UNIVERSIDAD PARA LA COOPERACIÓN INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PLAN FOR RENOVATION OF A HANGAR AT THE NORMAN MANLEY INTERNATIONAL AIRPORT (NMIA).

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DEDICATION

I would first like to thank my muse and support, my supremely beautiful and brilliant wife Tania for giving me the confidence to always go after my dreams and achieve whatever I put my mind to.

To my mother and father, I appreciate every sacrifice you have made for me; I am everything that I am and proudly everything that I am not because of you. Your love and care for me has made me into the man I am today.

This work is also dedicated to my family, friends and loved ones who in many ways supported me through the development of this work.

WE MADE IT!!!

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ABBREVIATIONS AND ACRONYMS

AAJ:	Airport Authority of Jamaica
CEO:	Chief Executive Officer
CFO:	Chief Financial Officer
FAA:	Federal Aviation Administration
FGP:	Final Graduation Project
MPM:	Master in Project Management
NMIA:	Norman Manley International Airport
NMIAL:	NMIA AIRPORTS LIMITED
PM:	Project Manager
PMI:	Project Management Institute
PMO:	Project Management Office
QC:	Queens Council
UCI:	Universidad para la Cooperación Internacional
WBS:	Work Breakdown Structure
NMIA:	Norman Manley International Airport

EXECUTIVE SUMMARY (ABSTRACT)

The Norman Manley International Airport (NMIA) plays a critical role in the economic development of Jamaica, and is the premier gateway to the nation's capital, Kingston. The airport caters to over 1.7 million passengers, with an approximate 4% average growth rate and handles over 70 percent (17 million kgs) of the Island's airfreight. The airport business network is comprised of over 70 companies and government agencies, with over 3,500 persons directly employed at the Airport.

Located on a picturesque peninsula twenty minutes from Kingston’s business center, the NMIA has a significant task in trying to acquire increased market share, when compared to other hubs across the Caribbean. Unstable weather conditions as well as normal maintenance needs of airline operators has berthed the need for a secure and state of the art location to safely; store and fix aircraft in the region. The airport therefore, after numerous requests by airline operators and after analyzing the regions capacity to store and maintain aircraft has accepted the task to renovate and put in service a state of the art service hangar.

Though the NMIA used some project management tools, which held some construction management guidelines. The need existed to create a formal project management plan to guide all the critical aspects of the project life cycle. The plan covered all the necessary design and execution activities to ensure completion of the 100 feet by 80 feet hangar.

The general objective was to develop a Project Management Plan, framed within the standards of the Project Management Institute (PMI), to be used to manage the renovation of the NMIA hangar. The specific objectives were: to create a project charter to formally authorize the project and provide the Project Manager with the authority to apply organizational resources to the project in order to produce the Project Management Plan; to create a scope management plan that included all the work required to successfully complete the project; to create a schedule management plan which supported the development and management of a project schedule and ensured the project was completed within the time constraints; to create a cost management plan that defined the processes for developing and managing the project budget and ensured the project was completed within the budget constraints;; to create a human resource management plan that ensured that all human resources were known and managed effectively to complete the project within time, cost and scope constraints; to develop a communication management plan which ensured the timely and effective communication of the project status and other key information; to create a risk management plan that recognized and scrutinized risks for the successful completion of the project and developed plans to minimize the likelihood of the negative risks; to develop a quality management plan that recognized the quality requirements for the project which ensured that results meet expectations for approval within the time, cost and scope constraints; to develop a procurement management plan that was used to obtain products, services or results required by the project, and to develop a

stakeholder management plan that identified and supported all the project stakeholders and ensured effective stakeholder engagement.

The methodology used for the research was explanatory or analytical. A combination of primary and secondary data gathered by interviews and looking for information from A Guide to the Project Management Body of Knowledge (PMBOK Guide®) Fifth Edition were crucial in building each subcomponent of the subsidiary plans used to develop the Project Management Plan for the airport hangar.

As a result, the probability for success of the project was markedly improved and guaranteed exponential improvements in efficiency. It was realized that a project management team would be a great asset for all projects moving forward, as well, as the induction of standard project management documents would aid in improving all aspects of business project execution and efficiency.

The resulting project management plan for the renovation of the NMIA hangar played a vital role in bolstering the airports ability to execute construction type projects in an efficient and high-quality fashion, and it is suggested that the team at NMIA consider the use of the planning process and subsequent project management plan as a basis for implementing a methodology for similar projects in the future. Additionally, the team at NMIA should seek to implement document storage systems for future use in strategically centralizing information associated with project planning and organizational process assets.

INTRODUCTION

1.1. Background

Jamaica has always had a vibrant civil aviation industry with the first flight reported in the island on 21 December 1911. This is eight years after the world recorded its first powered flight by the Wright Brothers. Nineteen years later, on 3 December 1930, the first commercial flight, a Consolidated Commodore twin-engine flying boat operated by Pan American Airways landed in Kingston Harbour.

Today the national airport is known as the Norman Manley International Airport (NMIA), formerly known as the Palisadoes Airport named after its location along the Palisadoes strip.

The Norman Manley International Airport (NMIA), named after Jamaican national hero and former Prime Minister, The Rt. Hon. Norman Washington Manley, MM, QC; plays a critical role in the economic development of Jamaica, and is the premier gateway to the nation's capital, Kingston. The airport caters to over 1.7 million passengers, which ranks the airport as the 14th busiest airport in the Caribbean and 4th busiest among English speaking Caribbean nations.

The NMIA has for many years suffered the realities of being in the path of natural disasters such as; severe tropical storms and hurricanes. As was the case in 1988, when hurricane Gilbert a category 3 hurricane hit Jamaica and caused significant damage to airport facilities and airline aircrafts from debris swung by powerful winds. Some aircrafts were even lifted and tossed through the air by the winds experienced in that hurricane.

The need therefore has existed for some time to have a proper airplane hangar facility in which aircrafts can be safely stored or repaired during times of extreme need due to mechanical faults, severe weather, or rental time during landing.

1.2. Statement of the problem

The NMIA has the need for an airplane hangar to fill the void experienced when aircrafts have experienced mechanical problems, or the need arises as it does very often for storage of aircraft as a means of generating revenue. Renovation of a hangar has been considered the most feasible solution, however, due to the size and complexity of the project, it is of great importance to produce an extensive management tool. Each element of the Project Management Plan will be created, along with all of the tools, techniques, and concepts used to justify each management decision selected for application.

1.3. Purpose

Schedule slippage, quality flaws and budget overruns are the familiar symptoms of a project in trouble.

According to a web excerpt from Lim, R. (2016, August 31), “Poor Preparation”, is one of the main reasons that projects fail. In order to increase the successful renovation of the Airport hangar, the Project Manager will seek to develop the Project Management Plan by detailing the management of all critical aspects of the project. Each step is to be coordinated strategically to develop all of the subsidiary documents which will be used as a guide during project execution. The research proposal will explore the Project Management Institute’s (PMI) guide to effectively create a Project Management Plan, providing justification for the decisions made while developing the project’s knowledge areas.

1.4. General objective

To develop a Project Management Plan, outlined within the standards of the Project Management Institute, to manage the renovation of a hangar.

1.5. Specific objectives

1. To create a project charter that formally authorizes the project and provide the project manager with the authority to apply organizational resources to the project in order to produce the project management plan.
2. To create a scope management plan to ensures that all works required are included to successfully complete the project.
3. To create a schedule management plan to support the development and management of a project schedule that ensures the project is completed within the time constraints.
4. To create a cost management plan to define the processes for developing and managing the project budget that ensures the project is completed within the budget constraints.
5. To develop a quality management plan to identify the quality requirements for the project to ensure the results meet expectations for approval within the time, cost and scope constraints.
6. To create a human resource management plan to ensure that all human resources are identified and managed effectively to complete the project within time, cost and scope constraints.
7. To develop a communication management plan to ensure the timely and effective communication of the project status and other key information.
8. To create a risk management plan to identify and examine risks to the successful completion of the project and develop plans to minimize the likelihood of the risks.
9. To develop a procurement management plan to be used to obtain products, services or results required by the project.
10. To develop a stakeholder management plan to identify and support all the project stakeholders to ensure effective stakeholder engagement.

THEORETICAL FRAMEWORK

2.1 Company/Enterprise framework

2.1.1 Company/Enterprise background

NMIA Airports Limited (NMIAL) is the operator of the Norman Manley International Airport and is a wholly owned subsidiary of Airports Authority of Jamaica (AAJ) which was incorporated in 2003. The Airport is operated under a 30-year Concession Agreement with AAJ and is held to specific performance targets.

The Norman Manley International Airport (NMIA) is located on a picturesque peninsula twenty minutes from Kingston's business center. It is bordered by the seventh largest natural harbour of the world; (Kingston Harbour) and is one of Jamaica's global gateways. The Norman Manley International Airport (NMIA) is the primary airport for business travel to and from Jamaica and for the movement of air cargo.

Most recently the management of the NMIA has been approached by various aircraft carrier companies to produce suitable space for storage of vessels during periods of repair. With this in mind, the project team has agreed that it is indeed feasible and necessary to create a more comprehensive project management plan for this project. (A. Hudson, personal communication, November 28th, 2017).

2.1.2 Mission and vision statements

MISSION

To operate a safe, profitable and environmentally friendly airport, providing world-class service with a uniquely Jamaican character (A. Hudson, personal communication, November 28th, 2017).

VISION

A friendly, efficient, world-class airport that is a gateway of choice in the Caribbean (A. Hudson, personal communication, November 28th, 2017).

The NMIA aims to achieve its mission and vision through, an atmosphere of honesty, fairness, and integrity, where a commitment is made to the core organizational values - People, Customer Focus, Integrity, Financial Management, Regulatory and Statutory Requirements, Safety, Security and Environment.

2.1.3 Organizational structure

The organizational makeup of the AAJ group is astonishingly large and encompassing of various groups and members, namely: NMIA, AAJ, and Aerodrome. The NMIA is run by an executive team who oversees the operation and well being of some 156 staff (A. Hudson, personal communication, November 28th, 2017).

Figure 1. Executive team structure (Source: http://www.nmia.aero/executiveprofile)

Project management is a department that houses four individuals at the NMIA it is found under the guidance of the Snr. Director of Airport Operations. The breakdown is shared in figure 2 below.

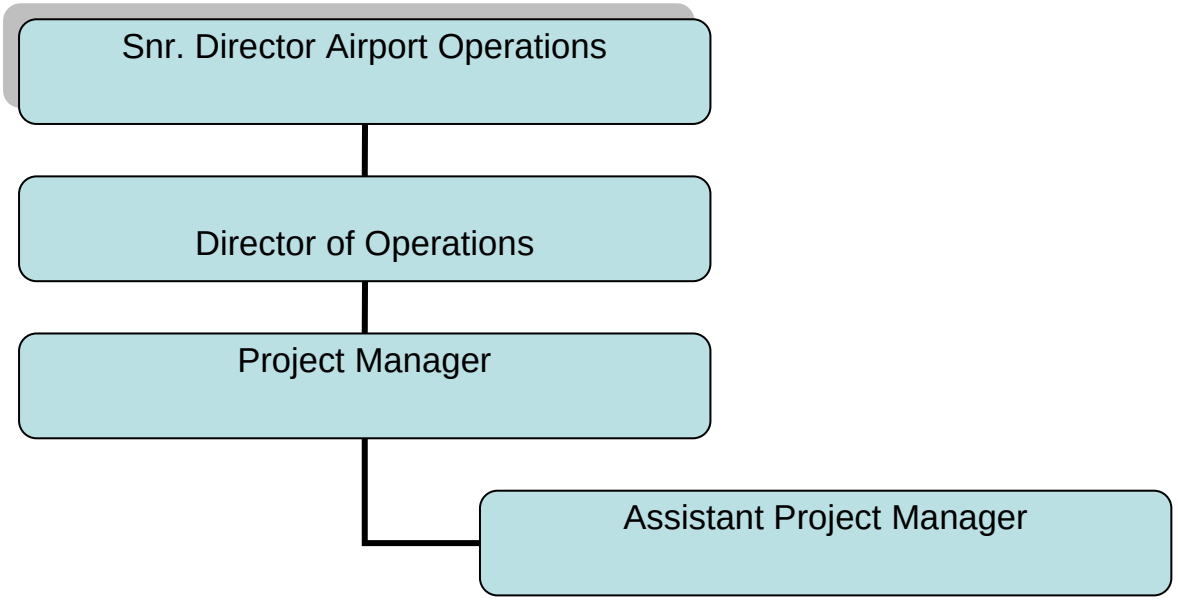

Figure 1 Project team structure (Source: A. Hudson, personal communication, November 28th, 2017)

2.1.4 Products offered

The NMIA provides a suite of products and services for International Airline companies as well as the millions of Airport passengers that pass through the airport yearly.

The NMIA products to passengers include: Arrival and Departure lounges outfitted with sufficient seating and lounging areas for families and groups. They are also equipped with restaurant chains such as: Island Grill, Burger King, and Café Blue to name a few of the offerings.

For the airline operators, the NMIA is a centrally located hub in the Caribbean which provides a safe and secure space for storing, maintaining and landing aircraft; which includes the runway and hangar sections being developed.

2.2 Project Management Concepts

2.2.1 Project

The *PMBOK Guide*® has defined a project as “a temporary endeavor undertaken to create a unique product, service, or result. The temporary nature of projects indicates that a project has a definite beginning and end. The end is reached when the project’s objectives have been achieved or when the project is terminated because its objectives will not or cannot be met, or when the need for the project no longer exists.” (Project Management Institute, 2013, p.3)

In construction projects we find this definition to be increasingly accurate s no two buildings are exactly alike. In-fact recently many architects have been compared to renaissance artists such as Michelangelo and Da Vinci based on their works of art that are building structures.

2.2.2 Project management

According to the PMBOK Guide® to Project Management is the “application of knowledge, skills, tools, and techniques to project activities to meet the project requirements” and realized through meticulous application and incorporation of “47 logically grouped project management processes, which are categorized into five Process Groups.” (Project Management Institute, 2013, p, 5).

Within every sector, specifically construction, the discipline of project management is integral to success. According to PMI, “ninety percent of global senior executives ranked project management methods as either critical or somewhat important to their ability to deliver successful projects and remain competitive” (Project Management Institute, 2010, p. 2).

Project Management Methodology focuses on the Processes that a project goes through namely initiation, planning, executing, monitoring and controlling, and closing. All projects from the least to the most complex can be broken down into smaller more manageable work packages which, when initiated and implemented can be easily

monitored and controlled to obtained the desired results within the constraints of Scope, Quality, Schedule, Budget, Resources, and Risks. With this in mind, building and in particular the one mentioned in this document may be constructed within the “triple constraints” of time, cost and quality.

2.2.3 Project life cycle

No matter what project it is that you’re preparing for, the project management life cycle can assist you and your team in narrowing the project's focus, keeping its objectives in order and finishing the project on time, on budget and with a minimum of headaches.

Every project management life cycle contains five steps: Initiation, Planning, Execution, Monitoring/Control and Closure. No one step is more important than the other and each step plays a crucial role in getting your project off the ground, through the race, down the stretch and across the finish line.

At the initiation phase a project charter is created and used as basis to authorize the project. It is in this phase as well that a project manager is assigned who in-turn will select a project team with the skillsets needed to successfully execute the project.

Next the all-important second step of any successful project management life cycle is planning and should include a detailed breakdown and assignment of each task of your project from beginning to end. The Planning Phase will also include a risk assessment in addition to defining the criteria needed for the successful completion of each task. In short, the working process is defined, stake holders are identified and reporting frequency and channels explained.

Following is the Execution and Control phases, here the planned solution is implemented to solve the problem specified in the project's requirements. For us the hangar project will be executed using the solutions specified and monitored to ensure minimum deviations from scope to ensure the project is efficiently and feasibly executed.

Finally, the project will move into the closing phase where formal project termination is done once all requirements are met for particular deliverables.

Figure 2 Interaction of Process Groups at different Phases (source: http://www.free-management-ebooks.com/faqpm/principles-08.htm

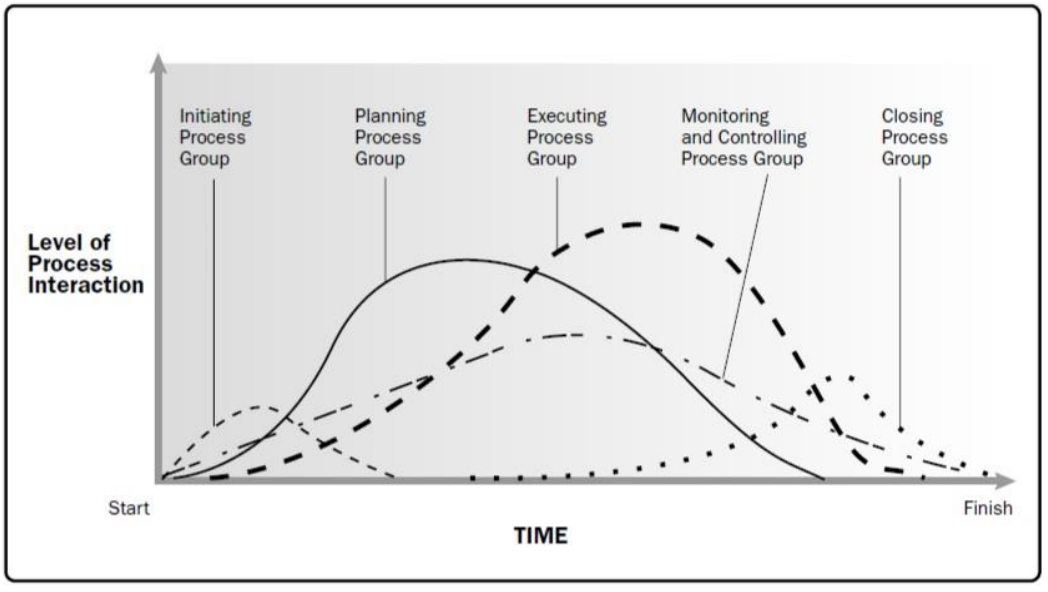

Figure 3 Process groups interact in a Phase or Project. (source: PMI, 2013)

2.2.4 Project management processes

For this Project of renovating the airport hangar at the NMIA, only the processes involved in initiating and planning a project will be used to develop the Project

management plan. It will be a compilation of subsidiary documents created as a result of each initiating and planning process activity. A subsidiary document as defined in PMBOK Guide® to Project Management is a document created to support the main document.

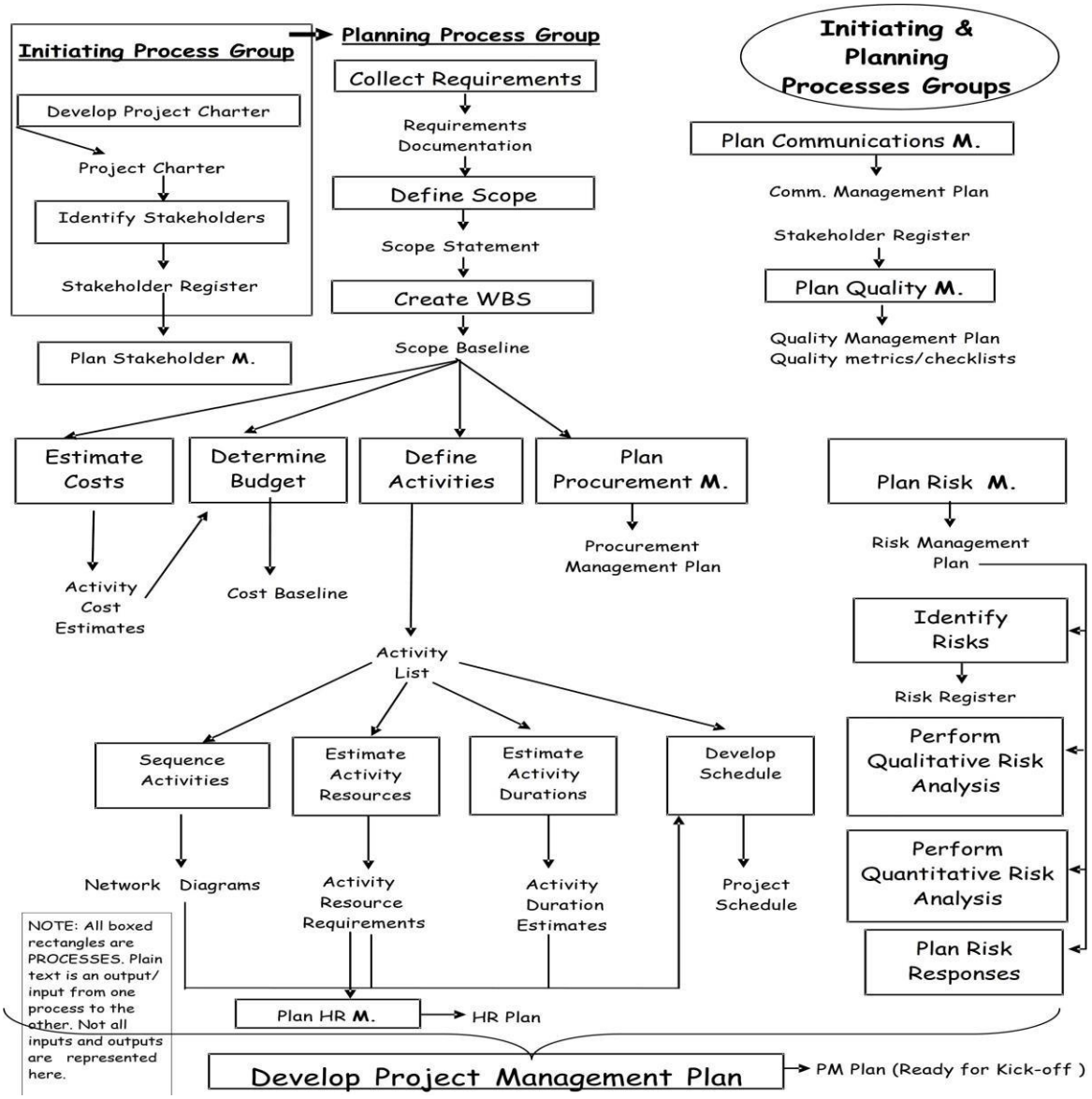

Figure 4 Initiating and Planning Processes. Reprinted from *A Guide to the Project Management Body of Knowledge* (p. 51), Project Management Institute, 2013, Project Management Institute. Copyright 2013 by Project Management Institute, Inc.

2.2.5 Project management knowledge areas

Figure 5 Project Management Knowledge Areas (PMBOK GUIDE® Guide Fifth Edition, 2013)

The PMBOK GUIDE® guide Fifth Edition highlights ten knowledge areas used on projects. The guide asserts that each knowledge area represents a complete set of concepts, terms and activities that make up a professional field, project management field or area of specialization (PMBOK GUIDE® guide Fifth Edition, 2013).

The knowledge areas of project management (Project Management Institute, 2016), that are relevant to this project management plan for a hangar renovation, are as follows:

1. Integration management
2. Scope management
3. Time management
4. Cost management
5. Quality management
6. Human Resources management

7. Communication management
8. Risk management
9. Procurement management
10. Stakeholder management

The study will begin with a project charter to commence the activity of ***project integration management*** for the airport hangar project. Next a ***scope management plan*** will be created to ensure that all work deliverables are identified and broken down into proper work packages that can be executed and monitored throughout the project.

Next will be an attempt to create a ***time management plan*** to ensure that the project is completed on time; to develop a ***cost management plan*** to make sure the project is within budget; to design a ***quality management plan*** to make certain that all resources needed to complete the project successfully are available. We will try to ensure that the proper skillsets are acquired to ensure the project is executed adequately, by developing and managing the project team in the ***Human Resources Management Plan***.

We will also try to create a ***communications management plan*** to ensure that the system of communications and the project performance are documented properly; to develop a ***risk management plan*** that details the process to be employed on the project in order to manage risk; to create a ***procurement management plan*** that documents with whom and how the project will purchase resources or outsource tasks that are critical; to construct a ***stakeholder management plan*** that documents the interaction between stakeholders and processes used to manage issues identified on the project.

METHODOLOGICAL FRAMEWORK

3.1 Information sources

Academic projects often require the use of information sources in order to define, illustrate, compare, support or apply ideas. This is also true of many lines of work in today's information economy. Hence a familiarity with information sources is essential for competent performance in a variety of careers.

Information can come from virtually anywhere: personal experiences, books, articles, expert opinions, encyclopedias, the Web. The type of information needed will change depending on its application.

Individuals generate information on a daily basis as they go about their work. In academic institutions, staff and students consult various sources of information. The choice of the source to consulted is usually determined by the type of information sought. The three types of information sources are:

- Primary
- Secondary
- Tertiary

3.1.1 Primary sources

Primary sources are original materials on which other research studies are based. According to Healey Library at UMass Boston (2017), primary sources are “immediate, first-hand accounts of a topic, from people who had a direct connection with it. Primary sources can include:

- Texts of laws and other original documents.
- Newspaper reports, by reporters who witnessed an event or who quote people who did.
- Speeches, diaries, letters and interviews - what the people involved said or wrote.
- Original research.

- Datasets, survey data, such as census or economic statistics.
- Photographs, video, or audio that capture an event.

3.1.2 Secondary sources

According to Healey Library at UMass Boston (2017), secondary sources are “one step removed from primary sources, though they often quote or otherwise use primary sources. They can cover the same topic, but add a layer of interpretation and analysis. Secondary sources can include:

- Most books about a topic.
- Analysis or interpretation of data.
- Scholarly or other articles about a topic, especially by people not directly involved.
- Documentaries (though they often include photos or video portions that can be considered primary sources).

Chart 1. 1 Information sources

Objectives	Information sources	
	Primary	**Secondary**
1. To create a project charter that formally authorizes the project and provide the project manager with the authority to apply organizational resources to the project in order to produce the project management plan.	Meeting minutes, personal interview with lead project manager (expert)	***PMBOK GUIDE®® Guide and PMI database***

2. To create a scope management plan to ensures that all works required are included to successfully complete the project.	Meeting minutes and personal interview with lead project manager (expert)	***PMBOK GUIDE®® Guide*, PMI database, and the Internet**
3. To create a schedule management plan to support the development and management of a project schedule that ensures the project is completed within the time constraints.	Personal interview with lead project manager (expert)	***PMBOK GUIDE®® Guide*, and the Internet**
4. To create a cost management plan to define the processes for developing and managing the project budget that ensures the project is completed within the budget constraints.	Personal interview with lead project manager (expert) and meeting	***PMBOK GUIDE®® Guide*, and PMI database**
5. To develop a quality management plan to identify the quality requirements for the project to ensure the results meet expectations for approval within the time, cost and scope constraints.	Personal interview with lead project manager (expert)	***PMBOK Guide®***
6. To create a human resource management plan to ensure that all human resources are identified and managed effectively to complete the project within time, cost and scope constraints.	Personal interview with lead project manager (expert)	***PMBOK GUIDE®® Guide* and the internet**

7. To develop a communication management plan to ensure the timely and effective communication of the project status and other key information.	Personal interview with lead project manager (expert)	***PMBOK GUIDE®*** **and PMI *Guide*** **database**
8. To create a risk management plan to identify and examine risks to the successful completion of the project and develop plans to minimize the likelihood of the risks.	Personal interview with lead project manager (expert)	***PMBOK GUIDE®*** **and PMI *Guide*** **database**
9. To develop a procurement management plan to be used to obtain products, services or results required by the project.	**Purchasing institutions, personal interviews with lead project manager (expert)**	***PMBOK Guide®***
10. To develop a stakeholder management plan to identify and support all the project stakeholders to ensure effective stakeholder engagement.	**Interviews with lead project manager (expert)**	***PMBOK Guide®*** **and textbook**

3.2 Research methods

Research methods are the techniques you use to do research. They represent the tools of the trade, and provide you with ways to collect, sort and analyse information so that you can come to some conclusions.

Walliman (2012) says that “Research Methods are the tools and techniques for doing research.” He continues to say that: “Research methods are a range of tools that are used for different types of enquiry, just as a variety of tools are used for doing different practical jobs, for example, a pick for breaking up the ground or a rake for clearing leaves. In all cases, it is necessary to know what the correct tools are for doing the job, and how to use them to best effect.

3.2.1 Analytical Method

The research method selected for use in this project is the analytical research method. In Analytical Research, the researcher has to use facts or information already available and analyze them to make a critical evaluation of the material. With this research method, information from multiple sources will be examined and used to develop the deliverables found in Chart 5.

Chart 1. 2 Research methods (Source: S. Heron, The Author, December 2017)

Objectives	Analytical Research Method
To create a project charter that formally authorizes the project and provide the project manager with the authority to apply organizational resources to the project in order to produce the project management plan.	To create the project charter as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
To create a scope management plan to ensures that all works required are included to successfully complete the project.	To create the scope management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
3. To create a schedule management plan to support the development and management of a project schedule that ensures the project is completed within the time constraints.	To create the Schedule management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
4. To create a cost management plan to define the processes for developing and managing the project budget that ensures the project is completed within the budget constraints.	To create the cost management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
5. To develop a quality management plan to identify the quality requirements for the project to ensure the results meet expectations for approval within the time, cost and scope constraints.	To create the quality management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
6. To create a human resource management plan to ensure that all human resources are identified and managed effectively to complete the project within time, cost and scope constraints.	To create the human resource management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
7. To develop a communication management plan to ensure the timely and effective communication of the project status and other key information.	To create the communication management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
8. To create a risk management plan to identify and examine risks to the successful completion of the project and develop plans to minimize the likelihood of the risks.	To create the risk management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
9. To develop a procurement management plan to be used to obtain products, services or results required by the project.	To create the procurement management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.
10. To develop a stakeholder management plan to identify and support all the project stakeholders to ensure effective stakeholder engagement.	To create the stakeholder management plan as defined in the objective section in Chart 1 above; the analytical method will be used by assessing facts or information from various sources also identified in Chart 1.

3.3 Tools

The PMBOK Guide® (2013) defines tools as “something tangible, such as a template or software program, used in performing an activity to produce a product or result.

a) Project charter template - guides the development of the project charter.
b) Scope Management Plan template - guides the development of the scope management plan and all of its subcomponents.
c) Project Management Plan template - guides the development and organization of the project management plan and all its subcomponents.
d) Schedule Management Plan template - guides the development of the project management plan and all its subcomponents.
e) Cost Management Plan template – develops the cost management plan that will guide the project team during the project’s lifecycle.
f) Quality Management Plan template – outlines the development of the Quality Management Plan.
g) Human Resource Management Plan template – guides the planning of human resource management.
h) Communications Management Plan template – guides the development of the communications management plan.
i) Risk Management Plan and Risk Register template – developed in Microsoft Excel 2017, identifies and classifies risks, and plans risk responses.
j) Procurement Management Plan template – aids in identification of contracts and purchasing decisions.
k) Stakeholder Management Plan template – aids in identification and classification of stakeholders, and plans stakeholder management.

Chart 1. 3 Tools

Objectives	Tools
1. To create a project charter that formally authorizes the project and provide the project manager with the authority to apply organizational resources to the project in order to produce the project management plan.	• Project Charter template and Project Management Plan template
2. To create a scope management plan to ensures that all works required are included to successfully complete the project.	• Requirements traceability matrix template • Microsoft Vision Professional 2017 • Requirements Documentation template • Requirements Management Plan template • Work Breakdown Structure generator • Scope Management Plan template
3. To create a schedule management plan to support the development and management of a project schedule that ensures the project is completed within the time constraints.	• Schedule Management Plan template • Microsoft Project 2017 • Microsoft Visio Professional 2017 • Activity List template
4. To create a cost management plan to define the processes for developing and managing the project budget that ensures the project is completed within the budget	• Cost Management Plan template • Microsoft Excel 2017 • Project Budgeting template • Cost Baseline template

constraints.	
5. To develop a quality management plan to identify the quality requirements for the project to ensure the results meet expectations for approval within the time, cost and scope constraints.	• Quality Management Plan template • Quality Management tools (Checksheets)
6. To create a human resource management plan to ensure that all human resources are identified and managed effectively to complete the project within time, cost and scope constraints.	• Human Resource Management template • Responsibility Assignment Matrix
7. To develop a communication management plan to ensure the timely and effective communication of the project status and other key information.	• Communications Management Plan template • Communications Matrix
8. To create a risk management plan to identify and examine risks to the successful completion of the project and develop plans to minimize the likelihood of the risks.	• Risk Management Plan template • Risk Register template
9. To develop a procurement management plan to be used to obtain products, services or results required by the project.	• Procurement Management Plan template
10. To develop a stakeholder management plan to identify and support all the project stakeholders to	• Stakeholder Management Plan template • Stakeholder Analysis Chart

ensure effective stakeholder engagement.	• Microsoft Excel 2017 • Stakeholder Register template • Stakeholder Engagement Assessment Matrix • Mindtools Online Stakeholder Power/Interest Grid Creator

3.4 Assumptions and constraints

Everyone makes assumptions and are bound by constraints. These are an important part of life whether we realize it or not. We always deal with them in our daily life. According to PM Study Circle (2016), “An assumption is a belief of what you assume to be true in the future. You make assumptions based on your knowledge, experience or the information available on hand. These are anticipated events or circumstances that are expected to occur during your project’s life cycle”.

They also define constraints as, “limitations imposed on the project, such as the limitation of cost, schedule, or resources, and you have to work within the boundaries restricted by these constraints. All projects have constraints, which are defined and identified at the beginning of the project.

The PMBOK GUIDE® Guide recognizes six project constraints: scope, quality, schedule, budget, resource, and risk. Out of these six, scope, schedule, and budget are collectively known as the triple constraints.

Chart 1. 4 Assumptions and constraints

Objectives	Assumptions	Constraints
1. To create a project charter that formally authorizes the project and provide the project manager with the authority to apply organizational resources to the project in order to produce the project management plan.	The charter will be the first document completed and will be, created before all other subsidiary documents.	There are limited days allocated to create the project charter. Also, stakeholder identification is scheduled to occur at the same time as the development of the project charter.
2. To create a scope management plan to ensures that all works required are included to successfully complete the project.	All information needed to create the scope have been shared. There will be limited changes to the work required	Scope may change as project progresses.
3. To create a schedule management plan to support the development and management of a project schedule that ensures the project is completed within the time constraints.	The time allocated is sufficient to complete the hangar project	The client has set a cap of 18 months to complete the hangar project
4. To create a cost management plan to define the processes for developing and managing the project budget that ensures the project is completed within the budget constraints.	All financial resources will be identified and depicted in the budget	Scope shifts may end up in increased budgetary needs
5. To develop a quality management plan to identify the quality requirements for the project to ensure the results meet expectations for approval within the time, cost and scope constraints.	All of the quality requirements of the project will be identified in the quality management plan	The airport hangar must meet size, lighting and space requirements requisite with growing FAA regulations. As airplanes grow in size, it will be important to forecast this growth when doing the hangar
6. To create a human resource management plan to ensure that all human resources are	Sufficient talent, knowledge and people	The budget will only allow for the wage

identified and managed effectively to complete the project within time, cost and scope constraints.	are available to complete the project	needs of the human resources identified at the start of the project
7. To develop a communication management plan to ensure the timely and effective communication of the project status and other key information.	Technology is sufficient to fill the communication needs of the project	The energy needs will require constant electrical power
8. To create a risk management plan to identify and examine risks to the successful completion of the project and develop plans to minimize the likelihood of the risks.	Most if not all project risks will be identified	The planning phase is critical time to identify main risks.
9. To develop a procurement management plan to be used to obtain products, services or results required by the project.	Suppliers locally are capable of filling the requirements from procurement	Schedule delays from international suppliers. Jamaica's procurement policy requires atleast three company bids for procurement tenders.
10. To develop a stakeholder management plan to identify and support all the project stakeholders to ensure effective stakeholder engagement.	All stakeholders will be identified with an adequate management plan	Stakeholder management is critical and information required to plan for them needs to be complete

3.5 Deliverables

The (Project Management Institute, 2013) defines 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".

Chart 1. 5 Deliverables (Source: S. Heron, The Author, December 2017)

Objectives	Deliverables
1. **To create a project charter that formally authorizes the project and provide the project manager with the authority to apply organizational resources to the project in order to produce the project management plan.**	Project Charter
2. **To create a scope management plan to ensures that all works required are included to successfully complete the project.**	Scope Management Plan
3. **To create a schedule management plan to support the development and management of a project schedule that ensures the project is completed within the time constraints.**	Schedule Management Plan
4. **To create a cost management plan to define the processes for developing and managing the project budget that ensures the project is completed within the budget constraints.**	Cost Management Plan
5. **To develop a quality management plan to identify the quality requirements for the project to ensure the results meet expectations for approval within the time, cost and scope constraints.**	Quality Management Plan
6. **To create a human resource management plan to ensure that all human resources are identified and managed effectively to complete the project within time, cost and scope constraints.**	Human Resource Management Plan

Objectives	Deliverables
7. **To develop a communication management plan to ensure the timely and effective communication of the project status and other key information.**	Communication Management Plan
8. **To create a risk management plan to identify and examine risks to the successful completion of the project and develop plans to minimize the likelihood of the risks.**	Risk Management Plan
9. **To develop a procurement management plan to be used to obtain products, services or results required by the project.**	Procurement Management Plan
10. **To develop a stakeholder management plan to identify and support all the project stakeholders to ensure effective stakeholder engagement.**	Stakeholder Management Plan

RESULTS

For this project a total of ten project management guided documents were created using online templates and have been developed to obtain standardization of the NMIA Hangar Renovation project. These plans support the creation of project information in a structured manner and serve to guide the project team on practices to execute the project, in accordance with generally recognized good practices of the PMBOK® Guide.

The plans can easily be utilized by project teams for projects similar to this one and can be found in the Appendix section of this document.

4.1. Project Integration Management

The first process in the NMIA airport hangar project was the creation of a project charter and was also the first process in the Project Integration Management knowledge area. To complete this activity, reference was made to meeting minutes, interviews and the PMBOK GUIDE® as primary sources to be used as the foundation for the charter.

A template from the PMI database was used as a tool to develop the Project Charter that formally authorized the project and provided the Project Manager with the authority to apply organizational resources to the project to produce the Project Management Plan.

The development of the Project Management Plan will be the second process in the Project Integration Management Knowledge area comprised of the subsidiary plans developed during the Final Graduation Project; Scope Management, Time Management, Cost Management, Human Resource Management, Quality Management, Communications Management, Stakeholder Management, Risk Management and Procurement Management. Online templates were used to guide the compilation of each subsidiary plan and the project management plan as a whole.

It was identified early on that the team at NMIAL did not have a standard project management approach that could be referred to in the Hangar Renovation Project. As a matter of fact, the lack of a project management office (PMO), and informal historic approach to projects was key in influencing the importance of formalizing the project management approach with a Project Management Plan for the Hangar project. It is believed that this plan will be a useful benchmark guide for future projects undertaken by the entity.

The project initiation was done through the development of a Project Charter; to view it please (see Appendix 4).

4.2. Project Scope Management

The Guide to the Project Management Body of Knowledge PMBOK Guide® defines Project Scope as the “The work that needs to be accomplished to deliver a product, service, or result with the specified features and functions” (Project Management Institute, 2013).

Good scope management ensures that all the work required, and only the work required to complete the project, is included in the project. To define the scope of the project it was imperative to produce a concise scope management plan, which was done through the modification of a template taken from the internet, seen in figure 7 below.

The planning of the project scope management was the first of the planning process group initiatives to happen and was done just after the stakeholder management plan was completed. The Scope Management Plan included: The Work Breakdown Structure (WBS), WBS dictionary, project scope statement, scope definition, scope verification and scope control measures, as outlined in the PMBOK GUIDE® Fifth edition.

Although these processes were identified as occurring after the second process group in scope management, they were conducted concurrently with the development of the Scope Management Plan as the inputs required were developed.

To create the plan, as detailed in the PMBOK GUIDE® 5th edition, the Project Charter was used as an input, as well as a review of meeting notes that highlights an interview with the project sponsor.

Following the planning of scope management, the requirements were collected as the final planning process for project scope management. As detailed in the PMBOK® Guide 5th edition, the Requirements Management Plan, Scope Management Plan, Stakeholder Management Plan, Project Charter and Stakeholder Register were used as inputs to this process.

In addition to analyzing project documents to produce the Requirements documentation (see Appendix 6), the Requirements traceability matrix was also generated (see Appendix 7).

4.3. Project Time Management

“Time is your most valuable resource, if you’re not planning it, you’re wasting it”, (Unknown). The Time Management Plan is an integral part of the project as it is a constant reminder of the realities of a resource of which we can never get back; time.

It is the component of the project roadmap that explains how the hangar project activities were planned and coordinated. In planning the project schedule, activities were established, managed, monitored and controlled within the preapproved project timeline. It can be seen at (see Appendix 7).

The processes involved include:

- Plan schedule management – involves establishing policies, procedures and documentation for planning, developing, managing and executing the project schedule (PMBOK GUIDE® guide Fifth Edition, 2013).
- Define activities – defining the specific activities that need to be performed in order to complete the project is critical to its success. The activities are defined based on the schedule developed in the WBS.
- Sequence activities – this process is used to determine the order that each of the activities needs to be completed in. At this stage, the relationships between activities are identified and documented.
- Estimate activity resources – in this process, the type and quantities of material, people, equipment, and/or supplies required to perform each activity are estimated.
- Estimate activity duration - process to estimate how long it will take to complete each activity.
- Develop schedule – following the estimation of activity duration, the schedule is developed listing start and finish dates for each activity.
- Control schedule – the process of monitoring the status of project activities to manage changes to the project baseline and update project progress.

The Project Charter and the Scope Management Plan were used as inputs to this process to gather information regarding the Scope Baseline and the summary milestone schedule. The tools and techniques used were expert judgement, analytical techniques, and meetings in order to create the Schedule Management Plan in appendix item 6.

Following the creation of the Schedule Management Plan, the next process step was to create an activity list. The inputs of which came from Schedule and Scope Management Plans containing the Scope Baseline comprised of the WBS, project deliverables, constraints and assumptions.

Of the techniques identified in the PMBOK GUIDE®, decomposition and expert judgement were the ones used during this process. The tool used to capture the information for this and the remaining processes required to develop the schedule was Microsoft Office Project 2016, identified as a scheduling software in the PMBOK Guide®.

According to PMI, an activity list is a comprehensive list with an activity identifier and scope of work description of the schedule activities required to complete each work package (PMI, 2013, p. 152). The activity list as seen below in figure 9, has been compiled from information located in the schedule.

Activity ID	Element Name	Description of Work	Responsibility
1.1	Design Phase	Commence conceptualization	Architect, Assistant Project Manager, Project Manager
1.1.1	Architectural Design	Graphical Visualization of project	Architect, Project Manager
1.1.2	Permits and Approvals	The process of making an application for the following permits: • KSAC • NEPA • Ministry of Works	Assistant Project Manager, Draftsman
1.1.3	Mobilization	Process of preparing the project site for works to begin	Assistant Project Manager, Field Superintendent, Project Manager, Site Foreman
1.1.4	Drawings	The preparation of a set of graphical documents that instructs the contractors how the refurbished building should look	Architect, Draftsman
1.2	Renovation Phase	Phase where project execution occurs	Assistant Project Manager, Project Manager
1.2.1	Demolition	The hangar will be torn down and checked for structural imperfections that may need fixing. Windows, doors and roof will be removed.	Field Superintendent, Masonry workers, Site Foreman

Activity ID	Element Name	Description of Work	Responsibility
1.2.2	Masonry	Cement work to bolster any structural imperfections	Field Superintendent, Masonry workers, Site Foreman
1.2.3	Electrical Work	Works related to ensuring there is electrical power to building and installing the necessary equipment (including generator)	Electricians
1.2.4	Plumbing & Sewage	Installation of all waste and supply lines, water closets and lavatory	Plumbing Subcontractor
1.2.5	Painting	Entire building will be painted inside and out	Painting Subcontractor
1.2.6	Windows and Doors	Hangar will have a new bay door where planes will enter and exit. ALL other windows and doors will be changed to hurricane proof grade.	Windows and Doors Subcontractor
1.2.7	Furnishings	The placement of furnishings, and finishing's (walls, floors and ceilings) and other interior components required for maximum use of the building	Assistant Project Manager, Interior Designer
1.2.8	Safety & Security	Hangar technology will be upgraded to include state-of-the-art safety & security tools	Assistant Project Manager, Project Manager, Subcontractor, Owner
1.3	Post Renovation	Phase that occurs after substantial completion	Assistant Project Manager, Project Manager
1.3.1	Building Inspection	Ensure hangar is structurally sound and within parameters set out in design phase	Assistant Project Manager, Project Manager, Sponsor rep
1.3.2	Equipment Installation	Air compressor, Power supply and other tools to be used by renters	Project Manager, Equipment Subcontractor
1.3.3	Equipment Testing	Testing hangar equipment	Assistant Project Manager, Project Manager, Subcontractor, Owner
1.4	Project Management	The management of the planning, execution, monitoring & controlling and closure of the project	Assistant Project Manager, Project Manager
1.4.1	Planning	Planning and updating project activities throughout project lifecycle	Assistant Project Manager, Project Manager
1.4.2	Scheduling	Planning of project activities,	Assistant Project Manager,

Activity ID	Element Name	Description of Work	Responsibility
		assigning timeline and dates to determine and control project duration	Project Manager
1.4.3	Accounting	Monitoring the financial expenditures of the project throughout the project lifecycle	Accountant
1.4.4	Reporting	Documenting project activities, preparing reports and presenting to the appropriate stakeholders	Accountant, Assistant Project Manager, Field Superintendent, Project Manager
1.4.5	Meetings	All meetings held to control the management of the project	Assistant Project Manager, Project Manager
1.4.6	Site Management	Management of the day-to-day on site running of a construction project	Field Superintendent

Figure 6 Hangar Project Activity List. Adapted from Project Management Docs. Retrieved March 25, 2018 from http://www.projectmanagementdocs.com/template/Activity-List.doc

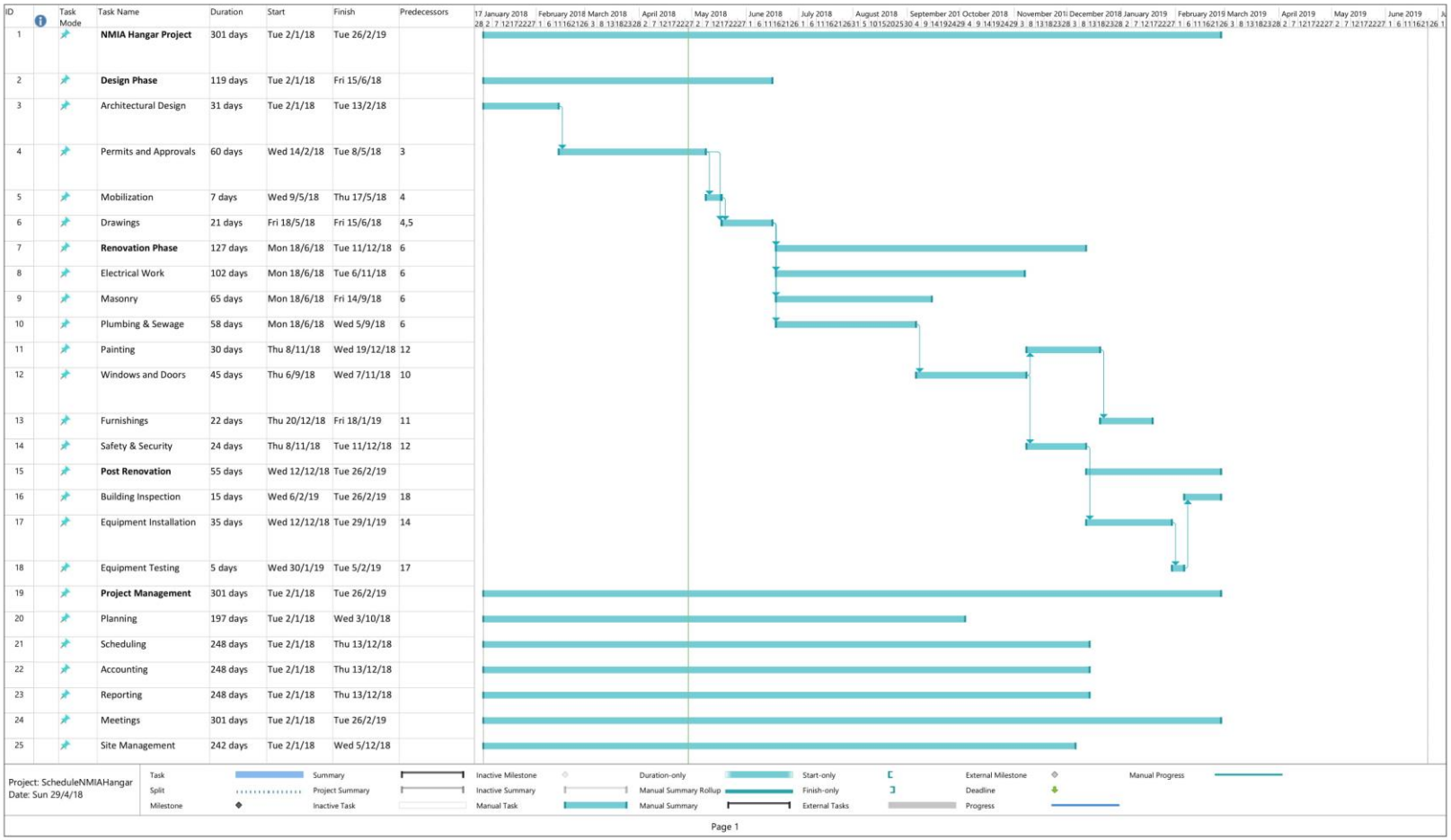

Figure 7 Hangar Project Gantt Chart. (Created in Microsoft Project 2016, March 2018)

4.4. Project Cost Management

Cost management is concerned with the process of planning and controlling the budget of a project or business. It includes activities such as planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget. Cost management covers the full life cycle of a project from the initial planning phase towards measuring the actual cost performance and project completion.

Plan cost management is the process that establishes the policies, procedures and documentation for managing and controlling project costs (PMBOK GUIDE® Fifth Edition, 2013). Planned cost is calculated during the planning phase of a project and is approved before the scheduled tasks commence. The tools and techniques used to develop the Cost Management Plan were expert judgement, analytical techniques, and meetings.

Once the project is completed, planned costs vs. actual costs are compared to determine if the project was within budget and to provide a benchmark for future cost management plans and project budgets.

For this project it was imperative to create a Cost Management Plan (see Appendix 9), as well a Project Requirements Funding Matrix (see Appendix 10) and finally a Project S Curve (see Appendix 11) for the project.

4.5. Project Human Resource Management

Immediately following the Communications Plan came the production of the Human Resource Management Plan which is shared below in figure 12. Given the access to local experts; expert judgement and personal interviews were the tools and techniques used to identify the human resources required, the roles and skills of each member; as well as how they will be managed throughout the duration of the project.

The human resources management plan is a tool which will aid in the management of this project's human resource activities throughout the project until closure. The human resources management plan includes: Roles and responsibilities of team members throughout the lifespan of the Hangar Renovation project of the NMIAL, Jamaica.

For the Human Resource Management Plan (see Appendix 12), a comparison of Roles and Responsibilities including competence and authority was done in a RACI matrix.

4.6. Project Quality Management

The PMBOK GUIDE® asserts that, “project quality management includes the processes and activities of the performing organization that determine quality policies (PMBOK GUIDE® Fifth Edition, 2013).

The Quality Management Plan defines the acceptable level of quality, which is typically defined by the customer, and describes how the project will ensure this level of quality in its deliverables and work processes.

The Quality Management Plan (see Appendix 13) was created after the Procurement Management Plan, to adequately plan and ensure that quality was built into the project’s processes and the product. Plan Quality Management is the only Quality Management process used during project planning.

4.7. Project Communications Management

The PMBOK GUIDE® Fifth Edition describes Project Communication Management (see Appendix 14) as “the processes required to ensure timely and appropriate planning, creation, distribution, storage, retrieval, management, control, monitoring and the ultimate disposition of project information” (PMBOK GUIDE® Fifth Edition, 2013).

The Communication plan for this project serves as a guide for information sharing and exchange throughout the life of the project and will be updated as communication needs change. The plan identifies and defines the roles of persons involved in this project as well it details how each stakeholder would receive information from members of the project team, the frequency of communication, the information that would be communicated to them and the person responsible for ensuring that the correct information was received by the communication sent (Project Management Institute, 2013, p. 289). The Matrix will be used as the guide for what information to communicate, who is to do the communicating, when to communicate it and to whom to communicate.

4.8. Project Stakeholder Management

Stakeholder management is an important aspect of any project. Most projects we work on will involve multiple shareholders, and each one potentially has the ability to speed up, slow down or completely obstruct the progress of the project. Stakeholders may not be in the driver's seat, but they can be extremely useful advocates, sponsors and agents of change.

According to the PMBOK GUIDE®, Project Stakeholder Management includes "the processes required to identify the people, groups or organizations that could impact or be impacted by the project, to analyze their expectations, impact on the project and to develop the appropriate management strategies for effectively engaging them in decisions and execution of project tasks" (PMBOK GUIDE® Fifth Edition, 2013).

In this NMIA Hangar project 2018, the Stakeholder Management Plan (see Appendix 15) was initiated as the final process of the initiation process group of activities; and included an interest vs power matrix. The tools and inputs used to be those taken from the PMBOK GUIDE® which include: Project charter, procurement documents, enterprise environmental factors, organizational process assets as well as; stakeholder analysis, expert judgement and meetings.

4.9. Project Risk Management

According to the 5th Edition of the PMBOK GUIDE®, project risk is “an uncertain event or condition that if it occurs has a positive or negative effect on one or more project objectives such as scope schedule cost or objectives such as scope, schedule, cost, or quality.”

All risks have a probability of occurrence and may present opportunities or negative impacts with varying degrees of severity. The degree of severity is determined mathematically as follows: severity = probability x impact.

To plan risk management, in accordance with Project Risk Management described in the PMBOK Guide®, the previously developed subsidiary plans, including the Project Charter and Stakeholder register, were used as inputs to the process. As well the tools and techniques used were analytical techniques, expert judgement, and meetings.

In addition, a 3x3 probability and impact matrix was employed to prioritize each risk for planning risk responses. Based on the probability of each risk occurring and its possible impact on the project, a black circle is placed in the expected risk position. The red zone represents high risks, the yellow zone moderate risks and the green zone low risks.

To view the Risk Management Plan please (see Appendix 16) also the Risk Probability and Impact matrix is available (see Appendix 17).

4.10. Project Procurement Management

As one of the knowledge areas of project management, project procurement is critical during planning and throughout the project timeline. This knowledge area supports the operation which entails the processes necessary to acquire essentials for the project, through the purchase or acquisition of: products, services, and results – outside of the

immediate project team. Although there have been projects that had success despite not investing significantly in procurement management, industry experts advise that project management offices spare no investment in this critical process.

It is with this recommendation in mind, the creation of this procurement document was authorized. The methodology used for this document was sourced from the Project Management Book of Knowledge (5th) Edition. The project procurement processes identified were: Plan Procurement Management, Conduct Procurements, Control Procurements, and Close Procurements.

Overall this document presents the description of the project, and how it is linked to project procurement. With this procurement document, all stakeholders will be more knowledgeable about procurement management – with respect to this project of the NMIA Hangar.

CONCLUSIONS

This particular Project Management Plan was created using the analytical research method and the fifth edition of the PMBOK Guide®, to be used as a developmental tool for the NMIA Hangar Project Management team. From the development of this FGP, I have realized the crucial need for a project management plan in the execution of this NMIA Hangar Renovation project, and projects in the future. The plan has assisted in streamlining the expectations of the project team and has set realistic cost, schedule and scope for a project such as this one.

1. The Project Charter is a project initiation document that's developed before a project ever begins. It serves two primary purposes: 1) it provides a high-level definition of the project requirements and 2) it formally authorizes the existence of the project. Among other items, the project charter will describe the project scope, deliverables, schedule, budget, resource requirements, risks, constraints and completion criteria. In this project of the Hangar Renovation was created as deliverable number one, using an online template as guide.
2. As deliverable number two, Project Scope Management refers to the set of processes that ensure a project's scope is accurately defined and mapped. Scope Management techniques enable project managers and supervisors to allocate just the right amount of work necessary to successfully complete a project—concerned primarily with controlling what is and what is not part of the project's scope. The scope management plan describes the project scope and documents how it will be further defined, validated, and controlled. It was created using an online template as guide.
3. The Schedule Management Plan, the output from specific objective number three, was created in order to adequately identify and orchestrate each project activity to ensure the project's completion within the time constraints.
4. To create the Cost Management Plan, the output from specific objective number four, a template in Microsoft Excel was used to adequately develop the project budget, and an online template was used to capture the Cost Management Plan

a vital step in Project Cost Management. It contains information like planning the project cost, managing and controlling the project in relation to the cost baseline, and managing cost variances.

5. Deliverable or objective number six was addressed with the creation of a Human Resource Management Plan. Plan Human Resource Management is the process of identifying and documenting project roles, responsibilities, required skills, reporting relationships, and creating a staffing management plan. This process is part of the Planning Process Group. In addition to that, finalizing the project hierarchy of who reports to whom and designing the staffing management plan is also part of this process.
6. Three broad activities are done as part of quality management. They are quality planning, quality assurance, and quality control. The output from specific objective number five was to develop the Quality Management Plan, an online template was used to guide this.
7. Deliverable number seven was solved with the delivery of a Project Communications plan which was created using an online template. The information and communication need of the stakeholders were taken into consideration in the Plan Communication process. A clear and concise communication requires handling communications in a structured way and choose the best type of communication for the situation.
8. The stakeholder management plan was also created using an online template which outlined how stakeholders will be engaged in the project.
9. Using an online template, a risk management plan was prepared to forecast risks, estimate impacts, and define responses to issues.
10. The next deliverable was the procurement management plan which was also created from an online template. The document is very detailed and among other things describes how items will be procured during the project and the approach that will be used to managing vendors on the project.
11. The limitation of human resources meant that an individual would create the project management plan and its subsidiary plans using templates,

spreadsheets, tables and charts, conducting meetings with the key contact persons, and reviewing meeting minutes and other project documents.

RECOMMENDATIONS

Having completed the exercise, the student makes the following recommendations to the NMIA and key stakeholders of the NMIA Hangar renovation project. The following recommendations are related to the above captioned Project Management Plan and are meant to further augment the current project objectives.

1. The probability of project success is markedly improved with the use of PMBOK GUIDE® strategies for project management; as such the first recommendation for the NMIAL is to increase company knowledge on PMBOK GUIDE® concepts.
2. Trainings catered towards professionalizing NMIA are recommended as this will promote common project management practices and familiarize the department with terminology used in the PMBOK® Guide. The training as well as training need is included in the implementation plan.
3. For future building projects, NMIAL would benefit from creating standard project management documents to manage the initiation and planning phases.
4. A project management team is a great asset for any institution, the NMIAL should create and keep certified its own project management team.
5. NMIAL should implement a strenuous document management system.
6. NMIAL board and executive should consider the use of the planning process and templates created during the development of the Project Management Plan for the Renovation of the hangar project, as a basis for implementing a methodology to be used by the company for future projects of similar relevance.
7. The development of complementary training modules for NMIA staff (in the efficient use of project management tools, techniques and material).
8. The NMIA should do more to highlight the benefits the project will yield to all stakeholders to generate interest.

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APPENDICES

APPENDIX 1: FGP CHARTER

PROJECT CHARTER **Formalizes the project start and confers the project manager with the authority to assign company resources to the project activities. Benefits: it provides a clear start and well defined project boundaries.**	
Date	**Project Name:**
Issue date: November 13, 2017	Project Management Plan for renovation of a Hangar at the Norman Manley International Airport (NMIA)
Knowledge Areas / Processes	**Applicacion Area (Sector / Activity)**
Knowledge areas: Integration, Scope, Time, Cost, Quality, Human Resources, Communications, Risk, Procurement and Stakeholders **Process groups:** Initiating, Planning, Executing, Monitoring and Controlling, and Closing	Construction
Start date	**Finish date**
Is the same as the issue date	Corresponds to the date when the project is scheduled to be finished
Project Objectives (general and specific)	
General objective: To develop a Project Management Plan, outlined within the standards of the Project Management Institute, to manage the renovation of a hangar. Specific objectives: 1. To create a project charter that formally authorizes the project and provide the project manager with the authority to apply organizational resources to the project in order to produce the project management plan. 2. To create a scope management plan to ensures that all works required are included to successfully complete the project. 3. To create a schedule management plan to support the development and management of a project schedule that ensures the project is completed within the time constraints. 4. To create a cost management plan to define the processes for developing and managing the project budget that ensures the project is completed within the budget constraints. 5. To develop a quality management plan to identify the quality requirements for the project to ensure the results meet expectations for approval within the time, cost and scope constraints. 6. To create a human resource management plan to ensure that all human resources are identified and managed effectively to complete the project within time, cost and scope constraints. 7. To develop a communication management plan to ensure the timely and effective communication of the project status and other key information. 8. To create a risk management plan to identify and examine risks to the successful completion of the project and develop plans to minimize the likelihood of the risks. 9. To develop a procurement management plan to be used to obtain products, services or results required by the project. 10. To develop a stakeholder management plan to identify and support all the project stakeholders to ensure effective stakeholder engagement.	
Project purpose or justification (merit and expected results)	
The purspose of this study is to develop a Project Management plan that will guide project management activities; that wil aid the NMIA in renovating a hangar within budget, on-time or in a reasonable time and with the desired quality that will ultimately promote revenue growth for the airport. The renovations will include: door changes, roof repairs, plumbing, lighting, electrical and service elements.	

The hangar will be among the top 5 in the caribbean region; based on size, amenities and location that will allow for easy storage and repairs to passenger, and cargo planes that frequently pass through the area. Which will utlimately drive revenue growth and overall airport services delivery to airline clients.

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

The Project Management Plan Document will be a comprehensive document generated by this project.
It will include:

- Project Charter
- Scope management
- Schedule management plan
- Cost management plan
- Quality management plan
- Human resource management plan
- Communication management plan
- Risk management plan
- Procurement management plan
- Stakeholder management plan

PROJECT CHARTER

Assumptions

It is assumed the company will allow us to do the FGP within the company
It is assumed that the company will provide for analysis; ALL relevant documents
It is assumed that the hangar project will be funded by NMIAL
It is assumed that expert knowledge was gathered at various points of the project
It is assumed that the community is welcoming of the project
It is assumed that there will be government support in funding the project
It is assumed that the organization will seek expert advise and services where needed
It is assumed that communication will be frequent, clear and concise throughout the project
It is assumed that all stakeholders are aware of the project

Constraints

The time allocated for the exercise may be too short
Government approvals
Limited resources: human and raw material
The development team must not undertake any new projects or vacations for the duration of the proposed schedule
Confidentiality: company proporietary information will need to be kept confidential.

Preliminary risks

If there is a natural disaster, it may impact the project scope, time, and cost.
If there is a problem acquiring funding, the project may be negatively impacted in scope and quality.

Budget

The project budget will be:
USD $580,000.00

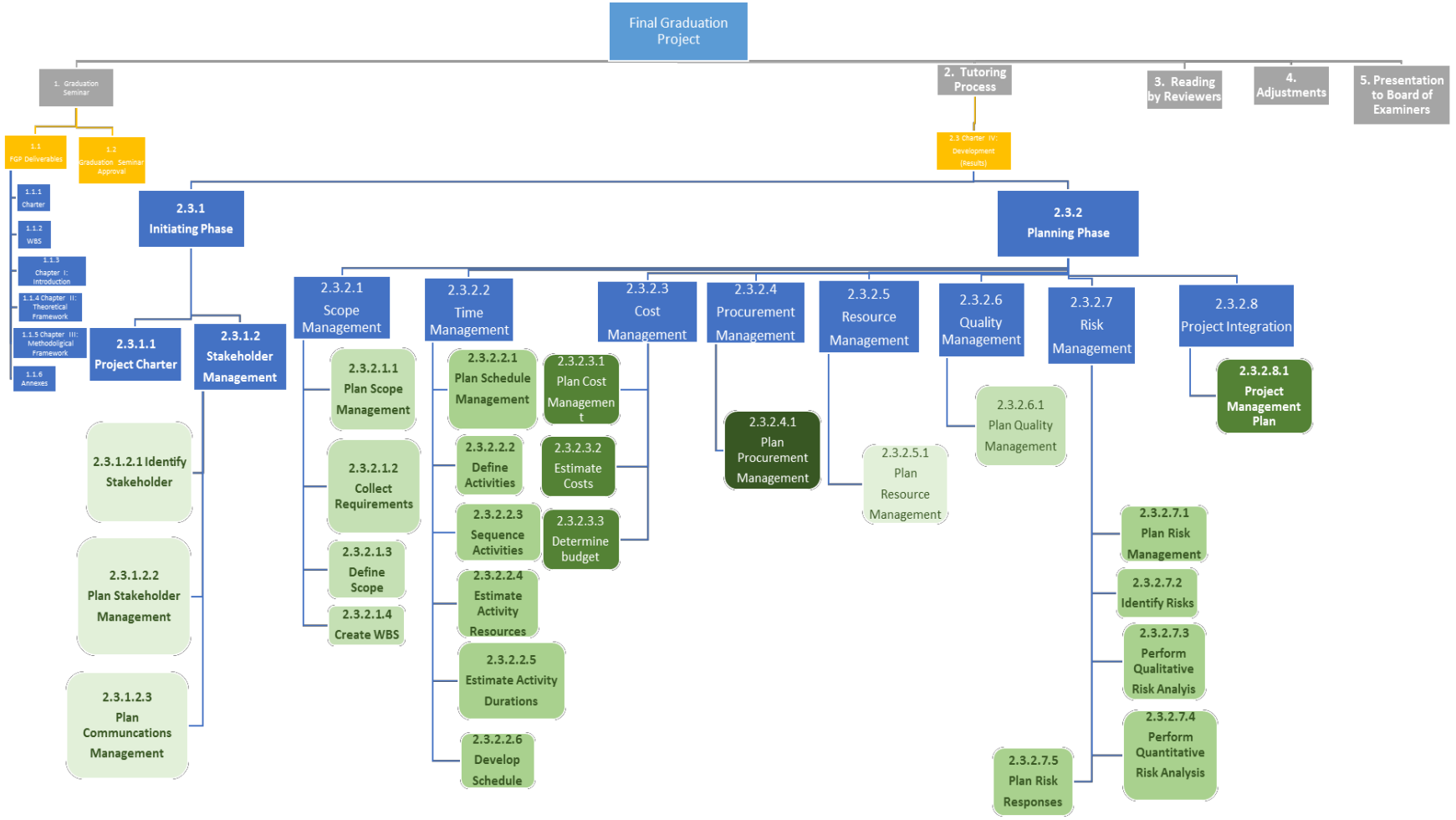
Milestones and dates

Milestone	Start date	End date
Submission of Project charter	November 13. 2017	November 19, 2017
Submission of WBS	November 13, 2017	November 19, 2017
Submission of Introduction Chapter		
Submission of FGP Schedule		
Submission of Theoretical Framework		

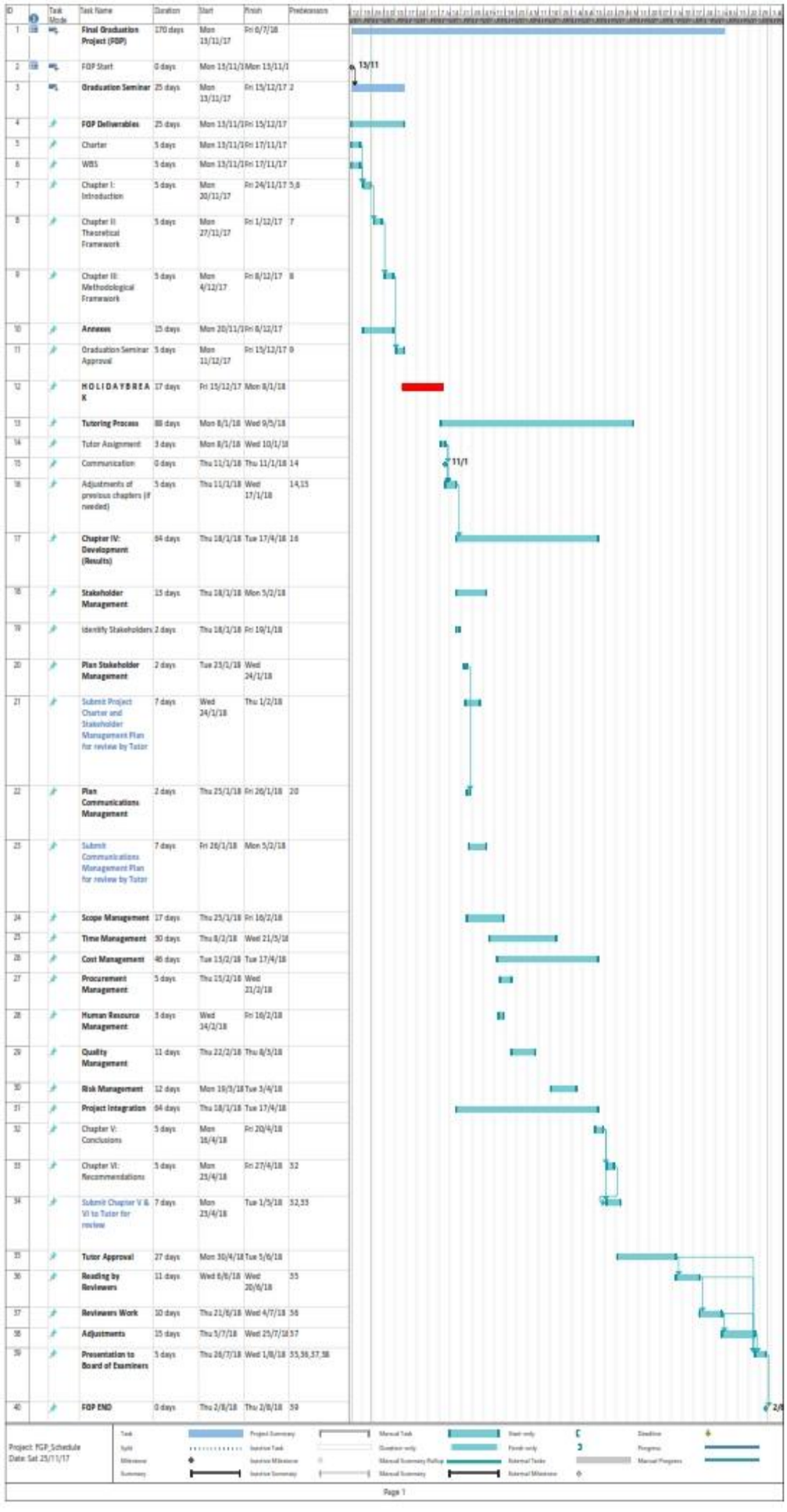
Submission of Methodological Framework		
Submission of Executive Summary		
Submission of Bibliography, Indexes		
Acquisition of Signed Charter		
Scope management plan		
Tutor Review		
Schedule Management plan		
Tutor Review		
Cost Management Plan		
Tutor Review		
Quality Management Plan		
Tutor Review		
Human Resource Management Plan		
Tutor Review		
Communication Management Plan		
Tutor Review		
Risk Management Plan		
Tutor Review		
Procurement Management Plan		
Tutor Review		
Stakeholder Management Plan		
Tutor Review		
Conclusions and Recommendations		
Tutor Review		
Final Project Submission		
Completionf of FGP		

Relevant historical information	
The company under study, the Norman Manley International Airport Limited (NMIAL) is the operator of the Norman Manley International Airport (NMIA) and is a wholly owned subsidiary of Airports Authority of Jamaica (AAJ) which was incorporated in 2003. The Airport is operated under a 30-year Concession Agreement with AAJ, and is held to specific performance targets. The hangar project is geared at refurbishing a facility that has been unused for greater than 25 years and the company has not engaged in any similar efforts related to this project.	
Stakeholders	
Direct stakeholders: • FGP Lecturer – Mr. Brenes • Tutors • Project Manager – Samuel Heron Indirect stakeholders: • Academic Assistant	
Project Manager: Samuel Heron	**Signature:** 
Authorized by:	**Signature:**

APPENDIX 2: FGP WBS



APPENDIX 3: FGP SCHEDULE



APPENDIX 4: PROJECT CHARTER

PROJECT CHARTER
for (Hangar Renovation at the Norman Manley International Airport)

Prepared for - NMIAL
Business Name - NMIAL

Prepared By: Samuel Heron

Contents

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Project Purpose 65
Business Objectives 65
Project Details 65
Deliverables 66
Estimated Schedule 66
Estimated Budget 67
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Constraints 69
Alternatives 70
Stakeholders 70
Project Manager 75
Project Authorization 75

Executive Summary

The company under study, the Norman Manley International Airport Limited (NMIAL) is the operator of the Norman Manley International Airport (NMIA) and is a wholly owned subsidiary of Airports Authority of Jamaica (AAJ) which was incorporated in 2003.

The Airport is operated under a 30-year Concession Agreement with AAJ and is held to specific performance targets.

The hangar project is geared at refurbishing a facility that has been unused for greater than 25 years and the company has not engaged in any similar efforts related to this project.

Project Purpose

The purpose of this study is to develop a Project Management plan that will guide project management activities; that will aid the NMIA in renovating a hangar within budget, on-time or in a reasonable time and with the desired quality that will ultimately promote revenue growth for the airport. The renovations will include: door changes, roof repairs, plumbing, lighting, electrical and service elements.

The hangar will be among the top 5 in the Caribbean region; based on size, amenities and location that will allow for easy storage and repairs to passenger, and cargo planes that frequently pass through the area. Which will ultimately drive revenue growth and overall airport services delivery to airline clients.

Business Objectives

The NMIAL does not currently have a strategic plan, however it has an overall strategic goal of providing safe and customer friendly Aero-based services for airlines and end-users.

As such, the airport hangar project aims to fill the gap that currently exists aims to:

- Refurbishing the structure to make it more structurally sound
- Create an aesthetically pleasing hangar
- Provide a space for airplane storage or maintenance
- Create sustainable revenue through the renting of the renovated hangar

Project Details

Project Management Plan for renovation of a Hangar at the Norman Manley International Airport (NMIA)

Deliverables

A renovated airport hangar at the NMIA in Kingston Jamaica; equipped with new technology that will aid in aircraft maintenance and safety.

The Project Management Plan Document will be a comprehensive document generated by this project.

It will include:

- Project Charter
- Scope management
- Schedule management plan
- Cost management plan
- Quality management plan
- Human resource management plan
- Communication management plan
- Risk management plan
- Procurement management plan
- Stakeholder management plan

Estimated Schedule

Provide high-level schedule information.

Project Milestones and/or Phases	Estimated Completion Date
Start of Project	
1. Project Initiation/Kick-off	
2. Conceptual Design Commence	
3. Project Defined	
4. Site Investigation Report Complete	
5. Conceptual Design Complete	
6. Initial Impact Assessment Complete	
7. Feasibility Study Complete	
8. Approval of Project Charter	
9. Baseline Project Schedule	
10. Design documents approved by client	
11. Complete Design Documents & Submit to Municipal Corp. and Ministry for Permit	
12. Project Management Plan Complete	

13. Procurement and Sourcing Commence	
14. Sub-Contractor Tendering Commence	
15. Sub- Contractor Tendering Complete	
16. Award Contracts	
17. Building Permit Issued	
18. Begin Work Drawings	
19. Approval of Roles and Responsibilities	
20. Working Drawing Complete	
21. Mobilization Commencement	
22. Mobilization Complete	
23. Site works begin	
24. Commencement of Renovation Phase	
25. Demolition commences	
26. Demolition completed	
27. Masonry commences	
28. Masonry work completed	
29. Electrical work commences	
30. Electrical work completed	
31. Plumbing & Sewerage work commences	
32. Plumbing & Sewerage work completed	
33. Windows and doors ordered	
34. Windows and doors received	
35. Security technology ordered	
36. Security technology received	
37. Security technology installed and tested	
38. Windows and doors installed and tested	
39. Painting work commences	
40. Painting work completed	
41. Furnishings ordered	
42. Furnishings installed	
43. Miscellaneous work completed	
44. Equipment Installed and tested	
45. Test building occupancy by parking a plane	
46. Final Building inspection completed	
47. Final account	
48. End of Hangar Project	

Estimated Budget

Provide high-level budget information.

Item	Project Costs (USD $)
Construction Costs	$320,000.00
Administration	$80,000.00
Equipment Costs	$60,000.00
Project Management Costs	$120,000.00
-	-
Grand Total	$580,000.00

Human Resource Requirements

List the people from within the organization that will be assigned to the project.

Names / Roles	Positions	Responsibilities
Project Manager	1 position	Responsible for the overall success of the Project. The PM must authorize and approve all project expenditures. The PM is also responsible for ensuring that work activities meet established acceptability criteria and fall within acceptable variances. The PM will be responsible for reporting project status in accordance with the communications management plan. The PM will evaluate the performance of all project team members. The PM is also responsible for acquiring human resources for the project by skillset. The PM must possess the following skills: leadership/management, budgeting, scheduling, and effective communication.
Assistant Project Manager	1 position	Responsible for creating project planning documents (i.e. Project Management

		Plan), taking meeting minutes, reporting to the PM on changes and updates made to the project for approval, managing the procurement process, and collecting daily reports from the site management team. The Assistant Project Manager is also responsible for broadcasting daily site reports to relevant stakeholders as directed by the Project Manager.
Accountant	1 position	Responsible for all financial transactions and financial reporting pertaining to the project.
Field Superintendent	1 position	Responsible for any and all production and business pertaining to the site works.

Assumptions

- It is assumed the company will allow us to do the FGP within the company
- It is assumed that the company will provide for analysis; ALL relevant documents
- It is assumed that the hangar project will be funded by NMIAL
- It is assumed that expert knowledge was gathered at various points of the project
- It is assumed that the community is welcoming of the project
- It is assumed that there will be government support in funding the project
- It is assumed that the organization will seek expert advice and services where needed
- It is assumed that communication will be frequent, clear and concise throughout the project
- It is assumed that all stakeholders are aware of the project

Constraints

- The time allocated for the exercise may be too short
- Government approvals

- Limited resources: human and raw material
- The development team must not undertake any new projects or vacations for the duration of the proposed schedule
- Confidentiality: company proprietary information will need to be kept confidential.

Alternatives

The alternatives to the hangar project are:

- Doing nothing and facing the same challenges
- Constructing a brand-new hangar without proof of concept showing the success of a hangar as a revenue generator

Stakeholders

List all known project stakeholders.

Stakeholder Name	Communication Type	Communication Medium	Notes
NMIAL	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Has high interest in the project and is responsible for the funding of the project. Is most critical throughout enter project lifecycle.
Snr. Director Airport Operations	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Has high interest in the project and is responsible for the approval of funding of the project.
Director of Operations	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Has high interest in the project being successful.
Project Manager	- Meetings - Personal Communication - Reports	E-mail Face to Face Telephone	Will have overall responsibility to ensure the project

Stakeholder Name	Communication Type	Communication Medium	Notes
	- Presentation - Announcements		is successfully delivered within budget, on-time and to scope of the project sponsor.
Assistant Project Manager	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Has overall responsibility to support the Project Manager in all activities geared at the successful execution of the project.
Accountant	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Will oversee proper expenditure of funds throughout the project
Electrical Engineer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged to oversee the electrical needs during initiation
Plumbing Engineer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged to oversee the plumbing needs during initiation
Mechanical Engineer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged to oversee the mechanical needs during initiation
Structural Engineer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged to oversee the structural needs during initiation
Quantity Surveyor	- Personal Communication - Meetings	E-mail Face to Face Telephone	Will be engaged during initiation

Stakeholder Name	Communication Type	Communication Medium	Notes
	- Project Announcements		phase of project
Land Surveyor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged during initiation phase of project
Field Superintendent	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.
Foreman	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.
Laborer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.
Mason	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.

Stakeholder Name	Communication Type	Communication Medium	Notes
Carpenter	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.
Electrical Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of electrical fixtures
Plumbing Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of plumbing fixtures
Roofing Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of roofing fixtures
Fire and Safety Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of Fire and Safety

Stakeholder Name	Communication Type	Communication Medium	Notes
			fixtures
Windows and Doors Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of Windows and Doors fixtures
Environmental Agency	- Meetings - Letters	E-mail Written RFP	Agency will provide environmental permits allowing the refurnishing project to happen
Government of Jamaica	- Meetings - Letters	E-mail Written RFP	Has interest in the successful execution of the project for potential revenue creation
Municipal Corporation	- Meetings - Letters	E-mail Written RFP	Has interest in the successful execution of the project for potential revenue creation
Federal Aviation Authority (FAA)	- Meetings - Letters	E-mail Written RFP	Has low interest in the successful execution of the project and will be most integral at initiation phase
Airline Corporations	- Meetings - Letters	E-mail Written RFP	Has interest in the successful execution of the project for potential revenue benefits

Project Manager

The project manager is Samuel Heron contact ucisam@sdc.gov.jm.

Project Authorization

Date: _____

By initialing each page and signing below, I _____, the Project Sponsor, approve the project described herein and authorize it to begin.

By: _____
Signature of Project Sponsor

_____
Project Sponsor Printed Name

APPENDIX 5: SCOPE MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Scope Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron

Last Revised On: March 10, 2018

This scope management plan is a component of the project management plan. It describes how the project scope will be developed, defined, monitored, controlled and verified.

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Scope Development 79
Scope Definition 79
  Project Scope Statement 79
  Work Breakdown Structure (WBS) 81
  WBS Dictionary 83
  Scope Verification 86
Scope Control 86
  Integrated Change Control Procedures 86
Plan Approval 87

Scope Management Plan

Management Approach

The term “project scope” refers to the sum of all products, services and results that will be provided as the project.
The scope for this project is defined by the Scope Statement, Work Breakdown Structure (WBS) and WBS Dictionary. The Project Manager, Sponsor and Stakeholders will establish and approve documentation for measuring project scope which includes deliverable quality checklists and work performance measurements.
Proposed scope changes may be initiated by the Project Manager, Stakeholders or any member of the project team. All change requests will be submitted to the Project Manager who will then evaluate the requested scope change. Upon acceptance of the scope change request the Project Manager will submit the scope change request to the Change Control Board and Project Sponsor for acceptance. Upon approval of scope changes by the Change Control Board and Project Sponsor the Project Manager will update all project documents and communicate the scope change to all stakeholders. Based on feedback and input from the Project Manager and Stakeholders, the Project Sponsor is responsible for the acceptance of the final project deliverables and project scope.
The purpose of this scope management plan is to set forth the plans and procedures for defining, developing, monitoring, controlling, changing, implementing and verifying the project scope. It’s the intent of scope management to ensure the completion of all the work required, and only the work required, to complete the project successfully.
The project manager will assume overall responsibility for project scope management. The people listed below will assume the following scope management responsibilities:

Names / Roles	Responsibilities
Project Manager – Samuel Heron	a. Measure and verify project scope b. Facilitate scope change requests c. Facilitate impact assessments of scope change requests d. Organize and facilitate scheduled change control meetings e. Communicate outcomes of scope change requests f. Update project documents upon approval of all scope changes
Project Sponsor - NMIA	a. Approve or deny scope change requests as appropriate b. Evaluate need for scope change requests c. Accept project deliverables
Assistant Project Manager – Andre Hudson	a. Participate in defining change resolutions b. Evaluate the need for scope changes and communicate them to the project manager as necessary

Names / Roles	Responsibilities
Project Team Members	a. Participate in defining change resolutions b. Evaluate the need for scope changes and communicate them to the project manager as necessary
Stakeholders / Subcontractors, Site Workers, Consultants	a. Can propose scope changes b. Will execute change directives issued by Project Manager

Scope Development

SOURCES

The scope of this project is defined in the Scope Definition section, below. Development of the project scope began with an examination of the following sources:

A. Project Charter
B. Applicable codes, regulations, statutes and laws
C. Stakeholders

COLLECT PROJECT REQUIREMENTS

The complete requirements gathering and definition process is described in the Requirements Management Plan and all known project requirements are set forth in the Requirements Traceability Matrix. The Requirements Traceability Matrix is included in the Requirements Management Plan.

Scope Definition

The scope for this project was defined through a comprehensive requirements collection process. First, a thorough analysis of all revised project contracts and meeting minutes, building codes, owners' requirements and documentation relative to industry standards were completed. From this information, the project manager and project team lead developed the requirements management plan, requirements documentation and the requirements traceability matrix for the building specifications.
The project deliverables were generated based on the requirements collection process and input from subject matter experts such as the Architect, Contractor, Sub consultants, Subcontractors, Environmental Agencies, Governmental Regulatory Agencies, and the Fabricators. This process of expert judgement provided feedback on the most effective, safe and cost-efficient ways to meet the original requirements of renovating a state-of-the-art airport hangar that is structurally sound and able to withstand up to a category 5 hurricane.

Project Scope Statement

Scope Description, Product Acceptance Criteria and Project Deliverables

The project includes the renovation of a hangar at the Norman Manley International Airport which will have the following floor plan, (fabrication specifications and items excluded):

1. Floors & Storey Details
    a. Ground Floor – this is the main floor of the hangar and will be used for the safe storage of aircraft during routine or emergency servicing or natural disasters. It will be 185’ by 295’ with a floor to ceiling height of 60’, enough tail clearance for a Boeing 737-800. The structure can be seen in figure 1 floor plan.

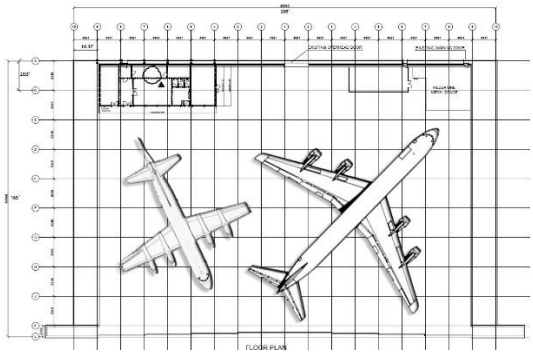


Figure 1: Floor Plan

2. Fabrication Specifications
    a. Building shall be 185’ by 295’
    b. Building will have one floor
    c. Fabricator to provide complete framing for roof structural decking and sheeting.
    d. Replace the hangar doors and windows
    e. Repainting of the Hangar
    f. Air Quality Audit
    g. Subterranean Audit
    h. Environmental Audit

3. Equipment
    a. Janitorial Supplies
    b. Air to Ground two-way radio
    c. Standby Generator
    d. Bird Strobe lighting
    e. Tankless oil-free multi scroll air compressor
    f. Hydraulic Ground Power Unit
    g. Solid-state Ground Power unit

Project Exclusions
a. Concrete flooring, including hollow core slabs.
b. Stair railing
c. Infill walls

Project Constraints

The owners have requested that the project should not exceed 580,000 US dollars. In addition, the project duration should not exceed eighteen (12) months to including permits, tests and approvals.

Project Assumptions

1. Weather
    a. It is assumed that it will rain therefore the building has to be weather proof
    b. It is assumed that there will be hurricanes; therefore, concessions have been made to reinforce the building to withstand up to a category 5 hurricane
    c. It is assumed that we will have high temperatures; therefore, this will determine the type of paint and cement finishes used
2. Finance
    a. It is assumed that the project will be fully funded
3. Workforce
    a. It is assumed that the requisite skills and knowledge are accessible by the project manager
4. Schedule
    a. It is assumed that the project will be successfully completed within 12 months
5. Budget
    a. It is assumed that the budget of USD$580,000.00 is sufficient to complete the project
6. Permits
    a. It is assumed that ALL legal permits will be acquired in a timely manner to facilitate project completion.

Work Breakdown Structure (WBS)

In order to effectively manage the work required to complete this project, it will be subdivided into individual work packages which will not exceed 40 hours of work. This will allow the Project Manager to more effectively manage the project's scope as the project team works on the tasks necessary for project completion. The project is broken down into four phases: the design phase, renovation phase, post renovation phase, and the project closure phase. Each of these phases is then further broken down into work packages which will require no more than 40 hours of work.

See below (WBS).

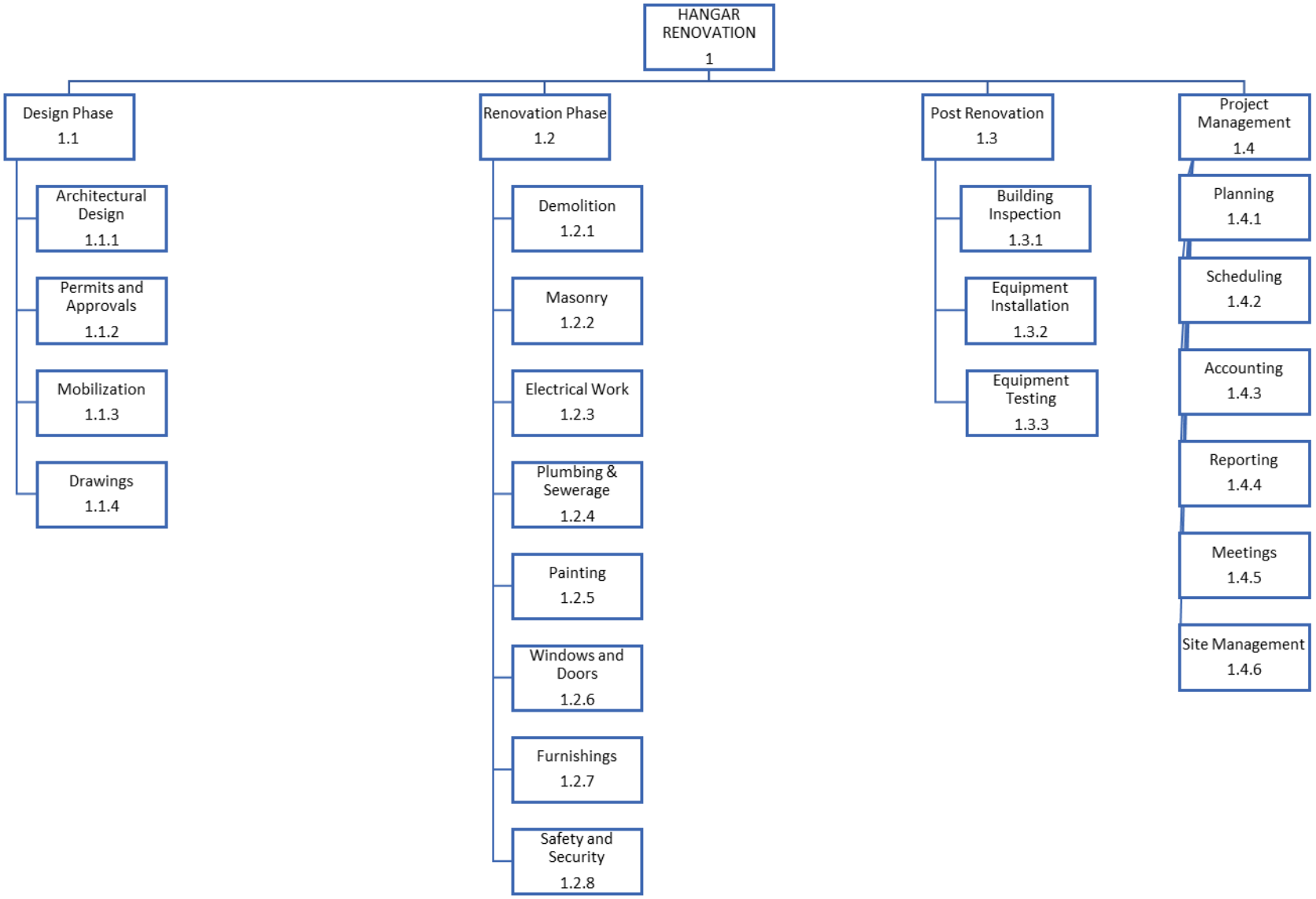


Figure 1.1 Work Breakdown Structure (WBS)

WBS Dictionary

In order to more clearly define the work necessary for project completion, the WBS Dictionary is used. The WBS Dictionary includes an entry for each WBS element. The WBS Dictionary includes a detailed description of work for each element and the deliverables, budget and resource needs for that element. The project team will use the WBS Dictionary as a statement of work for each WBS element.

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget USD	Resources
1	**1.1**	**Design Phase**	**Commence conceptualization**		***$80,000***	
2	1.1.1	Architectural Design	Architectural briefing describing the understanding of the project with the Architect, Hydrologist, and Sub consultants	Architectural Drawings	$30,000	• Laptop • Internet • CAD Software • Relevant literature
2	1.1.2	Permits and Approvals	The process of applying for permits from: Municipal Corporation, Town planning permit, aviation permit, Ministry of Works, Ministry of Health, Ministry of Foreign Affairs	Permits to Proceed	$15,000	• Architectural, structural drawings • Application forms • Land titles • Permission notes
2	1.1.3	Mobilization	Prepare site for work to commence	Site preparation complete including; *site surveying *site layout *hoardings *fencing	$25,000	• Backhoe • Dump truck • Cement mixer • Light weight crane • Wheel barrows • Jackhammers

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget USD	Resources
				*site office *toilets *temporary electricity *water *signs		
2	1.1.4	Drawings	Working documents that show graphical representation of the work to be done		$10,000	
1	1.2	Renovation Phase	Here the project execution will occur		***$320,000***	
2	1.2.1	Demolition	The hangar will be torn down and checked for structural imperfections that may need fixing. Windows, doors and roof will be removed.		$10,000	
2	1.2.2	Masonry	Cement work to bolster any structural imperfections		$6,000	
2	1.2.3	Electrical Work	Work will include new light fixtures, bulbs and fittings.		$8,000	
2	1.2.4	Plumbing & Sewage	Hangar plumbing and sewage will need assessment and possible upgrades		$6,000	
2	1.2.5	Painting	Entire building will be painted inside and out		$50,000	

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget USD	Resources
2	1.2.6	Windows and Doors	Hangar will have a new bay door where planes will enter and exit. ALL other windows and doors will be changed to hurricane proof grade.		$95,000	
2	1.2.7	Furnishings			$35,000	
2	1.2.8	Safety & Security	Hangar technology will be upgraded to include state-of-the-art safety & security tools		$110,000	
1	**1.3**	**Post Renovation**			***$60,000***	
2	1.3.1	Building Inspection	Ensure hangar is structurally sound and within parameters set out in design phase		$10,000	
2	1.3.2	Equipment Installation	Air compressor, Power supply and other tools to be used by renters		$40,000	
2	1.3.3	Equipment Testing	Testing hangar equipment		$10,000	
1	**1.4**	**Project Management**			***$120,000***	
2	1.4.1	Planning			$20,000	
2	1.4.2	Scheduling			$10,000	
2	1.	Accounting			$10,000	

Level	WBS Code	Element Name	Description of Work	Deliverables	Budget USD	Resources
	4.3					
2	1.4.4	Reporting			$15,000	
2	1.4.5	Meetings			$20,000	
2	1.4.6	Site Management			$45,000	

Scope Verification

As this project progresses, the Project Manager will verify interim project deliverables against the original scope as defined in the scope statement, WBS and WBS Dictionary. Once the Project Manager verifies that the scope meets the requirements defined in the project plan, the Project Manager and Sponsor will meet for formal acceptance of the deliverable. During this meeting, the Project Manager will present the deliverable to the Project Sponsor for formal acceptance. The Project Sponsor will accept the deliverable by signing a project deliverable acceptance document. This will ensure that project work remains within the scope of the project on a consistent basis throughout the life of the project.

Scope Control

The Project Manager and the project team will work together to control the scope of the project. The project team will leverage the WBS Dictionary by using it as a statement of work for each WBS element. The project team will ensure that they perform only the work described in the WBS dictionary and generate the defined deliverables for each WBS element. The Project Manager will oversee the project team and the progression of the project to ensure that the scope control process is followed.

Integrated Change Control Procedures

If a change to the project scope is needed, the process for recommending changes to the scope of the project must be carried out. Any project team member or sponsor can request changes to the project scope. All change requests must be submitted to the Project Manager in the form of a project change order.

WRITTEN REQUESTS
All requests for change must be submitted in writing, on the Change Request Form.

A. Who May Submit Change Requests

The following people may initiate changes to the project scope:

1. Project sponsor
2. Project Manager
3. Project team members
4. Other project stakeholders

B. Deliver To
All written requests for changes must be submitted to the project manager who will log and track each request on the Change Request Log.

CHANGE CONTROL BOARD

Members of the change control board will evaluate each change request and decide whether it becomes approved, approved with modifications, rejected or deferred. Once a decision is reached, the change request is signed and emailed to the project manager for planning revisions and implementation.

A. APPROVED

When a change request is approved, the project manager will track the approval on the change request log found in Attachment E, below. The project manager will also ensure implementation of the change, as it was submitted and approved.
Where implementation affects changes to the project management plan, the project manager will revise the plan and distribute notice of the revisions in accordance with the procedures set forth in the communication management plan.

B. APPROVED WITH MODIFICATIONS

When a change request is approved with modifications, the project manager will track the modified approval on the change request log found in Attachment E, below. The project manager will also ensure implementation of the change, as it is modified.
Where implementation affects changes to the project management plan, the project manager will revise the plan and distribute notice of the revisions in accordance with the procedures set forth in the communication management plan.

C. REJECTED

When a change request is rejected, the project manager will track the rejection on the change request log found in Attachment E, below and provide written notice of the rejection to the party who initiated the change. No further action will be taken.

D. DEFERRED

When a change request is deferred, the project manager will track the deferred request on the change request log found in Attachment E, below. The project manager will also notify the party who initiated the change request.
No other action will be taken unless the change control board later approves, approves with modifications or rejects the change request.

Plan Approval

By signing below, I, _____ in my capacity as Project Sponsor approve of this Scope Management Plan.

Name:
Title:

_____ -
_____
Signature
Date Approved

APPENDIX 6: REQUIREMENTS DOCUMENT

Renovation of a hangar at the Norman Manley International Airport: Requirements Document (1.0)

Project: Renovation of a hangar at the Norman Manley International Airport
Date(s): 30 October 2017
Prepared by: S. Heron (Project Manager)

Document status: __ Draft __ Proposed __ Validated __ Approved

1. Introduction

This document contains the design, structural, and functional requirements for ***the Renovation of a hangar at the Norman Manley International Airport***. These requirements have been derived from several sources, including the Sponsor, the Architect and Contractor, the Subcontractors and Sub consultant, and Industry Standards from government.

1.1 Purpose of This Document

This document is intended to guide development of ***the Renovation of a hangar at the Norman Manley International Airport***. It will go through several stages during the course of the project:

1. **Draft:** The first version, or draft version is compiled after requirements have been discovered, recorded, classified, and prioritized.
2. **Proposed:** The draft document is then proposed as a potential requirements specification for the project. The proposed document should be reviewed by several parties who may comment on any requirements and any priorities, either to agree, to disagree, or to identify missing requirements. Readers include the project manager, assistant project manager, suppliers, subcontractors and the project sponsor. The document may be amended and re-proposed several times before moving to the next stage.
3. **Validated:** Once the various stakeholders have agreed to the requirements in the document, it is considered validated.
4. **Approved:** The validated document is accepted by representatives of each party of stakeholders as an appropriate statement of requirements for the project. The project manager/contractor will then use the requirements document as a guide to implementation, and to check the progress of the project as it develops.

1.2 How to Use This Document

We expect that this document will be used by people with different skill sets. This section explains which parts of this document should be reviewed by various types of readers.

Types of Reader

The sections of this document that will be read by each reader are detailed in the chart below.

Type of Reader	Sections Most Pertinent to Reader
Project Manager and Assistant Project Manager	All
Project Sponsor	1.3, 1.4, 1.5, 2, 3, 4, 5
Suppliers	1.5, 2.1, 2.2,
Subcontractor	2 and 3

Technical Background Required

Readers must have a level of proficiency that will allow them to understand architectural design, engineering, construction and procurement specifications detailed in the document.

1.3 Business Case for the Product

The Renovation of a hangar at the Norman Manley International Airport is the result of market demand to design and build a functional structure. In addition, the Hangar is also being pursued as the Clients, want to expand their business portfolio.

2. General Description

This section will give the reader an overview of the project, including why it was conceived, what it will do when complete, and the types of people we expect will use it. We also list constraints that were faced during development and assumptions we made about how we would proceed.

The project is being undertaken to renovate an airport hangar for NMIA, the sponsoring company that wishes to expand their business portfolio.

2.1 Project Perspective

The NMIA has the need for an airplane hangar to fill the void experienced when aircrafts have experienced mechanical problems, or the need arises as it does very often for storage of aircraft as a means of generating revenue. Renovation of a hangar has been considered the most feasible solution, however, due to the size and complexity of the project, it is of great importance to produce an extensive management tool.

The primary stakeholders for the project are the CEO and Board of Directors (the clients) of NMIA. The project is being developed by NMIA project team who will build and manage the execution of the project.

It is anticipated that as a result of the Renovation of a hangar at the Norman Manley International Airport various commercial and private airlines will benefit from the new space as well as increased revenue for the NMIA.

2.2 Building Functions

The Airport Hangar;

- Building shall be 185’ by 295’
- Building will have one floor
- Fabricator to provide complete framing for roof structural decking and sheeting.
- Replace the hangar doors and windows
- Repainting of the Hangar
- Air Quality Audit
- Subterranean Audit
- Environmental Audit

The Airport Hangar will serve to facilitate formal events as well when not in use.

2.3 User Characteristics

Main clients will be airline companies ranging from small personal aircraft to large commercial airlines who need storage space or space for maintenance. Clients can also be anyone requesting to rent an auditorium, ballroom, dining or open area space seating within the maximum seating capacity for each area. They must sign a contract agreeing to terms of usage and fees required.

2.4 General Constraints

The project should not exceed 580 thousand US dollars. The project duration should not exceed twenty- four (24) months, with eighteen (18) months assigned to substantial completion and an additional six (6) for miscellaneous works. The government approvals may take time and throw the project out of scope.

3. Specific Requirements

This section of the document lists specific requirements for ***the Building of the Convention Center***. Requirements are divided into the following sections:

- Customer Needs. These are requirements written from the point of view of end users, usually expressed in narrative form.
- Functional Requirements. These are detailed specifications describing the functions the system must be capable of doing.
- Technical/Structural Requirements. These are requirements about the user interface, which may be expressed as a list, as a narrative, or as images of screen mock-ups.

3.1 Customer/User Needs

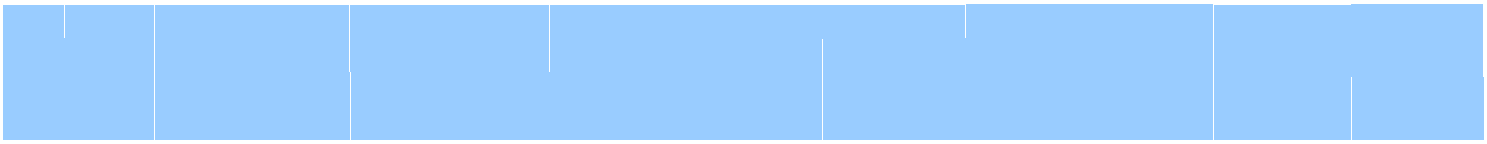
- Safety
- Aesthetics
- Ease of Use/Comfort
- Hardware and tools needed for aircraft maintenance

3.2 Functional Requirements

- Proper cooling and ventilation systems
- Barrier free design (handicap access)
- Proper site drainage
- Proper lighting
- Emergency exits
- Fire control
- Adequate restroom facilities

3.3 Technical Requirements

- Building must adhere to local building code requirements and industry standards
- Building and building components must be built to withstand natural catastrophic occurrences
- Building heights and enclosures must be at a minimum height to ensure proper functioning of the forced air systems
- Building must have all necessary utilities such as electrical, plumbing, air-conditioning, etc.



APPENDIX 7: REQUIREMENTS TRACEABILITY MATRIX

REQUIREMENTS TRACEABILITY MATRIX								
Project Name:				Renovation of a hangar at the Norman Manley International Airport				
Project Manager Name:				S. Heron				
Project Description:				Project will result in the renovation of a Airport Hangar				
ID	WBS ID	Customer Needs	Functional Requirements	Technical Assumption(s) Technical Requirements	Verification	Architectural/Design Document	Priority	Additional Comments
001	1.2.1	Use existing property	Surveyor to provide proper surveyor's drawings to Architect and Owner	Building must be within the commercial zoning area.		Location plan	High	
002	1.2.2	Building needs to be rendered and finished fixing any structural flaws	Use concrete to render and correct structural blemishes	Structure will be reinforced with cement and cement rendering		Foundation plan and piling layout	High	

003	1.2.4	Structural steel frame to reduce building Cost	Find steel building fabricators to produce steel frame	Steel framing as per architectural drawings and to conform to American Steel Association Standards		Structural drawings and layouts (including steel structure)		
004	1.2.4	Building is built with structural integrity	Enlist the services of a structural engineer	All structural engineering must conform to the "Jamaica building code" and the necessary standards.		Complete structural drawings	High	
005	1.2.4	Must have electricity	Enlist the services of an electrical engineer	Electrical receptacles, switches, circuit breakers, size of wires, electrical fixtures, size of conduits and the amount of electrical demand load required to run the building		Electrical layout and schedules	High	

006	1.2.4	Must have running water and discharge waste water	Enlist the services of a plumbing engineer	Plumbing drawings to indicate all supply lines, water waste lines, ventilation and plumbing fixtures		Plumbing layout and schedules	High	
007	1.2.4	Must have properly running air conditioning system	Enlist the services of an air conditioning engineer	Layout to indicate all ducting with CFM air flow for each space calculation		Air-conditioning layout and schedules	High	
008	1.2.1	Ergonomically planned spaces	Enlist the services of an Architect	Architectural floor plan indicates dimensions of walls and components		Architectural floor plans	High	
009	1.2.1	Modern / Colonial design	Enlist the services of an Architect	Modern / Colonial Architectural order, scaling and propositions to produce the desired aesthetics and placement of windows, doors and roofing system		Architectural elevations	High	

010	1.2.1	Window and door selection	Enlist the services of an Architect	Windows and doors will be impact resistant PVC with steel extrusions. Window glass will be double glazed with low-emissivity glass slightly tinted…Doors will be a high grade commercial entrance door with mechanical closures		Window and door schedules	High	
011	1.2.1	Quality detailed finishes, especially wood and interiors	Enlist the services of an Architect	Detail various building components and how they are constructed		Architectural details	High	
013	1.2.1	Modern morphic ceilings to ensure good natural lighting	Enlist the services of an Architect	Refer to manufactures specification and product usage		Reflected ceiling plan	High	

014	1.2.4	Quality detail interior layout with material use and hardware tools	Enlist the services of an Interior designer	Building must adhere to local building code requirements and industry standards		Interior design layouts	High	

APPENDIX 8: TIME MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Schedule Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron

Last Revised On: March 11, 2018

This schedule management plan is a component of the project management plan. It establishes the criteria and the activities for developing, monitoring and controlling the project schedule.

Contents

Management Approach 99
Scheduling Method..... 99
Schedule Processes..... 102
Define Activities 102
Develop Schedule 102
Control Schedule..... 102
Report Schedule 103
changes and thresholds 103
changes..... **Error! Bookmark not defined.**
Plan Approval..... 104

Schedule Management Plan

Management Approach

The project manager will assume overall responsibility for schedule management. The project schedule is the guide for how the project will be completed and finished. The schedule is a critical part of this project because it provides the project team and sponsor with a visual picture of the project's standing at any given time. The schedule management plan is used to define the technique the project team will use in creating the project schedule. This plan also comprises how the team will review the project schedule and manages changes after the standard schedule has been approved. This includes identifying, analyzing, documenting, prioritizing, approving or rejecting, and publishing all schedule-related changes.

Scheduling Method

Project schedules will be made using Microsoft Project 2016. Activity definition will identify the specific work packages which must be performed to complete each deliverable. Activity sequencing will be used to determine the order of work packages and assign relationships between project activities. Activity duration estimating will be used to calculate the number of work periods required to complete work packages. Resource estimating will be used to assign resources to work packages in order to complete schedule development.
Once an initial schedule has been developed, the project manager and project team leader will assess it cautiously to review assigned project tasks. The project team and resources must agree to the proposed work package assignments, durations, and

schedule. Once this is achieved the project sponsor will review and approve the schedule and it will then be baselined.

The following are designated as milestones for the project schedule:

1. Project Initiation/Kick-off
2. Conceptual Design Commence
3. Project Defined
4. Site Investigation Report Complete
5. Conceptual Design Complete
6. Initial Impact Assessment Complete
7. Feasibility Study Complete
8. Approval of Project Charter
9. Baseline Project Schedule
10. Design documents approved by client
11. Complete Design Documents & Submit to Municipal Corp. and Ministry for Permit
12. Project Management Plan Complete
13. Procurement and Sourcing Commence
14. Sub-Contractor Tendering Commence
15. Sub- Contractor Tendering Complete
16. Award Contracts
17. Building Permit Issued
18. Begin Work Drawings
19. Approval of Roles and Responsibilities
20. Working Drawing Complete
21. Mobilization Commencement
22. Mobilization Complete
23. Site works begin
24. Commencement of Renovation Phase
25. Demolition commences
26. Demolition completed
27. Masonry commences
28. Masonry work completed
29. Electrical work commences
30. Electrical work completed
31. Plumbing & Sewerage work commences
32. Plumbing & Sewerage work completed
33. Windows and doors ordered
34. Windows and doors received
35. Security technology ordered
36. Security technology received
37. Security technology installed and tested

38. Windows and doors installed and tested
39. Painting work commences
40. Painting work completed
41. Furnishings ordered
42. Furnishings installed
43. Miscellaneous work completed
44. Equipment Installed and tested
45. Test building occupancy by parking a plane
46. Final Building inspection completed
47. Final account
48. End of Hangar Project

Schedule Processes

The project scheduler will initiate schedule development by adding to the schedule the deliverables found in the project work breakdown structure (WBS). The WBS can be found in the scope management plan.

Define Activities

The project manager will be responsible for facilitating the breakdown of work packages into activities that provide a basis for sequencing and estimating duration and resources with the project team. The project manager will also create the project schedule using MS Project 2016 and validate the schedule with the project team, and stakeholders. The project manager will obtain schedule approval from the stakeholders and baseline the schedule.

The project team is responsible for participating in work, and duration and resource estimating. The project team will also review and validate the proposed schedule and perform assigned activities once the schedule is approved.

The project stakeholders will participate in reviews of the proposed schedule, assist in its validation and approve the final schedule before it is baselined.

Develop Schedule

Developing the project schedule involves analyzing activity sequences, durations, resource requirements and schedule constraints to create the project schedule model.

Identify the person or persons responsible for developing the project schedule.

After initial schedule development, will the schedule be reviewed and validated by the project team? Who will review the schedule with the project team and what project team members will be responsible for validating it?

Will the project sponsor be involved in preliminary schedule reviews? Will he or she participate in validating the schedule? Who will prepare the schedule model?

What will be the format of the schedule model? Gantt chart? Milestone chart? Project schedule network diagram?

Control Schedule

Controlling schedule involves monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan.

The project schedule will be reviewed and updated as necessary when new or old information is added or deleted. It will include the actual start, finish and percentages of the completion.

The project manager is responsible for holding schedule updates or review meetings and determining of schedule modifications. Submitting schedule change requests and reporting schedule status in accordance with the project’s communications plan will be left to the project manager.

The project team is responsible for participating in schedule updates or review meeting sessions. The team must communicate any changes of the actual start/finish dates to

the project manager. Finally, the team will participate in schedule variance resolution activities as needed.
The project stakeholder(s) will maintain awareness of the project schedule status and review/approve any schedule change requests submitted by the project manager.

Report Schedule

The project manager will review and update the project schedule every Monday and Thursday. On these dates, members of the project team will provide the project manager with actual performance and completion information.
The project manager will compare the actual information to the schedule baseline and calculate the completion percentages and any variances. The project manager will distribute the actual schedule information according to the terms set forth in the communication management plan.
Where necessary, the project manager will meet with the project team members to determine the cause of any variance and discuss appropriate corrective measures. Where schedule changes are necessary, the project manager will submit a change request in accordance with the change management plan.

Changes and Thresholds

If any member of the project team determines that a modification to the schedule is essential, the project manager and team will meet to assess and evaluate the change. The project manager and project team must conclude which tasks will be impacted, any variance resulting from the potential change, and any alternatives or variance resolution activities they may employ to see how they would affect the scope, schedule, and resources. If, after this evaluation is complete, the project manager determines that any change will surpass the established schedule constraints, then a schedule change request must be submitted.
Submittal of a schedule change request to the project stakeholder(s) for approval is required if either of the two following conditions is true:

- The proposed change is estimated to reduce the duration of an individual work package by 2% or more or increase the duration of an individual work package by 10% or more.
- The change is estimated to reduce the duration of the overall baseline schedule by 10% or more or increase the duration of the overall baseline schedule by 2% or more.

Any change requests that would result in changes that are within or less than the percentages indicated in the above thresholds must be submitted to the project manager for approval. Once the change request has been reviewed and approved the project manager is responsible for adjusting the schedule and communicating all changes and impacts to the project team and stakeholders. The project manager must also ensure that all change requests are stored for safety.

Changes

Any changes in the project scope, which have been approved by the project stakeholder, will require the project team to evaluate the outcome of the scope changes on the current schedule. If the project manager determines that the scope change will significantly affect the current project schedule, they may demand that the schedule be re-baselined in concern of any changes, which need to be made as part of the new project scope. The project stakeholder must review and approve this request before the schedule can be re-baselined.

Plan Approval

By signing below, I, _____ in my capacity as Project Sponsor approve of this Schedule Management Plan.

Name:
Title:

_____ -
_____
Signature Date
Approved

APPENDIX 9: COST MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Cost Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron

Last Revised On: March 14, 2018

This Cost management plan is a component of the project management plan. It establishes the criteria and the activities for developing, monitoring and controlling the project Cost.

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Management Approach 107
MEASURING PROJECT COSTS 107
REPORTING FORMAT 108
COST VARIANCE RESPONSE PROCESS 108
COST CHANGE Control PROCESS 108
PROJECT BUDGET 109
Plan Approval 109

Cost Management Plan

INTRODUCTION

The Project Manager will be responsible for managing and reporting on the project's cost throughout the duration of the project. During the monthly project status meeting, the Project Manager will meet with management to present and review the project's cost performance for the preceding month. Performance will be measured using earned value. 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 to bring it back within budget.

Management Approach

Costs for this project will be managed at the fourth level of the Work Breakdown Structure (WBS). Control Accounts (CA) will be created at this level to track costs. Earned Value calculations for the CA's will measure and manage the financial performance of the project. Although activity cost estimates are detailed in the work packages, the level of accuracy for cost management is at the fourth level of the WBS. Credit for work will be assigned at the work package level. Work started on work packages will grant that work package with 50% credit; whereas, the remaining 50% is credited upon completion of all work defined in that work package. Costs may be rounded to the nearest dollar and work hours rounded to the nearest whole hour.

Cost variances of +/- 0.1 in the cost and schedule performance indexes 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 indexes will change the status of the cost to an alert stage; as such, those values will be changed to 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 request and be must approved by the Project Sponsor before it can become within the scope of the project.

MEASURING PROJECT COSTS

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

- Schedule Variance (SV)
- Cost Variance (CV)
- Schedule Performance Index (SPI)
- 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 projects performance back to acceptable levels.

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

REPORTING FORMAT

Reporting for cost management will be included in the bi-monthly project progress report. The Monthly Project Progress Report will include a section labelled, “Cost Management”. This section will contain the Earned Value Metrics identified in the previous section. All cost variances outside of the thresholds identified in this Cost Management Plan will be reported on including any corrective actions which are planned. Change orders which are triggered based upon project cost overruns will be identified and tracked in this report.

COST VARIANCE RESPONSE PROCESS

The Control Threshold for this project is a CPI or SPI of less than 0.95 or greater than 1.15. If the project reaches one of these Control Thresholds, a Cost Variance Corrective Action Plan is required. The Project Manager will present the Project Sponsor with options for corrective actions within five business days from when the cost variance is first reported. Within three business days from when the Project Sponsor selects a corrective action option, the Project Manager will present the Project Sponsor with a formal Cost Variance Corrective Action Plan.
The Cost Variance Corrective Action Plan will detail the actions necessary to bring the project back within budget and the means by which the effectiveness of the actions in the plan will be measured. Upon acceptance of the Cost Variance Corrective Action Plan it will become a part of the project plan and the project will be updated to reflect the corrective actions.

COST CHANGE CONTROL PROCESS

The cost change control process will follow the established project change order process. Approvals for project budget/cost changes must be approved by the project sponsor.

PROJECT BUDGET

Please see the project budget associated with this hangar project below:

Item	Project Costs (USD $)
Construction Costs	$320,000.00
Administration	$80,000.00
Equipment Costs	$60,000.00
Project Management Costs	$120,000.00
-	-
Grand Total	$580,000.00

Plan Approval
By signing below, I, _____ in my capacity as Project Sponsor approve of this Cost Management Plan.

Name:
Title:

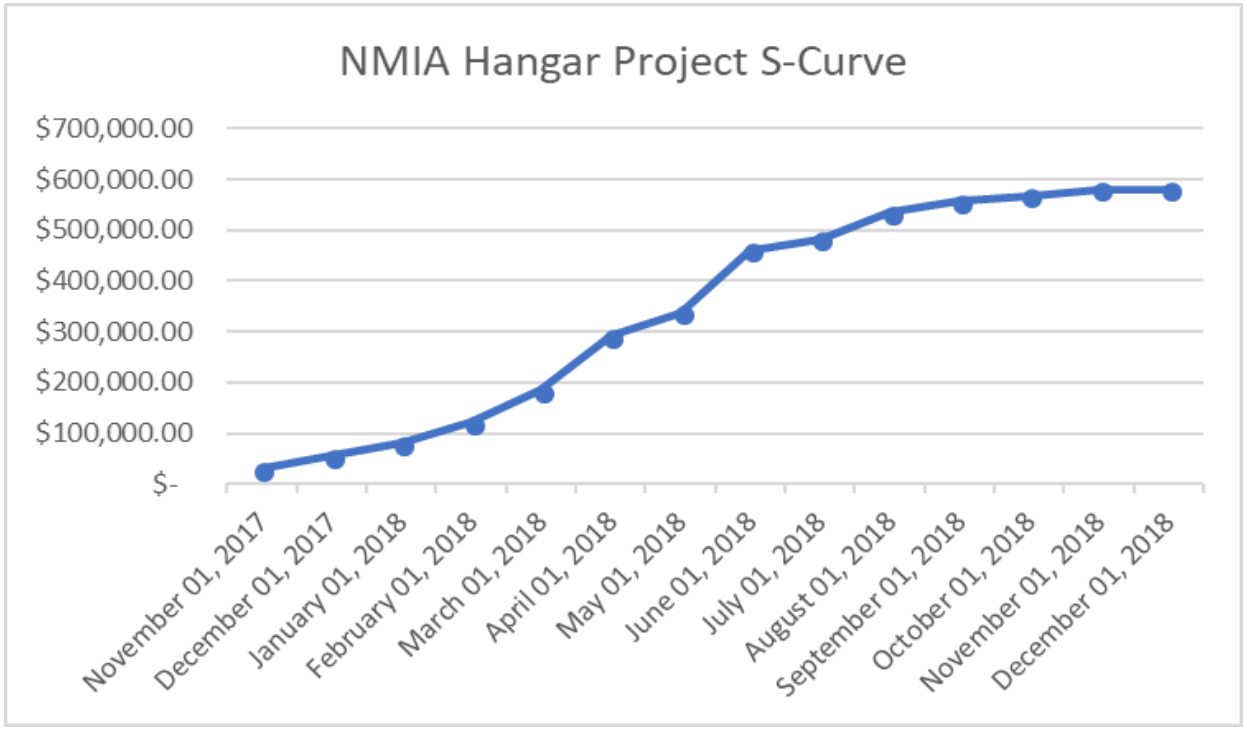
_____ -
_____
Signature Date
Approved

APPENDIX 10: PROJECT FUNDING REQUIREMENTS

Allocation of Project Funds: Building of the Convention Center Project

PROJECT PHASE	FUNDING TYPE	November 01, 2017	December 01, 2017	January 01, 2018	February 01, 2018	March 01, 2018	April 01, 2018	May 01, 2018	June 01, 2018	July 01, 2018	August 01, 2018	September 01, 2018	October 01, 2018	November 01, 2018	December 01, 2018
INITIATION	DESIGN	$ 30,000.00													
DESIGN	DEVELOPMENT		$ 25,000.00												
				$ 25,000.00											
RENOVATION	CONSTRUCTION				$ 30,000.00	$ 50,000.00	$ 95,000.00	$ 35,000.00	$ 110,000.00						
POST RENOVATION	TESTING									$ 10,000.00	$ 40,000.00	$ 10,000.00			
PROJECT MANAGEMENT	IMPLEMENTING				$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	$ 12,000.00	
	TOTAL	$ 30,000.00	$ 25,000.00	$ 25,000.00	$ 42,000.00	$ 62,000.00	$ 107,000.00	$ 47,000.00	$ 122,000.00	$ 22,000.00	$ 52,000.00	$ 22,000.00	$ 12,000.00	$ 12,000.00	$ -
	CUMULATIVE TOTAL	***$ 30,000.00***	***$ 55,000.00***	***$ 80,000.00***	***$ 122,000.00***	***$ 184,000.00***	***$ 291,000.00***	***$ 338,000.00***	***$ 460,000.00***	***$ 482,000.00***	***$ 534,000.00***	***$ 556,000.00***	***$ 568,000.00***	***$ 580,000.00***	***$ 580,000.00***

APPENDIX 11: PROJECT S CURVE



APPENDIX 12: HUMAN RESOURCE MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Human Resource Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron

Last Revised On: March 19, 2018

This Human Resource management plan is a component of the project management plan. It establishes the criteria and the activities for developing, monitoring and controlling the project Human Resource.

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Human Resource Management Plan

INTRODUCTION

Human resources management is an important part of the NMIA Hangar Project. The human resources management plan is a tool which will aid in the management of this project's human resource activities throughout the project until closure. The human resources management plan includes:

- Roles and responsibilities of team members throughout the project
- Project organization charts
- Staffing management plan to include:
    a. How resources will be acquired
    b. Timeline for resources/skill sets
    c. Training required to develop skills
    d. How performance reviews will be conducted
    e. Recognition and rewards system

The purpose of the human resources management plan is to achieve project success by ensuring the appropriate human resources are acquired with the necessary skills, resources are trained if any gaps in skills are identified, team building strategies are clearly defines, and team activities are effectively managed.

ROLES AND RESPONSIBILITIES

The roles and responsibilities for the NMIA Hangar Project are essential to project success. All team members must clearly understand their roles and responsibilities in order to successfully perform their portion of the project. For the NMIA Hangar Project the following project team roles and responsibilities have been established:

Names / Roles	Positions	Responsibilities
Project Manager	1 position	Responsible for the overall success of the Project. The PM must authorize and approve all project expenditures. The PM is also responsible for ensuring that work activities meet established acceptability criteria and fall within acceptable variances. The PM will be responsible for reporting project status in accordance with the communications management plan. The PM will evaluate the performance of all project team members. The PM is also responsible for acquiring human resources for the project by skillset. The PM must possess the

Names / Roles	Positions	Responsibilities
		following skills: leadership/management, budgeting, scheduling, and effective communication.
Assistant Project Manager	1 position	Responsible for creating project planning documents (i.e. Project Management Plan), taking meeting minutes, reporting to the PM on changes and updates made to the project for approval, managing the procurement process, and collecting daily reports from the site management team. The Assistant Project Manager is also responsible for broadcasting daily site reports to relevant stakeholders as directed by the Project Manager.
Accountant	1 position	Responsible for all financial transactions and financial reporting pertaining to the project.
Electrical Engineer	1 position	Responsible for ensuring that the building operates at an optimum and efficient electrical capacity. The EE is responsible for producing an electrical floorplan, lighting layout, switches, rises, etc. to be submitted to the Architect.
Plumbing Engineer	1 position	Responsible for producing floor layouts showing the lavatories, water closets, urinals, supply lines, waste water lines and connections to the sewer system. The PE will also submit drawings to the Architect.
Mechanical Engineer	1 position	Responsible for the air-conditioning systems, ensuring that they provide the necessary cooling capacity to maintain the CFM’s and airflow in the building. The ME also produces an air-conditioning, ducting and supply line layout to be submitted to the Architect.
Structural Engineer	1 position	Responsible for the structural integrity of the building and produces structural calculations and drawings to be issued to the Architect.

Names / Roles	Positions	Responsibilities
Quantity Surveyor	1 position	Responsible for collecting data based on the construction specifications and drafting documents to come to a cost analysis for the proposed project.
Land Surveyor	1 position	Responsible for topography and contour mapping.
Field Superintendent	1 position	Responsible for any and all production and business pertaining to the site works.
Foreman	1 position	Responsible for the technical requirements as per the specifications and drawings. The Foreman ensures that each skilled worker carries out the work per the specifications.
Laborer	5 positions	Responsible for the daily support of the construction process
Mason	2 positions	Responsible for the daily support of the construction process
Carpenter	2 positions	Responsible for the daily support of the construction process
Electrical Subcontractor	1 position	Responsible for reading and calculating electrical drawings and ensuring their correct placement in the building. In addition, the ES is responsible for installing all building and site lighting as per electrical and site layouts and schedules.
Plumbing Subcontractor	1 position	Responsible for reading and calculating plumbing drawings and ensuring their correct placement in the building within schedule constraints.
Roofing Subcontractor	1 position	Responsible for reading Architectural drawings pertaining to the roof layout and constructing the roof in accordance with the specifications and schedule constraints.
Fire and Safety Subcontractor	1 position	Responsible for determining the necessary apparatus required to ensure fire safety. The FSS is also responsible for the installation of the necessary apparatus to ensure fire safety within schedule constraints.
Windows and Doors Subcontractor	1 position	Responsible for ensuring that the window and door schedules and specifications are adhered to in the

Names / Roles	Positions	Responsibilities
		manufacturing of the windows and installation of same in accordance with the drawings and within schedule constraints.

The following RACI chart shows the relationship between project tasks and team members. Any proposed changes to project responsibilities must be reviewed and approved by the project manager. Changes will be proposed in accordance with the project's change control process. As changes are made all project documents will be updated and redistributed accordingly.

	Project Manager	Engineers	Subcontractors	Field Superintendent	Assistant Project Manager	Site Workers	Accountant
Requirements Gathering	A	R	I	R	R	I	
Building Design	A	R					
Change Request	A		I	I	R	I	
Feasibility Study	A						
Contract Administration	A				R		
Site Management	A		I	R	R	I	
Permits/Approvals	A			I	R		
Project Scope	A	I	I	I	R	I	
Project Communications	A		I	I	R	I	
Project Quality	A		I	I	R	I	
Stakeholder Management	A			I	R	I	
Accounting	A				R		R
Status Reports	A		I	I	R	I	
Manage Site Workers	A			R	I	I	
Procurements	A				R		

Key:
R – Responsible for completing the work
A – Accountable for ensuring task completion/sign off
C – Consulted before any decisions are made
I – Informed of when an action/decision has been made

STAFFING ACQUISTION

For the NMIA Hangar Project, the project staff will consist of a few internal resources; including the For the NMIA Hangar Project, the project staff will consist of a few internal resources; including the project manager and assistant project manager. However,

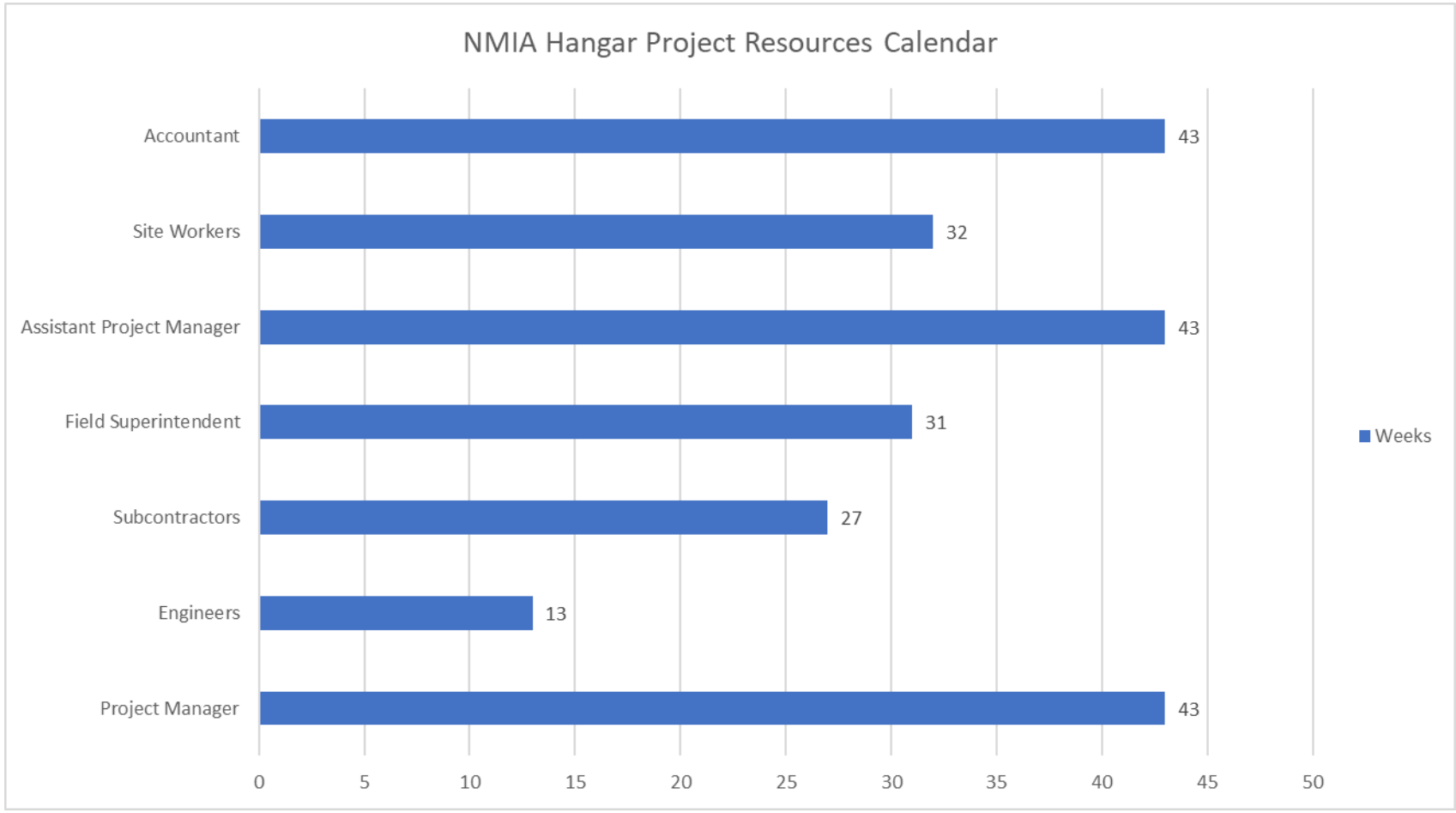
much of the work will be subcontracted to external resources who successfully win a bid from an RFP.

The Project Manager will negotiate with various companies in order to identify and assign resources for the project. All winning bidders must sign a contract/agreement with the performing organization before they may begin any project work.
The managerial staff and office workers will work at the office of NMIA and be required to visit the site daily. The subcontractors and site workers will work on site until contract completion. project manager and assistant project manager. However, much of the work will be subcontracted to external resources who successfully win a bid from a RFP.

The Project Manager will negotiate with various companies in order to identify and assign resources for the project. All winning bidders must sign a contract/agreement with the performing organization before they may begin any project work.
The managerial staff and office workers will work at the office of NMIA and be required to visit the site daily. The subcontractors and site workers will work on site until contract completion.

RESOURCE CALENDARS

The refurbishing of the NMIA Hangar will last for a total of approximately 43 weeks. It will require human resources allotments from beginning to end and will require ALL resources be identified before the project commences. Below the resource histogram will display the time in weeks each identified resource member will require to complete the project.


NMIA Hangar Project Resources Calendar
Accountant
Site Workers
Assistant Project Manager
Field Superintendent
Subcontractors
Engineers
Project Manager
43
32
43
31
27
13
43
0
5
10
15
20
25
30
35
40
45
50
Weeks

TRAINING

There is currently no training scheduled with regards to the Hangar Project since the organization has adequate staff with required skill sets; as well skill sets not in-house will be outsourced to professionals. However, if training requirements are identified, funding will be provided from the project reserve.

PERFORMANCE REVIEWS

The project manager will review each team member's assigned work activities at the onset of the project and communicate all expectations of work to be performed. The project manager will then evaluate each team member throughout the project to evaluate their performance and how effectively they are completing their assigned work. Prior to releasing project resources, the project manager will meet with the appropriate functional manager and provide feedback on employee project performance. The functional managers will then perform a formal performance review on each team member.

RECOGNITION AND REWARDS

Although the scope of this project does not allow for ample time to provide cross-training or potential for monetary rewards there are several planned recognition and reward items for project team members.

- Upon successful completion of the Project, a party will be held to celebrate the success of each team member.
- Upon successful completion of the project, any team member who satisfactorily completed all assigned work packages on time after verified inspection, will receive a certificate of thanks from the CEO.
- Team members who successfully complete all of their assigned tasks will be short-listed for the next NMIA project
- Labour force team has opportunity for bonuses as an incentive for early task completion that stands up to final inspection.

Plan Approval

By signing below, I, _____ in my capacity as Project Sponsor approve of this Human Resource Management Plan.

Name:
Title:

_____ _____

Signature Date Approved

APPENDIX 13: QUALITY MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Quality Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron

Last Revised On: March 19, 2018

This Quality management plan is a component of the project management plan. It establishes the criteria and the activities for developing, monitoring and controlling the project Quality.

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QUALITY REQUIREMENTS/STANDARDS ..... **Error! Bookmark not defined.**
QUALITY ASSURANCE ..... **Error! Bookmark not defined.**
QUALITY CONTROL..... **Error! Bookmark not defined.**
QUALITY CONTROL MEASUREMENTS..... **Error! Bookmark not defined.**
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Quality Management Plan

INTRODUCTION

The Quality Management Plan for the NMIA Hangar project will establish the activities, processes, and procedures for ensuring a quality product upon the conclusion of the project. The purpose of this plan is to:

- Ensure quality is planned
- Define how quality will be managed
- Define quality assurance activities
- Define quality control activities
- Define acceptable quality standards

QUALITY MANAGEMENT APPROACH

The quality management approach for the NMIA Hangar project will ensure quality is planned for both the product and process. In order to be successful, this project will meet its quality objectives by utilizing an integrated quality approach to define quality standards, measure quality and continuously improve quality.
Product quality for the NMIA Hangar project will be defined by the company's current standards and criteria based on industry standards. The focus is on the project's deliverable and the standards and criteria being used will ensure the product meets established quality standards and client satisfaction.
Process quality for the NMIA Hangar project will focus on the processes by which the project deliverable will be designed and constructed. Establishing process quality standards will ensure that all activities conform to organizational and regulatory standards which results in the successful delivery of the product.
The Project Manager/Architect will define and document all organizational and project specific quality standards for both product and processes. All quality documentation will become part of the Airport Hangar Project Management Plan and will be transitioned into a building operational management document upon the successful completion of the project.
Metrics will be established and used to measure quality throughout the project life-cycle for the product and processes. The Project Manager/Architect will be responsible for working with the project team to define these metrics, conduct measurements, and analyze results. These product and process measurements will be used as one criterion in determining the success of the project and must be reviewed by the project sponsor/client. Metrics will include:

- Building Design
- Schedule
- Resources
- Cost
- Process performance
    - Fabrication
- Product performance
    - Attenuation
    - Tensile strength
    - Compression strength
- Customer Satisfaction

Quality improvements will be identified by any member of the project team. Each recommendation will be reviewed to determine the cost versus benefit of implementing the improvement and how the improvement will affect the product or processes. If an improvement is implemented, the Assistant Project Manager will update all project documentation to include the improvement.

QUALITY REQUIREMENTS/STANDARDS

Product Quality:

The product quality standards and requirements will be determined by the Project Manager/Architect. These standards will primarily be based on the company's documented standards. There may be product-specific quality standards identified that are not currently part of the documented organizational standards. In this case, the project Manager/Architect will review these newly identified standards and the Assistant Project Manager will incorporate them into organizational documentation if approved. The project team will also document any newly identified quality standards into the NMIA Hangar Project Management plan and ensure communication with all stakeholders.

Process Quality:
The process quality standards and requirements will be determined by the Project Manager/Architect. Many of these standards will be based on existing company process standards. The NMIA Hangar project team will work with the Project Manager/Architect to establish acceptable standards and document these standards for incorporation into both organizational process documents as well as the NMIA Hangar Project Management plan. These standards will be communicated to all project stakeholders.

QUALITY ASSURANCE

The quality assurance of the NMIA Hangar focuses on the processes used in the refurbishing of the building. In order to ensure quality, an iterative quality process will be used throughout the project life-cycle. This iterative process includes measuring process metrics, analyzing process data, and continuously improving the processes. The Project Manager/Architect and the project team will perform assessments at planned intervals throughout the project to ensure all processes are being correctly implemented and executed. The table below provides the key quality assurance metrics for the Project.

Process Action	Acceptable Standards	Assessment Activities	Assessment Interval
Hangar wall strength	- Local earthquake standards - International hangar standards	Field testing	Monthly
Hangar door strength	- Required strength	Field testing	After installation
Equipment operation	- Efficient and reliable	Field testing	After installation

The Project Manager and the project team will provide day-to-day quality management and conduct process audits on a weekly basis, monitor process performance metrics, and assure all processes comply with project standards. If discrepancies are found, the

Project Manager or Assistant Project Manager will meet with the Field Superintendent and review the identified discrepancies.
The Assistant Project Manager will schedule regularly occurring project, management, and document reviews. In these reviews, an agenda item will include a review of project processes, any discrepancies and/or audit findings, and a discussion on process improvement initiatives.
Process improvement is another aspect of quality assurance. Quality assurance reviews, findings, and assessments should always result in some form of process improvement and, as a result, product improvement. All process improvement efforts must be documented, implemented, and communicated to all stakeholders as changes are made.

QUALITY CONTROL

The quality control of the Renovation of a hangar at the Norman Manley International Airport project focuses primarily on the design and construction of the building. The quality performance standards for the Renovation of a hangar at the Norman Manley International Airport Project are in accordance with the organizational standards. Additionally, all physical measurements will be conducted to ensure compliance with established quality standards.
The project team will perform all physical measurements on site and will ensure all physical and performance standards are met.
The Project Manager will schedule regularly occurring project, management, and document reviews. In these reviews, an agenda item will include a review of products, any discrepancies and/or audit findings from the Assistant Project Manager, and a discussion on product improvement initiatives.
It is imperative to the success of the project that all of the established physical and performance standards are met.

QUALITY CONTROL MEASUREMENTS

All Renovation of a hangar at the Norman Manley International Airport Project deliverables and processes 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.

QUALITY ASSURANCE LOG

Process Inspection	Date	Process measured	Required Value	Actual Measured	Acceptable? Y/N	Recommendation	Date Resolved

QUALITY CONTROL LOG

Deliverable	Date	Item Measured	Required Value	Actual Measured	Acceptable? Y/N	Recommendation	Date Resolved

Plan Approval

By signing below, I, _____ in my capacity as Project Sponsor approve of this Quality Management Plan.

Name:
Title:

_____ _____
Signature Date Approved

APPENDIX 14: COMMUNICATIONS MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Communications Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron

Last Revised On: March 19, 2018

This Communications management plan is a component of the project management plan. It establishes the criteria and the activities for developing, monitoring and controlling the project Quality.

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COMMUNICATION DELIVERY METHODS AND TECHNOLOGIES.**Error! Bookmark not defined.**

GUIDELINES FOR MEETINGS ..... **Error! Bookmark not defined.**

COMMUNICATIONS MATRIX ..... **Error! Bookmark not defined.**

Plan Approval..... **Error! Bookmark not defined.**

COMMUNICATION Management Plan

INTRODUCTION

This Communications Management Plan sets the communications framework for this project. It will serve as a guide for communications throughout the life of the project and will be updated as communication needs change. This plan identifies and defines the roles of persons involved in this project. It also includes a communications matrix which maps the communication requirements of this project. An in-depth guide for conducting meetings details both the communications rules and how the meetings will be conducted, ensuring successful meetings. A project team directory is included to provide contact information for all stakeholders directly involved in the project.

COMMUNICATIONS MANAGEMENT APPROACH

The Project Manager will take a proactive role in ensuring effective communications on this project. The communications requirements are documented in the Communications Matrix presented above in this document. The Communications Matrix will be used as the guide for what information to communicate, who is to do the communicating, when to communicate it and to whom to communicate.

As with most project plans, updates or changes may be required as the project progresses or changes are approved. Changes or updates may be required due to changes in personnel, scope, budget, or other reasons. Additionally, updates may be required as the project matures and additional requirements are needed. The project manager is responsible for managing all proposed and approved changes to the communications management plan. Once the change is approved, the project manager will update the plan and supporting documentation and will distribute the updates to the project team and all stakeholders. This methodology is consistent with the project's Change Management Plan and ensures that all project stakeholders remain aware and informed of any changes to communications management.

AUDIENCE

The major audiences for this project are listed below.

- Project Sponsors: CEO and Representative from the Board of Directors, NMIA
- Project Manager
- Assistant Project Manager
- Project Team
- Regulatory Governmental Agencies
- Sub consultants

- Subcontractors
- Financial Advisor
- Site workers

COMMUNICATION DELIVERY METHODS AND TECHNOLOGIES

The primary communication vehicles are e-mail, phone, face-to-face (personal communication), meetings, reports, presentations and announcements.

GUIDELINES FOR MEETINGS

Meeting Agenda
Meeting Agenda will be distributed 5 business days in advance of the meeting. The Agenda should identify the presenter for each topic along with a time limit for that topic. The first item in the agenda should be a review of action items from the previous meeting.

Meeting Minutes
Meeting minutes will be distributed within 2 business days following the meeting. Meeting minutes will include the status of all items from the agenda along with new action items and the Parking Lot list.

Action Items
Action Items are recorded in both the meeting agenda and minutes. Action items will include both the action item along with the owner of the action item. Meetings will start with a review of the status of all action items from previous meetings and end with a review of all new action items resulting from the meeting. The review of the new action items will include identifying the owner for each action item.

Meeting Chair Person
The Chair Person is responsible for distributing the meeting agenda, facilitating the meeting and distributing the meeting minutes. The Chair Person will ensure that the meeting starts and ends on time and that all presenters adhere to their allocated time frames.

Note Taker
The Note Taker is responsible for documenting the status of all meeting items, maintaining a Parking Lot item list and taking notes of anything else of importance during the meeting. The Note Taker will give a copy of their notes to the Chair Person at the end of the meeting as the Chair Person will use the notes to create the Meeting Minutes.

Time Keeper
The Time Keeper is responsible for helping the facilitator adhere to the time limits set in the meeting agenda. The Time Keeper will let the presenter know when they are approaching the end of their allocated time. Typically, a quick hand signal to the presenter indicating how many minutes remain for the topic is sufficient.

COMMUNICATIONS MATRIX

Communication Type	Objective of Communication	Medium	Frequency	Attendees	Deliverable	Format
Introductory Meeting	Introduce the project team and the project. Review project objectives and management approach.	Face to Face	Once	- Project Sponsor - Project Team - Stakeholders	- Agenda - Meeting Minutes	Soft copy archived and emailed to each person
Project Team Meetings	Review status of the project with the team.	Face to Face Skype video call	Weekly	- Project Team	- Agenda - Meeting Minutes - Project Schedule	Soft copy archived and emailed to each person
Monthly Project Status Meetings	Report on the status of the project to management.	Face to Face Skype video call	Monthly	- Project Team	- Slide Updates - Project Schedule	Soft copy archived and emailed to each person
Project Status Reports	Report the status of the project including activities, progress, costs and issues.	- Email	Monthly	- Project Sponsor - Project Team - Stakeholders	- Project Status Report - Project Schedule	Soft copy archived and emailed to each person

Plan Approval

By signing below, I, _____ in my capacity as Project Sponsor approve of this Quality Management Plan.

Name:

Title:

_____ _____

Signature Date Approved

APPENDIX 15: STAKEHOLDER MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Stakeholder Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron
Last Revised On: March 19, 2018

This Stakeholder management plan is a component of the project management plan. It establishes the criteria and the activities for developing, monitoring and controlling the project Quality.

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STAKEHOLDER Management Plan

INTRODUCTION

The stakeholder management plan is used for: planning the engagement of stakeholders, developing strategies to reduce or eliminate resistance and creating strategies to increase support and buy-in. Because planning for stakeholder management generates activities, this plan becomes an input to other subsidiary plans.

STAKEHOLDERS MANAGEMENT APPROACH

To identify a stakeholder, the project team will brainstorm to determine the following:

- Will the person be directly or indirectly affected by this study?
- Will a person or their organization positively or negatively influence the project?
- Does the person or their organization have special skills or competences the project will need?
- Can the person potentially benefit from the project or are they in a position to resist this change?
- How involved can this person be in the project?

STAKEHOLDER REGISTER

Stakeholder Name	Communication Type	Communication Medium	Notes
NMIAL	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Has high interest in the project and is responsible for the funding of the project. Is most critical throughout enter project lifecycle.
Snr. Director Airport Operations	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Has high interest in the project and is responsible for the approval of funding of the project.
Director of Operations	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Has high interest in the project being successful.
Project Manager	- Meetings	E-mail	Will have overall

Stakeholder Name	Communication Type	Communication Medium	Notes
	- Personal Communication - Reports - Presentation - Announcements	Face to Face Telephone	responsibility to ensure the project is successfully delivered within budget, on-time and to scope of the project sponsor.
Assistant Project Manager	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Has overall responsibility to support the Project Manager in all activities geared at the successful execution of the project.
Accountant	- Meetings - Personal Communication - Reports - Presentation - Announcements	E-mail Face to Face Telephone	Will oversee proper expenditure of funds throughout the project
Electrical Engineer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged to oversee the electrical needs during initiation
Plumbing Engineer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged to oversee the plumbing needs during initiation
Mechanical Engineer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged to oversee the mechanical needs during initiation
Structural Engineer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged to oversee the structural needs during initiation
Quantity Surveyor	- Personal Communication - Meetings	E-mail Face to Face Telephone	Will be engaged during initiation phase of project

Stakeholder Name	Communication Type	Communication Medium	Notes
	- Project Announcements		
Land Surveyor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Will be engaged during initiation phase of project
Field Superintendent	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.
Foreman	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.
Laborer	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.
Mason	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site. Also manages methods and production.
Carpenter	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone	Responsibility for following technical specifications and industry standards on site.

Stakeholder Name	Communication Type	Communication Medium	Notes
			Also manages methods and production.
Electrical Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of electrical fixtures
Plumbing Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of plumbing fixtures
Roofing Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of roofing fixtures
Fire and Safety Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of Fire and Safety fixtures
Windows and Doors Subcontractor	- Personal Communication - Meetings - Project Announcements	E-mail Face to Face Telephone Written RFP	Outsourced contractor responsible for the successful delivery, installation and short-term maintenance of Windows and Doors fixtures

Stakeholder Name	Communication Type	Communication Medium	Notes
Environmental Agency	- Meetings - Letters	E-mail Written RFP	Agency will provide environmental permits allowing the refurnishing project to happen
Government of Jamaica	- Meetings - Letters	E-mail Written RFP	Has interest in the successful execution of the project for potential revenue creation
Municipal Corporation	- Meetings - Letters	E-mail Written RFP	Has interest in the successful execution of the project for potential revenue creation
Federal Aviation Authority (FAA)	- Meetings - Letters	E-mail Written RFP	Has low interest in the successful execution of the project and will be most integral at initiation phase
Airline Corporations	- Meetings - Letters	E-mail Written RFP	Has interest in the successful execution of the project for potential revenue benefits

STAKEHOLDER ANALYSIS

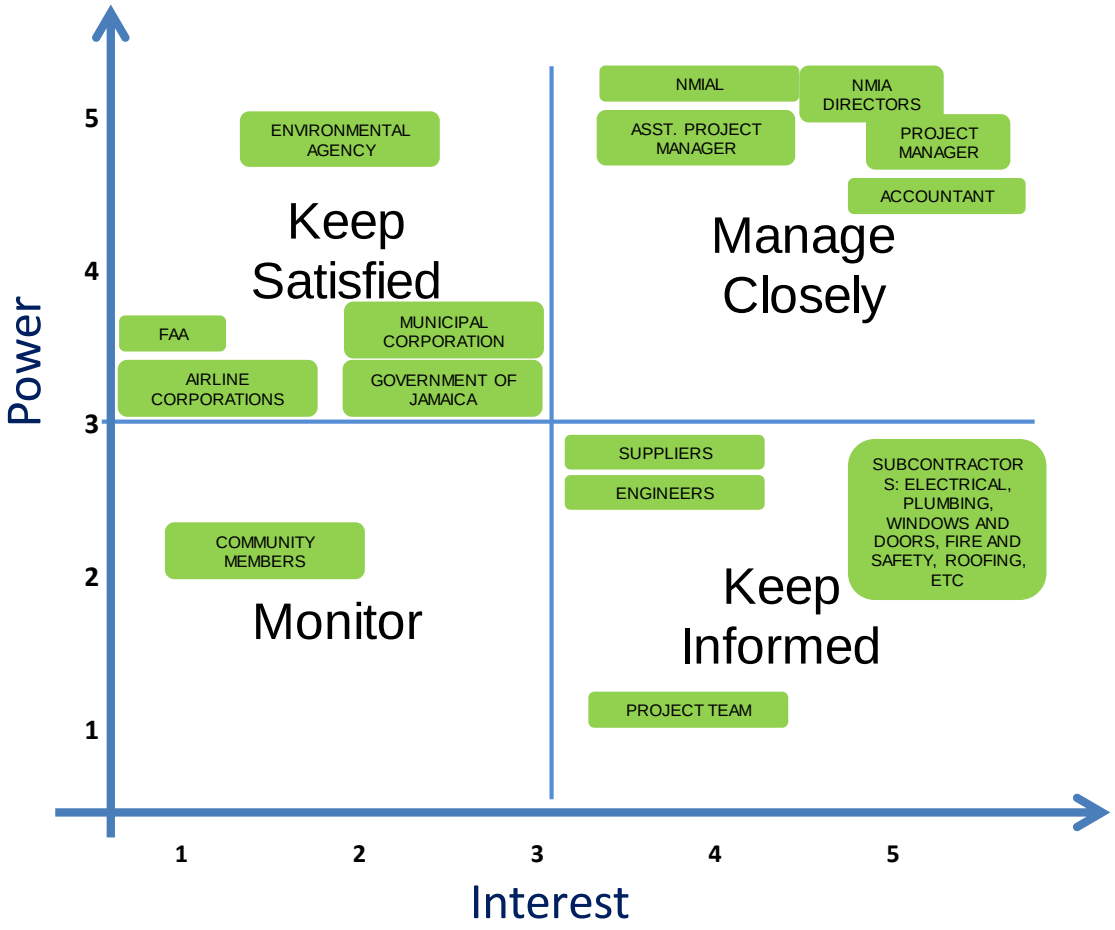
Stakeholder Name	Key interests or stake in the change and degree of impact (H, M or L?)	Level of influence over the change (H, M or L?)	Present attitude to the project (in favour or opposed?)	Stakeholder management strategies	Key points for Stakeholder Engagement and Management Plan
NMIAL	- High Interest - High Impact	H	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Snr. Director Airport Operations	- High Interest - High Impact	H	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Director of	- High	H	IN	Consult,	Continued

Stakeholder Name	Key interests or stake in the change and degree of impact (H, M or L?)	Level of influence over the change (H, M or L?)	Present attitude to the project (in favour or opposed?)	Stakeholder management strategies	Key points for Stakeholder Engagement and Management Plan
Operations	- Interest - High Impact		FAVOUR	involve and keep informed	two-way engagement essential
Project Manager	- High Interest - High Impact	H	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Assistant Project Manager	- High Interest - Medium Impact	M	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Accountant	- High Interest - Medium Impact	M	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Electrical Engineer	- High Interest - High Impact	M	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Plumbing Engineer	- High Interest - High Impact	M	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Mechanical Engineer	- High Interest - High Impact	M	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Structural Engineer	- High Interest - High Impact	M	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Quantity Surveyor	- High Interest - High Impact	M	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Land Surveyor	- High Interest - High Impact	M	IN FAVOUR	Consult, involve and keep informed	Continued two-way engagement essential
Field	- High	M	IN	Involve and	Continued

Stakeholder Name	Key interests or stake in the change and degree of impact (H, M or L?)	Level of influence over the change (H, M or L?)	Present attitude to the project (in favour or opposed?)	Stakeholder management strategies	Key points for Stakeholder Engagement and Management Plan
Superintendent	- Interest - Medium Impact		FAVOUR	keep informed	two-way engagement essential
Foreman	- High Interest - Medium Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Laborer	- High Interest - Medium Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Mason	- High Interest - High Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Carpenter	- High Interest - High Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Electrical Subcontractor	- High Interest - High Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Plumbing Subcontractor	- High Interest - High Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Roofing Subcontractor	- High Interest - High Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Fire and Safety Subcontractor	- High Interest - High Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Windows and Doors Subcontractor	- High Interest - High Impact	L	IN FAVOUR	Involve and keep informed	Continued two-way engagement essential
Environmental	- Medium	L	NEUTRAL	Keep	One-way

Stakeholder Name	Key interests or stake in the change and degree of impact (H, M or L?)	Level of influence over the change (H, M or L?)	Present attitude to the project (in favour or opposed?)	Stakeholder management strategies	Key points for Stakeholder Engagement and Management Plan
Agency	Interest - Medium Impact			informed	engagement essential
Government of Jamaica	- High Interest - High Impact	M	NEUTRAL	Keep informed	One-way engagement essential
Municipal Corporation	- Medium Interest - Medium Impact	L	NEUTRAL	Keep informed	One-way engagement essential
Federal Aviation Authority (FAA)	- Medium Interest - Medium Impact	L	NEUTRAL	Keep informed	One-way engagement essential
Airline Corporations	- High Interest - Low Impact	L	NEUTRAL	Keep informed	One-way engagement essential

Stakeholders - Power/Interest grid



Plan Approval

By signing below, I, _____ in my capacity as Project Sponsor approve of this Quality Management Plan.

Name:
Title:

_____ _____

Signature Date Approved

APPENDIX 16: RISK MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Risk Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron
Last Revised On: March 19, 2018

This Risk management plan is a component of the project management plan. It establishes the criteria and the activities for developing, monitoring and controlling the project Quality.

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RISK Management Plan

INTRODUCTION

A risk is an event or condition that, if it occurs, could have a positive or negative effect on a project's objectives. Risk Management is the process of identifying, assessing, responding to, monitoring, and reporting risks. This Risk Management Plan defines how risks associated with the NMIA Hangar project will be identified, analyzed, and managed. It outlines how risk management activities will be performed, recorded, and monitored throughout the lifecycle of the project and provides templates and practices for recording and prioritizing risks.

The Risk Management Plan is created by the project manager in the Planning Phase of the CDC Unified Process and is monitored and updated throughout the project.

The intended audience of this document is the project team, project sponsor and management.

RISK MANAGEMENT PROCEDURE

The project manager working with the project team and project sponsors will ensure that risks are actively identified, analyzed, and managed throughout the life of the project. Risks will be identified as early as possible in the project so as to minimize their impact. The steps for accomplishing this are outlined in the following sections. The project manager will serve as the Risk Manager for this project.

RISK IDENTIFICATION

Risk identification will involve the project team, appropriate stakeholders, and will include an evaluation of environmental factors, organizational culture and the project management plan including the project scope. Careful attention will be given to the project deliverables, assumptions, constraints, WBS, cost/effort estimates, resource plan, and other key project documents.

A Risk Management Log will be generated and updated as needed and will be stored electronically in the project library located at the NMIA offices.

RISK ANALYSIS

The probability and impact of occurrence for each identified risk will be assessed by the project manager, with input from the project team using the following approach:

Probability

- High – Greater than <70%> probability of occurrence
- Medium – Between <30%> and <70%> probability of occurrence
- Low – Below <30%> probability of occurrence

Impact

- High – Risk that has the potential to greatly impact project cost, project schedule or performance
- Medium – Risk that has the potential to slightly impact project cost, project schedule or performance
- Low – Risk that has relatively little impact on cost, schedule or performance

Risks that fall within the high zones will have risk response planning which may include both a risk mitigation and a risk contingency plan.

RISK RESPONSE PLANNING

Each major risk will be assigned to a project team member for monitoring purposes to ensure that the risk will not “fall through the cracks”.

For each major risk, one of the following approaches will be selected to address it:

- Avoid – eliminate the threat by eliminating the cause
- Mitigate – Identify ways to reduce the probability or the impact of the risk
- Accept – Nothing will be done
- Transfer – Make another party responsible for the risk

For each risk that will be mitigated, the project team will identify ways to prevent the risk from occurring or reduce its impact or probability of occurring. This may include prototyping, adding tasks to the project schedule, adding resources, etc.

For each major risk that is to be mitigated or that is accepted, a course of action will be outlined for the event that the risk does materialize in order to minimize its impact.

RISK MONITORING, CONTROLLING AND REPORTING

The level of risk on a project will be tracked, monitored and reported throughout the project lifecycle.

A “Top 20 Risk List” will be maintained by the project team and will be reported as a component of the project status reporting process for this project.

All project change requests will be analyzed for their possible impact to the project risks.

Management will be notified of important changes to risk status as a component to the Executive Project Status Report.

RISK REGISTER

Risk ID	Risk Description	Risk Category	Date Identified	Status	Assigned to	Prevention strategy	Contingency Plan
1	Severe change in climate	Scheduling / Financial	Jan – 02 – 2018	Ongoing	Project Manager	None	Increase resources in-case of severe weather to offset time lost
2	Delays in shipping of materials/equipment	Scheduling	Mar-09-2018	Ongoing	Assistant Project Manager	Make advance order of critical resources	Try to source most critical resources locally
3	Delay in permits	Scheduling	Feb-02-2018	Ongoing	Project Manager	Apply for permits early and extend invite to agency for site visit	
4	Material price increasing over time	Financial	Jan-02-2018	Ongoing	Project Manager	Order critical items in bulk at the initiation phase	Bulk buying of critical materials that span across the project schedule
5	On-site accidents	Scheduling / Financial	Jan-02-2018	Ongoing	Project Manager	Have daily safety meetings and setup visible reminders	Get on-site insurance and keep a pool of substitute skilled persons
6	Underestimating project cost	Financial	Jan-02-2018	Ongoing	Project Manager	Proper planning and budgeting	Project contingency budget

RISK REGISTER ANALYSIS

Risk ID	Risk Description	Probable Cause	Trigger events	Risk Response	Risk Contingency Plan	Risk Probability	Risk Impact
1	Severe change in climate	Act of nature	Weather reports	Accept natural acts of nature that can't be avoided	Add time contingency into project schedule	L	M
2	Delays in shipping of materials/equipment	Human error/weather problems	Delayed delivery advisory from supplier	Make advance order of critical resources	Try to source most critical resources locally	M	M
3	Delay in permits	Human error	Delayed production due to lack of permits	Apply for permits early and extend invite to agency for site visit		L	H
4	Material price increasing over time	Inflation rates	Sky rocketing prices of resources	Order critical items in bulk at the initiation phase	Bulk buying of critical materials that span across the project schedule	L	H
5	On-site accidents	Human error/Natural disasters	Human injury	Have daily safety briefings and setup visible reminders	Get on-site insurance and keep a pool of substitute skilled persons	M	M
6	Underestimating project cost	Human error, poor planning	Analysis shows project running over budget	Proper planning and budgeting	Project contingency budget	L	H

Plan Approval

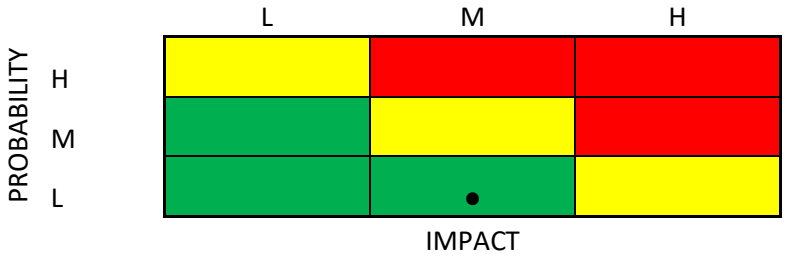
By signing below, I, _____ in my capacity as Project Sponsor approve of this Quality Management Plan.

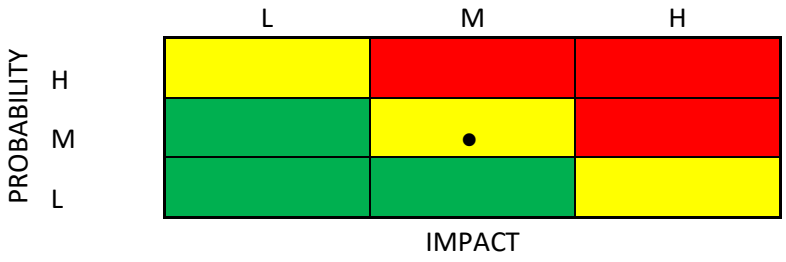
Name:
Title:

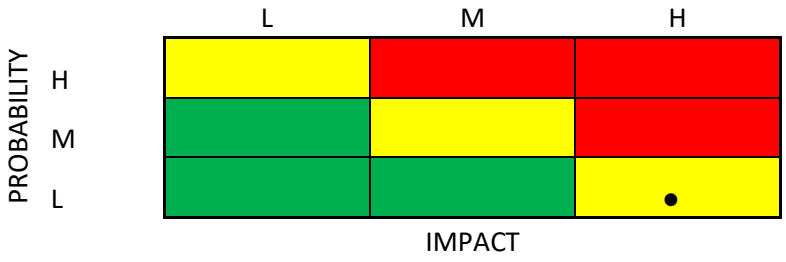
_____ _____

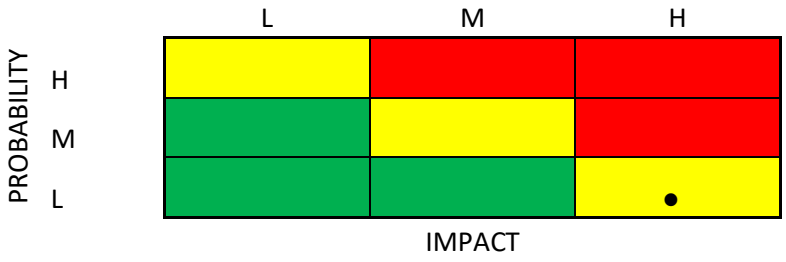
Signature Date Approved

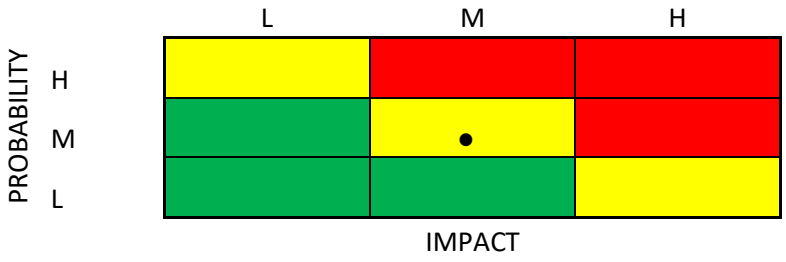
APPENDIX 17: RISK PROBABILITY AND IMPACT MATRIX

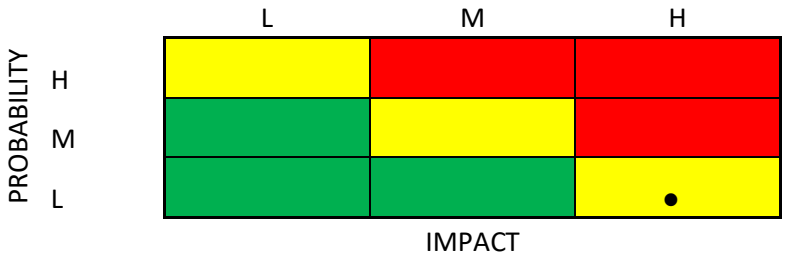
<table>
<tr><td colspan="2">Risk ID # 1: Severe Change in Climate</td></tr>
<tr><td>Description of Risk Event:</td><td>Prevention Strategies:</td></tr>
<tr><td>Weather conditions persisting more than 2 days that cause scheduling delays</td><td>Prevention in natural disasters is near to impossible and even the most ridiculous of strategies such as putting a tent over the entire site will not survive the winds of a Category 1 hurricane. Therefore, this risk will be accepted and dealt with as it arises.</td></tr>
<tr><td>Probable causes:</td><td>Risk Response/Contingency Plans:</td></tr>
<tr><td>Act of Nature</td><td>Risk Response: to accept that acts of nature occur and in this case the funds allocated for the budget will not allow for the desired prevention strategy
Contingency plan: a time contingency has been included</td></tr>
<tr><td>Risk Matrix:</td><td>Trigger Events:</td></tr>
<tr><td> 
</td><td>News reports on weather.</td></tr>
</table>

Risk ID # 2: Delays in shipping of materials/equipment	
Description of Risk Event:	**Prevention Strategies:**
Schedule delays resulting from project materials missing shipping dates	Include consequences of delay in contract with fabricators and allocate a scheduling contingency of approximately two-weeks
Probable causes:	**Risk Response/Contingency Plans:**
Human error/weather problems	*Risk Response*: Make advance order of critical resources *Contingency plan*: Try to source most critical resources locally
Risk Matrix:	**Trigger Events:**
	Shipping date of materials delayed

Risk ID # 3: Delay in permits	
Description of Risk Event:	**Prevention Strategies:**
Schedule delays resulting from unavailability of necessary permits	Allocate a scheduling contingency of approximately two-weeks
Probable causes:	**Risk Response/Contingency Plans:**
Human error	*Risk Response*: Apply for permits early and extend invite to agency for site visit *Contingency plan*: Try to complete other tasks that don't require a permit
Risk Matrix:	**Trigger Events:**
	Delayed production due to lack of permits

<table>
<tr><td colspan="2">Risk ID # 4: Material price increasing over time</td></tr>
<tr><td>Description of Risk Event:</td><td>Prevention Strategies:</td></tr>
<tr><td>Cost overrun due to an increase in materials over the project lifetime</td><td>Procurement contracts must be Firm Fixed Price (FFP)</td></tr>
<tr><td>Probable causes:</td><td>Risk Response/Contingency Plans:</td></tr>
<tr><td>Inflation rates</td><td>Risk Response: Bulk buying of critical materials that span across the project schedule
Contingency plan: Contact sellers and meet regarding contract terms and agreements</td></tr>
<tr><td>Risk Matrix:</td><td>Trigger Events:</td></tr>
<tr><td> 
</td><td>Increase in purchase price of items being procured</td></tr>
</table>

Risk ID # 5: On-site accidents	
Description of Risk Event:	**Prevention Strategies:**
Incidents that can occur resulting in bodily injury or damaged project materials	Ensure proper site management and supervision; as well ensure all site members get adequate tools for safety. Hard hats, steel plated boots, etc.
Probable causes:	**Risk Response/Contingency Plans:**
Weather conditions or human error	*Risk Response*: Avoid at all costs *Contingency plan*: ensure proper insurance coverage for site staff is active and sufficient
Risk Matrix:	**Trigger Events:**
	Human injury and material damage

Risk ID # 6: Underestimating project cost	
Description of Risk Event:	**Prevention Strategies:**
Project budget not accurately calculated, resulting in insufficient funds to complete project	Project Manager and Assistant Project Manager will both check budget multiple times to ensure accuracy
Probable causes:	**Risk Response/Contingency Plans:**
Human error	*Risk Response*: Avoid at all costs *Contingency plan*: contingency added to budget
Risk Matrix:	**Trigger Events:**
	Data shows increase in estimated costs versus actual expense.

APPENDIX 18: PROCUREMENT MANAGEMENT PLAN

NORMAN MANLEY INTERNATIONAL AIRPORT

Procurement Management Plan

Project Name: Hangar Renovation at the Norman Manley International Airport
Project Number: 0001

Prepared By: Samuel Heron
Last Revised On: March 19, 2018

This Procurement management plan is a component of the project management plan. It establishes the criteria and the activities for developing, monitoring and controlling the project Quality.

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PROCUREMENT Management Plan

INTRODUCTION

This Procurement Management Plan sets the procurement framework for this project. It will serve as a guide for managing procurement throughout the life of the project and will be updated as acquisition needs change.

PROCUREMENT MANAGEMENT PROCEDURE

The project manager will provide oversight and management for all procurement activities under this project. The assistant project manager will work with the project manager to identify all items to be procured for the successful completion of the project. The project manager will review the procurement items, determine whether it is advantageous to make or buy the items, and begin the vendor selection, purchasing and the contracting process; through an external procurement process which will include requesting proposals from potential providers.

PROCUREMENT DEFINITION

The following procurement items and/or services have been determined to be essential for project completion and success. The following list of items, justification, and timeline are pending project manager review for submission to the assistant project manager for purchasing to commence:

Item/Service	Justification	Needed By
Construction tools	Hammers, screw drivers, shovels, etc.	01/MAY/2018
Plywood	Will be used to support formwork	15/JUNE/2018
Concrete	Cement mixture which will reinforce super structure	15/JUNE/2018
Nails and screws	Fasteners	15/JUNE/2018
Electrical Equipment	Wires, breakers, circuits, etc.	15/JUNE/2018
Plumbing Equipment	PVC pipes, waterproof glue, etc.	15/JUNE/2018
Paint	Internal and External wall paint	01/NOV/2018
Windows and Doors	All windows and doors including hangar bay door for airplanes	01/SEP/2018
Ventilation	Air conditioning	02/DEC/2018
Security Equipment	Lights, cameras and	1/NOV/2018

	surveillance equipment	
Airplane maintenance equipment	Air compressors, bird strobe light, two-way radios, generators and more.	10/DEC/2018

The following individuals are authorized through this document to initiate and approve purchases for the NMIA Hangar project:

NAME	ROLE
S. Heron	Project Manager
A.Hudson	Assistant Project Manager

TYPE OF CONTRACT TO BE USED

All items and services to be procured for this project will be solicited under firm-fixed price contracts. The project team will work to define the item types, quantities, services and required delivery dates. The project manager will then solicit bids from various vendors in order to procure the items within the required time frame and at a reasonable cost under the firm fixed price contract once the vendor is selected.

As is government law in Jamaica, any items being procured for greater than USD$5,500 will require at least three sealed bids for purchase to be considered.

PROCUREMENT RISK

All procurement activities carry some potential for risk which must be managed to ensure project success. While all risks will be managed in accordance with the project's risk management plan, there are specific risks which pertain specifically to procurement which must be considered:

- Conflicts with current contracts and vendor relationships
- Potential delays in shipping and impacts on cost and schedule
- Questionable past performance for vendors
- Potential that final product does not meet required specifications

These risks are not all-inclusive and the standard risk management process of identifying, documenting, analyzing, mitigating, and managing risks will be used.

PROCUREMENT RISK MANAGEMENT

As previously stated, project risks will be managed in accordance with the project's risk management plan. However, project procurement efforts involve external organizations and potentially affect current and future business relationships as well as internal supply chain and vendor management operations, as such will require special consideration.

Any issues concerning procurement actions or any newly identified risks will immediately be communicated to the project management team as well as the project sponsor.

COST DETERMINATION

As mentioned above this project we will issue a Request for Proposal (RFP) in order to solicit proposals from various vendors which describe how they will meet our requirements and the cost of doing so. All proposals will include vendor support for all items from the procurement definition paragraph. Additionally, the vendors will outline how the work will be accomplished, who will perform the work, vendors' experience in providing these goods, customer testimonials, backgrounds and resumes of employees performing the work, and a line-item breakdown of all costs involved.

All information must be included in each proposal, as the proposals will be used as the foundation of our selection criteria. Proposals which omit solicited information or contain incomplete information will be discarded from consideration.

STANDARDIZED PROCUREMENT DOCUMENTATION

To simplify procurement management by all necessary means in order to facilitate successful completion of our contracts and project we will use standard documentation for all steps of the procurement management process.

The following standard documents will be used for project procurement activities:

- Standard Request for Proposal Template to include
    - Background
    - Proposal process and timelines
    - Proposal guidelines
    - Proposal formats and media
    - Source selection criteria
    - Pricing forms
    - Statement of work
    - Terms and Conditions
- Firm fixed price contract
- Procurement performance evaluation form

- Lessons learned form

CONTRACT APPROVAL PROCESS

The first step in the contract approval process is to determine what items or services will require procurement from outside vendors. This will be determined by conducting a cost analysis on products or services which is provided internally and compared with purchase prices from vendors.

A. Once cost analysis are complete and the list of items and services to be procured externally is finalized, the Assistant Project Manager will send out solicitations to outside vendors.
B. Once solicitations are complete and proposals have been received by all vendors, the approval process begins. The first step of this process is to conduct a review of all vendor proposals to determine which meet the criteria established by the project team.
C. Purchases less than $5,500 only require the approval of the Assistant Project Manager; whereas, purchases greater than $5,500 must be approved by the Project Manager and the Sponsor; and must have at least three bids before consideration. For these larger purchases the Project Manager and Sponsor will meet to determine which contract will be accepted.

DECISION CRITERIA

The criteria for the selection and award of procurement contracts under this project will be based on the following decision criteria:

- Ability of the vendor to provide all items by the required delivery date
- Quality
- Cost
- Expected delivery date
- Comparison of outsourced cost versus in-sourcing
- Past performance

These criteria will be measured by the Project Manager and Assistant Project Manager. The ultimate decision will be made based on these criteria as well as available resources.

VENDOR MANAGEMENT

The Project Manager is ultimately responsible for managing vendors. In order to ensure the timely delivery and high quality of products from vendors the Project Manager, or the Assistant Project Manager will meet weekly with each vendor to discuss the progress for each procured item. The meetings can be in person or by teleconference.

Plan Approval

By signing below, I, _____ in my capacity as Project Sponsor approve of this Quality Management Plan.

Name:
Title:

_____ _____

Signature Date Approved