table 39

Risk Response Strategy

Risk	Risk Response Strategy	Planned Response	Contingency Plan
Inadequate training	Mitigate	Conduct regular safety training sessions and audits	Implement additional training sessions if incidents occur
Budget overruns	Mitigate	Establish a budget review schedule and create a contingency fund	Reallocate resources or adjust project scope if necessary
Adverse weather	Avoid	Schedule construction activities to avoid peak weather seasons	Develop flexible timelines to shift activities as needed
Delayed approvals	Avoid	Submit permits and applications well in advance	Fast-track applications where possible; hire a consultant
Community opposition	Mitigate	Organize community meetings to address concerns	Prepare public relations strategies to manage negative feedback
Supplier issues	Transfer	Establish contracts with multiple suppliers	Have backup suppliers identified and ready to engage
Design flaws	Mitigate	Conduct regular design reviews and checks	Implement a rapid response team for immediate rework if needed
Inefficient processes	Mitigate	Implement project management tools for efficiency	Review processes regularly and adjust workflows as needed
Safety Incidents	Mitigate	Regular safety training and audits	Emergency response plan for incidents
Financial Instability	Mitigate	Regular budget reviews and contingency planning	Access emergency funding or cut non-essential costs
Construction Delays	Mitigate	Monitor weather and adjust schedules accordingly	Develop a buffer period in the project timeline
Regulatory Hold-ups	Avoid	Engage with regulatory bodies early	Hire a consultant to expedite the approval process
Public Protests	Mitigate	Foster stakeholder engagement through community outreach	Have a crisis communication plan ready for rapid response
Material Delivery Delays	Transfer	Engage multiple suppliers and monitor performance	Identify alternate suppliers for quick engagement

Risk	Risk Response Strategy	Planned Response	Contingency Plan
Rework Required	Mitigate	Implement a thorough design review process	Allocate additional resources to handle unexpected rework
Reduced Productivity	Mitigate	Train staff on efficient processes	Regularly review performance metrics and make adjustments

Note. Own work.

5 CONCLUSIONS

The implementation of a comprehensive project management methodology for Glean's Construction and Engineering Ltd. has proven essential to enhancing project execution, quality control, and stakeholder collaboration. The research highlighted the need for standardized processes to address the challenges faced by the organization, such as inefficiencies and inconsistencies in project delivery. By adopting a mixed-methods approach, including literature reviews and expert interviews, the study developed a robust framework that integrates both traditional and agile methodologies. This framework not only positions Glean's to adapt to the evolving demands of the construction industry but also fosters a culture of continuous improvement, ensuring long-term operational excellence.

1. Propose a robust project management methodology:

The development of a tailored project management methodology has provided Glean's Construction with a structured framework that enhances consistency across all projects. By integrating industry best practices and standardized processes, this methodology addresses previous inefficiencies and ensures that all team members follow the same guidelines. This approach leads to clearer communication, reduces errors, and ultimately results in improved project outcomes. Enhanced consistency also fosters stakeholder trust, as clients can rely on Glean's to deliver projects on time and within budget.

2. Demonstrate applications of the templates:

The successful application of the proposed templates in a pilot project has validated their effectiveness in streamlining project processes. These templates serve as practical tools that guide team members through various stages of project execution, from planning to delivery. Their use has been shown to enhance collaboration among team members, as everyone adheres

to a common structure, allowing for smoother transitions between tasks. Moreover, feedback from the pilot project indicated that the templates increased efficiency and reduced the time spent on documentation, which can often hinder progress.

3. Develop a project charter:

The creation and application of a comprehensive project charter has been pivotal in ensuring that all stakeholders understand the project's objectives, scope, and deliverables. This document acts as a foundational reference that aligns the project team and stakeholders, providing clarity on roles and responsibilities. By involving key stakeholders in the charter development process, Glean's has fostered a sense of ownership and commitment, which is crucial for project success. The charter also serves as a crucial tool for managing expectations and can be referenced throughout the project lifecycle to maintain alignment.

4. Develop a project scope management plan:

A well-defined scope management plan has been instrumental in controlling project boundaries and preventing scope creep. By clearly documenting what is included in the project and what is not, the plan ensures that all team members are aware of their tasks and responsibilities. Regular reviews of the scope have facilitated timely adjustments and discussions about changes, thereby minimizing misunderstandings and potential conflicts. This proactive approach to scope management not only enhances project focus but also ensures that resources are allocated effectively to meet project goals.

5. Develop a project schedule management plan:

The introduction of a structured schedule management plan has significantly improved Glean's ability to manage project timelines. This plan outlines all necessary tasks, their durations, and dependencies, allowing the project team to prioritize critical activities and allocate

resources accordingly. By employing tools such as Gantt charts and milestone trackers, the team can monitor progress and make adjustments as needed. The ability to visualize the project timeline has led to more effective time management, ensuring that Glean's completes projects on schedule and meets client expectations.

6. Develop a project stakeholder management plan:

Engaging stakeholders through a dedicated management plan has led to improved communication and collaboration throughout the project lifecycle. By identifying and analyzing stakeholders' interests and influence, Glean's can tailor its engagement strategies to meet their needs effectively. Regular feedback loops and stakeholder meetings have fostered an inclusive environment where concerns can be addressed promptly, thereby enhancing stakeholder satisfaction. This proactive engagement not only mitigates risks associated with stakeholder opposition but also builds stronger relationships that can benefit future projects.

7. Develop effective communication strategies:

Implementing structured communication strategies has minimized misunderstandings and ensured that all stakeholders are informed and engaged. By establishing clear protocols for information sharing—such as regular updates, meetings, and reports—Glean's has fostered an environment of transparency. This approach allows for timely dissemination of information and feedback, ensuring that everyone remains aligned and engaged. Enhanced communication also contributes to a more cohesive project team, improving collaboration and fostering a culture of mutual respect and accountability.

8. Develop Resource management plan:

The integration of the Resource Management Plan for Glean's Construction and Engineering Ltd. has been key in optimizing resource utilization and ensuring project success.

Resource allocation templates streamline documentation, enhancing clarity and reducing conflicts among team members. Regular reviews of resource utilization enable timely adjustments, ensuring that resources are deployed effectively. The integration of a Skills Matrix will allow Glean to align team competencies with project needs, optimizing team deployment. This proactive approach fosters accountability and open communication, allowing for quick resolution of resource-related issues. The Resource Management Plan has proven highly beneficial by improving operational efficiency and enhancing project delivery. By adopting standardized matrices and strategies, Glean's can significantly enhance its organizational effectiveness, strengthen its ability to adapt to changing project needs, and ultimately lead to successful outcomes.

9. Develop Cost management plan:

The establishment of a robust cost management plan at Glean's Construction and Engineering Ltd. has proven essential for maintaining financial control and ensuring project success. By implementing accurate cost estimation techniques, the company can effectively budget for all project phases, accounting for labor, materials, equipment, and overhead. This proactive approach not only facilitates the development of a comprehensive budget but also establishes a baseline for performance measurement. Regular monitoring and variance analysis allow the team to track actual costs against the budget, enabling timely identification and correction of potential overruns. Additionally, a well-defined change management process ensures that any alterations to project scope are assessed for their financial impact, maintaining transparency and stakeholder trust. By utilizing tools such as Earned Value Management (EVM), Glean's gains valuable insights into both cost and schedule performance, fostering informed

decision-making. Overall, the emphasis on effective cost management enhances project delivery, ensuring that projects are completed within budget while maximizing profitability and stakeholder satisfaction.

10. Develop a procurement management plan:

The establishment of a comprehensive procurement management plan at Glean's Construction and Engineering Ltd. is vital for the efficient acquisition of resources and services essential for project success. Currently, procurement is often deprioritized, which can lead to potential inefficiencies and delays. To address this, the organization should appoint a dedicated procurement officer who can systematically identify procurement needs and establish clear supplier selection criteria. By prioritizing procurement, Glean's can mitigate risks associated with delays and cost overruns, ensuring timely access to high-quality materials and services. Strengthening vendor relationships through effective communication will further enhance the procurement process, fostering supplier commitment to project success.

11. Develop a quality management plan:

The establishment of a quality management plan has set high standards for project deliverables, ensuring compliance with both internal and external quality expectations. This plan outlines specific quality assurance procedures and performance metrics, providing a clear framework for evaluating project outcomes. Regular quality audits and inspections enable the team to identify and rectify issues before they escalate, enhancing client satisfaction. By prioritizing quality management, Glean's has reinforced its reputation as a reliable contractor capable of delivering high-quality projects.

12. Develop risk management strategies:

The proactive risk management strategies developed for the Paradise School project have enabled the team to identify and mitigate potential risks effectively. By categorizing risks according to their likelihood and impact, the project team can prioritize which risks to address first. Regular risk assessments and updates to the risk register ensure that new risks are captured and managed promptly. This systematic approach not only minimizes disruptions but also fosters a culture of preparedness, enhancing the overall resilience and adaptability of Glean's in a dynamic construction environment.

6 RECOMMENDATIONS

These recommendations for the objectives of the pilot project not only address current deficiencies but also set a precedent for future projects. By leveraging these structured approaches, Gleans Construction can enhance overall project management effectiveness. This strategic alignment will position the organization as a leader in the construction sector, capable of adapting to the dynamic demands of the industry. By directing these recommendations to specific individuals or teams, Gleans Construction can enhance accountability and ensure that each objective is effectively incorporated from the pilot project, ultimately leading to improved project management practices and outcomes.

1. Propose a robust project management methodology.

Directed to the Project Management Officer: Establish a dedicated task force within the organization to develop and document a clear project management methodology that incorporates all practices. This will provide a structured outline for all projects. The absence of a standardized project management methodology leads to inconsistent practices across projects. Establishing a dedicated task force to implement the methodologies will ensure that all team members have a structured guideline to follow, thereby enhancing consistency and accountability.

2. Demonstrate applications of the templates.

Directed to the department supervisors: Organize interactive training sessions for team members on how to effectively utilize the new templates in real-life projects. This will ensure that everyone understands their application and benefits.

Currently, many templates may not be used effectively or implemented at all due to a lack of understanding or familiarity. Conducting interactive training sessions and workshops will

help team members appreciate the value of these templates, leading to their consistent application and improved efficiency in project execution.

3. Develop a project charter.

Directed to the Project Manager of each project: Ensure that all key stakeholders are involved in the creation of the project charter. Conduct collaborative workshops to gather input, fostering ownership and alignment on project objectives from the outset.

Many projects, big or small, lack a formal project charter. Involving all key stakeholders in creating the charter fosters ownership and clarity, ensuring that everyone understands the project's objectives and scope from the outset, thereby enhancing collaboration.

4. Develop a project scope management plan

Directed to the Project Team/Project Manager: Regularly review and update the project scope management plan throughout the project lifecycle. Engage team members in these reviews to identify any potential scope creep early on.

5. Develop a project schedule management plan

Directed to Project Engineer/ Scheduling Team: Utilize project management software to create a detailed project schedule that is easily accessible to all team members. Ensure that the schedule is updated regularly to promote transparency and accountability. The absence of a structured schedule management plan can lead to missed deadlines and confusion. Utilizing project management software to create a detailed project schedule that is accessible to all team members will promote transparency and accountability, ensuring that everyone is aware of their responsibilities.

6. Develop a project stakeholder management plan

Directed to the Stakeholder Engagement Liaison: Implement regular stakeholder engagement meetings throughout the project to gather feedback and address concerns promptly, ensuring that stakeholder needs are met effectively. When stakeholder engagement is not prioritized, projects may face conflicts or dissatisfaction. Implementing regular engagement meetings will ensure that stakeholders are kept informed and their feedback is considered, fostering a collaborative environment that enhances project success.

7. Develop effective communication strategies

Directed to Communication Officer: Establish a centralized communication platform where all project updates, documents, and communications can be accessed easily by team members and stakeholders. This will enhance information flow and collaboration. Ineffective communication often results in misunderstandings and delays. Establishing a centralized communication platform will facilitate real-time updates and information sharing, ensuring that all team members and stakeholders are aligned and engaged throughout the project

8. Develop a resource management plan

Directed to the project manager: To enhance resource management effectiveness at Glean's Construction and Engineering Ltd., it is recommended to develop a comprehensive Project Resource Management Plan. This plan should outline the identification, allocation, management, and release of resources—including personnel, equipment, materials, and finances—throughout the project lifecycle. Key components should include a Resource Breakdown Structure for identifying necessary resources, clear roles and responsibilities defined through a RACI chart, and a resource allocation strategy that aligns with project demands. Additionally, utilizing project management software for scheduling and real-time tracking will

promote transparency and accountability. By adopting this structured approach, Glean's can optimize resource utilization, improve project delivery timelines, and strengthen its capacity to adapt to the dynamic demands of the construction industry.

9. Develop a Procurement management plan or integrate a procurement officer

Directed to the Project Manager: Establish a formal procurement management plan that outlines clear procedures for the acquisition of materials and services essential to project success. This plan should prioritize the appointment of a dedicated procurement officer responsible for overseeing procurement activities and ensuring alignment with project objectives. Regularly conduct training sessions for team members on procurement best practices and the importance of timely resource acquisition. Implement a vendor evaluation system to assess supplier performance and reliability, fostering strong relationships with key partners. This structured approach will not only enhance procurement efficiency but also mitigate risks associated with delays and cost overruns.

10. Develop a Cost management plan

Directed to the Project Manager: To further enhance cost management at Glean's, it is crucial to implement a standardized cost estimation process that leverages historical data and detailed templates to improve budgeting accuracy across all projects, as this has not yet been established. Additionally, investing in advanced cost management software will facilitate real-time expense tracking, enabling proactive adjustments and financial oversight. Regular financial reviews should be instituted to compare actual costs against budgeted figures, allowing the team to identify variances early and address potential overruns promptly. Furthermore, establishing a formal change management protocol is essential to ensure that any modifications to project scope

are thoroughly assessed for their financial impact, maintaining transparency with stakeholders. Training sessions focused on cost management principles should also be implemented to foster a culture of cost awareness among team members. These steps will lead to more efficient project delivery and enhanced profitability, ensuring that Glean's remains competitive in the industry.

11. Develop a quality management plan

Directed to the Quality Assurance Team: Introduce regular quality audits during the project to ensure compliance with the quality management plan. Schedule these audits at critical phases to identify areas for improvement in real-time. Without a robust quality management plan, projects may fall short of client expectations. Introducing regular quality audits will help maintain high standards and allow for corrective actions to be taken promptly, ultimately enhancing client satisfaction.

12. Develop risk management strategies

Directed to the Risk Management Coordinator: Create a risk register to document potential risks and their mitigation strategies. Ensure this register is updated regularly to reflect new insights and challenges encountered during the project. Many projects fail to adequately address potential risks, leading to unforeseen challenges. Creating and regularly updating a risk register will enable the team to proactively identify and mitigate risks, fostering a culture of preparedness and resilience.

7 VALIDATION OF THE FGP IN THE FIELD OF REGENERATIVE AND SUSTAINABLE DEVELOPMENT

To the casual observer, the terms "sustainable development" and "regenerative development" may seem interchangeable, but they are distinct concepts with different goals. Sustainable development, which was established first, is primarily concerned with minimizing negative impacts from projects and human activities on the environment and society. Its core aim is to meet the needs of the present without compromising the ability of future generations to meet their own needs. The main goal is to strike a balance between economic growth, social equity, and environmental protection. Therefore, success in sustainable development is typically measured across three areas: the economy, society, and the environment.

In contrast, regenerative development goes beyond simply achieving sustainability. Its ultimate goal is not only to ensure that systems remain sustainable but also to make them resilient, healthy, and thriving. This holistic approach aims to enhance, restore, and improve both ecological and social systems. Regenerative development focuses on six interconnected processes: spiritual, environmental, social, economic, political, and cultural. By taking these processes into account, along with planetary systems, regenerative development presents a more comprehensive model of growth.

The relationship between project execution and operation within the frameworks of regenerative and sustainable development is crucial. It ensures that organizations and their teams prioritize sustainable features and regenerative themes in their projects. For example, new templates and procedures should emphasize environmental protection, gender equality, decent work, economic growth, innovation, infrastructure, and the development of sustainable cities and communities.

There are no adverse effects on either regenerative or sustainable development, as well as the Sustainable Development Goals (SDGs). The envisioned outcome of projects should integrate both development concepts fully. This integration will be achieved by weaving the themes of sustainability and regenerative development, alongside the SDGs, into the procedures and methodologies drafted for projects. These methodologies will serve as the foundation for enhancing the project management functions of the company. Consequently, it is essential for these themes to be intertwined to ensure that the company operates effectively, meets client needs, and equips employees with knowledge of best practices associated with both forms of development.

7.1 Relationship of the project to the Sustainable Development Goals

Overview of the Sustainable Development Goals (SDGs)

As part of the 2030 Agenda for Sustainable Development, the United Nations established the Sustainable Development Goals (SDGs) in 2015. These 17 interconnected global goals aim to solve pressing issues like poverty, inequality, environmental degradation, climate change, peace, and justice. By 2030, the SDGs seek to establish a more resilient, equitable, and sustainable world with an emphasis on prosperity, people, and the environment.

The SDGs build on the earlier Millennium Development Goals (MDGs), which focused primarily on poverty reduction and were in place from 2000 to 2015. The transition to the SDGs marked a shift towards a more comprehensive approach, recognizing the interconnectedness of social, economic, and environmental dimensions of development. The SDGs were developed through extensive global consultations involving governments, civil society, and the private sector, to ensure that they reflect the diverse needs and aspirations of people around the world.

Explanation of each SDG and project relevance

The Sustainable Development Goals offer a thorough framework that directs project management in the direction of equitable and sustainable development. In order to effectively solve global concerns and contribute to a more sustainable future, organizations should match their project execution, product operation, and maintenance practices with the SDGs.

Related and Unrelated Sustainable Development Goals (SDGs)

Related SDGs

SDG 4: Quality Education: Ensure inclusive and equitable quality education for all.

Why: The project supports educational initiatives through training programs and skill development, enhancing knowledge in project management and construction.

SDG 8: Decent Work and Economic Growth

Why: The project creates job opportunities and promotes local economic development through efficient project execution and employment generation.

SDG 9: Industry, Innovation, and Infrastructure

Why: Developing robust project management methodologies and frameworks fosters innovation and contributes to building resilient infrastructure.

SDG 10: Reduced Inequality

Why: Facilitating effective communication and collaboration among diverse teams helps to reduce inequalities by ensuring inclusive participation in project processes.

SDG 11: Sustainable Cities and Communities

Why: Implementing risk management strategies and quality assurance procedures ensures that urban development is sustainable and resilient, contributing to better living conditions.

SDG 12: Responsible Consumption and Production

Why: Establishing quality assurance procedures promotes sustainable practices in material sourcing and waste management throughout the project lifecycle.

SDG 16: Peace, Justice, and Strong Institutions

Why: Implementing structured feedback mechanisms fosters transparency and accountability, contributing to stronger institutions and social stability.

SDG 17: Partnerships for the Goals

Why: Collaborating with stakeholders reinforces partnerships that are essential for achieving sustainable development outcomes.

SDG 5: Gender Equality

Why: The project can promote gender equality by ensuring equal employment opportunities for women and addressing specific needs in its design and execution. This could include creating safe work environments, providing childcare facilities, and encouraging women's participation in decision-making processes

Unrelated SDGs

SDG 1: No Poverty: End poverty in all its forms everywhere.

Why: While the project may indirectly contribute to poverty alleviation through job creation, it does not directly address poverty reduction mechanisms or programs.

SDG 2: Zero Hunger: End hunger, achieve food security, and improve nutrition.

Why: The project does not focus on agricultural development or directly address food security issues, making it less relevant to this goal.

SDG 3: Good Health and Well-being :Ensure healthy lives and promote well-being for all.

Why: Although the project may enhance community health through infrastructure, it does not specifically target health care access or health promotion initiatives.

SDG 6: Clean Water and Sanitation : Ensure availability and sustainable management of water and sanitation for all.

Why: The project does not specifically address water management or sanitation infrastructure, limiting its direct relevance to this goal.

SDG 7: Affordable and Clean Energy: Ensure access to affordable, reliable, sustainable, and modern energy for all.

Why: Unless the project explicitly incorporates renewable energy solutions, it does not directly contribute to energy access or sustainability. This contributes to the construction aspect but not the policies and procedures .

SDG 13: Climate Action: Take urgent action to combat climate change and its impacts.

Why: While the project may incorporate some climate-resilience strategies, it does not primarily focus on climate change mitigation or adaptation efforts.

SDG 14: Life Below Water

Why: The project does not engage with marine conservation or coastal management, making it unrelated to this goal.

SDG 15: Life on Land

Why: The project involves land restoration or biodiversity protection. It does not directly address or correlate to the projects undertaken by our organization .

7.2 Analysis of the project according to Standard P5

Impact analysis using the Standard P5 framework is a critical component in assessing the sustainability and effectiveness of project management practices, particularly within construction and engineering consultancy projects. The methodology focuses on three core dimensions—People, Planet, and Prosperity—ensuring that projects not only meet their operational goals but

also contribute positively to society and the environment. This analysis is essential for organizations like Gleans Construction, which aims to enhance project execution while addressing quality control challenges and fostering collaboration among multidisciplinary teams.

Components of Standard P5 Impact Analysis

1. **People:** This dimension evaluates the social implications of a project, including labor practices, human rights, ethical behavior, and the overall impact on society and customers. It seeks to ensure that projects support decent work conditions, promote equity, and engage stakeholders effectively.

2. **Planet:** This aspect focuses on the environmental impacts of project activities. It encompasses energy consumption, greenhouse gas (GHG) emissions, water usage, waste management, and the overall

ecological footprint. The goal is to minimize negative environmental effects while promoting sustainable practices.

3. **Prosperity:** This dimension assesses the economic outcomes of projects, including project feasibility, business agility, local economic impact, and overall financial sustainability. It aims to ensure that projects contribute to economic growth and stability while being viable and resilient.

Criteria for Assigning Scores

Scores in the Standard P5 framework are typically assigned on a scale from 1 to 5, where:


- **1:** Very negative impact
- **2:** Negative impact
- **3:** Neutral impact
- **4:** Positive impact

- **5: Very positive impact**

Before Scores: These scores reflect the anticipated impacts prior to implementing any project interventions or sustainability initiatives. They are based on preliminary assessments, data analysis, stakeholder feedback, and historical project performance.

After Scores: These scores are assigned after the implementation of project activities and sustainability practices. They reflect the actual impacts observed as a result of the changes made, providing a clearer picture of the project's effectiveness in achieving its goals.

The impact analysis using Standard P5 is vital for various reasons. First, it helps project managers identify areas needing improvement or adjustment, allowing for more effective resource allocation and strategic planning. The analysis provides valuable insights that enhance decision-making processes by helping managers understand the broader implications of their actions, ensuring alignment with sustainability goals and stakeholder expectations. Engaging stakeholders in this process fosters transparency and trust, as it encourages collaboration and ensures that all voices are considered in project planning. Additionally, by comparing before and after scores, organizations can measure the effectiveness of their interventions, providing a quantitative assessment that demonstrates accountability and commitment to continuous improvement. The findings from the impact analysis also support sustainability reporting and compliance with industry standards, enabling organizations to communicate their dedication to sustainability and social responsibility to stakeholders and regulatory bodies. Lastly, by assessing impacts across various dimensions, organizations can identify best practices and lessons learned, which contribute to the overall development of a robust project management methodology.


	<p>Employment and staffing is the process of obtaining the personnel needed to carry out the project. It includes identifying the skills required for successful completion of the project, recruiting potential individuals (internally or externally), managing their time and performance, training them when needed, and compensating them accordingly.</p>	<p>Lifespan</p>	<p>yes</p>	<p>Inadequate skills assessment leading to poor staffing decisions</p>	<p>Enhanced project outcomes through better alignment of skills</p>	<p>3</p>	<p>Implement a comprehensive skills assessment and training program</p>	<p>5</p>	<p>Improved project efficiency and effectiveness</p>	<p>Regular follow-ups needed to assess training impact</p>
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		Servicing	yes							
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		Effectiveness	yes	Lack of clear performance metrics leading to underperformance	Improved project success rates through targeted skills development	3	Develop clear performance metrics and feedback loops	5	Higher quality outcomes and client satisfaction	Establish a rewards program for high performers
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		Efficiency	yes	Poor time management practices leading to delays in project delivery	Reduced project timelines and cost savings	2	Introduce time management training and tools	4	Quicker project turnaround and reduced costs	Monitor effectiveness of new tools regularly
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		Servicing	yes	Insufficient follow-up on team concerns leading to unresolved issues	Increased employee satisfaction and retention	3	Establish a feedback loop for continuous improvement	5	Better morale and project success	Regular check-ins to ensure issues are addressed
		Effectiveness	yes	Disconnected teams leading to inefficient workflows	Higher quality outcomes and improved project delivery times	3	Develop clear communication channels and role definitions	5	Streamlined processes and clearer accountability	Training on communication skills recommended
		Efficiency	yes	Poor collaboration leading to duplicated efforts and wasted resources	Reduced project costs and improved timelines	2	Introduce collaborative tools and team-building activities	4	Enhanced efficiency and reduced project costs	Evaluate tool effectiveness regularly

		Fairness	yes	Perceived favoritism leading to dissatisfaction	Improved workplace flow	3	Implement transparent decision-making processes	5	More inclusive environment and diverse ideas	Consider diversity
 <p>Project Health and Safety</p>	<p>Project health and safety is the practice of creating safe working conditions for personnel involved in the project. It involves implementing measures such as hazard assessment, risk management, training, enforcement, and investigation. Its main goal is to ensure that workers are not exposed to any unnecessary risks while performing their work.</p>	Lifespan	yes	Inadequate safety training and lack of hazard assessments leading to increased incidents	Reduced accidents and improved worker well-being	2	Implement regular safety training and comprehensive hazard assessments	5	Safer work environment and reduced injury rates	Continuous monitoring required

		Servicing	yes	Insufficient follow-up on safety compliance leading to lapses in protocols	Enhanced safety culture and employee morale	3	Establish regular safety audits and refreshers for all staff	5	Increased adherence to safety protocols	Evaluate training effectiveness regularly
		Effectiveness	yes	Lack of measurable safety outcomes leading to persistent risks	Improved project delivery and reduced liability	3	Develop clear safety metrics and reporting systems	5	Higher quality outcomes and lower accident rates	Feedback loop for continuous improvement needed
		Efficiency	yes	Poor resource allocation for safety equipment and training	Cost savings from reduced injuries and insurance premiums	2	Allocate dedicated budget for safety resources and training	4	Enhanced resource allocation and safety investment	Monitor budget impacts on safety outcomes

		Fairness	yes	Perceived inequality in safety practices leading to dissatisfaction among workers	Greater trust and collaboration among team members	3	Ensure all workers receive equal training and resources	5	More inclusive safety culture and improved morale	Consider anonymous reporting for safety concerns
 <p>Training and Qualifications</p>	<p>Training and qualifications is the process of ensuring that project team members have the necessary skills to effectively complete their work. It involves providing instruction, assessing proficiency, monitoring performance, and offering guidance.</p>	Lifespan	yes	Insufficient training programs leading to skill gaps among team members	Improved project outcomes and higher employee satisfaction	3	Develop comprehensive training programs with regular assessments	5	Enhanced skill levels and project efficiency	Continuous evaluation of training effectiveness

		Servicing	yes	Lack of follow-up training leading to outdated skills and knowledge	Increased adaptability and innovation within the team	3	Establish a continuous learning culture with regular workshops	5	Better prepared team and increased project success	Monitor participation and feedback regularly
		Effectiveness	yes	Poor training outcomes resulting in project delays and quality issues	Higher quality deliverables and increased client satisfaction	3	Implement measurable outcomes for training effectiveness	4	Improved project quality and reduced rework	Establish feedback loops for ongoing improvement
		Efficiency	yes	Inefficient training processes leading to wasted time and resources	Cost savings from reduced errors and improved project timelines	2	Streamline training processes and utilize e-learning tools	4	Enhanced training efficiency and reduced costs	Evaluate technology effectiveness regularly

		Fairness	no							
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Planet Impacts										
Subcategory	Transport	Lens	Scored?	Description (Cause)	Potential Sustainability Impact	Impact Score Before	Proposed Response	Impact Score After	Change	Comments (optional)
Element	Description									
	Local procurement is the practice of purchasing products and services from local suppliers.	Lifespan	yes	Limited engagement with local suppliers leading to missed opportunities	Enhanced local economic growth and community support	3	Develop partnerships with local suppliers and promote local sourcing	5	Increased local investment and job creation	Continuous communication with local suppliers necessary
		Servicing	yes	Lack of feedback mechanisms leading to inconsistent quality from local suppliers	Improved product quality and reliability	3	Establish regular evaluations and feedback loops with suppliers	5	Higher quality products and enhanced supplier relationships	Monitor supplier performance regularly
		Effectiveness	yes	Insufficient use of local resources resulting in higher costs and delays	Cost savings through reduced transportation and enhanced local support	3	Set clear metrics for evaluating local procurement effectiveness	5	Better project delivery and cost efficiency	Evaluate metrics for continuous improvement
		Efficiency	yes	Inefficient procurement	Streamlined processes and	2	Implement a centralized	4	Enhanced procurement	Regularly review


				processes leading to delays and excess costs	reduced lead times		procurement system focused on local suppliers		efficiency and reduced costs	procurement strategies
		Fairness	yes	Bias towards larger suppliers leading to exclusion of smaller local businesses	Increased diversity in supplier base and community engagement	3	transparent procurement criteria that prioritize local suppliers	5	More inclusive procurement practices and community trust	Consider outreach programs for small suppliers
	Digital communication is the use of digital tools and platforms to communicate about the project. These tools can include websites, email newsletters, social media accounts, messaging applications, and other digital communication channels.	Lifespan	yes	Limited engagement on digital platforms leading to poor information dissemination	Enhanced stakeholder engagement and project transparency	3	Develop a comprehensive digital communication strategy that includes regular updates	5	Improved stakeholder awareness and satisfaction	Regular audits of communication effectiveness needed

		Servicing	yes	Insufficient training on digital tools leading to ineffective communication	Increased efficiency and clarity in project updates	2	Provide training sessions for team members on using digital communication tools effectively	5	Enhanced communication skills and reduced misunderstandings	Monitor training effectiveness regularly
		Effectiveness	yes	Lack of measurable outcomes for digital communication efforts	Higher project success rates through better information flow	3	Implement metrics to assess the effectiveness of digital communication strategies	5	Improved project outcomes and stakeholder engagement	Continuous feedback loops for improvement needed
		Efficiency	yes	Inefficient use of multiple platforms leading to confusion and information overload	Streamlined communication processes and reduced response times	2	Centralize communication channels and develop a user-friendly platform for updates	5	Greater clarity and reduced communication errors	Regular reviews of platform effectiveness needed
		Fairness	yes	Exclusion of certain stakeholders from digital communication channels	Improved inclusivity and stakeholder trust	3	Ensure all stakeholders have access to digital communication tools and resources	5	More inclusive communication practices and enhanced trust	Consider multilingual communication options


	Traveling and commuting is the movement of project-related personnel between different locations. Traveling and commuting may include getting to the project site, attending off-site meetings, conducting off-site presentations, collecting data, and providing off-site support.	Lifespan	yes	Inefficient travel planning leading to unnecessary delays and costs	Reduced travel costs and improved project timelines	3	Implement a travel management system to optimize routes and schedules	5	Increased efficiency and reduced travel time	Regular evaluations of travel policies needed
		Servicing	no							
		Effectiveness	yes	Poor travel coordination affecting timely attendance and project deliverables	Higher quality outcomes through improved attendance and engagement	3	Establish clear travel protocols and expectations for timely arrivals	5	Continuous feedback on travel effectiveness necessary	
		Efficiency	yes	Excessive travel leading to increased costs	Cost savings and a smaller carbon footprint	2	Promote remote meetings when	5	Evaluate effectiveness of remote options regularly	

				and resource waste			possible to reduce travel needs			
		Fairness	no							
	Logistics is the planning and execution of activities related to transporting goods, raw materials, and services for use by the project. Logistics includes activities such as scheduling transportation, estimating costs, coordinating personnel, and making sure that all necessary procedures are completed on time.	Lifespan	yes	Poor coordination leading to delays in goods and services delivery	Improved project timelines and reduced costs	3	Implement a centralized logistics management system for better coordination	5	Enhanced efficiency and timely delivery of goods	Regular reviews of logistics processes needed

		Servicing		Lack of real-time tracking leading to inefficiencies and miscommunication	Increased reliability and satisfaction among stakeholders	3	Introduce tracking software to monitor logistics in real-time	5	Improved communication and accountability	Monitor effectiveness of tracking systems
		Effectiveness		Inadequate logistics planning resulting in increased costs and project delays	Higher quality deliverables and enhanced project outcomes	3	Establish clear logistics KPIs to measure effectiveness	5	Better project outcomes	Continuous assessment of logistics effectiveness needed
		Efficiency		Wasteful practices leading to excess costs and delays in logistics processes	Reduced costs and improved resource management	2	Streamline logistics processes and optimize transportation routes	4	Enhanced efficiency in logistics operations	Regularly review and adjust logistics strategies
		Fairness		Perceived favoritism in supplier selection leading to dissatisfaction	Increased trust and collaboration among suppliers	3	Develop transparent criteria for supplier selection and treatment	5	More inclusive logistics practices and improved relationships	Consider feedback from all stakeholders involved

 <p>Renewable energy, also called alternative energy, is energy generated from sources that are replenished at a faster rate than they are consumed. These sources include solar, wind, water, and geothermal power.</p> <p>Clean energy return (CER) refers to the amount of renewable energy generated by the project or the project's product that is in excess of the amount needed. CER is normally returned to the</p>	Lifespan		Insufficient investment in renewable sources leading to reliance on fossil fuels	Reduced carbon footprint and increased energy security	3	Invest in renewable energy infrastructure and initiatives	5	Enhanced sustainability through cleaner energy sources	Regular updates on renewable energy initiatives needed
	Servicing		Lack of resources for maintaining renewable energy systems	Improved energy resilience and cost savings	3	Provide training on renewable energy technologies	5	Improved capacity for renewable energy management	Monitor training effectiveness regularly
	Effectiveness		Inadequate evaluation of renewable energy contributions leading to missed opportunities	Better alignment with sustainability goals	3	Establish metrics to evaluate effectiveness of renewable energy use	5	Enhanced project outcomes through renewable energy	Continuous assessment of effectiveness needed
	Efficiency		Inefficient processes leading to underutilization of renewable energy sources	Streamlined processes for maximizing renewable energy output	2	Develop initiatives to optimize renewable energy resource allocation	4	Enhanced efficiency in renewable energy production	Regularly review renewable energy strategies for improvement
	Fairness		Bias in energy planning leading to inequitable access to renewable energy resources	Increased equity and access to clean energy	3	Develop inclusive strategies for stakeholder engagement in renewable energy planning	5	More equitable treatment of stakeholders in renewable energy access	Consider feedback from all stakeholders involved

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	<p>Water consumption is the usage of water during project activities. Although construction, manufacturing, and agricultural projects are probably the major users of water, all projects use water to some extent.</p>	Lifespan	yes	Inefficient water use leading to increased costs and environmental impact	Reduced costs and improved environmental sustainability	3	Implement water efficiency audits and best practices	5	Enhanced water conservation and reduced consumption	Regular monitoring of water use needed
		Servicing	yes	Lack of tracking mechanisms for water use leading to inefficiencies	Improved ability to manage and reduce water consumption	3	Provide training on water management and monitoring	5	Increased capacity for water efficiency	Monitor training effectiveness regularly
		Effectiveness	yes	Inadequate evaluation of water use leading to missed savings opportunities	Better resource allocation and cost savings	3	Establish metrics to evaluate water consumption effectiveness	5	Improved financial performance through water savings	Continuous assessment of effectiveness needed
		Efficiency	yes	Inefficient resource allocation leading to excessive water use	Streamlined processes enabling better water management	3	Develop initiatives to optimize water resource allocation	5	Enhanced efficiency in water use	Regular reviews of water management strategies

		Fairness	yes	Lack of stakeholder engagement in water planning leading to inequities	Increased trust and collaboration among stakeholders	3	Develop inclusive strategies for stakeholder engagement in water assessments	5	More equitable treatment of all stakeholders in water use	Consider feedback from all stakeholders involved
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Subcategory	Consumption	Lens	Scored?	Description (Cause)	Potential Sustainability Impact	Impact Score Before	Proposed Response	Impact Score After	Change	Comments (optional)
Element	Description									
	<p>Rec+B79:K83ycling involves transforming a waste item into a useful one. Items that can be recycled run the gamut from plastic water bottles to computers to electrical generators.</p> <p>Reuse involves using the same item again and again or finding a new purpose for it.</p>	Lifespan	Yes	Insufficient recycling processes and awareness leading to excessive waste	Reduced landfill use and increased resource recovery	3	Implement comprehensive recycling programs and awareness campaigns	5	Enhanced community engagement in recycling efforts	Regular monitoring of recycling rates needed

		Servicing	Yes	Lack of resources and infrastructure for effective recycling	Improved recycling rates and community participation	3	Provide training on recycling best practices and programs	5	Improved skills in effective recycling management	Monitor training effectiveness regularly
		Effectiveness	Yes	Inadequate measurement of recycling outcomes leading to missed opportunities	Better alignment with sustainability goals and reduced environmental impact	3	Establish metrics to evaluate the effectiveness of recycling programs	5	Enhanced project outcomes through effective recycling	Continuous assessment of effectiveness needed
		Efficiency	Yes	Inefficient processes leading to low recycling rates	Streamlined recycling processes and increased efficiency	2	Develop initiatives to optimize recycling resource allocation	4	Enhanced efficiency in recycling operations	Regular reviews of recycling strategies needed
		Fairness	Yes	Lack of stakeholder engagement in recycling decisions leading to inequities	Increased trust and collaboration among community members	3	Develop inclusive strategies for stakeholder engagement in recycling	5	More equitable treatment of all stakeholders in recycling efforts	Consider feedback from all stakeholders involved

Prosperity Impacts										
Subcategory	Project Feasibility	Lens	Scored?	Description (Cause)	Potential Sustainability Impact	Impact Score Before	Proposed Response	Impact Score After	Change	Comments (optional)
Element	Description									
	Business case analysis is the process of developing a business case that provides justification for the initiation or continuation of the project. It involves analyzing the underpinning logic of funding the project. This requires identifying the expected benefits and dis-benefits, likely costs and revenues,	Lifespan	yes	Inadequate analysis leading to poor project decisions and resource allocation	Improved project success rates and better resource utilization	3	Implement standardized templates and guidelines for business case development	5	Enhanced clarity and consistency in project justification	Regular reviews of business cases needed

	staffing requirements, major risks, schedule alternatives, and stakeholder impacts associated with a proposed project.									
		Servicing	yes	Lack of ongoing training leading to inconsistent quality in business case development	Higher quality analyses and improved decision-making	3	Provide training for team members on business case analysis techniques	5	Improved skills and increased confidence in analysis	Monitor training effectiveness regularly
		Effectiveness	yes	Insufficient metrics to evaluate business case outcomes leading to ineffective decisions	Higher stakeholder satisfaction and project alignment	3	Establish clear metrics to evaluate the effectiveness of business cases	5	Better alignment with stakeholder needs and project goals	Continuous assessment of business case effectiveness needed
		Efficiency	yes	Time-consuming processes leading to delays in	Faster decision-making and reduced time to project	2	Streamline the business case development process with clear steps and	4	Enhanced efficiency in project initiation processes	Regularly review processes for improvement

				project initiation	launch		timelines			
		Fairness	yes	Bias in stakeholder analysis leading to dissatisfaction and lack of buy-in	Increased trust and collaboration among stakeholders	2	Develop inclusive stakeholder engagement strategies in	4	More equitable treatment of stakeholders and improved project support	Consider feedback from all stakeholders involved
	Financial analysis is the process of evaluating +B13:H17the project from a monetary perspective. Typically, it is used to analyze whether the project warrants initial or additional funding.	Lifespan	yes	Insufficient financial metrics leading to poor funding decisions	Improved funding allocation and project sustainability	3	Develop comprehensive financial analysis templates and guidelines	5	Enhanced clarity and rigor in financial evaluations	Regular reviews of financial analyses needed

		Servicing	yes	Lack of training in financial analysis techniques leading to inconsistencies	Higher quality financial assessments and better investment decisions	3	Provide training sessions for team members on financial analysis skills	5	Improved financial literacy and confidence among team members	Monitor training effectiveness regularly
		Effectiveness	yes	Inadequate performance metrics leading to ineffective funding allocations	Higher success rates for funded projects and better return on investment	3	Establish clear KPIs to evaluate the effectiveness of financial analysis	5	Better alignment of funding with project needs	Continuous assessment of financial analysis effectiveness needed
		Efficiency	yes	Time-consuming financial assessments leading to delays in funding decisions	Faster decision-making and improved project launch timelines	3	Streamline the financial analysis process with clear workflows and timelines	5	Enhanced efficiency in funding decisions	Regularly review processes for improvement
		Fairness	yes	Bias in financial evaluations leading to dissatisfaction among stakeholders	Increased trust and collaboration among all stakeholders	3	Develop inclusive stakeholder engagement strategies during financial analysis	5	More equitable treatment of stakeholders in funding decisions	Consider feedback from all stakeholders involved

<p>Social return on investment (SROI) is a framework+B18:K22k for measuring and accounting for project results and outcomes by including social and environmental costs and benefits along with the traditional economic ones. It is based on the idea that projects create value in ways other than just financial returns. For example, a community development</p>	Lifespan	yes	Lack of comprehensive metrics leading to underreported social value	Enhanced understanding of project impact and community benefits	3	Develop SROI metrics and frameworks tailored to project goals	5	Improved assessment of social and environmental impact	Regular updates to SROI assessments needed
	Servicing	yes	Insufficient training on SROI methodologies leading to inconsistent reporting	Higher quality social impact assessments	2	Provide training on SROI techniques and reporting processes	4	Enhanced capacity for measuring social returns	Monitor training effectiveness regularly
	Effectiveness	yes	Inadequate evaluation processes leading to ineffective communication of project value	Better alignment of projects with community needs	3	Establish clear KPIs for measuring SROI effectiveness	5	Enhanced stakeholder engagement and support	Continuous assessment of SROI effectiveness needed

	<p>means having multiple solutions or choices available. It means the project is not constrained by a single approach. Optionality means that the project is capable of supporting different outcomes with different results without having to start over.</p>									
		Servicing	yes	Lack of training or resources to adapt plans effectively	Increased capacity to respond to changes and uncertainties	3	Provide training on adaptive management techniques	5	2	
		Effectiveness	yes	Inadequate evaluation of flexibility leading to missed opportunities	Higher success rates through better adaptation	2	Establish metrics to evaluate flexibility effectiveness	4	2	

		Efficiency	yes	Inefficient resource allocation limiting adaptability	Streamlined processes for quicker adjustments	3	Develop workflows for rapid resource reallocation	5	2	
		Fairness	no							
	Resiliency is the ability of the project to recover from or adjust easily to adverse conditions such as extreme market fluctuations, political or economic instability, natural disasters, or health emergencies. Resiliency does not make problems go away: it means having the ability to cope with	Lifespan	yes	Lack of contingency planning leading to vulnerability during crises	Increased stability and continuity during disruptions	3	Develop comprehensive risk management and contingency plans	5	2	

	Local economic impact includes the direct and indirect effects the project has on the economy of its local area. This can include job creation, increased spending in the local economy, or increased regional development.	Lifespan	yes	Insufficient analysis of local economic benefits leading to missed opportunities	Enhanced local economy and community development	3	Conduct comprehensive local economic impact assessments	5	Improved project alignment with community needs	Regular updates to impact assessments needed
		Servicing	yes	Lack of resources for tracking local economic effects effectively	Greater awareness and responsiveness to local economic conditions	3	Provide training on local economic impact assessment techniques	5	Improved skills in assessing economic impacts	Monitor training effectiveness regularly
		Effectiveness	yes	Inadequate measurement of economic outcomes leading to ineffective project planning	Better alignment of projects with local economic needs	3	Establish metrics for evaluating local economic impact	5	Enhanced project outcomes through local	Continuous assessment of effectiveness needed

		Efficiency	yes	Inefficient resource allocation limiting local economic benefits	Streamlined processes for maximizing local benefits	2	Develop initiatives to optimize local resource allocation	4	Enhanced efficiency in economic contributions	Regular reviews of resource allocation strategies
		Fairness	yes	Bias in identifying beneficiaries leading to dissatisfaction among community members	Increased trust and collaboration among local stakeholders	3	Develop inclusive strategies for stakeholder engagement in economic assessments	5	Enhanced efficiency in economic contributions	Consider feedback from all stakeholders involved
	Indirect benefits are the positive impacts that go beyond the immediate outcomes of the project and may not always be immediately visible. These benefits can include improved quality of life, increased economic activity in the	Lifespan	yes	Lack of visibility into indirect benefits leading to underappreciation of project value	Enhanced community well-being and environmental quality	2	Develop frameworks to better capture and report indirect benefits	4	Increased recognition of project impact	Regular updates to benefit assessments needed

	local area, and environmental improvements such as cleaner air or water.									
		Servicing	yes	Insufficient resources to track indirect benefits effectively	Greater holistic understanding of project implications	3	Provide training on measuring and reporting indirect benefits	5	Improved skills in assessing indirect impacts	Monitor training effectiveness regularly
		Effectiveness	yes	Inadequate metrics leading to ineffective communication of indirect benefits	Better stakeholder engagement and project alignment	2	Establish metrics to evaluate the effectiveness of indirect benefits	4	Enhanced project outcomes through recognition of indirect benefits	Continuous assessment of effectiveness needed
		Efficiency	yes	Resource allocation not optimized for capturing indirect benefits	Streamlined processes for maximizing indirect contributions	3	Develop initiatives to optimize resource allocation for indirect benefits	5	Enhanced efficiency in achieving broader impacts	Regular reviews of strategies for indirect benefits

		Fairness	yes	Bias in recognizing indirect beneficiaries leading to dissatisfaction among communities	Increased trust and collaboration among all community members	2	Develop inclusive engagement strategies for identifying indirect beneficiaries	4	More equitable treatment of stakeholders in indirect assessments	Consider feedback from all stakeholders involved
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Note. Own work.

Table 41*P5 Analysis Summary*

People Impacts	Initial Impact Score	New Impact Score	Change
Labor Practices and Decent Work	2.7	4.6	1.9
Society and Customers			
Human Rights			
Ethical Behavior			
Overall People Score	4.6		

Planet Impacts	Initial Impact Score	New Impact Score	Change
Transport	2.7	4.9	2.2
Energy	2.8	4.8	2.0
Land Air, and Water	3.0	4.8	1.8
Consumption	2.8	4.8	2.0
Overall Planet Score	4.9		

Prosperity Impacts	Initial Impact Score	New Impact Score	Change
Project Feasibility	2.7	4.7	2.0
Business Agility	2.8	4.8	2.0
Local Economic Impact	2.6	4.6	2.0
Overall Prosperity Score	4.7		
Overall Project Score	4.7		

Note. Own work.

The P5 scoring system, which evaluates impacts on People, Planet, and Prosperity, directly enhances project objectives by providing measurable insights into performance. The increase in the People score from 2.7 to 4.6 indicates improved labor practices and worker welfare, aligning with goals of equitable employment and community relations. The Planet score's rise from 2.7 to 4.9 reflects a strong commitment to environmental sustainability, supporting objectives related to energy efficiency and responsible resource use. Lastly, the Prosperity score increased from 2.7 to 4.7, demonstrating enhanced project feasibility and local economic impact, which aligns with goals of stimulating economic growth. Overall, these positive changes validate the project's strategies and guide future actions toward sustainable development.

7.3 Relationship of the project to the dimensions of Regenerative Development

Regenerative Development (RD) is an ongoing change process that manifests regenerative sustainability. It is the process through which capacities in living systems develop so that ever greater vitality, abundance, and prosperity for all life manifests. As a place-based development and design methodology, Regenerative Development catalyzes shifts to thriving for all life from the scale of individuals to the entire world. Through Regenerative Development, we can regenerate the world (Medium, 2022).

Dimensions of Regenerative Development

1. **Environmental:** This dimension focuses on restoring ecosystems and enhancing biodiversity. Projects should aim to improve soil health, water quality, and habitat restoration, fostering ecological resilience and balance.
2. **Social:** Social equity is paramount in regenerative development. This dimension seeks to empower marginalized communities, ensuring equitable access to resources and participation in decision-making. It emphasizes the importance of community well-being and social cohesion.
3. **Economic:** The economic dimension promotes the development of resilient and sustainable economic systems. It involves supporting local economies, encouraging diverse economic activities, and ensuring that practices are environmentally and socially responsible.
4. **Political:** Governance plays a crucial role in regenerative development. This dimension advocates for policies that support sustainability and community involvement, ensuring that decision-making processes are transparent and equitable.

5. **Cultural:** Recognizing the importance of cultural identity, this dimension focuses on preserving and enhancing local traditions, practices, and knowledge systems. Engaging with cultural values ensures that development initiatives are meaningful and relevant to communities.
6. **Spiritual:** The spiritual dimension highlights the intrinsic connection between people and the environment. It encourages stewardship and a sense of responsibility toward the Earth, fostering values and beliefs that inspire regenerative practices.

Importance of Project Product Validation

Project product validation is essential in the field of Regenerative Development :

- **Goal Alignment:** This guarantees that project results are in line with the regenerative principles laid out at the beginning, demonstrating that initiatives successfully support regeneration.
- **Engagement of Stakeholders:** Including stakeholders in the validation process promotes openness and cooperation, enabling a range of viewpoints and comments that increase the project's significance.
- **Constant Improvement:** Validation procedures assist in pinpointing areas that require enhancement, allowing teams to modify their procedures in response to stakeholder feedback and actual performance.
- **Accountability:** By establishing a framework for accountability, a systematic validation process enables organizations to show their dedication to regenerative principles and disclose their effects.

- **Learning and Adaptation:** Organizations can add to the body of knowledge on regenerative practices by applying lessons gained to future efforts through the validation of project outcomes.

Environmental Dimension

Developing robust project management methodologies can include sustainability practices that enhance environmental stewardship. By integrating templates and processes focused on minimizing ecological impact, projects can actively contribute to environmental restoration.

Social Dimension

Proposing methodologies that prioritize collaborative planning and structured feedback mechanisms enhances social equity by involving diverse stakeholders. This fosters a sense of community and ensures that all voices are heard, contributing to social cohesion and well-being.

Economic Dimension

Developing methodologies that enhance project execution and efficiency directly align with economic resilience. By assessing impacts on timelines and deliverables, and integrating traditional and agile methodologies, Gleans Construction can promote economic viability and adaptability in their projects.

Political Dimension

Researching industry standards and best practices for project management supports governance by ensuring that methodologies comply with regulations and promote stakeholder engagement. Implementing risk management strategies also aligns with political accountability by proactively addressing potential disruptions.

Cultural Dimension

By facilitating effective communication and collaboration among multidisciplinary teams, project methodologies can be tailored to respect and incorporate local cultural practices and knowledge. This ensures that projects are relevant and beneficial to the community.

Spiritual Dimension

Implementing quality assurance procedures and structured feedback mechanisms can cultivate a sense of stewardship among team members. Emphasizing high standards of performance and reliability fosters a deeper connection to the project and its impact on the community and environment.

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APPENDICES

APPENDIX 1: FGP CHARTER**CHARTER OF THE PROPOSED
FINAL GRADUATION PROJECT (FGP)**

1. Student name

2. FGP name

3. Application Area (Sector or activity)

4. Student signature



5. Name of the Graduation Seminar facilitator

6. Signature of the facilitator

7. Date of charter approval

8. Project start and finish date

9. Research question

How can project management methodologies be adapted to enhance and impact collaboration among multidisciplinary teams, project execution, quality control, and timelines within an engineering consultancy firm's which manage similar commercial, residential and institution building projects.

10. Research hypothesis

Adapting project management methodologies to include structured communication protocols, integrated technology tools, and collaborative planning sessions will enhance collaboration among multidisciplinary teams, resulting in improved project execution, higher quality control standards, and more efficient timelines within the Gleans Engineering consultancy firm projects.

11. General objectives

To create a comprehensive project management methodology that seeks to adopt pertinent industry standards and best practices, ensuring the improvement of multidisciplinary team collaboration, enhancing project execution, and maximizing quality control timelines in Glean's Construction and Engineering consulting projects. This methodology aims to provide a structured framework that aligns with industry standards, fostering efficient and effective project processes. By applying established project management methodologies, the organization will facilitate systematic execution, leading to timely and budget-compliant project delivery while enhancing communication and cooperation among diverse team members. Ultimately, this objective will improve client satisfaction and organizational reputation by implementing robust quality assurance processes that ensure all deliverables meet high standards.

12. Specific objectives

1. To propose a robust project management methodology that includes templates, processes, and procedures tailored for Gleans Construction projects, addressing the unique characteristics of similar projects within the organization.
2. To demonstrate applications of the templates for the management of projects undertaken by Glean's, utilizing a pilot project case study.
3. To develop a Project Charter that will outline the project's purpose and objectives, ensuring a clear and shared understanding of the project's intentions.
4. To develop a Project Scope Management Plan that defines and documents the project scope, ensuring that all the work required and only the work required is included.
5. To develop a project schedule management plan that assesses the

impact of the adapted methodologies on project timelines and schedules, deliverable quality through quantitative and qualitative performance metrics in the Glean's pilot project.

6. To develop a Project Stakeholder Management Plan that identifies and engages stakeholders, ensuring that their needs and expectations are managed throughout the project lifecycle. In addition to implementing structured feedback mechanisms and collaborative planning sessions with stakeholders to enhance collaboration and manage expectations.
7. To develop effective communication and collaboration strategies, and methods to facilitate adequate information flow among all stakeholders and the multidisciplinary teams.
8. To develop a Procurement Management Plan that establishes guidelines for sourcing materials and services, including vendor selection, contract management, and performance evaluation. This plan will ensure that procurement processes are efficient, cost-effective, and aligned with project objectives, facilitating the timely delivery of resources while managing risks associated with procurement activities.
9. To develop a comprehensive Cost Management Plan that outlines budgeting, cost estimation, and financial control processes, ensuring that project expenses are effectively monitored and controlled throughout the project lifecycle. This plan will include methodologies for tracking costs, managing variances, and optimizing resource allocation to achieve project objectives within the approved budget.
10. To develop a Quality Management plan, assurance, procedures, and performance metrics for systems to maintain high standards of system performance and reliability through project execution.
11. To develop risk management strategies that identify and mitigate potential project risks to minimize disruptions and ensure smooth progress toward project completion.

13. FGP purpose or justification

Importance of the Project

The construction industry is increasingly faced with complex challenges, including project delays, cost overruns, and quality assurance issues. This project is crucial as it aims to develop a tailored project management methodology that enhances collaboration and improves project execution within Gleans Construction which undergo multiple simple projects. By adopting industry standards and best practices, the project seeks to create a structured framework that addresses these challenges, ensuring that projects are completed on time, within budget, and to the highest quality standards.

Justification for the Project

The necessity for this project is underscored by data indicating that poor project management practices can lead to cost overruns of up to 20% in construction projects.

By implementing a comprehensive methodology that integrates Agile practices and quality management models, the project aims to reduce these overruns significantly. Research shows that organizations that adopt structured project management methodologies can achieve time savings of approximately 30%, translating into enhanced operational efficiency and reduced project risks. Despite practicing project management in the organization, the methodology will be useful to be implemented given the Project similarity and not have a proper structure in place.

Expected Benefits

The expected benefits of this project are multifaceted. Firstly, the adoption of a robust project management methodology is anticipated to improve project delivery timelines and quality, leading to higher client satisfaction rates. Secondly, the integration of structured communication and feedback mechanisms among multidisciplinary teams will foster collaboration, reducing misunderstandings and rework. Finally, this project serves as a model for future initiatives within Gleans Construction, promoting a culture of continuous improvement and adaptability in project management practices, ultimately positioning the organization for sustained success in a competitive industry.

14. Work Breakdown Structure (WBS). In table form, describing the main deliverable as well as secondary, products or services to be created by the FGP.

<p>1. Graduation Seminar</p> <ul style="list-style-type: none"> • 1.1 FGP Final Graduation <ul style="list-style-type: none"> ○ 1.1.1 FGP Charter ○ 1.1.1.2 WBS ○ 1.1.1.3 Chapter I: Introduction ○ 1.1.1.4 Chapter II: Theoretical Framework ○ 1.1.5 Chapter III: Methodological Framework ○ 1.1.6 Annexes <ul style="list-style-type: none"> ○ 1.1.6.1 Bibliography ○ 1.1.6.2 Schedule ○ 1.1.2 Graduation Seminar Approval <p>2. Tutoring Process</p> <ul style="list-style-type: none"> • 1.2 Assigned Tutor <ul style="list-style-type: none"> ○ 1.2.1 Tutor Assignment <ul style="list-style-type: none"> ▪ 1.2.1.1 Tutor Assignment Confirmation ▪ 1.2.1.2 Appointment and Communication with Tutor ○ 1.2.2 Adjustment of Previous Chapters ○ 1.2.3 Development Process <ul style="list-style-type: none"> ▪ 1.2.3.1 Templates for methodology ▪ 1.2.3.2 Develop a Scope Management Plan ▪ 1.2.3.3 Develop a Stakeholder Management Plan ▪ 1.2.3.4 Develop Schedule Management Plan ▪ 1.2.3.5 Develop a Communication Management Plan ▪ 1.2.3.6 Develop a Quality Management Plan ▪ 1.2.3.7 Develop a Risk Management Sustainable Management Plan ▪ 1.2.3.8 Develop a Cost Management Plan ▪ 1.2.3.9 Develop a Procurement Plan ○ 1.2.4 Chapter V: Conclusions ○ 1.2.5 Chapter VI: Recommendations ○ 1.2.6 Finalize • 3. Reading by Reviewers • 1.3.1 Reviewers' Assignment <ul style="list-style-type: none"> ○ 1.3.1.1 Assignment of 2 Reviewers ○ 1.3.1.2 Communication
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- **1.3.1.3 FGP Submission Reviewers**

- 1.3.2 Reviewers' Work**

- **1.3.2.1 Reviewer 1**

- **1.3.2.1.1 Reviewer 1 FGP Reading**

- **1.3.2.1.2 Reviewer 1 Report**

- **1.3.2.2 Reviewer 2**

- **1.3.2.2.1 Reviewer 2 FGP Reading**

- **1.3.2.2.2 Reviewer 2 Report**

- **1.4 Adjustments**

- **1.4.1 Report for reviews**

- **1.4.2 FGP Upgrade**

- **1.4.3 Second review**

- **1.5 Defense to Board of Examiners**

- **1.5.1 Final review by Board**

- **1.5.2 FGP Grade Report**

15. FGP budget

Table 42

FGP Budget

Item	Description	Cost (USD)
Software License Acquisition	Project Management Software and Work Breakdown Structure (WBS) Pro	\$400
Hardware Upgrade	Laptop or Computer Upgrade	\$800
Work Tour	Transportation for site visits and meetings	\$500
Reviewing Drafted FGP	Review by a certified English Professor for grammar and technical accuracy	\$200
Printing and Binding	Hard copy to print FGP and mail to the University	\$200
Total		\$2,100

Note. Own work.

16. FGP planning and development assumptions.

- **Availability of Resources** It is assumed that all necessary resources, including personnel, software, and materials, will be available and accessible throughout the project timeline. This includes having sufficient access to experts and tools needed to support the methodology development.
- **Stakeholder Engagement** The project assumes that key stakeholders will be actively engaged and supportive of the methodology development process. Their involvement is crucial for gathering insights, feedback, and approval at various stages of the project.
- **Compliance with Regulations** It is assumed that the projects managed under the new methodology will comply with all relevant industry regulations and standards. This includes adhering to safety, quality, and environmental guidelines established by local authorities.
- **Stability of Project Scope** The project assumes that the scope of the FGP document will remain stable throughout its development. While minor adjustments may occur, it is expected that the core objectives and deliverables will not change significantly, allowing for effective planning and execution.

17. FGP constraints

- **Time Constraints** The project must be completed within a fixed timeframe, often dictated by academic deadlines. Limited time may restrict the ability to conduct thorough research, gather feedback, and refine the methodology adequately.
- **Budget Constraints** The available budget for the project may be limited, impacting the ability to hire additional personnel, purchase necessary software, or access specialized resources. Financial limitations can affect the overall quality and comprehensiveness of the FGP document.
- **Scope Constraints** The project scope may be defined narrowly due to the need to focus on specific aspects of project management methodologies. This limitation can restrict the depth of analysis and the range of topics covered, potentially leaving out important considerations.
- **Quality Constraints** There may be external expectations regarding the quality standards of the FGP document, such as adherence to academic guidelines or industry best practices. These quality requirements can pressure the student to meet high standards while still managing time and resource limitations, potentially leading to stress and compromised outcomes.

18. FGP development risks

1. Risk of Resource Availability

Root Cause: Dependence on the availability of personnel and resources.

Risk Event: Key team members or necessary tools may become unavailable due to scheduling conflicts or technical issues.

Impact: If critical resources are not accessible, it could lead to delays in project milestones, resulting in rushed work and potentially compromising the quality of the final document.

2. Risk of Stakeholder Engagement

Root Cause: Inadequate communication or lack of interest from stakeholders.

Risk Event: Key stakeholders may not provide timely feedback or may disengage from the project.

Impact: This can lead to misalignment of project objectives and requirements, resulting in a final product that does not meet stakeholder expectations, which could require significant revisions and additional time.

3.Risk of Scope Creep

Root Cause: Unclear project objectives or evolving stakeholder demands.

Risk Event: New requirements or changes may be introduced after the project has started.

Impact: Scope creep can divert focus and resources away from original goals, leading to increased time and costs, and potentially compromising the quality of the FGP document.

4.Risk of Compliance Issues

Root Cause: Lack of awareness or understanding of relevant regulations and standards.

Risk Event: The methodology developed may not fully comply with industry regulations or academic guidelines.

Impact: Non-compliance can lead to significant revisions, delays in approval, and even potential rejection of the project, which would severely impact the student's ability to complete the FGP on time.

19. FGP main milestones

Milestones and Deliverables for FGP

Table 43

Milestones and Deliverables for FGP

Deliverable	Estimated Finish Date
1 Final Graduation Project	Fri 03/10/25
Graduation Seminar	Mon 21/04/25
FGP Deliverables	Mon 14/04/25
1.1.1 Charter	Fri 07/03/25
1.1.1.2 WBS	Fri 14/03/25
1.1.1.3 Chapter 1. Introduction	Fri 21/03/25
1.1.1.4 Chapter 2. Theoretical Framework	Fri 28/03/25
1.1.1.5 Chapter 3. Methodological Framework	Fri 04/04/25
1.1.6 Annexes	Mon 14/04/25
1.1.6. Bibliography	Mon 14/04/25

Deliverable	Estimated Finish Date
1.1.6.2 Schedule	Mon 14/04/25
1.1.2 Graduation Seminar approval	Tue 22/04/25
2 Tutoring Process	Wed 06/08/25
1.2 Assigned Tutor	Fri 09/05/25
1.2.1 Tutor Assignment	Wed 07/05/25
1.2.1.2 Communication	Fri 09/05/25
1.2.2 Adjustment of chapter	Tue 20/05/25
1.2.3 Charter IV. Development	Tue 22/07/25
1.2.4 Chapter V. Conclusions	Tue 29/07/25
1.2.5 Chapter VI. Recommendations	Wed 06/08/25
3 Reading be viewers	Mon 01/09/25
1.3.1 Reviewers Assignment request	Wed 13/08/25
1.3.1.1 Assignment of two reviewers	Fri 08/08/25
1.3.1.2 Communication	Tue 12/08/25
1.3.1.3 FGP Submission Reviewers	Wed 13/08/25
1.3.2 Reviewers work	Mon 01/09/25
1.3.2.1 Reviewer 1	Mon 01/09/25
1.3.2.1.1 FGP Readings	Wed 27/08/25
1.3.2.1.2 Reader 1. Report	Fri 29/08/25
1.3.2.2 Reviewers 2	Mon 01/09/25
1.3.2.2.1 FGP Readings	Wed 27/08/25
1.3.2.2.2 Reader 2. Report	Fri 29/08/25
1.4 Adjustments	Fri 26/09/25
1.4.1 Report for Reviews	Thu 11/09/25
1.4.2 FGP Update	Fri 12/09/25
1.4.3 Second review Reviewers	Fri 26/09/25
1.5 Defense to Board of Examiners	Fri 03/10/25

Note. Own work.

20. Theoretical framework

20.1 Estate of the “matter”

The problem being studied pertains to the inefficiencies in project management methodologies within the construction industry, particularly as experienced by Gleans Construction. Over the years, the company has faced challenges in

delivering projects on time, within budget, and to the expected quality standards. These issues have been attributed to a lack of standardized processes, inadequate stakeholder communication, and insufficient risk management practices.

- **Current State of the Problem**

Currently, Gleans Construction relies on ad-hoc project management techniques, leading to inconsistent outcomes across various projects. There is a notable absence of a unified methodology that aligns with industry best practices. As a result, project teams often struggle with coordination, leading to delays and increased costs.

- **Previous Resolutions and Proposed Improvements**

Efforts to address these issues have included:

- **Implementation of Basic Project Management Tools:** Initial attempts involved using basic tools like Gantt charts and simple task lists. However, these tools were insufficient for comprehensive project management and did not address the underlying issues.
- **Training Programs:** Some training programs were introduced to enhance team skills, but without a structured methodology, the training's effectiveness was limited.

Proposed improvements include the development of a formal project management methodology that incorporates:

- Standardized templates for documentation.
- Clearly defined processes for project initiation, planning, execution, and closure.
- Enhanced communication protocols to ensure stakeholder engagement.
- **Results of Implementations**

While early attempts at improving project management practices yielded minimal results, the introduction of structured training and the adoption of project management software in some teams showed promise. However, without a cohesive methodology, these improvements were not uniformly applied across all projects.

- **Related Research Works**

Several studies have been conducted on project management methodologies in construction, highlighting the following findings:

- **Standardization Benefits:** Research shows that organizations adopting standardized methodologies experience improved project outcomes, including reduced costs and enhanced team collaboration.
- **Stakeholder Engagement:** Studies indicate that effective communication with stakeholders significantly enhances project success rates. Engaging stakeholders early and throughout the project lifecycle is critical.
- **Risk Management Practices:** Research emphasizes the importance of robust risk management frameworks, which can mitigate potential issues before they escalate, leading to more successful project completions.
- **Additional Factors**

To better understand the problem and its current status, various factors should be considered:

- **Industry Trends:** The construction industry is increasingly adopting agile

methodologies and digital tools, which may influence how Gleans Construction approaches project management.

- **Regulatory Environment:** Compliance with evolving regulations and standards is critical, and a structured methodology could facilitate adherence to these requirements.
- **Technological Advances:** The integration of technology in project management, such as Building Information Modeling (BIM) and project management software, presents opportunities for enhanced efficiency and collaboration.

Gleans Construction has made some efforts to improve its project management practices; there remains a significant opportunity to develop a formal methodology that addresses the identified inefficiencies and aligns with industry standards. Further research and implementation of best practices could lead to substantial improvements in project delivery and overall organizational performance.

Research done

- **1. Bibliographical Research**

Conducting a thorough review of existing literature is essential. This includes:

- **Reports:** Analyze industry reports that provide insights into current trends and challenges in project management.
- **Thesis and Dissertations:** Review academic thesis that explore specific aspects of project management methodologies, which can offer in-depth analyses and findings.
- **Books and Magazines:** Utilize books and professional magazines that discuss best practices, case studies, and theoretical frameworks in project management.
- **2. Interviews with Experts**

Engaging with experts in the field provides practical insights and real-world applications of project management methodologies. Consider:

- **Interviews with Functionaries:** Speak with professionals who manage projects in settings to understand their challenges and successful strategies.
- **Consultations with Project Management Professionals:** Gather perspectives from experienced project managers who can share their knowledge on effective methodologies and tools.
- **3. Field Observation**

Observing project management practices in real-time can yield valuable data.

This can involve:

- **Site Visits:** Conduct visits to ongoing projects to observe management practices, team dynamics, and communication methods.
- **Shadowing Project Managers:** Spend time with project managers to see how they handle various aspects of project execution, including planning, risk management, and stakeholder engagement.

- **4. Case Studies**
- **5. Surveys and Questionnaires**

Developing surveys to gather quantitative data from project management professionals can help identify common practices, challenges, and the effectiveness of various methodologies.

By utilizing these research activities, Gleans Construction can gather comprehensive data that will inform the development of a structured project management methodology, ultimately leading to improved project outcomes.

20.2 Basic conceptual framework

List of the basic concepts to be included in the document.

Examples: project management, LEED certification, clinics, sustainable design and construction, etc.

List of Basic Concepts

1. **Project Management**
 - Key principles and methodologies
2. **Standardized Methodologies**
 - Benefits of adopting standardized project management practices
 - Comparison of different project management frameworks (e.g., PMBOK, Agile)
3. **Stakeholder Engagement**
 - Importance of communication and collaboration with stakeholders
 - Strategies for effective stakeholder management
4. **Risk Management**
 - Overview of risk management processes
 - Techniques for identifying, assessing, and mitigating risks
5. **Project Lifecycle**
 - Stages of project management: initiation, planning, execution, monitoring, and closure
 - Importance of each stage in achieving project success
6. **Documentation and Templates**
 - Role of standardized templates in project management
 - Documentation required at each project phase
7. **Team Dynamics and Collaboration**
 - Importance of teamwork in project execution
 - Tools and techniques to enhance collaboration among project teams
8. **Quality Management**
 - Concepts of quality assurance and quality control in construction
 - Standards for measuring project quality
9. **LEED Certification**

- Overview of LEED (Leadership in Energy and Environmental Design) principles
- Importance of sustainable design and construction practices

10. Sustainable Design and Construction

- Principles of sustainability in the construction industry
- Strategies for integrating sustainable practices into projects

11. Technological Integration

- Use of technology in project management (e.g., Building Information Modeling (BIM), project management software)
- Impact of digital tools on project efficiency and communication

12. Regulatory Compliance

- Importance of adhering to industry regulations and standards
- Role of project management methodologies in ensuring compliance

13. Industry Trends

- Current trends shaping the construction industry (e.g., agile methodologies, lean construction)
- Influence of market demands and technological advancements

14. Performance Metrics

- Key performance indicators (KPIs) for measuring project success
- Techniques for evaluating project outcomes

15. knowledge areas and processes of the five process groups.

21. Methodological framework

Table 44*Methodological Framework*

Objective	Name of Deliverable	Information Sources	Research Method	Tools	Restrictions
Define project scope and objectives	FGP Charter	Academic guidelines, project frameworks	Literature review	Microsoft Word, Google Docs	Limited access to specific databases
Develop theoretical framework	Chapter II: Theoretical Framework	Scholarly articles, theoretical texts	Qualitative analysis	Reference management software (Zotero)	Time constraints for literature review
Outline methodology	Chapter III: Methodological Framework	Research methodology textbooks, previous studies	Qualitative and quantitative methods	SPSS, Excel, MS Project	Limited sample size for data collection
Validate sustainability concepts	Chapter VII: Validation of Regenerative and Sustainable Development	Case studies, sustainability reports	Case study analysis	SWOT analysis tools	Availability of case study data
Plan and coordinate project activities	FGP Schedule and Work Breakdown Structure	Project management resources, literature	Project management techniques	MS Project, Trello	Changes in project scope
Manage project quality	Quality Management Plan	Quality assurance literature, industry standards	Quality assurance practices	Quality management software	Compliance with university guidelines
Communicate effectively with stakeholders	Communication Management Plan	Communication theory, stakeholder analysis	Stakeholder analysis	Slack, Microsoft Teams	Time limitations for stakeholder engagement

Objective	Name of Deliverable	Information Sources	Research Method	Tools	Restrictions
Objective	Name of Deliverable	Information Sources	Research Method	Tools	Restrictions
Identify and mitigate risks	Risk Management Plan	Risk management frameworks, academic articles	Risk analysis	Risk management software	Unforeseen project challenges
Draw conclusions and make recommendations	Chapter V: Conclusions and Chapter VI: Recommendations	Project findings, literature review	Synthesis of findings	Word processing tools	Must be based on data collected

22. Validation of the work in the field of regenerative and sustainable development.

Compliance of the FGP with Regenerative Development and Sustainable

Development

1. The FGP emphasizes a comprehensive methodology that integrates environmental, social, and economic considerations, promoting systems that enhance resilience and vitality.
2. The project includes mechanisms for feedback and evaluation, allowing for ongoing improvements and adaptations based on stakeholder input and environmental assessments.
3. By incorporating industry standards and best practices, the FGP aims to create a framework that not only meets current needs but also anticipates future challenges, ensuring long-term sustainability.
4. The FGP incorporates strategies that promote sustainability over the long term, ensuring that projects are designed to be resilient and adaptable to future changes and challenges.

5. The project includes mechanisms for ongoing assessment of its environmental, social, and economic impacts, allowing for adjustments and improvements based on stakeholder feedback and performance metrics.

Contribution of the Proposed Project to Regenerative and Sustainable Development

1. Implement practices that promote efficient resource use, such as minimizing waste.
2. Sustainable practices reduce environmental footprints and support long-term resource availability for future generations.
3. Provide training and resources to educate stakeholders about sustainable practices and regenerative principles.
4. Increased knowledge fosters a culture of sustainability, encouraging ongoing community involvement in future projects.

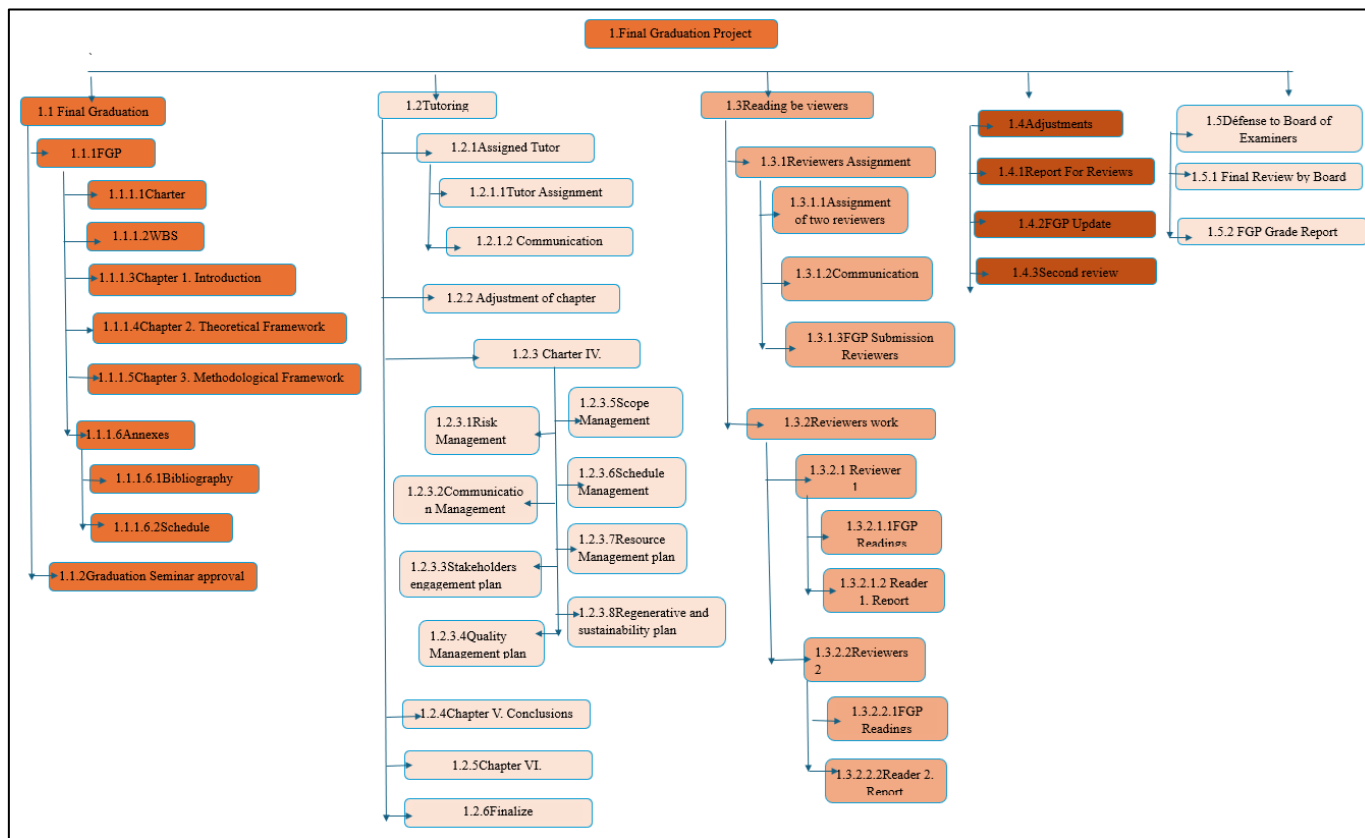
Measurement Methods

1. **Surveys and Questionnaires:** Collect qualitative and quantitative data from stakeholders about their experiences and satisfaction with project impacts.
2. **Field Assessments:** Conduct environmental assessments before and after project implementation to measure changes.
3. **Performance Metrics:** Establish key performance indicators (KPIs) to monitor progress toward sustainability goals, allowing for adjustments and enhancements based on real-time data.
4. **Regular Reporting:** Implement a system for ongoing reporting and evaluation to track the effectiveness of strategies and ensure accountability.

APPENDIX 2: FGP WBS

Figure 20

FGP WBS

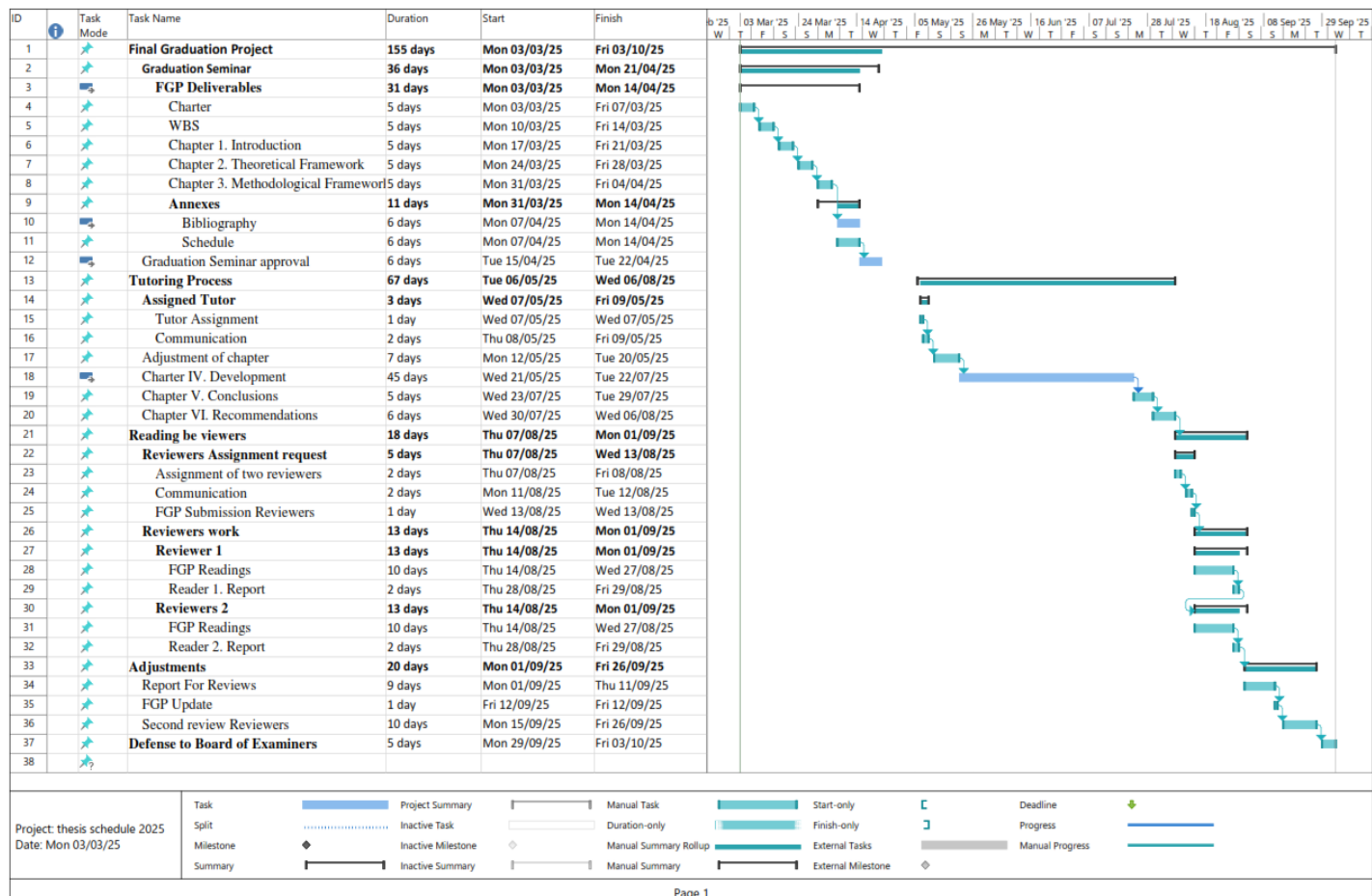


Note. Own work

APPENDIX 3: FGP SCHEDULE

Figure 21

FGP Schedule



Note. Own work.

APPENDIX 4: PRELIMINARY BIBLIOGRAPHICAL RESEARCH

Carboni, J., Duncan, W., Young, M. L., Pace, M., Gonzalez, M., & Smyth, D. (2024).

Sustainable project management: The GPM practice guide (3rd ed.). Independently published.

Justification: the guide emphasizes a regenerative approach, which is particularly beneficial in construction, where the restoration of ecosystems and communities can be integrated into project planning and execution. This perspective encourages practices that go beyond sustainability to enhance the natural environment, aligning with modern construction goals.

Chumpitaz, V. B., Rubio, J., & Rodriguez, S. (2020). Application of the Scrum framework to optimize time in construction projects. *Revista de Innovación y Tecnología*, 2020.

Retrieved from IEEE Xplore

Justification: By applying the Scrum framework, the paper introduces Agile methodologies to construction, which traditionally relies on more rigid, linear approaches. This innovative perspective can be enriched by showcasing how Agile can enhance flexibility and responsiveness in construction project management.

Dionisio, C. S. (2017). *A project manager's book of forms: A companion to the PMBOK guide, sixth edition* (3rd ed.). Wiley.

Justification: This book serves as an essential resource for project managers, providing ready-made forms aligned with the PMBOK® Guide, which can be used throughout various stages of project management, including initiating, planning, executing, monitoring, and closing projects. It is particularly useful for both new and experienced project managers looking to streamline their documentation processes and ensure adherence to best practices in project management. This book reinforces the standards and practices outlined in the guide. It ensures that the

methodologies discussed in my thesis are not only theoretical but also grounded in widely accepted project management principles, enhancing the credibility of my work.

Elkherbawy, A. A. (2019). *Lean construction versus project management in road projects: scheduling comparison*. Doctoral thesis, Universitat Politècnica de Catalunya. <http://hdl.handle.net/10803/668908>.

Justification : Elkherbawy (2019): Elkherbawy's comparison of lean construction and project management methodologies enriches the understanding of efficiency in project execution. This reference was chosen to explore how lean principles can be integrated into the methodology, promoting waste reduction and optimizing resource use.

Jovanovic, P., & Beric, I. (2018). Analysis of the Available Project Management Methodologies. *Management: Journal of Sustainable Business and Management Solutions in Emerging Economies*, 23(3), 1–13. <https://doi.org/10.7595/management.fon.2018.0027>

Justification: Jovanovic, P., & Beric, I. (2018): This article provides a comprehensive analysis of various project management methodologies, which is crucial for understanding the landscape of available approaches in the field. Jovanovic and Beric examine the strengths and weaknesses of different methodologies, critically assessing which elements can be integrated into the methodology for the organization. Their insights into how these methodologies can be adapted to suit specific project needs help reinforce the importance of flexibility and customization in project management practices. The reference also aligns to ensure that the proposed methodology is both robust and adaptable to the unique challenges faced by multidisciplinary teams in construction projects.

Khan, K. M., & Reza, M. (2018). *Earned value management for design and construction projects*. *International Journal of Trend in Scientific Research and Development*, 2(5), 1482–502. <http://dx.doi.org/10.31142/ijtsrd17029>.

Justification: Khan and Reza (2018): The discussion on earned value management (EVM) is crucial for tracking project performance. The selected reference is because EVM provides a quantitative framework to assess project progress and efficiency, which is essential for the methodology's focus on enhancing project execution.

Matos, P. V., Romão, M., Sarmiento, J. M., & Abaladas, A. (2019). The adoption of project management methodologies and tools by NGDOs: A mixed methods perspective. *Journal of Business Research*, 101, 651-659. <https://doi.org/10.1016/j.jbusres.2018.10.045>.

Justification: The article outlines various project management methodologies and tools, offering a framework that can be utilized by NGDOs to enhance their project effectiveness. This framework is beneficial for understanding how specific methodologies can be tailored to fit the unique needs of the sector, which aligns with the objective to develop adaptable project management strategies.

Nguyen, L. S., Kravets, O. J., Thai, T. P., Sekerin, V. D., & Gorokhova, A. E. (2021). *Quality management models of project management in the construction sector*. *Webology*, 18, SI05, 844–56. <http://dx.doi.org/10.14704/web/v18si05/web18266>.

Justification: Nguyen et al. (2021): The focus on quality management models in this study aligns perfectly with the objective of maximizing quality control timelines. Integrating their models into the methodology, it can ensure that quality assurance is embedded throughout the project lifecycle, ultimately leading to higher standards and client satisfaction.

Project Management Institute. (2021). *A guide to the project management body of knowledge (PMBOK® guide)* (7th ed.). Project Management Institute.

Justification: The 7th Edition provides a broad framework for project management, incorporating both traditional and modern approaches. This inclusive perspective is essential for the research, which aims to explore various methodologies and their applicability in different project contexts.

Rasnacis, A., & Berzisa, S. (2017). Method for Adaptation and Implementation of Agile Project Management Methodology. *Project Management Journal*, 48(2), 34-45.
<https://doi.org/10.1016/j.ijproman.2017.01.001>.

Justification: This article discusses a framework for adapting Agile methodologies to various project contexts, emphasizing the importance of understanding the specific project environment and ensuring effective communication and collaboration among team members.

APPENDIX 5: PHILOLOGICAL DICTUM

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August 20, 2025

Re: Philological Review of Final Graduation Project submitted by Shermel Marshall-Williams in partial fulfilment of requirements for a Master's Degree in Project Management (MPM)

Dear Academic Tutor,

With this letter, I confirm that I have reviewed the Final Graduation Project (FGP) submitted by MPM candidate Shermel Marshall-Williams entitled "Implementation of Project Management Methodologies for Gleans Construction and Engineering Ltd."

I hereby confirm that Shermel Marshall-Williams has made all the corrections to the FGP as I have advised as philologist. It is my professional opinion that the document meets the literary and linguistic standards in written English as required for the MPM by the Universidad para la Cooperación Internacional.

Warm Regards,



Stephanie Flores Bradshaw

Philologist