UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

FINAL GRADUATION PROJECT

PROJECT MANAGEMENT PLAN FOR SJP CONSULTANTS TO EXECUTE THE EXPANSION OF THE GUESNEAU HEALTH FACILITY

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FINAL GRADUATION PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF
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UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
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This Final Graduation Project was approved by the University as partial fulfillment of the requirements to opt for the Master in Project Management (MPM) Degree

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Thank you to all the lecturers whom imparted the project management knowledge throughout the duration of this journey.

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ABBREVIATIONS AND ACRONYMS

- BoQ – Bill of Quantities
- CDB - Caribbean Development Bank
- FGP - Final Graduation Project
- GOSL - Government of Saint Lucia
- MEP - Mechanical, Electrical & Plumbing
- PM - Project Management
- PMI - Project Management Institute
- PMIS - Project Management Information Systems
- PMBOK - Project Management Body of Knowledge
- PPP - Public-Private Partnership
- SSDF - St Lucia Social Development Fund
- SJP - Company Name
- WBS - Work Breakdown Structure

EXECUTIVE SUMMARY

SJP Consultants is an organization focused on Architectural and Engineering design work for the past ten (10) years. Recently, a decisión was made by the director to incorporate a Project Management Office (PMO) within the organization to manage the construction on the various design projects undertaken. The governance framework for the PMO is currently under construction.

In an effort to assist with community development projects in Saint Lucia, the Caribbean Development Bank (CDB) in collaboration with the Saint Lucia Social Development Fund (SSDF) sponsored the expansión of the Guesneau Health Facility and engaged the design and management services of SJP Consultants.

Due to the recent incorporation of the PMO at SJP Consultants, no governance framework or Project Management (PM) guidelines had been established to proceed with the management of the Guesneau Health Facility expansion. As a result, a PM plan was created to guide the project team in the construction of the facility and in facilitating the successful delivery of the project.

Hence, the main objective of this PM plan was to create a detailed guide to assist the SJP Consultant project team in successfully managing the execution and delivery of the Guesneau Health Facility Expansion. The specific objectives for the PM plan were to define a project charter to formally authorize the project and provide relevant details about the project; develop a scope management plan to define the work involved in the delivery of the project; develop a plan for cost management to ensure that the defined scope remains within budget; develop a plan for schedule management to ensure that a realistic time frame is identified and followed to ensure the timely delivery of the project; develop a quality management plan to define quality standards for the delivery of the project; develop a resource management plan to determine the relevant personnel involved in each aspect of the delivery; develop a communications management plan that details the methods of communication conducted during the project; develop a risk management plan that identifies risks involved in the project and mitigation measures for dealing with those risks; develop a procurement management plan that identifies procedures to be utilized for obtaining resources for project execution; develop a stakeholder management plan that identifies stakeholders and their relevance and power with the associated project.

The Project Management Body of Knowledge (PMBOK) was used as the basis for developing the PM plan. There are ten (10) knowledge áreas and forty nine (49) corresponding processes identified in the PMBOK. These knowledge áreas are the core technical frameworks required for effective PM planning and correspond to the specific objectives identified above.

Data was collected for the development of the project management plan by analysing historical data and reports from previously completed projects, conducting brainstorming sessions within the project team to obtain solutions to problems and

conducting interviews with ten (10) experts, one for each of the knowledge áreas to provide advice on the best way forward.

The results analysis encompasses a detailed breakdown of each knowledge área and its processes, providing information on output data and guidelines for proceeding with the physical execution of the project. Each knowledge area was developed in detail, providing the project team with a guide on each aspect of the project as it relates to the expansion of the Guesneau Health Facility in accordance with the Project Management Institute guidelines; Providing information on data gathered in project planning and outlining procedures and guidelines for project execution. The intent of the outputted results analysis is to ensure that the lack of proper project management identified throughout the island is not repeated during the execution of the Guesneau Health Facility.

It is recommended that the project team utilizes all the information, tools and guidelines specified within the PM plan to achieve the desired outcome. The team must remain within project scope to ensure that time and cost parameters are maintained throughout execution. Simultaneously, quality standards must be met in accordance with the quality criteria set out by the project team. Stakeholder awareness, communication and resource management are vitally important in maintaining order and achieving the desired outcome of the project. Adherence to the ten (10) knowledge areas identified in the PMBOK and elaborated on in the PM plan ensures the successful execution and delivery of the project.

1. INTRODUCTION

1.1. Background

SJP Consultants is an organization established in St. Lucia, which specializes in the production of Architectural and Engineering design work. The ten year old company has two (2) two main departments; Architecture & Engineering; However, the company recently expanded to include a Project Management Office (PMO) and is currently developing the governance framework for the PMO.

Over the past four (4) years, SJP Consultants has focused its efforts on community development projects. Project managers were sub-contracted for project execution. 80% of these projects were poorly executed due to a lack of structure and poor cost and time management. Consequently, SJP Consultants felt a need to establish its own PMO with qualified project managers to oversee the management of projects for which it has been hired.

Recently, the Government of Saint Lucia (GoSL) secured the services of SJP Consultants to design, and manage the Expansion of the Guesneau Health Facility. The company at that time, had neither a structured PMO nor PM guidelines. As a result, Ms. Sharm Jn Pierre, head of the new PMO at SJP Consultants, was tasked with preparing the PM plan for the Expansion of the Guesneau Health Facility.The plan was developed to guide the project team through the successful execution of the project. It was developed using the Project Management Body of Knowledge (PMBOK) as a benchmark; PMBOK being a seminal text for effective project management in the industry.

The expansion of the Guesneau Health Facility is one of many undertakings of the GoSL. The facility has been in existence for roughly three (3) decades and had been poorly maintained over the years. Consequently, the government has formed a private public partnership (PPP) with SJP Consultants to undertake the expansion of the Guesneau health facility.

The Caribbean Development Bank (CDB) in an effort to facilitate development in the Caribbean, has been funding various community development projects across the Caribbean, one of which is the expansion of the Guesneau health facility. The CDB is represented by a local entity known as the Saint Lucia Development Fund

(SSDF). The SSDF oversees the execution of projects as well as the dissemination of funds on the CDB's behalf.

1.2. Statement of the Problem

SJP Consultants was contracted to undertake the expansion of the Guesneau health facility, but the company had no project management (PM) guidelines to guide the project team in undertaking that project. It was imperative therefore, for SJP Consultants to develop a PM plan and to introduce some level of PM guidelines into their PMO framework to guide the project team.

1.3. Purpose

The purpose of creating the project management plan was to provide the project team with a guide to effectively and successfully manage and execute the expansion of the Guesneau health facility.

The plan was strategically developed for the expansion project using the standards outlined by the Project Management Institute (PMI) in the PMBOK guide. The standards focus on developing the ten (10) knowledge areas; scope, schedule, cost, communication, stakeholder, risk, procurement, integration, quality and resource management.

1.4. General objective

The general objective of the project management plan is to guide SJP Consultant's project team in successfully undertaking a major project, in this case, the expansion of the Guesneau health facility.

1.5. Specific objectives

The specific objectives are as follows;

1. To define the project charter to formally authorize the project and provide relevant details about the project.
2. To develop a scope management plan to define the work involved in the delivery of the project.
3. To develop a cost management plan to ensure that the defined scope of works remains within budget.

4. To develop a schedule management plan to ensure that a realistic time frame is identified and followed to ensure the timely delivery of the project
5. To develop a quality management plan to define quality standards for the delivery of the project.
6. To develop a human resource management plan to determine the relevant personnel involved in each aspect of the delivery.
7. To develop a communications management plan that outlines, highlights and details on recommended communication strategies utilized during the project.
8. To develop a risk management plan that identifies the risks involved in the project and mitigation measures for dealing with those risks.
9. To develop a procurement management plan that identifies procedures to be utilized for obtaining resources for project execution.
10. To develop a stakeholder management plan that identifies stakeholders, their relevance and power with the associated project.

2. THEORETICAL FRAMEWORK

2.1 Company/Enterprise framework

This project management undertaking is conducted within the island of St Lucia using a local consulting company known to the public as SJP Consultants; registered with the Registry of Companies in St. Lucia.

2.1.1 Company/Enterprise background

SJP Consultants is a company specializing in architecture and engineering design. Recently, the company expanded to include a (PMO), and has been working towards compiling a PM structure within the company. The company portfolio includes the design of both residential and commercial structures throughout the island.

The company was initially founded in 2010, to provide architectural design services. As the years progressed, the company evolved and expanded the services provided to the public by including an engineering department.

Driven by its promise to deliver cost-effective solutions and quality controlled designs, SJP Consultants has established a positive reputation with the locals.

2.1.2 Mission and vision statements

The mission of SJP Consultants is to provide the most efficient consultation services, combined with innovative, cost-effective designs.

The company's vision is to extend our services beyond the borders of St. Lucia and create a flawless reputation of achieving successful project design and construction throughout the Caribbean.

2.1.3 Organizational structure

SJP Consultants consists of a hierarchical organizational structure. Each aspect of the project and office management is led by a specific team. Each team contains one clear leader to manage the overall activities of the team. The table below depicts the Organizational structure of SJP Consultants.

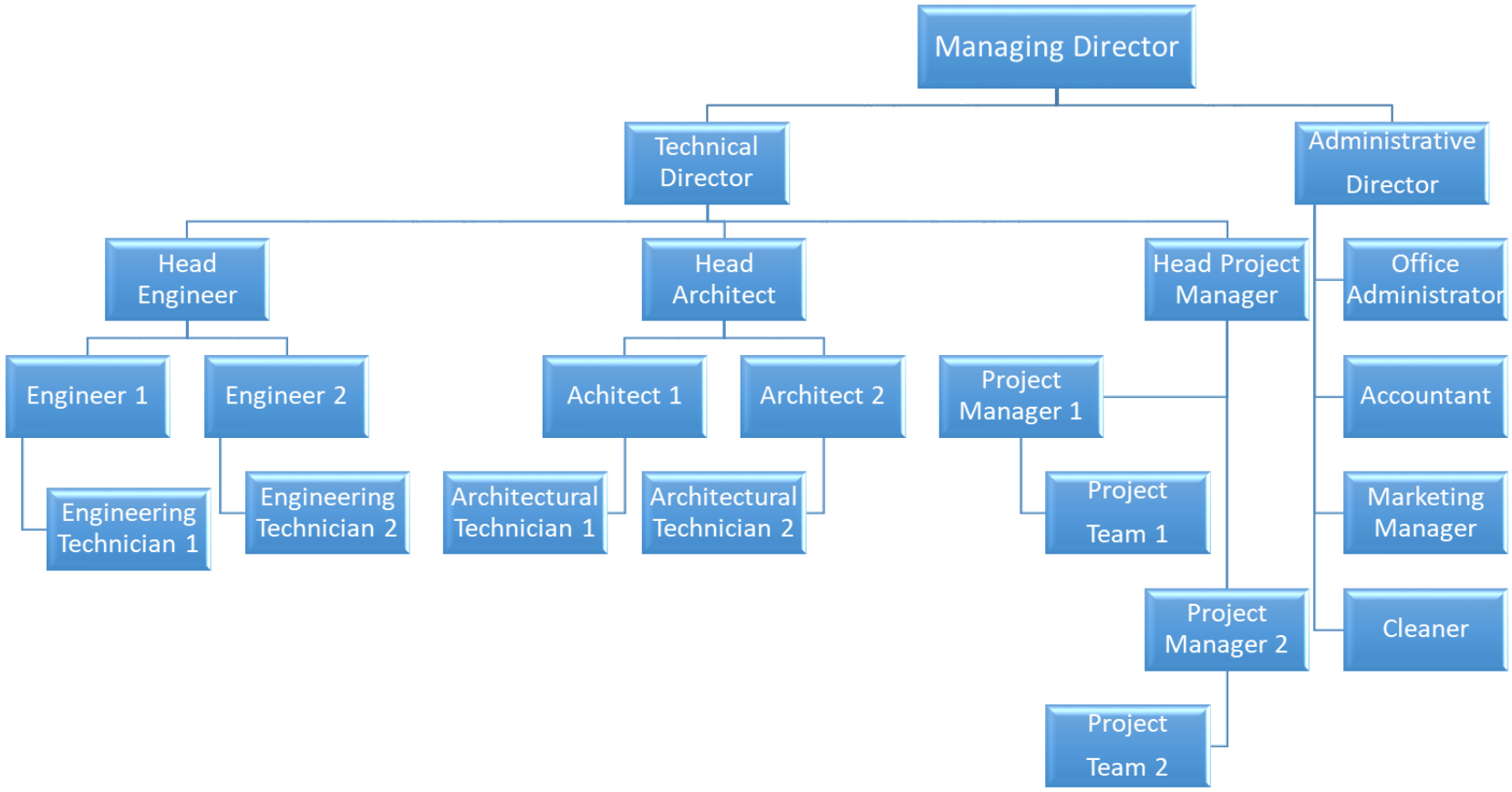


Figure 1. Organizational structure (compiled by author)

2.1.4 Products offered

The key objective of SJP Consultants is to provide cost- efficient sustainable designs and effective consultation services for each project undertaken. In that regard, SJP Consultants offer a wide range of consultancy services including; architectural residential and commercial building designs, civil and structural works and management services.

2.2 Project Management concepts

2.2.1 Project

According to *the Project Management Institute (2017. pg. 715)*, “a project is a temporary endeavor undertaken to create a unique product or service”. It contains a beginning and an end and possesses a unique set of requirements to be delivered within a particular time frame. For the FGP, the targeted Project is the preparation of a Project Management Plan for the construction of the Guesneau Health Center.

2.2.2 Project management

The *Project Management Institute (2017. pg. 716).* defines Project Management as “the application of knowledge, skills, tools and techniques to project activities to meet the project requirements” This involves the application of ten (10) knowledge áreas, forty-nine (49) Project Management processes and five (5) process groups. Included in this FGP document is a detailed breakdown of how each of these aspects is applied in the project management plan.

2.2.3 Project Management Office

The *Project Management Institute (2017. pg. 48).* defines a Project Management Office (PMO) as “an organizational structure that standardizes the project related governance processes and facilitates the sharing of resources, methodologies, tools and techniques.” The PMO has various responsibilities, however, its main function is

to support and manage multiple projects. The level of control and involvement of the PMO is depended on the type of PMO established by the organization. A PMO may either be supportive, controlling or directive.

2.2.4 Project life cycle

The Project Life Cycle includes a series of stages that a project will go through in its life span. The cycle includes five (5) stages; initiating, planning, monitoring and controlling and closing. The life cycle may follow an iterative cycle in the instance where time and cost changes continuously occur throughout the project. This document is focused on the initiation and planning stages.

Figure 2. Typical Project Life Cycle (Primus, 2018)

2.2.5 Project management processes

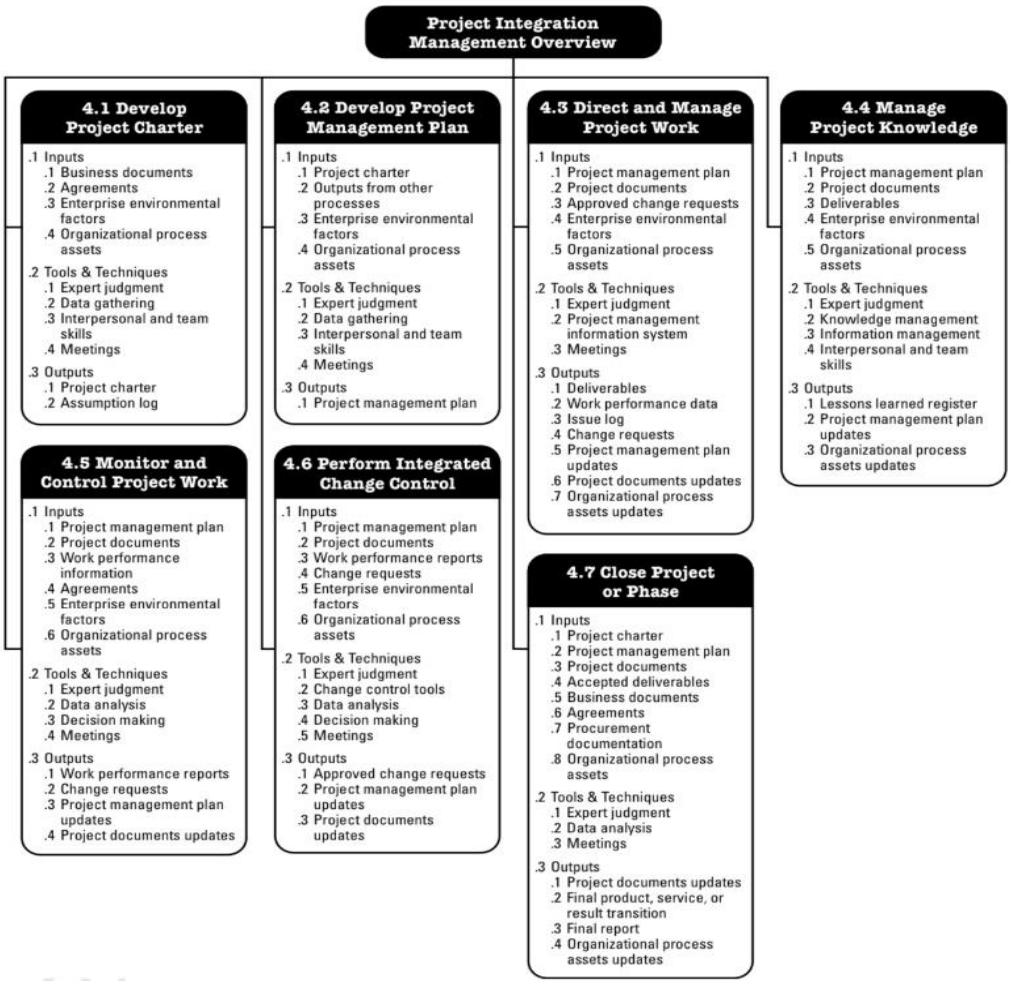
Project management processes exist to assist in meeting project objectives. A typical project consists of life cycle stages; the five (5) process groups as indicated in figure 2 above. Each process group includes various processes to accommodate the execution of a particular stage within the project.

2.2.6 Project management knowledge areas

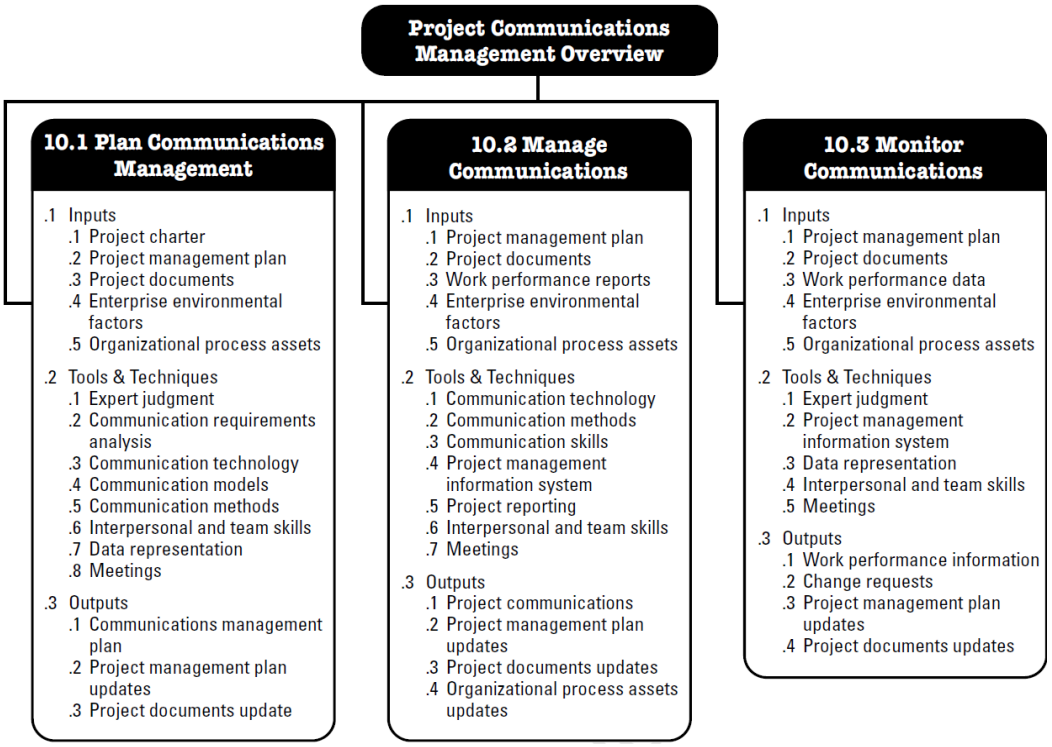
The PMI has formulated ten (10) specialized knowledge areas that are implemented within most projects. These are implemented during various process group interaction stages during the progression of a project.

The Project Management Institute (2017. pg. 716) defines the project management knowledge areas as “identified areas of project management defined by its knowledge requirements and described in terms of its component processes, practices, inputs, outputs, tools and techniques”. The ten (10) knowledge areas include;

1. Integration Management: This is the process of identifying and combining all project management activities involved in executing a project. The following *(extracted from Project Management Institute, 2017.pg.71)* indicates the processes and stages involved in creating the integration management plan;

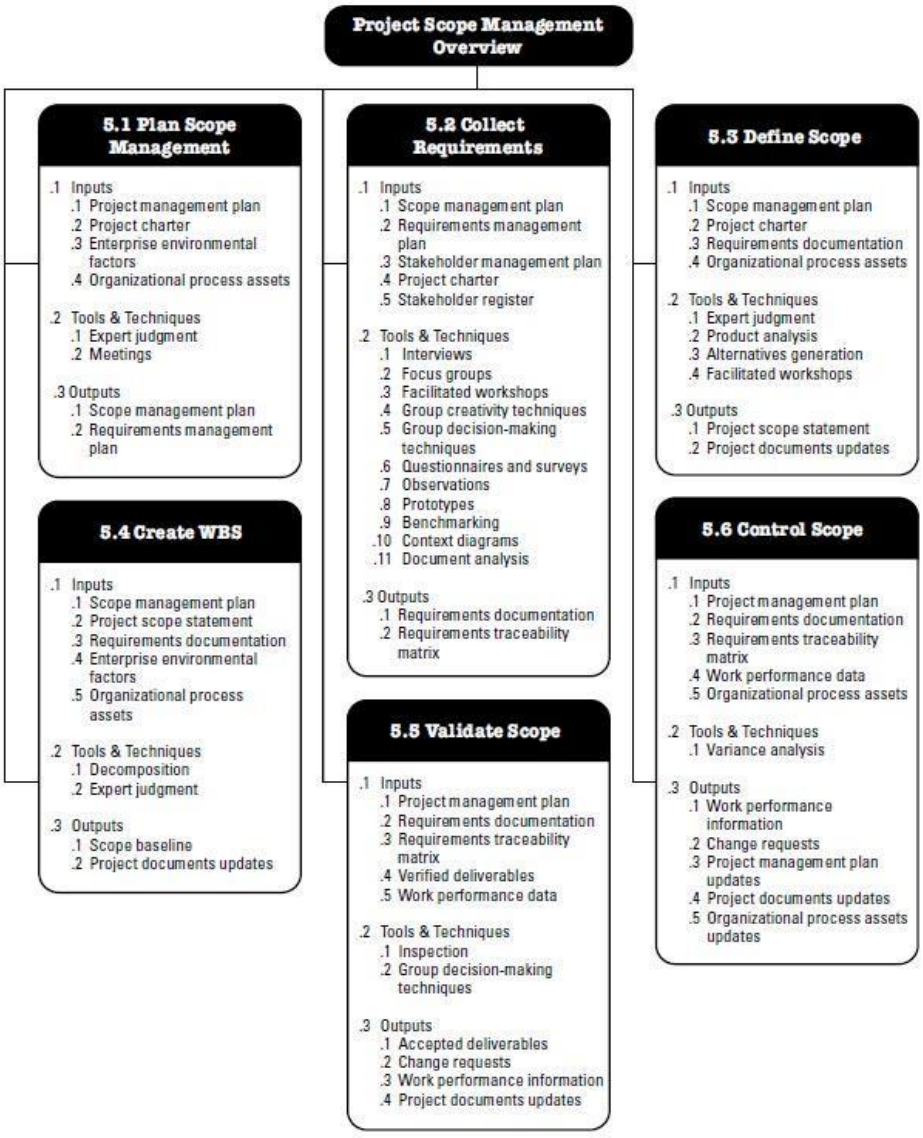


2. Communication Management: This is the process of developing a plan for project communication activities and how the information will be distributed as it relates to the needs of the stakeholders, organizational assets, or needs of the project. A communication médium for the transfer of information from one stakeholder to the next must be derived for the fluid progression of the Project. The following *(extracted from Project Management Institute, 2017. pg.360)* indicates the processes and stages involved developing the communication management plan.



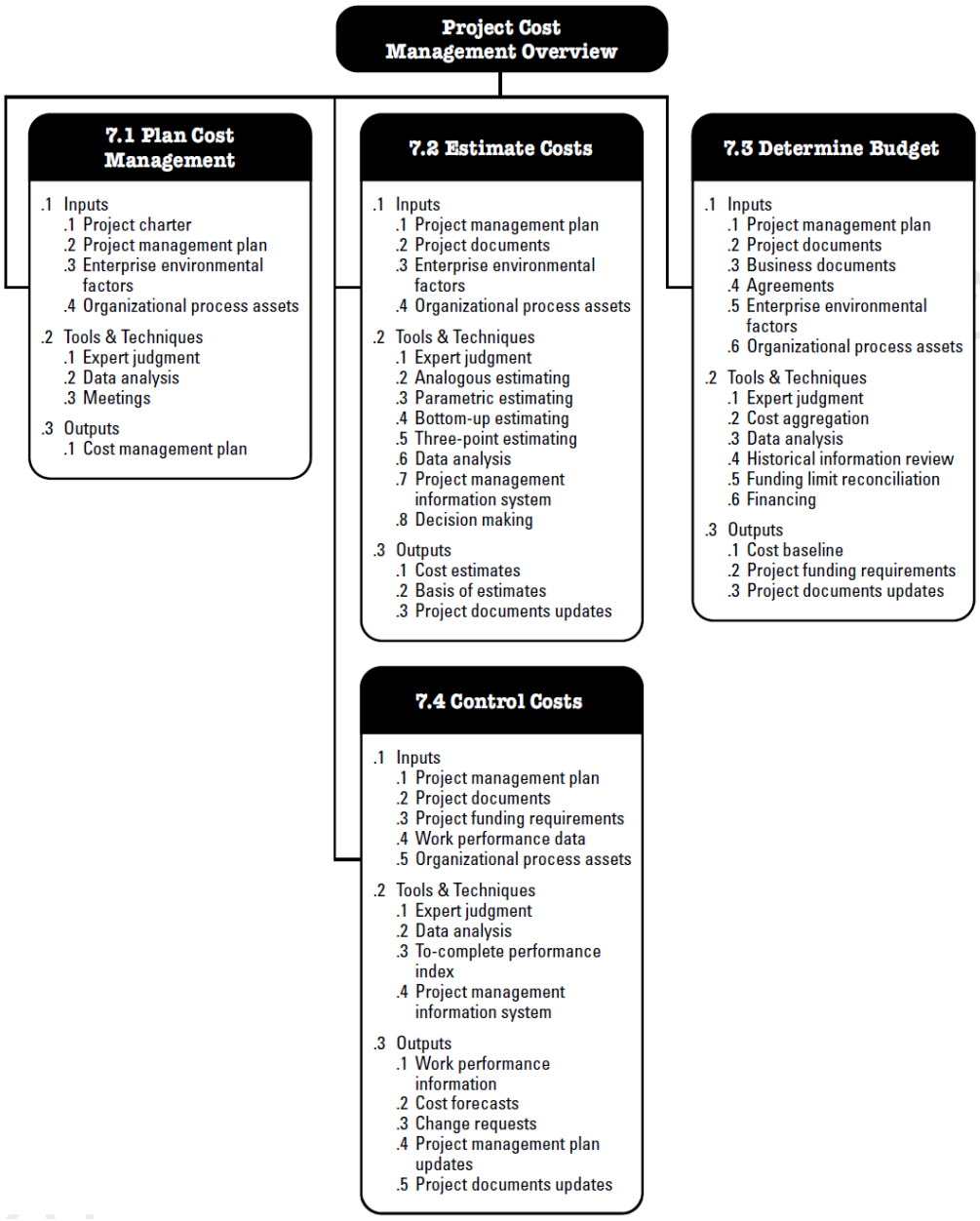
Communication is a key aspect in the development of the FGP. As a result, the relevant plans are being created to aid in managing and monitoring communication among stakeholders throughout the project.

3. Scope Management involves defining all work that needs to be executed during a project and ensures that only tasks identified are done. The following *(extracted from Project Management Institute, 2017.pg.130)* indicates the processes and stages involved developing the scope management plan;



A detailed document indicating all aspects involved in developing the FGP has been developed to accommodate the project.

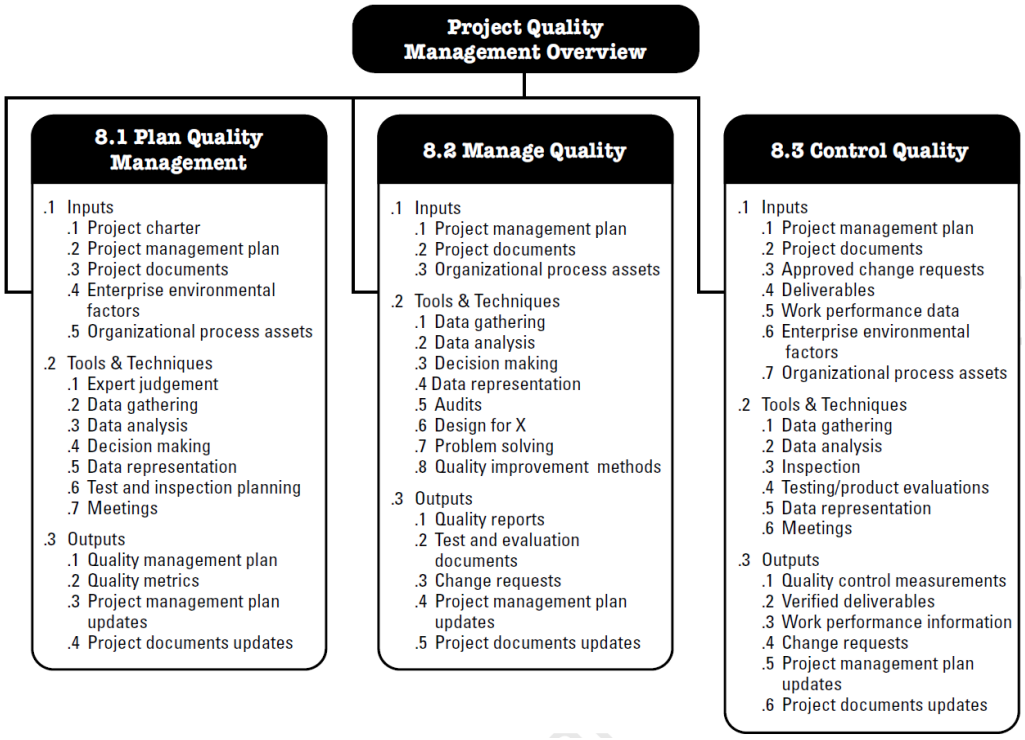
4. Cost Management involves planning and managing the cost of works outline by the scope management plan and being undertaken throughout the project to ensure that it remains within its approved budget.



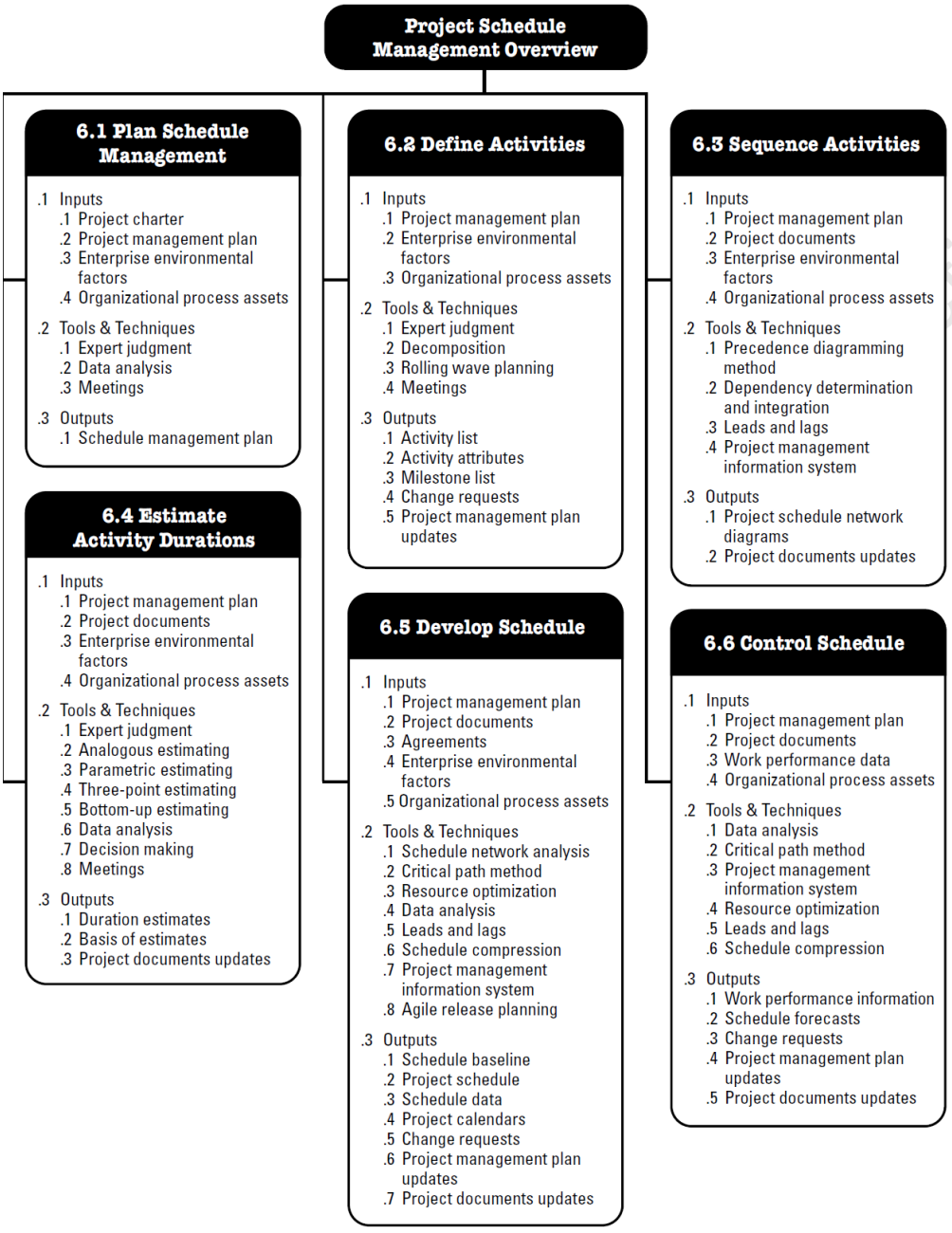
Source: Project Management Institute, 2017.pg. 232

An estimated project cost of $775,000 is forecasted for the planning and expansion of the Guesneau Health Facility.

5. Quality Management involves developing and incorporating an organization's quality within the life cycle of a project. The following (extracted from *Project Management Institute, 2017.pg.272*) indicates the processes and stages involved in developing the quality management plan;



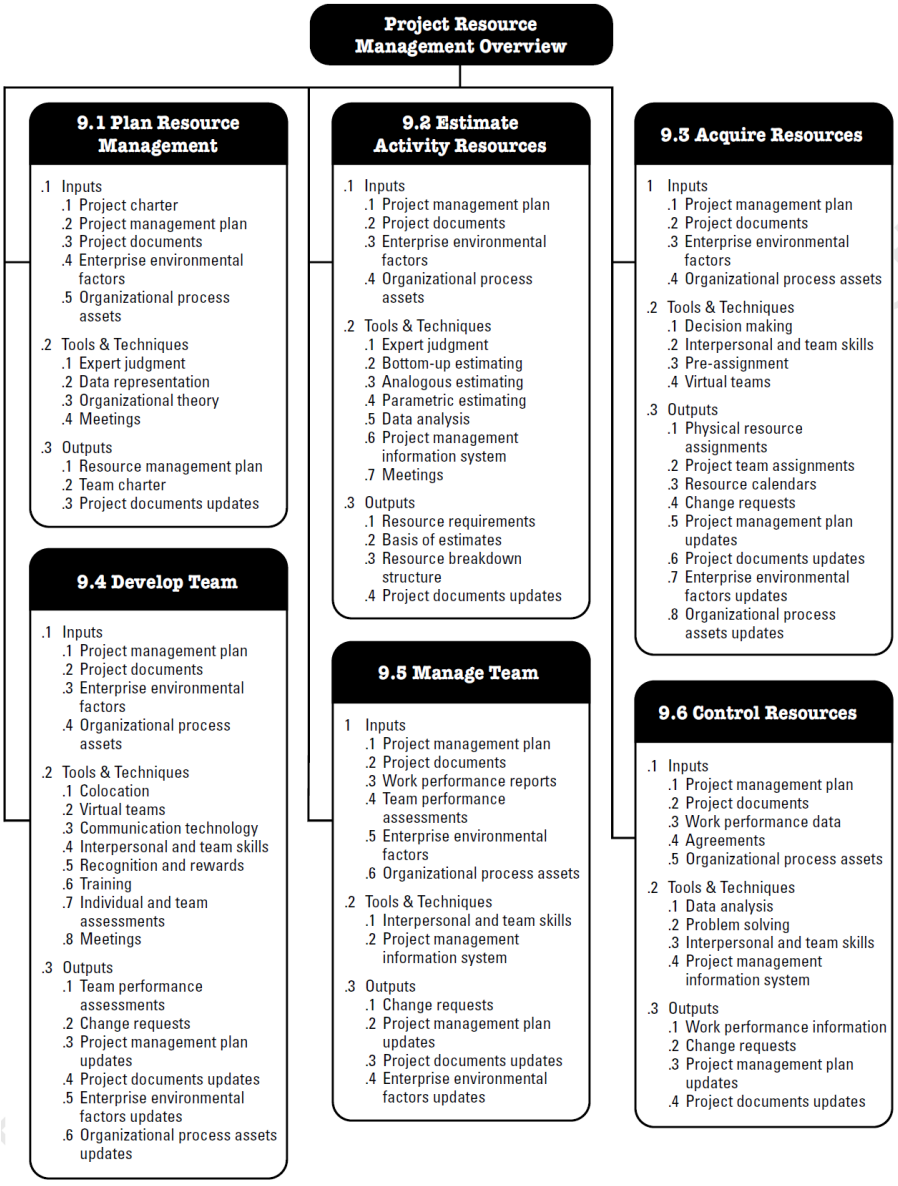
6. Schedule Management is the process of establishing policies, procedures and documentation for the different stages of the project life cycle. The following (extracted from *Project Management Institute, 2017.pg.173*) indicates the processes and stages involved in schedule management;



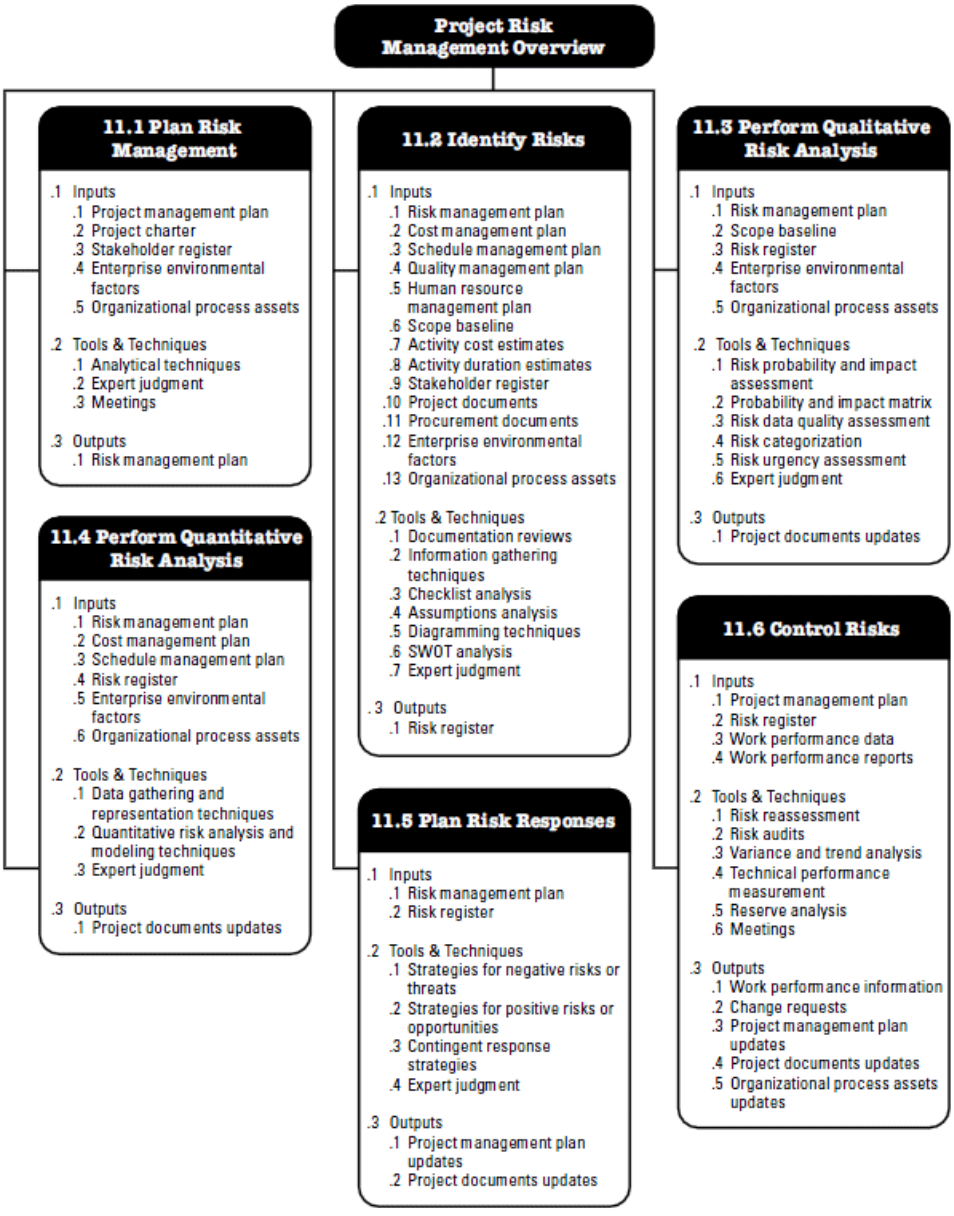
According to the detailed scope indicated within the scope management plan, a schedule has been derived in the form of a Gantt chart for both the

preparation plans for the final graduation project and also for the final graduation project.

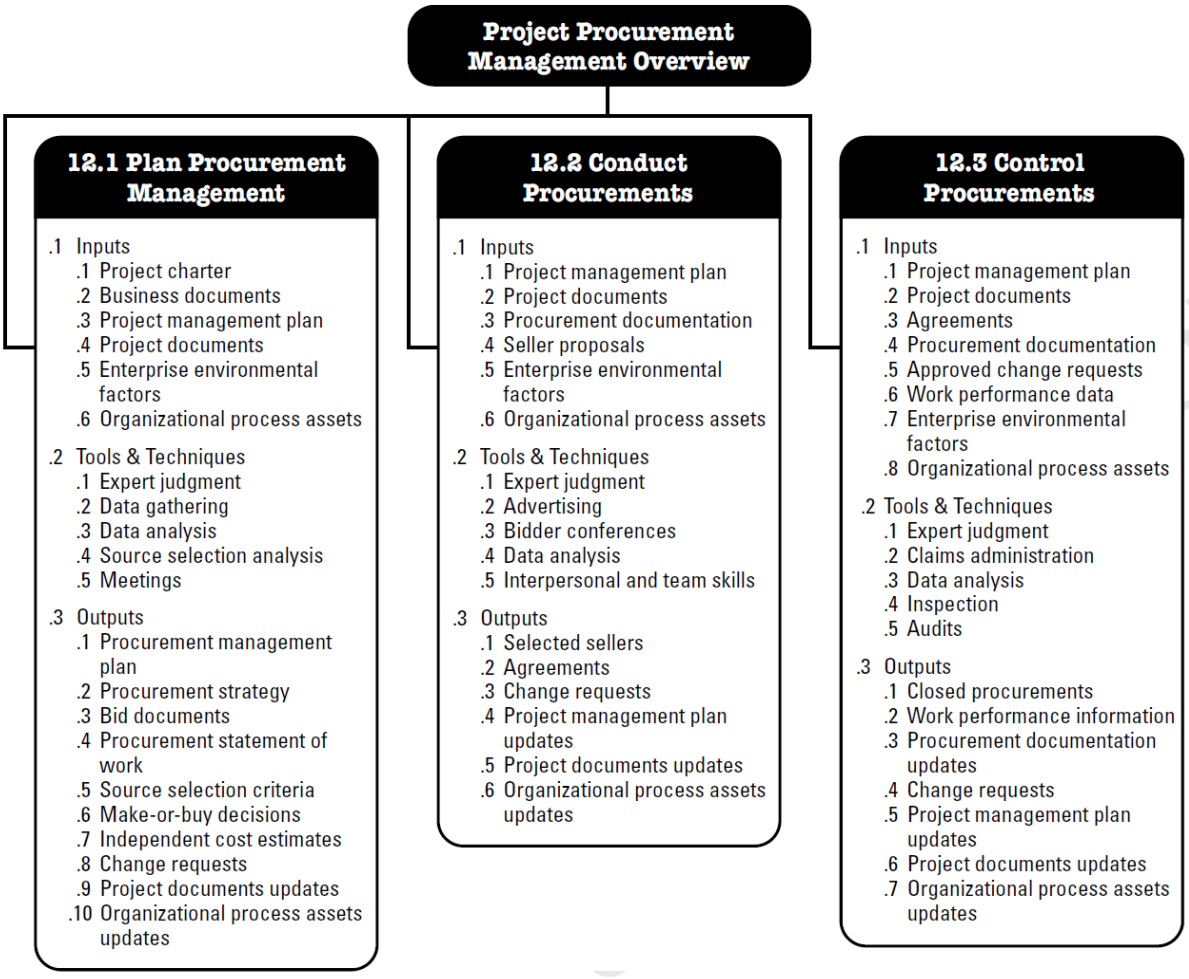
7. Resource Management involves developing a formal system to manage all personnel involved in the project as well as within the project management organization. The following (extracted from *Project Management Institute, 2017.pg.307*) indicates the processes and stages involved in developing a resource management plan;



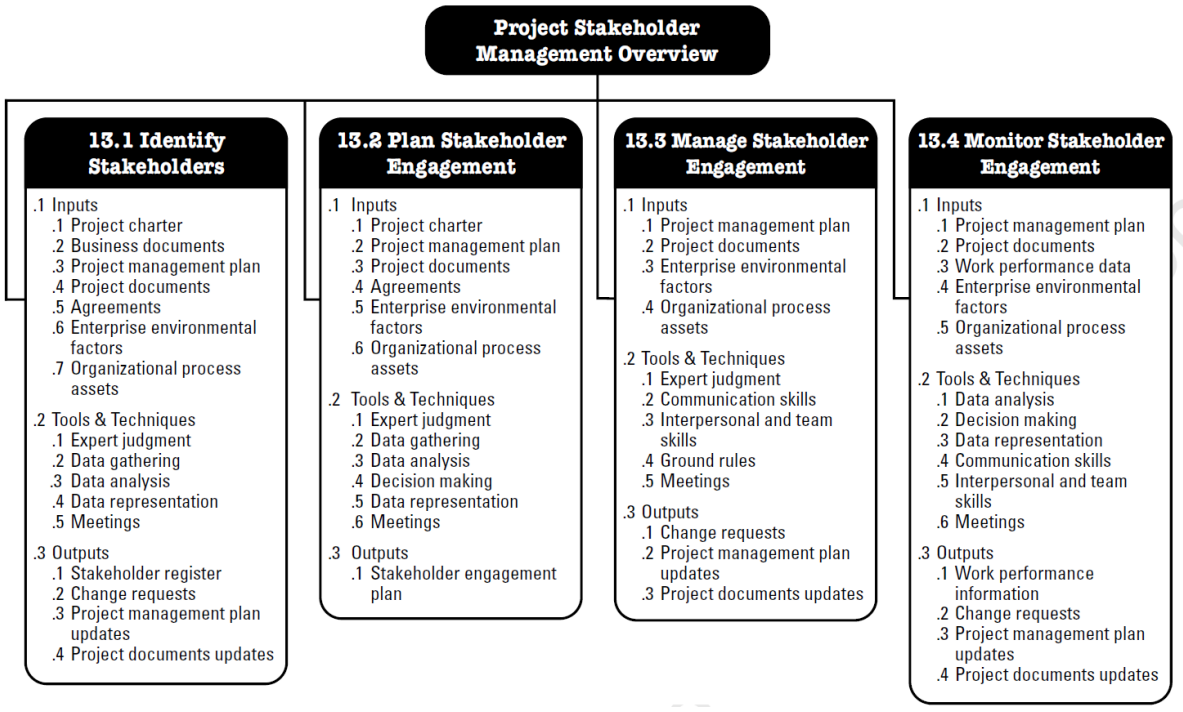
8. Risk Management involves formulating plans to identify, analyze, respond and monitor risks that may arise during the life cycle of a project. The following (extracted from *Project Management Institute, 2017.pg.396*) indicates the processes and stages involved in risk management*;*



9. Procurement Management: this involves the processes used for acquiring goods and/or services needed to execute a project. These are services required externally that the project team is unable to provide. The following (extracted from *Project Management Institute, 2017.pg.460*) indicates the processes and stages involved in procurement management;



10. Stakeholder Management: is the process of identifying, engaging, managing and monitoring people, groups and organizations that could impact or may be impacted by the project. The following (extracted from *Project Management Institute, 2017.pg.504*) indicates the processes and stages involved in compiling the stakeholder management plan;



In this FGP, all stakeholders involved in the process whether able to impact or be impacted by the project have been identified and assessed to develop stakeholder engagement stages.

3. METHODOLOGICAL FRAMEWORK

3.1. Information sources

An information source is defined as anything that may provide knowledge or information about a particular topic. Information sources may be observations, speeches, documents, pictures, organizations etc. (library and information science network, 2016).

3.1.1 Primary sources

A primary source is an immediate first hand account of events, practices, or conditions that are being researched created by witnesses or first recorders of the activity (University of Illinois, 2006).

Primary sources used for the development of the PM plan include:

- Progress reports from project managers on archived government projects on which SJP Consultants consulted on
- Stakeholder meetings
- Interviews with experts in the field of project management
- Project Management research Articles

These primary sources were selected because they provide a first hand account of what was done in similar government projects, in addition to recommendations obtained from project management specialist.

3.1.2 Secondary sources

A secondary source is a source of information formulated from a primary source; it is not obtained first hand and is often an interpretation, analysis or evaluation of the findings of a primary source *(Blakesley, 2006).*

Secondary sources used for FGP include:

- A Guide to Project Management Body of Knowledge; PMBOK Guide, Sixth Edition
- The Standard for Project Management
- Journal Articles

Chart 1 Information sources (Source: compiled by author)

	Objectives	**Information sources**	
		Primary	**Secondary**
1.	Create a detailed framework designed as a guide to efficiently deliver a successful project; i.e. the new health care facility.	Legal documentation and reports from a previously completed project government projects	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals
2.	Define a project charter to formally authorize the project and provide relevant details about the project.	Legal documentation and reports from a previously completed project government projects	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals

3.	Develop a scope management plan to define the work involved in the delivery of the project.	Legal documentation and reports from a previously completed project.	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals
4.	Develop a cost management plan to ensure that the defined scope remains within budget.	Legal documentation and reports from a previously completed government projects.	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals
5.	Develop a schedule management plan to ensure that a realistic time frame is identified and followed to ensure the timely delivery of the project	Legal documentation and reports from a previously completed government projects.	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals

6.	Develop a quality management plan to define quality standards for the delivery of the project.	Legal documentation and reports from a previously completed government projects.	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals
7.	Develop a human resource management plan to determine the relevant personnel involved in each aspect of the delivery.	Legal documentation and reports from a previously completed government projects.	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals
8.	Develop a communications management plan that outlines, highlights and details communication conducted during the project.	Legal documentation and reports from a previously completed government projects.	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals

9.	9. Develop a risk management plan that identifies the risks involved in the project and mitigation measures for dealing with those risks.	Legal documentation and reports from a previously completed government projects.	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals
10.	Develop a procurement management plan that identifies procedures to be utilized for obtaining resources for the project execution.	Legal documentation and reports from a previously completed government projects.	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals
11.	Develop a stakeholder management plan that identifies stakeholders and the relevance and power with the associated project.	Legal documentation and reports from a previously completed government projects	● PMBOK Guide – Project Management Body of Knowledge ● The Standard for Project Management ● Books, websites, journals

3.2 Research methods

Research methods may be defined as various means used to systematically process and analyze information to increase one's understanding. They are various applications utilized to provide trustworthy information about various topics *(Gay & Airasian, 2000).*

Research methods may include;

- **Quantitative and Qualitative:** qualitative utilize surveys and interviews to determine an impact/ outcome in obtaining data. Quantitative looks to prove particular research topics using numbers/quantities
- **Experiments and Non-Experimental:** Cause and effect method to determine the effect of change on various variables/ on the project.
- **Exploratory and Confirmatory:** Exploring new areas with existing knowledge in a particular area versus making predictions on the outcome of a particular activity/variable and comparing results
- **Explanatory:** Focuses on the cause and effort of various relationships during experimentation. This employs both statistical data and experimental data as comparisons of cause and effect are explored in conducting a particular activity.
- **Descriptive**: In this type of research, the outcome is not the focus but rather what it took to achieve that outcome over a specific timeframe. This method may include performing surveys, case studies, comparative and correlational studies.
- **Historical:** Involves studying data from previous projects which may be acquired through reports, project briefs, lessons learnt, project archives, books, articles, etc.
- **Casual - Comparative:** This research is carried out upon the completion/closing of a particular activity. Variables affecting the activity cannot be altered and therefore data collected and factual are true results.
- **Correlational:** Research carried out comparing the relationship between variables (or construction projects for the sake of the FGP project).

- **Evaluation:** Focuses on the impact of social intervention on a project.

Research methods used in this project are as follows;

- Historical Data (Books, articles, project documents)
- Descriptive method
- Quantitative method
- Exploratory method
- Explanatory method

Chart 2 Research methods (Source: Compiled by author)

	Objectives	Historical Data	Case Study
1.	Define a project charter to formally authorize the project and provide relevant details about the project.	PMBOK outlines the requirements of the charter to provide formal authorization of the project.	Project documents provide a sample guide as to the specific requirements to formalize a charter of a similar nature.
2.	Develop a scope management plan to define the work involved in the delivery of the project.	PMBOK provides a breakdown of requirements to be included in the scope management plan.	A breakdown of the specific scope activities which may be applied to this project has been provided.
3.	Develop a cost management plan to ensure that the defined	A variety of components of this knowledge area to formulating the cost management plan is provided.	A sample of costs to be considered as a guide is provided as a guide to formula a new plan. Additionally, lessons

	scope remains within budget.		learned may be utilized to correct downfalls (cost overruns) made in case study plans.
4.	Develop a schedule management plan to ensure that a realistic time frame is identified and followed to ensure the timely delivery of the project	Components affecting time management are provided as a guide to achieving a detailed time management plan.	Lessons learned are used to improve downfalls in time management in this new project.
5.	Develop a quality management plan to define quality standards for the delivery of the project.	The quality management plan may be derived under the guidance of various components outlined by PMBOK.	Utilizing output data and lessons learned, an efficient plan may be derived implementing rectification of previous downfalls of the case study.
6.	Develop a human resource management plan to determine the relevant personnel	PMBOK highlights directives and components to composing a successful human resource management plan.	Observations and activities performed in the case study will act as a guide to producing an efficient human resource management plan.

	involved in each aspect of the delivery.		
7.	Develop a communications management plan that outlines, highlights and details communication conducted during the project.	Guidelines in producing an effective management plan are provided in the PMBOK guide,	The availability of case study documents to review and evaluate the methods used will assist in providing a more functional communications management plan.
8.	9. Develop a risk management plan that identifies the risks involved in the project and mitigation measures for dealing with those risks.	The provision of tools and techniques to assess the various risks to be accommodated for in the risk management plan are outlined.	Available documents outline possible factors to be accommodated for, in producing a new risk management plan, along with the enlightenment of lessons learned for unexpected risks which may now be catered for within this new project.
9.	Develop a procurement management plan that identifies procedures to be utilized for	Guidelines provided will assist in deriving the best possible approach in formulating this plan	Archived documents from the case study provide a guide as well as a detailed idea of what procedures in procurement management were

	obtaining resources for the project execution.		effective and can be used to build this new procurement plan.
10.	Develop a stakeholder management plan that identifies stakeholders and the relevance and power with the associated project.	Guidelines provided by the PMBOK assist in formulating an effective stakeholder management plan, which accommodates all necessary factors.	Previous plans implemented as well as lessons learned provide a guide to produce an effective stakeholder management plan.

3.3 Tools

A tool is defined as something tangible such as a template or software program, used in performing an activity to produce a product or result *(Project Management Institute, 2017).*

Chart 3 Tools (Source: Compiled by author)

	Objectives	**Tools**
1.	Define a project charter to formally authorize the project and provide relevant details about the project.	Project Charter Template
2.	Develop a scope management plan to define the work involved in the delivery of the project.	Requirements Traceability Matrix, Preliminary Risk Identification Matrix, WBS, WBS Dictionary

3.	Develop a cost management plan to ensure that the defined scope remains within budget.	Microsoft Excel to develop Project Budget, Cost Baseline Schedule Template,
4.	Develop a schedule management plan to ensure that a realistic time frame is identified and followed to ensure the timely delivery of the project	Microsoft Project Schedule - Gantt chart, Activity List, Activity Duration Estimates, Critical Path Diagram
5.	Develop a quality management plan to define quality standards for the delivery of the project.	Quality Matrix Template, Quality Criteria Template, EVM Calculations, roles and responsibilities chart, Quality Activities Matrix, Metrics and Quality Baseline,
6.	Develop a resource management plan to determine the relevant personnel involved in each aspect of the delivery.	Hierarchical Chart, RACI Chart, Activity Resource Chart,
7.	Develop a communications management plan that outlines, highlights and details communication conducted during the project.	Communications Matrix Chart, Communications Output Indicators Template,
8.	9. Develop a risk management plan that identifies the risks involved in the project and mitigation measures for dealing with those risks.	Risk Register Template, Risk Breakdown Structure Template, Risk Probability and Impact Matrix Template, Risk Response Plan,
9..	Develop a procurement management plan that identifies procedures to be utilized for obtaining resources for project	Procurement Management Plan Template

	execution.	
10.	Develop a stakeholder management plan that identifies stakeholders and the relevance and power with the associated project.	Stakeholder List, Stakeholder Register, Stakeholder Analysis Matrix Template, Stakeholder Engagement Assessment Matrix,

3.4 Assumptions and constraints

An assumption according to the Project Management Institute 2017, is a factor in the planning process that is considered to be true, real, or certain without proof or demonstration.

A constraint according to the Project Management Institute 2017, is a limiting factor that affects the execution of a project, portfolio or program.

Chart 4 Assumptions and constraints (Source: Compiled by author)

	Objectives	Assumptions	Constraints
1.	Define a project charter to formally authorize the project and provide relevant details about the project.	• All relevant factors are covered/accounted for in the project charter. • All goals specified in the charter are achievable.	Objectives highlighted are irrelevant due to a change in project details.
2.	Develop a scope management plan to define the work involved in the delivery of the project.	• The project scope will not change. • The scope of works identified in research satisfies the needs of stakeholders.	Unforeseen additional works required to complete the project
3.	Develop a cost management plan to ensure that the defined scope remains within budget.	• A cost management plan compiled will be accurate and efficient to complete the project	Unforeseen costs may push the project off-budget.
4.	Develop a schedule management plan to ensure that a realistic time frame is identified and followed to ensure the timely delivery of the project	The project schedule will be followed as planned and therefore the project will be completed on time.	Delays in review during execution due to unforeseen circumstances.

5.	Develop a quality management plan to define quality standards for the delivery of the project.	All factors affecting the quality of delivery will be accounted for within this plan.	A change in environmental factors may occur affecting quality outputs.
6.	Develop a human resource management plan to determine the relevant personnel involved in each aspect of the delivery.	All resources are accounted for and readily available to proceed.	Unexpected limited human resources due to pandemic.
7.	Develop a communications management plan that outlines, highlights and details communication conducted during the project.	The methods of communication selected are clear, concise and achievable among stakeholders.	A change in circumstance may render the communication plan ineffective.
8.	Develop a risk management plan that identifies the risks involved in the project and mitigation measures for dealing with those risks.	All possible risks are accounted for and mitigation measures outlined in the risk management plan.	The occurrence of unforeseen risks push the project off its scheduled course
9.	Develop a procurement management plan that identifies procedures to be utilized for obtaining resources for project execution.	All resources and suppliers are readily available when compiling the plan.	Limited resources due to unforeseen disaster occurrences.
10.	Develop a stakeholder management plan that identifies stakeholders and	Stakeholder relevance, power and influence are correctly identified within	Relevant stakeholders are unavailable for engagement and

	the relevance and power with the associated project.	the stakeholder management plan.	as such, their priorities are unaccounted for.

3.5 Deliverables

A deliverable may be defined as an unique verifiable, product, result or capability to perform a service that is required to complete a process, phase or project *(Project Management Institute 2017).*

Chart 5 Deliverables (Source: Compiled by author)

	Objectives	**Deliverable**
1.	Define a project charter to formally authorize the project and provide relevant details about the project.	Project Charter
2.	Develop a scope management plan to define the work involved in the delivery of the project.	Scope Management Plan
3.	Develop a cost management plan to ensure that the defined scope remains within budget.	Cost Management Plan
4.	Develop a schedule management plan to ensure that a realistic time frame is identified and followed to ensure the timely delivery of the project.	Schedule Management Plan
5.	Develop a quality management plan to define quality standards for the delivery of the project.	Quality Management Plan
6.	Develop a human resource management plan to determine the	Human Resource Management Plan

	relevant personnel involved in each aspect of the delivery.	
7.	Develop a communications management plan that outlines, highlights and details communication conducted during the project.	Communications Management Plan
8.	Develop a risk management plan that identifies the risks involved in the project and mitigation measures for dealing with those risks.	Risk Management Plan
9.	Develop a procurement management plan that identifies procedures to be utilized for obtaining resources for project execution.	Procurement Management Plan
10.	Develop a stakeholder management plan that identifies stakeholders and the relevance and power with the associated project.	Stakeholder Management Plan

3.6 Restrictions

Project integration management is focused on how the other nine (9) knowledge areas work together in executing a project. Seven (7) processes are included in project integration management; develop project chárter, develop project management plan, direct and manage project work, manage project knowledge, monitor and control project work, perform integrated change control and close project.

The project chárter was the only process developed in the project management plan for the Guesneau Health Facility. It is essential to the project management plan because it authorizes the project, which is a vitally important requirement to commence any project.

The additional six (6) processes included in integration management were not developed because the nine (9) knowledge áreas developed in this project management plan provided details on the approach for each process.

4.0 RESULTS ANALYSIS

4.1. Project Charter

The project charter below formalizes the start of the project and specific relevant details about the project including project goals and objectives. The charter also outlines the timeline of the achievement of goals and objectives. Details of the organization and project team leading the project are included as well. The charter also provides an overview of possible risks that may be encountered during the execution of the project and how these risks will impact the project.

<table>
<tr><th colspan="2">PROJECT CHARTER</th></tr>
<tr><td>Date:</td><td>Project Name:</td></tr>
<tr><td>20th May, 2020</td><td>Expansion of the Guesneau Community Health Facility</td></tr>
<tr><td>Knowledge Areas and PM Processes:</td><td>Application Area (Sector / Activity):</td></tr>
<tr><td><u>Knowledge Areas:</u>
Scope Management,
Time Management,
Cost Management,
Communication Management,
Procurement Management,
Stakeholder Management,
Quality Management,
Human Resource Management,
Project Risk Management</td><td rowspan="2">The project is the construction of the Guesneau Health Facility.</td></tr>
<tr><td><u>PM Processes:</u>
Initiating, Planning, Monitoring, Controlling</td></tr>
</table>

Project Start Date:	**Project Finish Date:**
13th April, 2020	19th April, 2021
Project Objectives (General and Specific):	
General Objective:	
The objective of this project is to construct a modern health care facility with the capacity to provide health care services to persons within and around the Guesneau community.	
Specific Objectives:	
1. To construct an upgraded health facility to service the community of Guesneau. 2. To provide easy access to health care services for all community members; particularly the elderly. 3. To provide specific health services that the old facility lacked.	
Project purpose or justification (merit and expected results):	

The current health facility has been in existence for more than thirty years. Due to poor upkeep, the facility is currently in a deplorable condition; the physical building has slowly deteriorated with time. Over the years however, the community has grown and a more modern and accommodating facility has become a necessity.

There are two main hospitals to service the entire island of approximately 182,000 inhabitants. As a result, small health care facilities in each district are essential. Consequently, the government of Saint Lucia (GoSL) decided to undertake rehabilitation of health facilities throughout the island with financial assistance of the Caribbean Development Bank (CDB).

SJP Consultants was the company selected by the CDB to manage the expansion of the Guesneau health facility which is expected to provide additional services to a larger number of people in the community.

Description of Product or Service to be generated by the Project – Project final deliverables:

An upgraded health care facility with sufficient space to provide services to a larger number of individuals, as well as additional facilities to accommodate more health care professionals will be generated by the project. The estimated timeframe for completion of the facility is seven (7) months.

Assumptions:

- The current facility is outdated and in dire need of an upgrade.
- The site of the current facility can accommodate a larger health care facility.
- The community has expanded copiously and the current facility is unable to accommodate the growing community.
- The facility will be completed in accordance with the estimated timeline.

Constraints:

Some constraints have been taken into account in consideration of the execution of this project;

- The existing ground conditions are not as expected; the selected building design, consequently, may not be suited for the site as originally anticipated. This would require a redesign of the structure.

- The costs associated with fixtures and fittings in cost estimations increased overtime resulting in project cost overruns.

Preliminary Risks:

The following risks have been identified;

- Project completion may be affected by natural disasters. The Caribbean is prone to natural phenomena like hurricanes and droughts. These could adversely affect the project. Yet, a contingency plan for the occurrence of natural disaster is difficult to put together as the full extent of damages in the event of a natural disaster cannot be accurately predicted. Both project schedule and scope will be impacted.

- Political manoeuvring can also affect the project completion. General election is imminent; the alignment of the project with the island's general election could have financial repercussions as funding allocated for the project could be diverted or reallocated in the event of a change in administration.

Budget:

Project Cost - $775,247.92

Milestones and dates:

Milestone	**Date**
Project Management Planning	13th April, 2020 - 8th September, 2020
Project Design Phase (Concept, Approval & Permits)	1st June,2020 - 8th September, 2020
Bidding Process	9th September,2020 – 20th October,2020
Award of Contract	21st October, 2020 – 29th October, 2020

Mobilization of Construction	29th October, 2020
Site Work	30th October,2020 – 9th November, 2020
Substructure	4th November, 2020 – 7th December, 2020
Superstructure	8th December, 2020 – 12th January, 2020
Roof Installation	13th January, 2021- 28th January, 2021
Utility Installation	8th December, 2020 – 1st March, 2020
Finishes	2nd March, 2021 – 5th April, 2021
External Works	2nd March, 2021 – 5th April, 2021
Final Acceptance	6th April, 2021-19th April, 2021

Relevant historical information:

SJP Consultants is an organization composed of an Architecture department and an Engineering. The organization's focus over the past ten (10) years has been project designs. Recently, a Project Management Office (PMO) was established within SJP Consultants. The assembling of the governance framework for the department is on going.

Over the past four (4) years, SJP Consultants in collaboration with the Government of St. Lucia (GoSL) has undertaken design projects targeted at community development. The company's portfolio includes the design and consultation for a public pre-school, the Bacadere river dredging project and the Ravine Poisson public laundry facility.

Stakeholders:

The stakeholders impacted by or influence the project are outlined below;

1. Community members/residents
2. Contractor
3. Designers
4. Project management team
5. Suppliers

6. Construction team 7. Community council 8. UCI FGP course facilitators 9. Government 10. Suppliers 11. Funding agency (CDB) 12. Consultants

Approval:	
Project Management Company	SJP Consultants & Project Team
Project Sponsor:	St Lucia Social Development Fund
Project Manager:	S. Jn Pierre
Authorized by:	Signature: 

4.2. Scope Management Plan

PMBOK defines project scope “as the work that needs to be accomplished to deliver the final result” (Project Management Institute,2017, pg.131). The scope management plan was produced to define the work required to complete the expansión of the health facility.

4.2.1. Plan Scope Management

Plan scope management is the process of creating a plan which guides the progression and management of the scope by providing details on how the scope of the project will be defined, validated and controlled. *(Project Management Institute, 2017).* The main inputs utilized in this process are; the project chárter, the project management plan as it relates to quality management, the project life cycle and its developmental approach and the Enterprise Environmental Factors and Organizational Process assets which would impact the progression of the project.

For this project, the components of the project management plan as it relates to quality management is overseen by the project manager and require that activities in the plan scope management process be adequately reviewed and accurately documented for the compilation of the project management plan.

This planning process underwent a hybrid life cycle of which the scope, cost and schedule were predetermined before the execution of the project. As the project progresses however, the opportunity for evolution due to changes occurring during the life of the project is expected.

The construction is impacted by several factors including political, environmental and governance policies of the company. These factors have been considered in the plan scope management process.

4.2.2. Collect Requirements

The collect requirements process involves the collection, documentation and management of project requirements as it relates to the needs of the stakeholder, to meet the objectives of the expansion of the facility. This process entails various components including the project chárter, project management plan, project and

business documents, agreements and enterprise environmental factors that impact the erection of the facility.

With the use of expert judgment, research methods such as surveys and stakeholder meetings held weekly during the first month of planning, the requirements of the facility were compiled, analyzed, prioritized and documented by the project management team. Through these actions, the major requirements that satisfy the main objectives of the project were composed.

The erection of this health facility is expected to benefit many stakeholders as it is on-demand in the Guesneau community, and therefore careful consideration must be taken in finalizing the project requirements.

Details on the stakeholders involved and affected by the project have been provided in the stakeholder management plan (see chart 28: stakeholder analysis matrix)

4.2.2.1. Project Requirements

4.2.2.1.1 *Stakeholder Requirements*

The following stakeholder requirements were derived from the data collection documentation:

- The existing structure must be incorporated within the new facility.
- The pharmacy must be included in the design.
- Proper wáter storage facilities are required.
- Accommodations must be made for the comfort of staff.
- Proper parking facilities are required
- The facility must be furnished with up-to-date equipment.
- Additional examination rooms are required.
- All spaces must be adequately furnished.
- A spacious waiting área is required.
- The project must remain within budget.
- The facility must be secured,fencing therefore must be included.

4.2.2.1.2 *Technical Requirements*

The following technical requirements were derived from the data collection documentation:

- The facility must meet the medical facility and building code standards.
- The building must be designed to withstand natural disasters; the structure must be durable.
- Adequate drainage is required as the área is prone to flooding.
- The facility must meet standards for handicap accessibility.
- The facility must be outfitted with up-to-date, plumbing, electrical, ethernet and air conditioning installations.

4.2.2.3 Requirement Traceability Matrix

The Project Management Institute (2017. Pg 718) defines the Requirements Traceability Matrix as the grid that links product requirements from the origin to the deliverables that satisfy them. Depicted in the table below are the requirements specific to the health facility , its level of priority and means of verify that the specific requirement is satisfied.

Chart 6 Requirements Traceability Matrix (Source: Compiled by author)

REQUIREMENTS TRACEABILITY MATRIX								
PROJECT MANAGER:		Sharm Jn Pierre			CA 01/STL			
PROJECT SPONSOR:		St Lucia Social Development Fund			Construction/Rehabilitation of the Guesneau Health Facility			
REQUIREMENT INFORMATION					RELATIONSHIP TRACEABILITY			
ID	WBS ID	CATEGORY	FUNCTIONAL REQUIREMENT	PRIORITY	TECHNICAL ASSUMPTIONS	TECHNICAL REQUIREMENTS	VERIFICATION	COMMENTS
REQ-001	2.3	Mandatory	The existing structure must be incorporated within the new facility	High	There is sufficient space to accommodate an extension of the existing structure	Extension of the structure should be in keeping with setback requirements according to the building code	Final design indicating integration	
REQ-002	2.3	Mandatory	Must accommodate handicapped users	High	The combined floor area of the proposed and existing structure can accommodate modifications for handicapped users	Spacious restroom stalls, access ramps to enter building, accessible hallways	Final design indicating integration	
REQ-003	2.3	Mandatory	A pharmacy must be included	High	The pharmacy facility can function within		Final design indicating integration	

					the public health facility			
REQ-004	9.5	Mandatory	Proper wáter storage facilities required	High	A sufficient amount of water storage has been allocated for facility use		Final design indicating integration	
REQ-005	2.3	Mandatory	Accommodations are to be made for the comfort of staff	High	Provision of an employee lounge will satisfy staff comfort	15 parking spots required as per building code	Final design indicating integration	
REQ-006	2.3	Mandatory	Proper parking facilities	High	Lot area not covered by the building can accommodate sufficient parking		Final design indicating integration	
REQ-007	3.1	Mandatory	The facility must be furnished with up-to-date equipment	High	Equipment costs will be within the project budget		Procurement records	
REQ-008	2.3	Mandatory	Additional examination rooms	High	Number of rooms included meeting the minimum requirement for a health facility		Final design indicating integration	
REQ-009	2.3, 3.1	Mandatory	Adequately furnished and spacious waiting área	High	Area of space allocated is sufficient		Final design indicating integration	
REQ-010	1.1	Mandatory	Remain within Budget	High	The budget is enough to cover		The outcome of the project	

					all requirements of the project		upon completion	
REQ-011	9.4	Mandatory	Secure facility	High	Fencing the boundary of the lot is sufficient security		Day to day operations	
REQ-012	2.5	Mandatory	The facility must meet medical facility and building code standards	High		Approval of the building design by the relevant government agencies	Approval by building code authorities	
REQ-013	2.3	Mandatory	The facility must be designed to withstand natural disasters (durability of structure)	High	Conventional construction is sufficient to withstand disasters	The structure must be effectively and strategically designed	Approval by building code authorities	
REQ-014	2.3	Mandatory	Adequate drainage accommodations are required as the área is prone to flooding	High		The installation of a proper drainage system must be done according to code	Approval by building code authorities	
REQ-015	8.2	Mandatory	The facility must be outfitted with up-to-date, plumbing, electrical, ethernet and air conditioning installations	High		All installations must be up to standard and must pass all inspections	Fully operational/ functional systems	

4.2.3. Define Scope

The define scope process is composed of the fundamentals involved in the expansion of the Guesneau Health Facility. Through this process, one can identify and define the boundaries and acceptance criteria for the project, in addition to the final selected requirements to be satisfied with the outcome of the project.
The defined scope includes details on the final deliverable, an analysis of the assumptions and constraints of the project. It assesses the expected risks in the fulfillment of the final deliverable among other things.

4.2.3.1 Scope Description

1. Location of Structure: The existing structure is located in the center of the community of Guesneau along the main highway. The structure covers approximately 15% of the total lot area.

2. Description of the project (area and facilities): The existing structure measures approximately 1100 sq.ft. and the extension to be constructed measures approximately 1366 sq.ft.. The combined area is 2466 sq.ft. Repairs and renovations were being undertaken on the existing structure prior to integration with the new extension. The extension includes a staff lounge the upper floor level, four (4) additional treatment clinics, a doctor's office, a kitchen, three (3) additional restrooms (including one handicapped restroom), a pharmacy, storage/supplies room and a treatment room.

3. Major Milestones and their Time Estimates

The following are ethe major milestones and the corresponding timeframe within which they should be achieved;

- Planning Phase: 13th April, 2020 - 6th September, 2020
- Design and Approval Phase: 1st June, 2020 - 6th September, 2020

- Tender and Award of Contract: 7th September, 2020 - 29th October, 2020
- Construction Phase: 30th October, 2020 - 18th April, 2021

4. Final Facility Design

The new facility will be of modern design, as the existing structure is outdated and in poor condition. Additionally, the existing structure is unable to accommodate a highly populated developing community. The approved design drawings are highlighted below.

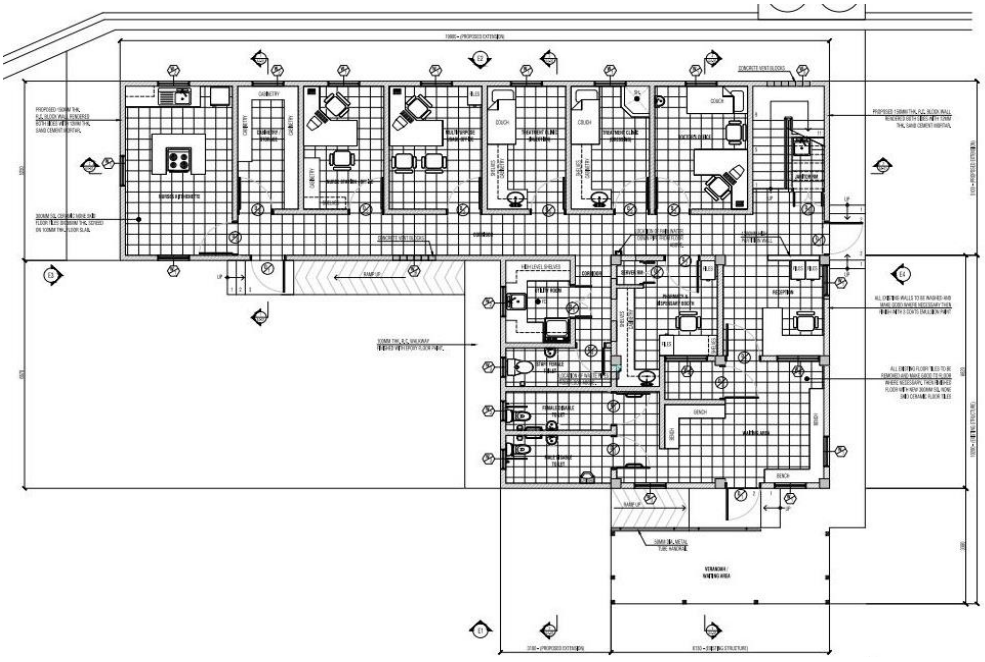


Figure 3. Proposed Ground Floor Layout (Source: compiled by author)

The ground floor of the new facility will contain a kitchenette, storage room, two treatment rooms, one doctor's office, a pharmacy, waiting área and toilets. This will be constructed of a combination of reinforced concrete for the slab and concrete blockwork for the walls. Finishes will include ceramic tiles for the floors and three quotes of emulsion paint as specified by construction drawings.

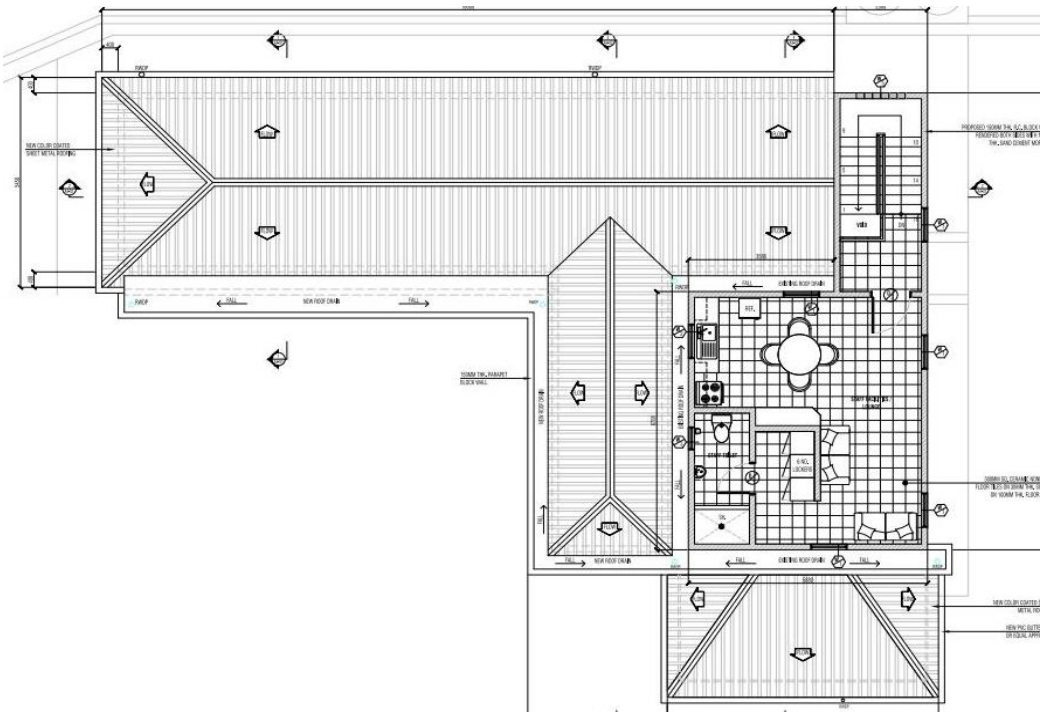


Figure 4. Proposed First Floor Layout (Source: compiled by author)

The first floor will house a staff lounge and will be composed of materials of a similar nature to the ground floor in terms of the structure and finishes.

Figure 5. Proposed Elevation 1 (Source: compiled by author)

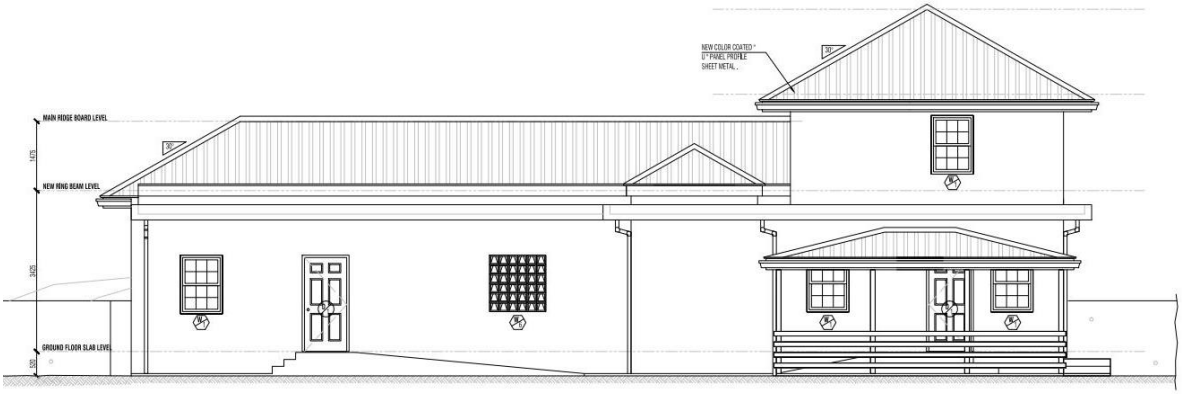


Figure 6. Proposed Elevation 2 (Source: composed by author)

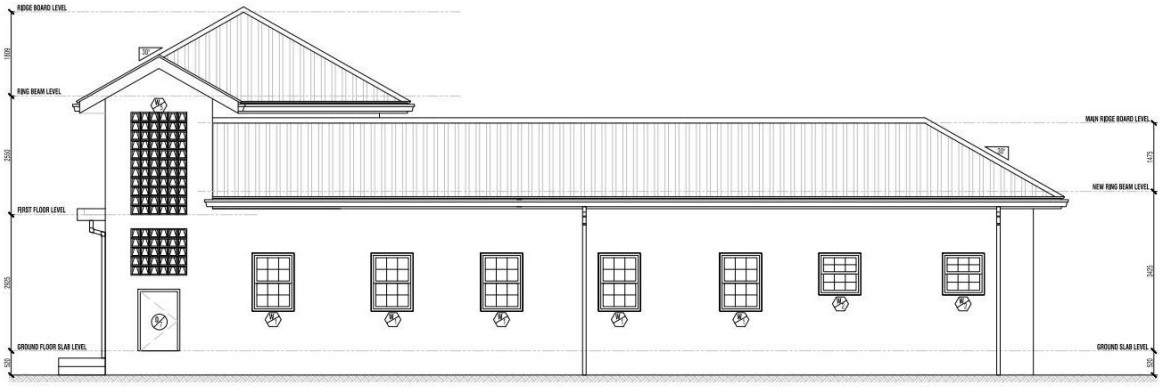


Figure 7. Proposed Elevation 3 (Source: composed by author)

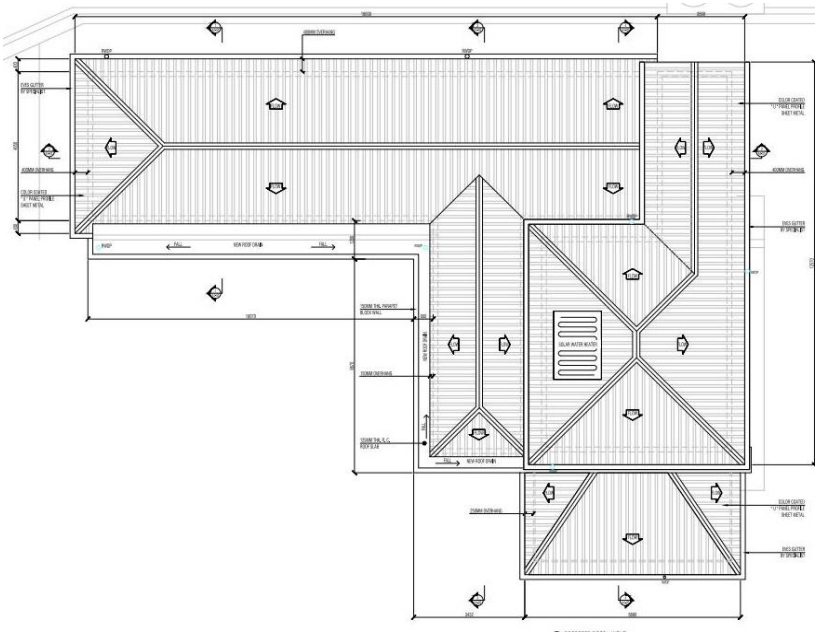


Figure 8. Proposed Roof Layout (Source: composed by author)

The roof is a combination of hip, gable and lean-to types and will be constructed of a timber frame structure and finished with u-panel galvanize sheets. It will also be outfitted with a combination of reinforced concrete and aluminium guttering for efficient roof drainage.

5. Assumptions

The following are assumptions made for the advancement of the project:

- The design of the new facility will adequately accommodate the rapidly expanding community.
- Renovation and expansion rather than reconstruction was the better holistic option.
- The workforce is willing to work through weekends and holidays, especially if the project is behind schedule.
- The project budget is adequate.
- Project funding will flow consistently during the project.
- The building even through construction, will be able to withstand natural disasters.
- The project management team is competent enough to manage the project.

6. Constraints

These constraints are to be taken into account when considering the execution of this project;

- Unexpected adverse ground conditions which may be unsuitable for the building design.
- Increases in the cost of fixtures and fittings during project implementation.
- Refusal of the workforce to work on holidays and weekends which could affect the timeline of the project.
- A second wave of COVID 19 which could cause a shutdown of the worksite and an extensive delay in the project schedule.
- Expiration of funds from the funding agency if it is not utilized by a certain period.

7. Project Deliverable

The final project deliverable is a two (2) storey completed concrete structure, furnished with up-to-date medical equipment appropriate for a health center.

8. Acceptance Criteria

In order for the project to be deemed complete,

- All milestones must be achieved as specified in the project management plan.
- There must be a final walkthrough by the project manager, contractor and project sponsor, after which, they must all agree that the project is complete.
- A final report must be submitted by the project manager to the sponsor and funding agency.
- The project sponsor must sign off on the completion of the project; the sponsor must deem the project complete.

9. Project Exclusion

Works not included in the scope are as follows;

- Procurement of professional medical equipment
- Additional extension outside contracted works

10. Preliminary Risk Register

Within the life cycle of the project, a number of risks will be encountered, especially during the construction phase. The major risks and risk response plans have been compiled below.

Chart 7 Risk Identification Matrix (Source: Compiled by author)

RBS CODE	Cause	Risk	Consequence	Prob-ability	Impact	Response Plan
1.1	Bad Weather	Natural disaster	• Delay in the project schedule • Possibility of exceeding project budget	High	High	Assess damages. Refer to contingency for additional financing. Review Project Schedule
1.2	Generalized Scope	Scope Creep	• Cost Overruns • Delay in the project schedule • Inability to meet the project deadline	High	High	Intermittently revisit project budget and scope with client /sponsor
		Lengthened project schedule	• Delay in project completion	High	High	Revisit project schedule upon revision of project scope
1.3	Political Alignment	Loss of funds due to reassignment of priorities by government	• Incomplete project	High	High	Complete the project before the next election.
1.4	Corona Virus Pandemic (2nd wave)	Halt in project	• Extensive delay in the project schedule • Possible expiration of project funds	High	High	Apply for an extension of the project schedule

4.2.4. Work Breakdown Structure (WBS)

To effectively manage the progress of the project, the workload was broken down into work packages containing corresponding activities required to achieve the successful completion of the overall project. Each of these work packages contains an estimated timeframe and deadline by which they need to be fulfilled, as indicated in the work schedule (Project Schedule: chart 12).

4.2.4.1. WBS Dictionary

Compiled in this table is a breakdown of each work package. Detailed information is provided on each activity. The activities included in this table directly correspond to the inputs of the work packages stated in the above WBS.

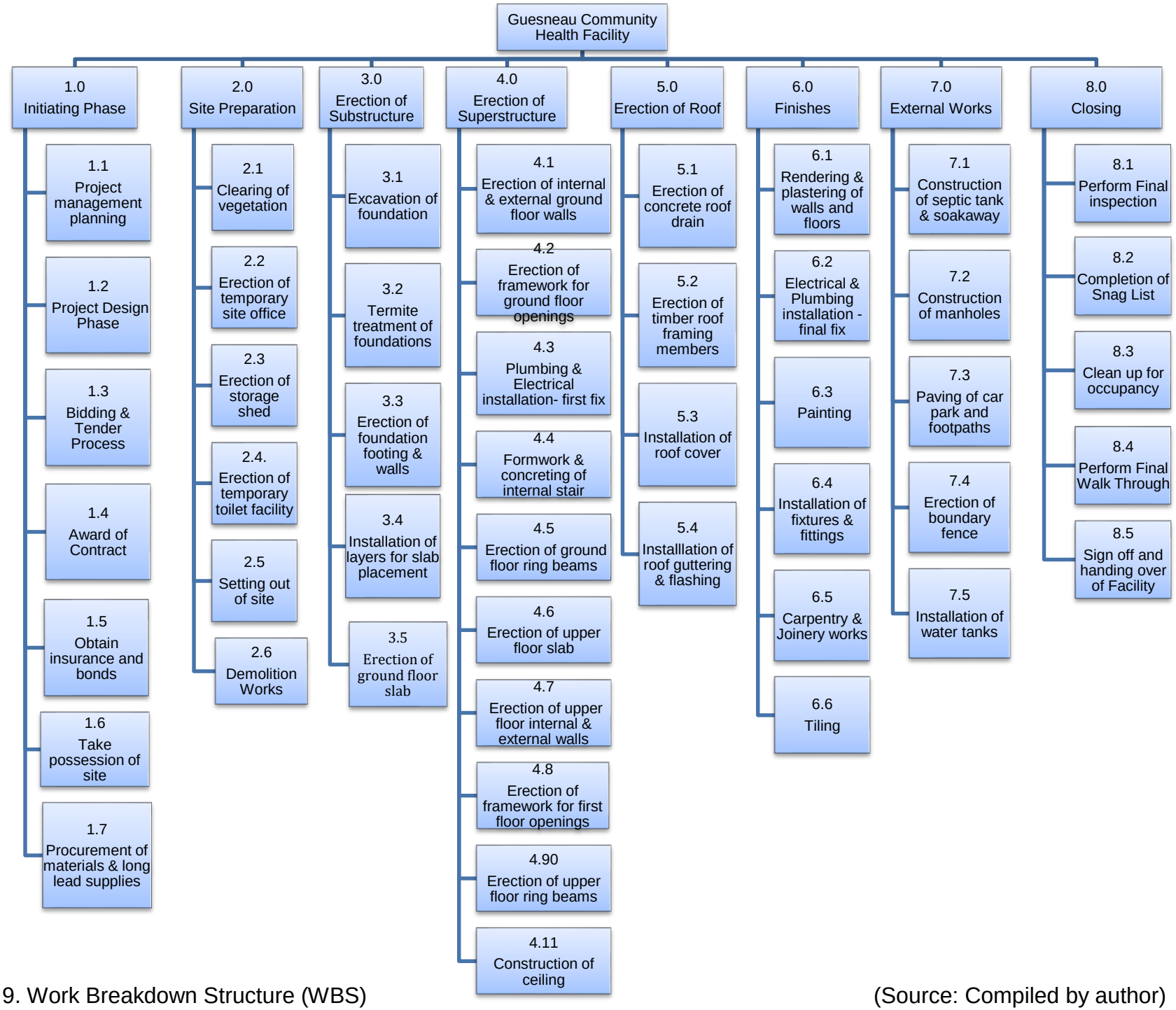


Figure 9. Work Breakdown Structure (WBS) (Source: Compiled by author)

Chart 8: WBS Dictionary (Source: Compiled by author)

Project Name: Rehabilitation of the Guesneau Health Facility					
Work Package	Work Package Description	Assumptions & Constraints	Quality Metrics	Resources Assigned	Schedule Milestone
1.0 Initial Phase	• Compilation of project management and design plans • Selection of contractor and preparation of insurance and bonds to commence works	• Design team is available and fully capable of executing design drawings • All pre-requisite requirements by the government agencies will be satisfied before commencement of construction • Knowledge base of Project team is derived from the PMBOK • Contractor is truthful on his qualifications and experience in construction	• Legibility and detail of drawings • Detailed information on approaches for all knowledge areas	• Design Team • Project Management Team • Contractor • Insurance & Bonds • Financing • Designated site	• Completion & Approval of design drawings • Completion of project management plan • Selection of a contractor • Commencement of construction
2.0 Site Preparation	• Execution of clearing of vegetation,	• Tropical weather will not impact the	• Progression of activities undisturbed	• Building materials	• Completion of site preparation

	setting out of building and construction the temporary office and storage shed	progression of preparation. • All resources and resource personnel are readily available		• Heavy duty equipment • Resource personnel	
3.0 Erection of Substructure	• This involves the excavation and erection of the building foundation up to the ground floor slab	• Materials are readily available. • Resource personnel are able to execute within the allotted timeframe and meet the quality requirements.	• Maintained project schedule • Positive results from material testing activities • Approval from inspection by Project Manager	• Building materials • Resource personnel • Hand tools • Detailed drawings	• Completion of building foundation
4.0 Erection of Superstructure	• This includes the erection of doors, windows and walls in addition to first fix installation of plumbing and electrical	• Materials are readily available. • Skill level of labourers are sufficient to produce favourable work.	• Approved quality inspections	• Building materials • Resource personnel • Hand tools • Detailed drawings	• Complete erection of superstructure

	• Also included is the erection of the first floor slab walls, doors & windows	• Materials are delivered on time. • Details specified in the drawings at executed as directed			
5.0 Erection of Roof	• Installation of roofing components onto the structure	• Weather remains promising • Materials are delivered on time. • Roof Connections are executed as instructed by detail drawings. • Sufficient resource personnel are available for execution	It's ability to withstand bad weather conditions Approval from inspection by Project Manager	• Building materials • Resource personnel • Hand tools • Detailed drawings	• Complete erection of roof structure
6.0 Finishes	This involves completion of tiling, painting, installation of	• Tasks are executed as per project schedule	Quality of outputted work	• Building materials • Resource personnel	• Completion of building internally and externally

	fitting and erection of cabinetary throughout the building	• Quality of workmanship is outstanding • All long lead procurements arrive in a timely manner • All subcontracted specialists are available to execute tasks.		• Hand tools	
7.0 External Works	This involves the casting of the driveway, erection of fencing and installation of water tanks	• Tropical weather conditions will not disturb work progress • External works are executed as per detailed drawings	Quality of outputted work	• Resource personnel • Materials	• Completion of external installations, erection of guttering and paving of driveway
8.0 Closing	This involves approval of completed works, final inspection and approval by the project sponsor.	All aspects of the project will be completed perfectly There will be no delays in work progress.	Approval from inspection by project manager and project sponsor		• Completion of building • Approved sign off of project by project sponsor • Handing over of site

4.2.5. Validate Scope

The validate scope process involves providing a formalized acceptance of work packages completed. Verifying that each package is adequately completed, confirms that the project is progressing along the right track.

During each monthly progress meeting, details on the work packages executed for the previous month are reviewed and critiqued, by the management team and major stakeholders. A criterion checklist will be used to keep track of progress and will be utilized during a preliminary walk-through of the site prior to the monthly progress meetings. This checklist is reflective of the major project requirements and assesses the work performance in that regard.

Upon completion of this assessment, the acceptance criterion is formally signed off and approved by the project sponsor. The information is then compiled in a report which also includes additional information on the progress of work performance and changes due to a possible lag in work performance. Any change requests approved during this period are presented in this document. The report is compiled by the project manager and submitted to the project sponsor monthly.

4.2.6. Control Scope

The control scope process is conducted throughout the execution of the project to ensure that any change requests or recommended corrective actions in the execution of the health facility are effectively reviewed, documented, controlled and managed upon implementation of changes. All changes presented for review, must be in alignment with the overall objectives of the project. Change request forms are to be completed, and all change requests are to be presented to the change review board for consideration (*see appendix 4*).

An impact assessment of change on the approved scope and schedule, in addition to possible constraints associated with the change, will be made to determine its validity.

All approved changes must be integrated, not only in the execution of the project but also in the relevant sections of the project management plan as they may have a major impact on multiple áreas.

Any design changes approved by the project management team must be submitted as a site instruction. Only the design team working under the project management team can issue such a document (*see appendix 5*).

Formal communication must be forwarded to all major stakeholders informing them of updates to the project scope following approved changes.

4.3. Schedule Management

For project tasks to flow consistently and to achieve timely delivery, it is necessary to create a schedule outlining essential tasks, policies, procedures and documentation detailing project requirements from the planning stage to the controlling stage. This chapter provides details of the estimated activities and timelines required to construct the health facility.

The project schedule is an important part of project planning and gives the project team a realistic timeline to monitor the project progression throughout its execution, allowing them to prioritize, approve or reject tasks that affect the successful timely delivery of the project.

4.3.1 Plan Schedule Management

During the plan schedule management process, resources were gathered from conducting data analyses and meetings held weekly for duration of six (6) weeks. This aided in determining the methodology implemented and integrated into the project. Additional resources such as historical records, lessons learnt, project research and expert judgment were also used in compiling the corresponding data presented in this proposal.

4.3.2 Define Activities

During the define activities process, the activities required to produce the health facility were identified and documented using the WBS as a guide for the team to proceed with execution. The WBS provided a detail breakdown of work packages outlining activities to be conducted from start to finish. Details on the project scope (including project objectives, stakeholder and other requirements) have been defined in previous sections of this document.

Change is inevitable. Hence, though a definitive schedule was prepared, it must be continuously updated as the project progresses. This is in keeping with the adaptive life cycle method in which the schedule is adapted in alignment with change occurrence.

Chart 9 Activity List (Source: compiled by author)

Activity List			
Project: Construction/ Rehabilitation of the Guesneau Health Facility			
Activity ID No.	**Activity Name**	**Description of Work**	**Responsibility**
1.0	Initiating Phase	Execute detailed Project planning	SJP Consultant Project Manager, Contractor
1.1	Project Management Planning	Compile documentation to provide detailed guidance throughout the progression of the project.	SJP Consultant Project Manager, Project team
1.2	Project Design & Approval Phase	Undertake the following: • Conceptual Design • Preliminary Drawings • Design Development • Submission design drawings to Government Agencies • Approval for construction	Project Manager, SJP Consultants design team
1.3	Bidding & Tender Process	Compile tender documents and requesting bids from various contractors.	SJP Consultant Project Manager
1.4	Award of Contract	Select of a contractor to perform the work.	SJP Consultant Project Manager
1.5	Procurement of Insurance and Bonds	Obtain supporting documents to cover project work and work team to be performed.	Contractor
1.6	Mobilization of Construction	Transfer resources and machinery needed to commence construction to the site for commencement.	Contractor, workmen
1.7	Procurement of Materials & Long Lead Supplies	Obtain materials, supplies, fixtures & fittings & equipment for construction	SJP Consultant Project Manager
2.0	**Site Preparation**	Preparation of the site for commencement of construction	Contractor, workmen
2.1	Clearing of Vegetation		Contractor, workmen
2.2	Erection of Temporary Site Office		Contractor, workmen
2.3	Erection of Storage Shed		Contractor, workmen

2.4	Erection of Temporary Toilet Facility		Contractor, workmen
2.5	Setting out of Site		Contractor, workmen
2.6	Demolition Works		Contractor, workmen
3.0	**Erection of Substructure**	Construct the foundation up to the ground floor slab.	Contractor, workmen
3.1	Excavation of Foundation		Contractor, workmen
3.2	Termite Treatment of Foundations		Contractor, workmen
3.3	Erection of Foundation Footing and Walls		Contractor, workmen
3.4	Installation of Layers for Slab Placement		Contractor, workmen
3.5	Erection of Ground Floor Slab		Contractor, workmen
4.0	**Erection of Superstructure**	Erect the physical structure; ground and first floor.	Contractor, workmen
4.1	Erection of Internal & External Ground Floor Walls		Contractor, workmen
4.2	Erection of Framework for Ground Floor Openings		Contractor, workmen
4.3	Plumbing and Electrical First Fix		Contractor, workmen
4.4	Formwork & Concreting of Internal Stair		Contractor, workmen
4.5	Erection of Ground Floor Ring Beams		Contractor, workmen
4.6	Erection of Upper Floor Slab		Contractor, workmen
4.7	Erection of Upper Floor Internal & External Walls		Contractor, workmen
4.8	Erection of Framework for First-Floor Openings		Contractor, workmen
4.9	Erection of Upper Floor Ring Beams		Contractor, workmen

4.11	Construction of Ceiling		Contractor, workmen
5.0	**Roof**	Erect the relevant roofing elements of the structure	Contractor, workmen
5.1	Erection of Concrete Roof Drain		Contractor, workmen
5.2	Erection of Timber Roof Framing Members		Contractor, workmen
5.3	Installation of Roof Cover		Contractor, workmen
5.4	Installation of Roof Guttering & Flashing		Contractor, workmen
6.0	**Finishes**	Application of all building finishes & furnishings.	Contractor, workmen
6.1	Rendering & Plastering of Walls & Floors		Contractor, workmen
6.2	Electrical & Plumbing Installation- Final Fix		Contractor, electrician, plumber
6.3	Painting		Contractor, workmen
6.4	Installation of Fixtures & Fittings		Contractor, workmen
6.5	Carpentry and Joinery Works		Contractor, carpenters
6.6	Tiling		Contractor, workmen
7.0	**External Works**	Complete all external works and installations	Contractor, workmen
7.1	Construction of Septic Tank & Soakaway		workmen
7.2	Construction of Manholes		workmen
7.3	Paving of Car Park and Footpaths		workmen
7.4	Erection of Boundary Fence		workmen
7..5	Installation of Wáter Tanks		workmen
8.0	**Closing**	• Wrap out of all works • Obtain final approval of the deliverable	SJP Consultants Project Management Team, Contractor, Sponsor
8.1	Perform Final Inspection	• Examine all final products	SJP Consultants Project Management Team, Contractor, Sponsor

8.2	Completion of the Snag List	• Recty all issues that arose during the final inspection.	Contractor, workmen
8.3	Clean up for occupancy	• Clean and clear up all debris, tools and machinery.	Contractor, workmen
8.4	Final walk-through	• Undertake final examination of complete facility	SJP Consultants Project Management Team, Contractor,
8.5	Sign Off and Handing Over of Facility	• Obtain the approval of the project sponsor on project completion	Sponsor

4.3.3 Sequence Activities

To obtain the greatest efficiency where project constraints have been identified, relationships are identified and documented as per project activities.

The sequence of activities required to execute the erection of the health facility was compiled by utilizing the scope baseline details (outlined in previous sections of this document) to satisfy the project management aspect of this area.

Specific details provided by the Activities Attributes Table have also been outlined in the Project Schedule and the activities list, indicating activity description, resources utilized, predecessor scheduling and dependencies and successor scheduling and dependencies. Therefore, an activity attributes table was not completed for this section.

4.3.4 Estimate Activity Duration

Within the estimate activity duration process, the estimated duration for each activity is specified. The final estimated activity durations were derived from historical data from a similar project previously conducted by the project management team (This method is referred to as the analogous estimating method. Where variations in the schedule appear, expert judgment was used to derive durations. In an effort to finalize the estimated activity durations, the project team met twice a week for a two-month duration, during which the project activities and durations were developed and reviewed until the final project schedule was derived.

Chart 10 Activities Duration Estimate (Source: compiled by author)

Activity Duration Estimates			
Project: Expansion of the Guesneau Health Facility			
Activity ID No.	**Activity Name**	**Duration (days)**	**Predecessors**
1.0	Initiating Phase	**238**	
1.1	Project Management Planning	107	
1.2	Project Design & Approval Phase	72	
1.3	Bidding & Tender Process	30	
1.4	Award of Contract	7	
1.5	Get insurance and bonds	21	
1.6	Mobilization of Construction	1	
1.7	Procurement of materials & long lead supplies		
2.0	**Site Work/Preparation**	7	1.6
2.1	Clearing of Vegetation	2	
2.2	Erection of Temporary Site Office	1	
2.3	Erection of Storage Shed	1	
2.4	Erection of Temporary Toilet Facility	1	
2.5	Setting out of site	1	
2.6	Demolition Works	1	
3.0	**Erection of Substructure**	27	2.5
3.1	Excavation of Foundation	9	
3.2	Termite Treatment of Foundations	3	

3.3	Erection of foundation footing and walls	8	
3.4	Installation of layers for slab placement	3	
3.5	Erection of ground floor slab	4	
4.0	**Erection of Superstructure**	39	3.0
4.1	Erection of internal & external ground floor walls	7	
4.2	Erection of framework for ground floor openings	2	
4.3	Plumbing and electrical first fix	10	
4.4	Formwork & concreting of internal stair	4	
4.5	Erection of ground floor ring beams	2	
4.6	Erection of upper floor slab	1	
4.7	Erection of upper floor internal & external walls	7	
4.8	Erection of framework for first floor openings	2	
4.9	Erection of upper floor ring beams	2	
4.11	Construction of ceiling	2	
5.0	**Roof**	15	4.0
5.1	Erection of concrete roof drain	3	
5.2	Erection of timber roof framing members	8	
5.3	Installation of roof cover	2	
5.4	Installation of roof guttering & flashing	2	
6.0	**Finishes**	**80**	4.0, 5.0
6.1	Rendering & Plastering of walls & floors	10	
6.2	Electrical & Plumbing installation- final fix	15	
6.3	Painting	14	

6.4	Installation of Fixtures & Fittings	6	
6.5	Carpentry and joinery works	15	
6.6	Tiling	20	
7.0	**External Works**	**8**	6.0
7.1	Construction of septic tank & soakaway	2	
7.2	Construction of manholes	1	
7.3	Paving of car park and footpaths	2	
7.4	Erection of boundary fence	2	
7..5	Installation of wáter tanks	1	
8.0	**Closing**	**7**	6.0, 7.0
8.1	Perform final inspection	1	
8.2	Completion of snag list	2	
8.3	Clean up for occupancy	2	
8.4	Perform final walk-through	1	
8.5	Sign off and handing over of facility	1	

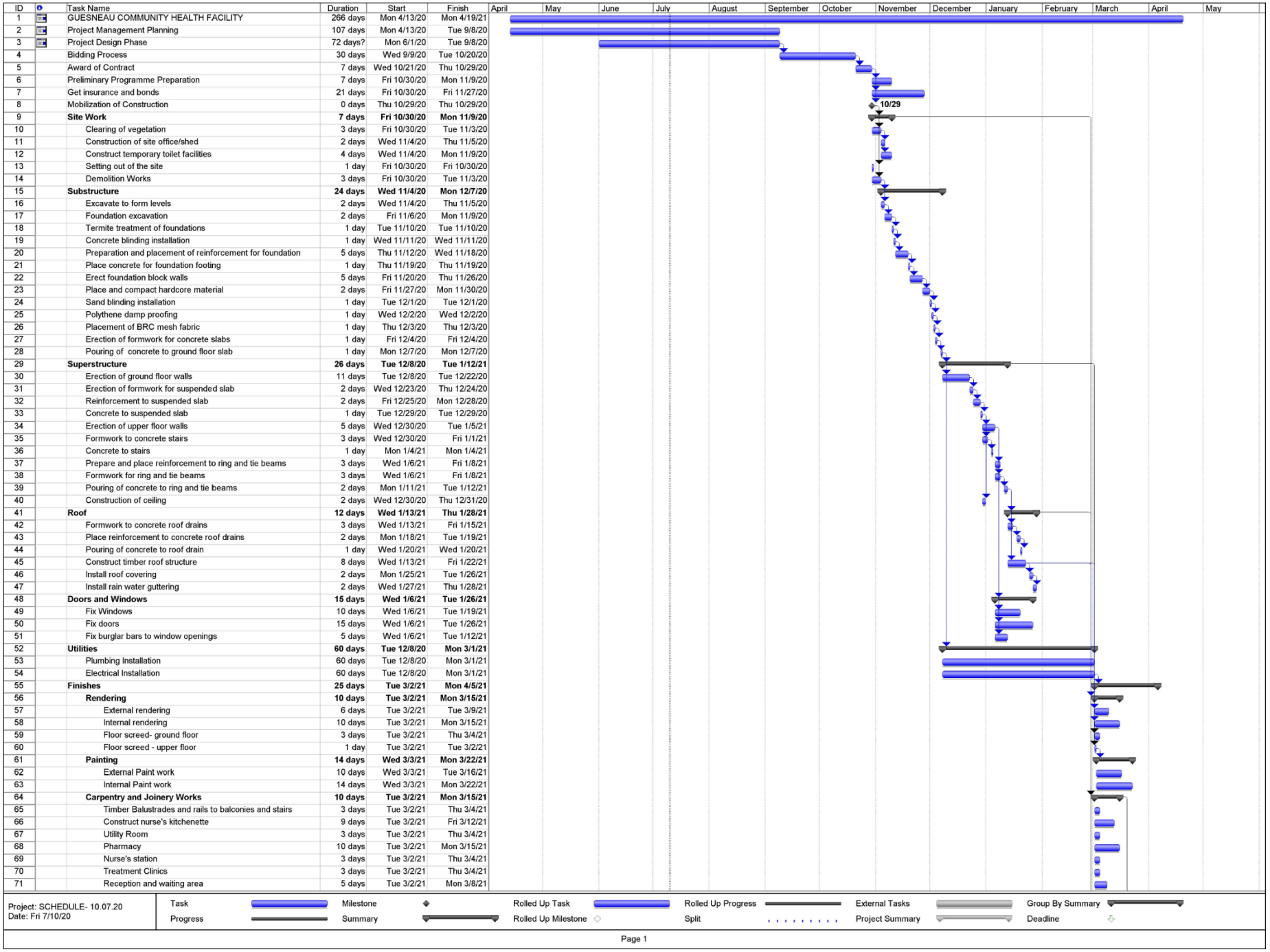
4.3.5 Develop Schedule

The project schedule was derived using the scope definition, activities list and durations. These were established using the analogous method in addition to expert judgment on expected timeframes for each activity. The schedule is composed of a combination of all the above-mentioned data.

Critical Path

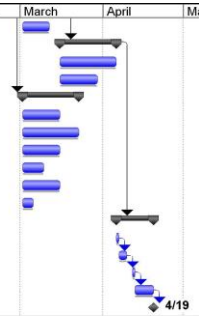
In planning a project, it is important to be aware of how flexible a schedule can be, in the event of any setbacks occurring during execution. The critical path table below indicates the longest path that the project can take while maximizing activity executed.

Chart 11 Project Schedule (Source: Compiled by author)



ID	Task Name	Duration	Start	Finish
1	GUESNEAU COMMUNITY HEALTH FACILITY	266 days	Mon 4/13/20	Mon 4/19/21
2	Project Management Planning	107 days	Mon 4/13/20	Tue 9/8/20
3	Project Design Phase	72 days?	Mon 6/1/20	Tue 9/8/20
4	Bidding Process	30 days	Wed 9/9/20	Tue 10/20/20
5	Award of Contract	7 days	Wed 10/21/20	Thu 10/29/20
6	Preliminary Programme Preparation	7 days	Fri 10/30/20	Mon 11/9/20
7	Get insurance and bonds	21 days	Fri 10/30/20	Fri 11/27/20
8	Mobilization of Construction	0 days	Thu 10/29/20	Thu 10/29/20
9	**Site Work**	**7 days**	**Fri 10/30/20**	**Mon 11/9/20**
10	Clearing of vegetation	3 days	Fri 10/30/20	Tue 11/3/20
11	Construction of site office/shed	2 days	Wed 11/4/20	Thu 11/5/20
12	Construct temporary toilet facilities	4 days	Wed 11/4/20	Mon 11/9/20
13	Setting out of the site	1 day	Fri 10/30/20	Fri 10/30/20
14	Demolition Works	3 days	Fri 10/30/20	Tue 11/3/20
15	**Substructure**	**24 days**	**Wed 11/4/20**	**Mon 12/7/20**
16	Excavate to form levels	2 days	Wed 11/4/20	Thu 11/5/20
17	Foundation excavation	2 days	Fri 11/6/20	Mon 11/9/20
18	Termite treatment of foundations	1 day	Tue 11/10/20	Tue 11/10/20
19	Concrete blinding installation	1 day	Wed 11/11/20	Wed 11/11/20
20	Preparation and placement of reinforcement for foundation	5 days	Thu 11/12/20	Wed 11/18/20
21	Place concrete for foundation footing	1 day	Thu 11/19/20	Thu 11/19/20
22	Erect foundation block walls	5 days	Fri 11/20/20	Thu 11/26/20
23	Place and compact hardcore material	2 days	Fri 11/27/20	Mon 11/30/20
24	Sand blinding installation	1 day	Tue 12/1/20	Tue 12/1/20
25	Polythene damp proofing	1 day	Wed 12/2/20	Wed 12/2/20
26	Placement of BRC mesh fabric	1 day	Thu 12/3/20	Thu 12/3/20
27	Erection of formwork for concrete slabs	1 day	Fri 12/4/20	Fri 12/4/20
28	Pouring of concrete to ground floor slab	1 day	Mon 12/7/20	Mon 12/7/20
29	**Superstructure**	**26 days**	**Tue 12/8/20**	**Tue 1/12/21**
30	Erection of ground floor walls	11 days	Tue 12/8/20	Tue 12/22/20
31	Erection of formwork for suspended slab	2 days	Wed 12/23/20	Thu 12/24/20
32	Reinforcement to suspended slab	2 days	Fri 12/25/20	Mon 12/28/20
33	Concrete to suspended slab	1 day	Tue 12/29/20	Tue 12/29/20
34	Erection of upper floor walls	5 days	Wed 12/30/20	Tue 1/5/21
35	Formwork to concrete stairs	3 days	Wed 12/30/20	Fri 1/1/21
36	Concrete to stairs	1 day	Mon 1/4/21	Mon 1/4/21
37	Prepare and place reinforcement to ring and tie beams	3 days	Wed 1/6/21	Fri 1/8/21
38	Formwork for ring and tie beams	3 days	Wed 1/6/21	Fri 1/8/21
39	Pouring of concrete to ring and tie beams	2 days	Mon 1/11/21	Tue 1/12/21
40	Construction of ceiling	2 days	Wed 12/30/20	Thu 12/31/20
41	**Roof**	**12 days**	**Wed 1/13/21**	**Thu 1/28/21**
42	Formwork to concrete roof drains	3 days	Wed 1/13/21	Fri 1/15/21
43	Place reinforcement to concrete roof drains	2 days	Mon 1/18/21	Tue 1/19/21
44	Pouring of concrete to roof drain	1 day	Wed 1/20/21	Wed 1/20/21
45	Construct timber roof structure	8 days	Wed 1/13/21	Fri 1/22/21
46	Install roof covering	2 days	Mon 1/25/21	Tue 1/26/21
47	Install rain water guttering	2 days	Wed 1/27/21	Thu 1/28/21
48	**Doors and Windows**	**15 days**	**Wed 1/6/21**	**Tue 1/26/21**
49	Fix Windows	10 days	Wed 1/6/21	Tue 1/19/21
50	Fix doors	15 days	Wed 1/6/21	Tue 1/26/21
51	Fix burglar bars to window openings	5 days	Wed 1/6/21	Tue 1/12/21
52	**Utilities**	**60 days**	**Tue 12/8/20**	**Mon 3/1/21**
53	Plumbing Installation	60 days	Tue 12/8/20	Mon 3/1/21
54	Electrical Installation	60 days	Tue 12/8/20	Mon 3/1/21
55	**Finishes**	**25 days**	**Tue 3/2/21**	**Mon 4/5/21**
56	**Rendering**	**10 days**	**Tue 3/2/21**	**Mon 3/15/21**
57	External rendering	6 days	Tue 3/2/21	Tue 3/9/21
58	Internal rendering	10 days	Tue 3/2/21	Mon 3/15/21
59	Floor screed- ground floor	3 days	Tue 3/2/21	Thu 3/4/21
60	Floor screed - upper floor	1 day	Tue 3/2/21	Tue 3/2/21
61	**Painting**	**14 days**	**Wed 3/3/21**	**Mon 3/22/21**
62	External Paint work	10 days	Wed 3/3/21	Tue 3/16/21
63	Internal Paint work	14 days	Wed 3/3/21	Mon 3/22/21
64	**Carpentry and Joinery Works**	**10 days**	**Tue 3/2/21**	**Mon 3/15/21**
65	Timber Balustrades and rails to balconies and stairs	3 days	Tue 3/2/21	Thu 3/4/21
66	Construct nurse's kitchenette	9 days	Tue 3/2/21	Fri 3/12/21
67	Utility Room	3 days	Tue 3/2/21	Thu 3/4/21
68	Pharmacy	10 days	Tue 3/2/21	Mon 3/15/21
69	Nurse's station	3 days	Tue 3/2/21	Thu 3/4/21
70	Treatment Clinics	3 days	Tue 3/2/21	Thu 3/4/21
71	Reception and waiting area	5 days	Tue 3/2/21	Mon 3/8/21

ID	Task Name	Duration	Start	Finish
72	Staff lounge	8 days	Tue 3/2/21	Thu 3/11/21
73	**Tiling**	**15 days**	**Tue 3/16/21**	**Mon 4/5/21**
74	Floor tiling	15 days	Tue 3/16/21	Mon 4/5/21
75	Wall tiling	10 days	Tue 3/16/21	Mon 3/29/21
76	**External Works**	**15 days**	**Tue 3/2/21**	**Mon 3/22/21**
77	Construct septic tank and soakaway	10 days	Tue 3/2/21	Mon 3/15/21
78	Retaining Wall and surface drain	15 days	Tue 3/2/21	Mon 3/22/21
79	Carpark and footpath	10 days	Tue 3/2/21	Mon 3/15/21
80	Manholes	6 days	Tue 3/2/21	Tue 3/9/21
81	Chain link fencing	10 days	Tue 3/2/21	Mon 3/15/21
82	Construct concrete base and install water tanks	4 days	Tue 3/2/21	Fri 3/5/21
83	**Final Acceptance**	**10 days**	**Tue 4/6/21**	**Mon 4/19/21**
84	Complete final inspection	1 day	Tue 4/6/21	Tue 4/6/21
85	Cleanup for occupancy	3 days	Wed 4/7/21	Fri 4/9/21
86	Perform final walk through inspection	1 day	Mon 4/12/21	Mon 4/12/21
87	Complete Snag list	5 days	Tue 4/13/21	Mon 4/19/21
88	Hand Over	0 days	Mon 4/19/21	Mon 4/19/21



Project: SCHEDULE- 10.07.20
Date: Fri 7/10/20

Task | Milestone | Rolled Up Task | Rolled Up Progress | External Tasks | Group By Summary
Progress | Summary | Rolled Up Milestone | Split | Project Summary | Deadline

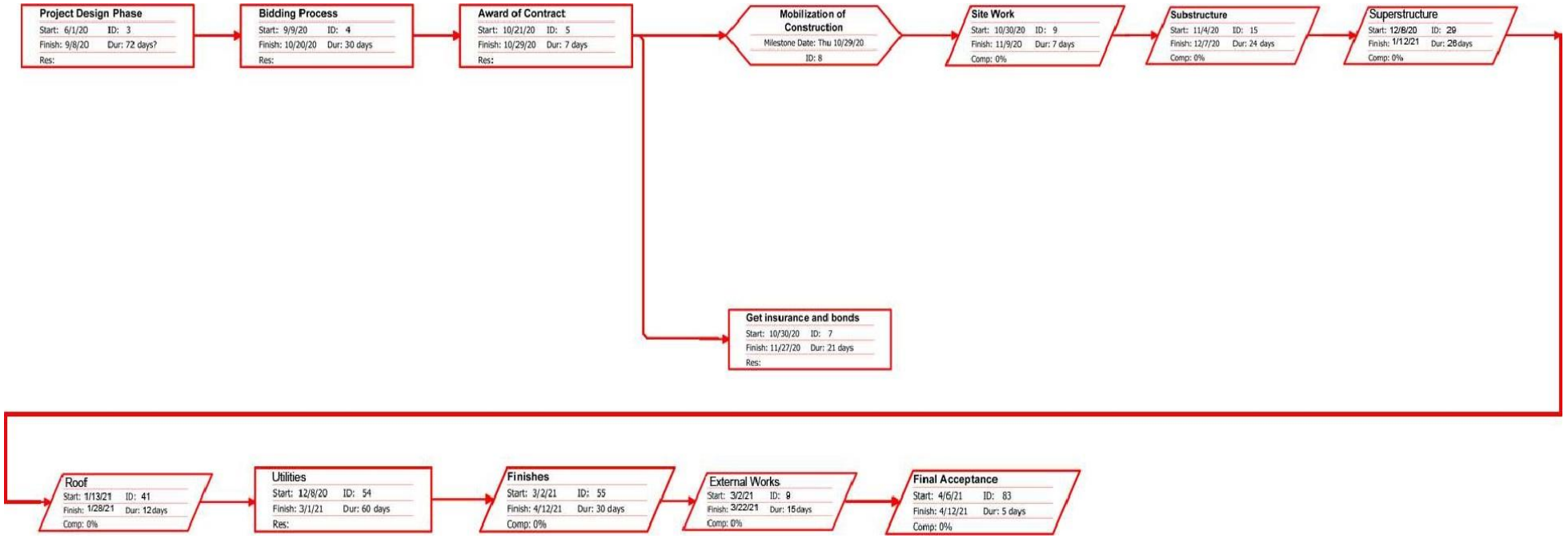


Figure 10. Critical Path (Source: Compiled by author)

4.3.6 Control Schedule

Data collected from the previous processes is utilized during the control schedule process to monitor the status of the project. Monitoring is done weekly using earned value management where a comparison is made of performance versus progress as per schedule.

This data is recorded using a standardized form, which will be completed by the project manager during the routine monitoring of the project.

During the monthly progress meetings, data collected for the previous month is discussed. Where there is a lag in the delivery of the project (work output is not on Schedule), discussion on schedule compression will take place. Through this, the project management team along with the contractor will decide the best and most economically viable way forward to place the project back on track. The cost associated with a lag in the schedule must be presented to the control board to assess the impact on the entire project.

Any changes to the schedule must be formally reviewed and discussed by the project team for approval before moving forward. Any changes to the Schedule must be sealed by an approved signature from the project manager.

4.4. Project Cost Management

4.4.1 Plan Cost Management

The plan cost management process provides a detailed breakdown of the policies used for estimating, budgeting, managing, monitoring and controlling the construction of the health facility from a financial standpoint.

The planning process is guided by the information presented in previous sections of this document, indicating pre-approved requirements which would influence the project cost, activities to be conducted during the project to develop some criteria for the project Schedule and approach for dealing with possible risks with associated costs.

It is important to note that project cost is heavily impacted by both environmental factors including the economic state of the country and their supply chain. Internal procedures of the organization also influence project cost as it relates to historical data used to formulate cost, as well as financial policies that they follow.

4.3.2 Estimate Cost

During the estimate cost process, a financial assessment is made to determine the estimated cost to complete the facility. This estimate is done with the aid of the Work Breakdown Structure (WBS), detailed drawings and historical records providing the unit cost for various resources.

The parametric estimating method was used to obtain a final costing by finding the product of the unit cost and material quantities.

The reserve analysis method was utilized to account for any cost uncertainties that arose; a contingency of 5% of the total estimated cost of the project was set aside for the reserve.

The estimates provided for this project are heavily influenced by the existing market prices of the present day as well as the pricing standards of the project management consultants responsible for overseeing the project. The Bill of quantities below provides a quantitative breakdown of the project cost.

Chart 12 Bill of Quantities Estimate (Source: compiled from historical data)

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
1.0	***SITE WORK***				
	Insurance				
1.1	Contractor's all risk insurance		1.00	3,000.00	3,000.00
	Site Establishment				
1.2	Site office/Shed	ps	1.00	3,000.00	2,000.00
1.3	Site Security / Watchman	ps	1.00	1,000.00	1,000.00
1.4	Site Toilet	ps	1.00	1,000.00	1,000.00
	Site Preparation				
1.5	Clearing entire site of bushes, shrubs, trees including grubbing out roots and removal from site.	ps	1.00	1,000.00	1,000.00
1.6	Setting out of the works	ps	1.00	2,000.00	2,000.00
1.7	Demolition Works	ps	1.00	5,000.00	5,000.00
				Sub-total	**15,000.00**

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
2.0	***EXCAVATION WORKS***				
2.1.1	Excavation to form level as per drawing	m3	200.00	100.00	20,000.00
2.1.2	For strip footings	m3	55.00	120.00	6,600.00
2.1.3	For Thickened slabs	m3	8.00	100.00	800.00
2.1.4	Termite treatment to exposed surfaces	sum	1.00	5,000.00	5,000.00
	SUB-BASE Materials				
2.2	50mm thick concrete blinding sub-base to footings				
2.2.1	200mm thick hardcore sub-base for footings	m^3	6.00	700.00	4,200.00
2.2.2	200mm thick hardcore sub-base for slab on grade	m^3	12.00	100.00	1,200.00
2.2.3	25mm thick sand blinding sub-base	m^3	25.00	100.00	2,500.00
2.2.4	1000 gauge polythene single layer	m^3	3.00	150.00	450.00
2.2.5	damp proof sheet membrane	m^2	120.00	6.00	720.00
2.3.0	**REINFORCEMENT**	kg	370.00	9.00	3,330.00
	High yield tensile steel bar reinforcement including cutting, bending and	kg	170.00	9.00	1,530.00

2.3.1	~~tying wire in the~~ **following:**	kg	75.00	9.00	675.00
2.3.2	12mm dia. main bars in strip footing & fdn walls	kg	260.00	9.00	2,340.00
2.3.3	10mm dia. bars in strip footing	kg	20.00	9.00	180.00
2.3.4	8mm dia. bars in strip footing & fdn walls				
2.3.5					
2.4.0	A142 B. R. C to slab on grade	m²	70.00	150.00	10,500.00
	A142 B. R. C to slab THICKENING				
2.4.1	**MASONRY**				
	~~Hollow-core loadbearing blockwork laid in cement~~ mortar (1:4) mix, all cores filled with concrete				
	200mm thick foundation walls				
2.5.0	**CONCRETE**				
	Reinforced in-situ concrete (1:2:4 - 19mm aggregate) packed around reinforcement in formwork in:				
2.5.1	Strip footings	m³	12.00	700.00	8,400.00
2.5.2	Thickened slabs	m³	2.00	700.00	1,400.00
2.5.3	100mm thick floor slab	m³	12.00	700.00	8,400.00
2.6.0	**FORMWORK**				
2.6.1	Edge and soffit of 100mm thick slab on grade	m²	9.00	38.00	342.00
				Sub-Total	**78,567.00**

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
3.0	***SUPERSTRUCTURE WORKS - LOWER FLOOR LEVEL***				
	REINFORCEMENT			9.00	8,100.00
	High yield tensile steel bar reinforcement including cutting, bending and		900.00	9.00	3,600.00

3.1.0	**tying wire in the following:**	kg	400.00	9.00	2,115.00
	12mm dia. vert. bars in masonry walls	kg	235.00	9.00	990.00
3.1.1	8mm dia. hor. bars in masonry walls	kg	110.00	9.00	756.00
3.1.2	12mm dia. main bars in ring beams	kg	84.00	9.00	162.00
3.1.3	10mm dia. main bars in ring beams	kg	18.00	9.00	540.00
3.1.4	8mm dia. stirrups in ring beams	kg	60.00	9.00	225.00
3.1.5	8mm dia. main bars in lintels	kg	25.00		
3.1.6	12mm dia. main	kg			
3.1.7	bars in staircase	kg		120.00	55,200.00
3.1.8	10mm dia. main		460.00	75.00	1,425.00
3.2.0	bars in staircase		19.00		
	MASONRY				
3.2.1	**Hollow-core loadbearing blockwork laid in cement mortar (1:4) mix, all cores filled with concrete**			700.00	4,900.00
3.2.2				700.00	700.00
3.3.0			7.00		
	150mm thick	m^2	1.00		
3.3.1	internal walls	m^2			
3.3.2	100mm thick				
	internal walls				
	CONCRETE	m^3			
	Reinforced in-situ concrete (1:2:4 - 19mm aggregate) packed around reinforcement in formwork in:	m^3			
	Ring Beams				
	Lintel beams				
3.3.3	Staircase & landings	m^3	2.00	700.00	1,400.00
3.3.4	Mortar for blockwork	m^3	46.00	700.00	32,200.00
3.4.0	**FORMWORK**				
3.4.1	Sides and soffit of beams	m^2	0.00	45.00	0.00
3.4.2	Sides and soffit of lintel	m^2	20.00	45.00	900.00
3.4.3	Sides and soffit of staircase	m^2	10.00	45.00	450.00
				Sub-total	**113,663.00**

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
4.0	***SUPERSTRUCTURE WORKS - upper floor***				
4.1.	**REINFORCEMENT**				
	High yield tensile steel bar reinforcement including cutting, bending and				
	tying wire in the following:				
4.1.1	12mm dia. main bars in landing	kg	15.00	9.00	135.00
4.1.2	10mm dia. Bars in landing	kg	5.00	9.00	45.00

4.1.3	12mm dia. vert. bars in masonry walls	kg	175.00	9.00	1,575.00
4.1.4	8mm dia. horz. bars in masonry walls	kg	80.00	9.00	720.00
4.1.5	12mm dia. main bars in ring beam	kg	90.00	9.00	810.00
4.1.6	8mm dia. stirrups in ring beam	kg	25.00	9.00	225.00
4.2	**MASONRY** **Hollow core loadbearing blockwork laid in cement mortar (1:4) mix, all cores filled with concrete**				
4.2.1	150mm thick walls	m²	107.00	120.00	12,840.00
4.3	**CONCRETE** **Reinforced in-situ concrete (1:2:4 - 19mm aggregate) packed around reinforcement in formwork in:**				
4.3.1	Ring beam	m³	3.50	700.00	2,450.00
4.3.2	Lintel beams	m³	0.50	700.00	350.00
4.3.3	Mortar for blockwork	m³	10.00	700.00	7,000.00
4.4	**FORMWORK**				
4.4.1	Sides and soffit of beams	m²	45.00	45.00	2,025.00
4.4.2	Sides and soffit of lintels	m²	8.00	45.00	360.00
				Sub Total	**28,535.00**

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
5.0	***ROOF WORKS***				
5.1	**CARCASSING**				
5.1.1	**Pressure-treated, pitch pine softwood in:**	m			
5.1.2	50 x 200mm ridge board & hip rafters	m	70.00	45.00	3,150.00
5.1.3	50 x 150mm rafters	m	410.00	40.00	16,400.00
5.1.4	50 x 150mm beams	no	25.60	40.00	1,024.00
5.1.5	Galvanized mild steel restraint straps; fixing to woodwork	m	170.00	40.00	6,800.00
5.1.6	50 x 150mm wall plates	m²	7.70	40.00	308.00
5.1.7	T1-11 plywood	m²	250.00	100.00	25,000.00
5.1.8	Polyethelene waterproofing membrane	m	250.00	6.00	1,500.00
5.1.9	25 x 75mm battens	m	140.00	32.00	4,480.00
5.2	**CLADDING, COVERING & DRAINAGE**	m	110.00	50.00	5,500.00
5.2.1	Permacladd metal roofing sheet and flashing nailed on battens	m²	250.00	67.00	16,750.00
5.2.2	PVC rainwater gutters and fittings; fixing with standard clips to woodwork background	m	69.00	84.00	5,796.00
5.2.3	75mm PVC rainwater pipes and fittings; fixing with standard clips to masonry background	m	35.00	84.00	2,940.00
5.3		m			
5.3.1			3.50	700.00	2,450.00
5.3.2		m³	75.00	9.00	675.00
5.3.3		kg	52.00	9.00	468.00
5.3.4		kg m²	30.00	45.00	1,350.00

	CONCRETE ROOF DRAINS Concrete for drains 12mm dia. rebar 10mm dia. Rebar Formwork				
				Sub Total	**89,648.00**

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	6.0 *FITTINGS AND FIXTURES*				
6.1.0	**DOORS**				3,600.00
	frames				8,400.00
6.1.1	**Supply and fix 45mm (finished) solid core doors including softwood**				1,000.00
6.1.2	900 x 2000mm high - aluminum external (D1)				1,200.00
6.1.3					400.00
6.1.4	800 x 2000mm high - timber internal (D2)				800.00
6.1.5	800 x 2000mm high - Bathroom (D3)				940.00
6.1.6	800 x 2000mm high - timber internal (D4)	no.	3.00	1,200.00	
6.1.7				700.00	1,650.00
6.1.8	800 x 1275mm high - aluminum external (D7)	no.	12.00	500.00	2,500.00
			2.00		
6.1.9	750 x 1850mm high - timber custom made (D8)	no.	2.00	600.00	17,990.00
		no.	1.00	400.00	9,600.00
6.2.0	Pair 100mm brass butt hinges				2,000.00
		no.	1.00	800.00	
6.2.1	75mm approved Mortise lock and lever set	no.	47.00	20.00	2,400.00
6.2.2	Approved design burglar bars on external doors		22.00	75.00	1,000.00
6.2.3		no.	1.00	2,500.00	10,000.00
6.2.4		no.			
	WINDOWS				25,000.00
6.2.5	**Supply and fix aluminium profile casement windows complete with all necessary ironmongery**	ps			
6.3.0					
	900x 1250mm high (W1) Casement		16.00	600.00	
	900 x 900mm high		4.00	500.00	
		no.	6.00	400.00	
	(W2) Casement	no.			
		no.	2.00	500.00	
	600 x 600mm high	no.			
		ps	1.00	10,000.00	
	(W3) Casement				
	1000 x 1200mm high (W4) Perspex				
	Approved design burglar bars on window openings				
	CARPENTRY				
	Allow a provisional sum to complete installation of built-ins as per detailed drawings				
6.3.1	Nurses' Kitchenette	ps	1.00		10,000.00
6.3.2	Utility Room	ps	1.00		6,000.00
6.3.3	Pharmacy including privacy screen	ps	1.00		6,000.00
6.3.4	Nurses's Station	ps	1.00		2,000.00
6.3.5	Treatment Clinic (Injection)	ps	1.00		1,000.00

6.3.6	Treatment Clinic (Dressing)	ps	1.00		1,000.00
6.3.7	Staff Lounge	ps	1.00		6,000.00
					32,000.00
				Summary Total	**74,990.00**

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
7.0	***MEP INSTALLATION***				
7.1.0	**ELECTRICAL INSTALLATION**				
	Complete electrical installation comprising: power circuits;				
7.1.1	**lighting circuits; outlets;**				35,000.00
7.1.2	**switches; testing; all fixtures**				9,200.00
	Allow a provisional sum to complete installation of electrical first fixing and final fixing				44,200.00
7.2.0					20,000.00
7.2.1	Installation of Fire alarm & smoke detection system				600.00
7.2.2					2,800.00
	PLUMBING INSTALLATION				
7.2.3	Allow a provisional sum to complete installation of plumbing first fixiNG including all internal piping			35,000.00	2,400.00
				9,200.00	700.00
7.2.4	**Installation of Appliances,**		1.00		150.00
7.2.5	**Fittings and Fixtures**		1.00		500.00
7.2.6	Showers; complete with taps and associated fittings				1,200.00
7.2.7					600.00
7.2.8	Washbasins; complete with taps and associated fittings	ps	1.00	200.00	5,000.00
7.2.9	WC suites; complete with cistern, seat and flap and associated fittings	ps	3.00	400.00	180.00
7.2.10	6mm thick safety glass mirrors (400 x 600)		7.00	600.00	630.00
7.2.11			4.00	100.00	600.00
7.2.12	Shower Curtain Rods	ps	7.00	50.00	
	Urinal; complete with all associated fittings	no	3.00	500.00	
	Stainless steel single sink	no	1.00	400.00	
	Laundry sink	no	3.00	300.00	
	Solar water panel and tank	no	2.00		
	Metal Grab Bars (1000mm long)	no	1.00	5,000.00	
	5 lb dry chemical Fire Extinguisher	no	2.00	90.00	
	10 lb carbon dioxide Fire Extinguisher	ps	3.00	210.00	
		no.	1.00	600.00	
		no.			35,360.00
				Summary Total	**79,560.00**

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
	8.0 *FINISHES*				
8.1.0	**IN-SITU FINISHINGS**				
	12mm cement and sand (1:3) smooth rendering on the following:				3,500.00
8.1.1	To walls; plaster to exposed lower floor blockwork				750.00
8.1.2	To walls; plaster to exposed entry floor blockwork				2,250.00
8.1.3					625.00
8.1.4	**50mm cement and sand (1:3) smooth screeding on the following:**	m³		250.00	7,125.00
8.2.0	To floors; screeding to the exposed lower floor slab	m³	14.00	250.00	480.00
8.2.1	To floors; screeding to the exposed upper floor slab	m³	3.00	250.00	6,000.00
8.2.2					16,800.00
8.2.3		m³	9.00	250.00	4,200.00
8.2.4	**TILE FINISHINGS**		2.50		6,000.00
8.2.5	To walls; kitchen; 100 x 100 tiles; backsplash				6,000.00
8.2.6	To walls; bathroom;	m²	4.00	120.00	39,480.00
	To floors; lower level	m²	50.00	120.00	
8.3.0	To floors; upper level	m²	120.00	140.00	70,800.00
	To counters; kitchen;	m²	30.00	140.00	2,400.00
8.3.1	Skirting 75mm high to walls	m²	6.00	120.00	3,000.00
8.3.2		m²	14.25	120.00	
8.3.3	**PAINTING AND DECORATION** **Prepare** emulsion paint on: **and apply one undercoat of primer and two finishing coats of**	m²			
	Rendered walls		1180.00	60.00	
	Ceiling	m²	40.00	60.00	
	Doors	m²	50.00	60.00	76,200.00
				Summary Total	**122,805.00**

ITEM NO.	DESCRIPTION	UNIT		RATE	AMOUNT
9.0	***EXTERNAL WORKS***				
9.1.0	**EXTERNAL DRAINAGE**				7,000.00
9.1.1	**Septic Tank**				
9.1.2	Standard 2 chamber septic tank size 3000mm x 1500mm x 1800mm deep in 200mm blockwork with reinforced concrete cover slab and rendered internally				1,000.00
	Soak Away Pit				
9.1.3	Soak Away pit size 1500 x 1500 x 1200mm				2,000.00
	Manhole				
9.2 9.2.1	Standard manhole size 600 x 600 x 450mm deep built-in 200mm blockwork with reinforced concrete cover slab and rendered internally				
9.2.2	**Pipework**			7,000.00	
9.2.3	Excavate trench for pipe not exceeding 300mm wide including return fill and rammed and	ps			
9.2.4	remove surplus excavated material from the site			1,000.00	
9.2.5	20mm dia. PVC cold water supply line pipe in trench including its associated fittings	ps	1.00		
9.3	38mm dia. PVC greywater line pipe in trench including its associated fittings			1,000.00	
	100mm dia. PVC sewer line pipe in trench including its associated fittings	no	1.00		
	75mm dia. Pvc rainwater pipe out to drain **Retaining Wall with surface drain**		2.00	30. 00	
		m³		9.0	
			13.00		
			55.00	0	
		m	20.00	16.00	
		m	21.00	18.00	
		m	50.00	17.00	
9.3.1	Excavation For concrete drain/Retaining Wall Footing	m3	42.00	120.00	5,040.00
9.3.2	16mm dia. main bars in RET. Wall	kg	442.00	9.00	3,978.00
9.3.3	12mm dia. main bars in retaining wall	kg	242.00	9.00	2,178.00
9.3.4	10mm dia. bars in retaining walls	kg	142.00	9.00	1,278.00
9.3.5	8mm dia. bars in retaining walls	kg	60.00	9.00	540.00
9.3.6	200mm thick blockwork for Retaining wall	m²	80.00	160.00	12,800.00
9.3.7	150mm thick blockwork for drain	m²	17.00	140.00	2,380.00
9.3.8	Concrete for Retaining Wall/Drain Footing	m³	13.00	700.00	9,100.00
9.3.9	Concrete Mortar for Ret. wall and drain	m³	12.00	700.00	8,400.00
		m	19.00	18.00	342.00
					58,469.00

9.3.10	50mm dia. Pvc pipe for weep holes				
9.4	**Carpark and footpath**				
9.4.1	Formwork to sides	m²	2.70	45.00	121.50
9.4.2	200mm thick hardcore sub-base	m³	45.00	40.00	1,800.00
9.4.3	25mm thick sand blinding sub-base	m³	6.00	98.10	588.60
9.4.4	1000 gauge polythene single layer damp proof sheet membrane	m²	225.00	2.23	501.75
9.4.5	A142 B. R. C to slab on grade	kg	350.00	3.55	1,242.50
9.4.6	125mm thick reinforced in-situ concrete (1:2:4 - 19mm aggregate) carport and footpath	m³	23.00	490.00	11,270.00
9.5	**Fencing**				
	Existing Fence from boundary peg 1 to 2 to 3 will remain. Additional fencing to be installed from boundary peg 1 to B2 to 18B to 18. Utilize materials from demolished fencing				
9.5.1	Reinforced in-situ concrete (1:2:4 - 19mm aggregate) base for chainlink fence; including excavation	m³	10.00	700.00	7,000.00
9.5.2	8' high Chainlink fence and accessories	m	32.00	150.00	4,800.00
9.5.3	8' high Chainlink fence from boundary peg B2 to 18B (re-using existing poles and rails)	m	48.00	90.00	4,320.00
9.6	Water Tanks				
9.6.1	Supply and install, 800 gal. plastic water tank	no.	2.00	1,500.00	3,000.00
9.6.2	Concrete Base	m3	0.50	900.00	450.00
9.2.3	~~Site~~ **Work**				
	Clean Up	ps	1.00	2,000.00	2,000.00
					37,094.35
				Summary Total	**95,563.35**

ITEM NO.	DESCRIPTION	UNIT	QTY	RATE	AMOUNT
10.0	***CONTINGENCY***				
10.1	**CONTINGENCY**	ps	5.00%		36,916.57
Construction Total					**775,247.92**

4.4.3 Determine Budget

The determination of the budget involves providing a breakdown in costing for the individual work packages to be executed during the life span of the project. A budget summary was created providing an cost estimate for each work package.

Chart 13 Work Package Summary Estimate (Source: compiled by author)

Planning Budget

ITEM A	DESCRIPTION	AMOUNT ($)
1.0	Project Management Planning	15,000
2.0	Project Design Planning	25,000
	Total cost (Planning)	**40,000**

Construction Budget

ITEM B	DESCRIPTION	AMOUNT ($)
	SUMMARY	
1.0	Site Work	15,000.00
2.0	Substructure	78,567.00
3.0	Superstructure (ground floor)	113,663.00
4.0	Superstructure (upper floor)	28,535.00
5.0	Roof Works	89,648.00
6.0	Fittings and Fixtures	74,990.00
7.0	MEP Installation	79,560.00
8.0	Finishes	122,805.00
9.0	External Works	95,563.35
	Sub-Total (Planning & Construction)	**738,331.35**
10.0	Contingency (5%)	36,916.57
	Total cost (Construction)	**775,247.92**

Cost Baseline

As per historical data compiled from a similar project, an approved versión of the time-phased budget is compiled, providing a breakdown of disbursement projections for the duration of the project.

Chart 14 Cost Baseline Schedule (Source: compiled by author)

Items	Description	20-Apr	20-May	20-Jun	20-Jul	20-Aug	20-Sep	20-Oct	20-Nov	20-Dec	21-Jan	21-Feb	21-Mar	Sub-totals
	Planning Budget													
1	Project Management Planning	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00	$ 3,000.00								$ 15,000.00
2	Project Design Planning			$ 6,250.00	$ 6,250.00	$ 6,250.00	$ 6,250.00							$ 25,000.00
	Construction Budget													
1	Site Work							$ 12,000.00				$ 3,000.00		$ 15,000.00
2	Substructure								$ 39,567.00	$ 35,000.00	$ 4,000.00			$ 78,567.00
3	Superstructure (ground floor)									$ 66,831.50	$ 36,831.50	$ 10,000.00		$ 113,663.00
4	Superstructure (upper floor)										$ 28,535.00			$ 28,535.00
5	Roof Works										$ 80,000.00	$ 9,648.00		$ 89,648.00
6	Fittings and Fixtures									$ 25,000.00	$ 24,995.00	$ 24,995.00		$ 74,990.00
7	MEP Installation									$ 39,560.00	$ 20,000.00	$ 20,000.00		$ 79,560.00
8	Finishes										$ 80,000.00	$ 40,805.00	$ 2,000.00	$ 122,805.00
9	External Works										$ 30,000.00	$ 40,000.00	$ 25,563.35	$ 95,563.35
	Total (contingency not included)	$ 3,000.00	$ 3,000.00	$ 9,250.00	$ 9,250.00	$ 9,250.00	$ 6,250.00	$ 12,000.00	$ 39,567.00	$ 166,391.50	$ 304,361.50	$ 148,448.00	$ 27,563.35	**$ 738,331.35**

4.4.4 Control Costs

The main objective of the project budget is to serve as a cost reference to achieve completion. This project's budget was créated using historical research and resource marketing data to derive a realistic cost baseline to complete the facility.

In order to control and monitor costs, earned value management (EVM) will be used to measure project performance and progress. An analysis will be conducted at monthly intervals monitoring and comparing planned work performed versus the work progression, to assist in determining the status of the project from a financial perspective. The actual cost of work performed during each period will also be assessed to determine whether or not the project cost remains within the prescribed budget. This data will be reflected in the monthly progress reports. Data will be reflected using a comparison graph in addition to numerical calculations.

All changes to costs will be reviewed and examined by a control board. The cost baseline will be updated as per project progression. Based on the analysis of the change request, a determination as to whether withdrawal from the contingency sum is required. All decisions must obtain final approval from the project sponsor before proceeding.

Cost Management Procedure

All disbursements and processing of payments (both receiving and issuing) are done by the project management team. The EVM is conducted monthly and is utilized to determine disbursement amounts for the preparation of a payment certificate, which must be issued to the contractor to access the necessary funding.

4.5 Quality Management Plan

Quality management involves incorporating the organization's policies as it relates quality management into each process, in order to meet stakeholder requirements for the construction of the facility. The intended approach in managing project quality is to define quality standards, measuring the quality of work executed against those standards, identifying methods of improvement and implementing these methods during execution.

4.5.1 Plan Quality Management

By utilizing the requirements management, risk management, and stakeholder management plans alongside the project charter and scope baseline; all inserts of this document, a quality criterion was derived detailing the standards and expectations to be satisfied during the execution of the project.

Expert judgment on quality standards and historical data were also used to derive data to facilitate the compilation of assumptions and constraints, which may influence the quality of work executed during the project.

Quality Approach

To ensure that quality standards are met as per project requirements, a quality assurance plan is required. This plan provides details on quality goals, roles and responsibilities, established quality criterion and metrics for assessing quality performance throughout the project.

1. Quality Goals

Drawing Quality

- Detailed specifications of each aspect of the design must be provided to ensure adequate construction standards are met.
- All drawing sheets must be legible in delivery.

- In the event of change requests, details must be approved by the head architect/engineer and in turn by the project manager before execution on site. Details must resolve the issues highlighted by the project manager

Material Quality

- Upon pouring of concrete, test cubes must be created and sent for testing to ensure that the correct ratio of mix is used and the strength of the concrete is not compromised.
- All steel members erected in the structure must be inspected before proceeding with a concrete pour. This is to ensure that the correct specified size steel is used.
- The specification of blocks must be inspected to ensure that the quality is durable enough for construction

Workmanship

- Upon completion of each work package, an assessment of work quality must be undertaken before proceeding to the next work package and its corresponding tasks. In the case of bulky work packages, inspections will be done weekly to assess whether quality standards reflecting the project objectives have been met.
- Precision in execution is also required and will be monitored at intervals.

3. Roles & Responsibilities

The chart below indicates the roles and responsibilities of the major stakeholders involved in the project execution.

Chart 15 Quality Matrix –RACI format (Source: Compiled by author)

Quality Goals	SJP Consultants			CDB Funding Agency	SSDF (Sponsor)	Contractor & Sub-Contractors
	Head Architect	Head Engineer	Project Manager & Team			
Detailed specifications	R	R	R			I
Drawing Legibility	R	R	I			I
Change Requests & Control			R	I	I	R
Quality Concrete Mix (Test Cube Inspection)			R	I	I	A
Execution of Steelwork		I	R	I	I	A
Execution Precision	I	I	R	I	I	A
Document all audits performed			R, A	I	I	
Assessment of performance			R, A	I	I	I

RACI Abbreviation Key (Project Management Institute, 2017).

- **R**esponsibility = person or role responsible for ensuring that the item is completed
- **A**ccountable = person or role responsible for actually doing or completing the item
- **C**onsulted = person or role whose subject matter expertise is required to complete the item
- **I**nformed = person or role that needs to be kept informed of the status of item completion

Chart 16 Quality Criteria & Metrics (Source: Compiled by author)

The chart below outlines the general requirements identified for the project, the method of measurement and the expected outcome.

Factor	Metrics	Metric definition	Expected outcome/result	Measurement frequency	Responsible
Materials	N/A	Quality of all supplies provided to be up to standard	Quality supplies for construction purposes	As necessary	Contractor/Project Manager
Workmanship	N/A	Assessment of quality of work output	Workmanship meets quality standards criterion	Monthly	Consultant/ Project Manager
Funding	EVM	Though a budget is established, funding needs to be released on time and in full to ensure that the right quality of product is purchased	Timely disbursement of funding	Monthly	Funding Agency/Sponsor
Functionality	N/A	Serviceable for all individuals in need	Serviceable to all users	As necessary	SJP Consultant Architects
Handicapped Accommodation	N/A	Special accommodation to be properly constructed within the facility	Functional for physically challenged persons	N/A	SJP Consultant Architects
Accessibility	N/A	Located in an area where all members of the community may obtain easy access	Easily accessible to all users	N/A	Project Sponsor
Easy Maintenance	N/A	The end-user is required to care for the facility in the long run	Ease of maintenance by end-user	N/A	SJP Consultant Design & Project Management Team

		and so the facility should be constructed to facilitate ease of maintenance			

The chart below outlines the specific requirements identified for the project and the approach to manage and control the activities involved in satisfying these requirements.

Chart 17 Quality Activity Metrics (Source: Compiled by author)

Deliverable	Requirement	Manage and Control activities	Frequency	Responsible
The physical structure	- Construction drawings - Project schedule (GANT chart) - Reliable construction team - Consistent availability of materials - Inflow of funding for material purchases	Manage: - Progress monitoring & Inspections	Weekly	Contractor, SJP Consultant Project Management Team
		Control: Progress meetings to be held with the contractor	Monthly	SJP Consultant Project Management Team, Contractor
Installed fixtures and fittings	-Project schedule -Reliable suppliers (on-time delivery) - Reliable construction team (including plumbing and electrical team) -Approved inspection upon completion by the relevant agencies - Inflow of funding for material purchases	Manage: - Progress monitoring & Inspections	Weekly/following each milestone. i.e. -Electrical first & second fix -Plumbing first & second fix Fixture & fitting installations -Installation of tiling -After the final coat of paint	SJP Consultant Project Management Team
		Control: Report on the progress of installations	Weekly	Contractor, SJP Consultant Project Management Team

Access footpaths and pavements (external works)	- Reliable construction team - Inflow of materials - Inflow of funding for material purchases	Manage: Progress monitoring & Inspections	Following the completion of the building	SJP Consultant Project Management Team, Contractor
		Control: Progress report by the contractor	As necessary/upon completion of a task	Consultant, Project Manager
Fencing to secure the facility	- Reliable construction team - Inflow of materials - Inflow of funding for material purchases	Manage: : Progress monitoring & Inspections	Following the completion of the building	Contractor, Project Manager
		Control: Progress report by the contractor	As necessary/upon completion of a task	Consultant, Project Manager
Monitoring and Inspection of the facility at intervals and completion	- Project schedule (GANT chart) -Well defined quality standards -Quality inspections -Material testing when necessary -Documentation of findings	Manage: Progress report by the contractor	Monthly	Consultant, Project Manager
		Control: Comparison of work done vs work schedules Comparison of Actual Cost vs Expected/anticipated Cost	Monthly	Consultant/ Project Manager

All quality standard inspections must be conducted and approved by the project manager and his project team and must satisfy set criteria reflecting expectations of the quality standards specified above. All output data is recorded in the monthly progress reports.

4.5.2 ***Manage Quality***

Throughout the manage quality process, the quality policies and requirements are managed throughout the various stages of the construction of the physical structure, and in the design phase to ensure that the quality objectives are met throughout execution.
In designing the structure, the project requirements must be satisfied; However, the level of detail provided in the design drawings is an utterly important aspect for executing details. The design team must be meticulous in its details to ensure that the correct specifications are provided for execution. Therefore, the head architect and engineer must carefully manage their team in the production of detailed drawings.
In turn, the contractor and his construction team under the guidance of the project manager must execute as per drawing specifications. This execution must be carefully managed by the project manager and his team at weekly or package intervals depending on the complexity of the tasks. This is governed by the quality standards specified above. Data obtained from inspections are documented in the form of a quality report. Also included in this report, are recommended corrective actions in the event of compromised quality standards and methods of improving quality output for the next work cycle. Any changes required which may impact the project must be formally recorded and assessed by the change control board for consideration.

4.5.3 Control Quality

By utilizing results obtained from quality inspections and assessments done by the project manager and his team, the progress of the project, as well as the integration of any change requests are closely monitored. Quality control assessments are performed at the major milestones of the project and are measured against quality metrics specified in the plan quality management process above. This will be conducted using a standardized checklist focused on quality metrics of the project. The standardized checklist is compiled by the project management team.
This data gathered from the quality inspections will provide an outlook on problematic areas that do not meet the requirements of the project and is used to analyze the project performance as it progresses. Quality control measurements are derived from this

analysis and findings are included in monthly progress reports. Quality control inspections are performed on a bi-weekly basis by the project manager.

Data compiled during these inspections are evaluated by the project team monthly, during which solutions for quality shortfalls are derived. All data acquired during these meetings are formally recorded and integrated into the project and quality management plan.

4.6 Resource Management Plan

The resource management plan functions to ensure that resources required for the project are readily available when required.

4.6.1 Plan Resource Management

During the plan resource management process, details including how resources and resource personnel are acquired and managed are specified.

Information from the project charter, quality management plan and scope management plan are used to compile the details of this process.

The hierarchical chart below represents details of resource personnel, their positions and relationships as it relates to this project.

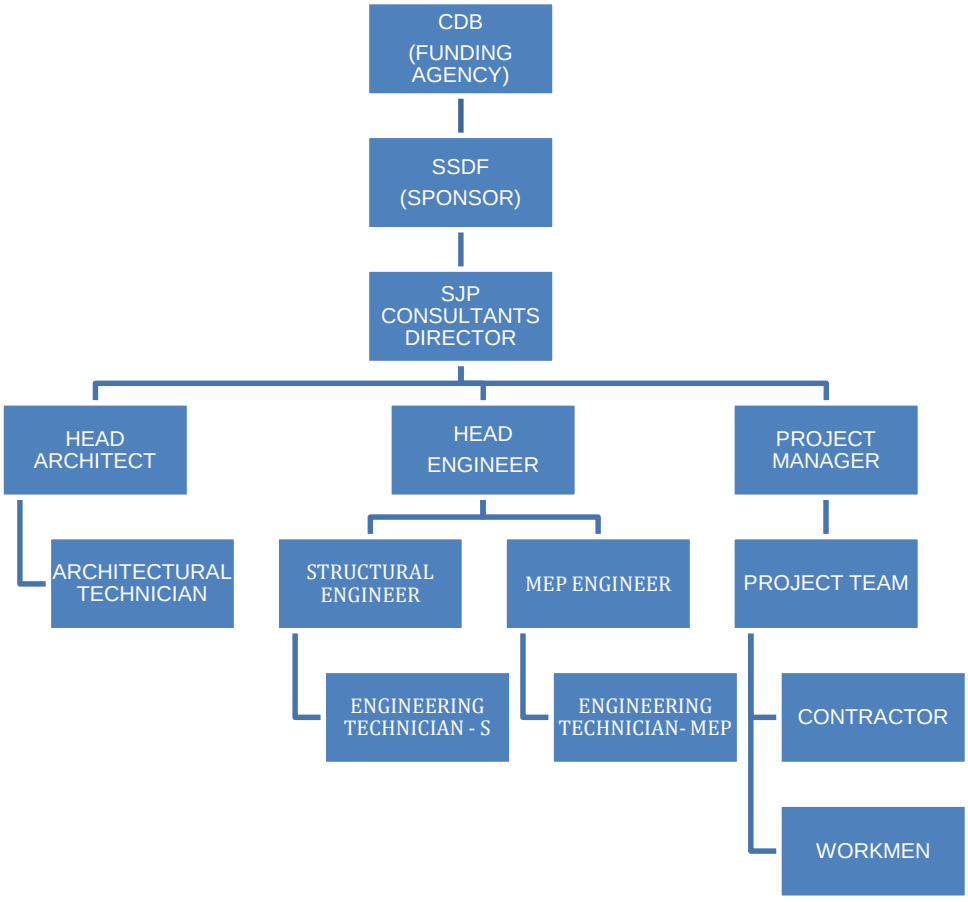


Figure 11 Hierarchical chart (Source: compiled by author)

This project involves various levels of stakeholders (as identified in the stakeholder management plan) who function as resource personnel throughout the project. To ensure clarity of roles and responsibilities throughout the project, the RACI chart below was developed.

Chart 18 RACI chart (Source: compiled by author)

Activities / Role	SJP Consultants			CDB Funding Agency	SSDF (Sponsor)	Contractor & Workmen
	Head Architect	Head Engineer	Project Manager & Team			
Project management planning	I	I	R, A	I	I	I
Design & Approval Phase	R	R	C	I	C	I
Bidding and tendering process	I	I	R, A	I	I	I
Award of contract			R, A	I	C	I
Obtain insurance and bonds			I	I	I	R, A
Take possession of the site			I	I	I	R, A
Construction Phase	C	C	R, A	I	I	R
Contract Administration	I	I	R, A	I	I	I
Accounting	I	I	R, A	I	C	I
Procurement	I	I	R, A	I	I	R
Stakeholder Management			R, A	I	I	I

RACI Abbreviation Key (Project Management Institute, 2017)

- **R**esponsibility = person or role responsible for ensuring that the item is completed
- **A**ccountable = person or role responsible for actually doing or completing the item
- **C**onsulted = person or role whose subject matter expertise is required to complete the item
- **I**nformed = person or role that needs to be kept informed of the status of item completion

4.6.2 Estimate Activity Resources

The estimate activities process uses data from the activities attributes and activities list defining tasks involved in the execution of the construction. Additionally, the Bill of Quantities (BoQ) provides detailed estimates of materials required for each activity as well as the pre-requisite costs associated with those materials in the execution of required tasks.

The analogous method was used to compile data for this process; a previous project of a similar nature was utilized as a base for the production of data.

The preparation of the project management plan and design drawings was executed by a delegated team from a projectized organizational structure within SJP Consultants assigned to this one particular project.

For the construction of the structure however, resource personnel specializing in specific áreas will be sub-contracted as needed, under the guidance of the project contractor.

Managerial staff attached to this project will be sourced from SJP Consultants, the project management team, which was selected to lead the construction process.

All sub-contractors and site personnel selected for the project must remain with the project until completion unless relieved of duties by the contractor or project manager. These individuals are required to sign a contract upon selection for project execution.

The activity resource chart below outlines the main activities, the resources involved, personnel responsible and the allocated timeframe for execution.

Chart 19 Activity Resource Chart (Source: compiled by author)

Activities/Resources	Allocation	Source	Responsibility
Project Design : Approval and construction drawings	72 days	Internal: **SJP Consultants** *Project Architect *Project Engineers *Project Manager	Project Design Team
Project Management Plan:	107 days	Internal: **SJP Consultants** *Project Manager	Project Management Team

		*Project Team	
Construction of structure: *Demolition of part of the existing structure *Construction of New Structure *Construction of temporary sheds	184 days	External: **Contractor** *Electricians *Plumbers *Tilers *Painters *Masons *Carpenters	Project Manager Contractor
Procurement of Materials: *Fixtures & Fittings *Furnishings *Building Materials *Roof supplies	Throughout the project	External: *Construction material suppliers *Furnishing suppliers	Project Manager Contractor
Equipment: *Backhoe *Tracker *Cement mixer	Throughout the project	External: *Construction machinery suppliers	Contractor
Contract Administration: *Progress Reports *Payment certificates *Progress meetings *Site inspections	184 days	Internal: *Project Manager *Project Management Team	Project Manager
Funding: Disbursement of funds	Throughout the project	Internal: *Funding Agency	CDB

4.6.3. Acquire Resources

Resource Materials

Using the data provided in the activities Schedule, WBS and BoQ which provides a breakdown of all activities and their estimated costs, a work forecast was produced for each month. Estimated material and human resources are procured one month ahead of the commencement of works. Requirements for forecasted works are documented by the

project team to ensure that everything is in place before the commencement of tasks for that particular period.

Long lead procurement of specific resources needed during the latter part of the project (finishes materials, fixtures, etc.) will be procured by the project manager prior to the commencement of the project to ensure the timely acquisition of these resources.

Resource Personnel

As mentioned in the process of acquiring material resources, resource personnel are subcontracted a month ahead of scheduled works and will remain on the project to completion.

A projectized team will be put together for this specific project from SJP Consultants. The team will manage the progression of the project throughout its lifespan and will oversee all contracted works. The contractor selected during the bid and tender process remains throughout the project, and is tasked with managing the physical execution of the project, overseeing the selection of subcontractors, workforce and the day to day activities involved in the project.

4.6.4 Develop Team

This project, from conception requires an integration of various skillsets in achieving successful completion. As a result, a teamwork environment is nurtured by the project manager to facilitate co-ordination among these individuals.

Project team meetings are used to unite as well as inform the team of details of the project including updates on its progression. When there are problems, the team brainstorms resolution ideas. Project team meetings provide the opportunity for members to engage productively and share their constructive recommendations.

During the design phase, the design team met bi-weekly to discuss design progress and any difficulties occurring along the way. Constructive discussions in resolving issues were nurtured by the project manager.

The project management planning involved increased interaction as discussion on the approaches to various aspects of planning was required. The team met weekly to discuss progress and constructive approaches.

During the construction of the structure, the construction team is expected to meet on the first day of each week to discuss forecasted tasks and issues which may need resolution. When necessary, a specialist will be subcontracted to provide training on the execution of specific tasks during these team meetings.

Monthly progress meetings will be held to provide an overview of project progress and engage in discussion to resolve any issues which may have arisen during the previous month. This meeting will be attended by the various heads of each team in addition to the project sponsor and will be led by the project manager.

4.6.5 Manage Team

During each phase of the project, the progress of each team involved is monitored closely by the project manager. During construction, the construction team will be closely monitored to ensure that they remain on track with work package assignments and maintain quality standards. Weekly walk-throughs will be performed and findings documented. Work performance reports will be compiled providing detailed assessments of work progress and an evaluation of the team's performance for the week against their delegated tasks. The performance of the project management team will be assessed by the project manager.

4.6.6 Control Resources

The control resources process is continuously performed throughout the project by the project manager. Resources must be readily available during the project life cycle. Therefore, work progress and resources utilized are closely monitored and compared with the scheduled use of resources as outlined by the project management plan. By monitoring the use of resources, replacement and reacquiring is done ahead of schedule, avoiding any delays. Resource monitoring will be done weekly.

Any delays in progress must be recorded in an issues log and brought forward to the change control committee to discuss corrective actions moving forward. Corrective actions must be signed off by the project manager before proceeding. All issues, resolution discussions and corrective actions must be documented and entered into the monthly progress reports produced by the project manager.

The project manager may choose to negotiate for additional resources or funding as required in the interest of the forward progression of the project.

4.7 Communication Management Plan

Communication is a crucial part of the success of any project. The team must be able to communicate effectively. The communication management plan details the strategic communication methods utilized during the project lifecycle as well as activities implemented to facilitate this strategy.

4.7.1 Plan Communication Management

In order to ensure that effective communication is established among all stakeholders, the interactive method of communication is used. This interactive method encompasses the use of meetings, emails, reports, telephone communication, focus groups and presentations. The communication matrix below illustrates the various communication approaches used for the numerous stakeholders.

Chart 20 Communication Matrix (Source: Composed by author)

Communication Item / Event	Audience	Objectives	Method of Communication	Frequency	Assigned Responsibility
Project Management Planning	Project Management Team	To create a Project management plan to guide the execution of the project	Emails, meetings, telephone communication	Bi-weekly during the planning phase	Project Manager
Project Design Planning	Project Design Team; including the engineer,	To produce an acceptable design for the facility with the approval of the project	Emails, meetings, presentations	Bi-weekly during the planning phase	Director of SJP Consultants

	architect, technicians, and project manager	sponsor			
Bidding and Tender Process	Contractors and Project Sponsor	To send out an official request for contractor bids and selection of the contractor	Email, meetings, press releases, formal letters, telephone communication	As necessary	Project Manager & Team
Construction Execution	Project Management Team, Construction Team, Design Team	To discuss, the status of works, work forecast, changes and procurements	Email, meetings, telephone communication, reports,	Weekly/ Monthly (as necessary)	Project Manager & Team, Contractor
Contract Administration	Project Sponsor, Project Management Team, Funding Agency and Contractor	To monitor, control and keep informed of project progression	Email, meetings, telephone communication, reports,	Weekly/ Monthly (as necessary)	Project Manager & Team

Stakeholder Management	Project Sponsor, Project Management Team, Funding Agency and other stakeholders	Keep stakeholders informed of Project progression, address any concerns voiced	Email, meetings, telephone communication, reports,	Monthly	Project Manager & Team

During the construction phase of the project, all requests, changes, reports, site instructions, and so on must be delivered and responded to using formal documentation (in writing or via email). Minutes must be recorded for all meetings held during the progression of the project. Paper/PMIS trails of all activities must be archived for later reference.

4.7.2 Manage Communications

Throughout the duration of the project (from planning to execution), the project manager will carefully monitor the methods of communication used, to ensure they work effectively. Stakeholders are to be informed of relevant details as per their impact level. In the case of high impact stakeholders, communication will come directly from the project manager utilizing a sender-receiver model. Details regarding the methods of communication for stakeholders are outlined in the communication matrix (chart 20) above.

The communication methods will be consistently monitored during implementation.

During each monthly progress meeting, an assessment is made on the effectiveness of project communication and its impact on the delivery of milestone outputs in achieving the final product is made. Weaknesses are highlighted and adjustments made to the methods of communication to ensure fluidity.

4.7.3 Monitor Communications

Monitoring and evaluation are critical to the successful implementation of the communication plan. It is the Project Manager's responsibility to obtain feedback from different communication outputs to assess the situation, and if necessary, plan to overcome the challenges of communication and improve the respective activities for the next period. The end goal is to ensure the success of the project.

The chart below outlines the recommended methods of communication for the project and how its effectivenessif determined.

Chart 21: Communication Output Indicators (Source: Compiled by author)

Communication Vehicle	Output	Indicator
Electronic	Emails Electronic Messages	"Marked as read" Feedback received Number of messages sent
Meetings	Minutes	Attendance Number of meetings Productivity of meetings (data collection)
Telephone	Call Log	Number of entries Productivity of conversations
Announcements	Press Release	Feedback from recipients
Reports	Archive data	Implementation of recommendations Build up of historical data

Evaluating communication output allows the project manager to determine how impactful and effective the methods of communication are. It also provides an open opportunity for adjustments in the next work forecast period.

4.8 Risk Management Plan

The occurrence of risks in a project is inevitable. As the project progresses, several unforeseen developments and risks that were not identified during the project planning phase may occur. The risk management plan serves to identify, analyze and manage these risks, so that they could be converted into opportunities, reducing the negative impact on project output.

4.8.1 Plan Risk Management

Risk Strategy

In an effort to ensure project success, regardless of risk occurrence and its impact, the strategic approach taken by the project team was to gather as much information as possible using expert judgment or the delphi technique, brainstorming and historical data; Information allows the identification of risks which may affect the success of the project and evaluate using root cause analysis. Through this approach, the initial risks identified in the project charter is gathered.

Following the identification of preliminary risks, the team must proceed to assess its findings, determining the impact of these risks on the project and brainstorming ways to convert those risks into opportunities or to alleviate these risks completely.

All findings were documented in a risk register and categorized to indicate their level of impact on the project. These details were added to the project management document as an update to the risk management plan.

During the initial risk assessment of the project, the following risk categories and risk possibilities were derived. As the project progresses, the Risk Register and RBS will be updated.

Chart 22 Risk Breakdown Structure (Source: Compiled by author)

RBS Level O	RBS Level 1	RBS Level 2	RBS Level 3
0. All sources of project risk	1. Financial Risk	1.1 Halt in Project Funding	
		1.2 Fluidity of Cash	
		1.3 Theft	
		1.4 Increase in material costs	
	2. Technical Risk	2.1 Design	2.1.1 Scope Changes
			2.1.2 Incompatible specifications
		2.2 Construction	2.2.1 Death
			2.2.2 Breech of Labour/Material supply Contract
			2.2.3 Policy Violations
	3. Organizational Risk	3.1 Company Policies	
	4. Environmental Risk	4.1 Natural Disaster	

0. All sources of project risk		4.2 Political Intervention	
	5. Scheduling Risk	5.1 Management	5.1.1 poor cost and time management
			5.1.2 Delinquency in project monitoring

Risk Strategy during Construction

As the construction phase of the project progresses, there will be risks which were not initially identified during the planning stage. As a result, the project team must monitor the project weekly, seeking irregularities in scheduled works, unexpected costs incurred or any other unplanned occurrences which could affect project progress.

Whatever the project team finds out will be compiled into a report and presented at the monthly progress meetings by the project manager. Findings will then be processed as per the risk strategy protocol outlined above.

Risk Analysis Team

The risk analysis team consists of the project manager, the project team and the project sponsor. This team meets once a month or as necessary throughout the duration of the project.

4.8.2 Identify Risks

As the project progresses, various risks which may provide varying levels of impact to the project arise. With consistent monitoring, these risks are detected in a timely manner and dealt with according to procedures outlined in the risk strategy. In order to determine a beneficial approach, the analysis team conducts a root cause analysis, through which an in-depth investigation is done identifying what led to the occurrence of this risk and performing a SWOT analysis assessing the strengths weaknesses, opportunities and threats presented in determining the best way forward and deriving realistic effective risk responses.

4.8.3 Perform Qualitative Risk Analysis

The probability of occurrence and impact of identified risks were assessed using the qualitative risk analysis. These risks were then prioritized from high to low in the risk register according to their risk value. The perform qualitative analysis process is iterative. Risks will continue to occur throughout the project. Proactivity is an essential requirement for project success.

The risk probability and impact chart below provides an indepth assessment of identified risks and the level of impact they may cause to the Project.

Chart 23: Risk Probability and Impact Matrix (Source: Compiled by author)

RISK	Probability	Impact	P x I Risk Value	Risk Level
1.1 Halt in Project Funding	2	5	10	Major Risk
1.2 Fluidity of cash	4	5	20	Very Serious Risk

1.3 Theft	2	4	8	Appreciable Risk
1.4 Increase in material costs	2	5	10	Major Risk
2.1.1 Scope Changes	4	5	20	Very Serious Risk
2.1.2 Incompatible specifications	2	5	10	Major Risk
2.2.1 Death	1	4	4	Marginal Risk
2.2.2 Breech of labour/material supply contract	2	5	10	Major Risk

2.2.3 Policy violations	1	3	3	Marginal Risk
4.1 Natural disaster	4	4	16	Very Serious Risk
4.2 Political intervention	1	4	4	Marginal Risk
5.1.1 Poor cost and time management	3	5	15	Very Serious Risk
5.1.2 Delinquency in project monitoring	3	5	15	Very Serious Risk

Risk rating rankings are defined below for the above ratings are highlighted below.

Risk Level			IMPACT				
			Very Low **1**	Low **2**	Medium **3**	High **4**	Very High **5**
PROBABILITY	Very High	**5**	5	10	15	20	25
	High	**4**	4	8	12	16	20
	Medium	**3**	3	6	9	12	15
	Low	**2**	2	4	6	8	12
	Very Low	**1**	1	2	3	4	5

Risk Level Definitions Key

	Very Serious Risk. Requires urgent preventive measures. The project should not be started without the application of urgent preventive measures and without solidly limiting the risk.
	Major Risk. Mandatory preventive measures. The risk variables must be strongly controlled during the project.
	Appreciable Risk. Study economically ai it is possible to introduce preventive measures to reduce the level of risk. If this is not possible, keep the variables controlled.
	Marginal Risk. It will be monitored although it does not require preventive starting measures.

Chart 24 Risk Register (Source: Compiled by author)

	Risk Description	Consequence	Impact Level	Probability Level	Mitigation Measures	Responsibility
1	Inability to maintain a consistent cash flow throughout the project	Delay in Project progress	Very high	High	Proper planning of funds disbursements	Project Manager & team
2	Continuous requests for scope changes by client	Delay in project completion Improper use of funding	Very high	High	Follow agreed scope Deal with changes after completion of orginal scope	Project Manager & team
3	Occurrence of a natural disaster	Delay in Project progression	High	High	Contingency funds to cover losses Delay is inevitable	Project Manager
4	Poor cost and time management	Delay in project progression Insufficient funding to complete project	Very high	Medium	Consistent monitoring and management	Project Manager & team
5	Delinquency in Project monitoring	Poorly managed Project Project failure	Very high	Medium	Task specific team members with the responsibility of monitoring, controlling and	Project Manager

					recording Project progression	
6	Halt in Project funding	Halt in operations	Very High	Low	Inevitable	Project Manager
7	Increase in material costs	Cost overruns	Very High	Low	Contingency funds	Project Manager
8	Incompatible Specifications: drawings specifications do not match the required output	Inaccurate work output	Very High	Low	Drawing design team to be placed on standby to advise accordingly	Project Manager
9	Breech of Labour/Material supply Contract	Delay in deliverable/ material supply delivery	Very High	Low	Create a back up listo f suppliers and labourers	Project Manager
10	Theft	Loss of material	High	Low	24 hour security on site	Project Manager
11	Death	Delay in contracted Works due to signed contract with the deceased	High	Very Low	Keep additional workers on file	Project Manager
12	Political Intervention	Redirecting of Project funds	High	Very Low	Inevitable	Project Manager

4.8.4 Perform Quantitative Risk Analysis

Quantitative Risk Analysis allows one to calculate realistic and achievable cost, scope and schedule targets for the project. Due to the fact that most of the risks highlighted in the risk register cannot be quantified, a quantitative risk analysis was not conducted in this plan.

4.8.5 Plan Risk Responses

Guided by risks previously identified, the corresponding risk responses were derived. In the event that the selected risk response was not effective, the risk analysis team is required to re-analyze the risk. In situations like these, the team will meet as often as necessary. Risk response is also an iterative process as solutions are continuously required in arising circumstances. As a result, this plan will be updated continuously as the project progresses.

Chart 25 Risk Response Plan (Source: Compiled by author)

ID	RISK	Trigger Events	Category	Strategic Response Type	Response Details
1.1	Halt in project funding	Excessive delay in the project due to disaster	Threat	Escalate	Communicate details to the funding agency and project sponsor
1.2	Fluidity of cash	More money is being spent in comparison to what is being disbursed	Threat	Avoid	Earned Value Management (EVM)
1.3	Theft	Lack of effective site security	Threat	Mitigate	Access contingency reserve fund to replace lost resources, Increase site security
1.4	Increase in material costs	A collapse in the country's economy	Threat	Accept	Access contingency reserve fund
2.1.1	Scope changes	Modification requests by sponsor	Overall	Enhance	Revisit scope plan and perform an impact assessment
2.1.2	Incompatible specifications	Inexperience,	Opportunity	Enhance	Design cost-effectively

		Limited knowledge of project requirements			
2.2.1	Death	Pandemic, Site Accident	contingent		Activate contingency resource personnel, Enforce site safety protocol
2.2.2	Breach of Labour/Material supply Contract	Limited Resources, Halt in imported supplies	Threat	Accept	Activate back up supplier/resource personnel
2.2.3	Policy Violations	Requirements satisfied yet not accepted by the relevant agencies	Threat	Mitigate	Ensure that all requirements are met before proceeding with the project
4.1	Natural Disaster	Hurricane Season	Contingent		Activate contingency resources
4.2	Political Intervention	Election Season	Threat	Transfer	Alert project sponsors and funding agency and allow them to intervene
5.1.1	Poor cost and time management	Misaligned project team	Threat	Avoid	Assign tasks to specific team members to prioritize
5.1.2	Delinquency in project monitoring	Misaligned project team	Threat	Avoid	Assign tasks to specific team members to prioritize

4.8.6 Implement Risk Responses

As the analyzed risks arise, the project team will refer to the response plan outlined above and respond as directed. Additionally, an in-depth assessment will be conducted on the overall impact of the project, and findings will be documented as an update of the risk management plan.

4.8.7 Monitor Risks

The project manager and team will continuously monitor project progress. They will closely monitor the occurrence of possible risks whether calculated or unexpected and will activate the risk management plan when necessary. Risk assessment data will be collected every week and data will be compiled in a report for further analysis.

4.9 Procurement Management Plan

Management of procurement is a very intricate part of the success of the project. This involves acquiring the resources needed to effectively execute and complete construction. Included in this plan are guidelines on procurement execution throughout the project, resources to be procured, details on possible contracts to be established and managing procurement relationships.

4.9.1 Plan Procurement Management

The plan procurement management process is overseen by the project manager.

The procurement list and statement of works were compiled by the project team and forwarded to the contractor to proceed with the networking with material suppliers. The procurement list was created using information for the project BoQ (see chart 15).

Within the three (3) days of being awarded the contract, the contractor is required to collaborate with material suppliers and service providers. Using the procurement list and statement of works provided by the project team, the contractor will proceed to obtain the necessary supplies for the forecasted work period.

The contractor must ensure that materials and service providers are procured at least one month ahead of forecasted works.

Long lead procurements of specialized fixtures and fittings for the facility were sourced by the project manager prior to commencement of construction. Specifications of these items are outlined in the design documents. The long lead procurements were sourced from oversees suppliers, who specialize in producing these specific items.

Procurement Strategy

Procurement Statement of Works

The expansion of the health facility requires a number of essential materials and services to carry out construction. A procurement list was compiled by the project manager and his team, identifying all items and services which needed to be purchased for execution.

Contract Type

Firm fixed price contracts were used in the procurement of materials for construction. This involved generating a total fixed price for materials on the onset. The material quantities were clearly defined in the BOQ and are not subject to change.

Fixed price incentive fee contracts were used for the procurement of the various services needed for the expansion of the facility. This type of contract permits flexibility for both parties and the shared responsibility in final delivery as set out in the terms and conditions of the contract.

No formal procurement policies, procedures and guidelines have been established by SJP Consultants, therefore the project team met to discuss and create the contract terms and conditions for the expansion project. This discussion was conducted under the guidance of a procurement expert (external party) who advised the team accordingly.

Data Analysis

The project management team utilized a make or buy analysis in determining whether or not materials and services should be purchased from external suppliers. With the make or buy analysis, the project team compared the cost and benefits of outsourcing as oppose to using internal resources.

The procurement list and statement of works provides details on materials and services required for the expansion of the facility.

Chart 26 Procurement List & Statement of Works (Source: Compiled by author)

Item #	Item	Deliverable Description	Deliverable	Procurement Deadline
1	Aggregates	Strip footings are erected for the foundation structure. 8 inch foundation block walls are then erected above the footing. A hardcore base is created for the ground floor slab to be erected.	Foundation & substructure	10/30/2020
2	Concrete			
3	Sand			
4	12mm dia. reinforcing steel bars			
5	8 in. Blocks			
6	10mm dia. reinforcing steel bars			
7	A142 B.R.C. wire mesh			
8	Polyurethane damp Proofing sheets			
9	Cement mortar mix			
10	Cement			
11	4 ft. X 8 ft. plywood sheets	Formwork for footing and floor slab		
12	12mm dia. reinforcing steel bars	Internal and external block walls are erected above the ground floor slab	Superstructure	11/08/2020
13	10mm dia. reinforcing steel bars			
14	8mm dia. reinforcing steel bars			
15	8mm dia. Stirrups			
16	Cement mortar mix			
17	Cement			
18	Concrete			
19	6 in. Blocks			
20	4 in. Blocks			
21	2 in. x 6 in. treated timber boards	Door and window openings are framed with the timber boards.		
22	4 ft. X 8 ft. plywood sheets	Erect formwork for beams & lintels.		
23	4 ft. x 8 ft. T1-11 treated plywood	The roof frame is erected by fixing the timber rafters to the building frame. The rest of the roof elements	Roof Structure	12/12/2020
24	1 in. x 10 in. treated timber boards			
25	1 in. x 3in. treated timber boards			

26	Polythene water proofing sheets	are then applied to the roof frame to complete the roof. The formwork for the concrete roof guttering is then set in place and the concrete is poured to form the roof gutter.		
27	2 in. x 6 in. treated timber boards			
28	2 in. x 8 in. treated timber boards			
29	Perma-clad metal roofing sheets			
30	3 in. PVC rainwater pipes			
31	3 in. PVC rainwater guttering			
32	18 gauge hurricane straps			
33	Fixing members (nails, screws, bolts)			
34	Concrete			
35	4 ft. X 8 ft. plywood sheets	The formwork for the concrete roof guttering is set in place and the concrete is poured to form the roof gutter.		
36	3 ft. x 6 ft. 8 in. aluminium door	Doors and Windows are installed following the plastering of walls and floor slabs.	Installed doors and windows	12/12/2020
37	2 ft. 8 in. x 6 ft. 8 in. timber doors			
38	2 ft. 6 in. x 4 ft. 3 in. timber doors			
39	4 in. brass but hinges			
40	3 in. Mortise lock and lever set			
41	Aluminium burglar bars			
42	3 ft. x 4 ft. 2 in. casement window			
43	3 ft. x 3 ft. casement window			
44	2 ft. x 2 ft. casement window			
45	3 ft. 4 in. x 4 ft. Perspex glass			
46	Sand	The internal and external walls of the building are plastered. Floor and wall tiles are applied to the inside of the structure.	Building finishes	02/02/2021
47	Cement mortar mix			
48	Cement			
49	4 in. x 4 in. wall tiles			
50	1ft x 1ft floor tiles			
51	8 in. x 8 in. floor tiles			
52	Thinset mortar			

53	3 in. Skirting	Three coats of paint are applied to the structure. One coat of primer is first applied, then two coats of emulsion Paint. Skirting is then applied in the various rooms.		
54	Primer			
55	Wall paint			
56	Water tank	The base for the wáter tank is created and the wáter tank installed. The plumbing connections to the wáter tank are installed. The fencing surrounding the perimeter of the building is installed.	Completed external works	02/02/2021
57	5/8 in. dia. reinforcing steel bars			
58	4 in. dia. PVC pipe			
59	1-1/2in. dia. PVC pipe			
60	3 in. dia. PVC pipe			
61	¾ in. dia. PVC pipe			
62	8 ft. high galvanized chain link fabric			
Item #	Services	Scope of Works	Deliverable	Deliverable Due Date
63	Cabinetary production and installation	Building of cabinetary for 7 rooms.	Cabinetary	02/02/2021
64	Electrical installation	Fixing of electrical wiring throughout the facility.	Installed electrical fixings	11/08/2020
65	Plumbing installation	Fixing of pipes and plumbing fixtures throughout the facility.	Installed plumbing lines and fixtures	11/08/2020
66	Ethernet installation	Fitting of telecommunications lines throughout the facility.	Installed ethernet connections	01/08/2021
67	Tile installation	Fixing of tiles in facility rooms.	Installed tiles in rooms	02/02/2021
68	Asphalt paving	Paving of facility driveway and parking área.	Paved driveway and car park	02/02/2021

69	Clearing and excavation of site	Removal of site vegetation and excavating for foundations using a backhoe and excavator.	Clearance of site	10/25/2020
70	Steel Bending	Bending of reinforcing steel to form stirrups.	Stirrups for reinforement in beams and columns	10/30/2020

4.9.2 Conduct Procurements

Procurement of Materials

Upon being awarded the contract, the contractor sources potential suppliers to provide resources for the project. Using the bill of quantities as a guide for resources and quantities, a detailed draft of material quantities is provided to potential suppliers for pricing proposal and supply capability.

Under the guidance of the Project Manager, two material suppliers are selected to provide the necessary resources; the first being the main supplier and the second being a backup. Suppliers are selected based on the quality of the product and the economic advantages. With the approval of the project manager, the contractor signs a contract with the main supplier.

Material supplies for the first two months of work are procured following the contractual agreement. A material requirements document indicating forecasted works and materials and their quantities are provided to the supplier for the immediate release of resources for the commencement of site work.

Moving forward, the contractor will furnish the supplier with a list of materials and quantities required for the following month, to ensure the availability of materials for the upcoming work forecast.

Procurement of Services

Prior to the commencement of construction, the contractor, the Project Manager and the project team, compile various sub-contractual proposals including heavy machinery services, steel fabrication, MEP services, Ethernet services and roof installation services for which vendors will bid. Bid proposals will be advertised using general circulation publications.

The team will then perform a bid evaluation to select the vendors most suited for the project. Selected vendors will then sign a mutually binding agreement providing specifications of the deliverable, agreed pricing for services, penalties, inspection, quality and acceptance criteria, payment terms, general terms and conditions, change requests and termination and alteration details.

4.9.3 Control Procurements

To ensure that the prompt procurement of material and services, the contractor will provide the relevant resource documentation one month prior to commencement of forecasted works to all relevant subcontractors and suppliers. Through this means, all necessary resources will be made available.

Procurement of Materials

The contractor will meet with material suppliers on a bi-weekly basis, to discuss material disbursements, deliveries, outstanding payments, product specifications and quality. A status report covering the abovementioned will be compiled and presented to the project manager for discussion during monthly meetings or as necessary.

Procurement of Services

In the case of procurement of services, workmanship will be continuously monitored to ensure that sub-contractors meet the requirements specified within the contract. The quality of workmanship will also be monitored. Considering there is a specific timeframe to complete the project, compliance is also required. Bi-weekly inspections followed by update meetings will be held to discuss task progression, findings and so on. Data collected from these meetings will be compiled and presented to the project manager at the monthly progress meeting or as necessary.

All projects are faced with risks and constraints throughout the project life-cycle. Therefore, it is likely that contract modifications may occur. In light of this, data collected during inspections and meeting discussions enable the project manager to keep an eye on the overall progression of the project. This makes it possible to foresee any adjustments necessary regarding contracts, project schedule, scope, or cost using the established change request protocols.

4.10 Stakeholder Management Plan

Stakeholders play a vital role in the planning and execution of the project as they are either impacted by the project or vice-versa. As a result, it is important to identify and engage all stakeholders using a structured approach. The stakeholder management plan focuses on identifying, analyzing and engaging stakeholders strategically and outlines in detail the approach to be taken during the planning and construction of the facility.

4.10.1 Identify Stakeholders

With the use of data gathering techniques such as research, questionnaires, brainstorming and historical data, the major stakeholders were identified and prioritized. Stakeholders were then analyzed in terms of their roles and impact on the project and a power grid generated indicating the varying levels of authority and influence on the project.

The stakeholder list below identifies the stakeholders involved in the project and the interest of each stakeholder.

Chart 27 Stakeholder List (Source: Compiled by author)

Name/Organization	Interests (Benefit)	Project Impact	*Priority
CDB (Funding Agency)	• Efficient use of funds provided • Social & economic development driver	high	1
SSDF (Sponsor)	• Meeting the needs of the stakeholders; • Achieving final project deliverable • Community development	high	1
SJP Consultants	• The holistic success of the project • Developing Company portfolio	medium	3
Design Team	• Capturing project design objectives successfully; • Experiencing development	medium	3

Project Management Team	• Achieving project management objectives • Experiencing development	high	3
Contractor	• Flawless delivery of physical deliverable • Development	medium	4
Sub-Contractors	• Provision of quality workmanship	medium	4
Suppliers/ Vendors	• Provision of quality standard material	medium	5
Community Members	• Feedback on the community impact of project both in output and outcome	low	4
Approval Agencies	• Ensuring the building requirements are met as per the country's enforced standards	medium	4
Health Ministry	• Operations management of the additional health facility	low	4
GOSL	• Infrastructural development of the country's health facilitation ability	low	5

*Priority scale ranges from a scale of 1-5; 1 - highest priority & 5 – lowest priority

The stakeholder register below provides contact information and details on methods of communication for each stakeholder identified in the stakeholder list

Chart 28 Stakeholder Register (Source: Compiled by author)

ID	Name/Organization	Role	Contact Info. Tel #	Contact Info. Email	Communication Type	Communication Medium
1	CDB	Funding Agency		Officer.CDB@gov.lc	• Reports • Meetings	Email Telephone Skype
2	SSDF • Project Officer • Community Liason Officer	Sponsor		p.officer@ssdf.org c.liason@ssdf.org	• Reports • Meetings • Personal communication	Email Telephone Skype
3	SJP Consultants • Director	Consultant		director@sjp.com	• Reports • Meetings • Personal communication	Email Telephone Skype
4	Design Team • Architect • Structural Engineer • MEP Engineer • Geotechnical Engineer	Design Drawings		arch@sjp.com struct@sjp.com mep@sjp.com geo@sjp.com	• Reports • Meetings • Personal communication • Presentations	Email Telephone Skype Social Networking
5	Project Management Team • Project Manager • Project Technician • Project Accountant • Project Administrator • Quality Technician • Procurement Technician	Project Management Contract Management		p.m@sjp.com p.t@sjp.com p.a@sjp.com p.adv@sjp.com q.t@sjp.com Pro.tech@sjp.com	• Reports • Meetings • Personal communication • Announcements	Email Telephone Skype Social Networking

6	Contractor	Construction Management		mpcontracting@candw.lc	• Reports • Meetings • Personal communication • Announcements	Email Telephone Face to Face
7	Sub-Contractors • Tiler • Roof Technician • Steel Benders • Carpenter • Electrician • Plumber • Painter	Specialists			• Meetings • Personal communication • Announcements	Email Telephone Face to Face
8	Suppliers/ Vendors • Construction Supplier • Roofing supplier • Paint supplier • Block Supplier • Heavy Duty Machinery rentals	Suppliers			• Meetings • Personal communication • Announcements	Email Telephone Face to Face
9	Community Members	Beneficiary	Refer to community Liason Officer	N/A	• Announcements • Meetings	Media Announce-ments Face to Face
10	Approval Agencies	Building regulators/policy enforcers	Refer to yellow pages directory	N/A	• Meetings • Personal communication	Face to Face Telephone
11	Health Ministry	N/A	Refer to yellow pages directory		• Meetings • Personal communication	Face to Face Telephone
12	GOSL	Regulation	N/A	N/A	• Meetings • Reports	Email Media Announce-ments Telephone

The Stakeholder Analysis matrix below serves to identify the stakeholders affected by and those who impact the construction of the health facility. It outlines and categorizes the functional roles and expectations of the stakeholders as per the project execution and dictates the levels of influence of these stakeholders, meeting project objectives successfully.

Chart 29 Stakeholder Analysis Matrix (Source: Compiled by author)

Stakeholder Analysis Matrix							
Project Name	Construction of Guesneau Health Facility	Expansion of Guesneau Health Facility					
Main Sponsor	SSDF						
ID	Stakeholders	Functional Area	Roles - Responsibilities	Main Expectations	Major Requirements	Influence/Impact (Low-Medium-High)	Stakes
1	CDB	Funding	Funding Agency	Low project involvement	• Stay within • budget	high	contribution
2	SSDF	Project Sponsor	Client	High project involvement	• Approval of Major • Decisions • Remain Informed	high	contribution
3	SJP Consultants	Project Management/ Design Team	Consultant	High project involvement	• Execute the Project Management Plan	high	Specialist knowledge
5	Project Team	Project Management	Assist Project Management in managing the project	High Project Involvement	• Assist project Manager in Management execution duties	high	Specialist Knowledge
6	Contractor	Construction	Oversee construction execution	High Project Involvement	• Meeting the project deadline • Remain within Budget • Maintain project scope	medium	Specialist knowledge
7	Sub-Contractors	Resource Personnel	Execution of specific tasks/work packages	High Involvement	• Deliver contract requirements	medium	Specialist knowledge

8	Suppliers/ Vendors	Resources	Material Suppliers	Low project Involvement	• Deliver resources punctually • Deliver quality standard supplies	low	contribution
9	Community Members	Residents	Consumers/End Users	Low project involvement	• Request update on project progress	low	Interest
10	Approval Agencies	Policy enforcers	Ensure that design adheres to the country's building standards	Low project involvement	• Design & construction adheres to building standards	medium	Rights
10	Health Ministry	none	none	Low project involvement	• Output meets functional requirements	low	Ownership
11	GOSL	Policy Formulators	Legislative Framework	Low project involvement	• Provide location and legislation for construction	medium	Ownership

Stakes Key *(*Project Management Institute, 2017).

Interest	Persons/groups affected by decisions related to the project or its outcomes
Ownership	A person or group with legal title
Knowledge	Specialist knowledge which benefits the project
Contribution	Provision of funds, human and material resources
Rights	Legal and moral rights including health and safety outlined in the legislative framework

Chart 30 Stakeholders Matrix assessing Impact, Interest, Power and Influence

(Source: Compiled by author)

Stakeholders	Impact (low, Medium, High	Interest (Low, Medium, High)	Power (low, Medium, High)	Influence (Low, Medium, High)
CDB	Medium	Medium	Low	Low
SSDF	High	High	High	High
SJP Consultants	High	High	Medium	Medium
Project Design Team	High	Medium	Medium	Medium
Project Management Team	High	High	High	High
Contractor	Medium	Low	Low	Low
Sub-Contractors	Medium	Low	Low	Low
Suppliers/ Vendors	Medium	Low	Low	Low
Community Members	Low	Low	Low	Low
Approval Agencies	Medium	Low	Low	Low
Health Ministry	Low	High	Low	Low
GOSL	High	Low	Low	High

4.10.2 Plan Stakeholder Engagement

A number of stakeholders with varying levels of interest and power are involved in the successful completion of this structure. To ensure that all stakeholders are engaged, regardless of the level of impact, an action plan was composed by the project management team to effectively interact and satisfy the diverse information needs of all involved. The methods of engagement were derived through brainstorming and discussions at meetings. The strategic method used for engagement was formulated by examining the level of involvement of stakeholders identified in the Stakeholder list (chart 26) and creating approaches accordingly.

Stakeholders are engaged by providing updates on project progress, acquiring inputs for decision-making and obtaining feedback on the progressive impact of the project on the direct community. The stakeholder engagement assessment matrix below depicts the required engagement levels to ensure the success of the final project.

Chart 31 Stakeholder Engagement Assessment Matrix

Stakeholder	Unaware	Resistant	Neutral	Supportive	Leading
CDB (Funding Agency)				X	
SSDF (Sponsor)					X
SJP Consultants					X
Design Team					X
Project Management Team					X
Contractor			X		
Sub-Contractors			X		
Suppliers/ Vendors			X		
Community Members	X	X		X	
Approval Agencies			X		
Health Ministry				X	
GOSL				X	

Engagement Key (Project Management Institute, 2017).

Unaware	Unaware of the project and potential impacts
Resistant	Aware of the project and potential impacts but resistant to any changes that may occur as a result of the work or outcome of the project. These stakeholders are unsupportive
Neutral	Aware of the project, but neither supportive nor unsupportive

Supportive	Aware of the project and its potential impact and approve of the work and its outcomes
Leading	Aware of the project and potential impact and are actively engaged in ensuring that the project is a success.

4.10.3 Manage Stakeholder Engagement

In an effort to minimize resistance and increase support of stakeholders throughout the project, the project manager, with the assistance of his team, will conduct monthly meetings with the most influential stakeholders to keep them abreast of project progress and updates, and to help them understand the goals objectives, benefits and risks involved in the execution of the project. During these meetings, the project manager will also obtain feedback from stakeholders regarding issues arising from the initiative.

Within seven (7) days following each stakeholder meeting, the project team will meet to discuss feedback received and brainstorm solutions; addressing the concerns arising as well as alleviating any risks that occurred during the previous month.
All discussions are formally recorded in the form of minutes and disbursed to the relevant parties via email by the end of the week.
Any changes required as per discussions must follow established change control procedures.

Considering that community members may not fall in the category of influential stakeholders, they will be represented by a liaison officer who will speak on their behalf at stakeholder meetings. The community liaison is appointed by the project sponsor and is required to be a medium of communication between community members and the project management team.

4.10.4 Monitor Stakeholder Engagement

With the use of data collected and recorded during progress meetings, informal discussions via telephone and face to face interaction, the project team assesses the effectiveness of their interactions using engagement criteria. The project manager will then determine areas in need of improvement and make the necessary adjustments to the project's communication plan.

5.0 CONCLUSIONS

The objective of this project was to diagnose a problem and articulate a plausible solution to problem diagnosed. The problem identified was the dearth of proper project management in the island and the proposed solution was the composition of a guide for proper project management. Hence, the general objective was to develop a project management plan to effectively manage the expansion of the Guesneau health facility, one of many undertakings by the government of Saint Lucia which formed a PPP with SJP Consultants to undertake that project. The exercise was underpinned by the "*The Standard for Project Management and A Guide to the Project Management Body of Knowledge (PMBOK® Guide*)", which is a complete collection of approved and established procedures, best practices, jargon and guidelines of project management depicted in the ten (10) knowledge areas.

The plan was developed by expounding on each knowledge area as it relates to the expansion of the Guesneau Health Facility; Providing information on data gathered in project planning and outlining procedures and guidelines for project execution. The information compiled is in alignment with the ten (10) specific objectives required to complete the project management plan and achieve the successful completion of the project. Each of these objectives was accomplished during the planning process. A briefing on each guideline included in the project management plan is outlined below.

1. The project charter is an authorization document issued to recognize the existence of the project. Outlined in the charter is an overview of details specific to the project, including the project description, scope statement, milestones, project budget, risks, stakeholders, assumptions and constraints. The charter acts as a compiled summary of the project integrated into a simplified table format.

2. Included in the Scope Management Plan are indepth details of the specific activities involved in the construction of the facility. These details are depicted in the form of the WBS and the WBS Dictionary which specifies each aspect

of the project and the activities involved. Details outlined in the project charter have been explained, and particulars on the main requirements of the project have been provided. These details guide the project team in fulfilling the expectations for the final deliverable.

3. As per the work structure identified, the validation and control of the project is overseen by the project manager and his team. An assessment is executed using set acceptance criteria ensuring that the project remains on track and facilitating the acceptance of the work packages outlined in the WBS. The project is closely monitored to ensure compliance with requirements specified in the define scope process.

4. The Schedule Management Plan specifies details of the activities undertaken during the construction process and the corresponding durations for execution. A project schedule was mapped out as a guide for the execution of the project providing visual details, work packages and their corresponding activities and illustrating the time frame for each activity over the lifespan of the project. A visual is also outlined indicating the most critical path for the project and indicating the longest path that may be pursued while utilizing the shortest time span. Earned Value Management is the method to be utilized by the project team to control the activities involved.

5. An estimated budget was specified in the project charter. However, the Cost Management Plan provides details of the project budget. It provides cost estimates on each work package and the activities involved in the execution of the project from commencement to completion. An outline of how funding will be disbursed during the lifespan of the project is also depicted within the plan utilizing a cost baseline schedule chart. The project cost, similar to the project schedule is controlled using the Earned Value Management method to ensure that the project remains within budget.

6. Outlined in the Quality Management Plan are quality standards to be adhered to during the lifespan of the project. The standards indicated are specific to workmanship, materials and resources, in addition to drawing quality. They all greatly impact the final deliverable. Quality is managed and controlled by the project team by conducting routine assessments and material testing against the quality criteria and metrics specified in the quality management plan. Quality management is conducted throughout project in order to ensure that any discrepancies are flagged and rectified speedily via the specified change control protocols.

7. Specified in the Resource Management Plan is a hierarchical chart indicating the resource personnel involved in the project and the corresponding authorities as it relates to their ranked positions. The roles of each post as it relates to project activities are further dictated using a RACI chart and explained using the activities resource chart, providing details on resources required, scheduled activities and the timeframe to be completed. Material and personnel resources required for execution of the project are acquired ahead of work package commencement. Formal contracts are used to reserve materials and services. These indicate expectations and requirements of all parties involved and are sealed formally by the signature of both parties. Resources are consistently monitored throughout the project to ensure that they are adequately utilized and requirements are adhered to in the interest of the project.

8. The Communication Management Plan was created to facilitate effective communication among all stakeholders. Included in this plan is the communication matrix, depicting the most effective methods of communication among the various stakeholders based on research executed by the project team. In order to monitor the efficiency of these communication methods, communication output indicators are used. Based on data collected utilizing these indicators, the project management team is able to detect any downfalls in communication and rectify them in a timely manner.

9. During the initial phase of the project, preliminary risks were identified based on the analysis of historical data. Within the Risk Management Plan however, an indepth assessment of project risks was conducted by the project management team using addition data collection methods including expert judgement and the Delphi technique to compile a risk register. The impact, probability levels and mitigation measures are also assessed. A risk breakdown structure was also derived to categorize the occurrence of risk possibilities throughout the project. Further qualitative assessment of risks as it relates to severity and impact was conducted to provide the project team with insights regarding realistic possibilities and their consequences. This data was represented in the Risk Probability and Impact Matrix.

   A risk response plan was developed to manage these risk possibilities in the event they are to occur during the project life span and an implementation plan was also developed to deal with the occurrences accordingly.

10. Procurement is a very significant part of the project. The Procurement Management Plan outlines the project team's approach to procuring the various services and materials needed to execute the project. This plan is guided by the project schedule, material list and projected resource requirements for the forecast period. All resources are procured two months ahead of the work period to ensure that timely recovery is done in the event of a downfall. Monitoring and controlling of procurement is vitally important for the project to ensure timely completion.

11. Stakeholders play an important role in the success of any project. Therefore, a stakeholder list and register was derived within the Stakeholder Management Plan detailing all stakeholders who are impactful in or are impacted by the execution and completion of this project. A stakeholder analysis matrix was derived detailing the roles and responsibilities, expectations, requirements and levels of influence of all stakeholders involved.

Recognizing the impact, interest, power and influence of stakeholders is an essential aspect in determining how to approach stakeholders. A stakeholder matrix assessing these aspects was formulated to aid the team in their approach to dealing with stakeholders.

Dependent on the level of impact of the stakeholder, the level of involvement and method of engagement varies. As a result, a stakeholder engagement assessment is imperative. These means of engagement are strategically monitored and managed throughout the project by examining the effectiveness of communication and engagement while utilizing the various forms of communication.

12. The Project Management Plan is a compilation of ten (10) abovementioned plans, reflecting the fundamentals of each of the ten (10) knowledge areas outlined by the PMBOK guide, Sixth Edition 2017. The objective is to ensure that the best project management practices are exercised by the SJP Consultant Management team in the expansion of the Guesneau Health Facility Construction.

6.0 RECOMMENDATIONS

The following recommendations have been highlighted in facilitating the successful expansion of the Guesneau Health Facility;

1. SJP Consultant Project team and the project sponsor must recognize the Project Charter and its significance in authorizing the expansion of the Guesneau Public Health Facility.
2. The project scope is one of the most significant parts of this project management plan and must be used as a benchmark for the SJP Consultant Project team in proceeding with the planning for the expansion of the facility.
3. Time and cost are major impactors of this project. Therefore, the project team must consistently monitor and control the project and rectify issues immediately to ensure project success.
4. The quality of the final product is a major determinant of whether a project is considered successful or not. As a result, it is necessary for the project team to maintain quality standards throughout the project to guarantee success.
5. The compiled project team is one of the most essential resources. Therefore, SJP Consultants must ensure that a skilled and capable project team is created to lead the project prior to the planning phase.
6. Communication is key in any project. Therefore, it is important that the project management team keeps an open line of communication with all relevant stakeholders to guarantee a fluid progression throughout the project.
7. Risks will continuously arise throughout the project. As a result, it is important for the project management team to closely monitor the project, so that in the event of any unexpected developments, the risk response plan can be activated in a timely manner and the project's progress can remain on track.
8. The project team must approach the procurement of resources and resource personnel as early as possible to avoid any last minute issues.
9. All stakeholders are significant in the execution of the deliverable. Therefore, the project team must ensure that everyone is heard, understood and

contented. The team must also ensure that the proper communication means as per the communication management plan is used in engaging stakeholders.

10. In addition to the guidance of this Project Management Plan, SJP Consultants must adhere and refer to the guidelines of the PMBOK guide, Sixth Edition 2017 throughout project execution.

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1. APPENDICES

Appendix 1: FGP Charter

PROJECT CHARTER	
Date:	**Project Name:**
23rd March, 2020	Project Management Plan for SJP Consultants
Knowledge Areas / PM Processes:	**Application Area (Sector / Activity):**
Scope Management, Schedule Management, Cost Management, Quality Management, Resource Management, Communication Management, Risk Management Procurement Management, Stakeholder Management,	- Construction
PM Processes: Initiating, Planning,	
Project Start Date:	**Project Finish date:**
13th April, 2020	30th October, 2020
Project Objectives	
General Objective:	
The general objective is to develop a project management plan to effectively manage the expansion of the Guesneau health facility.	

Specific Objectives:

1. To define a project charter to formally authorize the project and provide relevant details about the project.
2. To develop a scope management plan to define the work involved in the delivery of the project.
3. To develop a cost management plan to ensure that the defined scope remains within budget.
4. To develop a schedule management plan to ensure that a realistic time frame is identified and followed to ensure the timely delivery of the project.
5. To develop a quality management plan to define quality standards for the delivery of the project.
6. To develop a human resource management plan to determine the relevant personnel involved in each aspect of the delivery.
7. To develop a communications management plan that outlines, highlights and details communication conducted during the project.
8. To develop a risk management plan that identifies risks involved in the project and mitigation measures for dealing with those risks.
9. To develop a procurement management plan that identifies procedures to be utilized for obtaining resources for project execution.
10. To develop a stakeholder management plan that identifies stakeholders and the relevance and power with the associated project.

Project purpose or justification (merit and expected results):

The purpose of the project management plan is to produce a detailed guide to achieve the successful execution and completion of the Guesneau Health Facility.
The island is flooded with poorly executed projects. Creating a project management plan will guide the project team into achieving a successful project outcome.

The current health facility has been in existance for more that thirty years. Due to poor upkeep, it is currently in a deplorable condition as the physical building has slowly deteriorated with time. As the years have progressed, the community continues to grow and the need for a more modern, accommodating facility is apparent.

The island of Saint Lucia consists of two main hospitals to service an entire island of approximately 182,000 inhabitants. As a result, small health facilities in each district is essential. In recognition of this, the Saint Lucia government along with the financial aid of the Caribbean Development Bank (CDB) have undertaken rehabilitation initiatives for all health facilities throughout the island.

In light of this, the CDB has employed SJP Consultants, to design and manage the expansion of the Guesneau healthfacilit y. The new facility is expected to provide additional health services as well as accommodating more patients on a daily basis.

Description of Product or Service to be generated by the Project – Project final deliverables:

This final product is a functional Project Management Plan which guides the project team in the execution of the Guesneau Health Facility. The plan explains how each knowledge area will be applied in the final project to ensure a successful outcome.

Assumptions:

1. Project schedule will be followed as planned and therefore the project will be completed on time.
2. All resources and resource personnel are readily available during each phase of the project.
3. The occurrence of this nationwide epidemic (COVID-19) will not affect the progress of the completion of the Project Management Plan.

Constraints:

1. The scope of the project is not clearly understood.
2. The time allotted to complete the FGP may be inadequate due to the complexity of the selected project.
3. Historical data used to compile the project may not satisfy the requirements of this project.

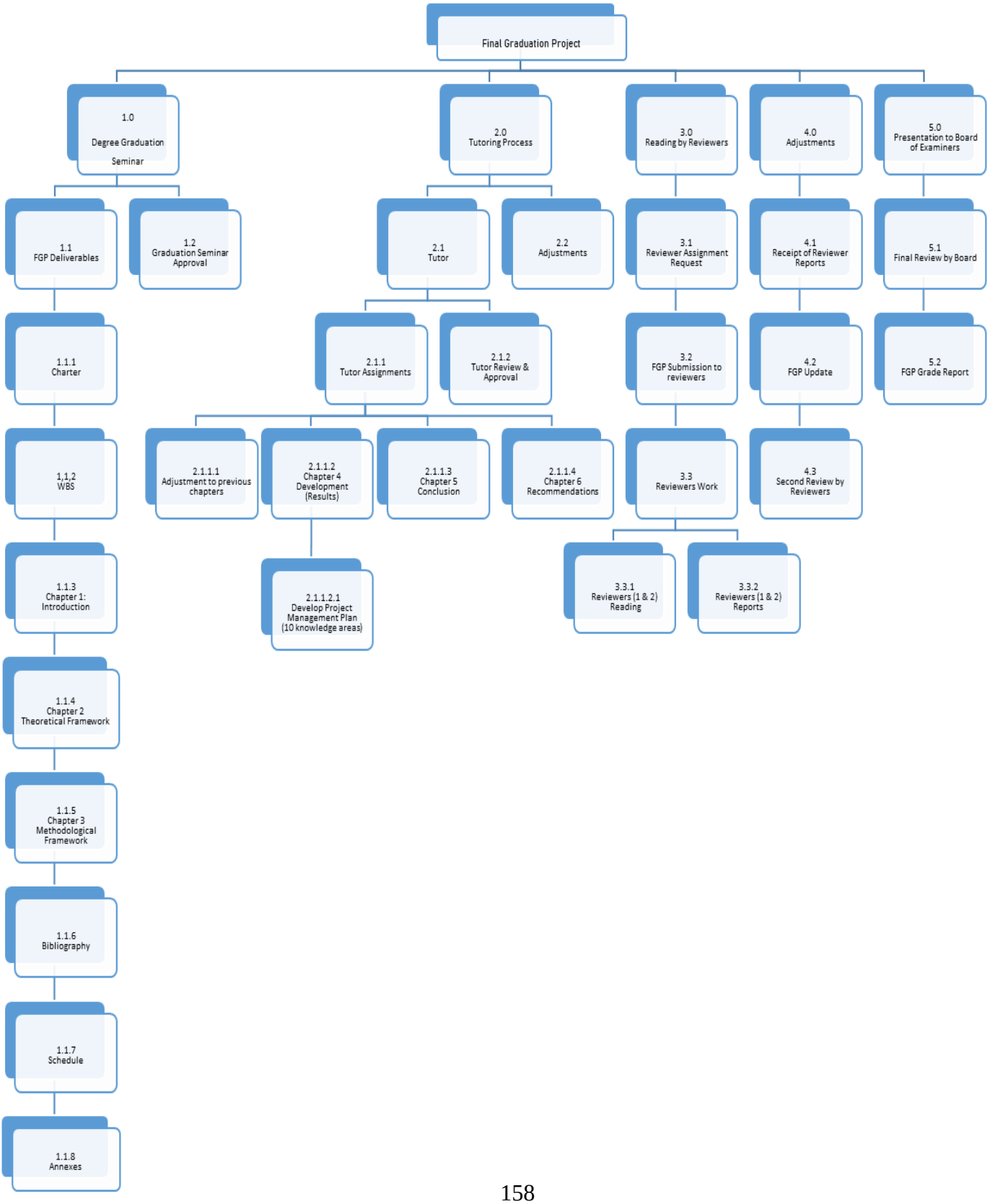
Preliminary Risks:

Risk	**Effect**	**Impact**
1.0 Advice provided by tutor may not be understood clearly	Delay in document corrections	The time frame of delivery

2.0 Feedback is not given in a timely fashion by the tutor	Delay in project progress	Delay in overall project completion
3.0 Current epidemic imposes an unexpected threat to the health of the individual preparing this document	Inability to complete assigned work	Delay in project completion; incomplete scope, prolonged time frame
4.0 Failure to recognize and satisfy the requirements of the relevant stakeholders.	Incorrect project scope	Project scope and time frame
5.0 Inability to satisfy the recommendations of the tutor.	Continuous delay in project delivery	Delayed time and scope
Budget:		
Project Management Planning - $15,000		
Milestones and dates:		
Milestone	**Start date**	**End date**
FGP Start	4/13/2020	4/13/2020
1.0.Degree Graduation Seminar	4/13/2020	5/17/2020
1.1.FGP Deliverables	4/13/2020	5/10/2020
1.2.Graduation Seminar Approval	5/11/2020	5/17/2020
2.0. Tutor Process	5/18/2020	9/8/2020
3.0.Reading by Reviewers	9/9/2020	10/01/2020
4.0.Adjustments	10/02/2020	10/21/2020
5.0.Presentation to the Board of Examiners	10/22/2020	10/30/2020
Relevant Historical Information:		

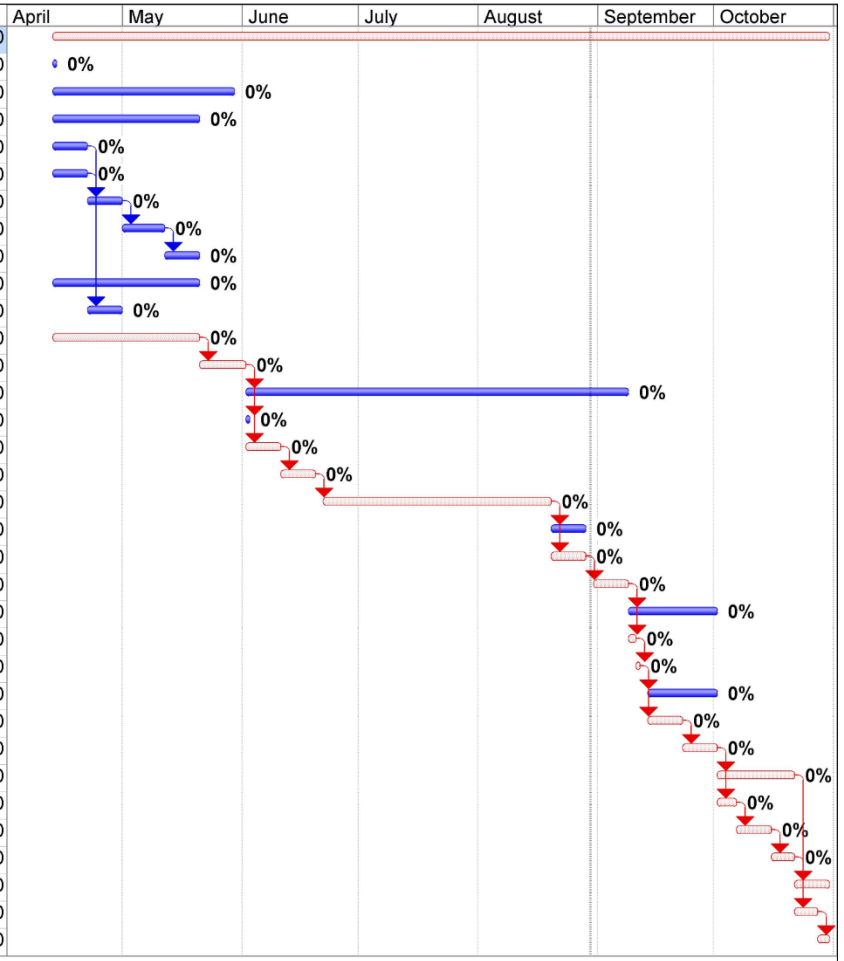
SJP Consultants is a team of architects and engineers who specialize in project designs. The company has been in existence over the past ten (10) years. Recently, SJP Consultants expanded to include a PMO to undertake the project management of their design jobs. The management framework guiding the PMO is currently undergoing development. Over the past four(4) years, the Government of St. Lucia (GoSL) has employed SJP Consultants as the primary design company for community development projects throughout the islands. The construction of 80% of these projects was poorly executed. In light of this, the PMO department was created to undertake the project management of future projects.	
Stakeholders:	
Direct stakeholders: Lecturer, Tutor, Reviewers, Board of Examiners, Project Manager (Sharm Jn Pierre) **Indirect stakeholders:** GOSL, SJP Consultants, CDB,SSDF	
Approval:	
Project Manager:	Signature: 
Authorized by:	Signature:

Appendix 2: FGP WBS



Appendix 3: FGP Schedule

ID	Task Name	Duration	Start	Finish
1	Final Graduation Project	145 days	Mon 4/13/20	Fri 10/30/20
2	FGP Start	1 day	Mon 4/13/20	Mon 4/13/20
3	1.0.Degree Graduation Seminar	35 days	Mon 4/13/20	Fri 5/29/20
4	1.1.FGP Deliverables	28 days	Mon 4/13/20	Wed 5/20/20
5	1.1.1. Charter	7 days	Mon 4/13/20	Tue 4/21/20
6	1.1.2.WBS	7 days	Mon 4/13/20	Tue 4/21/20
7	1.1.3. Chapter 1: Introduction	7 days	Wed 4/22/20	Thu 4/30/20
8	1.1.4. Chapter 2: Theoretical Framewor	7 days	Fri 5/1/20	Mon 5/11/20
9	1.1.5. Chapter 3: Methodological Frame	7 days	Tue 5/12/20	Wed 5/20/20
10	1.1.6. Bibliography	28 days	Mon 4/13/20	Wed 5/20/20
11	1.1.7.Schedule	7 days	Wed 4/22/20	Thu 4/30/20
12	1.1.8.Annexes	28 days	Mon 4/13/20	Wed 5/20/20
13	1.2. Graduation Seminar Approval	8 days	Thu 5/21/20	Mon 6/1/20
14	2.0. Tutor Process	71 days	Tue 6/2/20	Tue 9/8/20
15	2.1.Tutor	1 day	Tue 6/2/20	Tue 6/2/20
16	2.1.1.Tutor Assignments	7 days	Tue 6/2/20	Wed 6/10/20
17	2.1.1.1.Adjustments to previous chapte	7 days	Thu 6/11/20	Fri 6/19/20
18	2.1.1.2.Chapter 4: Development (Result	43 days	Mon 6/22/20	Wed 8/19/20
19	2.1.1.3.Chapter 5: Conclusion	7 days	Thu 8/20/20	Fri 8/28/20
20	2.1.14.Chapter 6: Recommendations	7 days	Thu 8/20/20	Fri 8/28/20
21	2.2.Adjustments	7 days	Mon 8/31/20	Tue 9/8/20
22	3.0.Reading by Reviewers	17 days	Wed 9/9/20	Thu 10/1/20
23	3.1.Reviewer Assignment Request	2 days	Wed 9/9/20	Thu 9/10/20
24	3.2.FGP Submission to Reviewers	1 day	Fri 9/11/20	Fri 9/11/20
25	3.3.Reviewers Work	14 days	Mon 9/14/20	Thu 10/1/20
26	3.3.1.Reviewers 1 & 2 Reading	7 days	Mon 9/14/20	Tue 9/22/20
27	3.3.2.Reviewers 1 & 2 Reports	7 days	Wed 9/23/20	Thu 10/1/20
28	4.0.Adjustments	14 days	Fri 10/2/20	Wed 10/21/20
29	4.1.Receipt of Reviewer Reports	3 days	Fri 10/2/20	Tue 10/6/20
30	4.2.FGP Update	7 days	Wed 10/7/20	Thu 10/15/20
31	4.3.Second Review by Reviewers	4 days	Fri 10/16/20	Wed 10/21/20
32	5.0.Presentation to the Board of Examir	7 days	Thu 10/22/20	Fri 10/30/20
33	5.1.Final Review by Board	4 days	Thu 10/22/20	Tue 10/27/20
34	5.2.FGP Grade Report	3 days	Wed 10/28/20	Fri 10/30/20



Project: FGP Project Schedule UPDA
Date: Sun 8/30/20

Critical
Critical Split
Critical Progress
Task
Split
Task Progress
Baseline
Baseline Split
Baseline Milestone
Milestone
Summary Progress
Summary
Project Summary
External Tasks
External Milestone
Deadline

Page 1

Appendix 4: Change Request Form

Project name:

Requested by:	**Date:**

Request name:	**Request number:**

Change description:

Change reason:

Impact of change:

- **Scope**:
- **Budget**:
- **Timeline**:
- **Resourcing**:
- **Communications**:
- **Other**:

Proposed action:

Associated cost:

Approved by:	**Date:**

Appendix 5: Site Instruction Form

Site Instruction Issuance Form

Prepared by:	Client: SSDF CASTRIES St. Lucia	Project: Gueswneau Health Facility Gueswneau, Babonneau St. Lucia	ISSUES: No. / Issued For / Date — 1	GENERAL NOTES: 1. Do not scale dimensions on this drawing. 2. All dimensions to be cross checked on site before commencement of construction and during the works. 3. All descrepancies noted to be reported immediately to the Engineer for clarification. 4. This design and drawing are the exclusive property of the Consultant.	Project No.:
Approved by:	Scale: As Shown; Designed by:	Drawing Title: SITE INSTRUCTION #	ADDENDUM: No. / DESCRIPTION / Date		Drawing No.:
	Date Last Revised:				Addendum No.:
	Date:				

Appendix 6: Quality Inspection Sheet

Project Name:	
Prepared by:	
Date:	

Quality Policy

Project Quality Definition

Deliverable and Acceptance Criteria	
List of project deliverables and milestones checklist for the period	
Deliverables	Acceptance Criteria/ Applicable Standards
1.	
2’	
3.	
4.	
5.	
6.	

Job Site Quality Check Sheet and Log Sheet	
Project ID	
Project Name	
Inspector	
Date	

Overview

- Conduct General Overview of Site
- Pay attention to critical/risky areas
- List Agenda Items below

Assess Work Completed

- List tasks and their statuses below
- Indicate crucial issues
- Verify if specifications are met

List Corresponding Comments Below

1.
2.
3.
4.
5.
6.
7.
8.

Monitor Work in Progress o Correction of work progress issues where necessary o Monitor work in progress on new tasks o Verify that drawing details and directives are followed List Corresponding Comments Below
1.
2.
3.
4.
5.
6.
7.
8.
Verify Material Controls Review materials as follows o Verify that materials are being inspected before use o Identify faulty/defective materials/equipment o Examine reaction of materials in use (signs of defects0 List Corresponding Comments Below
1.
2.
3.
4.
5.
6.
7.

8.
Corrective Actions o Identify issues at hand o Identidy corrective actions o Review & discuss with field personnel List Corresponding Comments Below
1.
2.
3.
4.
5.
6.
7.
8.

Bètafé
Education Services Inc.

Kentry D. Jn Pierre, PhD
Tel: 758 723 7601
besinc758@gmail.com
kdjnpierre@hotmail.com

30th August, 2020

To Whomsoever It Concerns:

Re: Sharm Jn Pierre's Final Graduation Project, "Project Management Plan for SJP Consultants to Execute the Expansion of the Guesneau Health Facility", Submitted in Partial Fulfillment of the Requirements for the Master in Project Development (MPM) Degree, University for International Cooperation.

I have read Sharm Jn Pierre's Final Graduation Project (FGP) and advised her of corrections and adjustments to be made so that the document meets the literary and linguistic standards expected of someone reading for a Master's degree. I can confirm that the corrections and adjustments have been made.

Sincerely,

Kentry D Jn Pierre, PhD

THE UNIVERSITY OF SHEFFIELD

It is hereby certified that

Kentry Dester Jn Pierre

having fulfilled the requirements prescribed by Ordinances and after due examination was admitted to the degree of

Master of Education

of this University

in Educational Studies

on 10 July 2002

Vice-Chancellor

Registrar and Secretary

UNIVERSITY

OF THE WEST INDIES

SCHOOL OF CONTINUING STUDIES, ST. LUCIA

(Formerly the Department of Extra - Mural Studies)

AND

ST. LUCIA MEDIA WORKERS ASSOCIATION

Certify that

KENTRY D. JN PIERRE

successfully completed the One - Year Programme in

Communication Arts

with CREDIT

and was on the 8th *day of* DECEMBER, 1989

awarded the Certificate in Communication Arts