UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PLAN FOR THE EXPANSION OF THE GENERATION ASSET MANAGEMENT GROUP WORKSPACE

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MASTER IN PROJECT MANAGEMENT (MPM) DEGREE

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This Final Graduation Project was approved by the University as partial fulfilment of the requirements to opt for the Master in Project Management (MPM) Degree

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DEDICATION

To the omniscient one who gives wisdom, knowledge and understanding, I dedicate this project.

To my family, my biggest support system. Thank you for always being there to give me the push I need to complete the hurdles along the way.

To those, indirectly or directly, who gave me the encouragement to see the project through its completion, I thank you.

To my fellow student colleagues. You have been a great help throughout this journey, I also dedicate this project to you.

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Foremost, I would like to thank the Almighty God for guiding me and giving me knowledge that led to the completion of this project. this could not have been done without his guidance, grace, and blessings.

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I also place on record, my sense of gratitude to one and all who have directly and indirectly lent a helping hand in the furtherance of my education and venture thus far.

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ABBREVIATIONS AND ACRONYMS

- CV – Cost Variance
- EWP – East-West Power
- FGP – Final Graduation Project
- GAMG – Generation Asset Management Group
- HVAC – Heating Ventilation & Air Condition
- IPPs – Independent Power Providers
- JPS – Jamaica Public Service Company
- NIA – National Insurance Agency
- NWA – National Works Agency
- PMBOK – Project Management Body of Knowledge
- RACI – Responsible, Accountable, Consulted, Informed
- STO – Shutdown Turnaround Outage Management
- UCI – Universidad para la Cooperacion Internacionale

EXECUTIVE SUMMARY (ABSTRACT)

Power is an essential part of man's existence. Energy cannot be created or destroyed, but simply changes from one form of energy to another (Winterborne, 2015). Electricity came to Jamaica in 1892, just thirteen years after Thomas Edison invented the first electric lamp. Electricity was supplied through the Jamaica Electric Light Company, who supplied approximately 3,928 customers through a small coal-burning steam generator on the island. The proverbial baton was passed on to the Jamaica Public Service Company Limited in 1923. Fast forward to 2020, the company remains as the sole distributor for electricity in Jamaica; catering to more than 640,000 customers each day.

The operations have evolved over the years as various arms of the business cater to the needs of its customer base. One such arm is that of the Generation Asset Management Group. A newly developed department under the Generation Division of the company, that has the responsibility of managing the generating units that span the island, through a group of specialist engineers, program manager, scheduler, logistics planner and asset management coordinator. Through the use of preventative maintenance tools and best practices, the team develops, operates, maintains, upgrades and disposes assets in the most cost-effective manner.

In 2018, a remodelling of the workspace was carried out, but with little to no project management plan. This lack of planning led to overruns in the schedule and cost of the project with inconsistencies in quality management. With the present need for an expansion, the director and heads of department saw the need to implement a project management for the execution of this project. The introduction of a project management plan was critical in ensuring best practices were used for the greatest efficiency.

As such, the purpose of this study sought to develop a Project Management Plan that integrated sustainable principles in order to effectively carry out project management activities for the expansion of the Generation Asset Management Group workspace.

The general objective was to develop a project management plan for the expansion of the Generation Asset Management Group workspace. The specific objectives sought to: create the project charter in order to define the key input elements for the development of the project management plan, develop the Scope Management Plan in an effort to ensure that the project included all required work needed for successful project completion, develop the Schedule Management Plan to manage the timely completion of the project, develop a Cost Management Plan to predict coming expenses in order to reduce the chances of going over budget, develop a Quality Management Plan that defined acceptable levels of quality, in order to ensure that optimal efficiency was achieved at the end of the project, develop a Resource Management Plan to ensure that people and physical resources were effectively acquired, managed and controlled, develop a Communication Management Plan to ensure that communication requirements are well defined, and effectively distributed to respective stakeholders, develop a Risk Management Plan that identified and mitigated potentially damaging risks to the project activities and outcomes, develop a Procurement Management Plan that described end-to-end processes that the project used to acquire its goods and/or services, and finally,

develop a Stakeholder Management Plan that identified appropriate management strategies to effectively engage stakeholders throughout the project lifecycle.

The methodology employed for the research was the analytic-synthetic method. The Sixth Edition of the PMBOK® Guide was used as a source of information. Interviews were also held with members of the performing organization to gather information.

In conclusion, it is imperative that all ten knowledge areas work in tandem to support the completion of the Project Management Plan. In order to attain success, all stakeholders need to understand the veracity of the scope, and the project team needs to gain buy in from all.

Finally, the information garnered from each knowledge area proved useful in the development of a robust project plan to execute the expansion of the GAMG Workspace.

During the development of this Project Management Plan, some recommendations came to the fore. One such was the importance of the Generation Asset Management Group to develop and implement a formal project management system to undertake future project successfully. Another involved the development of initiation and planning documents necessary for the execution of similar projects, and finally, to allow adequate time to be invested into the development of all major and subsidiary plans prior to project execution.

1 INTRODUCTION

1.1. Background

In 1879, Thomas Edison invented the first successful electric lamp. Thirteen years later, electricity was introduced for the first time to Jamaica by the Jamaica Electric Light Company from a small coal-burning steam generating plant on Gold Street in Kingston. A momentous accomplishment for a small island. Thirty-one years later, on May 25, 1923, the Jamaica Public Service Company Limited (JPS) came into existence, providing service to 3,928 customers. Fast forward to the present, JPS is the sole distributor of electricity in Jamaica. Eighty (80) percent of the shares is equally owned by two major companies, Marubeni Corporation of Japan and East-West Power (EWP), while the government of Jamaica holds 19.9% and 0.1% is held by a group of minority shareholders. The company owns and operates approximately 4 power stations, 9 hydroelectric plants, and 1 wind farm, and provides employment to more than 1,600 JPS team members, who provide service to over 640,000 customers each day. JPS is engaged in the generation, transmission and distribution of electricity, and also purchases power from a number of Independent Power Producers.

Generation Asset Management Group, an arm of the Generation division, is tasked with the responsibility of managing the generating units that span the island, through a group of specialist engineers, program manager, scheduler, logistics planner and asset management coordinator, who collectively employs the use of preventative maintenance tools and best practices to develop, operate, maintain, upgrade and dispose of assets in the most cost-effective manner.

1.2. Statement of the problem

In 2017, there was a seismic shift in the direction of the company, and by extension the department. The name Generation Technical Services Workshop, changed to Generation Asset Management Group (GAMG). Coupled with the name-change was a realignment of objectives for the department. This birthed an emerging need for a modern workspace as the workspace had not gone through a renovation for over 25 years. Since then, the

core staff has increased and the need for a bigger workspace is imminent to facilitate frequent meetings, online remote monitoring and the many other technological demands that the department carries. In 2018, a remodelling of the workspace was carried out, however, with little to no project management plan. This lack of planning led to overruns in the schedule and cost of the project, with inconsistencies in quality management. With the present need for an expansion, the director and heads of department have seen the need to implement a project management plan for the execution of this project. The introduction of a project management plan is critical as it aims to employ best practices to attain the greatest efficiency.

1.3. Purpose

The purpose of this study is to develop a Project Management Plan that integrates sustainable principles in order to effectively carry out project management activities for the expansion of the Generation Asset Management Group workspace. Renovation of the existing workspace was carried out approximately 2 years ago. However, with little project management practices employed. This resulted in an overrun of schedule and budget. It was noted by the director and senior management that, had project management best practices been employed, an overrun could have been avoided. A project management plan acts as a blueprint for a project, and provides details on the impact incorporating the risks and rewards to be had. It is essentially a clear pathway that will aid greatly in the decision making for the project. Since the last renovation, there have been recent talks about implementing a project management framework for subsequent projects. With this being done, the project management plan will become a company organizational asset that may be used as the basis for future project plans. Hence, this will be the first where best project management practices will be employed, in the form of a project management plan.

1.4. General objective

To develop a project management plan for the expansion of the Generation Asset Management Group work area.

1.5. Specific objectives

1. To create the project charter in order to define the key input elements for the development of the project management plan
2. To develop the Scope Management Plan in an effort to ensure that the project includes all required work needed for successful project completion
3. To develop the Schedule Management Plan to manage the timely completion of the project
4. To develop a Cost Management Plan to predict coming expenses in order to reduce the chances of going over budget
5. To develop a Quality Management Plan that defines acceptable levels of quality, in order to ensure that optimum efficiency is achieved at the end of the project.
6. To develop a Resource Management Plan to ensure that people and physical resources are effectively acquired, managed and controlled.
7. To develop a Communication Management Plan to ensure that communication requirements are well defined, and effectively distributed to respective stakeholders.
8. To develop a Risk Management Plan that identifies and mitigates potentially damaging risks, as well as opportunities that will enhance the project activities and aid in facilitating project outcomes.
9. To develop a Procurement Management Plan that describes end-to-end processes that the project will use to acquire its goods and/or services
10. To develop a Stakeholder Management Plan that identifies appropriate management strategies to effectively engage stakeholders throughout the project lifecycle.

2 THEORETICAL FRAMEWORK

2.1 Company/Enterprise framework

2.1.1 Company/Enterprise Background

For over 95 years, JPS has worked assiduously to satisfy the growing and ever-changing demands of the Jamaican people. The company has grown exponentially, moving from service to 4000 customers in the early years, to a customer base of over 600,000 presently. JPS operates in an environmentally conscious manner, and continues to provide a space where transparency, accountability and equality is exercised. JPS provides employment to over 1700 workers, composed of highly skilled engineers, technicians and service professionals. Among this staff complement is the Generation Asset Management Group (GAMG). Formerly known as the Generation Technical Services Department, were revamped in 2017, and given new responsibilities that include processes that enable the balancing of cost, opportunities and risks against the performance of assets in order to achieve organizational objectives. Over the 3 years, the department has grown, resulting in a growing need for more space to effectively accommodate workers and frequent meetings held.

2.1.2 Mission and Vision Statements

A mission and vision statement are of absolute importance to a company/organization. These provide direction and insight into the company, and describe the organization's purpose and overall intention. Just as the project management plan, so too is the function of the vision and mission statements. Having clear knowledge of these will aid in the development of an effective, solid project management plan.

Vision: We are a specialist group utilizing advanced technology and skills to continually improve the safety, reliability and efficiency of Power Plant operations in Jamaica.

Mission: To support the Generation Asset Management Program through knowledgeable employees, innovative work practices, advance technological tools and equipment to achieve safe, reliable and efficient power plant operations.

2.1.3 **Organizational Structure**

The Generation Asset Management Group is a small group that was renovated and retooled to support the Generation arm of the JPS in achieving optimal performance of the generating fleet across the Island. The group is fitted with 13 full time employees, exclusive of the director and part-time contractor workers.

Figure 1 below depicts the organizational structure. The company is headed by Jervis Johnson – the Director, who ensures optimal operation of the business unit. Mr. Johnson directly oversees eight (8) persons, consisting of a Program Manager, five (5) Specialist Engineers, a Workshop Supervisor and an Administrator. The Program Manager oversees a Logistics Planner, a Scheduler and an Asset Management Coordinator. The workshop supervisor oversees one (1) Machinist and one (1) Welder.

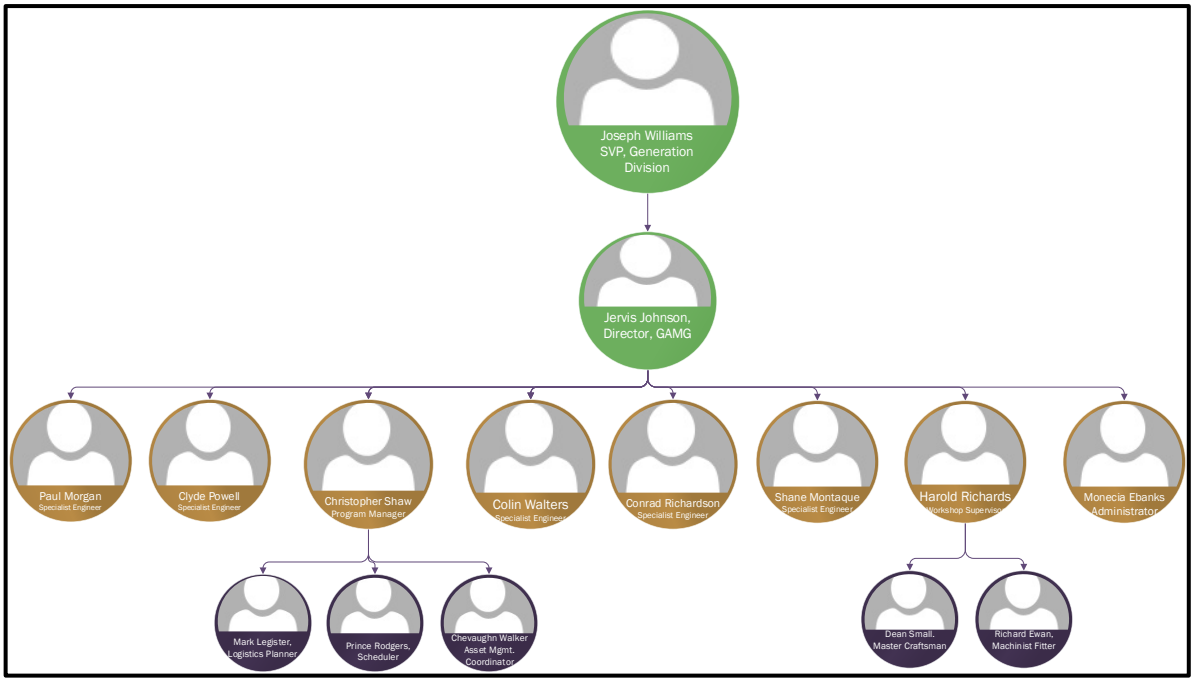


FIGURE 1 ORGANIZATIONAL STRUCTURE (SOURCE: COMPILED BY AUTHOR)

2.1.4 **Products Offered**

The Jamaica Public Service Company Ltd. (JPS) is solely responsible for the distribution of electricity to the island of Jamaica. Coupled with electricity distribution, is the sale of smart electronic devices for household support. The Generation Asset Management

Group in particular, offers support services in project and outage management to the power stations across the Island, inclusive of independent power providers (IPPs).

2.2 Project Management concepts

2.2.1 Project

The Project Management Body of Knowledge defines a project as a temporary endeavour undertaken to create a unique product, service, or result. (PMBOK® Guide, 2017).
No two projects are the same. In accordance with, and under the auspices of the Final Graduation Project (FGP), this project speaks to the development of a project management plan for the expansion of the GAMG department.

The GAMG department is heavily involved in outage management or shutdown management as some may know it. Shutdown Turnaround and Outage (STO) Management involves a significantly higher number of resources and more complex activities which introduce a higher level of risk to the business. While Project management in its truest sense focuses on all 10 Subsidiary Knowledge areas, Shutdown/Outage management focuses only on a few, one of which is risk. This increased level of risk requires an increase in management focus and effort to ensure risks are well managed and the full scope of the STO event is completed within the allocated time and cost constraints.
The department is quite *au fait* with the disciplines associated with projects.
This project management plan however, seeks to introduce a more holistic approach to ensure that all aspects are accounted for. it is a known fact that project management not only applies to a specific product but it also can result in improved services and results, whether tangible or intangible. In addition, unlike STO, project management also applies to other fields such as information technology, education, health care etc.

2.2.2 Project Management

Project Management speaks to the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements (PMBOK® Guide, 2017). Project

management brings a unique focus shaped by the goals, resources and schedule of each project (PMI). Effective project management is executed through the application of 49 processes which are grouped into five (5) process groups. It is our intention to use these processes in the expansion of the GAMG workspace, in an effort to obtain optimal results within the constraints of time, cost, scope, and quality.

The development of the Final Graduation Project (FGP) will consist of the creation of the Project Management Plan for the expansion of a workspace, and will be managed as a project. After which, the expansion of the GAMG workspace project will be managed as another project.

During the initiation phase of the project, the project will commence with the creation of the project charter. Once the charter is reviewed, accepted and formally authorized by the sponsor, the formal identity of the Project Manager will be revealed, authorizing him/her to “apply organization resources to project activities” (Project Management Institute, 2013, p. 71).

The initiation, planning, execution, monitoring & controlling and closing phases (stages) for the creation of the Project Management Plan will occur during the development of the FGP, in accordance with the sequential progression of each subsidiary seen in figure 2 shown in the next subsection.

2.2.3 Project Life Cycle

Project Management best practices identifies process groups that envelop the whole of a project, and guides the activities throughout start to end. These are initiation, planning, executing, monitoring & controlling and closing. Project Life Cycle provides structure to the project. Each stakeholder becomes aware of how the project is progressing, and what stage of the progression is currently being undertaken.

Currently, there are no formal documents pointing to the use of a project life cycle. Project Life Cycle is beneficial in that it provides a structure for project delivery, improves communication between team members, enables progress to be tracked across the organisation and provides for the progressive evolution of the project (Naybour, 2012).

It is our intention to employ the use of the project life cycle as shown below in figure 2, in an effort to streamline the process, however, Only the processes involved in initiation and planning will be catered to developing the project management plan.

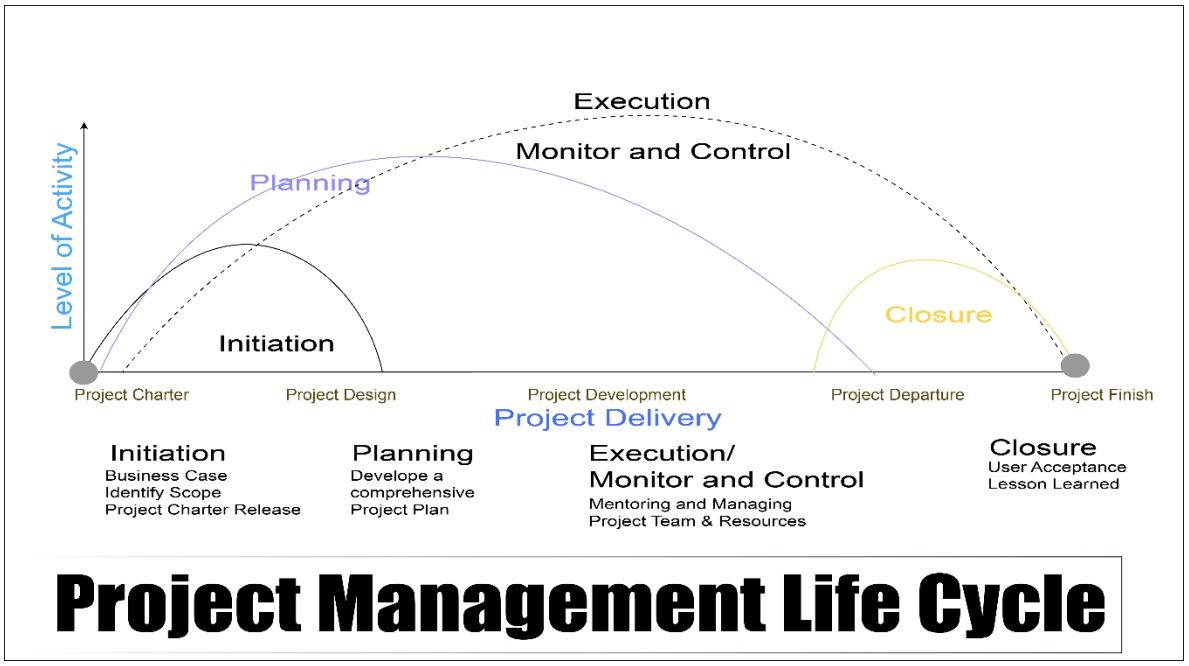


FIGURE 2 PROJECT LIFE CYCLE REPRINTED FROM HTTPS://PROJECT.PM/

2.2.4 Project management processes

Only the processes involved in initiation and planning will be catered to developing the project management plan.

2.2.5 Project management knowledge areas

Project Management Process Groups and Knowledge Areas are the core technical subject matters of the project management profession (The 10 PMBOK Knowledge Areas, 2018). Projects most commonly fail because there is a lack of attention and efforts being applied (Discenza, & Forman, 2007).

According to project management best practices, there are ten knowledge areas used in project management. The FGP will seek to highlight the following knowledge areas:

- Scope Management Plan – this involves the project scope and is involved in ensuring that the project includes all required work needed for successful project completion. Figure 3 below shows the six processes included within the scope management plan.

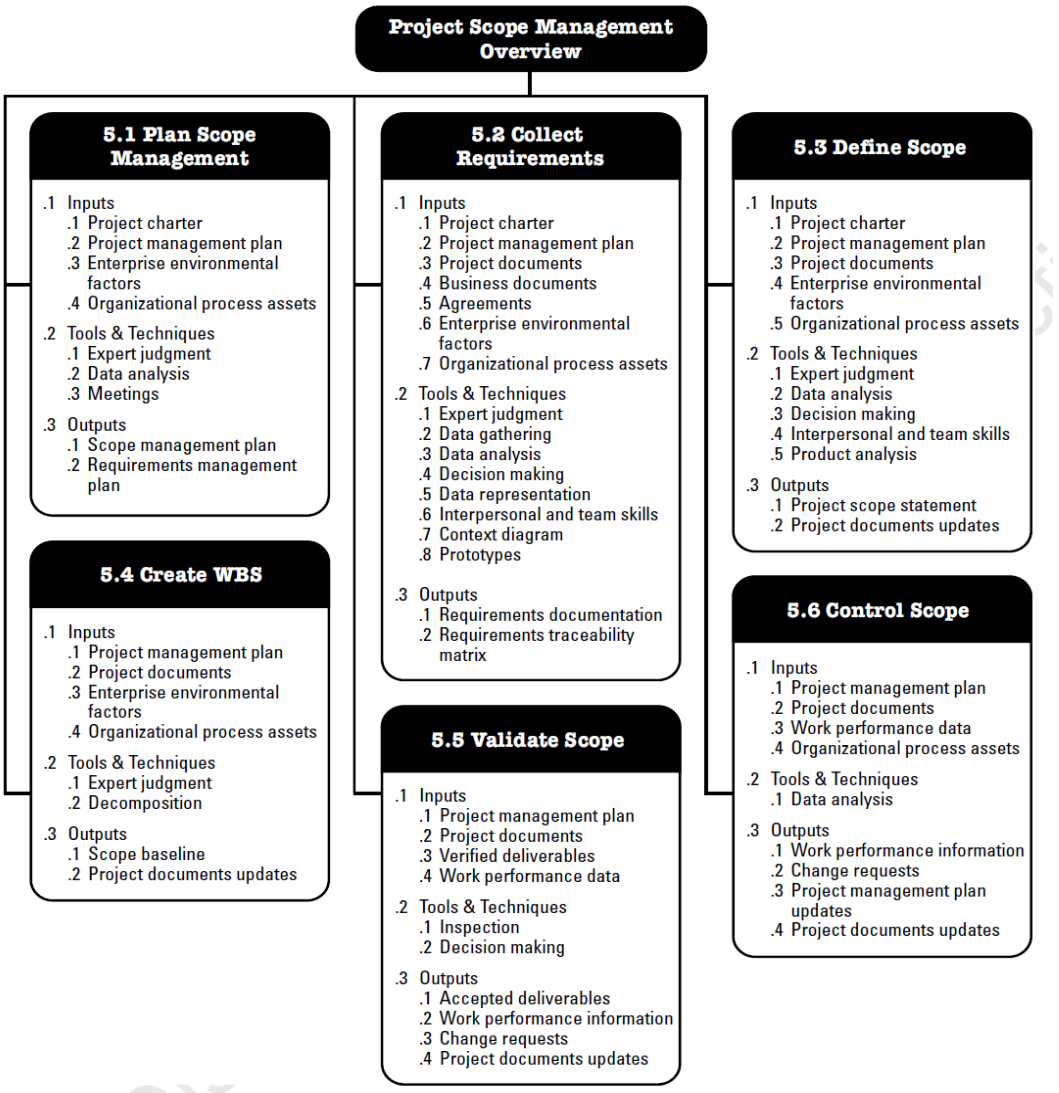


Figure 5-1. Project Scope Management Overview

FIGURE 3. PROJECT SCOPE MANAGEMENT REPRINTED FROM PMBOK GUIDE

- Schedule Management Plan is a process which refers to how the project manager manages his schedule for a particular project (The 10 PMBOK Knowledge Areas, 2018) and includes the time catered to completing each task.
- Cost Management Plan is concerned with the accurate execution of the budget. It involves predicting coming expenses in order to reduce the chances of going over budget
- Integration Management Plan involves ensuring the various elements of the projects are properly coordinated in order to meet the needs and expectations of stakeholders
- Quality Management Plan involves the careful inspection and definition of acceptable levels of quality, in order to ensure that optimacy is achieved at the end of the project.
- Resource Management Plan will ensure that people and physical resources are effectively acquired, managed and controlled.
- Communication Management Plan ensures that communication requirements are well defined, and effectively distributed to respective stakeholders.
- Risk Management Plan identifies and mitigates potentially damaging risks to the project activities and outcomes.
- Procurement Management Plan describes end-to-end processes that the project will use to acquire its goods and/or services.
- Stakeholder Management Plan identifies appropriate management strategies to effectively engage stakeholders throughout the project lifecycle.

3 METHODOLOGICAL FRAMEWORK

3.1 Information sources

Merriam Webster defines information as the attribute inherent in and communicated by one of two or more alternative sequences or arrangements of something that produces specific effects (Information, n.d.). Oxford denotes a source to be a place, person, or thing from which something comes or can be obtained (Source, n.d.). Concomitantly, information sources are avenues from which information can be unearthed.

One can pull information from many avenues. For e.g. media, books, journal entries, webpages etc. However, it is important to note that all avenues fall under one of three umbrellas: Primary, Secondary or Tertiary sources.

3.1.1 Primary sources

Primary sources are first hand documents that provide direct evidence on your topic. The Library of Congress refers to them as the “raw materials of history” (“Primary, secondary and Tertiary Sources”, 2018). These sources give evidence of a person or an event and cover a wide range, including interviews, blogs, surveys, original research, legal documents etc.

The Final Grade Project will see the use of minutes, legal documents, and records of organization in its development. Reference to **Chart 1** should be made for the specific primary sources used.

3.1.2 Secondary sources

Secondary sources are essentially interpretations of primary sources. They have once been referred to as an account written after the fact with the benefit of hindsight. (“Primary, secondary and Tertiary Sources”, 2018).

The elaboration of the Final Graduation project will incorporate use of information sources such as the PMBOK® Guide, library databases and the Project Management Institute database.

a. Chart 1 Information sources (C. Walker, The Author, March 2020)

Objectives	Information sources	
	Primary	**Secondary**
1. To create the project charter in order to define the key input elements for the development of the project management plan	Interview with lead project manager, minutes from kick-off meetings	PMBOK Guide and PMI Database
2. To develop the Scope Management Plan in an effort to ensure that the project includes all required work needed for successful project completion	Interview with lead project manager,	PMBOK Guide and PMI Database
3. To develop the Schedule Management Plan to manage the timely completion of the project Include as many additional lines as needed to have one line for every objective.	Interview with lead project manager,	PMBOK Guide and PMI Database

4. To develop a Cost Management Plan to predict coming expenses in order to reduce the chances of going over budget	Interview with lead project manager,	PMBOK Guide and PMI Database
5. To develop a Quality Management Plan that defines acceptable levels of quality, in order to ensure that optimacy is achieved at the end of the project.	Interview with lead project manager,	PMBOK Guide and PMI Database
6. To develop a Resource Management Plan to ensure that people and physical resources are effectively acquired, managed and controlled	Interview with lead project manager,	PMBOK Guide and PMI Database
7. To develop a Communication Management Plan to ensure that communication requirements are well defined, and effectively distributed to respective stakeholders	Interview with lead project manager,	PMBOK Guide and PMI Database

8. To develop a Risk Management Plan that identifies and mitigates potentially damaging risks to the project activities and outcomes	Interview with lead project manager, and meetings with risk management team	PMBOK Guide and PMI Database
9. To develop a Procurement Management Plan that describes end-to-end processes that the project will use to acquire its goods and/or services	Interview with procurement team (expert)	PMBOK Guide and PMI Database
10. To develop a Stakeholder Management Plan that identifies appropriate management strategies to effectively engage stakeholders throughout the project lifecycle.	Interviews with lead project manager	PMBOK Guide and PMI Database

3.2 Research methods

Research methods are the strategies, processes or techniques utilized in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic (“Research Methods”, 2020).

3.2.1 Analytical- synthetic method

Gillian Russell in his deduction of analytic-synthesis, references the term as a distinction between two kinds of truth. He posits synthetic truths to be true both because of what they mean and because of the way the world is, whereas analytic truths are true in virtue of meaning alone (Russell, 2012). A synthetic approach to research looks at the research question or topic from a holistic point of view. The researcher tries to understand the parts of the problem by looking at the whole, while an analytic approach to research would look at a topic from a constituent point of view. The researcher tries to understand the whole phenomenon by looking at the separate parts.

This project seeks to incorporate the use of the analytic-synthetic. The research method for each specific objective is outlined in Chart 2 below

b. Chart 2 Research methods (Source: C. Walker, The Author, March 2020)

Objectives	
1. To create the project charter in order to define the key input elements for the development of the project management plan	Information from the sources identified in Chart 1 objective 1 will be used to aid in the composition of the project charter.
2. To develop the Scope Management Plan in an effort to ensure that the project includes all required work needed for successful project completion	Information from the sources identified in Chart 1 objective 2 will be used to aid in the

	development of the scope management plan.
3. To develop the Schedule Management Plan to manage the timely completion of the project	Information from the sources identified in Chart 1 objective 3 will be used to aid in the development of the schedule management plan
4. To develop a Cost Management Plan to predict coming expenses in order to reduce the chances of going over budget	Information from the sources identified in Chart 1 objective 4 will be used to aid in the development of the cost management plan.
5. To develop a Quality Management Plan that defines acceptable levels of quality, in order to ensure that optimacy is achieved at the end of the project.	Information from the sources identified in Chart 1 objective 5 will be used to aid in the development of the quality management plan
6. To develop a Resource Management Plan to ensure that people and physical resources are effectively acquired, managed and controlled	Information from the sources identified in Chart 1 objective 6 will be used to aid in the development of the resource management plan.
7. To develop a Communication Management Plan to ensure that communication requirements are well defined, and effectively distributed to respective stakeholders	Information from the sources identified in Chart 1 objective 7 will be used to aid in the development of the communication management plan.

8. To develop a Risk Management Plan that identifies and mitigates potentially damaging risks to the project activities and outcomes	Information from the sources identified in Chart 1 objective 8 will be used to aid in the development of the risk management plan.
9. To develop a Procurement Management Plan that describes end-to-end processes that the project will use to acquire its goods and/or services	Information from the sources identified in Chart 1 objective 9 will be used to aid in the development of the procurement management plan.
10. To develop a Stakeholder Management Plan that identifies appropriate management strategies to effectively engage stakeholders throughout the project lifecycle.	Information from the sources identified in Chart 1 objective 10 will be used to aid in the development of the stakeholder management plan

3.3 Tools

A tool can be referred to as something tangible, such as a template or software program, used in performing an activity to produce a product or result (PMBOK, 2017).

The PMBOK Guide provides a listing of tools used. Each tool identified in this Final Graduation Project, is shared below and summarized in Chart 3.

c. Chart 3 Tools (C. Walker, The Author, March 2020)

Objectives	Tools
1. To create the project charter in order to define the key input elements for the development of the project management plan	Expert Judgement, data gathering, project management template, interviews and meetings.

2. To develop the Scope Management Plan in an effort to ensure that the project includes all required work needed for successful project completion	Expert judgement, meetings, data gathering & analysis, requirements management plan template, Microsoft Visio Professional 2019
3. To develop the Schedule Management Plan to manage the timely completion of the project Include as many additional lines as needed to have one line for every objective.	Meetings, decomposition, Microsoft Project 2019, activity list template.
4. To develop a Cost Management Plan to predict coming expenses in order to reduce the chances of going over budget	Cost management plan template, cost baseline template, project management information system.
5. To develop a Quality Management Plan that defines acceptable levels of quality, in order to ensure that optimacy is achieved at the end of the project.	Meetings, data representation tool, quality management template
6. To develop a Resource Management Plan to ensure that people and physical resources are effectively acquired, managed and controlled	Responsibility assignment matrix, human resource management plan, meetings.
7. To develop a Communication Management Plan to ensure that communication requirements are well defined, and effectively distributed to respective stakeholders	Communication management plan template, communication matrix, meetings
8. To develop a Risk Management Plan that identifies and mitigates	Risk management template, risk register template

potentially damaging risks to the project activities and outcomes	
9. To develop a Procurement Management Plan that describes end-to-end processes that the project will use to acquire its goods and/or services	Procurement management plan template
10. To develop a Stakeholder Management Plan that identifies appropriate management strategies to effectively engage stakeholders throughout the project lifecycle.	Data analysis tool, make or buy analysis, meetings, market research.

3.4 Assumptions and constraints

The PMBOK Guide (2017) ably defines an assumption as a factor in the planning process that is considered to be true, real, or certain, without proof or demonstration. Conversely, the PMBOK refers to a constraint as a limiting factor that affects the execution of a project, program, portfolio or process.

The assumptions and constraints surrounding the Final Graduation Project are included in Chart 4 below.

d. Chart 4 Assumptions and constraints (C, Walker, The Author, March 2020.)

Objectives	Assumptions	Constraints
1. To create the project charter in order to define the key input elements for the development of the project management plan	All relevant stakeholders will be in attendance to subsequent meetings to give important information and establish project requirements that will aid in development of the project charter.	Limited time to gather all necessary information.\
2. To develop the Scope Management Plan in an effort to ensure that the project includes all required work needed for successful project completion	Clear concise definition of the project scope.	Inadequate amount of time available.
3. To develop the Schedule Management Plan to manage the timely completion of the project Include as many additional lines as needed to have one line for every objective.	Project will run as scheduled.	A substantially large amount of work has to be collected in a short time span.
4. To develop a Cost Management Plan to predict coming expenses in order to reduce the chances of going over budget	It is assumed that the executive leadership team will provide the	Finance is not always readily acceptable to the idea of releasing funds.

	necessary means to support the project.	
5. To develop a Quality Management Plan that defines acceptable levels of quality, in order to ensure that optimacy is achieved at the end of the project.	Quality management plan will identify all technical requirements for the project.	Quality of work constrained by the project's budget
6. To develop a Resource Management Plan to ensure that people and physical resources are effectively acquired, managed and controlled	The organization has sufficient human resources to complete the project smoothly	Insufficient Resource to cover an unknown unknown.
7. To develop a Communication Management Plan to ensure that communication requirements are well defined, and effectively distributed to respective stakeholders	Communication flow is smooth throughout the project.	Intermittency in internet connection
8. To develop a Risk Management Plan that identifies and mitigates potentially damaging risks to the project activities and outcomes	Sufficient information to identify all risks.	Some risks may surface due to other constraints.
9. To develop a Procurement Management Plan that describes end-to-end processes that the project will use to acquire its goods and/or services	All goods and services to be procured in desired/specified time	Force Majeure may delay the receival of goods or may hinder the progression of a service.
10. To develop a Stakeholder Management Plan that identifies appropriate management	Detailed stakeholders	Stakeholder's requirement or level

strategies to effectively engage stakeholders throughout the project lifecycle.	register with requirements to be identified	of interest may shift during the project.

3.5 Deliverables

The PMBOK defines a deliverable as any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project (PMBOK, 2017).

e. Chart 5 Deliverables (Project Management Institute, 2017)

Objectives	Deliverables
1. To create the project charter in order to define the key input elements for the development of the project management plan	Project Charter
2. To develop the Scope Management Plan in an effort to ensure that the project includes all required work needed for successful project completion	Scope Management Plan, Requirements Management Plan
3. To develop the Schedule Management Plan to manage the timely completion of the project Include as many additional lines as needed to have one line for every objective.	Schedule Management Plan, Activity List, Schedule (Gantt Chart),
4. To develop a Cost Management Plan to predict coming expenses in order to reduce the chances of going over budget	Cost Management Plan, Cost Baseline

5. To develop a Quality Management Plan that defines acceptable levels of quality, in order to ensure that optima is achieved at the end of the project.	Quality Management Plan
6. To develop a Resource Management Plan to ensure that people and physical resources are effectively acquired, managed and controlled	Resource Management Plan
7. To develop a Communication Management Plan to ensure that communication requirements are well defined, and effectively distributed to respective stakeholders	Communication Management Plan
8. To develop a Risk Management Plan that identifies and mitigates potentially damaging risks to the project activities and outcomes	Risk Management Plan, Risk Register
9. To develop a Procurement Management Plan that describes end-to-end processes that the project will use to acquire its goods and/or services	Procurement Management Plan
10. To develop a Stakeholder Management Plan that identifies appropriate management strategies to effectively engage stakeholders throughout the project lifecycle.	Stakeholder Management Plan

4 RESULTS

4.1. Project Integration Plan

The Project Management Plan being developed is geared toward the expansion of the Generation Asset Management Group work area. The workspace had not gone through a renovation for over 25 years. Since then, the core staff has increased in number. As such, the need for a bigger workspace is imminent to facilitate frequent meetings, online remote monitoring and the many other technological demands that the department carries.

The first deliverable speaks to the development of a Project Charter. Information inputted into the Project Charter was derived from interviews with the lead project manager, minutes from kick-off meetings as well as references from the PMBOK Guide and PMI Database.

The Project Charter comprises objectives (general and specific), start and end date of the project, project purpose and justification, assumptions, constraints, risks, budget and major milestones associated with project completion. The project charter acts as that document of approval that gives the project manager autonomy over to act on behalf of the project.

The Project Charter also acts as a guide in allowing the project manager to have a better understanding of the objectives to be carried out in alignment with its purpose. It can be developed by the project sponsor or the project manager, and gets the approval from the executive leadership. The Charter can be found in the appendix section.

Figure 5 below outlines the Project Inputs, Tools and Techniques and Outputs necessary for this project.

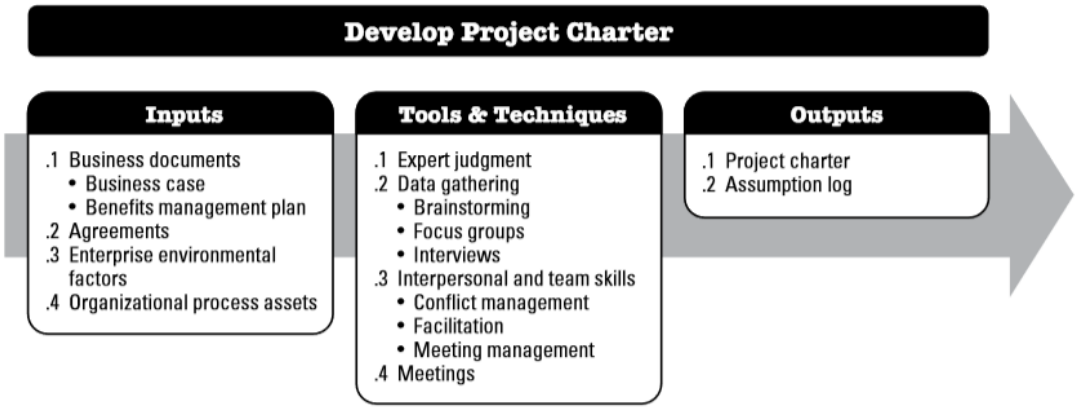


FIGURE 4: DEVELOP PROJECT CHARTER: INPUT, TOOLS & TECHNIQUES, AND OUTPUTS. (SOURCE: PMBOK GUIDE SIXTH EDITION, PROJECT MANAGEMENT INSTITUTE, 2017)

4.2. Scope Management Plan

The Scope Management Plan plays a pivotal role in project management and specifically, project execution. In an effort to prevent misunderstanding and ultimately, a greater risk of project overrun, a clearly defined scope must be developed. Monnappa (2020) describes Scope Management as a set of processes that ensure a project's scope is accurately defined and mapped.

This plan seeks to highlight several processes through the use of varying tools and techniques involved in the development. These include: collect requirements, define scope, creation of a WBS and control scope.

4.2.1 Scope Management Approach

During the execution of this project, the Project Manager will have the responsibility of managing the scope. Which means, all things scope related should be routed to the Project Manager. Therefore, changes requests must be channelled to Project Manager and Project Sponsor, who will approve and establish documentation for measuring project scope, inclusive of deliverable quality checklists and performance measurements. The scope of this project is defined by the Scope Statement, Work Breakdown Structure and Work Breakdown Structure Dictionary.

4.2.2 Roles and Responsibilities

The Project Manager, Project Sponsor and by extension, the Project Team will all be directly involved in managing the scope of this expansion project. As such, awareness must be raised as to the responsibilities of each party so as to ensure that the work performed on the project is within the scope established throughout the duration. The chart below describes the stakeholders and the role and responsibilities they will play in managing the scope of the project,

f. Chart 6: Roles and Responsibilities (Source: C. Walker, the author)

Name	Role	Responsibility
Chevaughn Walker	Project Manager	● Determine and Document project scope ● Ensure correct signoff ● Oversee change control
Joseph Williams	Project Sponsor	● Formal Acceptance of project scope and baseline ● Chair panel to assess change requests ● Formal acceptance of products ● Communicate outcomes of change requests
	Project Team	● Identifies and escalates policy issues to Team Leader or Project Manager for appropriate referral

		● May have specific roles for the specialized completion of various administrative or technical tasks as outlined in the project plan ● Evaluates the need for scope change and communicate them to the project manager as deemed necessary
Stakeholders	Subcontractors/Site Workers	● Can propose scope change. ● Execute change directives issued by Project Manager

4.2.3 **Scope Definition**

In 2017, there was a shift in the direction of the company which saw an increase in staff to the department. The need for a bigger workspace is imminent to facilitate frequent meetings, online remote monitoring and the many other technological demands that the department carries. As such, the project for the expansion of the workspace is critical.

The project scope for the GAMG expansion was carefully defined through comprehensive analyses. A collection of past meeting minutes, building codes, requirements & documentation, and past contracts was done. Information stemming from these were compiled to develop the requirements management plan, requirements documentation, and a requirements traceability matrix.

4.2.4 Product Scope Statement

Typically written by the project manager, a scope statement outlines the entire project, including any deliverables and their features, as well as a list of stakeholders who will be affected. It will also include any major project objectives, deliverables and goals to help measure success (Landau, 2019).

Additionally, the scope statement should explicitly state the work that will be excluded from the project so as to eliminate any ambiguity that may arise.

4.2.5 Project Scope Description

This project is focused on providing a Project Management Plan for the expansion of the GAMG workspace. A revision of all project contracts, meeting minutes, building codes, owners' requirements and documentation etc. must be completed. Project deliverables will be formed through the inputs from various subject matter experts involved in the project, i.e. Architect, contractors and subcontractors as well as the Government regulatory bodies who were engaged through the JPS' Facilities Management Department. The scope will include the addition to a building that supports sustainability and is eco-friendly. The scope will also include the hiring of a certified contractor, sub-contractors, suppliers, vendors and engineers.

All efforts are afoot in finance, scheduling, communication, stakeholder engagement and complete and targeted planning for the GAMG Expansion Project, so as to engage the staff into higher engagement and greater productivity.

The Project Management Plan for the expansion of the GAMG facility will be a 2000 square foot building intended to provide additional resources and seating for our growing staff. The building will be composed of structural steel, concrete works, precast concrete panels, mason blocks, thermal and moisture protection and metal roofing. The building will house LCD monitors, a smart screen, and desktop computers for staff, as well as a work desk for staff. The facility intends to house a total of 20 persons. (fabrication specs and items excluded)

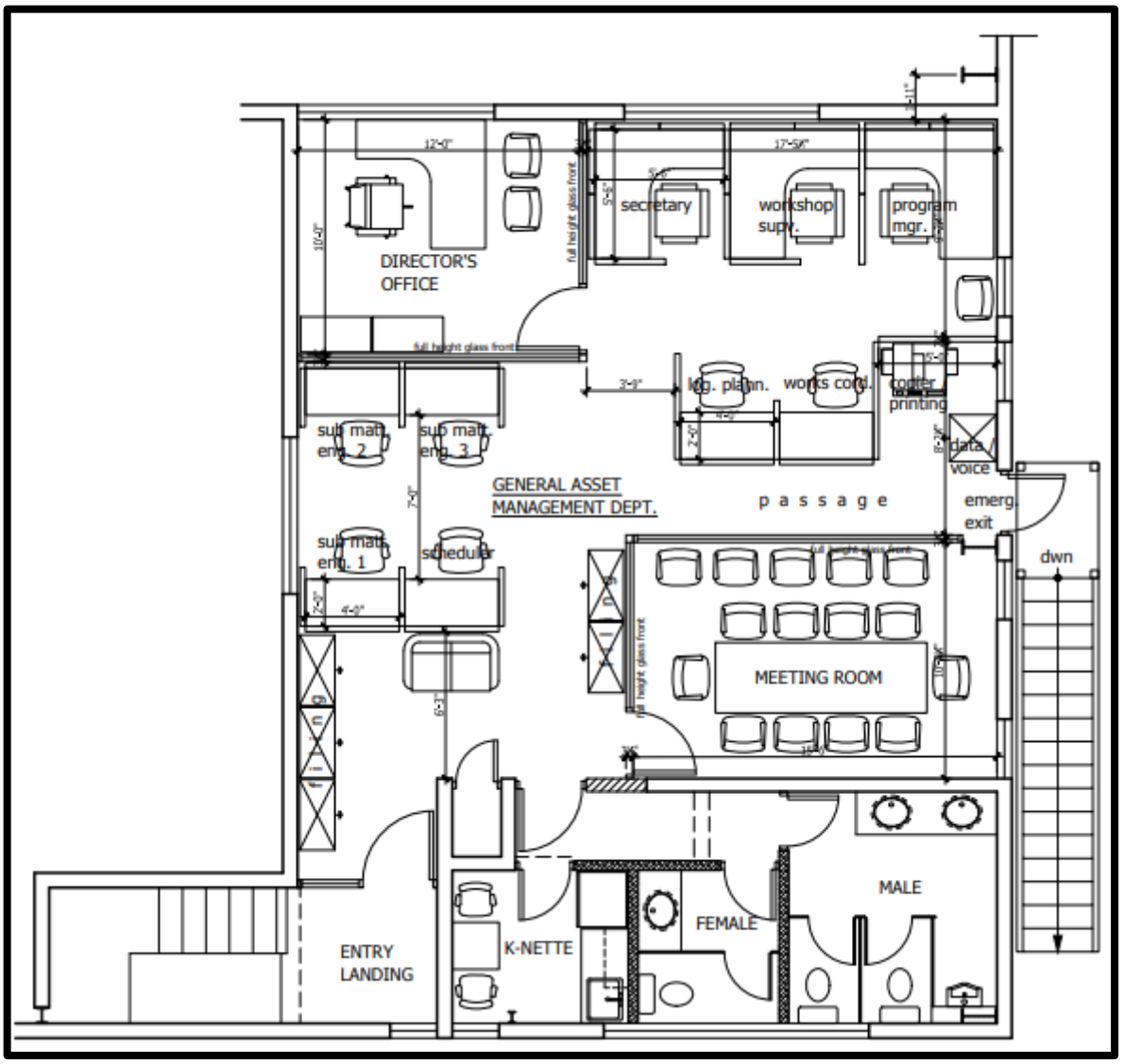


FIGURE 5: GAMG FLOOR PLAN (SOURCE: DESIGNED AND DRAWN BY MERVIN HILTON, PRODUCED BY AUTHOR)

4.2.6 **Product Acceptance Criteria**

The acceptance criteria of a project are very integral to its completion. It is simply defined as the set of objectives outlined by the client that must be met before the completion of the project. They set out the specific circumstances under which the user will accept the final output of the project (Simplilearn, 2020).

The project will be accepted as successful, once the following requirements are met:

- Satisfies the requirements and regulations set forth by the National Works Agency of the Government
- Satisfies the requirements and regulations of the parent company Jamaica Public Service (JPS)
- Operation of all contractors is conducted in tandem with the safety regulations stipulated by the organization
- Completed by September 20, 2021
- Completed within stipulated budget
- All stakeholders have been satisfied.

4.2.7 Project Deliverables

A project is usually defined by its deliverables. A project deliverable is any output created as the result of work done during a project. Defining, tracking, and managing project deliverables is one of the most important responsibilities of a project manager (Moses, 2018). The deliverables for this project can be seen in the chart below.

g. Chart 7: Project Deliverables (Source: C. Walker, the author)

PROJECT DELIVERABLES		
No.	Milestones	Deliverable
1.	Award Contract	· Secure qualified sub-contractors · Have all of a portion of project funds

2.	Project Planning	· Schedule work in phases · Estimate costs & risks · Schedule payment plan (pay-outs) · Procurement of production material/supplies. Determine needed lead/lag times for shipment
4.	Site Works	· Site Clearance · Bulk earthworks & grading
5.	Foundation	· Install all foundation according to architect and engineering drawings & specs
6.	Structure (concrete elements)	· Install all concrete elements of structure, such as concrete columns/belt beams, concrete slabs, excavation, dewatering, drilling, grading
7.	Exterior Finishes (Metal Work) (Windows & Security)	· Install metal roofing · Install structural and decorative metals including stairs and railings · Exterior painting · Install all windows and accessories necessary for the operation & security of windows and doors

8.	Interior Rough-In and Finishes (Wood Work (Thermal Moisture Protection) (Finishing –Floors, Walls, Ceilings) (Doors & Accessories) Communication Equipment Furnishing Counter Tops Plumbing & Medical Gas Install) (Heating/Ventilation, AC System – HVAC) (Electrical Power Distribution & Lighting System) (Surveillance Systems/Security	· HVAC Main Duck Work & AUHS · Install waterproofing, vapor barriers · Floor Finishes · Install doors, accessories for restroom areas (soap dispensers, handicap grabs bars) · Mount communication Equipment · Finish all counter tops for laboratory · Plumbing rough in walls & ceilings, pumps, storage tanks, waste disposal · Electrical rough-in walls & ceilings · Install cables for electrical distribution · Conduit for all surveillance equipment and fire alarm systems
9.	External Works (Exterior Improvements))	· Disposal Wells · Storm Drainage chambers · Install generators
10.	Testing & Inspection	· Test and inspect each phase of the project, once moved along. A final test/inspection at project

	(Throughout each execution & implementation phase of project)	
11.	Handover	· Hand over completed facility to sponsors. Close off the project and finalize last payments and bonuses.

4.2.8 **Project Exclusions**

Project exclusions refer to those activities which will not be included within the project. In essence, they are those things that are considered to be outside of the project boundaries. The exclusions for this expansion project are as follows.

- Training or recruiting of staff that will work in the facility
- The management of the Department once the project has been completed
- Renovations to the maintenance workshop (ground floor below)

4.2.9 **Project Constraints**

Project constraints are those activities that act as a barrier or restrict the options of the project team. Projects are usually constrained to Time, Cost and Scope (triple constraints). The project is constrained by the following:

- Budget - The project is constrained to a budget of US$10.34 million
- The project must be completed within 6 months
- Dependence on other functional departments to provide support despite their schedule and resource constraints.

4.2.10 Project Assumptions

As the name suggests, project assumptions are those which we take to be true in order to achieve project success. Below are assumptions for this expansion project.

- All labour contractors will be available, as scheduled.
- Labour contractors of the highest quality and competence will be carrying out works for this project.
- There will be no delays
- All drawings and plans have been approved by the local authority

4.2.11 Work Breakdown Structure

The work breakdown structure is essential in the project management plan. PMI defines it as a deliverable-oriented hierarchical decomposition of the work to be executed by the project team to accomplish the project objectives and create the required deliverables. It organizes and defines the total scope of the project (Brotherton et al, 2008).

4.2.12 Work Breakdown Structure Dictionary

The work breakdown structure dictionary in its basic form, supports the work breakdown structure within the project. Below is a depiction of the WBS dictionary that will be used throughout this project.

h. Chart 8: WBS Dictionary (Source: C. Walker, the author)

WBS	Task Name	WBS Description
0	**GAMG Expansion Project**	
1	**Preliminaries**	
1.1	Award contract	Award Initial Contract to the Project Management Team
1.2	Mobilization	Payment to begin contract/project
1.3	Compliance codes/building permits	acquire the required building codes
1.4	Meet with architect	meeting to discuss drawing options
1.5	Preliminary budget	Complete prelim. budget meetings
1.6	Cost analysis budget prepared	Prepare cost analysis
1.7	Approvals for drawings	acquire approvals for final drawings
1.8	Approvals for budget	acquire approvals for budget

1.9	Prepare project schedule	acquire a project schedule (scheduler)
1.1	Approval project schedule	Get project schedule approved
2	**Procurement & Contracts**	
2.1	Meet for Procurement and Contracts	Procurement & contract meetings
2.2	Tender for sub-contractors	Submission by subcontractors
2.3	Complete bids for sub-contractors	Subcontractors selected based on bids
2.4	Order long lead building items	Order building supplies for project
2.5	Order long lead electrical Items	Order electrical supplies for project
2.6	Order long lead plumbing Items	Order plumbing supplies for project
2.7	Order long lead roofing Items	Order roofing supplies for project
3	**General Activities & Milestones**	

3.1	Power On	Provide expansion building with electricity
3.2	A/C On	Provide building with Air Condition
3.3	Water Tie-In	Provide Water to building
3.4	Sewer Tie-In	Provide sewage service for building
4	**Site Work**	
4.1	Relocation to temporary office	Relocate the staff to temporary location
4.2	Clear Site	Building has been cleared and ready for construction
5	**Flooring**	
5.1	Stem Walls (Inc. Conc. Infill)	Erection and filling of concrete walls
5.2	Backfill to U/S Slab	Leveling off fill to under slab
5.3	U/S MEP services	Install MEP services under slab
5.4	F/R/P Slab on Grade	Floor slab poured

5.5	Quality Inspection Slab Pour	Inspection of slab pour by quality personnel
6	**Structure**	
6.1	Walls	Walls set and installed
6.2	Structural Steel Work	Steel work/rebar installed
6.3	Concrete Belt Beam	belt beam framed and poured
6.4	Dry Wall Installation	Installation of Dry Walls
6.5	Timber Roof Trusses (Inc. internal bracing)	Installation of roof trusses
6.6	Plywood, I & W Shield	Roof covered with ply and ice water shield
6.7	Quality Inspection Roof	Quality control personnel inspect roof
6.8	Quality Inspection Belt, Slabs & Steel	Quality control personnel inspect belt slabs and steel
7	**Exterior Finishes**	
7.1	Metal Roofing (Standing Seam)	Metal roof installed

7.2	Roof Gutters & Downspouts	roof gutters and downspouts installed
7.3	Exterior Plaster to Walls	all exterior walls plastered
7.4	Exterior Doors	All exterior doors installed
7.5	Exterior Windows	All exterior windows installed
7.6	Quality Inspection Windows & Doors	Quality personnel carry out inspection
7.7	Exterior Painting	Exterior painting of walls and roof trims
7.8	Hand Railing	Hand railing installed and painted
8	**Interior Finishes**	
8.1	Fire Rated Gyp Bd. Ceiling (to U/S of Roof Truss)	Sheetrock installed to underside of roof truss to create finish look
8.2	Interior Partitioned Dry Walls	Interior partitions installed
8.3	Render to Interior Face of External Walls	Interior masonry walls plastered with cement

8.4	HVAC Main Truck Duct Work & AUHs	A/C ducts and vents installed
8.5	Mechanical Rough-In Walls & Ceilings	Mechanical wiring carried out
8.6	LV Rough-In Walls & Ceilings	Low Voltage piping and Wiring installed within walls and ceilings
8.7	Plumbing Rough-In Walls & Ceilings	Plumbing rough in pipes installed in walls & ceilings
8.8	Test & Inspection of MEP Services	Inspection and Testing of Mechanical Electrical and Plumbing carried out
8.9	Acoustic Ceiling Framing	Framing in ceiling for ceiling tiles
8.1	Install MEP Fixtures Equipment, Fixtures & Trims	Installation of faucets, light switches, face basins, electrical panels
8.11	Final Inspection of MEP Services	All Mechanical, Electrical and Plumbing services have received final inspection to ensure proper function
8.12	Prime & 1st Coat Paint	Apply first coat and priming of paint
8.13	Floor & Wall Tiling	Floor and Wall tiles installed

8.14	Install MEP Equipment, Fixtures & Trims	Light switch covers, wall plates and faucet handles installed
8.15	Install Internal Doors/Cabinets	Installation of office cabinets and doors
8.16	Install Acoustic Ceiling Tile	Ceiling tiles installed
8.17	Final Fix MEP Devices & Trims	Final wiring and completed
8.18	Test & Commission MEP Systems	All systems tested for functionality
9	**External Operations/Works**	
9.1	Site Signage	Illuminated Emergency and exit signs installed
9.2	Floor Finishes	Tile installation finished
9.3	Final Paint	Final coat carried out
9.4	Final Clean	All debris removed from building and yard and build is professionally clean by cleaning company

9.5	Punch List	All items that client finds unsatisfactory is addressed as indicated in previous inspections
9.6	Final Inspection	Final inspection to ensure all tasks are completed and agreed upon

4.2.13 **Control Scope**

The Scope of Works for the expansion of the GAMG facility project will be controlled by the Project Manager and Project Team. The Project Team will perform the work reflected in the WBS and the WBS Dictionary or Glossary of Activities. These documents will be referenced in the development of each WBS deliverable. Changes to be amended will need to be requested through a Change Control.

The WBS Glossary of Activities will also serve as a referential report for each WBS component. The Project Manager will review weekly progress reports submitted by Team Members to ensure project works progress as planned. Project Scope Measurement Tools will also be utilized as part of the variance analysis process to ascertain project compliance and matters that need addressing.

4.3. Schedule Management Plan

The Schedule Management Plan is a vital pillar of the Project Management Plan. This plan ensures that project activities are within a set time, and that they are followed. The Schedule Management Plan provides initial guidance and tailors general time management planning for specific project use when performing the time management processes (Carson, 2011).

The onus is on the project manager and project team (scheduler) to ensure that the schedule is precisely followed. Failure to adhere to the Schedule Management Plan will cause an overrun of the project, which will have spinoff effects on cost. Below represents the time apportioned for each work activity

i. Chart 9: Resource Assignment (Source: C. Walker, the author)

Task Name	**Duration**	**Responsibility**
Award contract	0 days	Client
Mobilization	3 days	Client, Project Manager
Compliance codes/building permits	7 days	Project Manager
Meet with architect	3 days	Project Management Team, Architect, Architect Team, SP Architects
Preliminary budget	1 day	Project Manager, Sponsor, Accounts Dept.

Cost analysis budget prepared	5 days	Project Manager, Sponsor, Accounts Dept.
Approvals for drawings	1 day	Architect, Project Manager
Approvals for budget	1 day	Project Manager, Sponsor, Accounts Dept.
Prepare project schedule	7 days	Project Manager, Accountant
Approval project schedule	1 day	Project Management Team
Meet for Procurement and Contracts	1 day	Architect, Project Manager, Procurement dept.
Tender for sub-contractors	5 days	Project Manager, Procurement dept.
Complete bids for sub-contractors	1 day	Project Manager, Procurement dept.
Order long lead building items	1 day	Project Management Team
Order long lead electrical Items	1 day	Project Management Team
Order long lead plumbing Items	1 day	Project Management Team
Order long lead roofing Items	1 day	Project Management Team

Power On	1 day	Site Foreman, Contractor
A/C On	1 day	Site Foreman, Contractor
Water Tie-In	1 day	Site Foreman, Contractor
Sewer Tie-In	1 day	Site Foreman, Contractor
Relocation to temporary office	6 days	Client, Project Manager
Clear Site	3 days	Site Foreman, Contractor
Stem Walls (Inc. Conc. Infill)	5 days	Main Contractor, Site Foreman, Superintendent, Laborers
Backfill to U/S Slab	7 days	Main Contractor, Site Foreman, Superintendent, Laborers
U/S MEP services	10 days	Main Contractor, Site Foreman, Superintendent, Laborers
F/R/P Slab on Grade	12 days	Main Contractor, Site Foreman, Superintendent, Laborers
Quality Inspection Slab Pour	1 day	Main Contractor, Quality Control Manager, Site Foreman, Superintendent, Laborers

Walls	7 days	Main Contractor, Site Foreman, Superintendent, Laborers
Structural Steel Work	4 days	Main Contractor, Site Foreman, Superintendent, Laborers
Concrete Belt Beam	6 days	Main Contractor, Site Foreman, Superintendent, Laborers
Dry Wall Installation	4 days	Main Contractor, Site Foreman, Superintendent, Laborers
Timber Roof Trusses (Inc. internal bracing)	10 days	Main Contractor, Site Foreman, Superintendent, Laborers
Plywood, I & W Shield	10 days	Main Contractor, Site Foreman, Superintendent, Laborers
Quality Inspection Roof	2 days	Main Contractor, Quality Control Manager, Site Foreman, Superintendent, Laborers
Quality Inspection Belt, Slabs & Steel	2 days	Main Contractor, Quality Control Manager, Site Foreman, Superintendent, Laborers
Metal Roofing (Standing Seam)	7 days	Superintendent, Metal Roof Contractors
Roof Gutters & Downspouts	4 days	Superintendent, Metal Roof Contractors
Exterior Plaster to Walls	10 days	Main Contractor, Site Foreman, Superintendent, Laborers

Exterior Doors	1 day	Main Contractor, Site Foreman, Superintendent, Laborers
Exterior Windows	1 day	Main Contractor, Site Foreman, Superintendent, Laborers
Quality Inspection Windows & Doors	1 day	Main Contractor, Quality Control Manager, Site Foreman, Superintendent, Laborers
Exterior Painting	6 days	Main Contractor, Site Foreman, Superintendent, Laborers
Hand Railing	6 days	Main Contractor, Site Foreman, Superintendent, Laborers
Fire Rated Gyp Bd. Ceiling (to U/S of Roof Truss)	8 days	Main Contractor, Site Foreman, Superintendent, Laborers
Interior Partitioned Dry Walls	3 days	Main Contractor, Site Foreman, Superintendent, Laborers
Render to Interior Face of External Walls	8 days	Main Contractor, Site Foreman, Superintendent, Laborers
HVAC Main Truck Duct Work & AUHs	10 days	Main Contractor, Site Foreman, Superintendent, Laborers
Mechanical Rough-In Walls & Ceilings	6 days	Main Contractor, Site Foreman, Superintendent, Laborers
LV Rough-In Walls & Ceilings	6 days	Main Contractor, Site Foreman, Superintendent, Laborers

Plumbing Rough-In Walls & Ceilings	8 days	Main Contractor, Site Foreman, Superintendent, Laborers
Test & Inspection of MEP Services	21 days	Main Contractor, Quality Control Manager, Site Foreman, Superintendent, Laborers
Acoustic Ceiling Framing	7 days	Main Contractor, Site Foreman, Superintendent, Laborers
Install MEP Fixtures Equipment, Fixtures & Trims	4 days	Main Contractor, Site Foreman, Superintendent, Laborers
Final Inspection of MEP Services	3 days	Main Contractor, Quality Control Manager, Site Foreman, Superintendent, Laborers
Prime & 1st Coat Paint	2 days	Main Contractor, Site Foreman, Superintendent, Laborers
Floor & Wall Tiling	5 days	Main Contractor, Site Foreman, Superintendent, Laborers
Install MEP Equipment, Fixtures & Trims	2 days	Main Contractor, Site Foreman, Superintendent, Laborers
Install Internal Doors/Cabinets	3 days	Main Contractor, Site Foreman, Superintendent, Laborers
Install Acoustic Ceiling Tile	4 days	Main Contractor, Site Foreman, Superintendent, Laborers
Final Fix MEP Devices & Trims	4 days	Main Contractor, Site Foreman, Superintendent, Laborers

Test & Commission MEP Systems	2 days	Quality Control Manager, Site Foreman, Superintendent,
Site Signage	1 day	Main Contractor, Site Foreman, Superintendent, Laborers
Floor Finishes	5 days	Main Contractor, Site Foreman, Superintendent, Laborers
Final Paint	3 days	Main Contractor, Site Foreman, Superintendent, Laborers
Final Clean	4 days	Main Contractor, Site Foreman, Superintendent, Laborers
Punch List	5 days	Main Contractor, Site Foreman, Superintendent, Laborers
Final Inspection	1 day	Project Manager, Quality Control Manager, Site Foreman, Superintendent,

It is imperative that the expansion project meet the deadlines set out. As such, it is best practice to implement a calendar map to track the allotted days for the tasks set out. One task/job can have a cascading effect on another, and in instances, there needs to be a break between jobs to account for setting and such other activities that need setting time (for eg. Priming of walls, Backfill etc.). Chart 10 below depicts the sequence of activities inclusive of start and finish dates.

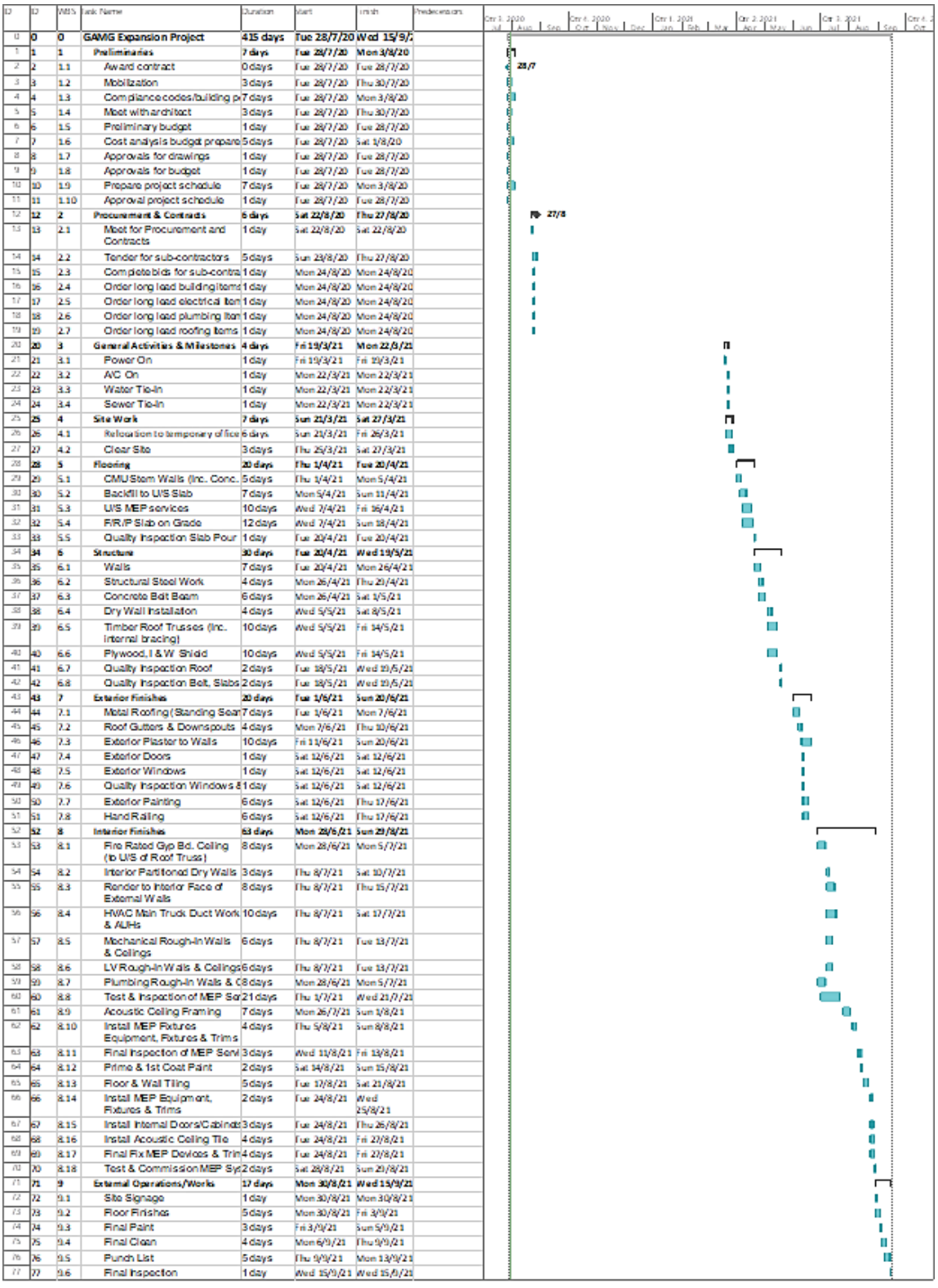
j. Chart 10: Schedule Calendar Chart (Source: C. Walker, the author)

WBS	Task Name	Duration	Start	Finish
0	GAMG Expansion Project	415 days	Tue 28/7/20	Wed 15/9/21
1	**Preliminaries**	**7 days**	**Tue 28/7/20**	**Mon 3/8/20**
1.1	Award contract	0 days	Tue 28/7/20	Tue 28/7/20
1.2	Mobilization	3 days	Tue 28/7/20	Thu 30/7/20
1.3	Compliance codes/building permits	7 days	Tue 28/7/20	Mon 3/8/20
1.4	Meet with architect	3 days	Tue 28/7/20	Thu 30/7/20
1.5	Preliminary budget	1 day	Tue 28/7/20	Tue 28/7/20
1.6	Cost analysis budget prepared	5 days	Tue 28/7/20	Sat 1/8/20
1.7	Approvals for drawings	1 day	Tue 28/7/20	Tue 28/7/20
1.8	Approvals for budget	1 day	Tue 28/7/20	Tue 28/7/20
1.9	Prepare project schedule	7 days	Tue 28/7/20	Mon 3/8/20
1.1	Approval project schedule	1 day	Tue 28/7/20	Tue 28/7/20
2	**Procurement & Contracts**	**6 days**	**Sat 22/8/20**	**Thu 27/8/20**
2.1	Meet for Procurement and Contracts	1 day	Sat 22/8/20	Sat 22/8/20
2.2	Tender for sub-contractors	5 days	Sun 23/8/20	Thu 27/8/20
2.3	Complete bids for sub-contractors	1 day	Mon 24/8/20	Mon 24/8/20
2.4	Order long lead building items	1 day	Mon 24/8/20	Mon 24/8/20
2.5	Order long lead electrical Items	1 day	Mon 24/8/20	Mon 24/8/20
2.6	Order long lead plumbing Items	1 day	Mon 24/8/20	Mon 24/8/20
2.7	Order long lead roofing Items	1 day	Mon 24/8/20	Mon 24/8/20
3	**General Activities & Milestones**	**4 days**	**Fri 19/3/21**	**Mon 22/3/21**
3.1	Power On	1 day	Fri 19/3/21	Fri 19/3/21
3.2	A/C On	1 day	Mon 22/3/21	Mon 22/3/21

3.3	Water Tie-In	1 day	Mon 22/3/21	Mon 22/3/21
3.4	Sewer Tie-In	1 day	Mon 22/3/21	Mon 22/3/21
4	**Site Work**	**7 days**	**Sun 21/3/21**	**Sat 27/3/21**
4.1	Relocation to temporary office	6 days	Sun 21/3/21	Fri 26/3/21
4.2	Clear Site	3 days	Thu 25/3/21	Sat 27/3/21
5	**Flooring**	**20 days**	**Thu 1/4/21**	**Tue 20/4/21**
5.1	Stem Walls (Inc. Conc. Infill)	5 days	Thu 1/4/21	Mon 5/4/21
5.2	Backfill to U/S Slab	7 days	Mon 5/4/21	Sun 11/4/21
5.3	U/S MEP services	10 days	Wed 7/4/21	Fri 16/4/21
5.4	F/R/P Slab on Grade	12 days	Wed 7/4/21	Sun 18/4/21
5.5	Quality Inspection Slab Pour	1 day	Tue 20/4/21	Tue 20/4/21
6	**Structure**	**30 days**	**Tue 20/4/21**	**Wed 19/5/21**
6.1	Walls	7 days	Tue 20/4/21	Mon 26/4/21
6.2	Structural Steel Work	4 days	Mon 26/4/21	Thu 29/4/21
6.3	Concrete Belt Beam	6 days	Mon 26/4/21	Sat 1/5/21
6.4	Dry Wall Installation	4 days	Wed 5/5/21	Sat 8/5/21
6.5	Timber Roof Trusses (Inc. internal bracing)	10 days	Wed 5/5/21	Fri 14/5/21
6.6	Plywood, I & W Shield	10 days	Wed 5/5/21	Fri 14/5/21
6.7	Quality Inspection Roof	2 days	Tue 18/5/21	Wed 19/5/21
6.8	Quality Inspection Belt, Slabs & Steel	2 days	Tue 18/5/21	Wed 19/5/21
7	**Exterior Finishes**	**20 days**	**Tue 1/6/21**	**Sun 20/6/21**
7.1	Metal Roofing (Standing Seam)	7 days	Tue 1/6/21	Mon 7/6/21
7.2	Roof Gutters & Downspouts	4 days	Mon 7/6/21	Thu 10/6/21

7.3	Exterior Plaster to Walls	10 days	Fri 11/6/21	Sun 20/6/21
7.4	Exterior Doors	1 day	Sat 12/6/21	Sat 12/6/21
7.5	Exterior Windows	1 day	Sat 12/6/21	Sat 12/6/21
7.6	Quality Inspection Windows & Doors	1 day	Sat 12/6/21	Sat 12/6/21
7.7	Exterior Painting	6 days	Sat 12/6/21	Thu 17/6/21
7.8	Hand Railing	6 days	Sat 12/6/21	Thu 17/6/21
8	**Interior Finishes**	**63 days**	**Mon 28/6/21**	**Sun 29/8/21**
8.1	Fire Rated Gyp Bd. Ceiling (to U/S of Roof Truss)	8 days	Mon 28/6/21	Mon 5/7/21
8.2	Interior Partitioned Dry Walls	3 days	Thu 8/7/21	Sat 10/7/21
8.3	Render to Interior Face of External Walls	8 days	Thu 8/7/21	Thu 15/7/21
8.4	HVAC Main Truck Duct Work & AUHs	10 days	Thu 8/7/21	Sat 17/7/21
8.5	Mechanical Rough-In Walls & Ceilings	6 days	Thu 8/7/21	Tue 13/7/21
8.6	LV Rough-In Walls & Ceilings	6 days	Thu 8/7/21	Tue 13/7/21
8.7	Plumbing Rough-In Walls & Ceilings	8 days	Mon 28/6/21	Mon 5/7/21
8.8	Test & Inspection of MEP Services	21 days	Thu 1/7/21	Wed 21/7/21
8.9	Acoustic Ceiling Framing	7 days	Mon 26/7/21	Sun 1/8/21
8.1	Install MEP Fixtures Equipment, Fixtures & Trims	4 days	Thu 5/8/21	Sun 8/8/21
8.11	Final Inspection of MEP Services	3 days	Wed 11/8/21	Fri 13/8/21
8.12	Prime & 1st Coat Paint	2 days	Sat 14/8/21	Sun 15/8/21
8.13	Floor & Wall Tiling	5 days	Tue 17/8/21	Sat 21/8/21
8.14	Install MEP Equipment, Fixtures & Trims	2 days	Tue 24/8/21	Wed 25/8/21
8.15	Install Internal Doors/Cabinets	3 days	Tue 24/8/21	Thu 26/8/21
8.16	Install Acoustic Ceiling Tile	4 days	Tue 24/8/21	Fri 27/8/21

8.17	Final Fix MEP Devices & Trims	4 days	Tue 24/8/21	Fri 27/8/21
8.18	Test & Commission MEP Systems	2 days	Sat 28/8/21	Sun 29/8/21
9	**External Operations/Works**	**17 days**	**Mon 30/8/21**	**Wed 15/9/21**
9.1	Site Signage	1 day	Mon 30/8/21	Mon 30/8/21
9.2	Floor Finishes	5 days	Mon 30/8/21	Fri 3/9/21
9.3	Final Paint	3 days	Fri 3/9/21	Sun 5/9/21
9.4	Final Clean	4 days	Mon 6/9/21	Thu 9/9/21
9.5	Punch List	5 days	Thu 9/9/21	Mon 13/9/21
9.6	Final Inspection	1 day	Wed 15/9/21	Wed 15/9/21



ID	WBS	Task Name	Duration	Start	Finish	Predecessors
0	0	**GAMG Expansion Project**	**415 days**	**Tue 28/7/20**	**Wed 15/9/2**	
1	1	**Preliminaries**	**7 days**	**Tue 28/7/20**	**Mon 3/8/20**	
2	1.1	Award contract	0 days	Tue 28/7/20	Tue 28/7/20	
3	1.2	Mobilization	3 days	Tue 28/7/20	Thu 30/7/20	
4	1.3	Compliance codes/building p	7 days	Tue 28/7/20	Mon 3/8/20	
5	1.4	Meet with architect	3 days	Tue 28/7/20	Thu 30/7/20	
6	1.5	Preliminary budget	1 day	Tue 28/7/20	Tue 28/7/20	
7	1.6	Cost analysis budget prepare	5 days	Tue 28/7/20	Sat 1/8/20	
8	1.7	Approvals for drawings	1 day	Tue 28/7/20	Tue 28/7/20	
9	1.8	Approvals for budget	1 day	Tue 28/7/20	Tue 28/7/20	
10	1.9	Prepare project schedule	7 days	Tue 28/7/20	Mon 3/8/20	
11	1.10	Approval project schedule	1 day	Tue 28/7/20	Tue 28/7/20	
12	2	**Procurement & Contracts**	**6 days**	**Sat 22/8/20**	**Thu 27/8/20**	
13	2.1	Meet for Procurement and Contracts	1 day	Sat 22/8/20	Sat 22/8/20	
14	2.2	Tender for sub-contractors	5 days	Sun 23/8/20	Thu 27/8/20	
15	2.3	Complete bids for sub-contra	1 day	Mon 24/8/20	Mon 24/8/20	
16	2.4	Order long lead building items	1 day	Mon 24/8/20	Mon 24/8/20	
17	2.5	Order long lead electrical iten	1 day	Mon 24/8/20	Mon 24/8/20	
18	2.6	Order long lead plumbing iten	1 day	Mon 24/8/20	Mon 24/8/20	
19	2.7	Order long lead roofing items	1 day	Mon 24/8/20	Mon 24/8/20	
20	3	**General Activities & Milestones**	**4 days**	**Fri 19/3/21**	**Mon 22/3/21**	
21	3.1	Power On	1 day	Fri 19/3/21	Fri 19/3/21	
22	3.2	A/C On	1 day	Mon 22/3/21	Mon 22/3/21	
23	3.3	Water Tie-In	1 day	Mon 22/3/21	Mon 22/3/21	
24	3.4	Sewer Tie-In	1 day	Mon 22/3/21	Mon 22/3/21	
25	4	**Site Work**	**7 days**	**Sun 21/3/21**	**Sat 27/3/21**	
26	4.1	Relocation to temporary office	6 days	Sun 21/3/21	Fri 26/3/21	
27	4.2	Clear Site	3 days	Thu 25/3/21	Sat 27/3/21	
28	5	**Flooring**	**20 days**	**Thu 1/4/21**	**Tue 20/4/21**	
29	5.1	CMU Stem Walls (Inc. Conc.	5 days	Thu 1/4/21	Mon 5/4/21	
30	5.2	Backfill to U/S Slab	7 days	Mon 5/4/21	Sun 11/4/21	
31	5.3	U/S MEP services	10 days	Wed 7/4/21	Fri 16/4/21	
32	5.4	F/R/P Slab on Grade	12 days	Wed 7/4/21	Sun 18/4/21	
33	5.5	Quality Inspection Slab Pour	1 day	Tue 20/4/21	Tue 20/4/21	
34	6	**Structure**	**30 days**	**Tue 20/4/21**	**Wed 19/5/21**	
35	6.1	Walls	7 days	Tue 20/4/21	Mon 26/4/21	
36	6.2	Structural Steel Work	4 days	Mon 26/4/21	Thu 29/4/21	
37	6.3	Concrete Belt Beam	6 days	Mon 26/4/21	Sat 1/5/21	
38	6.4	Dry Wall Installation	4 days	Wed 5/5/21	Sat 8/5/21	
39	6.5	Timber Roof Trusses (Inc. Internal bracing)	10 days	Wed 5/5/21	Fri 14/5/21	
40	6.6	Plywood, I & W Shield	10 days	Wed 5/5/21	Fri 14/5/21	
41	6.7	Quality Inspection Roof	2 days	Tue 18/5/21	Wed 19/5/21	
42	6.8	Quality Inspection Belt, Slabs	2 days	Tue 18/5/21	Wed 19/5/21	
43	7	**Exterior Finishes**	**20 days**	**Tue 1/6/21**	**Sun 20/6/21**	
44	7.1	Metal Roofing (Standing Seam	7 days	Tue 1/6/21	Mon 7/6/21	
45	7.2	Roof Gutters & Downspouts	4 days	Mon 7/6/21	Thu 10/6/21	
46	7.3	Exterior Plaster to Walls	10 days	Fri 11/6/21	Sun 20/6/21	
47	7.4	Exterior Doors	1 day	Sat 12/6/21	Sat 12/6/21	
48	7.5	Exterior Windows	1 day	Sat 12/6/21	Sat 12/6/21	
49	7.6	Quality Inspection Windows &	1 day	Sat 12/6/21	Sat 12/6/21	
50	7.7	Exterior Painting	6 days	Sat 12/6/21	Thu 17/6/21	
51	7.8	Hand Railing	6 days	Sat 12/6/21	Thu 17/6/21	
52	8	**Interior Finishes**	**63 days**	**Mon 28/6/21**	**Sun 29/8/21**	
53	8.1	Fire Rated Gyp Bd. Ceiling (to U/S of Roof Truss)	8 days	Mon 28/6/21	Mon 5/7/21	
54	8.2	Interior Partitioned Dry Walls	3 days	Thu 8/7/21	Sat 10/7/21	
55	8.3	Render to Interior Face of External Walls	8 days	Thu 8/7/21	Thu 15/7/21	
56	8.4	HVAC Main Truck Duct Work & AUHs	10 days	Thu 8/7/21	Sat 17/7/21	
57	8.5	Mechanical Rough-In Walls & Ceilings	6 days	Thu 8/7/21	Tue 13/7/21	
58	8.6	LV Rough-In Walls & Ceilings	6 days	Thu 8/7/21	Tue 13/7/21	
59	8.7	Plumbing Rough-In Walls & C	8 days	Mon 28/6/21	Mon 5/7/21	
60	8.8	Test & Inspection of MEP Ser	21 days	Thu 1/7/21	Wed 21/7/21	
61	8.9	Acoustic Ceiling Framing	7 days	Mon 26/7/21	Sun 1/8/21	
62	8.10	Install MEP Fixtures Equipment, Fixtures & Trims	4 days	Thu 5/8/21	Sun 8/8/21	
63	8.11	Final Inspection of MEP Servi	3 days	Wed 11/8/21	Fri 13/8/21	
64	8.12	Prime & 1st Coat Paint	2 days	Sat 14/8/21	Sun 15/8/21	
65	8.13	Floor & Wall Tiling	5 days	Tue 17/8/21	Sat 21/8/21	
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68	8.16	Install Acoustic Ceiling Tile	4 days	Tue 24/8/21	Fri 27/8/21	
69	8.17	Final Fix MEP Devices & Trin	4 days	Tue 24/8/21	Fri 27/8/21	
70	8.18	Test & Commission MEP Sys	2 days	Sat 28/8/21	Sun 29/8/21	
71	9	**External Operations/Works**	**17 days**	**Mon 30/8/21**	**Wed 15/9/21**	
72	9.1	Site Signage	1 day	Mon 30/8/21	Mon 30/8/21	
73	9.2	Floor Finishes	5 days	Mon 30/8/21	Fri 3/9/21	
74	9.3	Final Paint	3 days	Fri 3/9/21	Sun 5/9/21	
75	9.4	Final Clean	4 days	Mon 6/9/21	Thu 9/9/21	
76	9.5	Punch List	5 days	Thu 9/9/21	Mon 13/9/21	
77	9.6	Final Inspection	1 day	Wed 15/9/21	Wed 15/9/21	

FIGURE 7: PROJECT SCHEDULE FOR THE GAMG EXPANSION PROJECT. COMPILED BY AUTHOR, DATED JULY 2020

4.4. Cost Management Plan

Cost management and control is vital to a project's success. Mismanagement can lead to overcompensation of funds and subsequently an overrun of the budget. Therefore, managing the budget of the project is possibly one of the most important jobs a project will come across. According to Roseke (2016), Good project management requires a firm grasp on the concepts and techniques in project budgeting and cost control.

The total cost for the project stands at approximately JMD$10,335,000. It includes cost for the contractors, subcontractors, administrative costs, electrical and plumbing costs as well as contingency reserve. The chart below represents a general breakdown of the costs associated with the expansion project.

k. Chart 10: General Cost Breakdown (Source: C. Walker, the author)

GAMG Expansion Project Cost Breakdown	
Item	**Project Costs**
Construction/General Contractor	$2,795,000
Administration	$2,114,600
Plumbing	$1,735,000
Electrical	$1,170,500

HVAC	$1,200,000
Permits	$20,000
Taxes (10%)	$903,510
Contingency (5%)	$396,390
Total	**$10,335,000**

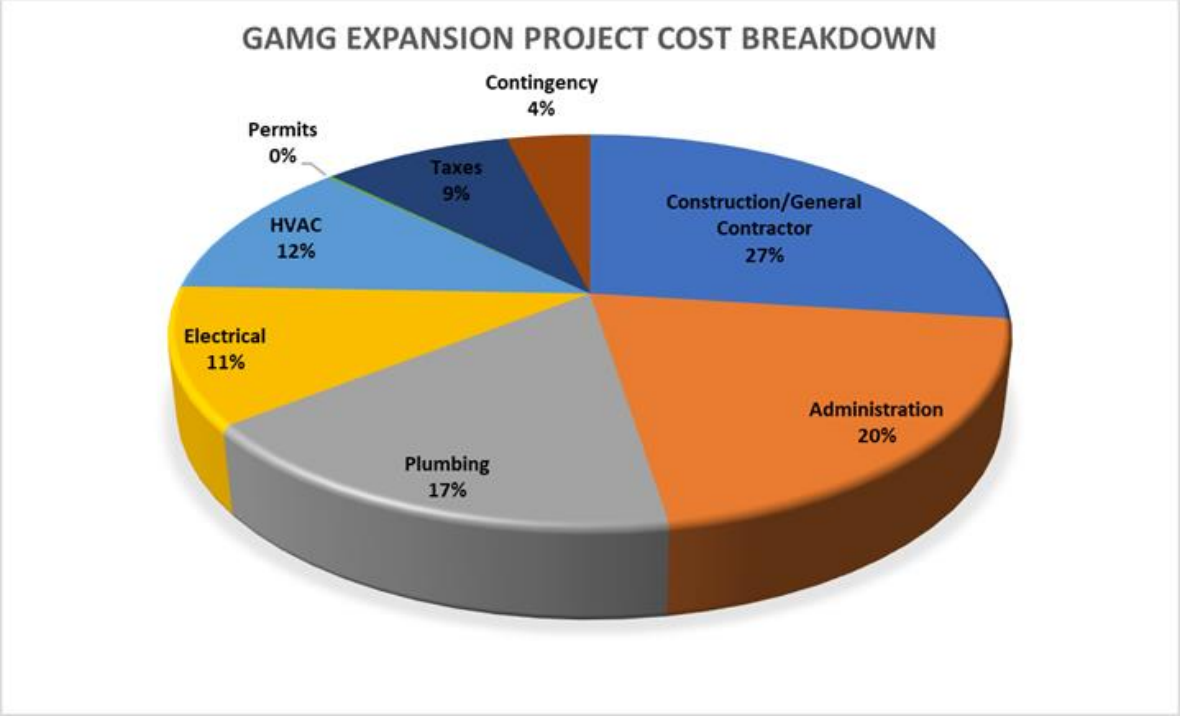


FIGURE 8: PROJECT PROJECT COST BREAKDOWN. COMPILED BY AUTHOR, DATED JULY 2020

I. Chart 11: Detailed Cost Breakdown (Source: C. Walker, the author)

Item Description	Estimated Cost
Insurance	$516,750.00
Bond	$16,565.33
Contractor Works	
Trucking, temporary utilities	$51,872.00
Site Clearance	$50,000.00
Site Fill	
Concrete Works	
Masonry	
Masonry Block Work	$104,525.00
Masonry Accessories	$45,565.67
Metals	
Structural steel columns beams and accessories	$259,677.00
Wood and Plastic	
Rough Faming including trusses	$55,810.00
Plywood decking	$80,522.00
Wood trims	$93,200.00
Thermal & Moisture	
Ice and water shield membrane	$103,709.00
6” batt insulation	$95,100.00
EPDM Roof Membrane	$73,702.00
Metal roofing	$150,250.00
Doors and Windows	
Office glass windows	$159,000.00
Steel doors and frames	$115,680.00
Windows	$72,830.00
Finishes	
Finish hardware	$60,000.00
Sheetrock (Finished) to wall	$70,500.00
Sheetrock (Finished) to ceiling	$75,250.00
Plaster	$94,539.00
Porcelain Tiles	$103,466.00
Vinyl Base	$31,963.00
Suspended ceilings	$105,285.00

Painting Internal	$50,654.00
Painting External	$100,654.00
Sheetrock (Finished) to wall	$57,931.00
Plumbing Works	
Fixture: Supply and Install	$449,200.00
Connection to Main Supply, 2" Meter	$117,074.00
Septic Tanks and Collection	$187,665.00
Condensate Drains and Installation	$248,325.00
Sanitary Drainage Piping and Fitting	$247,346.00
Hot Water Supply Piping and Fitting	$287,323.00
Storm Water Piping	$198,067.00
Electrical Works	
Service Entrance Equipment	$128,470.00
Electrical Riser Distribution (Panels and Feeders)	$152,075.00
General Area Lighting	$207,771.00
Generator Connections (Electrical and Mechanical)	$56,730.00
General Power Distributions (Outlets and Disconnections)	$155,805.00
Pump Room Electrics	$7,315.00
Fire Alarm	$55,213.00
Lightning Protection and Grounding	$54,450.00
Site Electrics	$180,850.00
Generator	$170,475.00
As Built Documents and Manuals	$1,346.00
HVAC Works	
Sleeves	$131,440.00
Turning Vanes (etc.)	$73,300.00
Testing and Balancing (allowance)	$252,000.00
Hangers and Duct Straps	$74,400.00
Restroom Exhaust Ductwork	$87,375.00
Air handlers (Evaporators)	$135,000.00
Condensing Units	$252,669.00
Controls (Thermostat etc.)	$13,349.00
Trunking	$13,979.00
Grilles Supply and Install	$12,420.00

Any Other Such Materials as Necessary to complete	$58,800.00
Emergency Drain Pans	$53,146.00
Ductwork and Accessories	$24,000.00
As Built Documents and Manuals	$18,122.00

4.4.1 Cost Management Approach

The Project Manager will send out a weekly financial to the Project Sponsor. This will come in the form of an Email. There will be a weekly review of the cost performance and cost management for the preceding week, carried out by the project manager. Performance will be measured using earned value management or metrics.

The Assistant Project Manager is responsible for preparing the Cost Management Plan and the Cost Baseline. The Project Manager is responsible for accounting for cost deviations and presenting the Project Sponsor with options for getting the project back on budget. The Project Sponsor has the authority to make changes to the project in an effort to bring the project back within budget.

Costs for this project will be managed at the second level of the Work Breakdown Structure (WBS). Control Accounts will be created at this level to track costs. Earned Value calculations for the Control Accounts will measure and manage the financial performance of the project. Credit for work will be assigned at the work package level. The percentage (%) of credit granted to each work package will be calculated based on the amount of work completed at a point in time compared to the total costs required to complete the work package.

4.4.2 Cost Variance

Cost variances of +/- 0.1 in the cost and schedule performance indices will change the status of the cost to cautionary; as such, those values will be changed to yellow in the project status reports. Cost variances of +/- 0.2 in the cost and schedule performance indices will change the status of the cost to an alert stage; as such, those values will be highlighted in red in the project status reports. This will require corrective action from the

Project Manager in order to bring the cost and/or schedule performance indexes below the alert level. Corrective actions will require a project change order and must be approved by the Project Sponsor before it can be included within the scope of the project.

4.4.3 Measuring Cost Performance

Performance of the project will be measured using Earned Value Management. The following four Earned Value metrics will be used to measure the project's cost performance:

1. Schedule Variance (SV)

2. Cost Variance (CV)

3. Schedule Performance Index (SPI)

4. Cost Performance Index (CPI)

If the Schedule Performance Index or Cost Performance Index has a variance of between 0.1 and 0.2 the Project Manager must report the reason for the exception. If the SPI or CPI has a variance of greater than 0.2 the Project Manager must report the reason for the exception and provide management a detailed corrective plan to bring the project's performance back to acceptable levels.

m. Chart 12: Performance Measurement Index (Source: C. Walker, the author)

Performance Measure	Yellow	Red
Schedule Performance Index (SPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2
Cost Performance Index (CPI)	Between 0.9 and 0.8 or Between 1.1 and 1.2	Less Than 0.8 or Greater than 1.2

4.5. Quality Management Plan

According to the PMBOK Guide, Project Quality Management speaks to the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements in order to meet stakeholders' objectives (PMBOK Guide, 2017).

Project Quality Management also supports continuous process improvement. It is of utmost importance that the project team correctly implements the correct quality tools necessary to meet the requirements of the project. If a project manager and a project team understand the various quality tools as well as how and when to use them, they will ultimately make better decisions, move the project along faster, and be much more successful with project recommendations and implementation. (Rever, 2007).

The material to be used on the project will meet standard specifications outlined by the National Works Agency, and contractors must be in compliance with the building code stipulated by the Government of Jamaica.

4.5.1 Quality Management Approach

The Generation Asset Management group intends to adopt a modern quality management approach in the expansion of the GAMG facility. A modern quality management approach seeks to minimize variation and to deliver results that meet defined stakeholder requirements (PMBOK Guide, 2017).

It is imperative that the quality management approach taken meet customer's needs, in such a way that still conforms to the standards stipulated by the Government of Jamaica. It is also of high importance that the project manager has buy-in from all levels i.e. senior management to line staff.

The project will be heavily focused on taking a sustainable approach into the execution of the project. Sustainability seeks to meet the needs of the present without adversely compromising the needs of future generations. It will be incumbent on the project manager to ensure that sustainability is upheld and facilitated at best.

4.5.2 Quality Requirements

Product Quality

The Jamaica Public Service Company Ltd. has a strong culture for safety and is banked on producing at the highest quality. The product quality standards and requirements will be determined by the Project Team and will be based on the company's documented standards. In the occurrence of product-specific quality standards identified that are not currently part of the documented organizational standards, the Project Team will review these newly identified standards and the Assistant Project Manager will incorporate them into organizational documentation if approved.

Process Quality

The process quality standards and requirements will be determined by the Project Management Team. Many of these standards will be based on the standards set out by the Jamaica Public Service Company Ltd. The project team will work with the Project Manager to establish acceptable standards and document these standards for incorporation into both organizational process documents as well as the Project Management plan. These standards will be communicated to all project stakeholders.

4.5.3 Quality Control Measurements

Quality control measures are vital for project success. They ensure steps are put in place that the works being carried out are of the highest standard so as to avoid rework which would result in project delay.

The deliverables for the Generation Asset Management Groups expansion project must be measured and fall within the established standards and tolerances. The below logs will be used by the project team in conducting these measurements and will be maintained for use as supporting documentation for the project's acceptance.

n. Chart 13: Quality Assurance Log (Source: C. Walker, the author)

Process Inspection # 1	Date	Process Measured	Required Value	Actual Measured	Acceptable? (Y/N)	Recommendation	Date Resolved

o. **Chart 14: Quality Control Log (Source: C. Walker, the author)**

Deliverable # 1	Date	Item Measured	Required Value	Actual Measured	Acceptable? (Y/N)	Recommendation	Date Resolved

4.5.4 **Quality Control**

Quality Control speaks to activities used to evaluate whether the product or service being delivered, meets the quality requirements that are specified for the project. This is very crucial in the execution of our expansion project. The project manager must ensure that frequent documentation is done on the project with regards to quality.

The project will employ the use of a Quality Control Manager who will use a quality check sheet for this activity to ensure the criteria are being met. This QC manager will also be mandated to provide periodic reports/updates at the scheduled meetings.

p. Chart 15: Quality Check Sheet (Compiled: C. Walker, the author, June 2020)

QUALITY CHECK FORM				
Department: GENERATION ASSET MANAGEMENT GROUP (GAMG)				
Project Name: Expansion of GAMG Workspace		**Date:**		
Project Number				
Item:		**Does this item meet required quality standard?**		**Additional Comments:**
		Yes	**No**	
1				
2				
3				
4				
5				
6				
7				
Name: (Sign/Date)		**Accepted by: (Sign/Date)**		

4.6. Resource Management Plan

A resource plan describes how people and physical resources will be estimated, acquired, developed, managed and controlled. People are developed and managed whereas materials are controlled after they are estimated and acquired.(Greycampus, 2020)

The Human Resource Management Plan is integral for this project, as it will ensure that all the resources are properly managed and efficiently used based on the necessary skills needed to complete each task assigned.

4.6.1 Roles and Responsibilities

Roles and responsibilities are necessary for any project manager to delegate, as it contributes to free-flowing progression in the project. It prevents confusion and unnecessary altercations which may arise as a result of vague explanations.

The following roles and responsibilities of each member are as follows:

Project Manager (1):

1. Ensures that roles and responsibilities are allotted correctly
2. Should ensure proper time management
3. Responsible for creating and developing budget and financial plan
4. Assist with scheduling
5. Responsible for effective communication plan among staff and sponsors
6. Ensure that knowledge and information is communicated efficiently
7. Evaluate performance of staff
8. Encourage and promote teamwork for the efficiency of the project's completion.

Skills/ Competencies:

- Risk Management Skills
- leadership Skills
- Communication Skills
- Analytical Skills
- Damage Control Skills
- Communication/Negotiation Skills
- Critical Thinking Skills
- Tactical Skills
- Operational Skills
- Decision Making Skills
- Cost Management Skills
- Budgeting Skills
- Scheduling Skills
- Empowerment Skills

- Conflict Resolution Skills
- Quality Management Skills

Authority:

To get the resources needed when needed, to control the project costs and budget, to oversee and manage changes to the project and to maintain and enhance client relationships.

Quality Control Manager Roles (1):

1. Manages the inspection and testing of materials, parts, and products to ensure adherence to established quality standards.
2. Setting the requirements for raw materials from suppliers and monitoring their compliance.
3. Supervising inspectors, technicians, and other staff members and providing guidance.
4. Ensuring legal obligations are followed and ensuring compliance with regulatory bodies and with health and safety guidelines.
5. Ensure that production is done correctly
6. Provide recommendations for quality of material
7. Analyze and advise on building specifications in order to prioritize all tasks

Skills/ Competencies:

- Delegation Skills
- Analytical Skills
- Organizational Skills
- Leadership Skills
- Planning Skills
- Communication Skills
- Writing Skills
- Detail-Orientated Skills

Cost/Financial Manager Roles (1):

1. Provide budget for the project
2. Ensure budget is adhered to
3. Overseas all items related to budget expenditure
4. Produce financial reports
5. Develop strategies and plans for the long-term financial goals of the organization

Skills:

- Time Management Skills
- Analytical Skills
- Financial Forecasting Skills

- Budgeting skills
- Team-Working skills
- Problem-Solving Skills
- Organizational skills

Human Resource & Communication Manager (1):

1. Recruit the best skilled worker for the project by working along with General Contractor (GC)
2. Ensures and enforces the safety of standards for labour
3. Communicates with the General subcontractor for employees hired for the project
4. Communicates with the necessary stakeholders for the completion of the project
5. Ensure individuals participating in the project are efficiently working
6. Ensure the fitness of hired workers

Skills/ Competencies:

- Communication Skills
- Planning Skills
- Time Management Skills
- Listening Skills
- Organization Skills

Risk Analyst & Procurement Manager Roles (1):

1. Creating risk management procedure for the project
2. To communicate risk policies and processes for an organisation.
3. Provide hands-on development of risk models involving market, credit and operational risk
4. Provide research and analytical support.
5. Provides a mitigation plan
6. Creating risk continuity plans
7. Create risk assessments
8. Provide risk reports
9. Determines and advices on the material and supplies to be procured
10. Purchases goods or services for their employer to use or sell
11. Ensures employers obtain quality products for competitive prices in a timely fashion.

Skills/ Competencies:

- Analytical Skills
- Organization Skills
- Strategic Skills
- Communication Skills

- Planning Skills
- Time-Management Skills
- Decision-Making Skills
- Problem-Solving Skills
- Negotiation Skills
- Research Skills

Project Staff:

The project team consists of a number of persons whose roles will be pivotal for the project and completing the majority of the work for the project. The project team carries out the day to day technical work of the project. They are responsible for carrying out the tasks that are assigned to them and report to the project manager. Sub-contractors will also be employed and they will be skilled and certified to complete the project, successfully.

Sub-Contractors:

A subcontractor has a duty to carry out the work with no or minimal supervision. The contractor hires a subcontractor to complete a specific aspect of the project, such as the electrical fittings, plumbing or bricklaying, and the subcontractor is responsible for this work. They are required to be certified and complete the contracted scope of work successfully and within the timeframe set.

General Contractor (1):

The Contractor's function is to meet and comply with all requirements provided by the Project Manager. A general contractor is responsible for acting as the intermediary between the design team, the construction workers and the owner of the underlying project. As the liaison, a general contractor will communicate with all those individuals and organizations involved in the project.

Architect (1):

Architects are appointed by the client, and they have the duty of gathering all the information and ideas necessary to create a functional space that meets client needs while being code compliant.

Site Superintendent (1):

The Site Superintendent is responsible for coordinating all the activities on the job site. The Site Superintendent will be responsible for site records and keep accurate as-built drawings. A Site Superintendent will need to have a number of skills, especially planning and organizational skills.

Site Foreman (1):

The Site Foreman is the main person in charge of coordinating all the construction activities and in charge of organizing the work for the project. He / she has an effect on the overall project progress, since they are usually responsible for both the research and

the construction staff. As the Site Foreman is responsible for all the construction workers, this also comes with being responsible for the health and safety of all the workers.

Mason Foreman (1):

The Mason Foreman would have to be qualified and have good experience in the field of masonry. This person will need to learn how to read Blueprint drawings to help provide material measurements. They will also be responsible for supervising all the mason 's work along with the professional masons and mason's assistants.

Skilled Masons (2):

Experienced masons are masons who aid with stone work and assist with laying bricks or blocks, and are experienced in working with bricks, blocks or stones. They'll need to have blueprint reading skills and estimate the amount of mortar needed to complete a job. They would be capable of mixing mortar, driving chariots, cars, laying the corner of buildings and cleaning up the worksite.

Mason Helpers (2):

Assist the skilled masons where necessary.

Carpenter Foreman (1):

The carpenters are responsible for the installation of drywall, the construction of wood materials which include furniture or cabinetry and the construction of wood framing. The carpenter foremen are also carpenter supervisors for the professional and semi-skilled carpenters.

Skilled Carpenters (2):

Assist the carpenters' foreman, which includes the installation of drywall, build materials from wood, such as the furniture, cabinetry and the building of wood framing.

Semi-Skilled Carpenters (2):

These carpenters assist the skilled carpenters and the carpenter foreman. They would have had some form of training and can assist partially with the trade.

Carpenter Helpers (2):

Assist the Carpenters' foremen, the skilled carpenters and the semi-skilled carpenters.

Engineer (1):

The engineer uses his professional knowledge and experience in engineering, and supervises the project. He / she offers suggestions, they help review plans, sketches and amounts. The engineer also liaises with the manager of the project, the architect and the manager of quality assurance to ensure that all the decisions taken are made correctly. He / she communicates ideas and material selection. The engineer must be strong in problem-solving, critical thinking, communication skills, skills in numeracy, and reporting skills.

Janitor (1):

The janitor is responsible for the daily cleaning of the job site to maintain a clean space.

Truck Driver (1):

The truck driver is responsible for running errands, picking up materials, supplies, and equipment.

Raci Matrix

The RACI Matrix is vital for a smooth flow of communication. It outlines who is responsible, accountable, consulted and informed, and offers clear guidelines to avoid ambiguity, misinformation or too much information from being disseminated. The chart below represents the RACI matrix

q. Chart 16: RACI Chart (Compiled: C. Walker, the author, July, 2020)

Activity	**Project Manager**	**Project Management Team**	**Architect**	**Site Superintendent**	**Site Foreman**	**Subcontractors**	**Engineer**	**Quality Control Manager**	**Cost/Financial Manager**	**Human Resource & Communication**	**Risk Analyst & Procurement**	**Laborers**	**Sponsors**
Award Contract	R	A								I			
Mobilization	R								A	I			
Project Planning	R	R/A								I			
Drawings	C		R/A										
Site Works (Clearance, Fill, Excavations)		C/I		R/A									
Concrete Works (formwork, reinforcing to substructure, superstructure)		C/I		R/A								I	
Mason Block work & Accessories		C/I		R/A								I	
Metal Works (Structural Steel columns beams & Accessories)		C/I		R/A								I	

Wood & Plastic (Rough Framing including trusses, plywood decking, wood trims)		C/I		R/A								I	
Thermal & Moisture		C/I		R/A		I							
Doors & Windows		C/I		R/A		I						I	
Procurements	C	I									R/A		
Project Communications	C	I								R/A			
Site Laborers	C			R/A								I	
Quality Assurance	C	I					C	R/A					
Risk Management	C						C	C			R/A		
Site Finishes	R/A		R				C					I	
Final Inspection	C	I					C	R/A					

4.2 Communication Management Plan

The Communication Management Plan focuses on how each sector in the project communicates with each other for the smooth running of the project's progress and completion. Roseke (2019) states that, "the communication management plan tells all the stakeholders how they will communicate, the frequency, the medium, the content, the timing and any other factors that are necessary for the stakeholders and to achieve project success".

The GAMG department will use the Communication Management Plan as a way to keep the sponsors and the stakeholders updated and informed. The stakeholders will be informed on the project's progress and tasks. The Communication Management Plan will state the flow of information. It provides the communication
requirements, the communication medium and how and when the medium will be used to communicate.

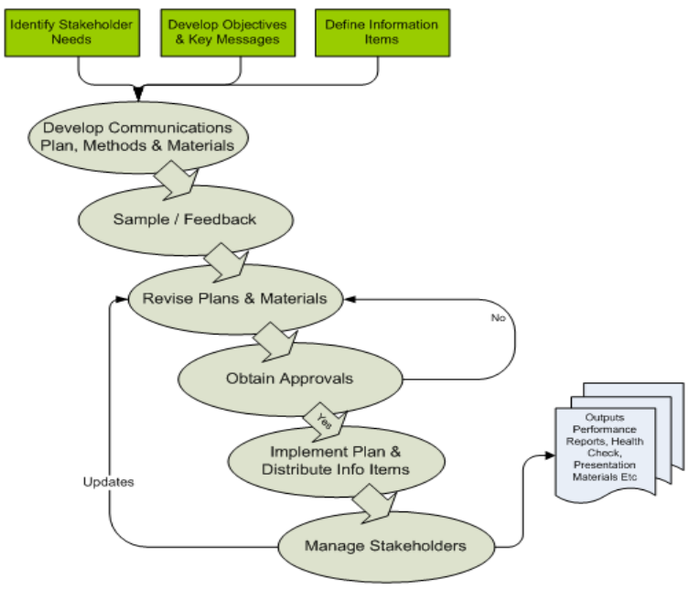


FIGURE 9: COMMUNICATION MANAGEMENT DIAGRAM, JULY 2020. RETRIEVED FROM:HTTPS://WWW.TPSGC-PWGSC.GC.CA/BIENS-PROPERTY/SNGP-NPMS/TI-IT/CONN-KNOW/COMM-ENG.HTML

4.7.1. Communication Objectives

The objectives to execute this communication plan includes:

1. To avoid miscommunication that leads to wasted time and costs overruns
2. To improve stakeholders' awareness and team behavior
3. To define the communication requirements, so that information can reach the correct stakeholder with the right information, at the right time

4.7.2. Communication Management Approach

Communication will be managed by the Project Manager and the GAMG secretary. The Communication Manager's responsibility is to take on a proactive role in ensuring that formal communication is managed effectively and that it is maintained for the duration of the project.

The GAMG secretary will be responsible for sending out meeting invites and important information via emails. The meeting agenda will be something that will be vital and is imperative that it is sent out before the date of the meeting. The secretary is also responsible for ensuring that the team attends and confirms attendance three days prior to the suggested date. The secretary will record minutes of the meeting and it will be circulated to the Project Manager. The Project Manager will review and once approved, the secretary will disseminate the minutes of the meeting.

All project related requirements for communication will be documented under the Communication Matrix. It shows the framework for their communication methods, the communication objectives and the frequency of communication. It indicates to whom the message is addressed, who owns the portion of the communication plan and what is expected from the meetings held.

r. Chart 17: Communication Matrix (Compiled: C, Walker, the author, July 2020)

Communication Type	Objectives of Communication	Medium/ Channel	Frequency	Audience	Owner	Deliverable
Kick-off Meeting	Introduction to project goals & objectives, approach and Deadlines	*In Person *Conference Video call	Once	-All stakeholders in the Executive Team i.e. Sponsors, Project Team Staff, Unique Construction	Project Manager	*Project Deadlines * Agenda *Meeting Minutes
Team Performance Assessments	Assessment of the project team's effectiveness	*In Person *Conference Video call	Every 3 months	-Unique Construction -Project Team Staff	Unique Construction	*Performance Assessments Report

Project Manager & Sponsors Meeting	Confirm project statutes performances report on resources used. Receive approval on each Section of the Project Plan, i.e. Quality, Cost, HR Plan Approve or reject any change request	*In Person *Conference Video call	As Needed	-Sponsors -Project Manager	Project Manager	*Sponsor Approval *Change Control *Agenda *Meeting Minutes
Unique Construction Progress Meeting	Review Statuses/ Progress of project, Answer any questions, Present deliverables completed	*In person *Conference call *Emails	Weekly	Unique Construction	Project Manager Communication Manager	*Agenda *Meeting Minutes
Weekly Project Team meeting	Answer any questions, Report Statuses	*In person *Conference call	Weekly	Unique Construction Project Staff Team	Project Manager	*Agenda *Meeting Minutes
Monthly Project Statuses Meeting	Discuss report statuses of project	*In person *Conference Video call *Email	Monthly	-Sponsors -Unique Construction -Project Team staff	Sponsors Unique Construction	*Progress Statuses Report *Agenda *Meeting Minutes
Advisory Meeting	Recap project process & statuses, Seek recommendation and advice on project progress	*In person *Email *Conference call	Every 3 weeks	Unique Construction	Project Manager	*Agenda *Meeting Minutes

Each meeting will be initiated by a meeting invite sent via Microsoft Outlook and it will be distributed by the Communication Manager five days before the tentative meeting date.

This will be a recurring meeting happening every week until the project has been completed. Meeting minutes will be sent out no later than 2 days after the meeting date.

4.7.3. Communication Requirements

The following requirements will guide the Communication Matrix, which are:

- All messages are targeted to a specific audience
- Teams must communicate what the stakeholder or Project Team needs to know before they need to know it
- Information has to be approved by the Project Manager before it is distributed
- Project meeting must be held at important milestones
- GAMG, sponsors and key stakeholders will listen and act on feedback

4.7.4. Feedback Measures and Report Performance

It is important that right information is distributed to the stakeholders that it should be distributed to and feedback will be important after each milestone meeting. Bean, S., Jug, R., & Xiaoyin, J. (2019) states that “feedback is a skill and an assessment tool that provides timely, descriptive information, which can follow the completion of an activity by providing an opportunity for future improvement”. Feedback will provide a measurement with the level of success in communication efforts and informs stakeholders of activities such as planned corporate events and functions. In this way, both positive and negative feedback will be received and it can be determined if communication channels and methods will need to be changed. With this being said, questionnaires, feedback forms and complaint forms will be used.

4.7.5. Roles in Communication

Project Sponsors

The project sponsor is a person (often a manager or an executive) with overall responsibility for the project. The sponsor’s role is mainly concerned with ensuring that the project provides the accepted business benefits and serves as the voice of the company, playing a critical leadership role in a variety of areas. In regards to communication, the Project Sponsors will communicate with top level executives and require that their information is disseminated to the team.

Change Control Board

A change control board is a group of individuals that will make decisions on whether or not a proposed change to a project should be approved. The board consists of a chair, board members, evaluator, originator, verifier, and a project manager (Change Control Board: Process & Best Practices, 2016). Decisions and recommendations are registered and the form of correspondence provided by this community is comprehensive documentation on the impact analysis of the change and its effect on the project, as well as on the implementation strategies.

Project Management Team

The Project Management Team is responsible for completing the work for the project. The team members are listed in the team directory listed below in *Chart 18,* which will be disseminated to the team and used as a reference, should any of the team need to communicate amongst each other. The role of the Project Management Team is to develop a clear scope analysis, project objective and ensure that deadlines are met.

The Project Management Team is also responsible for the job packages and reports to be approved by the Project Manager and the sponsors (such as Progress Reports, Results Reports, Change Request Forms and Budget). The team plays a crucial role in the development of a project plan. The team needs accurate input on the project plan hence, communication is important.

s. Chart 18: Project Management Team Directory Chart (Compiled: C, Walker, July 2020)

Name	Role	Email	Phone
Joseph Williams	Sponsor	jwilliams@jpsco.com	876-552-5552
Chevaughn Walker	Project Manager	chwalker@jpsco.com	876-555-0139
Aldane Stennett	Quality Manager	astennett@jpsco.com	876-555-0220
Monecia Ebanks	Human Resources/Communication Manager	mebanks@jpsco.com	876-555-5555
Prince Rodgers	Scheduler	prodgers@jpsco.com	876-555-2122
Chris Shaw	Risk Analyst/Procurement Manager	chshaw@jpsco.com	876-555-0550
Mark Legister	Logistics Planner	mlegister@jpsco.com	876-555-2585

Project Manager

The Project Manager is responsible for establishing the design of the project. The job requires the creation of the Sponsors' Charter to be approved and signed. Project Managers must accept the Change Requests and the project plan. The Project Manager shall have the right to use resources for the project. Based on their position, they need constant contact with all stakeholders so that they can effectively lead, track and manage the project and the team. The Project Manager will provide information on deliverables, progress updates, status and results updates.

4.8. Risk Management Plan

The Risk Management Plan identifies, strategizes and mitigates the losses that could result from any hazards. Environmental, intentional, negligence and natural disasters may impose the hazards that may hinder the success of JPS construction. A risk management plan is necessary to ensure the project's completion despite setbacks that may arise as a result of aforementioned situations.

"The risk management plan provides the approach for identifying, analyzing and monitoring risks that provide processes and controls that will impact cost estimation and management" (PMBOK Guide, 2017, p. 236). The risk management plan will provide a set of protocols, actions and procedures needed to prevent and reduce the impact should an event occur.

The plan is intended to guide and expose or identify any (known or unknown) risks and to analyze, monitor and control risks. Risk management is crucial to project success and this guide will include roles and responsibilities, methodology, budgeting, timing and impact matrix, reporting and tracking formats.

Due to the geographical position of the company, i.e. Jamaica, the natural disasters which may affect the progress can be a hurricane or an earthquake. These two disasters can contribute to the hindrance of the completion within the suggested timeline. Due to recent happenings, a pandemic can also be considered as a risk in limiting the progress of a project.

4.8.1. Roles and Responsibilities

Project Manager Role and Responsibilities include:

- Conduct inclusive project risk assessments to ensure accurate project risk status
- Develop, disseminate and update the risk management plan;
- Determine a formal risk management plan and methodology for risk assessment
- Present project risks to senior management and stakeholders as required
- Ensure that the time limits for risk mitigation are calculated in accordance with the objectives and objectives of the planned performance
- Ensure compliance with relative government safety and security standards, such as OSHA Regulation 29 CFR 1910
- Ensure that site loss prevention controls are carried out as provided by the risk manager.
- Develop and report development for risk management tasks
- Develop and report on the development of risk management tasks
- Establish risk transfer methods, policies and compliance with relative insurance companies, and record claims and related documentation
- Ensure that risk mitigation plans are established and that relative actions are appropriate to contain or eliminate potential events.
- Coordinate risk owners to monitor risks

4.8.2. Risk Analysis Manager

- Maintain updates to the risk management plan and register
- Conduct assessments to define and analyze possible risks
- Evaluate the gravity of each risk by considering its consequences
- Audit processes and procedures
- Develop risk management controls and systems
- Design processes to eliminate or mitigate potential risks
- Create contingency plans to manage crises

- Evaluate existing policies and procedures to find weaknesses or possible shortcomings
- Prepare reports and present alternatives
- Help input solutions and plans
- Evaluate employees' risk awareness and train them when necessary
- Incorporate the resources and time required to execute the Risk Management Plan
- Ensure that perform risk tasks assigned
- Update the risk lists and risk and lessons learned database

4.8.3. Project Team:

The risk management team (workgroup) is a distinct, frequently autonomous entity within the project management department led by the risk manager or the Chief Risk Officer. This helps to respect the activities of the project (such as recruitment, communication, quality assurance, staffing).

The team also develops methods to minimize perceived risks, applies risk assessment methodologies and risk analysis techniques, and combines risk management insurance programs with the project management team.

Any potential risks should be parallel in timelines and impact measures throughout the life cycle of the project. Risks that continue to occur throughout the project should be monitored and communicated. Stakeholders, vendors and management teams will be made available to all stakeholders and project management teams on an ongoing basis. The team should always be prepared to take action on the risk, eliminate the risk and retire the risk.

4.8.4. Risk Analysis Methods

Risk analysis is the method of determining the probability of an adverse occurrence occurring within the business , government or environmental sectors. Risk analysis is a study of the inherent uncertainty of the course of action and refers to the volatility of the anticipated cash flow, the variance of portfolio or stock returns, the likelihood of success

or failure of the project, and the risk of failure and possible future economic states (Hayes, 2019).

The project will not use quantitative schedule risk analysis, the decision tree analysis or the quantitative methods. The project references historical data and weather patterns for any environmental risks, such as hurricanes.

4.8.5. Project Risk Assumptions:

1. All building material will available when needed
2. The laborers and sub-contractors will be available to work, as needed
3. All building materials will be sufficient and have quality
4. The budget amount will not be exceeded
5. Jamaica customs will clear exported material and equipment in a timely manner
6. Equipment will not be damaged due to shipping negligence.
7. Sub-contractors are licensed and are top quality and can complete the work required on time; preventing any start delays

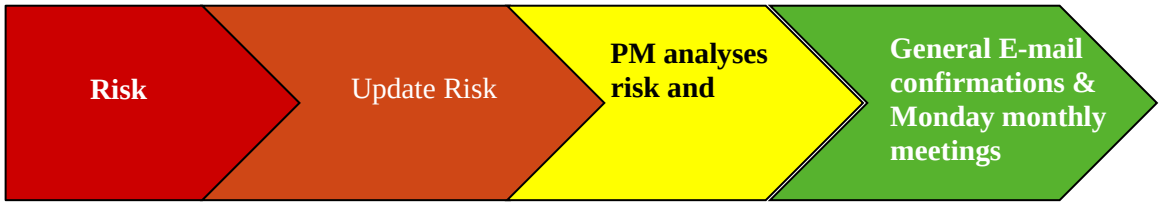


Figure 10: Risk Notification Workflow. (Compiled by Chevaughn Walker, July 2020).

4.8.6. Risk Management Reviews/Meetings

The meeting for Risk Management will be conducted every first Monday for the month. During each phase, an updated document with decisions made will be made available as well as the meeting agenda. This meeting will be used for discussions, risk analysis, decisions, alternatives and updates as seen fit. The risk register that was created will be used during each meeting and updated as necessary. Potential risks will also be recorded. A project initiation document will be provided by the Project Management Team preceding to each meeting via email and in some cases hard copy.

The risk management measures outlined in the mitigation and contingency plans will be carried out in accordance with the specifics of those plans. The Risk Manager will be responsible for enforcing these actions. The risk register must be made available and communicated by the contact manager.

4.8.7. Risk Register

The risk register is a risk control and project management tool. This is used to define possible threats in a project or company, often to satisfy regulatory requirements, but often to remain on top of potential problems that might disrupt the expected outcomes. The risk register includes all information about each identified risk, such as the nature of that risk, level of risk, who owns it and what are the mitigation measures in place to respond to it. (Ray, 2017)

A risk register will entail information such as:

- The person that is responsible for managing the risk
- Any proposed mitigation actions (preventative and contingency)
- Costing for each mitigation strategy
- Relationships to other aspects of the project

4.8.8. Risk Identification

The list below is a detailed Risk identification list, which contains the category, and the description, and is seen below in *Chart 19*.

t. Chart 19: Risk ID List (Compiled: C. Walker, July 2020)

Category	ID	Description
Schedule	1.1	Shortage of materials available when required
	1.2	Poor productivity from contractors
	1.3	Inaccurate delivery of supplies from suppliers
	1.4	Poor time estimating without much consideration for long rainy seasons, holidays and hurricane season
	1.5	Not enough lag time to account for late shipments by suppliers
	1.6	Wrong lead times for materials
	1.7	Deficient work
	1.8	Poor oversight in updating the schedule
Poor Estimation	2.1	Lack of communication with contractors on cost deliverables
	2.2	Poor estimation of the critical path throughout the project
	2.3	Unrealistic deadlines for service contractors
	2.4	Poor estimation of time needed to accomplish a task/deliverable
Insufficient Resources	3.1	Insufficient skilled personnel on the island to complete task
Subcontractor Performance	3.2	Unacceptable standard of work on deliverables
	3.3	Subcontractor incapable of completing task on time

Suppliers	3.4	Inability to meet supply on demand
	3.5	Poor quality of delivered materials or damaged shipments
Improper Planning or Pairing with Project Dependencies	3.6	Tasks to be completed have not been scheduled chronologically to successfully complete the building.
	3.7	Poor sequential planning in purchasing materials for the different phases of the project
	3.8	Tasks are not paired correctly with completion dates, causing delays
Budget	4.1	Overspending
	4.2	Poor tracking of expense
	4.3	Poor cost estimating of project materials
	4.4	Poor practice in cost saving techniques
	4.5	Poor management of monies for the project
Limited Resource Funding	5.1	Payments delayed
Inflation Unknowns	6.1	If the project goes over the agreed time period
Labour Rate Changes	7.1	Contractors request additional monies due to change orders
	7.2	Contractors request more funds for deliverables due to their poor estimating on a bid
Currency Changes	8.1	Devaluation of dollar affecting buying power
	8.2	Devaluation of dollar affecting net profit
Theft	9.1	Staff stealing materials
	9.2	Contractors on-site stealing on the premises, materials, time, etc.
	9.3	Outside intruders stealing materials

Vandalism/ Accidents	10.1	Staff Injuries
	10.2	Negligence of vehicles while driving on the property
Scope Risks	11.1	The drawings and plans signed do not match the initial signed agreements by client and project management
	11.2	Changes and alterations remain ongoing throughout the life of the project affecting deliverables
	11.3	Amendments can be made as a result of shortage of funds
Scope Creep	12.1	The requirements have not been clearly specified
	12.2	Changes and amendments to the design and purpose of the building are requested or made increasing through the life of the project
	12.3	Stakeholder list is inaccurate and increases the impact of the project and who is affected causing the scope to increase
Rejection of project within scope	13.1	Deliverables are outside of their extended scope and are rejected by the government
	13.2	Alterations to drawings become excessive and extend the budget, time and procurement of materials to meet contracted scope, however government rejects project because they feel it is necessary for the success of deliverable
Site works Unknown	14.1	Flood waters may flow through the property
	14.2	Elevation of site may not be high enough to avoid flooding
Mistakes in drawing plans	15.1	Incorrect material may have been suggested for a specific area
	15.2	Plans may not be in coordination with MEP requirements set forth by Works Agency
	15.3	Plumbing fixtures and fittings in wrong location on drawings
Issues Arising	16.1	Opposing Stakeholders
	16.2	Similar issues continuously appear throughout the life of the project

	16.3	Unresolved issues become new risk to the project
	16.4	Issues on the project are not resolved within an appropriate timescale
Communication	17.1	Key project stakeholders are not updated on the project's progress
	17.2	Information is not distributed amongst the team in a timely manner
	17.3	Project issues arise due to lack of communication control
Force Majeure	18.1	Environmental acts of God that can affect the project's success
Hurricane	18.2	Hurricane waters and winds may create damage and destruction to the site and building
	18.3	Hurricanes may spin off as a result of hurricane system
Flood	19.1	Overflowing of marshes and ponds due to heavy rains can cause flash flooding
Earthquake	19.2	Possibilities of earthquakes due to natures unnatural changes
Fire	20.1	Fires from nearby forest can cause smoke and fire damages
	20.2	Accidental fires from hot works on site
	20.3	Fires resulting from staff smoking on site
	20.4	Fire spreads from nearby buildings
Deliverables	21.1	Production of deliverables does not meet the quality of criteria defined
Materials	22.1	Materials delivered are of poor quality
Finished Product	23.1	Building not built within time, budget and scope

4.8.9. Risk Quantification

All the risks in the chart above were assigned a number to be easily identified. Below is an impact chart which includes number ratings as a guideline of how to rate the possibility of each risk.

u. Chart 20: Impact Chart (Compiled: C Walker, July 2020)

Title	Score	Description
Low Risk	1-3	Highly unlikely to occur; however, still mentioned, recorded, but not monitored
Moderately Low Risk	4-5	Unlikely to occur, but they will be monitored throughout the life of the project
Medium Risk	6-7	Likely to occur; still will be tracked and monitored throughout the life of the project
High Risk	8-9	Very likely to occur, based on circumstances of the project
Very High Risk	10	Highly likely to occur, as circumstances will cause this risk to eventuate and very likely to be created

The table below shows the scoring method used to project the impact of the risk on the project should it occur.

v. Chart 21: Impact Chart (Compiled: C. Walker, the author, July 2020)

Title	Score	Description
Low Risk	1-3	The risk will have an insignificant impact or negligible effect on the project
Moderately Low Risk	4-5	Minor impact on the project which may or may not cause a slight setback, e.g. <5% deviation in scope, scheduled end-date or project budget
Medium Risk	6-7	The risk will have a measurable impact on the project, e.g. 5-10% deviation in scope, schedule end-date or project budget

High Risk	8-9	The risk will have a significant impact on the project, e.g. 10-25% deviation in scope, schedule end-date or project budget
Very High Risk	10	The risk will have a major impact on the project, e.g. >25% deviation in scope, scheduled end-date or project budget

4.8.10. Priority

The possibility that a risk will occur and its impact on the project will be scored using a metric system that will be outlined above in *Chart 22* and *Chart 23.* The metrics system used the following likelihood and impact scores created to provide a rating of the risk that may occur for the duration of the project. The priority score was calculated as shown below:

Priority equals the average *Likelihood and Impact* score

Priority is calculated as Priority = (*Likelihood* + *Impact*) / 2

Color Code Key:

Priority Score	**Priority Rating**	**Color**
0 – 3	Low	Orange
3.1 – 5	Moderately Low	Gray
5.1 – 7	Medium	Yellow
7.1 – 9	High	Purple
9.1 - 10	Very High	Red

w. Chart 22 showing risk priority rating; created by Chevaughn Walker, 2020

ID	Likelihood	Impact	Priority Score	Rating
1.0	2	10	6	Medium
1.1	2	8	5	Moderately Low

1.2	2	6	4	Moderately Low
1.3	6	8	7	Medium
1.4	4	6	5	Moderately low
1.5	6	6	6	Medium
2.0	6	6	6	Medium
2.1	4	10	7	Medium
2.2	4	4	4	Moderately Low
2.3	4	4	4	Moderately Low
2.4	4	4	4	Moderately Low
2.5	4	4	4	Moderately Low
2.6	4	4	4	Moderately Low
3.0	4	6	5	Medium
3.1	6	6	6	Medium
3.2	4	6	5	Medium
3.3	4	2	3	Low
3.4	8	6	7	Medium
3.5	6	8	7	Medium
3.6	6	4	5	Medium

4.0	6	8	7	Medium
4.1	8	8	8	High
4.2	4	4	4	Moderately Low
4.3	2	2	2	Low
4.4	4	4	4	Moderately Low
4.5	4	4	4	Moderately Low
4.6	2	2	2	Low
5.0	6	6	6	Medium
5.1	4	2	3	Low
5.2	2	2	2	Low

4.8.11. Risk Plan

A risk strategy will be developed that will include a series of steps to be taken to prevent, pass or minimize risk, based on the assigned risk priority.

The risk management strategy is a structured document outlining the risk management process of the company. This process starts with the formation of a stakeholder team around the company to evaluate possible threats to the organization.

4.8.12. Risk Schedule

The risks identified and the preventative or contingent actions associated are listed below in *Chart 23*.

- Preventative actions are taken to reduce the likelihood of the risk's occurring
- Contingent actions are taken to reduce the impact should the risk occur

For each risk action identified, an assigned resource responsible for undertaking the action and a date within the action must be completed. An example of the risk action preventative and contingent chart is seen below in *Chart 23*.

x. Chart 23: Risk Action Preventative and Contingent Chart (Compiled: C. Walker, 2020)

Rating	ID	Preventative Action	Action Resource	Action Date	Contingent Actions	Action Resource	Action Date
Medium	1.0	**Scheduling:** Increase project end date with lag times that account for holidays, sick days, etc. Use the longest critical path to find the project end date and account for additional lag days.	Project Manager	*7/31/2020*	Place contractors on warranty type contracts. Use the contractor's dates and timelines to verify if they are in timeline scope. Measure the contractor dates against the critical path without lag days and plan for an early start and early finish.	Project Manager	*As required*
High	1.1	**Poor Estimation:** Unique Construction (Project Consultant Team) provided estimated completed dates	Project Manager	*7/31/2020*	Account for project delays by extending the critical path timeline with a safety factor.	Project Manager	*As required*

		for milestones and phases to compare with all contracted timelines. The actual timeline can be compared and ensured that it will be on schedule.					
Low	1.2	**Insufficient Resources:** Publicize potential bids for subcontractors. Provide the opportunity for local bidding. The on-site project team will also be sourced locally.	HR Manager Quality Manager	*7/1/2020*	Pool of local resources are proficient enough to complete the project and further selections can be made, if necessary.	HR Manager Quality Manager	*As required*
High	1.3	**Subcontractor Performance:** Ensure that contracts are awarded to contractors based on experience, skills and quality work. Provide periodic checks as contractors complete their work.	HR Manager Quality Manager	*7/24/20*	Hold contractors liable to warranties given in contracts for deliverables. Pursue alternate contractors if unable to meet requirements. Exercise Resource Leveling.	HR Manager Quality Manager	*As required*

Medium	1.4	**Suppliers:** Documented policy for contractors to provide a list of vendors to obtain supplies within RFP timeline.	Quality Manager Procurement Manager	*7/1/20*	Maintain a 30-day policy deadline to obtain resources. Use local supplier, if needed. Check local supplies with contractors within 20 days of complications and outsource supplies after 15 days, if unable to meet supplies needs. Verify dependencies prior to spending additional funds if able to wait on contractors.	Quality Manager Procurement Manager	*As required*
Medium	1.5	**Improper Planning and Pairing with Project Dependencies:** Update project schedule periodically to balance deliverables and dependencies.	Project Manager Schedule Engineer	*7/24/2020*	Enforce contractor's deadlines as submitted by the RFP.	Project Manager Schedule Engineer	*As required*

Mediu m	2.0	**Budget:** Conduct audits of materials purchased by contractors once submitted for payments	Project Manager Quality Manager	*7/24/2020*	Enforce contracted RFP's as outlined by the contractors and ensure it within budget. If requests have an increase of 5% or more, complete risk contingency plan, which analyzes and audits expenses.	Quality Manager	*As required*
High	2.1	**Limited Resource Funding:** Hold government to contract obligations for funding.	Project Sponsor	*7/24/2020*	Seek legal action for additional funding for expenses.	Project Manager	*As required*
Low	2.2	**Inflation Unknowns:** Tax fluctuations And customs inflations are excepted due to it being a government project.	Procurement Manager Project Sponsor	*Anytime*	No factor	Procureme nt Manager Project Sponsor	*N/A*
Low	2.3	**Labour Rate Changes:** Contracts are to be issued to alleviate inflation.	Procurement Manager	*Launch of negotiation s*	Procurement objectives specifies work to be contracted and enforce contractual	Procureme nt Manager	*As required*

					obligations through contracts, which will remove any labour fluctuations.		
Low	2.4	**Currency Changes:** Provide some buffer for profit loss and price in the project.	Finance Manager	*7/31/2020*	Enforce buffer for project by approximately 10-20% due to frequent fluctuations of the Jamaican Dollar.	Finance Manager	*As required*
Low	2.5	**Theft:** Follow site security plan for storage of materials.	Project Manager	*8/28/2020*	Ensure that contractor is accountable for materials and storage of materials, if missing from site.	Project Manager	*As required*
Low	2.6	**Vandalism/Accidents:** Follow risk control mitigation plan ensuring contractors have insurance and are responsible for staff on-site.	Risk Analysis Manager	*7/31/2020*	Enforce risk control mitigation plan ensuring contractors have insurance and will take responsibility for staff on-site.	Risk Analysis Manager	*As required*
Medium	3.0	**Scope Risks:** Follow change process established plan.	Project Manager	*7/31/2020*	Enforce established process for changes	Project Manager	*As required*

					orders, change order documents as established by the project manager.		
Mediu m	3.1	Scope Creep: Follow change process established plan.	Project Manager	*7/31/2020*	Enforce established process for changes orders, change order documents as established by the project manager.	Project Manager	*As required*
Low	3.2	**Rejection of Project Within scope:** Approval of documents that will be signed by project sponsors after each phase of the project.	Quality Manager	*Each Milestone*	Review signed contracts as previous milestones were completed with Project Sponsor. Review scope with project sponsor and verify deliverables are within scope.	Quality Manager	*As required*
Low	3.3	**Site Works Unknowns:** Follow site works plan.	Site Superintend ent	*8/3/2020*	Conduct assessment of measures needed and	Project Manager	*As required*

					enforce site works plan.		
High	3.4	**Mistakes with drawings:** Follow change control plans and procedures put in place. Verify the mistakes are not outside of the scope and costs are very minimal.	Project Manager	*7/31/2020*	If changes are outside the scope, follow change processes in place and verify with project sponsors for acceptance, approval and release as necessary with remedies as necessary for contractors.	Project Manager	*As required*
High	3.5	**Issues Arising:** Identify conflicts through a complaint policy.	HR manager	*7/31/2020*	Review complaints through panel and pursue legal action, if required.	Project Manager	*As required*
Medium	3.6	**Communication:** Use the communication policy to have scheduled meetings and rely on e-mails and communication templates.	Communication Manager	*7/31/2020*	Exercise and request information from respective parties and distribute through e-mail with response confirmation.	Communication Manager	*As required*
High	4.0	Force Majeure: Create preparedness plans within	Risk Manager	*7/31/2020*	Execute environmental preparednes	Risk Manager	*As required*

		reason for unknown environmental effects.			s plans. Assess damage and establish an emergency recovery plan.		
High	4.1	**Hurricane:** Create hurricane preparedness plan escalated through June toN ovember, which is usually peak season for hurricanes in Jamaica	Risk Analysis Manager	*7/1/2020 – 11/31/2020* *6/1/2021 – 6/30/2021*	Follow through hurricane preparednes s plan. Reserve 3% of sums and insure in the event of a hurricane. Ensure that funds are injected back into the project and that the applicable funds are recovered from the Insurance Company.	Risk Analysis Manager	*As required*
Low	4.2	**Flood:** Follow site works plan to alleviate potential flooding on-site. The building is elevated, drains are installed, etc.	Site Superintend ent	*7/31/2020*	Follow through expert judgement and supplement with building plan as given.	Site Foreman	*As required*
Very Low	4.3	**Earthquake:** Assumed as not a factor	Project Sponsor	*7/31/2020*	Assumed as not a factor	Project Manager	*As required*
Low	4.4	**Fire:** Create a fire safety, prevention	Risk Manager	*7/31/2020*	Install additional fire	Risk Manager	*As required*

		and response plan. No smoking policy is to be enforced. Install piping and plumbing immediately for fire hydrants.			extinguishers and enforce proper fire safety tips. Use fire response plan, if needed.		
Low	4.5	**Wind:** Install a windsock on-site to measure the wind speed for site works to operate, effectively. The OSHA safety standards will be followed.	Site Superintendent	*8/31/2020*	Ensure compliance within policy using safety regulations for site safety based on OSHA regulations and delay until safety is established.	Site Foreman	*As required*
Medium	5.0	**Deliverables**: Verify that the contractors completed their tasks within the scope and the time for the given project is relative to the Project Management Team's requirements.	Project Manager	*9/1/2020*	Reconsider the requirements after the deliverable has been produced, measure any deviation and enhance the deliverable to meet the requirements.	Project Manager	*As required*
Low	5.1	**Materials:** All contractors are required to purchase materials according to the	Quality Manager Procurement Manager	*9/1/2020*	Materials are ordered and checked from manifest. The manifest is from the contractors and they are	Quality Manager Procurement Manager	*As required*

					examined to authenticate adequacy.		
Very Low	5.2	**Finished Product:** Verify through approval process and ensure that the project is delivered within the scope.	Quality Manager	*5/1/2021*	Enforce phase and milestone approvals of the project with project closure documents for release	Project Manager	*As required*

4.8.13 Risk Assessment

In Jamaica, the most possible risk which can be very detrimental to the completion of the project is a hurricane or tropical storm. The hurricane season in Jamaica is from June 1st to November 30th annually. If the project spans 6 months, from March to September, the possibility of the project being impeded by a hurricane or tropical storm is 50% as half the amount is hurricane season. Because of this 50% probability, a plan was created in preparation of a hurricane or tropical storm.

Research and historical checks have shown that a Hurricane impacts Jamaica once every 10-11 years, on average. A hurricane gets close (without a direct hit) once every 4 years.

Between the beginning of the hurricane season in June until the end of the season in November, an average of ten (10) tropical storms are formed, some of which developed into hurricanes. Therefore, countries within the hurricane zone, including Jamaica have been subject to the effects of this destructive force. The records of the Meteorological Service of Jamaica show that hurricanes are a recurring threat to Jamaica and the heavy winds and rains associated with these natural disasters have often left Jamaica with lingering effects like flooding and landslides. The earliest reference to a hurricane in Jamaica dates back to 1559, when a hurricane caused severe damage to the island's

infrastructure, while the most recent is that of Hurricane Gilbert in September of 1988 (History of Hurrican and Floods in Jamaica, n.d.).

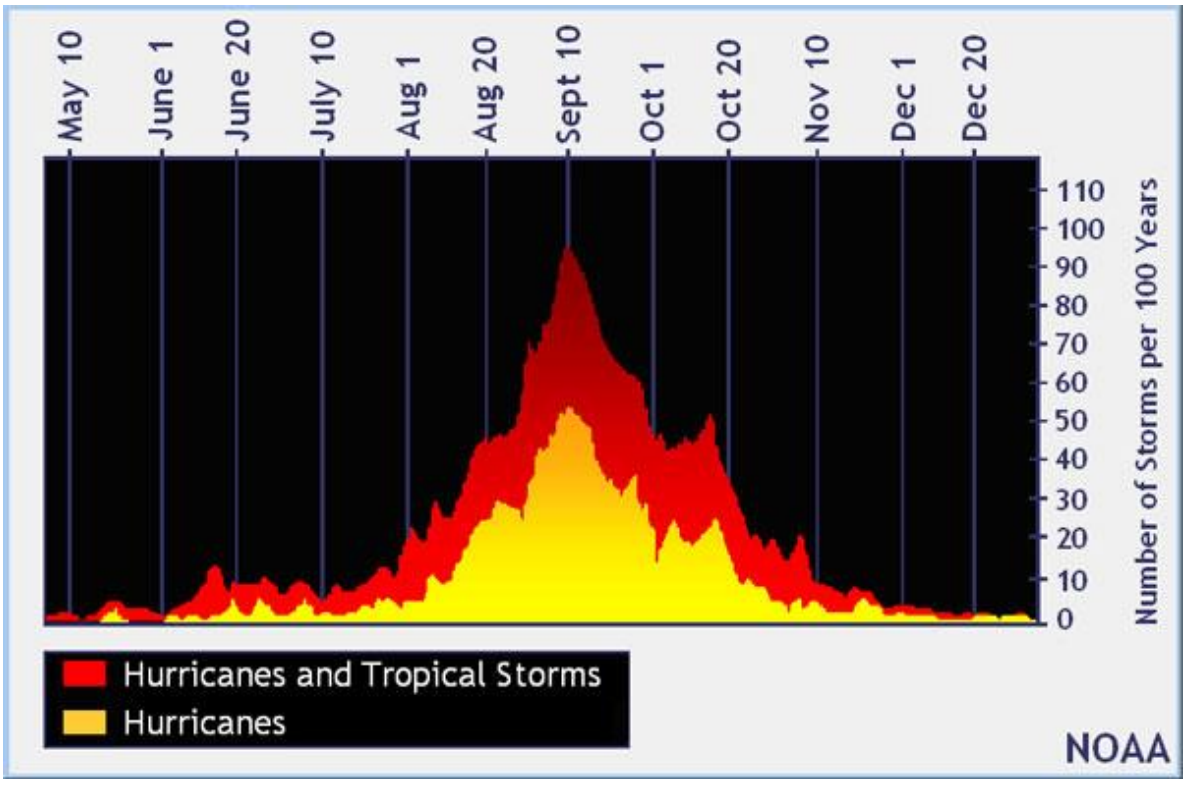
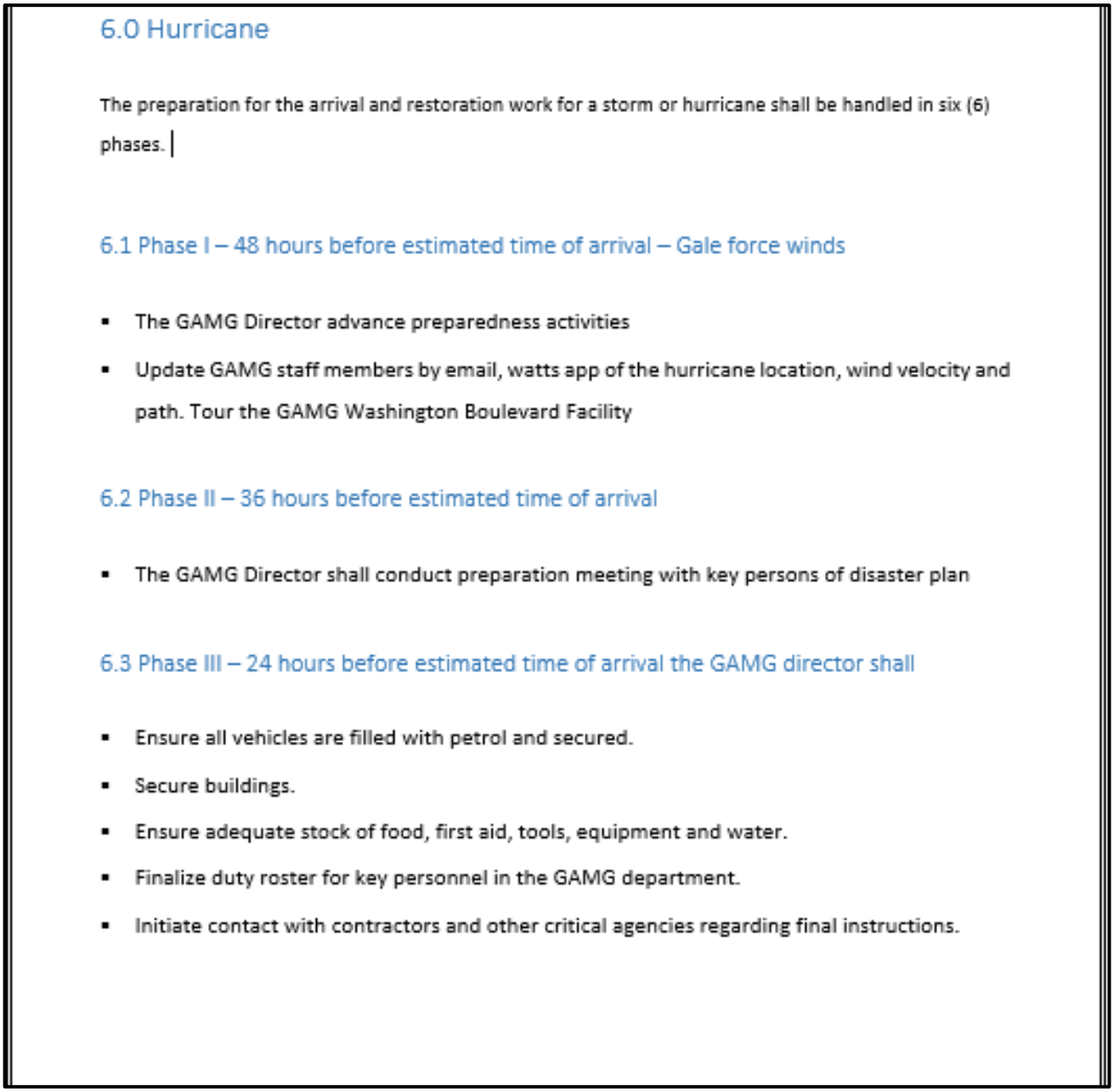


FIGURE 11 SHOWING THE FREQUENCY OF TROPICAL STORMS AND HURRICANES IN THE ATLANTIC REGION. RETRIEVED FROM HTTPS://EARTHSKY.ORG/EARTH/HOW-RARE-ARE-NOVEMBER-HURRICANES-ATLANTIC

Jamaica is located in the Caribbean Sea and the Caribbean Sea is adjacent to the Atlantic ocean, making Jamaica susceptible to natural disasters formed in the Atlantic ocean.

Below represents a snippet of GAMG's Hurricane disaster plan



6.0 Hurricane

The preparation for the arrival and restoration work for a storm or hurricane shall be handled in six (6) phases.

6.1 Phase I – 48 hours before estimated time of arrival – Gale force winds

- The GAMG Director advance preparedness activities
- Update GAMG staff members by email, watts app of the hurricane location, wind velocity and path. Tour the GAMG Washington Boulevard Facility

6.2 Phase II – 36 hours before estimated time of arrival

- The GAMG Director shall conduct preparation meeting with key persons of disaster plan

6.3 Phase III – 24 hours before estimated time of arrival the GAMG director shall

- Ensure all vehicles are filled with petrol and secured.
- Secure buildings.
- Ensure adequate stock of food, first aid, tools, equipment and water.
- Finalize duty roster for key personnel in the GAMG department.
- Initiate contact with contractors and other critical agencies regarding final instructions.

FIGURE 12. PART 1 OF GAMG HURRICANES DISASTER PLAN.

6.4 Phase IV – 12 hours before estimated Time of Arrival the GAMG director shall

- The GAMG director shall send home employees (during day)
- Secure documents and equipment
- Shut down the GAMG facility at Wahsington Boulveard location
- Final preparation of location
- *Securing Workshop Machines and Equipment*
    - Prior to the arrival of the storm or hurricane, machines must be properly secured and electrically isolated in order to prevent damage or injury to personnel. Sensitive machines such as the **surface grinder**, **boring mill**, **cutter grinder** and **shaper** must be covered with tarpaulin.
    - The assigned GAMG pick-up truck must be properly sheltered prior to the hurricane and must have a full tank of fuel available. The pick-up truck must be free from defects that would render it in operable.

6.5 Phase V – 0 hours

- The hurricane or storm has made landfall. The safety of life and property shall govern all activities during the hurricane or storm. If necessary the electrical system will be de-energized in accordance with established procedure. Contact must be maintained with Central EOC by providing status reports within three hour intervals or sooner if there is significant change in conditions.

6.6 Phase VI – Hurricane or Storm has passed

- After the hurricane or storm has passed and winds have subsided sufficiently, all duty personnel must conduct the critical activities required after the disaster, these include damage assessment, cleanup and other necessary repairs that will facilitate the restoration of normal operation as quickly as possible.

FIGURE 13. PART 2 OF GAMG HURRICANES DISASTER PLAN.

Other potential risks to the Caribbean:

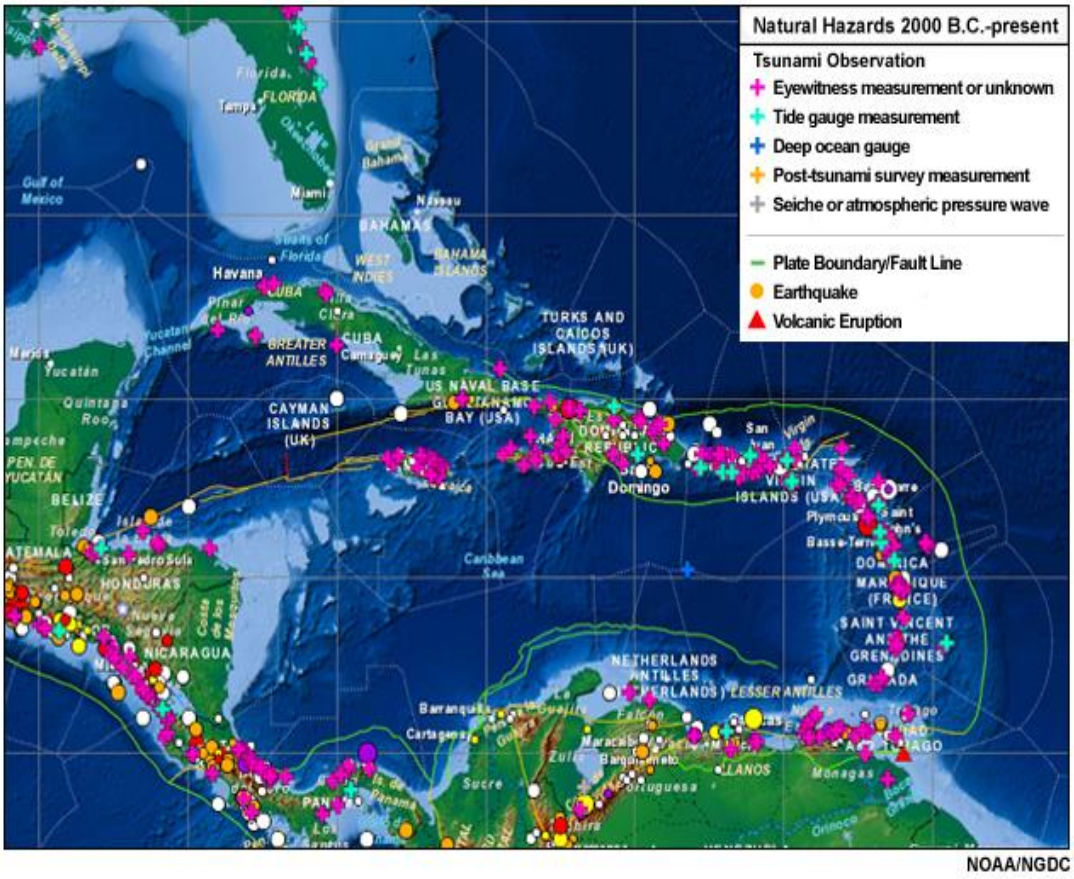


FIGURE 14: NATURAL HAZARDS IN THE CARIBBEAN. RETRIEVED FROM: HTTP://WWW.CITY-DATA.COM/FORUM/AMERICAS/1452699-EARTHQUAKE-RISK-CARRIBBEAN-HIGHER-THAN-I.HTML

4.9 Procurement Management Plan

The procurement management plan helps to identify the criteria for a project and efficiently coordinate the measures taken to meet the final contract. The strategy should be versatile enough to adapt as acquisition requirements change and resolve important issues such as which products need to be procured, how contracts should be accepted, criteria decisions based on risk detection, cost determination, and contract lifecycle management. The plan will provide the aforementioned strategies associated with the construction of JPS. The procurement document will be approved prior to the commencing of the project.

4.9.1 Status and Schedule

The updating of the procurement plan document is generally planned when the scope of the project changes. The project manager must notify the project team of all details relevant to procurement by communication methods in the communication document. The procurement schedule will commence a month in advance of each phase.

4.9.2 Responsibilities of contactors

- The responsibilities of the contractor include but are not limited to the following:
- The contractor is to develop a plan in accordance with the deliverable(s) in the budget and within scope that pertains to the procurement of goods
- The contractor is responsible for attaining any and all materials for the project
- Primarily responsible for completing a building project on time and within a budget
- They may oversee the building of a new structure
- Fill out necessary paperwork and adhere to local, regional or national guidelines
- The contracting parties must supply all the goods and services included in the RFP obtained by the contractor.
- The contractor shall be responsible for delays in the project as a result of any negligence and should be penalized if necessary
- The contractor shall be responsible for their employees
- The contractor is responsible for procurement details and a list of materials

4.9.3 Responsibilities of the Project Management Team and contractors

The responsibilities of the Project Management Team and contractors include but are not limited to the following:

- The Project Management Team will incorporate the contractors' plan into the estimated time period to enhance the efficiency and effectiveness as it relates to the dependencies and target dates.
- Periodic checks of the performance of the contractor will be monitored and tracked

- Audit and review of payment requests for materials purchased and used throughout each phase
- Periodic reviews and changes are planned for contractors; here contactors may request any change request which may impact material supplies. The changes will be decided by the Project Management Team and, if necessary, conveyed by e-mail.
- The Project Management Team is responsible for checking all insurance reports related to contractors; ensuring that the existing coverage of various claims helps to reduce risks;
- The team is also responsible for the communication of updates and evaluations if small scope changes occur as required by the government.
- The team will log and track any claims made by contractors to seek any resolution needed

4.9.4 Fixed Price Contracts

A fixed-price contract in construction is a pricing strategy that sets the total price set in advance for all construction-related tasks performed during the lifetime of the project. Fixed price contracts are often referred to as lump sum contracts and are generally perceived as advantageous in the construction industry because there is a specific scope and timeline for the project. The price is not subject to change after agreed upon, thus resulting in the contractor covering cost increases due to several factors. For the purpose of this construction, the fixed price contract (FFP) will be adapted.

4.9.5 Subcontractor selection process and criteria

Procurement of project materials must be purchased by the contracting party. The Quality Control Director must check the consistency of the materials selected prior to each installation process. The procurement manager will ensure that the materials are of the best standards and that the materials are also sustainable, which is the client's criteria. The materials will be in compliance with the Jamaica Building Code.

The Project Management Team will ensure that the criteria have been laid out by governmental policies and agreements. In addition, the HR manager's guidelines will be taken into perspective. The subcontractors will be evaluated and each contractor's bid will be carefully evaluated. Some of the properties that will be considered when selecting subcontractors are quality, the timeframe the subcontractor can provide the service and costs and reliability.

Many of the assets that should be considered when choosing subcontractors are efficiency, the timeframe of the subcontractor will provide service and cost and reliability. Originally, bidders would be chosen on the basis of the standard of work, because that is most relevant. When a subcontractor is found not to have been approved by the General Contractor, it is suggested that references be given and their work be checked with viable sources to ensure the subcontractor's credibility.

The other criteria that are important for subcontractors' selection are time and costs. Time is the ability to provide a service within the specified deliverable date. The expense is the sum that has been applied that the job should be done. The subcontractor whose bid is too small may not be chosen; while it may serve as a red flag, recognizing that the subcontractor will not be able to complete the job. This can therefore have an impact on the overall project.

4.9.6 Procurement: Roles and Responsibilities

y. Chart 24: Procurement: Roles and Responsibilities (Compiled: C. Walker, the author, July 2020)

Name	Role	Email	Responsibilities
Chevaughn Walker	Project Manager	chwalker@jpsco.com	● Oversees procurement management plan ● Issue tenders to bid ● Evaluate, control and manage change orders and processed ● Award contracts to contractors
Aldane Stennett	Quality Manager	astennett@jpsco.com	● Review material purchase order lists and ensure that they are in accordance with building specifications and the Jamaica building code
Monecia Ebanks	Human Resources/Communication Manager	mebanks@jpsco.com	● Responsible for vetting contracted parties based on qualifications and skills necessary for required deliverables ● Communicating procurement requirements to all contractors ● Issue change order request
Ann-Marie Woodham	Procurement Officer/Cost Engineer	awoodham@jpsco.com	● Evaluate change and change order processes ● Evaluate procurement submittals and ensure that the requests for reimbursement is in line with estimated costs of the project
Mark Legister	Logistics/Procurement Manager	mlegister@jpsco.com	● Ensure that materials are top quality and sustainable ● Provide contracts for contractors ● Ensure that procurement of materials is achieved within target dates

4.9.7 Contract Tracking

A management system will be used for this project to monitor the procurement documentation and contracts of the contractors. The program will be used to carry out checks and audits by the management team to ensure that the project stays within the budget. Documentation will be categorized, identified and provided with a specific ID number associated with the contract or contractor. This system will be done for easy access, referencing and checking.

4.9.8 Contracts Close-Out

The chart below will be used to track the performance of the contractors. This will be based on the ability to meet the quality, deadlines, documentation quality and efficiency. The documentation information will be managed and archived along with the metrics data for historical purposes and for any future projects, if needed. Immediate action can be taken after revising the chart if necessary.

The performance of the contractors are ranked from 1-4, 1 being unsatisfactory, 2 being acceptable, 3 being good and 4 being excellent.

z. Chart 25: Contractor Rating Form (Compiled: Chevaughn Walker, July 2020)

	Product Quality	On Time Delivery	Documentation Quality	Development Costs	Development Time	Cost Per Unit	Transactional Efficiency
Contractor 1							
Contractor 2							
Contractor 3							
Contractor 4							

Contractor 5							

1 – Unsatisfactory 2-Acceptable 3-Good 4-Excellent

Inspection and Acceptance Form

Date: _____ Contractor: _____ Manager: _____

MM/DD/YY

Project Phase: _____ Milestone: _____ Contract ID: _____

Cost of Deliverable: _____ Contractors Completion Date: _____

MM/DD/YY

Project Estimated Cost: _____ Estimated Deadline: _____

MM/DD/YY

RFP Scope of Works:

Quality of Work

Please tick the relevant category.

_____Completed _____Partially Completed _____Incomplete ____Not Started

_____On-Time _____Ahead of Time _____Delayed _____Outside of Schedule

_____Poor _____Very Poor _____Good _____Very Good _____Excellent

FIGURE 15: INSPECTION AND ACCEPTANCE FORM, (COMPILED BY C. WALKER, JULY 2020).

4.10 Stakeholder Management Plan

The last process in this study is the Stakeholder Management Plan. A formal definition of a stakeholder is: “individuals and organizations who are actively involved in the project, or whose interests may be positively or negatively affected as a result of project execution or successful project completion” (Project Management Institute (PMI®), 1996).The Stakeholder Inventory was a resource that would have been done along with a list of stakeholders that would have been identified by the Project Management Committee, along with the collection of information from the Project Manager, who requires expertise, and information from stakeholders was collected from interviews.

4.10.1 Identify Stakeholders

Stakeholder Identification is the first step in Stakeholder Management, a vital method that effective individuals use to gain support from others. Managing stakeholders will help to ensure that your projects thrive where others can fail.

The process of identifying stakeholders is important and should take place when the project charter is formed. To find out who are your stakeholders, this can be collectively done with the Project Management Team. Once the names of the stakeholders are identified, they will be placed into a register, which will be seen in *Chart 26*.

It is important that stakeholders are identified so that they can be kept abreast of important information surrounding the project and the lines of communication will always be open with them.

4.10.2 Stakeholder Analysis

The stakeholder analysis decides which interest will be taken into account over the life of the project. These will be used to notify the Project Manager and the sponsor where there could be obstacles and steps that need to be taken prior to comprehensive project

planning. Any consideration of what the project entails, the interests of each stakeholder, potential attitudes / risks and steps to be taken.

aa. Chart 26: Power Interest Grid (Compiled: C. Walker, July 2020)

P o w e r	High Keep Satisfied *(High Power, Low Interest)* Power	A1 A2 Manage Closely *(High Power, High Interest)* B C
	Monitor *(Low Power, Low Interest)* D	Keep Informed *(Low Power, High Interest)*
	Low **Interest** **High**	

Legend

Sponsors:

The Government of Jamaica

The National Insurance Agency (NIA) = A1

The Ministry of Health & Wellness = A2

Project Management Team (GAMG) = B

Project Team: General/subcontractors = C

JPS community= D

If a stakeholder is placed in the ‘Keep Satisfied’ category, the stakeholders have high power and low interest. Should stakeholders be placed in the ‘Manage Closely’ category, the stakeholders would be considered to have high power and high interest. Should stakeholders be placed in the ‘Monitor’ category, the stakeholders would be considered to have low power and low interest. Finally, if any stakeholders were placed in the ‘Keep Informed’ section, they would be considered to have low power, high interest.

4.10.3 **Stakeholder Engagement**

According to PMBOK, “Stakeholder Engagement is the process of developing approaches to involve project stakeholders based on their needs, expectations, interests and potential impact on the project.” (PMBOK Guide Sixth Edition, p. 503). Stakeholder engagement is the involvement of all tended stakeholders that affect the decisions of the JPS project.

According to Roseke (2019) “stakeholder engagement is a major undertaking as many stakeholders have different needs and wants and their power and interest in the project are unique, which requires specialize consultation requirements”. The Project Management Team is responsible for all stakeholder engagement strategies from the start of the project. The team is also responsible for reviewing and keeping stakeholders involved, even as each stakeholder has different requirements. It is crucial for the team to have a strategy tailored to the project and an engagement strategy for each stakeholder, because all their needs vary. The communication plan is crucial to influencing stakeholders, because it is crucial to know the best way of contacting each stakeholder. This can be determined by the Communication Matrix listed as ***Chart 17***.

4.10.4 **Stakeholder Communications Plan**

A stakeholder communications plan outlines who you need to communicate with, about what, how you’re going to do it, and how often. There are also a few important considerations such as timing and budget. An effective stakeholder communications plan

will: support your organisation in achieving its stated goals and objectives, support or improve your operational effectiveness, support or improve your relationships with those who are important to ensuring your success (often called key stakeholders or your target audience) deliver measurable results to your organisation (Developing a Communication Strategy, 2020).

The Stakeholders Communications Plan is important to involve, manage and monitor the Stakeholders Management Plan. This is critical and the success of the project is dependent on keeping the stakeholders informed. It is important to ensure that each stakeholder uses the appropriate type of communication.

Some of the various forms of communications are as follows:

- Group Meetings – large meetings generally held with the management body to come up with ideas or discuss various issues that may arise
- One-on-one meetings – formal or informal meetings that includes two or three people
- Informal written correspondences – written forms of correspondences such as notes, e-mails, memos and text messages
- Written Approvals – written agreements that has information relating to the project

4.10.5 Manage Stakeholders

Some of the ways in which Herman Mehling (2010) suggested to manage stakeholders involves:

1. Identifying all the stakeholders
2. Ensuring that all stakeholders agree on deliverables
3. Determining how to handle any changes
4. Ensuring that there is set and frequent communication
5. Ensuring that the stakeholders are aware of the project's vision
6. Keeping stakeholders engaged throughout the lifecycle of the project
7. Ensuring stakeholders agree on what needs to be completed
8. Trying and empathizing with stakeholders

All the above items listed, once understood can assist with managing stakeholders.

4.10.6 **Stakeholder Register**

According to PMBOK, “the stakeholder register identifies potential owners for risk responses” (PMBOK Guide Sixth Edition, 2017, p. 440). The register is a tool that can assist with documenting the persons that have any impact on the project, their influence and their impact on the project. It is very challenging to remember every stakeholder and their information, thus resulting in the importance of the register. The register will contain each stakeholder’s impact and influence on JPS.

The stakeholder register will be produced after the project charter has been finalized and approved. It is important to know the needs and requirements of all the stakeholders. Having all these stakeholders, it can prove difficult to recall all the characteristics of the stakeholders. The Stakeholder Registry can assist in collecting and accessing all the information on each Stakeholder.

bb. Chart 27: Stakeholder Matrix (Compiled: C. Walker, July 2020)

Project Name: Expansion of GAMG Workspace
Location: Kingston, Jamaica
Project Sponsors: Jamaica Public Service Company Ltd.

ID	Name	Role	Email	Functional Area	Responsibilities	Contact Numbers	Communication Methods	Power (High, Medium, Low)	Impact (High, Medium, Low)
1	Chevaughn Walker	Project Manager	chwalker@jpsco.com	JPS Co Ltd.	• Oversees procurement management plan • Issue tenders to bid • Evaluate, control and manage change orders and processed • Award contracts to contractors	876-318-8282	• Email • Telephone • Face to Face Meetings • Presentations • Personal Communication	High	High
2	Aldane Stennett	Quality Manager	astennett@jpsco.com	JPS Co. Ltd.	• Review material purchase order lists and ensure that they are in accordance with building specifications and the Jamaica building code	876-365-3585	• Email • Telephone • Face to Face Meetings • Presentations • Personal Communication	High	High

3	Monecia Ebanks	Human Resources/Communication Manager	mebanks@jpsco.com	JPS Co. Ltd.	• Responsible for vetting contracted parties based on qualifications and skills necessary for required deliverables • Communicating procurement requirements to all contractors • Issue change order request	876-521-1000	• Email • Telephone • Face to Face Meetings • Presentations Personal Communication	High	High
4	Prince Rodgers	Schedule/Cost Engineer	prodgers@jpsco.com	JPS Co Ltd.	• Evaluate change and change order processes • Evaluate procurement submittals and ensure that the requests for reimbursement is in line with estimated costs of the project	876-878-8500	• Email • Telephone • Face to Face Meetings • Presentations • Personal Communication	High	Medium
5	Ann-Marie woodham	Risk Analyst/Procurement Manager	awoodham@jpsco.com	JPS Co Ltd.	• Ensure that materials are top quality and sustainable • Provide contracts for contractors	876-465-8954	• Email • Telephone • Face to Face Meetings • Presentations	Medium	Medium

					• Ensure that procurement of materials is achieved within target dates		• Personal Communication		
6	Doraine Hinds	Representative	dhinds@nia.gov.jm	National Insurance Agency (NIA)	• Can propose scope changes • Approve or deny scope change requests, as appropriate • Verifies need for the scope change requests • Accepts final project deliverables and project scope • Updates project documents upon approval of all scope changes • Communicates the scope change to all project team members	876-656-6258	• Email • Telephone • Face to Face Meetings • Personal Communication	High	High
7	Hezekiah Garvey	Representative	hgarvey@mohw.gov.jm	Ministry of Health	• Can propose scope changes Receives submitted	876-618-1686	• Email • Telephone • Face to Face Meetings	High	High

					change request forms for revision • Evaluates the requested scope change and measures its impact and verifies its' validity • If approved, submits the scope change request to the Change Control Board • Organizes and facilitate scheduled change control meetings Communicate outcomes of scope change requests Updates project documents upon approval of all scope changes		• Personal Communication		
8	Chaplain Moss	President	cmoss@jpsco.com	JPS Co. Ltd.	• Leader of company • Can make decisions and affect overall decisions within company	876-595-9595	• Email • Telephone • Personal Communication • Face to Face Meetings	High	High

9	Phillip Mundy	Site Superintendent	pmundy@jpsco.com	JPS Co. Ltd.	• In control of all trades on site	876-547-9636	• Email • Telephone • Personal Communication • Face to Face Meetings •	High	High
10	Howie Mandel	Site Foreman	hmandel@gmail.com	Unique Construction.	• Assist the Site Superintendent in carrying out the daily task on site	876-236-6589	• Email • Telephone • Personal Communication • Face to Face Meetings	Medium	Medium
11	Howard Cooke	Mason Foreman	Contact Contractor	Unique Construction.	• Controls all masons and mason helpers giving instructions to carry out daily tasks	876-953-2156	• Telephone • Personal Communication • Face to Face Meetings	Medium	Medium
12	Barry Jones	Skilled Mason	Contact Contractor	Unique Construction.	• Instructed by Mason foreman to execute daily task and activities	876-456-9521	• Telephone • Personal Communication • Face to Face Meetings •	Low	Low
13	Michael White	Carpenter Foreman	Contact Contractor	Unique Construction	• Receives instructions from site foreman for daily task related to trade and instruct all	Contact Contractor	• Telephone • Personal Communication • Face to Face Meetings	Medium	Medium

					carpenters on the site				
14	Paul Paul	Skilled Carpenters	Contact Contractor	Unique Construction.	• Instructed by Carpenter foreman to carry out daily activities related to trade	Contract Contractor	• Personal Communication • Face to Face Meetings	Low	Low
15	Joe Biden	Semi-Skilled Carpenters	Contact Contractor	Unique Construction.	• Construction/Carpentry	Contract Contractor	• Personal Communication • Face to Face Meetings	Low	Low
16	Many	Carpenter Helpers	Contact Contractor	Unique Construction.	• Construction/Carpentry	Contract Contractor	• Personal Communication • Face to Face Meetings	Low	Low
18	Joana Powell	Engineer	jpowell @jpsco. com	JPS Co. Ltd.	• Engineering	876-878-7878	• Email • Telephone • Personal Communication • Face to Face Meetings	High	High
19	Rosey Dowan	Janitor	None	Minott Cleaning Services	• Ensuring that the office are clean and the building is free of debris	876-456-6545	• Email • Telephone • Personal Communication • Face to Face Meetings	Low	Low

21	Paul Watson	Architect	pwatson@gmail.com	Subcontractor	• Architect	876-876-8745	• Email • Telephone • Personal Communication • Face to Face Meetings	Low	Medium
23	Electrical	Unique Construction	ggarvey@gmail.com	Subcontractor	• Electrician	876-545-5456	• Email • Telephone • Personal Communication • Face to Face Meetings	Medium	High
24	Plumbing	Unique Construction	cwhitter@gmail.com	Subcontractor	• Plumbing	876-525-8585	• Email • Telephone • Personal Communication • Face to Face Meetings	Medium	High
25	Air Condition & HVAC	Carlisa	dwhyte@carlisa.com	Subcontractor	• HVAC/Air Conditioning	876-225-5577	• Email • Telephone • Personal Communication • Face to Face Meetings	Medium	High
27	Metal Roofers	Labourer	many	Subcontractor	• Metal Roofing	876-875-6545	• Telephone • Personal Communication • Face to Face Meetings	Medium	Medium

28	Laborers	Laborers	Many	laborers	• Completion of all tasks and duties given to complete the project	Contract Contractor	• Telephone • Personal Communication Face to Face Meetings	High	Low
29	Jerome Johnson	National Works Agency	nwa@gov.jm	Regulator	• Representative	876-872-7125 Ext #4002	• Meetings • Personal • Email • Personal Communication • Telephone	High	High

5 CONCLUSIONS

1. A project without a plan is like a journey without a roadmap. Project Management planning is very essential for the success of any project venture one will undertake. The expansion project needed a plan to ensure that the works carried was that of a quality and standard. Additionally, a project management plan ensures that costs, scope and schedule are adhered to, so as to ensure the company's finances are not wrongfully and wastefully used. Through analytical research coupled with information from the PMBOK Guide, the project team was able to effectively and efficiently develop the Project Management Plan.

2. The Charter was useful in defining and providing clarity toward the project within the Project Management Plan. The Project Charter outlined the description, objectives, scope statement, budget, and initial associated risks.

3. It was of paramount importance that the Scope Management Plan included all work required for successful project completion. It incorporated the Scope Management Approach, Scope Definition, Project Scope Definition, Product Scope Statement, Product Acceptance Criteria, Product Deliverables, Project Exclusions, Project Assumptions and Constraints, the WBS and WBS Dictionary, and Project Scope Control.

4. The Schedule Management Plan was developed as a means of assisting with project deliverables. Ensuring they are scheduled, planned, managed, and controlled. A few of the items created were sequential activities with start and end dates to ensure a smooth flow and effective tracking throughout the project.

5. The Cost Management Plan was integrally involved in determining overall and specific costs involved within the Project. To create the Cost Management Plan, Microsoft excel was employed providing breakdown of cost, to provide a cost baseline, and to capture costs related with deliverables.

6. Do once, check thrice is a popular statement used within our company. It ensures that the highest standard is produced at all times, and errors hardly made. The Quality

Management Plan was created to ensure the project deliverables were being carried out at the highest possible degree to meet the expectations of the stakeholders. This plan included the quality management approach, quality assurance and control.

7. All resources necessary for successful completion is embedded within the resource management plan. The plan involved employing the organization chart as well as details identifying how the resources will be managed throughout the project. Staff skill levels, as well as roles and responsibilities of the project management team were also implemented within this plan.

8. The Communication Plan speaks to the modus operandi for information exchange within the project. The communication requirements, approach, roles in communication were discussed. The communication matrix played a big part in outlining the dissemination process so as to allow for smooth flow of information both internally and externally.

9. The Risk Management Plan included risk analysis methods, risk assumptions, and risk reviews geared toward an accurate assessment of the project. Tools used throughout the formulation of this plan included a risk matrix, a risk ID list, a risk impact chart, a risk action preventative and contingent chart and a risk register.

10. The Procurement Management Plan determines the approach to which the project intends to acquire items necessary for its completion. The plan also detailed constraints that might affect project completion within the time and budget specified.

11. The purpose of the Stakeholder Management Plan was to identify, classify, engage and managed throughout the project. Excel was used to develop a power interest grid, which identifies stakeholder’s power and interest they have in the project and subsequently for effective stakeholder engagement.

6 RECOMMENDATIONS

- The Generation Asset Management Group should develop and implement a formal Project Management system to undertake future projects successfully.
- The Generation Asset Management Group should develop initiation and planning documents necessary for the execution of similar projects.
- The Generation Asset Management Group should invest in tools necessary to complete the Schedule management plan
- The Generation Asset Management Group should invest in the skill set that will allow them to successfully complete the Cost Management Plan for subsequent projects.
- The Generation Asset Management Group should invest in tools necessary to undertake a quality management plan.
- The Generation Asset Management Group should invest in the resources needed to adequately undertake a project of this nature.
- The Generation Asset Management Group should allow adequate time to be invested into the development of all major and subsidiary plans prior to project execution.

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APPENDIX

Appendix 1: FGP Charter

<table>
<tr><th colspan="2">PROJECT CHARTER</th></tr>
<tr><td>Date:</td><td>Project Name:</td></tr>
<tr><td>February 24, 2020</td><td>To develop a project management plan for the expansion of the Generation Asset Management Group workspace.</td></tr>
<tr><td>Knowledge Areas / PM Processes:</td><td>Application Area (Sector / Activity):</td></tr>
<tr><td>Knowledge Areas: Integration, Scope, Schedule, Cost, Quality, Resources, Communications, Risks, Procurement and Stakeholders</td><td rowspan="2">Construction</td></tr>
<tr><td>PM Processes: Initiation, Planning</td></tr>
<tr><td>Project Start Date:</td><td>Project Finish date:</td></tr>
<tr><td>February 24, 2020</td><td>Aug 18, 2020</td></tr>
<tr><td colspan="2">Project Objectives (General and Specific):</td></tr>
<tr><td colspan="2">General Objective:</td></tr>
<tr><td colspan="2">To develop a project management plan for the expansion of the Generation Asset Management Group work area</td></tr>
</table>

Specific Objectives:

1. To create the project charter in order to define the key input elements for the development of the project management plan
2. To develop the Scope Management Plan in an effort to ensure that the project includes all required work needed for successful project completion
3. To develop the Schedule Management Plan to manage the timely completion of the project
4. To develop a Cost Management Plan to predict coming expenses in order to reduce the chances of going over budget
5. To develop an Integration Management Plan to ensure that the various elements of the projects are properly coordinated in order to meet the needs and expectations of stakeholders
6. To develop a Quality Management Plan that defines acceptable levels of quality, in order to ensure that optimacy is achieved at the end of the project.
7. To develop a Resource Management Plan to ensure that people and physical resources are effectively acquired, managed and controlled.
8. To develop a Communication Management Plan to ensure that communication requirements are well defined, and effectively distributed to respective stakeholders.
9. To develop a Risk Management Plan that identifies and mitigates potentially damaging risks to the project activities and outcomes
10. To develop a Procurement Management Plan that describes end-to-end processes that the project will use to acquire its goods and/or services
11. To develop a Stakeholder Management Plan that identifies appropriate management strategies to effectively engage stakeholders throughout the project lifecycle

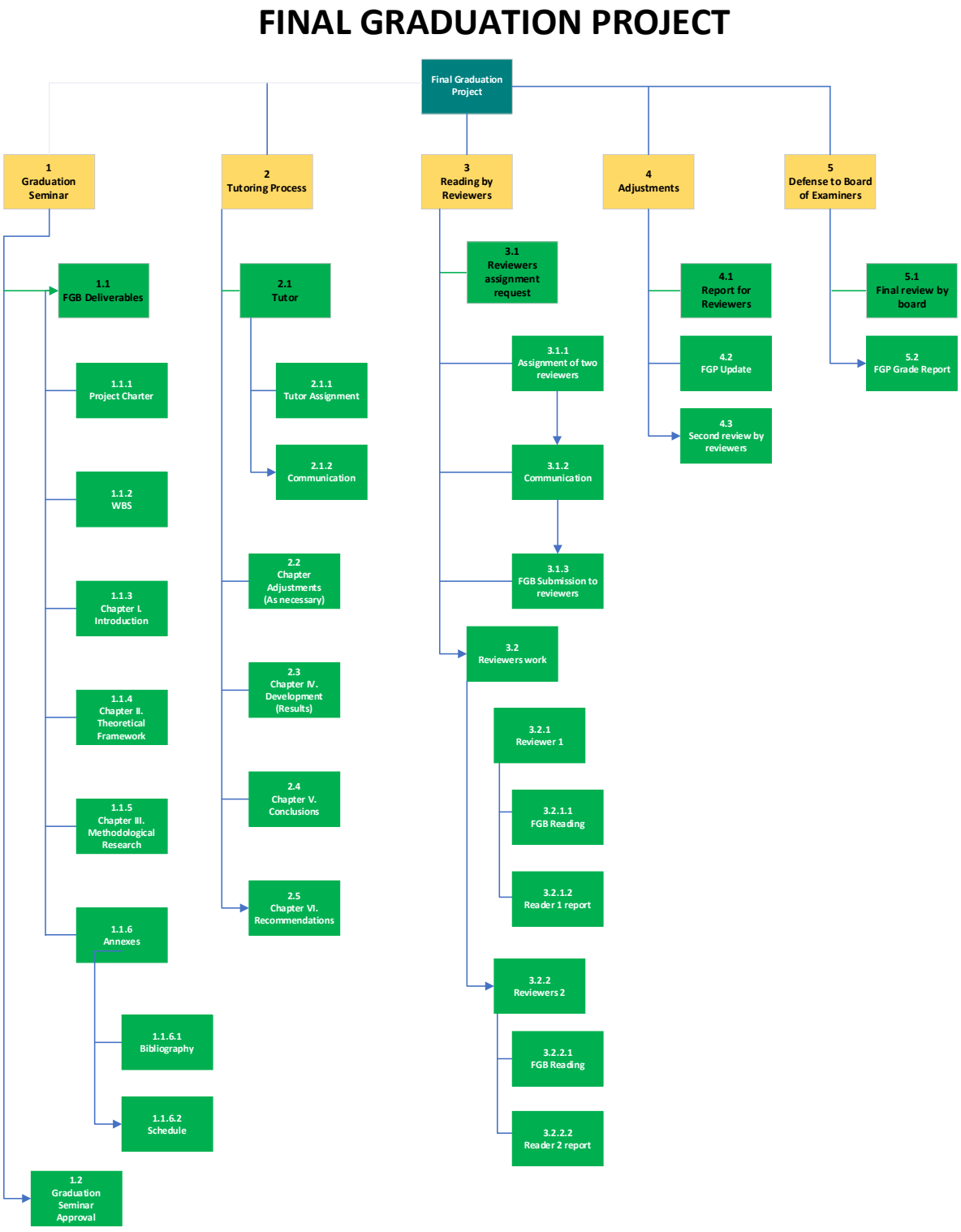
Project purpose or justification (merit and expected results):
The aim of this project is to create a project management plan that will guide the project execution to maximize its success chances. In 2017, there was a seismic shift in the direction of the company, and by extension the department. The name Generation Technical Services Workshop, changed to Generation Asset Management Group (GAMG). Coupled with the name-change was a realignment of objectives for the department. Since then, the core staff has increased and the need for a bigger workspace is imminent to facilitate frequent meetings, online remote monitoring and the many other technological demands that the department carries. As such, the project for the expansion of the workspace is critical.
Description of Product or Service to be generated by the Project – Project final deliverables:
This study aims to provide a comprehensive project management plan with its subsidiary management plans. The Project Management Plan will address all good practices recommended in appropriate bibliographical sources as the Project Management Body of Knowledge (PMBOK 6th Edition). Specific deliverables associated with each specific objective include: 1. Project Charter 2. Scope Management Plan 3. Schedule Management Plan 4. Provision of a framework for the project management plan
Assumptions: The following assumptions have been made: Project has full support of the project team Information will be easily retrieved and in a timely manner to create the Project Management Plan.

The project scope will not be modified. No major changes in the economic picture.
Constraints:
The project is constrained by the following: Cost - potential increase in cost should there be a change in scope Resources - Availability of resources to perform project work Time - Six months set to complete the project management plan
Preliminary Risks:
Insufficient time to complete the study impacts the scope, quality and potentially the cost of the project. Lack of participation by stakeholders may impact the time the project takes to complete.
Budget:
USD$2000.00 to be spread across the five-month period. 10% office space, 10% electricity consumption, 40% travel expenses (inclusive of petrol and toll) 5% for printing of physical copies of the document, and $600 for all other costs.
Milestones and dates:

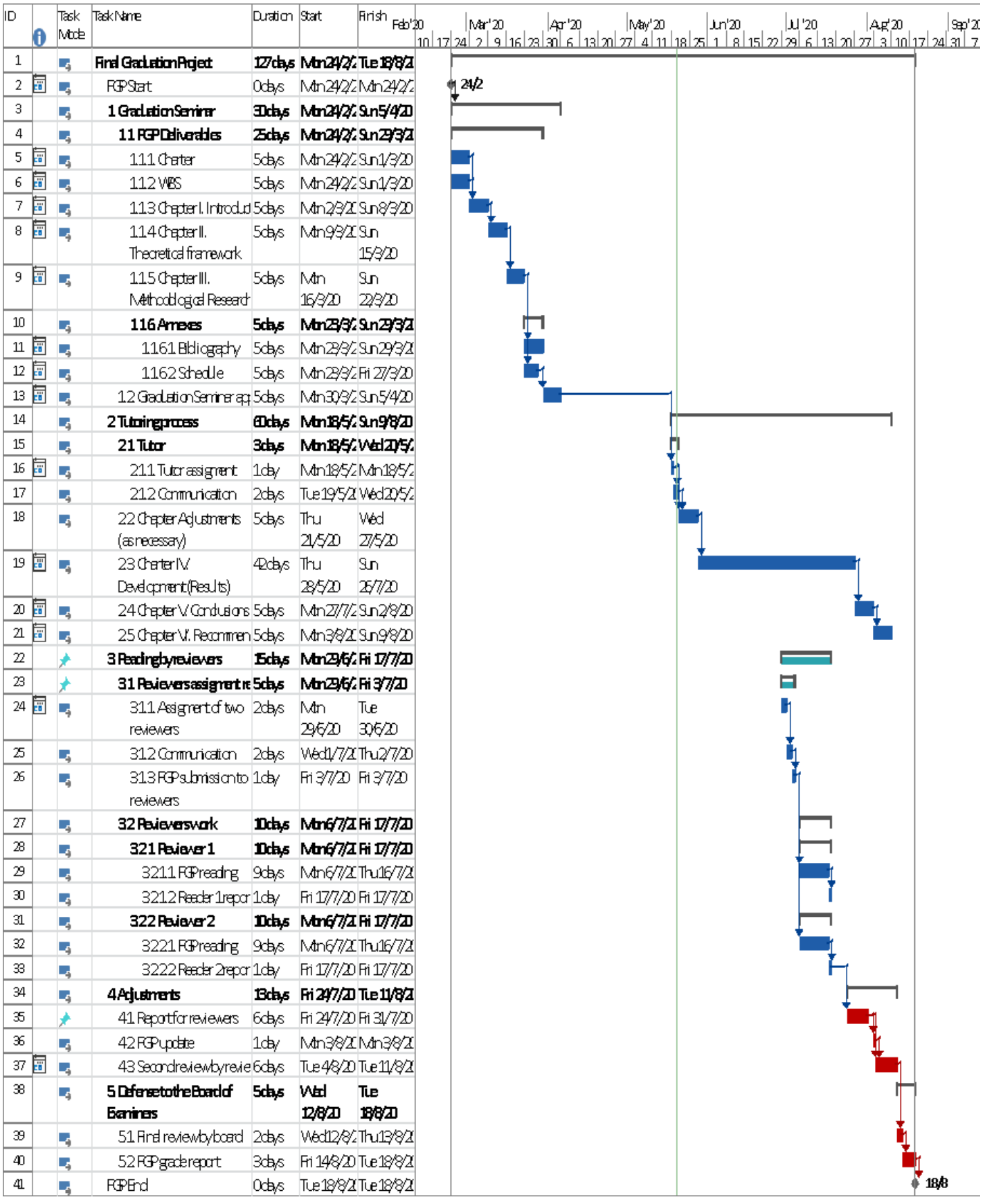
Milestone	**Start date**	**End date**
Final Graduation Project Start	February 24, 2020	February 24, 2020
Final Graduation Seminar	February 24, 2020	April 5, 2020
Tutoring Process	May 18, 2020	August 9, 2020
Reading by Reviewers	June 29, 2020	July 17, 2020
Adjustments	July 24, 2020	August 11, 2020

Defense to the Board of Examiners	August 12, 2020	August 18, 2020
Relevant historical information:		
Renovation of the existing workspace was carried out approximately 2 years ago. However, with little project management practices carried out. This resulting in an overrun of schedule and budget. It was noted by the director and senior management that, had project management best practices been employed, an overrun could have been avoided. Since, there have been recent talks about implementing a project management framework for subsequent projects. With this being done, the project management plan will become a company organizational asset that might be used as the basis for future project plans. Hence, this will be the first where best project management practices will be employed, in the form of a project management plan.		
Stakeholders:		
Direct Stakeholders: Jervis Johnson, Director Christopher Shaw, Program Manager Ann-Marie Woodham, Procurement Officer Tesfaye O'sullivan, Facilities Manager **Indirect Stakeholders:** Joseph Williams, Senior Vice President- Generation Terry Brown, Procurement Director Rohan Lindsay, Facilities Director		
Approval:		
Project Manager: Chevaughn Walker	Signature:	
Authorized by:	Signature:	

Appendix 2: FGP WBS



Appendix 3: FGP Schedule



ID	Task Mode	Task Name	Duration	Start	Finish
1		**Final Graduation Project**	**127 days**	**Mon 24/2/20**	**Tue 18/8/20**
2		FGP Start	0 days	Mon 24/2/20	Mon 24/2/20
3		**1 Graduation Seminar**	**31 days**	**Mon 24/2/20**	**Sun 5/4/20**
4		**1.1 FGP Deliverables**	**25 days**	**Mon 24/2/20**	**Sun 29/3/20**
5		1.1.1 Charter	5 days	Mon 24/2/20	Sun 1/3/20
6		1.1.2 WBS	5 days	Mon 24/2/20	Sun 1/3/20
7		1.1.3 Chapter I. Introduct	5 days	Mon 2/3/20	Sun 8/3/20
8		1.1.4 Chapter II. Theoretical framework	5 days	Mon 9/3/20	Sun 15/3/20
9		1.1.5 Chapter III. Methodological Researc	5 days	Mon 16/3/20	Sun 22/3/20
10		**1.1.6 Annexes**	**5 days**	**Mon 23/3/20**	**Sun 29/3/20**
11		1.1.6.1 Bibliography	5 days	Mon 23/3/20	Sun 29/3/20
12		1.1.6.2 Schedule	5 days	Mon 23/3/20	Fri 27/3/20
13		1.2 Graduation Seminar ap	5 days	Mon 30/3/20	Sun 5/4/20
14		**2 Tutoring process**	**60 days**	**Mon 18/5/20**	**Sun 9/8/20**
15		**2.1 Tutor**	**3 days**	**Mon 18/5/20**	**Wed 20/5/20**
16		2.1.1 Tutor assignment	1 day	Mon 18/5/20	Mon 18/5/20
17		2.1.2 Communication	2 days	Tue 19/5/20	Wed 20/5/20
18		2.2 Chapter Adjustments (as necessary)	5 days	Thu 21/5/20	Wed 27/5/20
19		2.3 Charter IV. Development(Results)	42 days	Thu 28/5/20	Sun 26/7/20
20		2.4 Chapter V. Conclusions	5 days	Mon 27/7/20	Sun 2/8/20
21		2.5 Chapter VI. Recommen	5 days	Mon 3/8/20	Sun 9/8/20
22		**3 Reading by reviewers**	**15 days**	**Mon 29/6/20**	**Fri 17/7/20**
23		**3.1 Reviewers assignment**	**5 days**	**Mon 29/6/20**	**Fri 3/7/20**
24		3.1.1 Assigment of two reviewers	2 days	Mon 29/6/20	Tue 30/6/20
25		3.1.2 Communication	2 days	Wed 1/7/20	Thu 2/7/20
26		3.1.3 FGP submission to reviewers	1 day	Fri 3/7/20	Fri 3/7/20
27		**3.2 Reviewers work**	**10 days**	**Mon 6/7/20**	**Fri 17/7/20**
28		**3.2.1 Reviewer 1**	**10 days**	**Mon 6/7/20**	**Fri 17/7/20**
29		3.2.1.1 FGP reading	9 days	Mon 6/7/20	Thu 16/7/20
30		3.2.1.2 Reader 1 repor	1 day	Fri 17/7/20	Fri 17/7/20
31		**3.2.2 Reviewer 2**	**10 days**	**Mon 6/7/20**	**Fri 17/7/20**
32		3.2.2.1 FGP reading	9 days	Mon 6/7/20	Thu 16/7/20
33		3.2.2.2 Reader 2 repor	1 day	Fri 17/7/20	Fri 17/7/20
34		**4 Adjustments**	**13 days**	**Fri 24/7/20**	**Tue 11/8/20**
35		4.1 Report for reviewers	6 days	Fri 24/7/20	Fri 31/7/20
36		4.2 FGP update	1 day	Mon 3/8/20	Mon 3/8/20
37		4.3 Second review by revie	6 days	Tue 4/8/20	Tue 11/8/20
38		**5 Defense to the Board of Examiners**	**5 days**	**Wed 12/8/20**	**Tue 18/8/20**
39		5.1 Final review by board	2 days	Wed 12/8/20	Thu 13/8/20
40		5.2 FGP grade report	3 days	Fri 14/8/20	Tue 18/8/20
41		FGP End	0 days	Tue 18/8/20	Tue 18/8/20

Appendix 4: Approval Letter

August 18, 2020

Academic Advisor,

Masters Degree in Project Management (MPM)

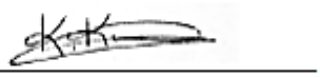
Universidad para la Cooperacion Internacional (UCI)

RE: Philological Review of Final Graduation Project submitted by Chevaughn Odain Walker in partial fulfilment of the requirements for the Masters in Project Management (MPM) Degree

To Whom It May Concern,

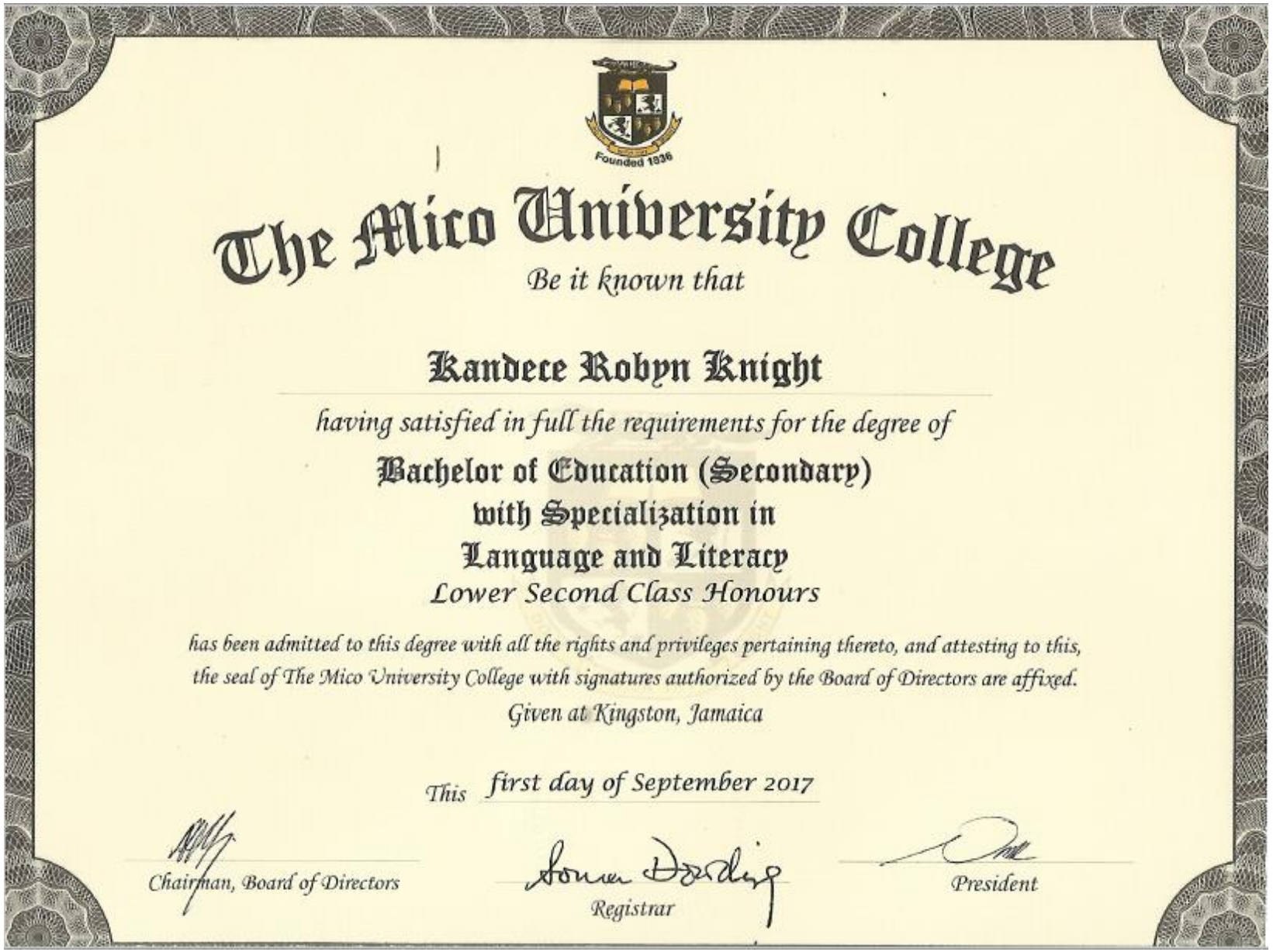
I hereby confirm that **Chevaughn Odain Walker** has made all necessary correction to his Final Graduation Project document as I have advised. As such, the document now meets the literary and linguistic standards of a student reading for a degree at the Masters level.

Sincerely,



Kandece Knight (Ms.)

Appendix 5: Proof of Qualification



Founded 1836

The Mico University College

Be it known that

Kandece Robyn Knight

having satisfied in full the requirements for the degree of

Bachelor of Education (Secondary)
with Specialization in
Language and Literacy
Lower Second Class Honours

has been admitted to this degree with all the rights and privileges pertaining thereto, and attesting to this, the seal of The Mico University College with signatures authorized by the Board of Directors are affixed.

Given at Kingston, Jamaica

This first day of September 2017

Chairman, Board of Directors

Registrar

President