UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PLAN FOR THE EFFICIENT IMPLEMENTATION OF THE HONEY PRODUCTION REDEVELOPMENT SUPPORT PROJECT IN BELIZE

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FINAL GRADUATION PROJECT SUBMITTED IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE
MASTER IN PROJECT MANAGEMENT (MPM) DEGREE

Belize City, Belize

February 2024

UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

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

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DEDICATION

First, I dedicate this research paper to God the Almighty for giving me the knowledge and wisdom to undertake such a monumental task and do so with his grace and guidance.

I take this opportunity to thank my wife Mrs. Paulette Cain Mejia and daughter Niyah Tiannie Mejia for their overwhelming support and patience while pursuing higher education.

Lastly but certainly not least, to my tutor Mrs. Sophia Crawford Mora, for her guidance, patience and understanding during this process.

ACKNOWLEDGMENTS

I would like to express deep gratitude and appreciation to the lecturers and academic assistant of the University for their time, patience and understanding as I perused my way through this course. I gained newfound knowledge, understanding and appreciation for the thematic area.

Appreciation is also extended to my agriculture family in the Ministry of Agriculture, Food Security and Enterprise in Belize for their support and encouragement to fulfill this dream of mine.

To my much appreciated and capable tutor Mrs. Sophia Crawford Mora, sincere thanks for extending her wealth of knowledge and encouragement, during the tutorship phase, to see this process a reality.

ABSTRACT

The objective of this paper is to develop a Project Management Plan to implement the Honey Production Redevelopment Support Project (Honey Project) in Belize successfully and efficiently.

This plan is developed to aid the Ministry of Agriculture, Food Security and Enterprise (MAFSE) in Belize achieve greater project success. The MAFSE has traditionally used the waterfall approach to project management and has faced a certain amount of failures in project execution and management. This is especially important in today's world since project management processes and procedures are more complex and dynamic.

Upon completion, this research will produce a Project Management Plan for the successful and efficient implementation of the Honey Project in Belize which consists of a project charter, scope, schedule, cost, quality, resource, communication, risks, procurement, stakeholders, and the validation the of project in a sustainable and regenerative perspective. This is done using quantitative, qualitative, mixed research methods and tools such as meetings, expert judgement, and data analysis.

It is therefore anticipated that the development of a Project Management Plan for the Honey Project in Belize will assure greater management and control of project works and resources throughout the project's life cycle in a calculated and sound manner.

INDEX OF CONTENTS

INDEX OF FIGURES

INDEX OF CHARTS

ABBREVIATIONS AND ACRONYMS

BAIMS	Belize Agriculture Information
BMDC	Belize Marketing and Development Cooperation
BZD	Belizean Dollars
FGP	Final Graduation Project
GOB	Government of Belize
M-BAR	Managing Belizean Agriculture Resilience
MAFSE	Ministry of Agriculture, Food Security and Enterprise
PMBOK	Project Management Body of Knowledge
PEU	Project Execution Unit
PMI	Project Management Institute
RACI	Matrix Responsible, Accountable, Consult, Inform Matrix
RBS	Risk Breakdown Matrix
WBS	Work Breakdown Structure

EXECUTIVE SUMMARY

Project Management processes and methodologies have become increasingly dynamic given the current organizational structures and stakeholders requirements in the project management domain. The Ministry of Agriculture, Food Security and Enterprise (MAFSE) in Belize has been managing projects for decades using the archaic methodology or traditional methods. This approach has seen various failures of projects when compared to scope, time, and cost. This research involved the development of a Project Management Plan to efficiently implement the Honey Production Redevelopment Support Project (Honey Project) in Belize. With a properly written Project Management Plan the Honey Project is expected to be implemented efficiently, sustainably, and regenerative in nature. The general objective was to develop a Project Management Plan to implement the Honey Production Redevelopment Support Project in Belize successfully and efficiently.

The specific objectives were to: to create a project charter to properly define key input for the development of the Project Management Plan, to develop the Scope Management Plan to ensure the project includes all the work required to complete the project successfully and only the work required by the project; to develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project; to create a Cost Management Plan that will define budget management for the successful completion of the project within budget; to develop a Quality Management Plan for managing and controlling quality within the project; to develop a Resource Management Plan to ensure the timely availability of required resources for the successful completion of the project; to design a Communication Management Plan to ensure all stakeholders, include project team, are properly and timely informed on project progress; to develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success; to create a Procurement Management Plan to carry out fair and ethical purchasing of goods, services, or results for the successful completion of the project; to design a Stakeholders Management Plan to identify and manage stakeholders who directly or indirectly impact the successful completion of the project; to validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.

The methodology for this research was to employ the use of the PMBOK Guide, 6th Edition, 2017, PMBOK Guide, 7th Edition, 2021, project documents of past similar projects, lecture notes, conference papers, journals and historical data and information to develop the various elements of the Project Management Plan using best practices and learned lessons from past experience. Mixed methods for research were applied, meaning quantitative as well as qualitative analyses were considered. This allowed for data to be viewed from a statistical and comprehensive perspective. By viewing data in this manner relationships not easily observed can become apparent and be analyzed by interested parties. Tools that facilitated the research were meetings, templates, expert judgement, data analysis and gathering.

The Ministry of Agriculture, Food Security and Enterprise in Belize is a government entity that is tasked with food security and economic stability for farmers. The MAFSE has been

implementing projects for many years and the practices employed are often archaic in their approach as very little project management practices and procedures are employed during project implementations. This has caused many projects to fail due to poor planning, inadequate project implementation and management due to scope creep and cost overruns. It can be concluded that the MAFSE should start to consider efficient project management practices during project creation and planning. These practices must include scope planning, stakeholders' identification and utilization, cost management, and the integration of all the project management processes as recommended by PMI. This will improve project delivery and success within the Ministry.

It is strongly recommended that these practices be implemented as soon as possible to increase the possibility of success for ongoing projects within the Ministry. These practices, if used as recommended, can deliver on the objectives of the Ministry which include food security and economic stability of farmers and the citizens of Belize.

1 INTRODUCTION

The main purpose of the development of a Project Management Plan for the Honey Production Redevelopment Support Project in Belize is to apply and integrate what has been studied during the Master's Degree Program at UCI and incorporate practical application of concepts of Project Management, Regenerative and Sustainable development. This plan will include concepts and templates that can be as a guide for implementing future projects in Belize. The PMBOK® Guide 6th Edition, 2017 and PMBOK® Guide 7th Edition, 2021 are the principal literature sources used for the development of this Project Management Plan. This is strengthened using supplementary bibliographical research documents and historical projects of similar nature.

1.1. Background

The Ministry of Agriculture, Food Security and Enterprise (MAFSE) in Belize is a public entity whose mission is to ensure food and nutrition security for its citizenry while at the same time providing an enabling environment for business opportunities in a sustainable and competitive environment. This mission has proven fruitful with the establishment of the Project Execution Unit (PEU) in the MAFSE that is tasked with managing and ensuring the successful execution of projects and delivering the end results to the beneficiaries. Currently, the MAFSE is executing a total of ten (10) projects with varying degrees of expectations, and stakeholders, which include International Financial Institutions as well as local governments. The PEU is currently poorly staffed with only the Project Director, Procurement Officer and the Monitoring and Evaluation Officer working on a full-time

basis under this unit. All Project Managers and supporting staff are assigned other duties along with those responsibilities that the projects require. This situation has caused many issues with the implementation of projects and successful delivery of deliverables to stakeholders. The creation of a Project Management Plan for the effective and efficient implementation of the Honey Production Redevelopment Project would cover the 10 knowledge areas as recommended by the Project Management Institute as well as aligning the project with sustainable and regenerative development goals. It is believed that a properly written Project Management Plan can improve the chances of success for a project if all procedures and processes are adhered to during project execution.

1.2. Statement of the problem

The Ministry of Agriculture in Belize has been managing projects for many years using the same archaic methods that are no longer functional in today's world. Collaborations are made with local, regional, or international sponsors on projects to fulfill a certain need within the agriculture sector. These projects are usually written using the waterfall methodology and Project Managers are assigned to fulfill the requirements of these projects. The pre-established project documents are then handed to the Project Managers to execute and deliver the projects as expected. This has caused some significant issues with project delivery within the ministry and has not proven efficient or effective. The Ministry has faced several challenges executing projects using those archaic methods and procedures and if no adjustments are made then more projects will fail in the future. Projects are being executed without a properly written Project Management Plan and this has resulted in the

Ministry seeing a 50% success rate in project implementation when rating them against the triple constraint of time, cost, and scope. There are ways to improve project execution successes and one of the most effective methodologies is to use a Project Management Plan to execute projects. Hence, this research aims to answer the question of: can the components of a Project Management Plan contribute to the successful implementation of the Honey Production Redevelopment Support Project in Belize? This is expected to be answered after solving the hypothesis question of: is it possible to improve project execution efficiency of the Honey Production Redevelopment Support Project in Belize by using a Project Management Plan? It is strongly believed that a properly written Project Management Plan can improve the implementation of the Honey Project in Belize.

1.3. Purpose

The main purpose of this research is to solve the hypothesis question of: is it possible to improve project execution efficiency of the Honey Production Redevelopment Support Project in Belize by using a Project Management Plan? Through this project, the research will focus on the creation of a Project Management Plan for the Honey Production Redevelopment Support Project (Honey Project) that is being implemented by the Ministry of Agriculture in Belize. Currently, there are no projects within the auspices of the Ministry that are being implemented using a Project Management Plan so one will be developed to ascertain whether the project can be implemented and be successful while being effective and efficient during its implementation. The key benefit of developing this plan is the production of a comprehensive document that defines the basis of all project work and how

the work will be performed. This integrated document is needed to guide the Project Manager and project team on project requirements, timing, and budgetary considerations for each activity during project implementation. A document such as this is necessary to keep the Project Managers guided as to project activities and requirements. The results of this research will be disseminated with the Director of Projects for historical and documentation purposes for future projects within the Ministry. This project will impact the lives of beekeepers in Belize since it will build their capacity and enhance their ability to produce and generate income. The project is targeting disadvantaged women and youths who would have otherwise been marginally disenfranchised and unemployed. The success of this project is important, and the utilization of a Project Management Plan will assist in the successful implementation and delivery of the end results to beneficiaries.

1.4. General objective

To develop a Project Management Plan to implement the Honey Production Redevelopment Support Project in Belize successfully and efficiently.

1.5. Specific objectives

1. To create a project charter to properly define key input for the development of the Project Management Plan.
2. To develop a Scope Management Plan to ensure the project includes all the work required to complete the project successfully and only the work required by the project.
3. To develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project.

4. To create a Cost Management Plan that will define budget management for the successful completion of the project within budget.

5. To develop a Quality Management Plan for managing and controlling quality within the project.

6. To develop a Resource Management Plan to ensure the timely availability of required resources for the successful completion of the project.

7. To design a Communication Management Plan to ensure all stakeholders, including the project team, are properly and timely informed on project progress.

8. To develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success.

9. To create a Procurement Management Plan to conduct fair and ethical purchasing of goods, services, or results for the successful completion of the project.

10. To design a Stakeholders Management Plan to identify and manage stakeholders who directly or indirectly impact the successful completion of the project.

11. To validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.

2 THEORETICAL FRAMEWORK

In this chapter the theoretical elements for the development of a project management plan for the Honey Production Redevelopment Support Project are presented. These theoretical elements serve as a guide to understanding the research objectives and detailing the tools and processes necessary to implement and utilize a Project Management Plan for the successful implementation of a project in Belize.

2.1 Company/Enterprise framework

2.1.1 Company/Enterprise background

The Ministry of Agriculture, Food Security and Enterprise is a public entity whose goal is to provide an environment that is conducive to increase production and productivity, promote investment, and encouraging private sector involvement in agribusiness enterprises in a manner that ensures competitiveness, quality production, trade, and sustainability (Ministry of Agriculture, 2023).

2.1.2 Mission and vision statements

Mission

To grow and continue as a key economic pillar, ensuring food and nutrition security, diversifying business opportunities, reducing poverty, and enhancing human resources capacity in a sustainable and competitive environment (Ministry of Agriculture, 2023).

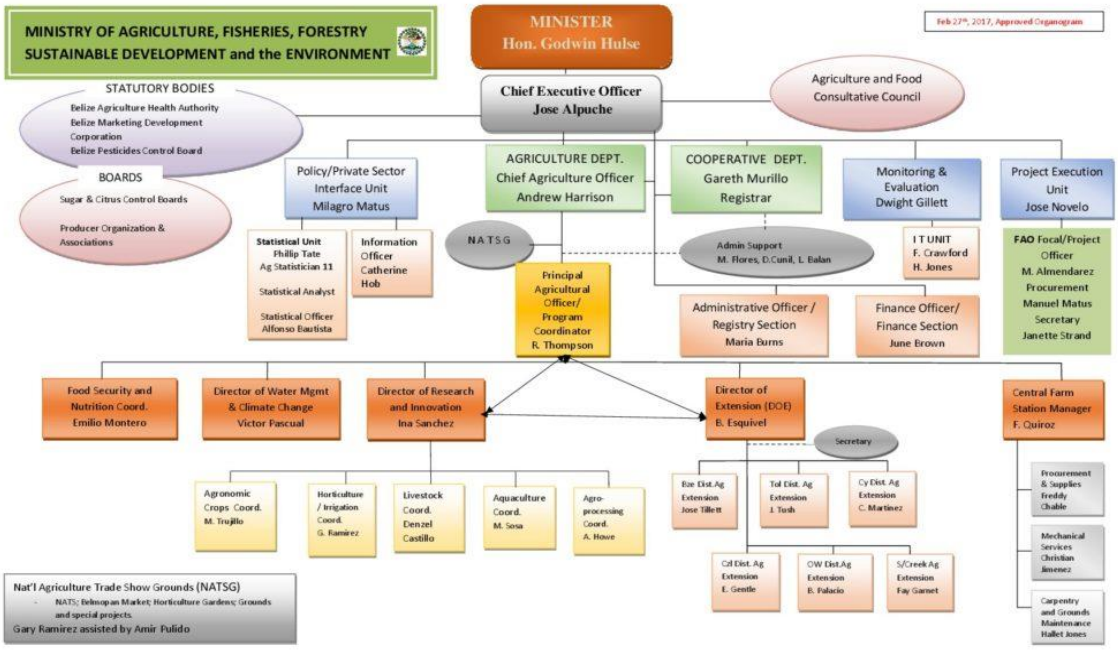
Vision

An agriculture and Food Sector that is innovative, competitive, diversified, and sustainable (Ministry of Agriculture, 2023).

2.1.3 Organizational structure

Figure 1

Organizational Structure



Note. This Organizational Structure was extracted from the Ministry of Agriculture, Food Security and Enterprise web page: www.agriculture.gov.bz with permission (Source: Ministry of Agriculture, 2023)

Explanation of Units in Figure 1:

The Ministry of Agriculture in Belize has five main units namely: Policy Unit, Agriculture Department, Cooperative Department, Monitoring and Evaluation and Project Execution Unit. The Policy Unit is responsible for creating and managing policy direction within the Ministry including its stakeholders. The Agriculture Department main functions is research and development, extension services and importation of agricultural commodities. The Cooperative Department develops and manages cooperatives in the country. The

Monitoring and Evaluation unit works directly with the Project Execution Unit, and both are responsible for project implementation and management.

2.1.4 Products offered

The Ministry of Agriculture, Food Security and Enterprise offers a number of products and services to its stakeholders which include industry partners, schools, farmers, and international organizations working within the agricultural domain. These products and services include but are not limited to:

a) Capacity building of farmers, students, and teachers

   The MAFSE is a public entity that is responsible for technology transfer to the Belizean populace. Their primary means of transferring agricultural technologies is through capacity building. The main clients of the MAFSE are farmers, students, and teachers with the goal of preparing them for the ever-changing agricultural field.

b) Community outreach

   Community outreach is done through stakeholders' collaboration with the primary aim of ensuring food security in Belize. The MAFSE's main contribution during community outreach is the installation of food feeding programs in schools and along with Non-Governmental Organizations (NGOs). This collaboration's main objective is to ensure that the farm to table mantra is working and beneficial to the less fortunate.

c) Extension services

The MAFSE has district offices countrywide that are equipped with qualified Extension Officers that are responsible for disseminating information and training stakeholders in the latest agricultural developments. The main function of the extension service is to increase farmers' efficiency so farmers can reap the highest benefits from their agricultural enterprises.

d) Belize Agriculture and Market Information Systems (BAIMS)

The Belize Agriculture Information Management System (BAIMS) is a web-based application that serves as a central repository for all agriculture data utilized by the MAFSE. Farmers and policy makers use data to analyze agriculture data for proper timely decision making.

e) Import and Export License

Agricultural commodities that are produced by local farmers are sold on the local market thus providing income and a means of livelihood for those involved. This production is protected by the quantity of imported commodities into the local economy. These licenses are only issued if there is an absolute need to do so.

f) Agricultural Research and Development

The Research and Development Unit's goal is to Promote sustainable practices in horticulture crop production while addressing the research needs of the agricultural sector through R&D networking. The Central Farm Research and Development is a centralized station compromising of five main sections: Administration, Livestock,

Crops, Agro-processing, and Agriculture Engineering. These are responsible for executing research that promotes agricultural efficiency.

g) Project Execution and Management

The Project Execution and Management Unit is responsible for managing projects that are in the care of the MAFSE. The success of these projects is highly dependent on the productivity and effectiveness of this unit.

These products and services are offered on a needs basis since the stakeholders are the ones being served through public and or International Financial Institutions (IFIs) funds. These products and services are reflected in the vision and mission of the Ministry which speak about ensuring food and nutrition security for all while being a sustainable and responsible entity in Belize.

2.2 Project Management Concepts

2.2.1 Project Management Principles

Project

The PMBOK Body of Knowledge 6th Edition (2017) defines a project as a temporary endeavor which is conducted in order to achieve a unique product, service,
or result.

Process Groups

Project Management Process Groups are sequentially grouped project management processes that guide the execution of a project from start to finish. The 5 groupings as outlined by the PMBOK Body of Knowledge 7th Edition (2021) are as follows:

- Initiating Process Group
- Planning Process Group
- Executing Process Group
- Monitoring and Controlling Process Group
- Closing Process Group

2.2.2 Project Management Domains

The PMBOK Body of Knowledge 7th Edition (2021) states that project performance domains are "a group of related activities that are critical for the effective delivery of project outcomes. Collectively, the performance domains represent a project management system of interactive, interrelated, and interdependent management capabilities that work in unison to achieve desired project outcomes." This indicates that the project performance domains are important for the successful implementation of a project. Please see the eight performance domains below:

1. Stakeholders

   According to PMBOK Body of Knowledge 7th Edition (2021) stakeholders performance domain addresses activities and functions associated with stakeholders. It

also states that a stakeholder is “an individual, group, or organization that may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project, program, or portfolio.”

2. Team

According to PMBOK Body of Knowledge 7th Edition (2021), the Team Performance Domain addresses activities and functions associated with the people who are responsible for producing project deliverables that realize business outcomes. It further states that the performance domain establishes the culture and environment that enables a collection of diverse individuals to evolve into a high-performing project team.

3. Development, Approach and Lifecycle

“The Development Approach and Life Cycle Performance Domain addresses activities and functions associated with the development approach, cadence, and life cycle phases of the project” (PMI, 2021). This performance domain also establishes the development approach, delivery cadence, and project life cycle needed to optimize project outcomes.

4. Planning

According to PMBOK Body of Knowledge 7th Edition (2021), “the Planning Performance Domain addresses activities and functions associated with the initial, ongoing, and evolving organization and coordination necessary for delivering project deliverables and outcomes.” The main purpose of planning is to develop a road map to create the project deliverables.

5. Project Work

   According to PMBOK Body of Knowledge 7th Edition (2021), “the Project Work Performance Domain addresses activities and functions associated with establishing project processes, managing physical resources, and fostering a learning environment.” Project work establishes the processes and performing the work to enable the project team to deliver the expected deliverables and outcomes.

6. Delivery

   “The Delivery Performance Domain addresses activities and functions associated with delivering the scope and quality that the project was undertaken to achieve. Projects support strategy execution and the advancement of business objectives” (PMI, 2021). Project delivery primarily focuses on meeting requirements, scope, and quality expectations to produce the expected deliverables that will drive the intended outcomes.

7. Measurement

   According to PMBOK Body of Knowledge 7th Edition (2021), “The Measurement Performance Domain addresses activities and functions associated with assessing project performance and taking appropriate actions to maintain acceptable performance. Measurement involves assessing project performance and implementing appropriate responses to maintain optimal performance.”

8. Uncertainty

   According to PMBOK Body of Knowledge 7th Edition (2021), “the Uncertainty Performance Domain addresses activities and functions associated with risk and uncertainty. Projects exist in environments with varying degrees of uncertainty. Uncertainty presents threats and opportunities that project teams explore, assess, and decide how to handle.”

2.2.3 Predictive, adaptative and hybrid projects

Predictive

In Predictive Project Management (Traditional) the details of project and requirements are clearly defined during the planning stage of the project and is usually followed throughout the life of the project unless requested and approved changes are made to the project scope and baseline. This type of management requires detailed planning to avoid scope creep during project implementation. The Honey Project belongs in this group of projects.

Adaptive

Adaptive Project Management, which is also known as Agile Project Management, is used for projects of high complexities that require varying degrees of iterations during project execution. Each iteration is timeboxed with consistent durations that aims to deliver products or services that are of value to customers.

Hybrid

Hybrid Project Management is a combination of two or more project management methodologies and is usually used based on a project's complexity and uniqueness during the development stage to ensure a project's success. The Hybrid Project Management approach can use the predictive approach to clarify the requirements but deliver the products or services using an iterative or adaptive approach. This method allows for multiple functions while achieving the same results.

2.2.4 Project Management

According to the PMBOK Body of Knowledge 7th Edition (2021), Project Management deals with the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements. The PMBOK Body of Knowledge 6th Edition (2017) went further by stating that, " Project management is accomplished through the appropriate application and integration of the project management processes identified for the project. Project management enables organizations to execute projects effectively and efficiently." Finally, according to Isam (2017), "Project management typically involves a one-time project rather than an ongoing activity, and resources managed include both human and financial capital."

2.2.5 Project Management Knowledge Areas and Processes

Project Integration Management

"Project Integration Management includes the processes and activities to identify, define, combine, unify, and coordinate the various processes and project management activities within the Project Management Process Groups. In the project management context, integration includes characteristics of unification, consolidation, communication, and interrelationship." (PMI, 2017, p. 69)

Figure 2

Project Integration Management Overview

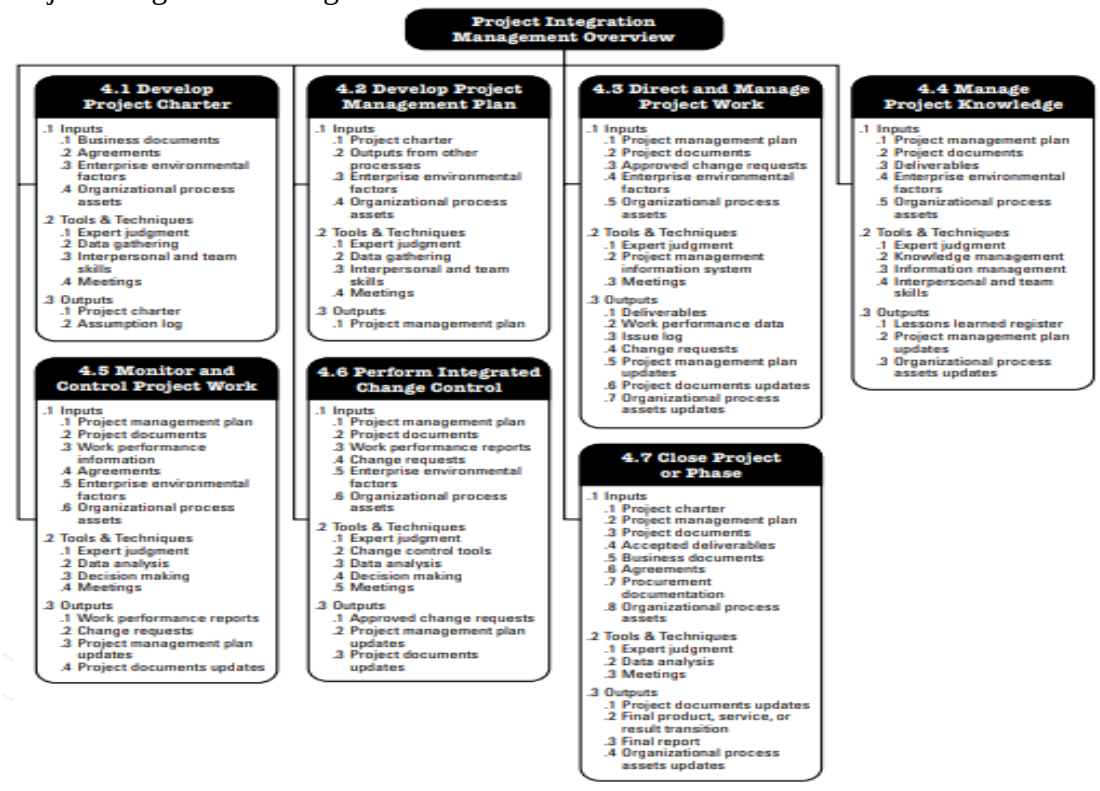


Figure 4-1. Project Integration Management Overview

Note. This figure was sourced from PM Body of Knowledge, 2017, p. 71.

Project Scope Management

According to the PMBOK Body of Knowledge 6th Edition (2017), “Project Scope Management includes the processes required to ensure that the project includes all the work required, and only the work required, to complete the project successfully. Managing the project scope is primarily concerned with defining and controlling what is and is not included in the project.” The Project Scope Management Processes include Plan Scope Management, Collect Requirements, Define Scope, Create WBS, Validate Scope, and Control Scope.

Figure 3

Project Scope Management Overview

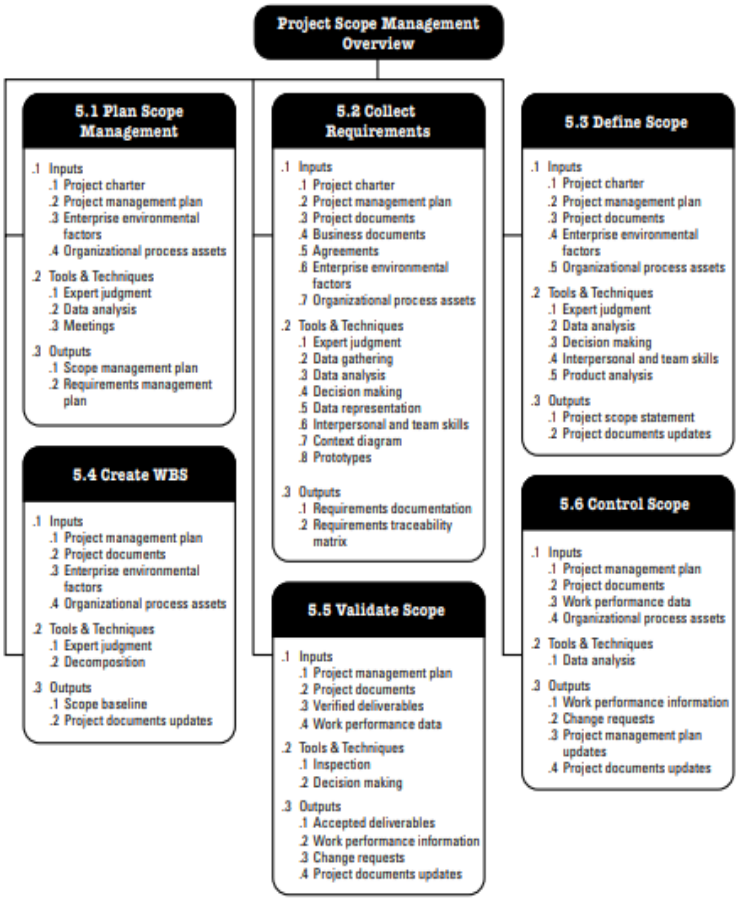


Figure 5-1. Project Scope Management Overview

Note. This figure was sourced from the PM Body of Knowledge ,2017, p. 130.

Project Schedule Management

According to the PMBOK Body of Knowledge 6th Edition (2017), “Project Schedule Management includes the processes required to manage the timely completion of the project.” The Schedule Management Processes include Plan Schedule Management, Define Activities, Sequence Activities, Estimate Activity Durations, Develop Schedule, and Control Schedule.

Figure 4

Project Schedule Management Overview

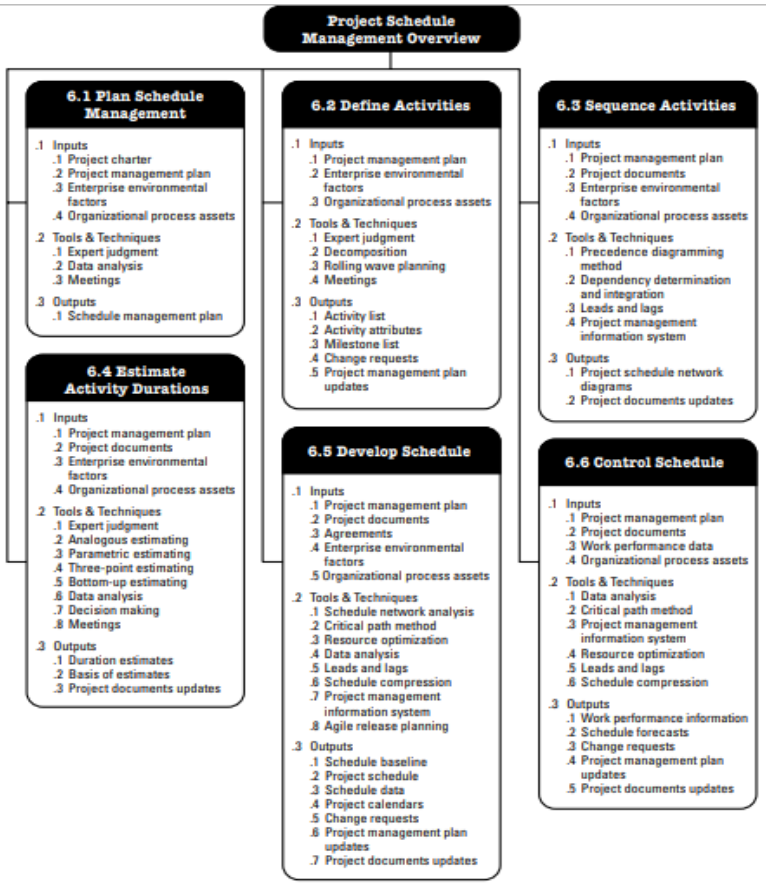


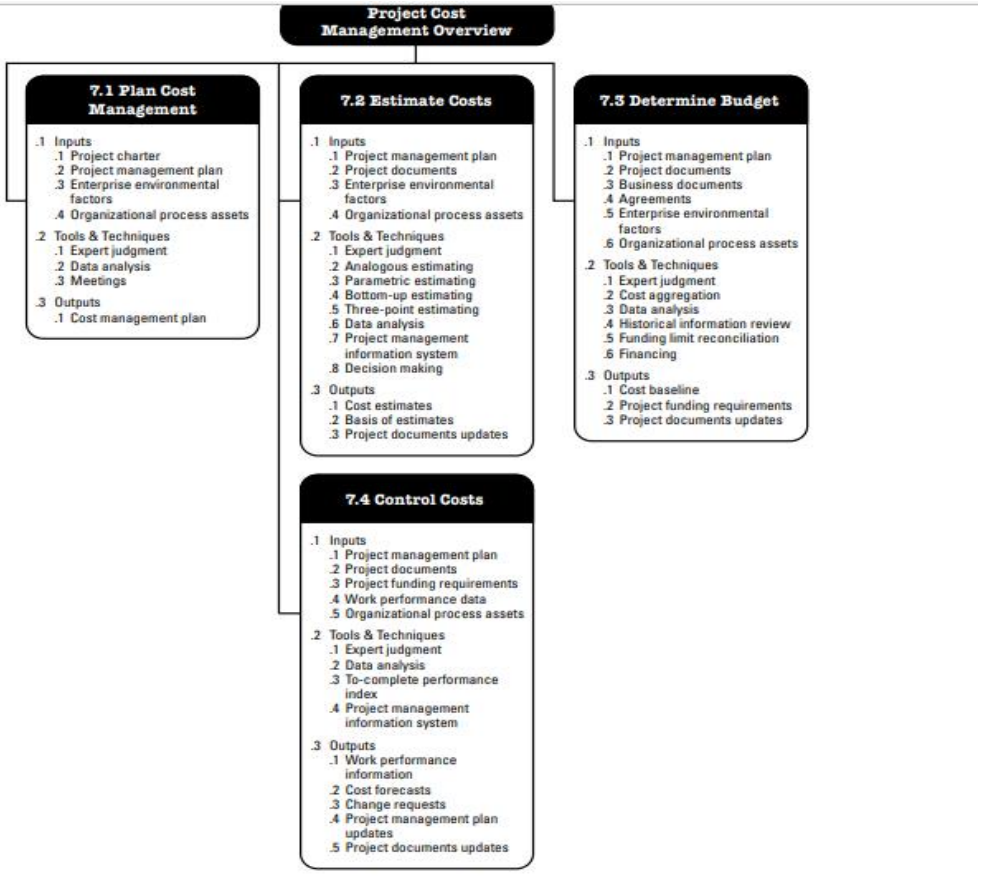
Figure 6-1. Project Schedule Management Overview

Project Cost Management

According to the PMBOK Body of Knowledge 6th Edition (2017), "Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget." The Project Cost Management Processes include Plan Cost Management, Estimate Costs, Determine Budget, Control Costs.

Figure 5

Project Cost Management Overview



Note. This figure was sourced from PM Body of Knowledge 2017, p. 232.

Project Quality Management

According to the PMBOK Body of Knowledge 6th Edition (2017), " Project Quality Management includes the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirements in order to meet stakeholders' objectives. Project Quality Management also supports continuous process improvement activities as undertaken on behalf of the performing organization." The Project Quality Management Processes include Plan Quality, Manage Quality and Control Quality.

Figure 6

Project Quality Management Overview

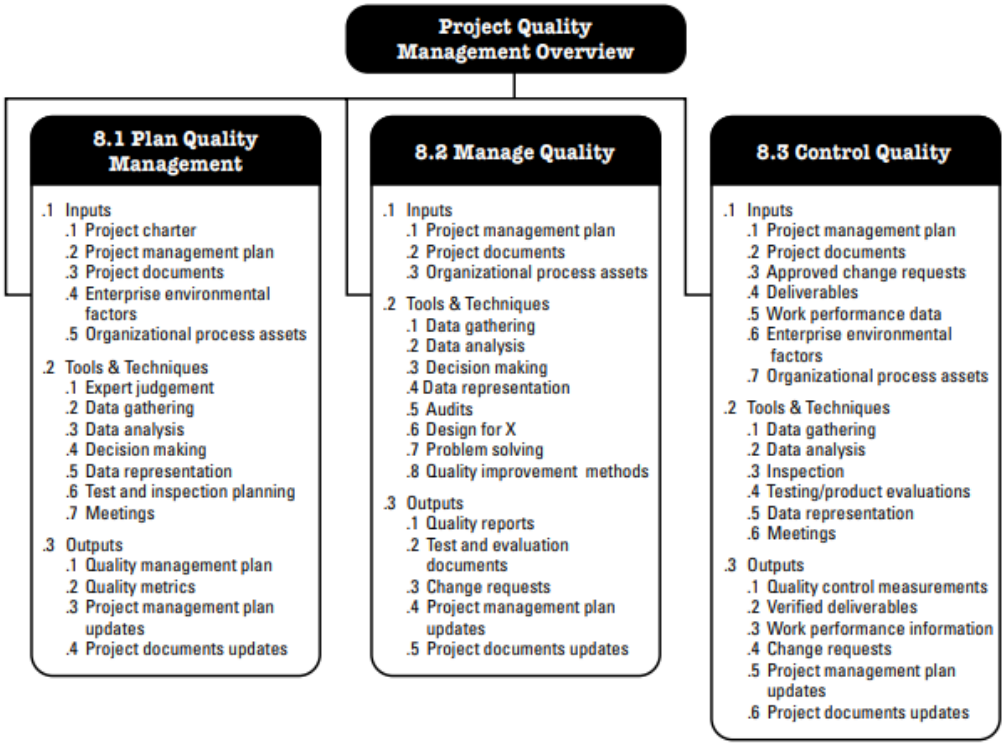


Figure 8-1. Project Quality Management Overview

Note. This figure was sourced from PM Body of Knowledge, 2017, p. 272.

Project Resource Management

"Project Resource Management includes the processes to identify, acquire, and manage the resources needed for the successful completion of the project. These processes help ensure that the right resources will be available to the Project Manager and project team at the right time and place." The Project Resources Management Processes include Plan Resource Management, Estimate Activity Resources, Acquire Resources, Develop Team, Manage Team, and Control Resources. (PMI, 2017, p. 307)

Figure 7

Project Resource Management Overview

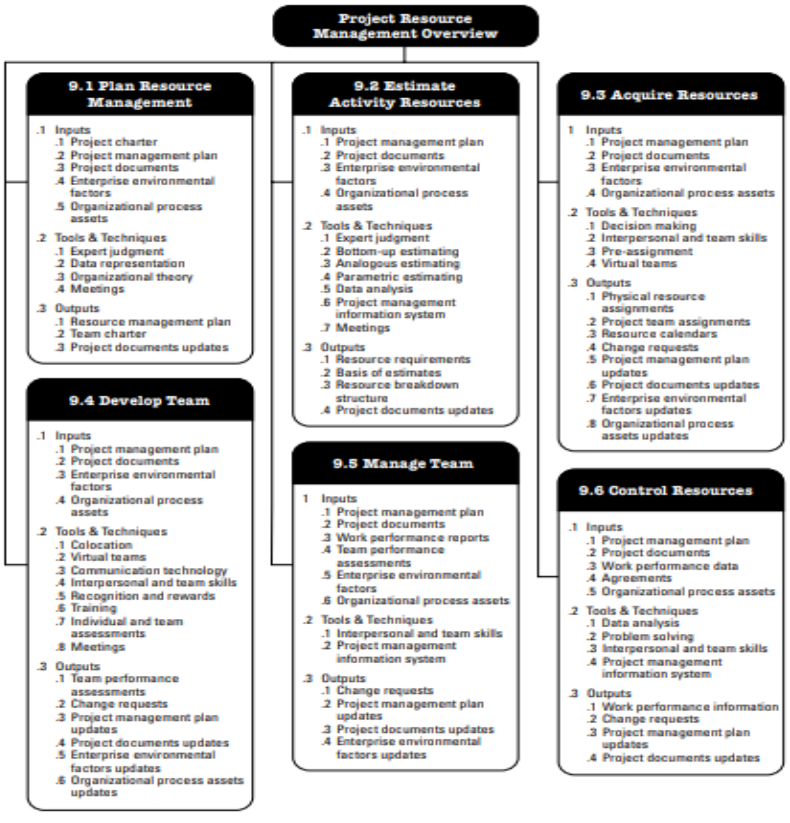


Figure 9-1. Project Resource Management Overview

Note. This figure was sourced from PM Body of Knowledge, 2017, p. 308.

Project Communications Management

"Project Communications Management includes the processes necessary to ensure that the information needs of the project and its stakeholders are met through development of artifacts and implementation of activities designed to achieve effective information exchange. Project Communications Management consists of two parts. The first part is developing a strategy to ensure communication is effective for stakeholders. The second part is conducting the activities necessary to implement the communication strategy." The Communications Management Processes include Plan Communications Management, Manage Communications, and Monitor Communications. (PMI, 2017, p. 359)

Figure 8

Project Communications Management Overview

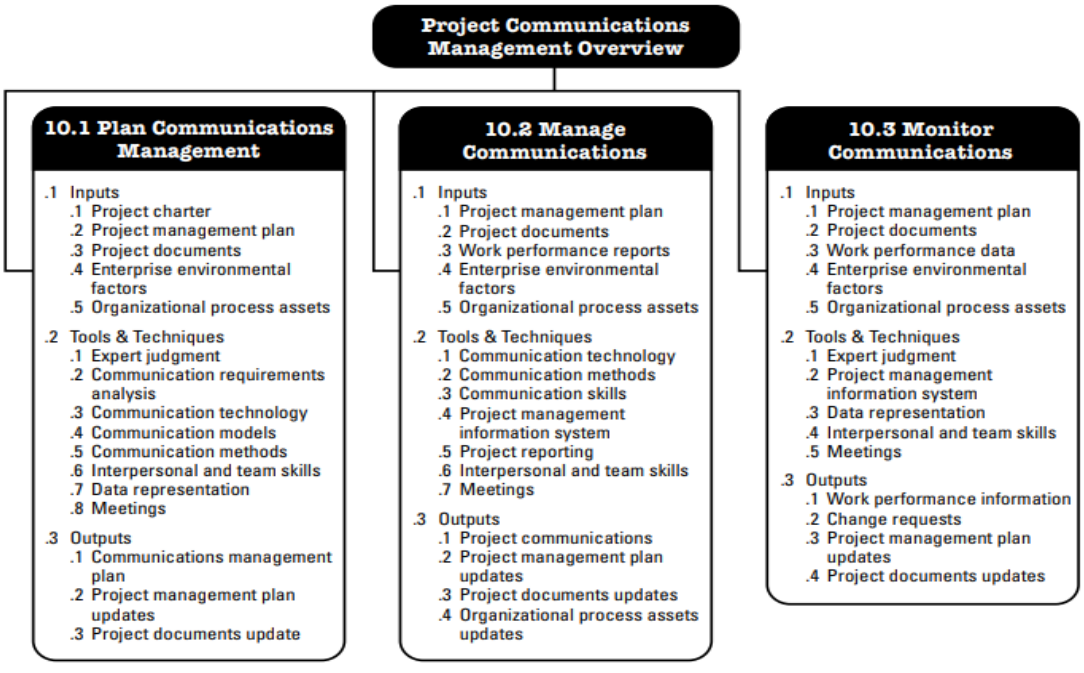


Figure 10-1. Project Communications Overview

Note. This figure was sourced from PM Body of Knowledge, 2017, p. 360.

Project Risk Management

According to the PMBOK Body of Knowledge 6th Edition (2017), “Project Risk Management includes the processes of conducting Risk Management Planning, identification, analysis, response planning, response implementation, and monitoring risk on a project. The objectives of Project Risk Management are to increase the probability and/or impact of positive risks and to decrease the probability and/or impact of negative risks, in order to optimize the chances of project success.” The Project Risk Management Processes include Plan Risk Management, Identify Risks, Perform Qualitative Risk Analysis, Perform Quantitative Risk Analysis, Plan Risk Responses, Implement Risks Responses, and Monitor Risks.

Figure 9

Project Risks Management Overview

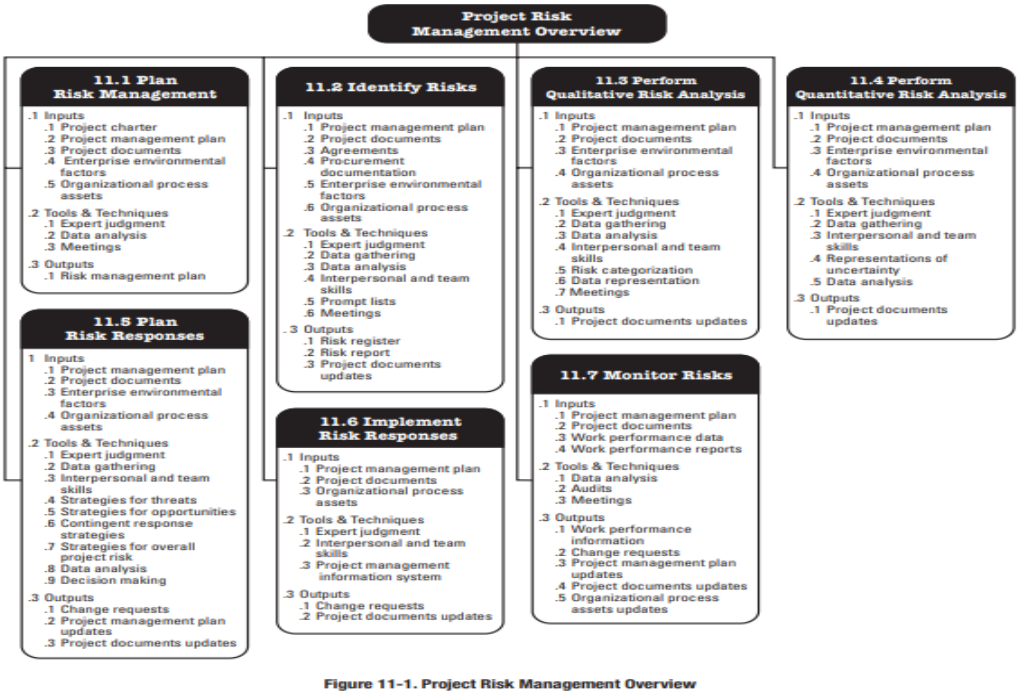


Figure 11-1. Project Risk Management Overview

Note. This figure was sourced from PM Body of Knowledge, 2017, p. 396.

Project Procurement Management

"Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team. Project Procurement Management includes the management and control processes required to develop and administer agreements such as contracts, purchase orders, Memoranda of Agreements (MOAs), or internal service level agreements (SLAs)." The Project Procurement Processes include Plan Procurement Management, Conduct Procurement Management, and Control Procurement Management. (PMI, 2017, p. 359)

Figure 10

Project Procurement Management Overview

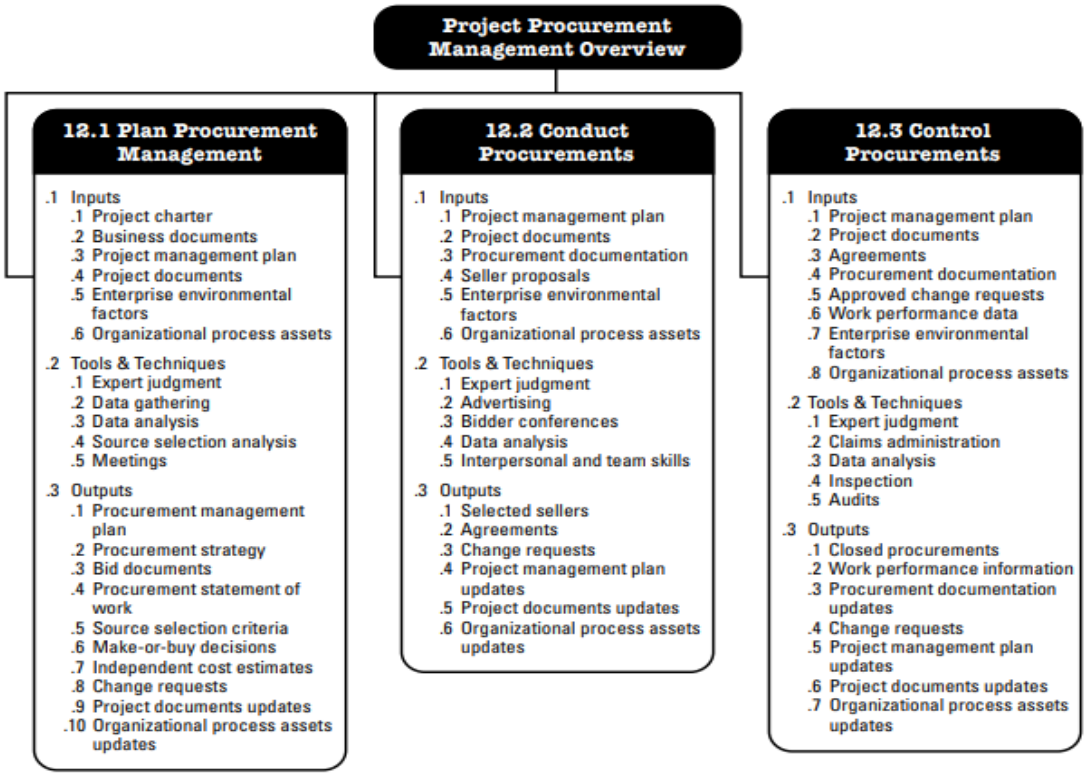


Figure 12-1 Project Procurement Management Overview

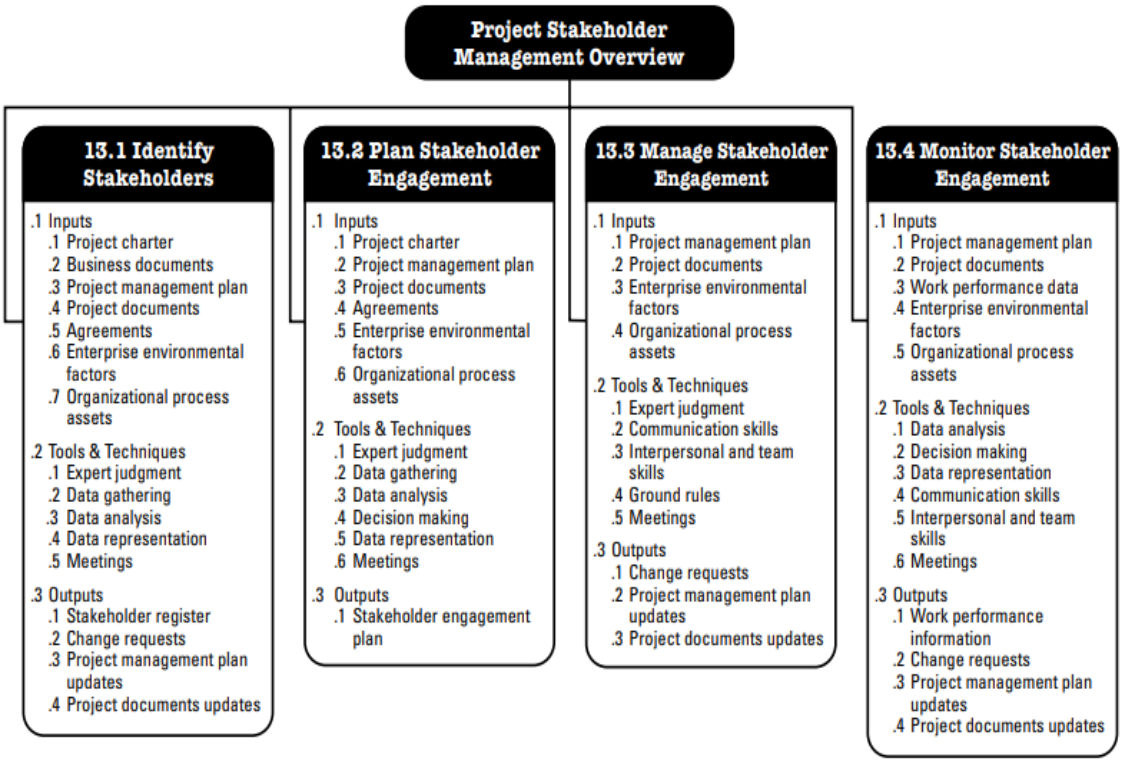
Note. This figure was sourced from PM Body of Knowledge, 2017, p. 460.

Project Stakeholder Management

"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 stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholders in project decisions and execution." The Project Stakeholder Management Processes include Identify Stakeholders, Plan Stakeholder Engagement, Manage Stakeholders Engagement and Monitor Stakeholders Engagement. (PMI, 2017, p. 503)

Figure 11

Project Stakeholders Management Overview



Note. This Figure was sourced from PM Body of Knowledge, 2017, p. 504.

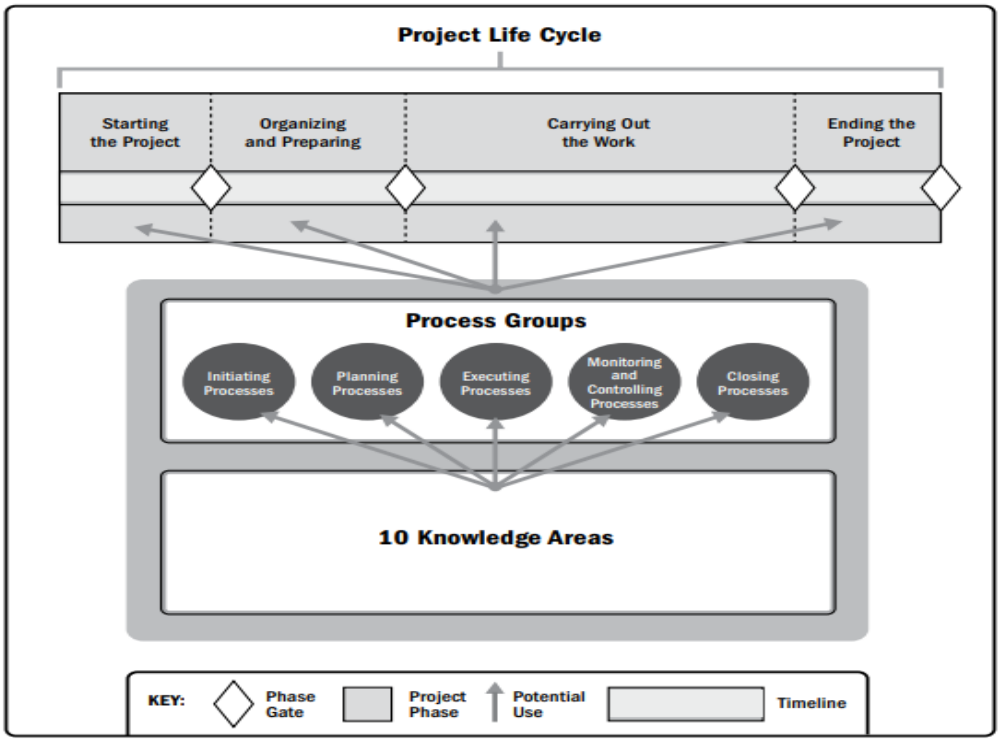
2.2.6 Project life cycle

The PMBOK Body of Knowledge 7th Edition (2021), states the methods used to create and evolve product, service, or results during the project life cycle, such as a predictive, iterative, incremental, adaptive, or hybrid method.

The PMBOK Body of Knowledge 6th Edition (2017), states that a project's life cycle comprises a series of phases that a project passes through from start to finish. These phases include initiation, planning, execution, monitoring, and closure. Within this particular project, the life cycle (Predictive) will be identical as it is well suited for the composition of phases needed for the execution of the Honey Project.

Figure 12

Interrelationship of PMBOK Guide Key Components in Projects



Note. This figure was source from PM Body of Knowledge, 2017, p. 18.

Figure 13

Generic Depiction of a Project Life Cycle

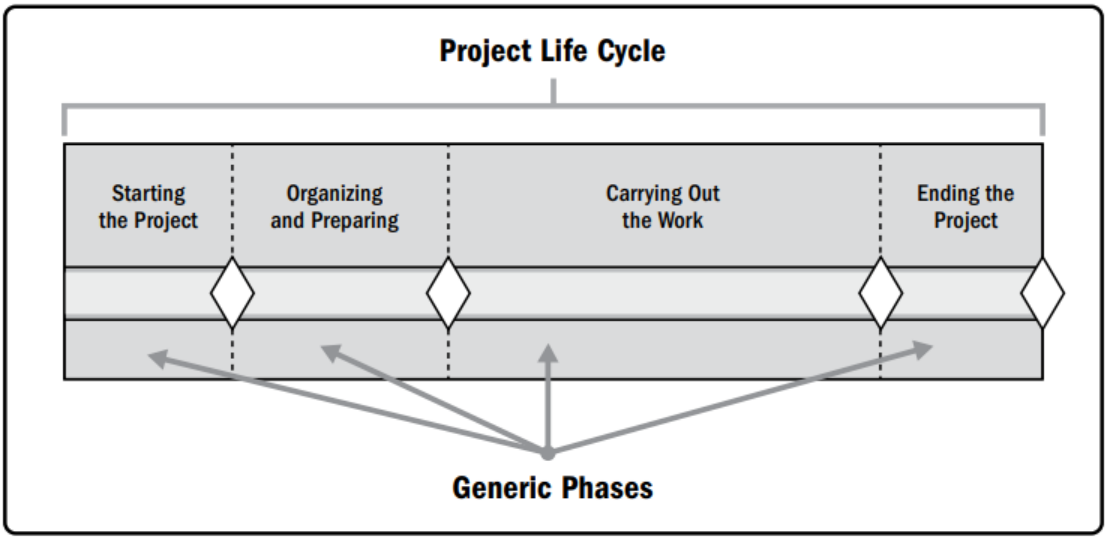


Figure 1-2. Generic Depiction of a Project Life Cycle

Note. This figure was sourced from PM Body of Knowledge, 2017, p. 548.

2.2.7 Company strategy, portfolios, programs and projects

Company Strategy

To provide an environment that is conducive to increase production and productivity, promoting investment, and encouraging private sector involvement in agribusiness enterprises in a manner that ensures competitiveness and quality production.

Portfolios

The Portfolio of the Ministry of Agriculture, Food Security and Enterprise Portfolio includes:

- Capacity building of farmers, students, and teachers
- Community outreach

- Extension services
- Belize Agriculture and Market Information Systems (BAIMS)
- Import and Export License
- Agricultural Research and Development
- Project Execution and Management

Projects

Ongoing projects include:

- Breeding Sheep and Goat Production and Guidance System Enhancement Project (Ph. II Project)

- Honey Production Redevelopment Support Project (Expansion of the Honey Production Sub-sector)

- Covered Structures – Support to Small Disadvantaged Farmers

- Enhancing Sugarcane Farmers' Resilience to Natural Hazard Events

- CARICOM-FAO-Mexico Initiative 'Cooperation for Climate Change Adaptation and Resilience in the Caribbean' subproject Resilient School Feeding programme: GCP /SLC/018/MEX.

- Mesoamerica without Hunger Programme: Improve Food and Nutrition Security and encourage healthy eating habits in Belize through strengthening the school feeding programme.

- Technical Assistance for Inclusive, Sustainable and Resilient Food Systems in the Rural and Peri -Urban Areas of the Cayo District, as a Response to the COVID -19.

- Follow-up Cooperation for Training on Development of Agricultural Cooperatives and Improvement of Management Capacity.

- Managing Belizean Agriculture Resilience (M-BAR).

- Belize: Climate Resilient Sustainable & Agriculture Project

2.3 Other applicable theory/concepts related to the project topic and context.

2.3.1 Current Situation of the Problem or Opportunity in Study

The Ministry of Agriculture in Belize has been implementing projects for many years and their approach to managing project is archaic since the only approach is the Predictive or Waterfall Project Management methodologies. This management strategy has proven ineffective since the project success rate is roughly 50% when calculating project success rate based on completing the project on time, budget, and scope. The Waterfall/Predictive Approach to project management allows for projects to be planned with as much detail as possible from the beginning and is expected to minimize variations and changes during project execution. This method allows for structure and predictability which are welcomed since some projects were designed to be implemented using the Straight-Line Approach. While there is absolutely no problem in implementing projects using the predictive approach it is widely known that most projects implemented by the Ministry of Agriculture in Belize are done without using a Project Management Plan to guide project success. According to the PMBOK Body of Knowledge 6th Edition (2017), “Project Management Plan is the process of defining, preparing, and coordinating all plan components and consolidating them into an integrated Project Management Plan. The key benefit of this process is the production of a comprehensive document that defines the basis of all project work and how the work will be performed.” This integrated document is needed to guide Project Managers on project requirements, timing, and budgetary considerations for each activity. With a properly written Project Management Plan, projects are bound for mistakes

that can prove costly and unaffordable. According to Simplilearn. (2023), “A Project Management Plan is a formal, approved document that defines how the project is executed, monitored, and controlled. It may be a summary or a detailed document and may include baselines, subsidiary management plans, and other planning documents.” It is assumed that after conducting this research using a properly written Project Management Plan for the Honey Project that future projects executed by the Ministry of Agriculture will be executed using such a plan for a higher success rate of project delivery within the ministry.

2.3.2 Previous research done for the topic in study.

It is no secret that beekeeping in any country is a challenge and any project relating to beekeeping can prove challenging given the dangers involved with rearing this livestock species. It is especially challenging managing a beekeeping project without an existing Project Management Plan.

The Ministry of Agriculture (2023) states that beekeeping in Belize has created an enabling environment for the development of disadvantaged women and youths and with proper interventions from the relevant authorities this sub-sector can witness a re-growth as it was in the 1980s. Furthermore, Good Beekeeping Practices (2020) states that the most important aspect of beekeeping is the production of bees, queens, package and bees and that best beekeeping practices involve proper management of the apiary that can prevent bee diseases which allow beekeepers to obtain high quality products respecting the consumers' health.

Nunamaker et al. (1986) states that many economic and biological changes have confronted the beekeeping industry of the western hemisphere in recent years and that to understand the beekeeping industry in Belize, a survey and sample collection trip was made to Belize in 1984.

2.3.3 Other Theory Related to the Topic in Study.

There is little research and few studies on beekeeping in Belize that are published so information relating to the effective and efficient management of the Honey Project in Belize is scarce or non-existent. This is due to poor documentation from beekeeping initiatives in the past years. Nevertheless, beekeeping continues to contribute to the food security of Belize by providing jobs and livelihoods to marginal residents. Currently, honey is in high demand in the country and the need for a constant supply is creating a niche market for the women and youths who would have been employed elsewhere instead of from the production and sale of honey. More documented research is needed to determine where the industry has been and where exactly it is going in the future. It is important to note that this sub-sector is considered a priority by the Ministry of Agriculture in Belize. The implementation of the Honey Project in Belize is the first heavily documented project of its kind, and it is expected that a great amount of data will be collected and used as lessons learnt for future projects in the country. With the inclusion of a functional and effective Project Management Plan it is expected that all the deliverables of the project will be met, and the project will be hailed as a momentous success. This Project Management Plan is designed to guide all project management activities to ensure project success.

3 METHODOLOGICAL FRAMEWORK

According to (Launiainen et. al), a Methodological Framework introduces and integrates student centered research base, blended learning and social leadership approaches. This framework provides a guide for the research with the aim of increasing its efficiency and delivering evidence-based results. The framework's main function is to provide researchers with the tools necessary to deliver the results as expected, which includes determining what data should be collected and how it should be analyzed. The framework can also be utilized to assess the strengths and weaknesses of a study's methodology.

3.1 Information sources

According to LISedunetwork & LISedunetwork, (2022), an Information Source is a source of information for somebody. This may be anything that might inform a person about something or provide knowledge to somebody. Information sources may be observations, people's speeches, documents, pictures, organizations etc." Additionally, information sources can be divided into Primary and Secondary sources.

3.1.1 Primary sources

"Primary sources of information are the first published records of original research and development or description of new application or new interpretation of an old theme or idea. There are original documents representing unfiltered original ideas." (LISedunetwork & LISedunetwork, 2022)

3.1.2 Secondary sources

Secondary sources of information are those which are either compiled from or refer to primary sources of information. The original information has been casually modified, selected, or reorganized so as to serve a definite purpose for a group of users. Such sources contain information arranged and organized on the basis of some definite plan. These contain organized repackaged knowledge rather than new knowledge. (LISedunetwork & LISedunetwork, 2022)

Chart 1

Information Sources

Objectives	**Information sources**	
	Primary	**Secondary**
1. To create a project charter to properly define key input for the development of the Project Management Plan.	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Lecture Notes ✓ Conference Papers ✓ Journals ✓ Historical data and information
2. To develop a Scope Management Plan to ensure the project includes all the work required to	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021	✓ Lecture Notes ✓ Conference Papers ✓ Journals

Objectives	Information sources	
	Primary	**Secondary**
complete the project successfully and only the work required by the project.	✓ Project documents of past similar projects	✓ Historical data and information
3. To develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project.	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Lecture Notes ✓ Conference Papers ✓ Journals ✓ Historical data and information
4. To create a Cost Management Plan that will define budget management for the successful completion of the project within budget.	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Lecture Notes ✓ Conference Papers ✓ Journals ✓ Historical data and information
5. To develop a Quality Management Plan for	✓ PMBOK Guide, 6th Edition, 2017	✓ Lecture Notes ✓ Conference Papers

Objectives	Information sources	
	Primary	**Secondary**
managing and controlling quality within the project.	✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Journals ✓ Historical data and information
6. To develop a Resource Management Plan to ensure the timely availability of required resources for the successful completion of the project.	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Lecture Notes ✓ Conference Papers ✓ Journals ✓ Historical data and information
7. To design a Communication Management Plan to ensure all stakeholders, including the project team, are properly and timely informed on project progress.	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Lecture Notes ✓ Conference Papers ✓ Journals ✓ Historical data and information

Objectives	Information sources	
	Primary	**Secondary**
8. To develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success.	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Lecture Notes ✓ Conference Papers ✓ Journals ✓ Historical data and information
9. To create a Procurement Management Plan to conduct fair and ethical purchasing of goods, services, or results for the successful completion of the project.	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Lecture Notes ✓ Conference Papers ✓ Journals ✓ Historical data and information
10. To design a Stakeholders Management Plan to identify and	✓ PMBOK Guide, 6th Edition, 2017	✓ Lecture Notes ✓ Conference Papers ✓ Journals

Objectives	Information sources	
	Primary	**Secondary**
manage stakeholders who directly or indirectly impact the successful completion of the project.	✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Historical data and information
11. To validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.	✓ PMBOK Guide, 6th Edition, 2017 ✓ PMBOK Guide 7th Edition, 2021 ✓ Project documents of past similar projects	✓ Lecture Notes ✓ Conference Papers ✓ Journals ✓ Historical data and information

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

3.2 Research methods

Research Methods

"Research methods are the strategies, processes or techniques utilized in the collection of data or evidence for analysis in order to uncover new information or create better understanding of a topic." (*LibGuides: Research Methods: What Are Research Methods?*, n.d.)

3.2.1 Quantitative Method

"Collects numerical data and analyzes it using statistical methods. The aim is to produce objective, empirical data that can be measured and expressed in numerical terms. Quantitative research is often used to evaluate hypotheses, identify patterns, and make predictions." (Mcleod, 2023)

3.2.2 Qualitative Method

"Collects non-numerical data such as words, images, and sounds. The focus is on exploring subjective experiences, opinions, and attitudes, often through observation and interviews. Qualitative research aims to produce rich and detailed descriptions of the phenomenon being studied, and to uncover new insights and meanings." (Mcleod, 2023)

3.2.2 Mixed Method

"Mixed methods strategically integrate or combine rigorous quantitative and qualitative research methods to draw on the strengths of each. Mixed method approaches allow researchers to use a diversity of methods, combining inductive and deductive thinking, and offsetting limitations of exclusively quantitative and qualitative research through a complementary approach that maximizes strengths of each data type and facilitates a more comprehensive understanding of health issues and potential resolutions." (*Mixed Methods Research*, n.d.)

Chart 2

Research Methods

Objectives	**Research methods**		
	Qualitative	**Quantitative**	**Mixed**
1. To create a project charter to properly define key input for the development of the Project Management Plan.	The qualitative method will be used to gain a comprehensive perspective for the creation of the Project Charter.	The quantitative method will be used to analyze the historical data and variables for the creation of the Project Charter.	A combination of the qualitative and quantitative methods will be used to determine relationships for the creation of the project charter.
2. To develop a Scope Management Plan to ensure the project includes all the work required to complete the project successfully and only the work required by the project.	The qualitative method will be used to gain a comprehensive perspective for the creation of the Scope Management Plan.	The quantitative method will be used to analyze the historical data and variables for the creation of the Scope Management Plan.	A combination of the qualitative and quantitative methods will be used to determine relationships for the creation of the Scope Management Plan.

Objectives	Research methods		
	Qualitative	**Quantitative**	**Mixed**
3. To develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project.	The qualitative method will be used to gain a comprehensive perspective for the creation of the Schedule Management Plan.	The quantitative method will be used to analyze the historical data and variables for the creation of the Schedule Management Plan.	A combination of the qualitative and quantitative methods will be used to determine relationships for the creation of the Schedule Management Plan.
4. To create a Cost Management Plan that will define budget management for the successful completion of the project within budget.	The qualitative method will be used to gain a comprehensive perspective for the creation of the Cost Management Plan.	The quantitative method will be used to analyze the historical data and variables for the creation of the Cost Management Plan.	A combination of the qualitative and quantitative methods will be used to determine relationships for the creation of the Cost Management Plan.
5. To develop a Quality Management Plan for	The qualitative method will be	The quantitative method will be	A combination of the qualitative and

Objectives	Research methods		
	Qualitative	Quantitative	Mixed
managing and controlling quality within the project.	used to gain a comprehensive perspective for the creation of the Quality Management Plan.	used to analyze the historical data and variables for the creation of the Quality Management Plan.	quantitative methods will be used to determine relationships for the creation of the Quality Management Plan.
6. To develop a Resource Management Plan to ensure the timely availability of required resources for the successful completion of the project.	The qualitative method will be used to gain a comprehensive perspective for the creation of the Resource Management Plan.	The quantitative method will be used to analyze the historical data and variables for the creation of the Resource Management Plan.	A combination of the qualitative and quantitative methods will be used to determine relationships for the creation of the Resource Management Plan.
7. To design a Communication Management Plan to ensure all stakeholders, including	The qualitative method will be used to gain a comprehensive	The quantitative method will be used to analyze the historical data	A combination of the qualitative and quantitative methods will be

Objectives	Research methods		
	Qualitative	Quantitative	Mixed
the project team, are properly and timely informed on project progress.	perspective for the creation of the Communication Management Plan.	and variables for the creation of the Communication Management Plan.	used to determine relationships for the creation of the Communication Management Plan.
8. To develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success.	The qualitative method will be used to gain a comprehensive perspective for the creation of the Risk Management Plan.	The quantitative method will be used to analyze the historical data and variables for the creation of the Risk Management Plan.	A combination of the qualitative and quantitative methods will be used to determine relationships for the creation of the Risk Management Plan.
9. To create a Procurement Management Plan to conduct fair and ethical purchasing of goods, services, or results for the	The qualitative method will be used to gain a comprehensive perspective for	The quantitative method will be used to analyze the historical data and variables for	A combination of the qualitative and quantitative methods will be used to determine

Objectives	Research methods		
	Qualitative	Quantitative	Mixed
successful completion of the project.	the creation of the Procurement Management Plan.	the creation of the Procurement Management Plan.	relationships for the creation of the Procurement Management Plan.
10. To design a Stakeholders Management Plan to identify and manage stakeholders who directly or indirectly impact the successful completion of the project.	The qualitative method will be used to gain a comprehensive perspective for the creation of the Stakeholders Management Plan.	The quantitative method will be used to analyze the historical data and variables for the creation of the Stakeholders Management Plan.	A combination of the qualitative and quantitative methods will be used to determine relationships for creation of the Stakeholders Management Plan.
11. To validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.	The qualitative method will be used to gain a comprehensive perspective for validation of the Honey Project	The quantitative method will be used to analyze the historical data and variables for validation of the Honey Project	A combination of the qualitative and quantitative methods will be used to determine relationships for validation of the

Objectives	Research methods		
	Qualitative	**Quantitative**	**Mixed**
	from a regenerative and sustainable perspective.	from a regenerative and sustainable perspective.	Honey Project from a regenerative and sustainable perspective.

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

3.3 Tools

According to the Project Management Institute (2017), a tool can be defined as "Something tangible, such as a template or software program, used in performing an activity to produce a product or result." Tools utilized for the creation of this project included the following:

- ✓ Integration Management Plan Template - Outline for the development of the Integration Management Plan
- ✓ Scope Management Plan Template – Outline for the development of the Scope Management Plan
- ✓ Schedule Management Plan Template - Outline for the development of the Schedule Management Plan
- ✓ Cost Management Plan Template - Outline for the development of the Cost Management Plan

- ✓ Project Management Plan Template - Outline for the development of the Project Management Plan
- ✓ Quality Management Plan Template - Outline for the development of the Quality Management Plan
- ✓ Resource Management Plan Template - Outline for the development of the Resource Management Plan
- ✓ Communication Management Plan Template - Outline for the development of the Communication Management Plan
- ✓ Risk Management Plan Template - Outline for the development of the Risk Management Plan
- ✓ Procurement Management Plan Template - Outline for the development of the Procurement Management Plan
- ✓ Stakeholder Management Plan - Outline for the development of the Stakeholder Management Plan
- ✓ Sustainable Management plan Template - Outline for the development of the Sustainable Management Plan
- ✓ Project Management Scheduling Software – Software used to create the project schedule.
- ✓ Activity List Template – Used to create the list of scheduled activities.
- ✓ Responsibility Assignment Matrix – To assign responsibilities to the project team.
- ✓ Communication Matrix – Matrix to outline project communication.

- ✓ Stakeholder Engagement Assessment Matrix – Matrix to assess stakeholder engagement needs.
- ✓ Stakeholder Prioritization Matrix – Matrix to prioritize project stakeholders.
- ✓ Project Charter Template – Document to outline key project information.
- ✓ Risk Register Template – Register to document project risks.
- ✓ Requirements Traceability Matrix – Matrix to match deliverables with their requirements.
- ✓ Work Breakdown Structure – Used to break down large projects into manageable pieces.
- ✓ Work Breakdown Dictionary – Contains details of tasks, activities, and deliverables.
- ✓ Bottom-up Estimation – Estimation technique to determine project costs by working from the details and combining for the overall costs.
- ✓ Quality Activities Matrix Template – Matrix to outline how quality will be managed within the project.
- ✓ Stakeholder Register Template – Register to document project stakeholders.
- ✓ Stakeholder Assessment Matrix – Matrix to compare current engagement levels and desired engagement levels for Stakeholder.
- ✓ P5 Impact Analysis – Tool to determine the impact on the sustainable development of the project.

Chart 3

Tools

Objectives	**Tools**
1. To create a project charter to properly define key input for the development of the Project Management Plan.	✓ Expert Judgement ✓ Work Breakdown Structure ✓ Activity List ✓ Integration Management Plan ✓ Requirements Traceability Matrix
2. To develop a Scope Management Plan to ensure the project includes all the work required to complete the project successfully and only the work required by the project.	✓ Expert Judgement ✓ Data Analysis ✓ Meetings ✓ Scope Management Plan Template ✓ Requirements Traceability Matrix ✓ Work Breakdown Structure ✓ Work Breakdown Structure Dictionary
3. To develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project.	✓ Data Analysis ✓ Meetings ✓ Activity List ✓ MS Projects ✓ Schedule Management Plan

Objectives	Tools
	✓ Expert Judgement ✓ Meetings ✓ Bottom – Up Estimation
4. To create a Cost Management Plan that will define budget management for the successful completion of the project within budget.	✓ Expert Judgement ✓ Data Analysis ✓ Meetings ✓ Bottom – Up Estimation ✓ Cost Management Plan Template
5. To develop a Quality Management Plan for managing and controlling quality within the project.	✓ Expert Judgement ✓ Data gathering ✓ Data analysis ✓ Decision making ✓ Data representation ✓ Test and inspection planning ✓ Meetings ✓ Quality Activities Matrix Template ✓ Quality Management Plan Template
6. To develop a Resource Management Plan to ensure the timely availability of required resources for	✓ Expert Judgement ✓ Data representation ✓ Organizational Theory

Objectives	Tools
the successful completion of the project.	✓ Meetings ✓ RACI ✓ Resource management Plan Template
7. To design a Communication Management Plan to ensure all stakeholders, including the project team, are properly and timely informed on project progress.	✓ Expert Judgement ✓ Communication requirements analysis ✓ Communication technology and methods ✓ Interpersonal and team skills ✓ Data representation ✓ Meetings ✓ Communication Management Plan
8. To develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success.	✓ Expert Judgement ✓ Data Analysis ✓ Meetings ✓ Risk Register Template ✓ Risk Management Plan Template
9. To create a Procurement Management Plan to conduct fair and ethical purchasing of goods, services,	✓ Expert Judgement ✓ Data gathering ✓ Data analysis

Objectives	Tools
or results for the successful completion of the project.	✓ Source selection analysis ✓ Meetings ✓ Procurement Management Plan Template
10. To design a Stakeholders Management Plan to identify and manage stakeholders who directly or indirectly impact the successful completion of the project.	✓ Expert Judgement ✓ Data gathering and analysis ✓ Data representation ✓ Meetings ✓ Stakeholder Register Template ✓ Stakeholder Assessment Matrix ✓ Stakeholder Management Plan Template
11. To validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.	✓ Sustainable Management Plan Template ✓ Expert Judgement ✓ Data gathering ✓ Data analysis ✓ P5 Impact Analysis

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Assumptions and Constraints

According to the PMBOK, 7th Edition (2021) "An assumption is a factor that is considered to be true, real, or certain, without proof or demonstration. A constraint is a limiting factor that affects the execution of a project, program, portfolio, or process." The triple constraints include scope, schedule, and cost but in recent years quality and risks have been added to this list of constraints.

Chart 4

Assumptions and Constraints

Objectives	Assumptions	Constraints
1. To create a project charter to properly define key input for the development of the Project Management Plan.	All information to create the project charter is available	✓ Limited information available for the development of the project charter.
2. To develop a Scope Management Plan to ensure the project includes all the work required to complete the project	Information to determine the full	✓ Project sponsors disorganized.

Objectives	Assumptions	Constraints
successfully and only the work required by the project.	extent of the scope is available.	✓ Scope definition is not clear due to missing information.
3. To develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project.	Schedule will follow the pre-design method of implementation.	✓ Project must observe deadlines and milestones. ✓ Deadlines on certain activities uncertain.
4. To create a Cost Management Plan that will define budget management for the successful completion of the project within budget.	Inflation will not affect the cost of executing the Honey Project.	✓ Project budget is limited. ✓ Funds distribution from project sponsors.

Objectives	Assumptions	Constraints
5. To develop a Quality Management Plan for managing and controlling quality within the project.	Requirements from stakeholders are readily available.	✓ Lack of information from stakeholders. ✓ Internal policies from project sponsors.
6. To develop a Resource Management Plan to ensure the timely availability of required resources for the successful completion of the project.	✓ Resources readily available when needed. ✓ Resources are of the required quality.	✓ Project resources unavailable when needed. ✓ Poor distribution of allocated resources.
7. To design a Communication Management Plan to ensure all stakeholders, including the project team, are properly and timely informed on project progress.	✓ All stakeholders properly informed about	✓ Lack of response from stakeholders

Objectives	Assumptions	Constraints
	project activities. ✓ Stakeholders willing to share information.	✓ Project sponsors communication policies
8. To develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success.	✓ All risks are identified. ✓ Risk owners are doing their jobs.	✓ Limited information on historical risks since the project is new. ✓ Severe natural disasters.
9. To create a Procurement Management Plan to conduct fair and ethical purchasing of goods, services, or results for the successful completion of the project.	✓ Local suppliers capable of supplying resources needed by the project.	✓ Capacity of local suppliers ✓ International shipping issues.

Objectives	Assumptions	Constraints
	✓ Suppliers abiding by signed contract.	
10. To design a Stakeholders Management Plan to identify and manage stakeholders who directly or indirectly impact the successful completion of the project.	✓ All stakeholders are properly identified. ✓ Stakeholders. functioning as per assignment.	✓ Stakeholders not responding to project requirements. ✓ Organizational structure of project stakeholders.
11. To validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.	A sustainable and regenerative approach will be applicable to the implementation of the Honey Project.	Local suppliers are able to supply equipment and materials that are sustainable and regenerative in nature.

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

3.4 Deliverables

According to the PMBOK, 6th Edition (2017), deliverables refer to all tangible and intangible outputs produced within the scope of the project.

Chart 5

Deliverables

Objectives	**Deliverables**
1. To create a project charter to properly define key input for the development of the Project Management Plan.	Project Charter
2. To develop a Scope Management Plan to ensure the project includes all the work required to complete the project successfully and only the work required by the project.	Scope Management Plan
3. To develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project.	Schedule Management Plan
4. To create a Cost Management Plan that will define budget management for the successful completion of the project within budget.	Cost Management Plan

Objectives	Deliverables
5. To develop a Quality Management Plan for managing and controlling quality within the project.	Quality Management Plan
6. To develop a Resource Management Plan to ensure the timely availability of required resources for the successful completion of the project.	Resource Management Plan
7. To design a Communication Management Plan to ensure all stakeholders, including the project team, are properly and timely informed on project progress.	Communication Management Plan
8. To develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success.	Risk Management Plan

Objectives	Deliverables
9. To create a Procurement Management Plan to conduct fair and ethical purchasing of goods, services, or results for the successful completion of the project.	Procurement Management Plan
10. To design a Stakeholders Management Plan to identify and manage stakeholders who directly or indirectly impact the successful completion of the project.	Stakeholders Management Plan
11. To validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.	Sustainable and Regenerative Management Plan

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4 RESULTS

The Results Analysis Chapter analyzes how the specific objectives, including the application of Project Management Processes of the Honey Project, can be effective and efficient to produce a Project Management Plan for managing project activities from inception to final completion, with the hope of achieving project success.

4.1 Integration Management Plan

4.1.1 Integration Management Introduction

This section will comprise of the Project Charter and the Project Management Plan. It will highlight the various processes and project management activities and how they will intertwine and utilize together.

4.1.2 Develop Project Charter

The project charter was created to describe the project and give readers an overall understanding of what it entails. Additionally, according to PMI, the charter formally authorizes the existence of a project and allows the Project Manager the ability to mobilize resources. The project charter is outlined below:

Project Name: Honey Production Redevelopment Support Project in Belize

Project Start Date: August 01, 2023

Project End Date: July 31, 2025

Project Objectives

General Objective:

To implement the Honey Production Redevelopment Support Project in Belize to increase livelihood opportunities in rural communities.

Specific Objectives:

- Increase rural livelihood opportunities through beekeeping in farming communities especially among women and youth.
- Increase national production and productivity of beekeeping.
- Increase the quality of honey and honey products through the promotion of standards and good manufacturing practices.

Project Purpose or Justification

Belize was a major exporter of honey during the 1980s, but due to several reasons including climate change and the invasion of the aggressive Africanized bees, the production of honey went from roughly 700,000 pounds to less than 100,000 pounds by the year 2000. This rapid decline saw the Ministry of Agriculture in Belize scrambling for ways to revive the industry. The search for a remedy saw the birth of the Honey Production Redevelopment Support Project. This project is targeting one hundred new beekeepers which must include 50% of women and youth.

Through the implementation of this project, it is expected that honey production will increase from 90,000 lbs. (2023) to 150,000 lbs. within the first three years (2025) and also increase the number of beekeepers by 100% (75 – 150) within that same time period. The yield is also expected to increase from 49 lbs. per hive to 55 lbs. per hive by the year 2025. With the efficient implementation of this project, it is expected that the honey demand of Belize, which is approximately 300,000 lbs./year will be met by the year 2028. The increase will greatly contribute to poverty reduction and food security for the country of Belize.

Since there are no projects within the auspices of the Ministry of Agriculture in Belize that are being implemented using a Project Management Plan, one will be developed for the effective and efficient implementation of the Honey Project. The key benefit of developing this plan is the production of a comprehensive document that defines the basis of all project work and how the work will be performed. This integrated document is needed to guide the Project Manager and project team on project requirements, timing, and budgetary considerations for each activity during project implementation.

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

1. Project Management Plan
2. Capacity Building of Beneficiaries
3. Establishment of Demonstration Apiary
4. Procurement and Distribution of Beekeeping Equipment and Materials

Assumptions

1. Beekeepers are willing to train and adhere to the Best Beekeeping Practices.
2. Demonstration apiary will be utilized by beneficiaries as an educational tool.
3. Beekeeping materials and equipment are locally available.
4. Importation of beekeeping materials and equipment from neighbouring countries.

Constraints

1. Beekeepers refusing to be trained.
2. Demonstration apiary not functioning to Best Beekeeping Standards
3. Beekeeping materials and equipment not available locally.
4. Importation from neighboring countries too costly.

Risks

1) Extreme weather events can delay project activities.
2) Pest and Disease attacking the bees.
3) Inferior materials and equipment
4) Supplier delays
5) Non-compliance of beneficiaries to Best Beekeeping Practices

Budget

The budget is estimated at $ 1,067,943.48 BZD.

Milestones and Dates

Milestone	Start Date	End Date
Capacity Building of Beneficiaries	August 01, 2023	July 31, 2024
Establishment of Demonstration Apiary	January 02, 2024	June 30, 2024
Procurement of Beekeeping Equipment and Materials	August 01, 2024	February 14, 2025
Distribution of Beekeeping Equipment and Materials	March 01, 2025	June 30, 2025
Project Management	September 01, 2023	July 31, 2025

Stakeholders:

The following are the project stakeholders:

1. Project Manager
2. Project Team
3. Ministry of Agriculture, Food Security and Enterprise
4. Government of Belize
5. Belize Marketing and Development Cooperation (BMDC)
6. CARICOM Development Fund (CDF)
7. Beekeepers
8. Citizens of Belize
9. Suppliers

4.1.3 Project Management Plan

According to PMI (2017), this process defines, prepares, and coordinates all plan components while integrating them into the overall Project Management Plan.

a. Change Control

For any changes that may be necessary during the project, an integrated change control process will be followed.

- Change request is submitted.
- The proposed change is assessed to determine its effect on the project.
- The Project Steering Committee, Project Manager and Project Sponsor give approval or rejection
- The decision is recorded in the change log.
- Project documents are updated.

Chart 6

Change Control Template

Change Request Form			
Project Name: Honey Project Redevelopment Support Project (Honey Project)			
Change Name:			
Change Number:			
Requested By: _____	**Contact:_____**	**Date: _____**	
Description of Change:			
Priority:	**High**	**Medium**	**Low**
Impact on Objectives:			
Date Required: _____	**Approval of Request: (Y/N)**	**Date: _____**	
Change Potential Impact			
Scope:			
Cost:			
Schedule:			
Risk:			
Quality:			

Change Request Form				
Recommended Alternatives:				
Comments				
For Official Use Only				
Select One:	**1. Accepted**	**2. Deferred**	**3. Rejected**	**4. More Information Needed**
Comments:				
Project Manager Signature: _____				
PSC Chairman Signature: _____				

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

b. Lessons Learned

A Lesson Learned Register will be used to record knowledge gained during the project and to capture vital information to enable continual improvement throughout the project. Please see Lessons Learned template for the Honey Project below:

Chart 7

Lessons Learned Template

Lessons Learned Template						
Project Name:						
Project Number:						
Project Sponsor:						
Project Manager Name:						
Number	**Date Identified**	**Date Entered**	**Issue**	**Potential Impact**	**Recommendations or Comments**	**Follow-ups**

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

c. Project Closure

PMI (2017) states that this process finalizes all activities for the project, phase, or contract. In order for the project to be closed the following must be completed and approved:

Acceptance criteria met and approved by the Government of Belize and project sponsor.

a) Handing over certificate is provided.

b) Beneficiaries signing a Memorandum of Agreement (MOA)

c) Completed and signed audit submitted.

4.2 Scope Management Plan

4.2.1 Scope Management Introduction

The objective of Project Scope Management is to ensure that all the work to be done for the project is carried out and only that work. This is important since any changes to the project scope can affect the overall time and cost of the project. The Scope Management Plan allows the stakeholders to understand what is included in the project and what is not. In order to avoid cost, time and budget overruns, each item of work should be clearly defined and documented.

4.2.2 Collect Requirements

Collecting requirements allows the project team to ensure that the needs of all the stakeholders are considered. Without this, the project work could be completed without bringing value to the stakeholders.

Chart 8

Requirements Traceability Matrix

Project Name	Honey Production Redevelopment Support Project			
Project Description	Building an enabling environment for enhanced livelihood of Beekeepers in Belize			
ID	**Requirements Description**	**Business Needs, Opportunities, Goals, Objectives**	**Project Objectives**	**Verification**
R1	Capacity building must be done using local	Production efficiency	Ensures beekeepers learn about	Field activities

	language and pre-approved presentations		Best Beekeeping Practices	
ID	**Requirements Description**	**Business Needs, Opportunities, Goals, Objectives**	**Project Objectives**	**Verification**
R2	Capacity building must be done within locality of beekeepers	Production efficiency	Ensures the inclusion of practical activities	Field activities
R3	Demonstration apiary must be accessible to beekeepers for training purposes	Fulfill training needs	Ensures continuous capacity building of beekeepers	Site reports
R4	Materials and equipment must be sourced locally	Empower local entrepreneurs	Ensures quality materials and equipment	Inspection
R5	Materials and equipment must be inspected by project technical coordinator prior to distribution	Supply of quality materials and equipment to beekeepers	Ensures longevity	Inspection
R6	Bee boxes must be procured from renewable sources	Environmental considerations	Ensures renewable sources of materials	Site visit, Inspection
R7	Bees are to be sourced from sustainable bees' producers	Environmental considerations	Allows for efficient and sustainable conscious beekeeping practices	Site visit, Inspection
R8	Each bee box must contain ten frames	Efficient production	Ensures quantitative production parameters are met	Production records
R9	Delivery of bees must be done during the nighttime	Safety regulations	Ensures safe transportation	Inspection, records

			of bees to destination	
ID	**Requirements Description**	**Business Needs, Opportunities, Goals, Objectives**	**Project Objectives**	**Verification**
R10	Each bee box should contain fifty percent bees' population.	Efficient production	Ensures quantitative production parameters are met	Production records

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.2.3 Define Scope

Project Scope Statement

Project Description

The Honey Production Redevelopment Support Project (Honey Project) entails the provision of two trainings at the basic level, two at the advanced level, the establishment of one demonstration apiary and the procurement and distribution of beekeeping materials and equipment. The training will be conducted prior to the distribution of beekeeping materials and equipment to ensure beekeepers are prepared to manage their beekeeping enterprise effectively and efficiently.

Project Deliverables:

1. (2) Best Beekeeping Practices Training at the Basic and Advance levels
2. (1) Establishment of Demonstration Apiary
3. Procurement of Beekeeping Materials and Equipment
4. Distribution of Beekeeping Materials and Equipment
5. Project Management

Acceptance Criteria

- Training must be done in English.
- Training must be held in the locality of beekeepers.
- Materials and Equipment procured from local sources.
- Materials and Equipment are of acceptable quality.
- Public safety during bees' transportation is mandatory.

Project Exclusions

- Inspection of existing bees for pest and disease prior to introduction of new bees.
- Management of bees after the expiration of the Memorandum of Agreement.
- Importation of Materials and Equipment by local entrepreneurs.

Constraints

- Project to be carried out within the budget of $ 1,067,943.48 BZD.
- All works to be conducted within 24 months.
- Sourcing materials and equipment locally

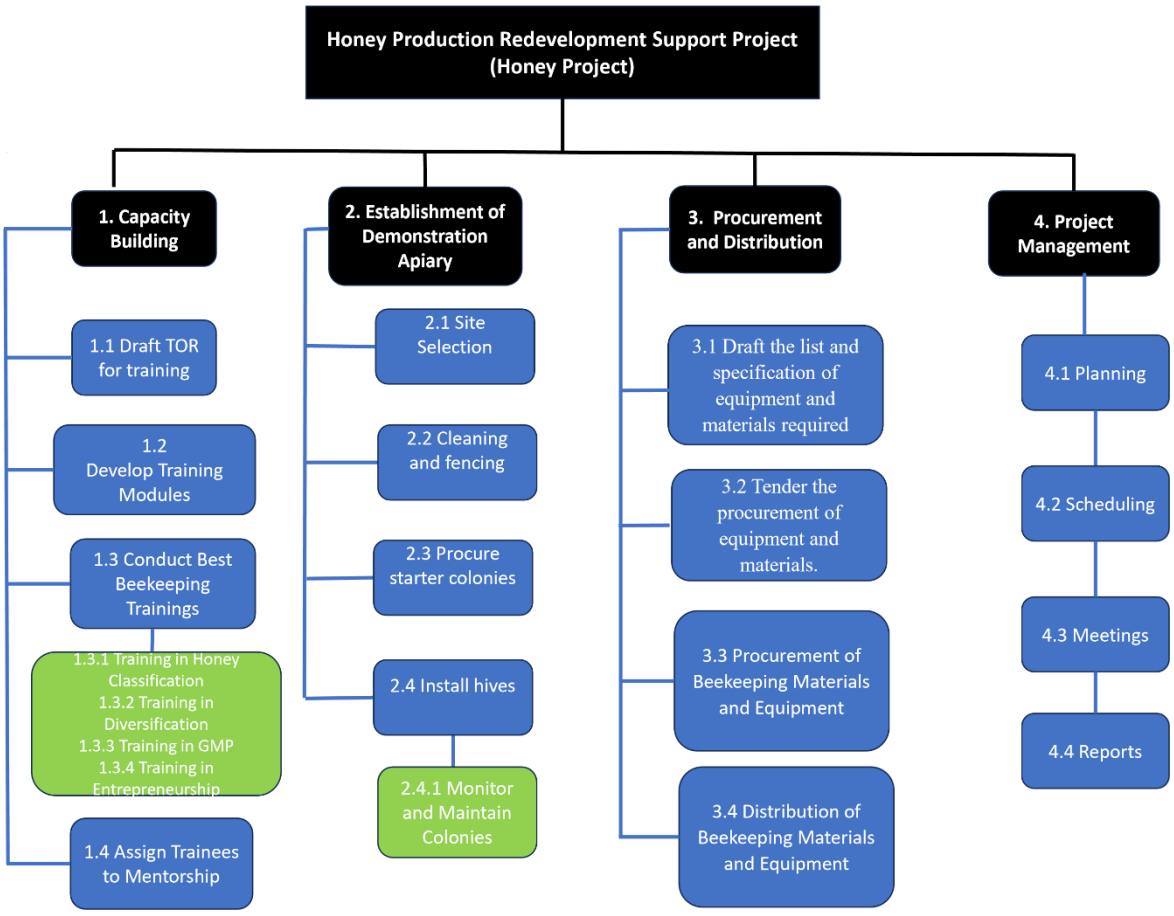
Assumptions

- All works can be carried out within budget.
- All works can be carried out within a timeframe.
- Materials and equipment can be imported within budget.

4.2.4 Create WBS

Figure 14

Work Breakdown Structure



Note. This figure was sourced from A. Mejia, Author, 2023. Own Work

4..2.5 WBS Dictionary

The PMBOK guide to Project Management Knowledge 7th Edition (2021) states that the WBS dictionary provides detailed deliverables, activities, and scheduling about each component within the Work Breakdown Structure. The following WBS dictionary was created based on the WBS and provides the aforementioned project information:

Chart 9

WBS Dictionary

Level	WBS Code	WBS Name	Description/Definition	Budget ($ BZD)	Resources
1	1	Capacity Building	Creating of the Terms of Reference for the trainers and the training packages	$181,755.00	
2	1.1	Draft TOR for training	Formulating the Terms of Reference for hiring consultants.	$15,100.00	Project Manager and Project Team
2	1.2	Develop Training Modules	Creation of training modules and topic to conduct trainings.	$9,800.00	Project Manager and Project Team
2	1.3	Conduct Best Beekeeping Training	Train beekeepers on the Best Beekeeping Practices including Pest and Diseases	$38,115.00	Project Manager, Consultants and Project Team
3	1.3.1	Training in Honey Classification	Conduct training in the classification of honey and honey products with thirty beekeepers	$27,690.00	Project Manager, Consultants and Project Team
3	1.3.2	Training in Diversification	Conduct training in honey product diversification and food safety standards	$26,680.00	Project Manager, Consultants and Project Team

Level	WBS Code	WBS Name	Description/Definition	Budget ($ BZD)	Resources
3	1.3.3	Training in GMP and Entrepreneurship	Conduct training in Good Manufacturing Practices and Entrepreneurship	$25,820.00	Project Manager, Consultants and Project Team
3	1.4	Assign Trainees to Mentorship	Selection of Mentors to continue train the beneficiaries for a five weeks period	$38,550.00	Project Manager, Consultants, Mentors and Project Team
1	2	Establishment of Demonstration Apiary	Establishment of a Demonstration Apiary that will be used to train beekeepers, students, and teachers	$41,853.00	Project Manager and Project Team
2	2.1	Site Selection	Selection of an appropriate location to place the apiary	$200.00	Project Manager, Consultants and Project Team
2	2.2	Cleaning and Fencing	Clearing of obstacles from around the location of the apiary and fencing for security	$4,693.00	Project Manager, Consultants and Project Team
2	2.3	Procure starter colonies	Procurement of starter colonies to populate demo apiary	$21,200.00	Project Manager, Consultants and Project Team
2	2.4	Install hives	Transportation and installation of starter colonies in the demo apiary	$2,860.00	Project Manager, Consultants and Project Team
3	2.4.1	Monitor and maintain colonies	Monitoring and ensuring colonies are properly cared for to avoid abscondment	$12,900.00	Project Manager, Consultants and Project Team

Level	WBS Code	WBS Name	Description/Definition	Budget ($ BZD)	Resources
1	3	Procurement and Distribution	Procurement and Distribution of materials and equipment to beneficiaries	$433,887.30	Project Manager and Project Team
2	3.1	Draft the list and specification of equipment and materials required	Creating of specified requirements for all materials and equipment to be purchased by the project	$1,054.00	Project Manager, PSC and Project Team
2	3.2	Tender the procurement of equipment and materials.	Advertise requirements by the project for fair and equitable procurement practices	$320.00	Project Manager, PSC and Project Team
2	3.3	Procurement of Beekeeping Materials and Equipment	Procurement of materials and equipment needed to operate a beekeeping enterprise	423,833.30	Project Manager, PSC and Project Team
2	3.4	Distribution of Beekeeping Materials and Equipment	Distribution of beekeeping materials and equipment to beneficiaries	$8,680.00	Project Manager, PSC and Project Team
1	4	Project Management	Application of project management processes and procedures throughout the duration of the project	$271,151.20	Project Manager, CDF, PSC and Project Team
2	4.1	Planning	Planning project activities throughout the life of the project.	$112,150.00	Project Manager, CDF, PSC and Project Team
2	4.2	Scheduling	Scheduling project activities throughout the life of the project.	$91,650.00	Project Manager, CDF, PSC and Project Team
2	4.3	Meetings	Attending meetings with stakeholders to update them on project activities and progress.	$39.880.00	Project Manager, CDF, PSC and Project Team

Level	WBS Code	WBS Name	Description/Definition	Budget ($ BZD)	Resources
2	4.4	Reports	Providing project reports, including daily logs, weekly reports, change updates and monthly work programs and support	$27,471.20	Project Manager, CDF, PSC and Project Team

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.2.6 Roles and Responsibilities

The roles and responsibilities for the project are outlined in the table below. This will allow the project team to have access to reference material for ease of collaboration with relevant stakeholders.

Chart 10

Roles and Responsibilities

Role	Responsibilities
CARICOM Development Fund	Project Sponsor
Ministry of Agriculture, Food Security and Enterprise	Co-sponsor and oversight on project progress and reporting.
Project Steering Committee	Overall management and control of project activities and approvals.
Project Manager	Overall management of the project and its activities through the application of the best Project Management Practices and procedures.
Suppliers	Sourcing and procuring quality materials and supplies requested from the project
Project Team	Support the Project Manager with the successful implementation of the project.
Beekeepers	Beneficiaries of the project.

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.2.7 Validate Scope

Scope validation dictates if the project deliverables will be accepted or rejected. This decision should be as objective as possible to avoid bias. Therefore, measurable metrics should be employed. The criteria within the requirements traceability matrix will be utilized to ensure impartiality.

4.2.8 Control Scope

Scope control is vital to the successful completion of the project. Without proper scope control the project could be threatened with scope creep which adds work, time, and cost to the project without added value. To avoid this, the project scope will be continually monitored for changes in variances. To effectively control any detriments to the project scope a robust change request procedure should be implemented.

4.3 Schedule Management Plan

4.3.1 Schedule Management Introduction

According to the PMBOK guide 7th edition, the Schedule Management Plan is a component of the Project Management Plan that establishes the criteria and activities for developing, monitoring, and controlling the schedule. This is especially important to ensure the timely completion of the project.

4.3.2 Schedule Management Approach

The schedule management plan will be created using information from similar past projects as well as knowledge and experience within the project area. Based on historically past and similar projects, 20 activities necessary to carry out the project will be defined. Using this knowledge and the work packages outlined in the WBS, the activities will be listed. After the listing of the activities, they will be sequenced, and the durations estimated. Once those tasks are completed the project schedule will be created using Microsoft Projects.

4.3.3 Define Activities

The activities were defined using personal and expert judgement, and historical information from past and similar projects. Additionally, predecessor and successor information were outlined in order to fully understand the interdependencies of the activities.

Chart 11

Activity List

ACTIVITY LIST			ACTIVITY ATTRIBUTES		
ACTIVITY ID	**ACTIVITY NAME**	**ACTIVITY DESCRIPTION**	**PREDECESSOR ACTIVITY IDs**	**SUCCESSOR ACTIVITY IDs**	**RESOURCE REQUIREMENTS**
1.1	Draft TOR for training	Formulating the Terms of Reference for hiring consultants.			Project Manager, PSC, CDF & Project Team
1.2	Develop Training Modules	Creation of training modules and topics to conduct training.	1.1	1.2	Project Manager & Project Team
1.3	Conduct Best Beekeeping Training	Train beekeepers on the Best Beekeeping Practices including Pest and Diseases	1.2	1.3	Project Manager & Project Team
1.3.1	Training in Honey Classification	Conduct training in the classification of honey and honey products with thirty beekeepers	1.3	1.3.2	Project Manager, Consultant & Project Team
1.3.2	Training in Diversification	Conduct training in honey product diversification and food safety standards	1.3.1	1.3.3	Project Manager, Consultant & Project Team
1.3.3	Training in GMP	Conduct training in	1.3.2	1.4	Project Manager,

ACTIVITY LIST			ACTIVITY ATTRIBUTES		
ACTIVITY ID	**ACTIVITY NAME**	**ACTIVITY DESCRIPTION**	**PREDECESSOR ACTIVITY IDs**	**SUCCESSOR ACTIVITY IDs**	**RESOURCE REQUIREMENTS**
	and Entrepreneurship	Good Manufacturing Practices and Entrepreneurship			Consultant & Project Team
1.4	Assign Trainees to Mentorship	Selection of Mentors to continue train the beneficiaries for a five weeks period	1.3.3	2.1	Project Manager, PSC, & Project Team
2.1	Site Selection	Selection of an appropriate location to place the apiary	1.4	2.2	Project Manager, & Project Team
2.2	Cleaning and Fencing	Clearing of obstacles from around the location of the apiary and fencing for security	2.1	2.3	Project Manager, & Project Team
2.3	Procure starter colonies	Procurement of starter colonies to populate demo apiary	2.2	2.4	Project Manager, & Project Team
2.4	Install hives	Transportation and installation of starter colonies in the demo apiary	2.3	2.4.1	Project Manager, & Project Team
2.4.1	Monitor and maintain colonies	Monitoring and ensuring colonies are properly cared	2.4	3.1	Project Manager, & Project Team

ACTIVITY LIST			ACTIVITY ATTRIBUTES		
ACTIVITY ID	**ACTIVITY NAME**	**ACTIVITY DESCRIPTION**	**PREDECESSOR ACTIVITY IDs**	**SUCCESSOR ACTIVITY IDs**	**RESOURCE REQUIREMENTS**
		for to avoid abscondment			
3.1	Draft the list and specification of equipment and materials required	Creating of specified requirements for all materials and equipment to be purchased by the project	1.4	3.2	Project Manager, Consultant, CDF, & Project Team
3.2	Tender the procurement of equipment and materials.	Advertise requirements by the project for fair and equitable procurement practices	3.1	3.3	Project Manager, & Project Team
3.3	Procurement of Beekeeping Materials and Equipment	Procurement of materials and equipment needed to operate a beekeeping enterprise	3.2	3.4	Project Manager, & Project Team
3.4	Distribution of Beekeeping Materials and Equipment	Distribution of beekeeping materials and equipment to beneficiaries	3.3		Project Manager, & Project Team
4.1	Planning	Planning project activities throughout the	1.1		Project Manager, Consultant, CDF, & Project Team

ACTIVITY LIST			ACTIVITY ATTRIBUTES		
ACTIVITY ID	**ACTIVITY NAME**	**ACTIVITY DESCRIPTION**	**PREDECESSOR ACTIVITY IDs**	**SUCCESSOR ACTIVITY IDs**	**RESOURCE REQUIREMENTS**
		life of the project.			
4.2	Scheduling	Scheduling project activities throughout the life of the project.	1.1		Project Manager, Consultant, CDF, & Project Team
4.3	Meetings	Attending meetings with stakeholders to 1.1update them project activities and progress.	1.1		Project Manager, Consultant, CDF, & Project Team
4.4	Reports	Providing project reports, including daily logs, weekly reports, change updates and monthly work programs and support	1.1		Project Manager, Consultant, CDF, & Project Team

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.3.4 Sequence Activities

Within this stage, the activities were placed in their corresponding order using the established relationships.

4.3.5 Estimate Activity Durations

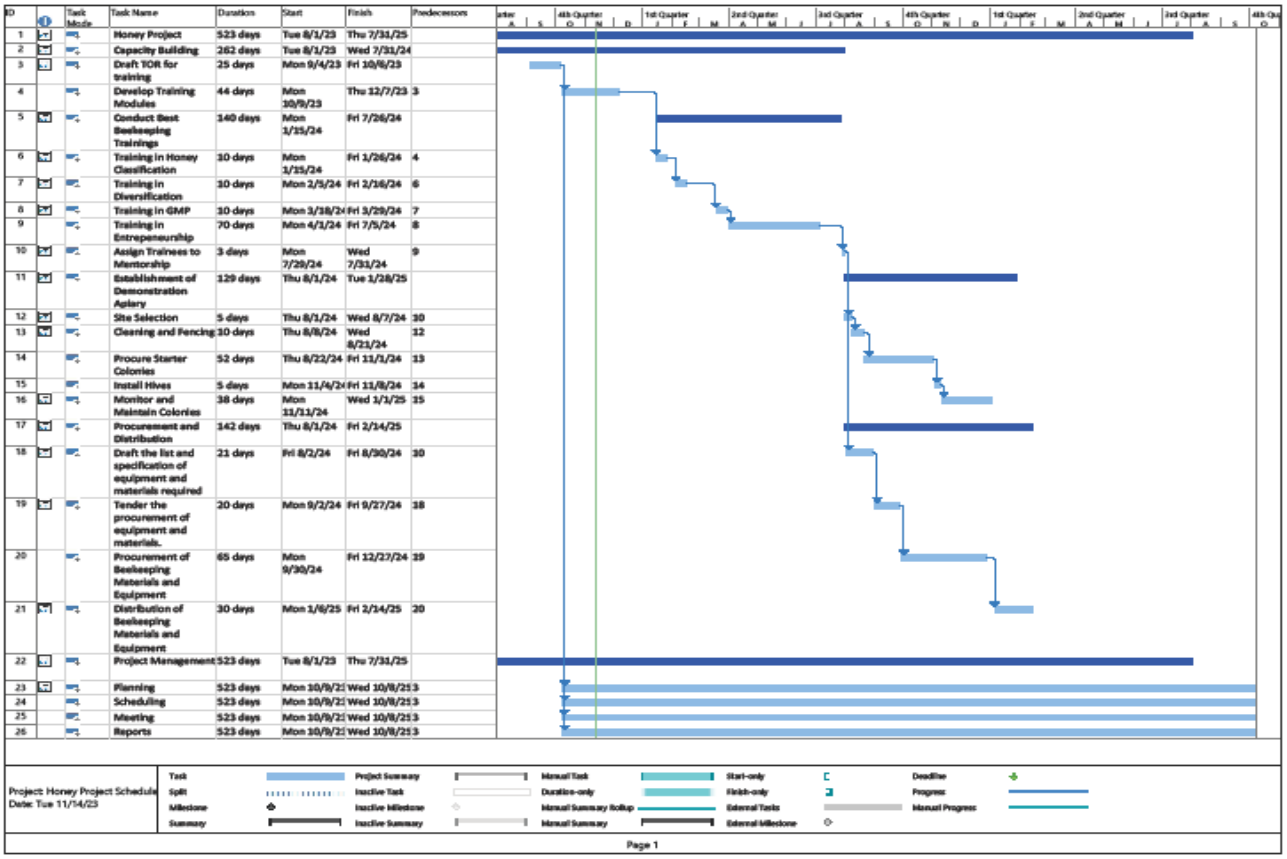
Due to the nature of agricultural projects, durations are typically estimated using a combination of expert judgement and past historical data. Depending on the degree of

similarity between the projects, determinations are made. Factors may include number of beneficiaries, geographical location, resources, and scope. Based on these and other factors, decisions are made as to whether these tasks would require more or less time to complete.

4.3.6 Develop Schedule

Figure 15

Project Schedule



Note. This figure was sourced from A. Mejia, Author, 2023. Own Work

4.3.7 Project Schedule Changes

The control of the schedule is crucial to ensure that the project activities and timelines do not fall behind. It is inevitable that changes will occur in a project, but it is very important that the Project Manager and his team monitor these changes to ensure they do not negatively affect the project. Monitoring is done by the project team and Project Manager by carefully scrutinizing the recommended changes and the risk they possess to the scope, cost, and schedule of the project. If the effects are found to be acceptable, then the Project Manager or the PSC approves the changes and makes the necessary changes to the schedule.

4.3.8 Control Schedule

According to PMI (2017), control schedule is the process of monitoring the status of project activities to update project progress and manage changes to the schedule baseline to achieve the plan. The schedule control procedure will be used to monitor the activities and tasks of the Honey Project to ensure that the project activities proceed as planned. The procedure will be used to monitor the status of the project, update the different processes, and manage changes that occur during the execution of the project.

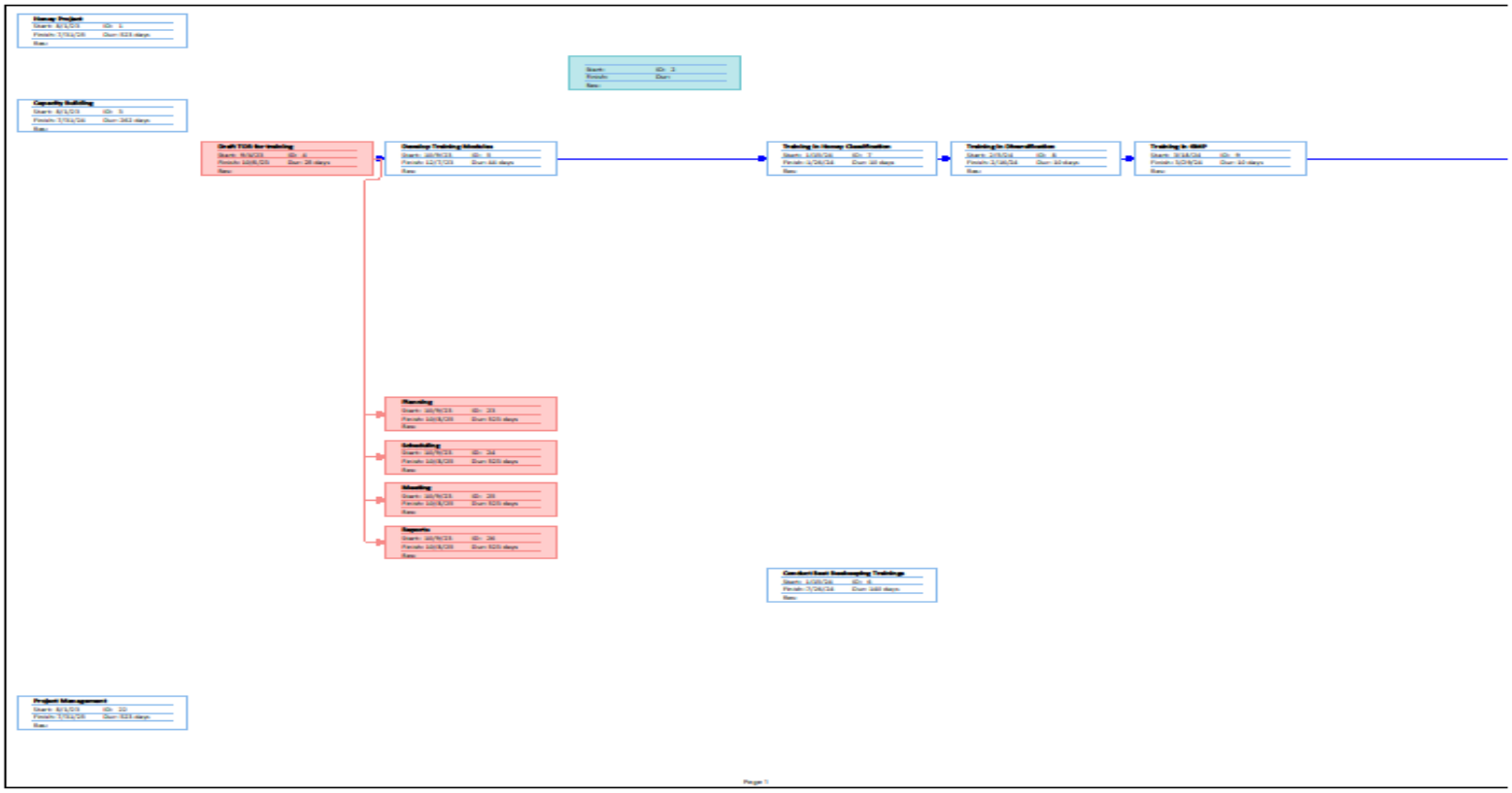
Several techniques will be employed to control the Honey Project schedule. Earned Value Analysis is one of the most reliable ways to track and manage schedule performance. It will be used to assist in measuring how much progress the team has made on a project, and to track whether they are on schedule and within budget. The iteration burndown chart will also be used to control the project schedule. The chart will illustrate how much work has

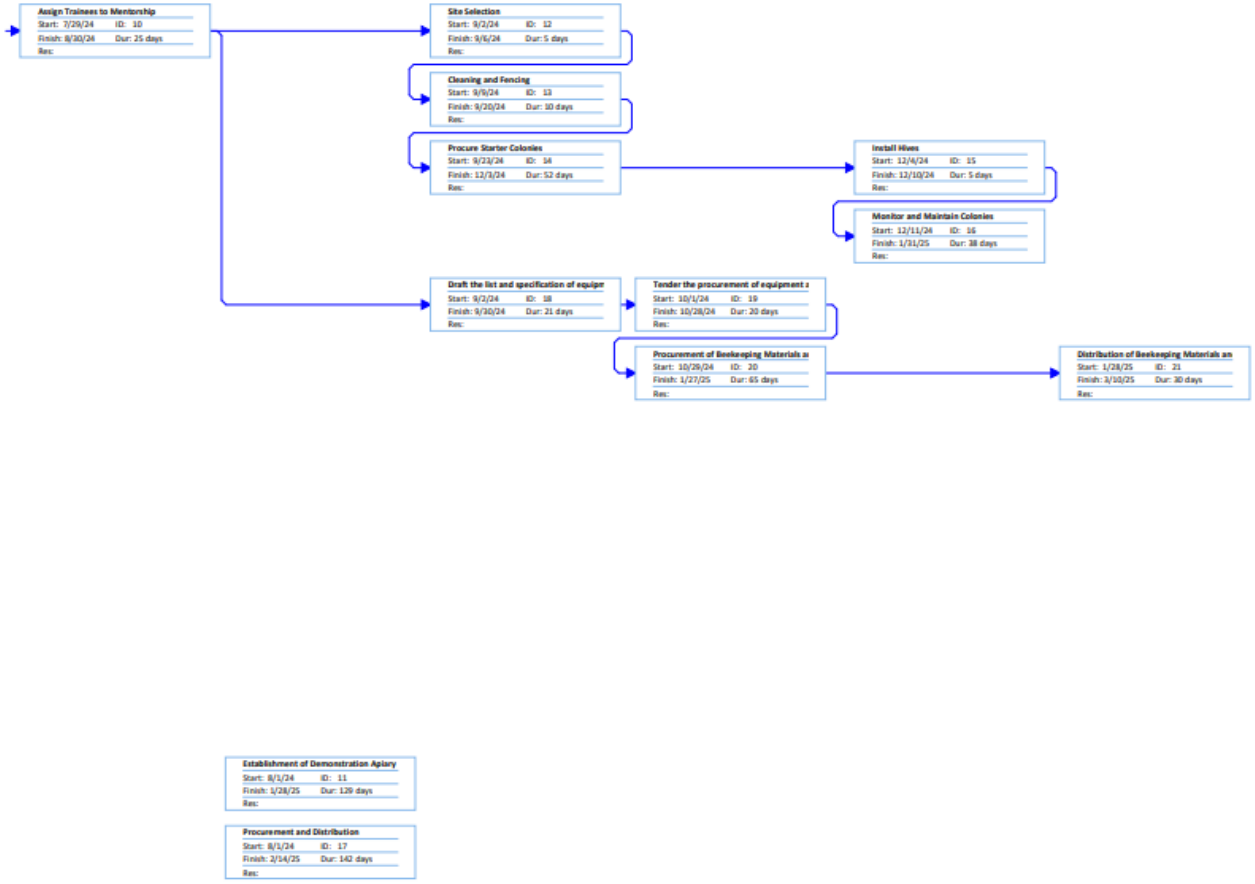
been completed, how much work is remaining, and the speed of progress. This information can help the Project Manager identify potential problems and make necessary changes. Performance reviews will be used to gauge, compare, and analyze the performance of work in progress against the baseline of the Honey Project. The Critical Path Method is the longest sequence of dependent tasks in a project and will also be used as an important technique to control the schedule.

4.3.9 Network Diagram

Figure 16

Network Diagram





Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.3.10 Reserve Analysis

Reserve Analysis is carried out to determine the amount of contingency and management reserve needed for the project to account for uncertainty within the schedule. Contingency reserves are the estimated duration within the schedule baseline. These are based on identified and accepted risks. Management reserves are estimated from the schedule management for the project that is withheld for management control purposes and are reserved for unforeseen work that is within scope of the project. For this project, the Honey Project Reserves will be applied to all activities as a basis for project schedule reserves. This probabilistic approach will provide an estimated time period built into the schedule to accommodate unforeseen delays that can occur in the project's life cycle. As the project progresses, the reserves may be used to cover the cost of risk mitigation activities, whether foreseen or unforeseen.

Chart 12

Activity List and Variance calculating using PERT

WBS Code	Activity Name	Predecessor	Optimistic Duration (t0)	Most likely Duration (tM)	Pessimistic Duration (tP)	Expected Duration (tE)	Variances (SD^2)
1	Start						
1.1	Draft TOR for training	N/A	20	25	30	25.0	2.8
1.2	Develop Training Modules	1.1	41	44	48	44.2	1.4
1.3	Conduct Best Beekeeping Training	1.2	135	140	151	141.0	7.1
1.3.1	Training in Honey Classification	1.3	8	10	12	10.0	0.4
1.3.2	Training in Diversification	1.3.1	7	10	11	9.7	0.4
1.3.3	Training in GMP and Entrepreneurship	1.3.2	7	10	12	9.8	0.7
1.4	Assign Trainees to Mentorship	1.3.3	19	25	30	24.8	3.4
2.1	Site Selection	1.4	3	5	7	5.0	0.4

WBS Code	Activity Name	Predecessor	Optimistic Duration (t0)	Most likely Duration (tM)	Pessimistic Duration (tP)	Expected Duration (tE)	Variances (SD^2)
2.2	Cleaning and Fencing	2.1	8	10	14	10.3	1.0
2.3	Procure starter colonies	2.2	46	52	59	52.2	4.7
2.4	Install hives	2.3	3	5	7	5.0	0.4
2.4.1	Monitor and maintain colonies	2.4	32	38	45	38.2	4.7
3.1	Draft the list and specification of equipment and materials required	1.4	18	21	25	21.2	1.4
3.2	Tender the procurement of equipment and materials.	3.1	17	20	24	20.2	1.4
3.3	Procurement of Beekeeping Materials and Equipment	3.2	58	65	72	65.0	5.4
3.4	Distribution of Beekeeping Materials and Equipment	3.3	27	30	36	30.5	2.3
				510		512.0	37.9

Total Expected Duration (tE) – 512 days

Total Variance – 37.9

Standard Deviation - 6.16

Project duration with 84% probability = 518.16 days (512 + 6.16)

4.4 Cost Management

According to PMI (2017), the Project Cost Management processes are defined as:

- Plan Cost Management
- Estimate Cost
- Determine Budget
- Control Cost

4.4.1 Plan Cost Management

This section primarily focuses on the financial aspects of the project. This includes outlining the methodology for estimates, the project budget and how project funds will be monitored and controlled throughout the project. This is important to ensure there is no mismanagement of funds that can affect the final outcome of the project. Plan Cost Management process for the Honey Project will establish the cost of all resources needed to successfully complete the project. The plan will be aligned to the recommendations of PMI (2017), to plan, manage, budget and control project costs. Project deliverables will be broken down into work packages and major milestones. Each activity under a work package will be listed with its estimated unit cost and tallied to establish an initial cost

baseline. The total cost for this project BZD $ 1,334,929.34 ($667,464.67USD). Contingency Reserves are calculated as a percentage (10%) of the deliverables relating to the implementation of the project and Management Reserves are calculated as a percentage (25%) of the deliverables for management control only. All cost estimates are in Belize Dollars.

4.4.2 Estimate Costs

Costs were estimated using a combination of Bottom – Up Estimation and expert judgement. This enabled project cost to be determined by using information from past similar projects and agricultural diversification initiatives with similar objectives. This means that where possible typical details were used to estimate material and labor costs and where these were not available, past project information was utilized.

Chart 13

Cost Estimates

ACTIVITY ID	ACTIVITY NAME	ACTIVITY DESCRIPTION	RESOURCES	UNIT	RATE	QTY	AMOUNT
1.1	Draft TOR for training	Formulating the Terms of Reference for hiring consultants.	Project Manager, PSC, CDF & Project Team	No.	$2,157.14	7	$15,100.00
1.2	Develop Training Modules	Creation of training modules and topics to conduct training.	Project Manager & Project Team	No.	$2,450.00	4	$9,800.00
1.3	Conduct Best	Train beekeepers on the Best	Project Manager	No.	$6,352.50	6	$38,115.00

ACTIVITY ID	ACTIVITY NAME	ACTIVITY DESCRIPTION	RESOURCES	UNIT	RATE	QTY	AMOUNT
	Beekeeping Training	Beekeeping Practices including Pest and Diseases	& Project Team				
1.3.1	Training in Honey Classification	Conduct training in the classification of honey and honey products with thirty beekeepers	Project Manager, Consultant & Project Team	No.	$9,230.00	3	$27,690.00
1.3.2	Training in Diversification	Conduct training in honey product diversification and food safety standards	Project Manager, Consultant & Project Team	No.	$4,446.67	6	$26,680.00
1.3.3	Training in GMP and Entrepreneurship	Conduct training in Good Manufacturing Practices and Entrepreneurship	Project Manager, Consultant & Project Team	No.	$4,303.33	6	$25,820.00
1.4	Assign Trainees to Mentorship	Selection of Mentors to continue train the beneficiaries for a five weeks period	Project Manager, PSC, & Project Team	No.	$4,818.75	8	$38,550.00
2.1	Site Selection	Selection of an appropriate location to place the apiary	Project Manager, & Project Team	Each	$200.00	1	$200.00
2.2	Cleaning and Fencing	Clearing of obstacles from around	Project Manager,	Each	$2,346.50	2	$4,693.00

ACTIVITY ID	ACTIVITY NAME	ACTIVITY DESCRIPTION	RESOURCES	UNIT	RATE	QTY	AMOUNT
		the location of the apiary and fencing for security	& Project Team				
2.3	Procure starter colonies	Procurement of starter colonies to populate demo apiary	Project Manager, & Project Team	No.	$2,120.00	10	$21,200.00
2.4	Install hives	Transportation and installation of starter colonies in the demo apiary	Project Manager, & Project Team	No.	$286.00	10	$2,860.00
2.4.1	Monitor and maintain colonies	Monitoring and ensuring colonies are properly cared for to avoid abscondment	Project Manager, & Project Team	No.	$1,016.67	12	$12,200.00
3.1	Draft the list and specification of equipment and materials required	Creating of specified requirements for all materials and equipment to be purchased by the project	Project Manager, Consultant, CDF, & Project Team	No.	$1,054.00	1	$1,054.00
3.2	Tender the procurement of equipment and materials.	Advertise requirements by the project for fair and equitable procurement practices	Project Manager, & Project Team	No.	$320.00	1	$320.00
3.3	Procurement of Beekeeping Materials and Equipment	Procurement of materials and equipment needed to operate a	Project Manager, & Project Team	No.	$4,238.33	100	423,833.30

ACTIVITY ID	ACTIVITY NAME	ACTIVITY DESCRIPTION	RESOURCES	UNIT	RATE	QTY	AMOUNT
		beekeeping enterprise					
3.4	Distribution of Beekeeping Materials and Equipment	Distribution of beekeeping materials and equipment to beneficiaries	Project Manager, & Project Team	No.	$86.80	100	$8,680.00
4.1	Planning	Planning project activities throughout the life of the project.	Project Manager, Consultant, CDF, & Project Team	No.	$9,345.83	12	$112,150.00
4.2	Scheduling	Scheduling project activities throughout the life of the project.	Project Manager, Consultant, CDF, & Project Team	No.	$7,637.50	12	$91,650.00
4.3	Meetings	Attending meetings with stakeholders to update them on project activities and progress.	Project Manager, Consultant, CDF, & Project Team	No.	$3,323.33	12	$39.880.00
4.4	Reports	Providing project reports, including daily logs, weekly reports, change updates and monthly work programs and support	Project Manager, Consultant, CDF, & Project Team	No.	$2,289.27	12	$27,471.20

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.4.3 Determine Budget

According to PMI (2017), Determine Budget is the process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline. A project budget helps set expenditure expectations and is an important aspect in getting project approval, ensuring funds are available when needed, and measuring project's performance. This process is dynamic and requires constant monitoring, reviews, and updates throughout the project lifecycle. The project budget is an essential document for the project's decision-making processes that needs to be communicated to stakeholders to realize the needs of the project i.e., financial, human resource, materials, equipment, training etc.); the process of determining budget also provides a baseline for the Project Manager to track project expenditures and identifying project needs. It will identify skill and expertise needed to realize work packages and activities whilst prioritizing activities and measuring performance against actual cost as the project matures. The inputs used to determine the budget for the Honey Project are the Project Management Plans including the Cost Management Plan, Resource Management Plan, Schedule Management Plan, and the Scope Baseline. The tools and techniques used in this process will be expert judgement and the use of historical and financing data. This process will lead to obtaining the cost baseline for the project and updates to the project schedule and risk register for the project. The contingency reserves and management reserves for the project will be 15% and 25% respectively.

Figure 17

Determine Budget

	ACTIVITY NAME	ACTIVITY DESCRIPTION	COST	Start	Finish	DURATION (Month)	2023					2024												2025						
							August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
1.1	Draft TOR for training	Formulating the terms of reference for hiring consultants.	$15,100.00	4-Sep-23	6-Oct-23	2		$ 7,550.00	$ 7,550.00																					
1.2	Develop Training Modules	Creation of training modules and topics to conduct trainings.	$9,800.00	9-Oct-23	7-Dec-23	3			$ 4,000.00	$ 4,000.00	$ 1,800.00																			
1.3	Conduct Best Beekeeping Training	Train beekeepers on the Best Beekeeping Practices including Pest and Diseases	$38,115.00	15-Jan-24	26-Jul-24	7						$ 5,445.00	$ 5,445.00	$ 5,445.00	$ 5,445.00	$ 5,445.00	$ 5,445.00	$ 5,445.00												
1.3.1	Training in Honey Class	Conduct training in the classification of honey and	$27,690.00	15-Jan-24	26-Jan-24	1						$ 27,690.00																		

	ACTIVITY NAME	ACTIVITY DESCRIPTION	COST	Start	Finish	DURATION (Month)	2023					2024												2025						
							August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
	ification	honey products with thirty beekeepers																												
1.3.2	Training in Diversification	Conduct training in honey product diversification and food safety standards	$26,680.00	5-Feb-24	16-Feb-24	1							$ 26,680.00																	
1.3.3	Training in GMP	Conduct training in Good Manufacturing Practices	$25,820.00	18-Mar-24	29-Mar-24	1								$ 25,820.00																
1.4	Assign Trainees to Mentorship	Selection of Mentors to continue train the beneficiaries for a five weeks period	$38,550.00	1-Apr-24	30-Aug-24	5									$ 7,710.00	$ 7,710.00	$ 7,710.00	$ 7,710.00	$ 7,710.00											
2.1	Site Selection	Selection of an appropriate location	$200.00	2-Sep-24	6-Sep-24	1														$ 200.00										

	ACTIVITY NAME	ACTIVITY DESCRIPTION	COST	Start	Finish	DURATION (Month)	2023					2024											2025						
							August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
		to place the apiary																											
2.2	Cleaning and Fencing	Clearing of obstacles from around the location of the apiary and fencing for security	$4,693.00	9-Sep-24	20-Sep-24	1														$ 4,693.00										
2.3	Procure starter colonies	Procurement of starter colonies to populate demo apiary	$21,200.00	23-Sep-24	3-Dec-24	4														$ 5,300.00	$ 5,300.00	$ 5,300.00	$ 5,300.00							
2.4	Install hives	Transportation and installation of starter colonies in the demo apiary	$2,860.00	4-Dec-24	10-Dec-24	1																	$2,860.00							
2.4.1	Monitor and maintain	Monitoring and ensuring colonies are	$12,900.00	11-Dec-24	31-Jan-25	2																	$ 6,450.00	$ 6,450.00						

	ACTIVITY NAME	ACTIVITY DESCRIPTION	COST	Start	Finish	DURATION (Month)	2023					2024											2025						
							August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
	colonies	properly cared for to avoid abscondment																											
3.1	Draft the list and specification of equipment and materials required	Creation of specified requirements for all materials and equipment to be purchased by the project	$1,054.00	2-Sep-24	30-Sep-24	1														$1,054.00									
3.2	Tender the procurement of equipment and materials.	Advertise requirements by the project for fair and equitable procurement practices	$320.00	1-Oct-24	28-Oct-24	1															$320.00									

	ACTIVITY NAME	ACTIVITY DESCRIPTION	COST	Start	Finish	DURATION (Month)	2023					2024												2025						
							August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
3.3	Procurement of Beekeeping Materials and Equipment	Procurement of materials and equipment needed to operate a beekeeping enterprise	$423,833.30	29-Oct-24	27-Jan-25	4															$ 105,958.33	$ 105,958.33	$ 105,958.33	$ 105,958.33						
3.4	Distribution of Beekeeping Materials and Equipment	Distribution of beekeeping materials and equipment to beneficiaries	$8,680.00	28-Jan-25	10-Mar-25	3																		$ 2,893.33	$ 2,893.33	$ 2,893.33				
4.1	Planning	Planning project activities throughout the life of the project.	$112,150.00	1-Aug-23	31-Jul-23	24	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92	$ 4,672.92

	ACTIVITY NAME	ACTIVITY DESCRIPTION	COST	Start	Finish	DURATION (Month)	2023					2024												2025						
							August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
4.2	Scheduling	Scheduling project activities throughout the life of the project.	$91,650.00	1-Aug-23	31-Jul-23	24	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75	$ 3,818.75
4.3	Meetings	Attending meetings with stakeholders to 1.1update them project activities and progress.	$39,880.00	1-Aug-23	31-Jul-23	24	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67	$ 1,661.67
4.4	Reports	Providing project reports, including daily logs, weekly reports, change updates and monthly work programs and support	$27,471.20	1-Aug-23	31-Jul-23	24	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63	$ 1,144.63

	ACTIVITY NAME	ACTIVITY DESCRIPTION	COST	Start	Finish	DURATION (Month)	2023					2024												2025						
							August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
	Sub-total		**$928,646.50**																											
	Contingency Reserves		**$139,296.98**																											
	Baseline Cost		**$1,067,943.48**																											
	Management Reserve		**$266,985.87**																											
	Total Project Cost		**$1,334,929.34**																											
							$ 11,297.97	$ 18,847.97	$ 22,847.97	$ 15,297.97	$ 13,097.97	$ 44,432.97	$ 43,422.97	$ 42,562.97	$ 24,452.97	$ 24,452.97	$ 24,452.97	$ 24,452.97	$ 19,007.97	$ 22,544.97	$ 122,876.30	$ 122,556.30	$ 131,866.30	$ 126,599.63	$ 14,191.30	$ 14,191.30	$ 11,297.97	$ 11,297.97	$ 11,297.97	$ 11,297.97
							$ 11,2	$ 30,1	$ 52,99	$ 68,2	$ 81,3	$ 125,	$ 169,	$ 211,	$ 236,261.73	$ 260,	$ 285,	$ 309,	$ 328,	$ 351,	$ 474,	$ 596,	$ 728,472.48	$ 855,	$ 869,	$ 883,4	$ 894,7	$ 906,0	$ 917,3	$ 928,

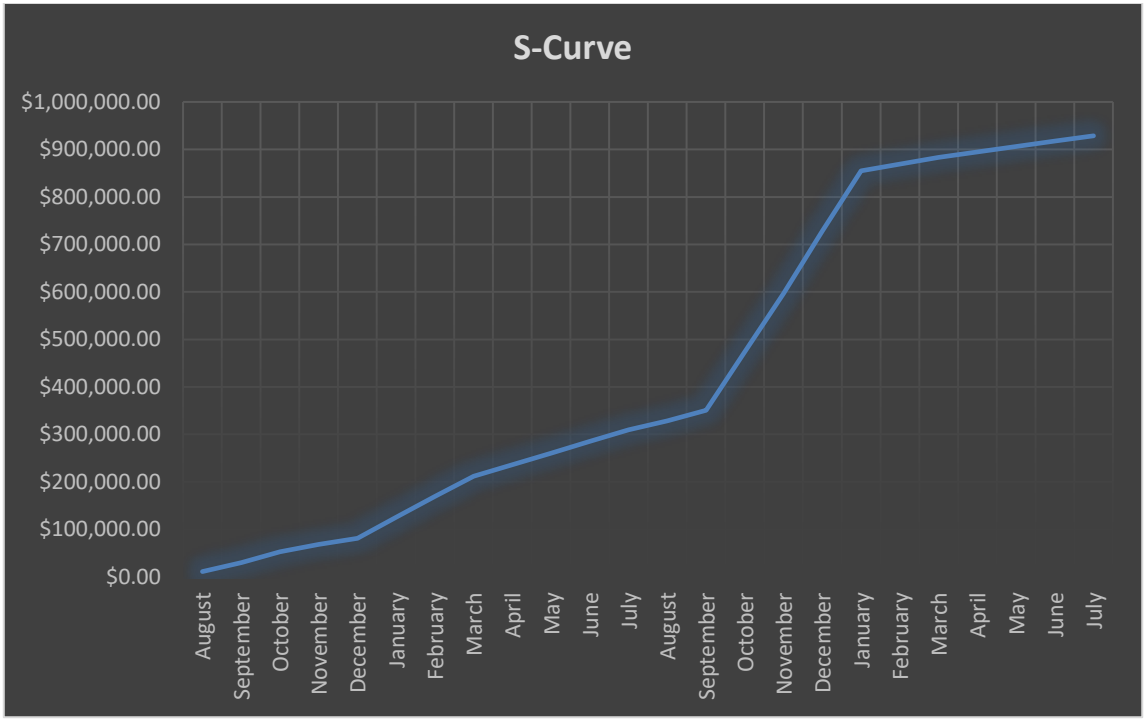
	ACTIVITY NAME	ACTIVITY DESCRIPTION	COST	Start	Finish	DURATION (Month)	2023					2024												2025						
							August	September	October	November	December	January	February	March	April	May	June	July	August	September	October	November	December	January	February	March	April	May	June	July
							97.97	45.94	3.91	91.88	89.85	822.82	245.79	808.76		714.70	167.67	620.64	628.61	173.58	049.88	606.18		072.11	263.41	54.71	52.68	50.65	48.62	646.59

Note. This figure was sourced from A. Mejia, Author, 2023. Own Work

A combination of Bottom – Up Estimating and Expert Judgement were utilized to determine the project budget. This allowed for the monthly expenditure to be estimated and determined based on when activities would be carried out and their durations in the overall project schedule. This was represented graphically on the S - Curve below .

Figure 18

S Curve



Note. This figure was sourced from A. Mejia, Author, 2023. Own Work

4.4.4 Control Costs

Project Cost Control involves monitoring and controlling the project budget from influences that may affect changes to the authorized cost baseline. This is done through the integrated Change Control Process. This process allows for the review and scrutinization of all change requests.

Cost Control allows for all requests to be analyzed to determine the potential effects on the cost baseline, scope, and schedule of the project. In the absence of this process, funds can be mismanaged and used in ways that negatively affect the overall project. For this project, Earned Value Management will be used to manage the project costs. With this technique indicators for scope, cost and schedule can be used to measure project performance and progress. Indicators include Cost Variance (CV), Schedule Variance (SV), Cost Performance Index (CPI) and Schedule Performance Index (SPI). These are constantly monitored throughout the project to determine if the actual cost, scope, and schedule are as planned and on schedule. If not, they can also be used to determine how much adjustment must be made to get back on track.

4.4.5 Cost Variance Response

The Cost Variance Response process expounds on the control thresholds for the project and what actions will be taken if the project triggers a control threshold. As a part of the response process, the Project Management Team typically presents options for corrective action to the Project Sponsor.

Chart 14

Cost Variance Response Process

Performance Measure	**Yellow Condition**	**Red Condition**
Schedule Performance Index (SPI)	Between 0.8 and 0.9 or 1.1 and 1.2	Less than 0.8 or Greater than 1.2
Cost Performance Index (CPI)	Between 0.8 and 0.9 or 1.1 and 1.2	Less than 0.8 or Greater than 1.2
Indicators	**Response**	
Yellow Alert	Project Manager to conduct analysis and make necessary adjustments to the project budget to strengthen cost control and spending.	
Red Alert	Project Manager to perform project cost performance overview, determine corrective actions and present to Project Steering Committee and Project Sponsor for approval.	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Responses Based on EVM

Yellow Condition

Upon reviewing the indicators for the reporting period, if the control thresholds of CPI or SPI are between 0.8 and 0.9 or between 1.1 and 1.2, or if the SPI or CPI has a variance of between 0.1 and 0.2 since the prior reporting period, the Project Manager must report to the Project Sponsor and explain the causes.

Red Condition

Upon reviewing the indicators for the reporting period, if the control thresholds of CPI or SPI are less than 0.8 or greater than 1.2, or if the SPI or CPI has a variance of greater than

0.2, the Project Manager must report the causes and provide the PSC and the Project Sponsor with a Cost Variance Corrective Action Plan to regain acceptable Project performance.

4.4.6 Cost Change Control Process

The Cost Change Control Process involves the following steps to ensure that requests are justified and add value to the Project.

1. Receive the request
2. Record the request
3. Assess the request
4. Make a recommendation
5. Accept or reject the request

4.5 Quality Management Plan

4.5.1 Introduction

This section includes the processes for integrating the organization's quality policies regarding planning, managing, and controlling project and product quality requirements in order to meet stakeholders' objectives. (PMI, 2017)

The Quality Management Plan for the Honey Project will establish activities, processes, and procedures to ensure that implementation adheres to project design, quality standards and sustainability requirements. The Project Quality Management processes are defined as:

- Plan Quality Management
- Manage Quality
- Control Quality

4.5.2 Plan Quality Management

The Plan Quality Management process for the Honey Project will involve identifying quality requirements and standards that will guide the project to achieving success throughout its life cycle. During the planning stage, the MAFSE will engage the services of the Belize Bureau of Standards and the Belize Marketing and Development Cooperation to ensure that every aspect of the project meets the required standards and specifications necessary to ensure quality is embedded into the project. Inputs for the process include the project schedule, activity list and budget, which all necessary to manage and schedule quality assessments throughout the project lifecycle. Quality assurances will also be strengthened through inspections, walk throughs, meetings and expert judgement.

4.5.3 Roles and Responsibilities

Chart 15

Project Resource Management Roles and Responsibilities

Role	Responsibilities
Sponsor (CDF)	Providing funding to execute the project
Implementing Agency (MAFSE)	Project execution
Beneficiaries (Beekeepers)	Derive benefits from project
Suppliers	Supply the goods and services

4.5.4 Quality Management Approach

Manage Quality is the process of translating the Quality Management Plan into executable quality activities that incorporate the organization's quality policies into the project (PMI, 2017). The Quality Management approach for this project is aimed at ensuring that the proper regulations, standards and procedures as well as specifications are followed in order to ensure quality products that will perform as required, that meet the needs of the end users and are in satisfaction with the requirements of the Project Sponsor. In order to do this, quality requirements are outlined, metrics specified, and the means of verification are stated. This allows for clarity of the process and accountability. Contractors will be expected to have a quality assurance plan approved by the Chief Agriculture Officer and validated for implementation throughout the project's life cycle. The Quality Assurance Processes for the Honey Project include measuring metrics, lessons learnt from previous projects, analyzing process data, quality control and quality assurance recommendations.

4.5.5 Customer Prioritization

Chart 16

Customer Prioritization

Customer Prioritization	MAF	CDF	Beekeepers	Suppliers	Row Total	Relative Dec. Value
MAFSE		1	0.2	0.1	1.3	0.04
CDF	1		0.1	0.2	0.3	0.01
Beekeepers	5	10		5	20	0.54
Suppliers	10	5	0.2		15.2	0.41
Total					36.8	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Based on the customer prioritization, the level of importance as follows:

1) Beekeepers

2) Suppliers

3) Ministry of Agriculture, Food Security and Enterprise

4) CARICOM Development Fund

4.5.6 Quality Requirements

a) Regulatory compliance

b) Policy adherence

c) Environmental considerations

d) Within budget

e) Sustainable

4.5.7 Requirements Prioritization

Chart 17

Requirements Prioritization (MAFSE)

Requirements Prioritization: Ministry of Agriculture (MAFSE)	Regulatory Compliance	Policy Adherence	Environmental Considerations	Within Budget	Sustainable	Row Total	Relative Dec. Value
Regulatory Compliance		1	10	5	1	17	0.30
Policy Adherence	1		5	0.1	0.2	6.3	0.11
Environmental Considerations	0.1	0.2		0.2	1	1.5	0.03
Within Budget	0.2	10	5		10	25.2	0.44
Sustainability	1	5	1	0.1		7.1	0.12
Total						57.1	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Chart 18

Requirements Prioritization (CDF)

Requirements Prioritization: CARICOM Development Fund (CDF)	Regulatory Compliance	Policy Adherence	Environmental Considerations	Within Budget	Sustainable	Row Total	Relative Dec. Value
Regulatory Compliance		5	10	0.1	5	20.1	0.35
Policy Adherence	0.2		1	0.1	0.2	1.3	0.02
Environmental Considerations	0.1	1		0.2	1	2.3	0.04
Within Budget	10	10	5		1	26	0.46
Sustainability	0.2	5	1	1		7.2	0.13
Total						56.9	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Chart 19

Requirements Prioritization (Beekeepers)

Requirements Prioritization: (Beekeepers)	Regulatory Compliance	Policy Adherence	Environmental Considerations	Within Budget	Sustainable	Row Total	Relative Dec. Value
Regulatory Compliance		10	0.1	1	0.2	11.3	0.20
Policy Adherence	0.1		5	1	0.1	6.1	0.11
Environmental Considerations	10	0.2		0.2	1	11.4	0.20
Within Budget	1	1	5		5	12	0.21
Sustainability	5	10	1	0.2		16.2	0.28
Total						57	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Chart 20

Requirements Prioritization (Suppliers)

Requirements Prioritization: (Suppliers)	Regulatory Compliance	Policy Adherence	Environmental Considerations	Within Budget	Sustainable	Row Total	Relative Dec. Value
Regulatory Compliance		0.1	0.2	0.1	1	1.4	0.02
Policy Adherence	10		10	0.1	0.1	10.2	0.17
Environmental Considerations	5	0.1		0.2	5	10.3	0.17
Within Budget	10	10	5		1	26	0.43
Sustainability	1	10	0.2	1		12.2	0.20
Total						60.1	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Chart 21

Customer Weighted Requirements Prioritization

Customer - Weighted Requirements Prioritization	MAFSE	CDF	Beekeepers	Suppliers	Row Total	Relative Dec. Value
Regulatory Compliance	0.01	0.00	0.11	0.01	0.12	0.12
Policy Adherence	0.00	0.00	0.06	0.07	0.13	0.13
Environmental Considerations	0.00	0.00	0.11	0.07	0.18	0.19
Within Budget	0.02	0.00	0.11	0.18	0.31	0.32
Sustainable	0	0	0.15	0.08	0.23	0.24
Total					0.97	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Based on the requirements prioritization, the level of significance is as follows:

- Within Budget
- Sustainable
- Environmental Considerations
- Policy Adherence
- Regulatory Compliance

4.5.8 Factors Related to Quality.

Chart 22

Factors related to quality.

Factor	Factor Definition
Communication	Communication is a critical factor for any project since the successful implementation and completion relies heavily on communication among stakeholders.
Leadership	This represents the Ministry of Agriculture ability to lead a project team to the successful implementation of the Honey Project.
Supplier involvement	Supplier involvement is important to minimize mistakes in the delivery of quality deliverables. Suppliers should be involved from the start of the project.
Employee Involvement	The project team must take ownership in the delivery of quality products and deliverables to the customers.
Customer Satisfaction	The key success factor in quality is to ensure that the customers are satisfied. For this to happen quality products must be delivered.

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.5.8 Metrics and Quality Baseline

Chart 23

Metrics and Quality Baseline

Quality Objective	Metric	Metric definition	Expected outcome/result	Measurement frequency	Responsible
To receive 100% of the funding by August 2025	Percentage of funds received	This is indicating that CDF should disburse all the financing for the project by August 2025	Successful implementation of the Honey Project by the Ministry of Agriculture	Quarterly review of funds available	CARICOM Development Fund/ Ministry of Agriculture
To complete 100% of the activities by August 2025	Percentage of work completed	Ministry of Agriculture should complete all project activities by August 2025	Successful and timely completion of the Honey Project	Quarterly review of project activities	CARICOM Development Fund/ Ministry of Agriculture

Quality Objective	Metric	Metric definition	Expected outcome/result	Measurement frequency	Responsible
For beneficiaries to receive 100% of materials by August 2025	Number of items received by beneficiaries	Beekeepers should receive all benefits owed to them for the project by August 2025	Beneficiaries satisfied with the quality of products received by the project	Quarterly meeting and feedback requests	Ministry of Agriculture/ Beneficiaries
To supply 100% of items to the customers by August 2025	Number of items delivered to customers	The suppliers should supply all materials and equipment to the beneficiaries by August 2025	All items procured by the project is delivered on a timely basis and with quality specifications	Every delivery will be monitored for quantity and quality	Ministry of Agriculture and Suppliers

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.5.9 Control Quality

Quality Control is a process of monitoring and recording the results of executing the quality management activities to assess project performance and ensure the project outputs are complete, correct, and meet customer expectations. The process determines whether project outputs comply with applicable standards, requirements, regulations, and specifications and determines whether corrective action is to be taken (PMI, 2017). The Honey Project team will apply quality control at project inception and continue throughout the project lifecycle and this will be the responsibility of the Project Manager. It is the duty of the Project Manager that suppliers and contractors comply with the quality requirements of the project and if there are any non-compliance then corrective actions should be immediately taken. To ensure compliance at all levels the Project Manager, along with his technical coordinator, will inspect every item and services being offered on behalf of the project. This will be complemented with daily and weekly meetings that will generate reports and be shared with the relevant stakeholders. Cost and schedule will be monitored by examining planned results against actual results to identify variances and determine corrective actions to where necessary. Inputs for this process include project documentations such as scope baseline, schedule management plan and budget.

4.5.10 Quality Activities

Quality activities are the activities that will be carried out from the commencement of the project through to its completion to ensure quality within the project. This ensures that there are proper checks and balances.

Chart 24

Quality Activities Matrix

Deliverable	Requirement	Manage and Control activities	Frequency	Responsible
Project approval	Submission of project proposal by Ministry of Agriculture	Manage: Project submission	Initial stage of project	MAFSE
		Control: Approval	Initial stage of project	MAFSE
Selection of beneficiaries	Call for application	Manage: Receive applications	Initial stage of project	MAFSE
		Control: Evaluation of applications	Initial stage of project	MAFSE/CDF
Capacity building	Providing training to all beekeepers in Honey Production	Manage: Evaluate efficiency	Monthly	MAFSE
		Control: Monitor progress	Monthly	MAFSE/CDF
Procurement of materials and equipment	Broadcast call for supplier bids for items and materials needed by the project	Manage: Provide payments	Quarterly	MAFSE/CDF
		Control: Evaluate quality	Quarterly	MAFSE/ Suppliers
Distribution of materials and equipment to beneficiaries	Providing benefits to beneficiaries	Manage: Timely distribution	Quarterly	MAFSE
		Control: Verification of delivery	Quarterly	MAFSE/ CDF

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.5.11 Quality Documents

Monthly Achievement Check Sheet

Monthly Achievement Check Sheet	
Period – January to December 2024	
Achievements	Quality Standards (Y/N)
Training of beekeepers	Yes
Identification of trainers	Yes
Procurement of boxes	Yes
Procurement of starter colonies	No
Distribution of equipment	Yes
Farmers' exchange visit	No
Production of honey	No
Labeling and packaging	No
Market of honey and honey products	Yes

Quality Check Sheet

Quality Checklist				
Project: Honey Project	Date: 5th February 2023			
Verification				
Items	Yes/No	N/A	Signature	Comments
Bee Boxes	Yes			
Bees	No			Weak
Suits	Yes			
Gloves	Yes			
Veils	Yes			
Smokers	No			Too small
Queen excluders	Yes			
De-capping tanks	Yes			
Sedimentation tanks	No			Wrong material
Frame feeders	Yes			
Honey extractors	Yes			
Wax	Yes			
Honey	No			Inferior quality

4.5.11 Continuous Improvement Plan

Chart 25

Continuous Improvement Plan

Process Description
1. **Employees Training:** In an effort to ensure success at every level of the Honey Project's execution it is important that the project team remain as capable as possible of delivering a quality product to the beneficiaries. Training must be practical and carried out by technical experts from both the public and private sectors.
2. **Skills Development:** The training provided is expected to build on the skills of the project team and also the beneficiaries. These skills are important for the care and successful beekeeping practices. These skills will allow the beneficiaries to financially gain from carrying out the necessary activities required to be productive.
3. **Improving Internal Processes:** Internal processes within the Ministry of Agriculture are needed to ensure that projects are given the importance that they require. In an effort to ensure that the beneficiaries receive all the benefits owed to them it is important that the right human resources are put in the right positions.
4. **Client Feedback:** Clients' feedback provides a review of their satisfaction with the organization, company, or product. These feedbacks create an environment of continuous improvement with the necessary data and information for improvement. Gathering feedback can be as simple as a questionnaire, interviews, surveys or in person conversations.
5. **Timely Audits:** Audits are used to determine if project activities are in line with the organization's processes and policies so it important that timely audits are conducted so that mistakes and re-work are reduced and corrected as quickly as possible. The auditing of the Honey Project will serve as the check and balance needed to ensure that the right training, materials, and equipment are being supplied to the beneficiaries.

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

The key factors for success in this project were identified as communication, leadership, supplier involvement, employee involvement and customer satisfaction. For this project to deliver quality products and services to the beneficiaries, the listed factors must be given attention and priority.

The metrics and quality baseline will be used to perform measurements to track performance while executing the project. Quality baseline is the quality objective of the project and is what will be used to measure and report on quality.

The quality documents used for this plan are a checklist and check sheet. These documents highlight processes necessary to ensure that quality requirements are being adhered to and accomplished.

4.6 Resource Management Plan

4.6.1 Resource Management Plan Introduction

According to PMI (2017), the Resource Management Plan involves the processes to identify, acquire and manage the resources needed for the successful completion of the project. This plan provides guidance on how project resources should be categorized, allocated, managed, and released. (PMI, 2017). This chapter targets the development of a Resource Management Plan for the Honey Project through the practical application of Project Resource Management. Effective management of resources from the design stage to final delivery of materials, equipment and trainings is highly dependent on accuracy of application of the intended Resource Management Processes for this project.

4.6.2 Resource Management Approach

This plan will cover the processes that deal with the creation and management of the project team and the roles and responsibilities each member is responsible for and how team members are chosen. Furthermore, the plan will speak to the acquisition and management of physical resources; namely consultants for trainings and beekeeping materials and equipment that are necessary to operate a beekeeping enterprise. These resources must be used as effectively as possible to keep the project within budget and on schedule. The utilization of resources will sometimes overlap and to avoid any conflicts between tasks, these overlapping must be identified and resolved prior to this realization.

4.6.3 Project Resources Management Processes

The Resource Process Group includes identifying and acquiring appropriate and timely project resources such as facilities, materials, people, infrastructure, tools, and equipment useful to the realization of project activities. As stated by PMI (2017), the Project Resource Management processes are defined as:

- Plan Resource Management
- Estimate Activity Resources
- Acquire Resources
- Develop Team
- Manage Team
- Control Resources

4.6.4 Plan Resource Management

Resource planning and management is integral to project management success and must be incorporated using input tools such as expert judgment and meetings. Plan Resource Management is the process of defining how to estimate, acquire, manage, and use team and physical resources (PMI, 2017).

Resources are critical to enhancing and guiding efficiency and quality of output needed to realize the objectives of the Honey Project. This planning process establishes the procedures used to estimate needed resources, manage, and acquire essential resources. The Project Manager has the pivotal role throughout the project's life cycle and ensures that resources are available when needed for the successful implementation and completion of

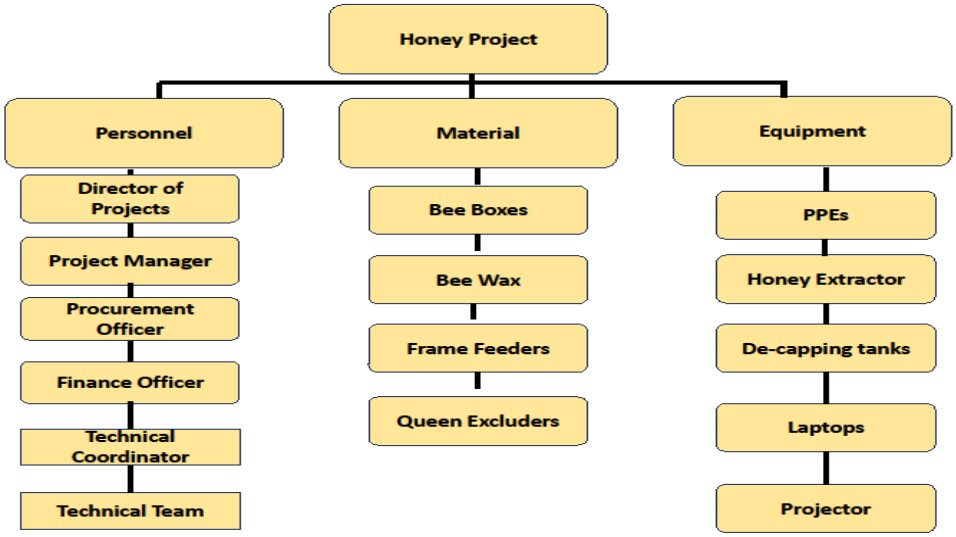
the project. In the planning phase of this project a Project Steering Committee was established to provide oversight and guidance for assurance of achieving project objectives. Project Steering Committee Meetings were held monthly to report on the project status and to obtain feedback from committee members. The committee was chaired by the Chief Agriculture Officer with support from the Project Manager, Technical Coordinator, and other members from the Ministry of Economic Development. All activities relating to the upcoming month were discussed and agreed upon during these meetings.

4.6.5 Resource Breakdown Structure

Resource Breakdown Structure is a hierarchical representation of resources by category and type (PMI, 2021).

Figure 19

Resource Breakdown Structure



Note. This figure was sourced from A. Mejia, Author, 2023. Own Work

4.6.6 Project Organizational Chart/RACI Matrix

The RACI Chart, also known as the Responsibility Assignment Matrix, links project team members with tasks and activities that strengthen accountability within the project.

Chart 26

Responsibility Assignment Matrix

Task	Director of Projects	Project Manager	Procurement Officer	Finance Officer	Technical Coordinator	Technical Team
Draft TOR for training	I	R	C	I	A	I
Develop Training Modules	C	R	I	I	A	A
Conduct Best Beekeeping Training	C	R	C	I	A	A
Training in Honey Classification	C	R	C	I	A	A
Training in Diversification	C	R	C	I	A	A
Training in GMP	C	R	C	I	A	A
Assign Trainees to Mentorship	I	R	I	I	A	C
Site Selection	I	R	I	I	A	C
Cleaning and Fencing	I	R	I	I	A	I
Procure starter colonies	I	R	R	C	I	I
Install hives	I	R	I	I	A	A
Monitor and maintain colonies	I	R	I	I	A	A
Draft the list and specification of equipment and materials required	C	R	C	I	A	A
Tender the procurement of equipment and materials.	C	R	A	C	I	I
Procurement of beekeeping materials and equipment	C	R	A	C	I	I
Distribution of beekeeping materials and equipment	C	R	I	I	A	A
Planning	R	R	C	C	I	I
Scheduling	R	R	C	C	I	I
Meetings	R	R	C	C	I	I
Reports	R	R	C	C	I	I
R= Responsible A=Accountable C= Consult I= Inform						

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.6.7 Estimate Activity Resources

Estimating Activity Resources is the process of estimating team resources and the type and quantities of materials, equipment, and supplies necessary to perform project work. Once activities are sequenced, quantity and type of resources are determined (PMI, 2017).

In an effort to optimize efficiency of the Honey Project the efficient use of equipment, materials and supplies and human resources are well managed to achieve maximum output during project implementation and execution. Activity schedules and change request control mechanisms were established to track project progress and manage information dissemination to stakeholders. Daily and weekly stand-ups were held to provide feedback, identification of potential risks, planning and overall progress tracking were done to ensure adequate delivery and availability of resources when needed. Project progress and minutes of meetings were disseminated to the stakeholders to effect proper communication and updates. The inputs necessary to realize this process are the Resource Management Plan Scope and Scope Baseline, Activity List and Cost Estimates. Tools and techniques used were expert judgement, data analysis, meetings, interviews, and e-mails. The table below depicts a summary of the resource allocation aligned with the proposed schedule per project deliverable.

Chart 27

Resource Calendar

Level	WBS Code	Task Name	Duration (Days)	Start	Finish	Resources
2	1.1	Draft TOR for training	25	September 9, 2023	October 6, 2023	Project Manager and Project Team
2	1.2	Develop Training Modules	44	October 9, 2023	December 7, 2023	Project Manager and Project Team
2	1.3	Conduct Best Beekeeping Training	140	January 15, 2024	July 26, 2024	Project Manager, Consultants and Project Team
3	1.3.1	Training in Honey Classification	10	January 15, 2024	January 26, 2024	Project Manager, Consultants and Project Team
3	1.3.2	Training in Diversification	10	February 5, 2024	February 16, 2024	Project Manager, Consultants and Project Team
3	1.3.3	Training in GMP	10	March 18, 2024	March 29, 2024	Project Manager, Consultants and Project Team
3	1.4	Assign Trainees to Mentorship	25	July 29, 2024	August 30, 2024	Project Manager, Consultants, and Project Team
2	2.1	Site Selection	5	September 2, 2024	September 6, 2024	Project Manager, and Project Team
2	2.2	Cleaning and Fencing	10	September 9, 2024	September 20, 2024	Project Manager, and Project Team
2	2.3	Procure starter colonies	52	September 23, 2024	December 3, 2024	Project Manager, Procurement Officer, Finance Officer
2	2.4	Install hives	5	December 4, 2024	December 10, 2024	Project Manager, and Project Team
3	2.4.1	Monitor and maintain colonies	38	December 11, 2024	January 31, 2025	Project Manager, and Project Team
2	3.1	Draft the list and specification	21	September 2, 2024	September 30, 2024	Project Manager, PSC and Project Team

Level	WBS Code	Task Name	Duration (Days)	Start	Finish	Resources
		of equipment and materials required				
2	3.2	Tender the procurement of equipment and materials.	20	October 1, 2024	October 28, 2024	Project Manager, Procurement Officer, Finance Officer
2	3.3	Procurement of beekeeping materials and equipment	65	October29, 2024	January 27, 2025	Project Manager, Procurement Officer, Finance Officer
2	3.4	Distribution of beekeeping materials and equipment	30	January 28, 2025	March 10, 2025	Project Manager, and Project Team
2	4.1	Planning	523	October 9, 2023	October 8, 2025	Project Manager, CDF, PSC and Project Team
2	4.2	Scheduling	523	October 9, 2023	October 8, 2025	Project Manager, CDF, PSC and Project Team
2	4.3	Meetings	523	October 9, 2023	October 8, 2025	Project Manager, CDF, PSC and Project Team
2	4.4	Reports	523	October 9, 2023	October 8, 2025	Project Manager, CDF, PSC and Project Team

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.6.8 Acquire Resources

Team members will comprise of Officers from within the Ministry of Agriculture, Food Security and Enterprise. These Officers all have extensive knowledge and experience in the area of their responsibilities and will collectively contribute to the success of the Honey Project. The team members will include the Director of Projects, Project Manager, who will be assigned by the Director of Projects, the Finance Officer, Procurement Officer, Technical coordinator, who will be assigned by the Project Manager and the Technical Team, who will be assigned by the Technical Coordinator. All members of the project team will be assigned roles and responsibilities that they must carry out as planned in the responsibility assigned matrix. Since each member of the project is already employed by the MAFSE the coordination and execution of the project's activities is expected to be as per design. The inputs used in this process are Resource Management Plan, project documents, enterprise environmental factors, and organizational process assets. Tools and techniques used are virtual teams, pre-assigned work, and negotiation.

Chart 28

Project Resource Roles and Responsibilities

Roles	Responsibilities
Director of Projects	Oversight of all projects within the auspices of the Ministry of Agriculture, Food Security and Enterprise. Also, responsible for reporting to sponsors and lobbying for new projects.
Project Manager	Responsible for the execution of the project, activities planning, updating of project documents, scheduling, reporting, and networking with stakeholders.
Finance Officer	Monitoring and controlling the project finances, purchases, and reports.

Roles	Responsibilities
Procurement Officer	Responsible for issuing tender, accepting bids, conducting meetings with potential suppliers, evaluating bids and issuing of contracts to winning suppliers.
Technical Coordinator	Work in close collaboration with the Project Manager and is responsible to execute and technical works of the project and report to the Project Manager of progress of the project.
Technical Team	Work with the beneficiaries to ensure they abide by the requirements of the project and report to the Technical Coordinator and Project Manager on progress of the project.

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.6.9 Team Development

Team Development will be a continuous process throughout the execution of the project. This is especially important for the technical team who will be executing the project in the districts. There will be weekly meetings with all members to ensure that everyone is informed and knowledgeable on the pending tasks. Training will be included in the project that specifically targets project team members to ensure they are up to date with the latest technology in beekeeping and by products of beekeeping. The inputs necessary for the development of team process are Resource Management Plan, Lessons Learned Register, Project Schedule, Project Team Assignments, Resource Calendars, Team Charter, enterprise environmental factors and organizational process assets. Tools and techniques included colocation, communication technology, interpersonal and team skills, recognition and rewards, training, individual and team assessments and meetings.

4.6.10 Managing Team

According to PMI (2017), “Manage Team is the process of tracking team member performance, providing feedback, resolving issues, and managing team changes to optimize project performance”. The team will be directly managed by the Project Manager with responsibility of the technical team assigned to the technical coordinator. This is important to ensure that there is accountability in every aspect of the project. Documents that will be used to manage team members include Issue Log, Lessons Learned Register, RACI, and Resource Management Plan. The tools and techniques used in this process are interpersonal and team skills namely conflict management, decision-making, emotional intelligence, influencing, leadership, and Project Management Information System. General reminders are constantly given to ensure that these are being adhered to and used when required. Adopting and using the above-mentioned tools will provide for clarity thus reducing impending conflicts and disagreements. Conflict resolution is usually through dialogue, team collaboration or problem solving where a win-win situation is expected. Regardless of the situation, the best positive outcome is where a compromise is derived that benefits the project and its deliverables.

4.6.11 Resource Management Document

Issue Log Template

Honey Project Issue Log							
ID	**Name**	**Date Identified**	**Description of Issue**	**Priority**	**Issue Owner**	**Target Date**	**Notes**
1	Equipment unavailability	12/12/2023	Exactor not available in country	High	Project Manager	15/02/24	Will need to be imported
2							
3							

4.6.12 Control Resources

According to PMI (2017), “Control Resources is the process of ensuring that the physical resources assigned and allocated to the project are available as planned, as well as monitoring the planned versus actual utilization of resources and taking corrective action as necessary”. This process is performed continuously throughout the project’s lifecycle. The Project Manager for the Honey Project will ensure that resources are procured when needed, available when required and distributed as planned. Project team members should receive all resources necessary to conduct their duties without hindrance and beneficiaries should receive their materials and equipment as planned. This is important to avoid project delays that can lead to scope creep. The inputs to the Resource Control Group for this project are Resource Management Plan, Project Documents, Work Performance Data, Procurement Agreements and organizational process assets. Tools and techniques used are problem solving, and performance reviews and analysis.

4.7 Communication Management Plan

4.7.1 Communication Management Plan Introduction

This Communication Management Plan will demonstrate how information and communication will flow among stakeholders for effective project execution and coordination. Every project includes a varying degree of stakeholder engagement, and the communication process is important to ensure that each stakeholder's expectations are met and satisfied. The project team is responsible for the successful engagement and interaction. Communication is a two-way process that is beneficial to any project and its components. Communication minimizes obstacles when used efficiently during the life cycle of a project. Communication flow in this project refers to the art of controlling, monitoring, verifying, recording, and documenting of information to strengthen and reinforce relationships within the project. As per the PMI (2017), the Communication Management Process includes:

- Plan Communication Management
- Manage Communications
- Control Communications

4.7.2 Audiences

The main audiences for this project are as follows:

- Government of Belize
- Ministry of Agriculture, Food Security and Enterprise
- CARICOM Development Fund

- Beekeepers
- Suppliers

4.7.3 Plan Communication Management

Plan Communication Management is the process of developing an appropriate approach and plan for project communication activities based on the information needs of each stake holder or group, available organizational assets, and the needs of the project (PMI, 2017). Plan Communications Management for the Honey Project required inputs from the Project Management Plan, Stakeholder Register, Organizational Process Assets, and Enterprise Environmental Factors such as best practices, regulations, policies, and sustainability etc. The development of an effective communication plan was important for the project to communicate with stakeholders in order to fulfill their needs and requirements during the project's lifecycle. In order to achieve effective and fulfilling communication among stakeholders the Project Management Team needs to gather and store data and information and establish an effective distribution methodology that ensures all stakeholders are kept abreast of the project's progress and shortcomings. This project will establish a Communication Matrix that will aid the project team to meet communication expectations, and this will include means such as e-mails, text messages, meetings, phone calls and invoices.

Chart 29

Communication Matrix

Communication	Purpose	Medium	Frequency	Audience	Communicator
Project Steering Committee Meetings	Approvals and decision making	Meetings	Quarterly	Project Steering Committee Members, Project Team	Project Manager
Progress Reports	Update of project's progress	Meetings	Monthly	Project Manager, Project Team, Sponsors, Government of Belize	Project Manager
Technical Team Meeting	Make technical decisions	Meetings	Weekly	Project Manager, Technical Team	Technical Coordinator
Request for Information Meetings	Request project information and status update	Email, Phone Calls	Monthly	Project Manager, Project Team, Sponsors, MAFSE, GOB	Project Manager
Beneficiaries Meetings	Update on project's progress	Meetings	Monthly	Project Manager, Technical Team, Beneficiaries	Technical Coordinator

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.7.4 Manage Communications

Manage Communications is the process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of the project's information (PMI, 2017).

Projects are only successful if open and honest communication is shared among the stakeholders which builds trust and promotes transparency within the project. This free flow of information must entail the involvement of the project team and their methodology of information gathering and dissemination. Manage communications for the Honey Project will be executed using all the communications methods indicated in the Planned Communication Process. The Project Manager must ensure there is an enabling environment for the works of the project to flow and unimpeded so as to create that communication flexibility that is very much required during project implementation. The effective use of the Communication Matrix must be employed to keep the relevant parties up to date with the project. This tool was developed for communication alignment which must be used appropriately and timely. In the event of conflicts or issues arising as a result of project communication that cannot be solved by the Project Manager then those issues will be escalated to the authoritative level. The project team will maintain an issue log, which will be managed by the Project Manager, to record all issues arising during the lifecycle of the project and to ensure the continuation of the project.

4.7.5 Communication Escalation Process

This escalation process will be used to highlight any potential challenges that may hinder the project's progress in an effort to resolve issues efficiently.

Chart 30

Escalation Chart

Project Name: Honey Production Redevelopment Support Project									
Project Number: BZ/G00008									
Issue #	Issue Details	Raised By	Date Raised	Priority			Escalate		To Whom
				H	M	L	Y	N	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

Key Priority H= High : Resolve Within Two Weeks ; M= Medium : Resolve Within Three Weeks ; L= Low : Resolve within one month

Escalate: Y=Yes ; N= No

4.7.6 Monitor Communication

Monitor Communications is the process of ensuring the information needs of the project and its stakeholders are met (PMI, 2017)

Effective communication will produce greater stakeholders' engagement and to do this there will be regular meetings and open dialogue and discussions among all stakeholders of the project. This is to ensure that each stakeholder is properly informed and kept updated with the project's progress. The objective of monitoring communication is to ensure the optimal flow of information using the planned communication mediums throughout the project lifecycle. The Project Manager is directly responsible for monitoring communication among stakeholders, and this is done using tools such as the Communication Management Plan and the Communication Matrix.

4.8 Risk Management Plan

4.8.1 Risk Management Plan Introduction

According to PMI (2017), risks are uncertain events or conditions; that if they occur, have a positive or negative effect on a project's objectives. Every project has associated risks which can prove both positive and negative on the project outcome. The various characteristics that can affect the level of project risk include project complexity, uniqueness, assumptions and constraints, people, requirements of stakeholders, changes, and environment. According to PMI (2017), the objectives of Project Risk Management are to increase the probability and or/ impact of positive risks and to decrease the probability and/ or impact of negative risks, in order to optimize the chances of project success. This will allow the project team to maximize the opportunities presented from the positive risks and maximize the possible negative effects of the negative risks.

As stated by PMI (2017), the Project Risk Management processes are as follows:

- Plan Risk Management
- Identify Risks
- Perform Qualitative Risk Analysis
- Perform Quantitative Risk Analysis
- Plan Risk Responses
- Implement Risk Responses
- Monitor Risks

4.8.2 Plan Risk Management

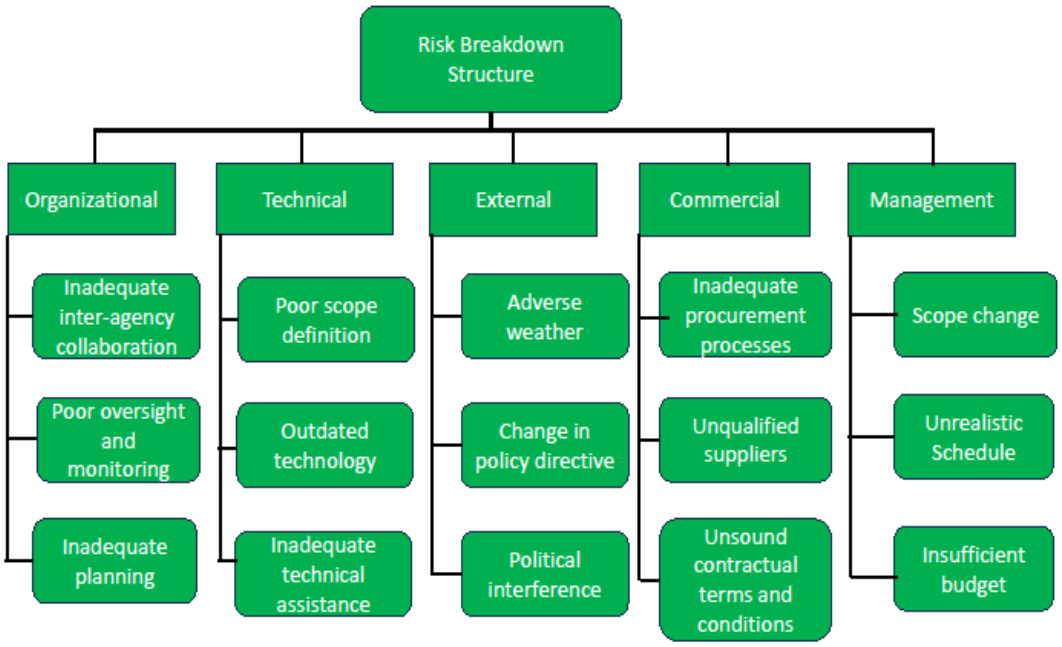
Plan Risk Management involves the processes of establishing methodologies to manage risks throughout the project life cycle of the Honey Project. As with all agricultural projects, the Honey Project is a very ambitious projects that involves disadvantage women and youths. The Project Manager and team are tasked with identifying all possible risks and evaluating their consequences on the successful outcome of the project. The PMI provides the necessary tools to effectively identify, monitor and respond to risks in the event of occurrence. To efficiently manage potential risks the Project Manager and team will create a Risk Management Plan in the planning phase that will be monitored throughout the execution of the project. The Risk Management Plan requires inputs from the Project Charter, Stakeholder Register, Procurement Records, Activity Durations, and Activity Cost. Tools required for this process include expert judgement and meetings. The objective of this plan is to increase the probability of the positive risk while at the same time decreasing the probability of negative risks from the project.

4.8.2.1 Risk Breakdown Structure

This Risk Breakdown Structure will be used to structure and guide the Risk Management Process through the understanding of the distribution of risk on the project and aiding in effective risk management.

Figure 20

Risk Breakdown Structure



Note. This figure was sourced from A. Mejia, Author, 2023. Own Work

4.8.2.2 Probability and Impact Scales

According to the PMI (2017), definitions of risk probability and impact levels are specific to the project context and reflect the risk appetite and thresholds of the organization and key stakeholders. The PMI (2017) states that Qualitative Risk Analysis and Quantitative Risk Analysis processes highlight the probability of a risk occurring and potential impact on project outcomes. The Probability Scale Matrix below will be used to evaluate both threats and opportunities of three objectives of the project which include: to build the capacity of beekeepers, equip them with the materials and equipment needed to establish a micro enterprise and establishment of a demonstration apiary.

Chart 31

Probability and Impact Scales

Scale	Probability	-/+ Impact on Project Objectives		
		Time	Cost	Quality
Very High	>70%	>1 Year	>$1M	Very significant impact on overall functionality
High	51-70%	9 Months - 1 Year	$500 - $1M	Significant impact on overall functionality
Medium	31-50%	6-9 Months	$300-$500T	Some impact in key functional areas
Low	11-30%	3-6 Months	$100-$300T	Minor impact on overall functionality
Very Low	1-10%	1-3 Months	$50T-$100TM	Minor impact on secondary functions
Nil	<1%	No Change	No Change	No Change in functionality

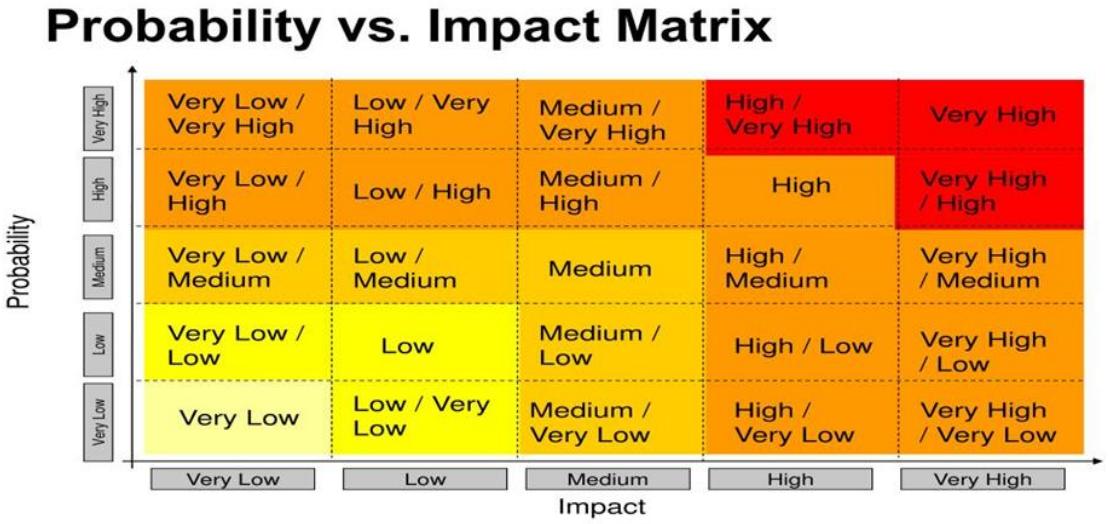
Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.8.2.3 Probability and Impact Matrix

In order to determine the likelihood of risks occurring within the Project, a qualitative risks assessment is necessary. The Probability and Impact Matrix presented below represents opportunities and threats using positive definitions of impacts for opportunities and negative impacts for threats. The Probability vs. Impact Matrix graph below describes what can be found in the probability and impact assessment. The Probability and Impact Matrix is a part of the qualitative analysis in the Risk Management Process. The matrix is a grid used to identify and track the probability of risk occurrence and its impact on the project's objective if the risk occurs (PMI, 2017).

Figure 21

Probability and Impact Matrix



Note. This figure was sourced from A. Mejia, Author, 2023. Own Work

4.8.2.4 Honey Project Probability and Impact Matrix

Chart 32

Honey Project Probability and Impact Matrix

Honey Project Probability and Impact Matrix

Risk Description	Risk Category	Probability	Impact	Risk Rating	Response
Inadequate Planning	Organizational	High	High	Very High	Manage
Unrealistic schedule	Management	High	High	Very High	Manage
Insufficient budget	Management	High	High	Very High	Manage
Adverse weather	External	High	High	Very High	Manage
Poor scope definition	Technical	High	High	Very High	Manage
Scope Change	Management	High	High	Very High	Manage
Inadequate procurement process	Procurement	High	High	Very High	Manage
Poor oversight and monitoring	Organizational	Medium	High	High	Attention
Outdated technology	Technical	Medium	High	High	Attention
Inadequate technical assistance	Technical	Medium	High	High	Attention

Change in policy directive	External	Medium	High	High	Attention
Political interference	External	Medium	High	High	Attention
Unqualified suppliers	Commercial	Medium	Low	Medium	Monitor
Unsound contractual terms and conditions	Procurement	Medium	Low	Medium	Monitor

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.8.3 Identify Risks

Identify Risk is the process of identifying individual project risks as well as sources of overall risk and documenting their characteristics (PMI, 2017).The Risk Identification Process for the Honey Project was a collaborative effort between the project team and the consultants hired during the project planning phase. During this process, historical, environmental, and geographical locations were conducted to obtain information on possible impacts on socio-economic impact of the beneficiaries. This process was conducted during the initiating and planning stages of the project and information obtained was used to develop the Risk Register for the project. The Identify Risk Process is continuous and iterative in nature, and it is required throughout the project as new risks can present themselves at any time during the project's life cycle.

4.8.4 Qualitative Risk Analysis

The Qualitative Risk Analysis is the process of prioritizing individual project risks for further analysis or action by assessing their probability of occurrence and impact as well as other characteristics (PMI, (2017). The Qualitative Risk Analysis for the Honey Project was conducted, by the project team lead by the Project Manager in consultation with the Project Steering Committee and other stakeholders, through a process of assessing risk prioritization using probability of risk occurrence. Inputs for conducting the Qualitative Risk Analysis included the Risk Register, Assumption Log, Organizational Process Assets, and other project documents. The Project Manager is responsible for guiding the project team in reviewing and updating project documents for project risks and issues throughout the project's life cycle.

4.8.5 Quantitative Risk Analysis

Perform Quantitative Risk Analysis is the process of numerically analyzing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives (PMI, 2017). This process requires the quantitative analysis for risk impact that includes evidence and verified data to identify effective risk response. For the purpose of this project, performing Quantitative Risk Analysis was not utilized since the project is considered small-scale so only the qualitative analysis was used for the level of risk identification and the identification of possible responses.

4.8.6 Risk Register

The Risk Register provides details for each individual risk, previously identified, and prioritized, which requires risk responses. The prioritization of each risk will assist in the selection of risk responses. High-priority threats or opportunities may require greater importance, action, and proactive measures. On the other hand, threats and opportunities in the low-priority level may not require the same actions as in the high-priority other than being reflected in the risk register; watch list or adding contingency reserve (PMI 2017). The Risk Register for the Honey Project was developed by the Project Manager, the project team, the PSC, and other stakeholders. The register highlights previously identified risks, risks owners, triggers and possible responses in the event those risks should occur.

Risk Register

chart 33

Risk Register

RBS Code	Cause	Risk	Consequence	Probability	Impact	PXL	Priority	Trigger	Preventative Actions	Owner
R001	Writing team unsure of project requirements	Inadequate Planning	This will cause project delays and cost overrun	High	High	0.28	High	Delay in delivery of tasks	Ensure writing and planning team are knowledgeable and skilled	Project Manager, Stakeholders
R002	Stakeholders requesting changes in project schedule and timelines	Unrealistic schedule	Extend the timelines and cost overrun	High	High	0.28	High	Late approvals from sponsor and government	-Conduct strict time management - Document project progress	Project Manager
R003	Inflation	Insufficient budget	Cost overruns and project shortfall	High	High	0.28	High	Completion delays	Allocate appropriate contingency	Project Manager, Sponsor
R004	Time of year	Adverse weather	Extend the timelines and cost overrun	High	High	0.28	High	Excess rain and severe weather	Conduct most projects works during the dry season	PM
R005	Stakeholders unsure of project requirements and schedule	Poor scope definition	Scope creep and delayed timelines	High	High	0.28	High	Scope creep, due to ad hoc requests by the stakeholders, this will be shown by civilians' discontent	-Ensure stakeholders are in possession of project documents -Be specific on works to be done	Project Manager

RBS Code	Cause	Risk	Consequence	Probability	Impact	PXL	Priority	Trigger	Preventative Actions	Owner
R006	Stakeholders requesting changes to project requirements	Scope Change	Cost will increase, going over the budget	High	High	0.28	High	Delays delivery of project requirements	Establish strict adherence to change control process	Project Manager, Stakeholders
R007	Inflation and corruption during project implementation	Inadequate procurement process	Cost overruns and delayed timelines	High	High	0.28	High	Delays and cost to the project	Establish contract review board and approval processes	Procurement Officer
R008	Poor communication among stakeholders	Poor oversight and monitoring	Cause delays and poor-quality delivery	Medium	High	0.20	High	delays in project implementation	Provide a clear communication mechanism to stakeholders	Project Manager
R009	Poor planning and changes in project requirements	Outdated technology	Project delays and timelines	Medium	High	0.20	Medium	Scope creep and schedule delays	Ensure technological requirements are specified in project document	Project Manager
R010	Poorly trained technical team	Inadequate technical assistance	Can cause delays and cost to the project	Medium	High	0.20	Medium	Inferior quality delivery of requirements	Build capacity of technical staff in related field of work	Project Manager, Technical team
R011	Changes in Government requirements	Change in policy directive	Delays in project timeline and cost overruns	Medium	High	0.2	Medium	Scope creep	Ensure the project agreement is adhered to by political parties	Project Manager
R012	Change of Government	Political interference	Scope creep, project delays and cost overruns	Medium	High	0.2	Medium	Scope creep, lack of communication	Ensure the project agreement is adhered to by political parties	Project Manager
R013	Poor vetting process to select suppliers	Unqualified suppliers	Extended timeline and poor-quality deliverables	Medium	High	0.2	Medium	Vague procurement process	Establish a multiple suppliers application process	Procurement Officer
R014	Poor contractual preparation	Unsound contractual terms and conditions	Project delays and inferior work delivery	Medium	High	0.4	Medium	Unsatisfied customers	Contracts must adhere to the procurement laws of Belize	Project Manager

4.8.7 Plan Risk Responses

Risk Response is the process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as treating individual project risks (PMI, 2017). The project team members of the Honey Project, including the Project Manager, are each assigned a risk or risks that they are responsible for in regard to monitoring and implementing agreed responses where necessary. Risk owners are responsible to report any threat that may pose detrimental to project objectives. These reports must be done using the appropriate channels and hierarchy. Risk Responses for the Honey Project were materialized through daily and weekly meetings and discussions as scheduled in the Communication Matrix and risk owners were asked to prepare brief summary reports during progress updates. Risk actions were developed by selecting one of the options: Avoid, Mitigate, Exploit, Transfer, or Accept Risk. The Risk Register will be updated periodically with the appropriate risk response while risks are monitored.

4.8.8 Implement Risk Response

Implement Risk Response is the process of implementing agreed upon risk response plans (PMI, 2017).

Implementing Risk Response for the Honey Project entailed the pre-agree assignment of risk owners and their responses as agreed in the Risk Register. This is important since it minimizes risk exposures and threats and maximizes opportunities. The Project Manager is directly responsible for this process, with the assistance of the project team. The inputs

required for this process are project documents which include the Risk Register, Lessons Learnt Register, Project Management Plans, and Organizational Process Assets. The tools and techniques include expert judgement and interpersonal and team skills.

4.8.9 Monitor Risks

Risk Monitoring is the process of monitoring previously identified risks and reinforcing the existing structures and Risk Response Strategies to identify, analyze and plan for newly identified risks (PMI, 2017). The Project Management Team will continuously update the Risk Register to ensure risks are being kept under strict monitoring and progress reports are being documented and acted upon. Risk monitoring for the Honey Project will reassure the effectiveness of the risk management plan. Inputs for this process included Work performance data, Lessons Learnt Register, and Risk Register and work performance reports. Tools for this process included audits and meetings.

4.9 Procurement Management Plan

4.9.1 Procurement Management Plan Introduction

According to PMI (2017), “Project Procurement Management includes the processes necessary to purchase or acquire products, services, or results needed from outside the project team. Project Procurement Management includes the management and control processes required to develop and administer agreements such as contracts, purchase orders, Memoranda of Agreements (MOAs), or internal Service Level Agreements (SLAs).” The Project Procurement Management process for the Honey Project entails document preparation, calling for bids, selecting, acquiring, and ensuring quality materials, equipment and services are procured to achieve the project’s objectives through the procurement management processes of Plan, Conduct, and Control Procurement Management. The Project Manager is responsible for communicating with vendors to rent, buy, or contract products or services needed to achieve the project’s objectives. The procurement of goods and services for the Honey Project will be done exclusively by the Procurement Officer aided by the Project Manager and Finance Officer. This is to ensure that ethical and procedural processes are followed when executing this crucial part of the project. Materials, services and equipment will be purchased according to plan and schedule to ensure timely availability and distribution.

4.9.2 Plan Procurement Management

According to PMI (2017), the planning process in procurement management entails the recording and documentation of decisions agreed upon for purchasing, goods and services as well as the method to find and utilize specific vendors. The determination of procurement needs of a project is works specific and can be conducted weekly, monthly or yearly based on the scope and the Project Management Plan of the project. This process clearly defines the roles and responsibilities of each team member to ensure appropriate and skilled personnel as described in the resource management plan of the project. This is coupled with a detailed checklist of works that should be completed prior to commencing the procurement process.

Some of the inputs that the PMBOK recommends and that were used throughout the Honey Project include:

- Project Charter
- Project Management Plan
- Project documents such as resource management plan, requirements documents and matrix, and a stakeholder register.
- Enterprise environmental factors, esp. equipment and materials availability
- Organizational process assets

The tools and techniques utilized were expert judgement and meetings

Chart 34

Procurement Management Plan Roles and Responsibilities

Role	Responsibilities
Project Manager	➢ Identification of needed resources ➢ Provision of technical specifications ➢ Monitoring and Evaluation of procured resources. ➢ Assignment of Resources
Procurement Officer	➢ Preparation of bid proposals ➢ Assessment of bids ➢ Vendor selection and awarding contracts.
Finance Officer	➢ Vetting of contracts ➢ Approving contract ➢ Approval of payments ➢ Financial Record Keeping

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.9.3 Conduct Procurement Management

According to PMI (2017), Conduct Procurement is "the process of obtaining seller responses, selecting a seller, and awarding a contract." This process is important since it aids in the selection of qualified sellers and provides a legal backing for goods and services procured by the project. The legal backing is established through signed Memorandum of Agreements (MOA), purchase orders and or contracts that are binding and hold both the seller and the buyer to certain standards. The inputs for this process include the Project

Management Plan (Scope Management Plan, Requirements Management Plan, Communications Management Plan, Risk Management Plan, Procurement Management Plan, And Cost Baseline); project documents (Lessons Learned Register, project schedule, requirements documentation, Risk Register and Stakeholder Register), procurement documentation, seller proposals, contracts, enterprise environmental factors, and organizational process assets.

4.9.4 Procurement Definition

The Bill of Quantities (BOQ) below outlines the materials, services and equipment needed for the execution of the Honey Project.

Chart 35

Bill of Quantities

Item	Description	Units	Quantity	Justification
	Draft TOR for Training			
1	Definition of training requirements	No.	7	To ensure trainings delivered meets best beekeeping practices
2	Hire consultant to establish TOR for training	No.	1	Trainings conducted for beekeepers using best beekeeping practices methodologies
	Develop Training Modules			
1	Identification of thematic areas	No.	20	To match with project requirements
2	Hire consultant to create Training Modules	No.	1	To ensure uniformity in the delivery of trainings to beekeepers
	Conduct Best Beekeeping Trainings			
1	Training in Honey Classification	No.	2	To train beekeepers on the importance of producing quality honey and to

Item	Description	Units	Quantity	Justification
				determine their classification
2	Training in Diversification	No.	2	To produce honey and honey by products such as wax and royal jelly etc.
3	Training in GMP and Entrepreneurship	No.	2	Beekeepers to learn the basics about Good Manufacturing Practices and Marketing techniques
	Assign Trainees to Mentors			
1	Selection of qualifying Trainees to be assigned	No.	100	Trainees to received five days of practical training and guidance
2	Contractual agreement with Mentors	No.	8	
	Site Selection			
1	Fuel	Gal	8	For project team to find the appropriate location for Demo Apiary
	Cleaning and Fencing			
1	Weed Trimmer	No.	1	To keep area clean
2	Fuel	Gal	5	To be used in the weed trimmer
3	Wires	Rolls	4	For security of Demo Apiary
4	Posts	No.	100	For security of Demo Apiary
	Procure Starter Colonies			
1	Bees	No.	10	To be used for educational purposes
	Hive Installation			
1	Stands	No.	10	To secure starter colonies form predators
	Monitor and Maintain Colonies			
1	Fuel	Gal	25	To keep area clean
2	Sugar	Sack	8	To feed bees
3	Medication	No.	10	To keep colonies healthy and strong

Item	Description	Units	Quantity	Justification
4	PPE's	No.	8	To protection of technical team
	Draft the list and specification of equipment and materials required			
1	Hire Consultant	No.	1	To work with technical team to draft specifications for equipment and materials
	Tender the procurement of equipment and materials.			
1	Advertisement	No.1	2	Fair equitable publication of project requirements
	Procurement of Beekeeping Materials and Equipment			
1	Bee boxes	No.	1500	Creation of micro beekeeping enterprise
2	Starter colonies	No.	375	Creation of micro beekeeping enterprise
3	Tops and Bottoms	No.	755	Creation of micro beekeeping enterprise
4	PPEs	No.	150	Creation of micro beekeeping enterprise
5	De-capping tanks	No.	7	Creation of micro beekeeping enterprise
6	Extractors	No.	7	Creation of micro beekeeping enterprise
7	Sedimentation tank	No.	1	Creation of micro beekeeping enterprise
8	Pollen traps	No.	200	Creation of micro beekeeping enterprise
9	Frame feeders	No.	200	Creation of micro beekeeping enterprise
10	Queen excluders	No.	200	Creation of micro beekeeping enterprise
	Queen kits	No.	3	Creation of micro beekeeping enterprise
	Distribution of Beekeeping Materials and Equipment			
1	Fuel	Gal	35	Delivery to beneficiaries

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.9.5 Type of Contract

A Fixed Price Contract will be used to carry out the Project. This is common for agricultural projects since the project's details were written during the planning stage so very little changes are expected during the execution of the project. A Fixed Price Contract is the most appropriate for this project since it includes materials, equipment, and services. All costs associated with the project will be negotiated prior to contract signing. Contracts will be monitored using the Contract Administration Matrix below.

Contract Administration Matrix

CONTRACT ADMINISTRATION MATRIX				
Project:			**Contract:**	
Contract Manager:				
Contact:				
Technical Group:				
Validity of the Contract:				
Start Date:		**Closing Date:**		
ACTIVITIES	**DATE**	**REQUIRES VALIDATION?**	**VALIDATED BY**	**OTHER ASPECTS**
REVIEWS / VISITS				
PAYMENTS / AMOUNTS				
VERIFICATION OF GUARANTEES				
SUBCONTRACTOR CONTROL				

CLOSING CONTRACT				
OBSERVATIONS: Breaches, actions taken, endorsements, fines applied, acknowledgments, temporary receptions, etc. Approved by: Signature and date:				

Note: Source UCI, 2023

4.9.6 Decision Criteria

Throughout the Project, vendors will be required to meet the specified Project specifications.

The criteria are listed below:

- Be able to provide delivery within specified timelines.
- Provide material certificates upon request.
- High quality standards
- Reasonable prices

4.9.7 Control Procurement Management

According to PMI (2017), Control Procurement is concerned with managing and monitoring procurement activities including managing contracts and ensuring that the performance of every party conforms with the agreed upon requirements as per the contract. The Procurement Officer in the Ministry of Agriculture, Food Security and Enterprise will take full responsibility for the procurement processes of the Honey Project. The Procurement Officer will ensure that the procurement practices of the project are aligned with the regulations and policies of the Government of Belize and will oversee the entire project's procurement processes to ensure that consultants and contractors are operating within the confinements of the procurement framework for the project. The procurement officer in consultation with the finance officer and Project Manager will administer and ensure each deliverable meets agreed quality standards through the implementation of quality control systems such as checklists and specification requirements. The Project Manager and the Project Management Team, including consultants, will provide status updates on project activities in a timely manner to ensure stakeholders are informed and aware of the project's progress.

4.9.8 Procurement Change Control Process

The change control process will follow the specified Project Change Control Process. That is, change requests will be submitted with justification for review. An assessment will be conducted to identify the potential impacts on the project. Following assessment, approval or rejection will be provided and records updated.

4.10 Stakeholders Management Plan

4.10.1 Introduction

According to PMI (2017), Stakeholder Management is the process required to identify the people, groups, or organizations that could impact or be impacted by the project, to analyze stakeholder expectations and their impact on the project, and to develop appropriate management strategies for effectively engaging stakeholder in project decisions and execution. Stakeholder Management creates a bond between projects, stakeholders and organizations that can positively or negatively impact outcomes and goals, thus influencing project success. The effective management of stakeholders can reduce the adverse effects of the negative impacts on project's success and capitalize on the opportunities of the positive impacts for project's success. This capitalization will not be possible without first identifying those stakeholders that are influential for the project's success, managing them and controlling their influence. The Honey Project Stakeholder Management Plan will identify an approach to manage stakeholders by establishing their roles and responsibilities, determining their influence and developing management strategies in accordance with PMI guidelines.

According to PMI (2017), the Project Stakeholder Management processes are:

- Identify Stakeholders
- Plan Stakeholder Engagement
- Manage Stakeholder Engagement
- Monitor Stakeholder Engagement

4.10.2 Identify Stakeholders

According to PMI (2017), Identify Stakeholders is the process of identifying project stakeholders regularly and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence, and potential impact on project success. Stakeholders' identification for the Honey Project commenced in the initiation and planning phase. The Director of Projects and project team conducted weekly meetings to identify possible stakeholders, their roles and responsibilities and determine their level of influence on project activities. This was done in consultation with past experts within the MAFSE and hired consultants. This was done in an effort to ensure that all stakeholders were properly identified and documented prior to project implementation. This process also involved the determination of each stakeholder's expectation from the project, where during the project they are most influential and manner of communication as the project advanced. The Project Manager took the lead in contacting each and every stakeholder and created an effective communication channel to ensure each stakeholders' contribution to the success of the project was well documented.

Inputs to this process were the Project Charter, organizational process assets and enterprise environmental factors. A stakeholder Register Matrix is used to identify persons, groups, and organizations that have an interest in the project works, and results.

4.10.2.1 Stakeholder Analysis

The Stakeholder Analysis was prepared with the use of existing project documentation, such as the Project Charter, brainstorming sessions, and meetings. Determining the stakeholder influence and impact started during the initial phase of the project phases and will continue throughout the project life cycle.

Chart 36

Stakeholder Analysis

Stakeholder	Project Involvement	Interest	Competence
Government of Belize	• Project endorsement • Funds disbursement	• Project success • Economies of scale	Financial support
Ministry of Economic Development and Finance	• Releases funding for the project as agreed. • Receives project status reports.	• Project success	Funds release
Ministry of Agriculture, Food Security and Enterprise (MAFSE)	• Project execution • Receives progress report • Sends progress report to sponsor	• Project success • Beneficiaries' socio-economic benefits	Execution of project
CARICOM Development Fund	• Funds disbursement • Receives reports • Conducts inspection	Project success Socio-economic benefits of beekeepers	Funds release

Stakeholder	Project Involvement	Interest	Competence
	• Drafts reports		
Beekeepers	• Beneficiaries • Attend trainings • Sign MOA	Creating a beekeeping enterprise	Honey producers
Suppliers	• Deliver quality products as per agreement • Source equipment and materials for the project	Economic benefit	Supplying materials and equipment

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

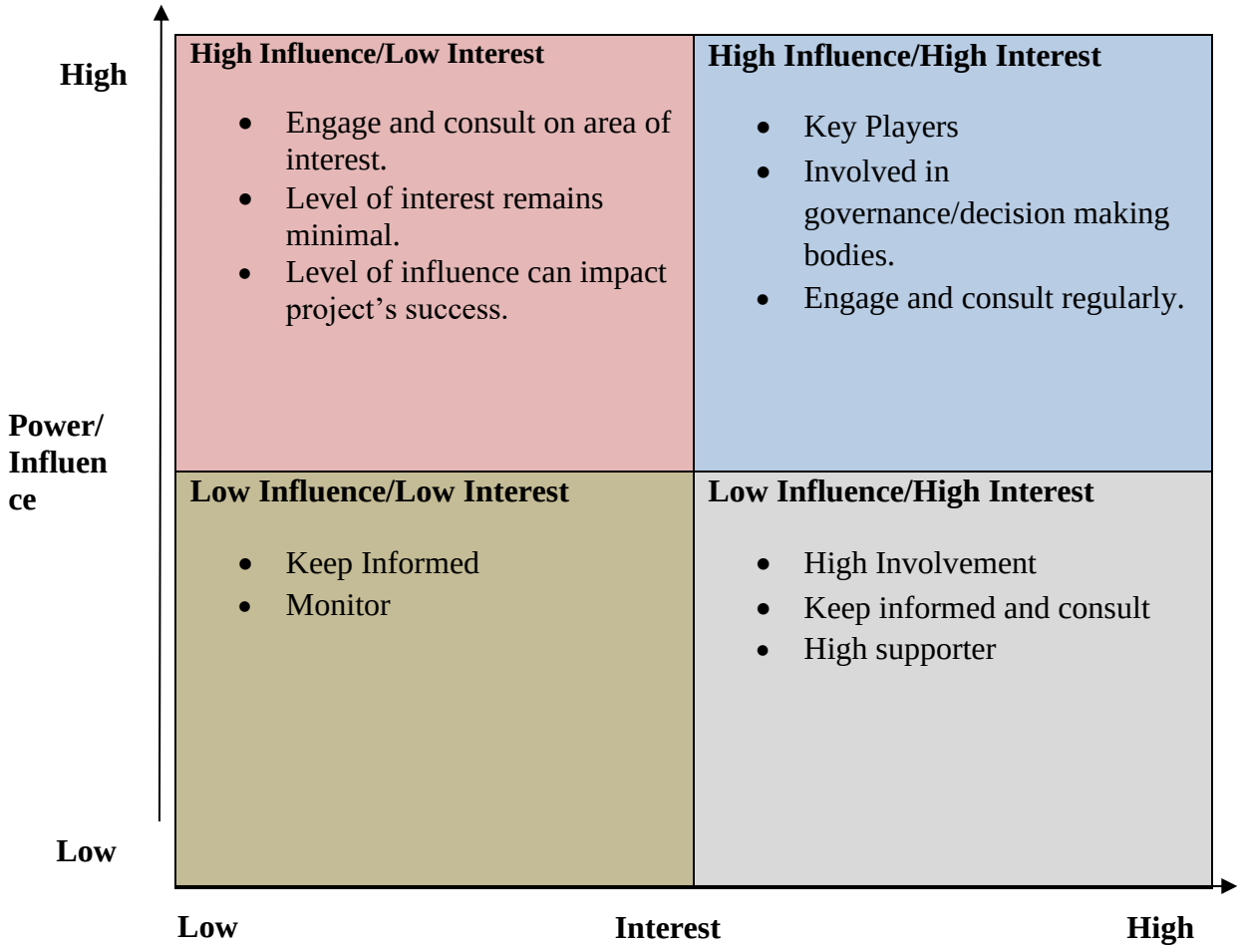
Project stakeholders can be classified into 4 categories:

- High influence/High Interest
- High influence/Low interest
- Low influence/High interest
- Low influence/Low interest

Please refer to chart 36 below for the influence/interest model for the Honey Project:

Chart 37

Influence/Interest Model



Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

The most critical stakeholders are members of the high interest / high influence category. The analysis of the stakeholders will be executed with the use of expert judgment, lessons learnt, brainstorming techniques, and the results included in the stakeholder registry.

Chart 38

Stakeholders Register

ID	Stakeholders	Functional Area	Roles	Responsibilities	Expectations	Requirements	Influence/Interest (Low-High)
1	Government of Belize	Government Finance	Approver	Approving project based on Sustainable Development Plan of Belize	That funds are used for the intended purpose and receive reports from executing agency	For executing agency to provide timely reports	Medium Influence, High Interest
2	Ministry of Economic Development and Finance	Finance Administration	Sponsor representative	Direct communication between sponsor and executing agency To ensure funds are requested on a timely basis	To receive timely reports from the executing agency on the project's progress For the executing agency to request funds on a timely basis	Sound project management processes and practices Project execution conducted according to local standards and regulations	High Influence, High Interest

ID	Stakeholders	Functional Area	Roles	Responsibilities	Expectations	Requirements	Influence/Interest (Low-High)
3	Ministry of Agriculture, Food Security and Enterprise	Project Administration	Project Execution	Assignment of capable Project Manager Selection of technical team Selection of beneficiaries Selection of consultants Coordinate the timely disbursements of funds from sponsor Attend PSC meetings Provide reports to sponsor	Timely execution of project Timely disbursement of funds from sponsor Timely receipt of progress reports from Project Manager	Sound project management procedures and processes Completion of project as per schedule	High Influence, High Interest
4	CARICOM Development Fund	Sponsor	Sponsor/Approver	Provide funds on a timely basis or as required for	Funds are utilized as per project documents	Sound project execution and timely completion as	Medium Influence, High Interest

ID	Stakeholders	Functional Area	Roles	Responsibilities	Expectations	Requirements	Influence/Interest (Low-High)
				project execution To approve for the Project Schedule, Project Management Plan, List of Beneficiaries etc.	Deliverables are per agreement	per agreed schedule	
5	Beekeepers	Beneficiaries	Beneficiaries	To receive full benefits as per project document To sign MOA with the MAFSE as per agreement	To grow the beekeeping industry in Belize	To establish a micro-beekeeping enterprise and contribute to food security of Belize	Low Influence, High Interest
6	Suppliers	Suppliers	Suppliers	To abide by the procurement requirements	Deliver quality products to the project	Timely availability of services, materials and equipment to the project	Medium Influence, High Interest

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.10.3 Plan Stakeholder Engagement

According to PMI (2017), Plan Stakeholder Engagement is the process of developing approaches to involve project stakeholders based on their needs, expectations, interests, and potential impact on the project. Inputs used for this process were project documents that included the Risk Register, Project Schedule and Stakeholder Register. The organizational process assets used was a Lesson Learnt Registry that was used during the execution of a similar project. Expert judgment, meetings and data analysis were also used to plan stakeholder engagement. A comprehensive Stakeholder Engagement Matrix is used for the Honey Project to determine the level of stakeholder involvement and participation for project success and delivery.

Classification of stakeholders for the Honey Project were as follows:

- Unaware – Not aware of the project and its potential impacts.
- Resistant – Aware of the project and potential impacts, but resistant to it.
- Neutral – Aware of the project, but neither in support nor opposed.
- Supportive – Aware of the project and supportive of the work and its outcomes.
- Leading – Aware of the project and actively engaged in making sure that the project is successful.

4.10.4 Stakeholders Engagement Matrix

According to PMI (2017)," a Stakeholder Engagement Assessment Matrix supports comparison between the current engagement levels of stakeholders and the desired engagement levels required for successful project delivery."

C - represents the current level of engagement

D - represents the desired level of engagement

Chart 39

Stakeholders Engagement Matrix

Stakeholders Engagement Matrix					
Project Number	Project Name				Project Manager
BZ/G00008	Honey Production Redevelopment Support Project				Andrew Mejia
Stakeholder	**Unaware**	**Resistant**	**Neural**	**Supportive**	**Leading**
Government of Belize				C,D	
Ministry of Economic Development and Finance				C,D	
Ministry of Agriculture, Food Security and Enterprise					C,D
CARICOM Development Fund					C,D
Beekeepers				C,D	
Suppliers			C	D	

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.10.5 Manage Stakeholder Engagement

Manage Stakeholder Engagement is the process of communicating and working with stakeholders to meet their needs and expectations, address issues, and foster appropriate stakeholder involvement, (PMI, 2017). During the execution of the Honey Project, stakeholders will be continuously reminded of their roles and responsibilities, and also properly communicated on the goals of the project. The communication included project updates, pending and impending risks and the collection of valuable feedback to improve project success and collaboration. While feedback is welcomed, the stakeholders will also be reminded of the Change Control Processes and what are required prior to incorporating changes into project activities. The recommendations will be properly evaluated, documented and appraised for potential risks before being incorporated or denied by the proper authorities. Inputs used to guide the managing stakeholder process for the Honey Project were the Risk Management Plan, Stakeholder Engagement Plan, Communications Management plan, Stakeholder Register, and Lessons Learned Register. Tools and Techniques used were expert judgement, interpersonal and team skills and meetings. The Project Manager in collaboration with the Technical Coordinator and technical team are responsible to document stakeholders' feedback and queries and perform planned communication technique to ensure every stakeholder's concerns are addressed and communicated to hierarchy for necessary action. The Issues Log Template will be used to document issues or risks identified by stakeholders and to propose viable solutions.

4.10.6 Monitor Stakeholder Engagement

According to PMI (2017), the Monitor Stakeholder Engagement is the process of monitoring stakeholder relationships and tailoring strategies for engaging stakeholders through modifications of engagement strategies and plans. This process is actualized throughout the Honey Project to maintain, control, and improve the efficiency and effectiveness of stakeholder engagement activities and involvement. It is the responsibility of the Project Manager to engage all stakeholders on project works, progress and bottlenecks (if any) and collect necessary feedback for the project's success. Stakeholders will be kept engaged through planned communication management and decision making to ensure process flow and project deliverables are obtained. This will be coupled with the documentation of concerns and queries and the recommended solutions. This level of engagement will drive the Honey project to success. Stakeholders' engagement will also include the identification of risks, the management of those impending risks and the process that is entailed in ensuring those risks are properly managed to avoid contribution to possible project delays and or project failure. Stakeholders will also be tasked with identifying those positive risks and maximizing their contributions for project delivery.

4.11 Validation of the Honey Project in the field Regenerative and Sustainable Development

4.11.1 Sustainability Management Plan

According to GPM® (2019), a Sustainability Management Plan (SMP) describes how sustainability will be addressed during a project. The integration of sustainability must be integrated at the initiation stage of the project. P5 (People , Planet, Prosperity, Process, Products) has an integral role in developing an SMP as P5 identifies the subjects to be addressed. An SMP should generally include:

- Purpose
- Approach
- Roles and Responsibilities
- Budget
- Key Performance Indicators for Sustainability
- Impact of Scope Exclusions on Sustainability
- Reviews and Reporting
- P5 Impact Analysis

4.11.2 Approach

4.11.2.1 Identifying sustainability impacts will include:

- A block of time during the Discovery Phase of the Honey Project for team members to work together to complete the P5™ Impact Assessment (P5IA).
- Time will be reserved during the first team meeting of each month to focus on reviewing sustainability impacts.
- Key Performance Indicators (KPIs) for relevant topics from P5 will be documented.
- To determine the environmental impact of implementing the Honey Project and perform a life cycle analysis.

4.11.2.2 Responding to sustainability impacts will include:

- Implementing responses to all items with a high positive or negative impact score.
- Avoidance of unacceptable impacts.
- Keeping this Project Sustainability Management Plan current throughout the project.
- Inclusion of “sustainability impact updates” as an agenda item for each team meeting.
- Integrating sustainability risk and opportunity management with overall project risk and opportunity management.

4.11.3 Roles and Responsibilities

Project Manager

- Allocate necessary resources to carry out sustainability management plan activities Develop, implement and distribute the Sustainability Management Plan
- Develop and update the P5 Impact analysis with support from project team and include it in project plan
- Coordinate with the Response Owners to implement responses identified in the P5IA
- Update the lessons learned database at the end of each project phase
- Provide a report to the function or office that is responsible for sustainability reporting

Project Team

- Identify sustainability impacts and describe them in the prescribed formats.
- Assess the impact of sustainability-related actions on project success criteria.
- Perform the impact response actions assigned.

Sustainability Impact Owner

- Develop and/or update the assigned risk response strategy.
- Monitor the risk assigned and inform PM of any changes to probability or impact.
- Monitor the risk trigger and risk cues and inform the PM as appropriate.

4.11.4 Sustainability Budget

This budget is aimed at implementing the Honey Project sustainably and with environmental considerations.

Chart 40

Sustainability Budget

Honey Project Sustainable Management Budget			
Budget Category	***Description***	***Cost estimate (USD)***	***Total Budget (USD)***
Research and Analysis	Conduct comprehensive research on producing honey sustainably and feasibly.	$1,000.00	
Sub-total			$1,000.00
Stakeholder Engagement	Organize community workshops, seminars, and campaigns to raise awareness and gain support.	$750.00	
Sub-total			$750.00
Production and Distribution	Promotion of eco-friendly products and distribute them to local markets.	$1,800.00	
Sub-total			$1,800.00
Public Relations and Marketing	Develop a marketing campaign to promote sustainable honey production	$800.00	
Sub-total			$800.00
Education and Outreach	Create educational materials and conduct school on the importance of sustainable beekeeping	$500.00	
Sub-total			$500.00
Green Certifications	Obtaining eco-labels, certifications	$1,000.00	
Sub-total			$1000.00
Environmental Impact Assessment	Assessment of the project's ecological footprint	$700.00	
Sub-total			$700.00
Final Reporting and Documentation	Compilation of project results, lessons learned, and best practices	$150.00	
Sub-total			$150.00

Honey Project Sustainable Management Budget			
Budget Category	***Description***	***Cost estimate (USD)***	***Total Budget (USD)***
Monitoring and Evaluation	Implement a system to track and assess the effects of beekeeping on the environment	$1,000.00	
Sub-total			$1,000.00
Contingency and Unforeseen Costs	Allocate a reserve fund for unexpected challenges and expenses.	$400.00	
Sub-total			$400.00
Total			**$8,100.00**

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.11.5 Key Performance Indicators

Chart 41

Key Performance Indicators

P5 Domain	Lens	Category	Element	KPI	Metric
People	Servicing	Labor Practices and Decent Work	Training and Qualifications	Training and Skill Development	Count - Measures the degree of staff awareness and capacity building for producing honey using sustainable and environmentally friendly means.
	Lifespan	Society and Customers	Community Engagement	Public Awareness and Education	Public Awareness Index - Measures the level of public awareness of producing honey using sustainable and environmentally friendly means.
	Effectiveness	Human Rights	Dignity, Diversity, Equity, and Inclusion	Inclusive participation	Weeks – Months – Measures the participation of stakeholders that have been involved in the project.
	Lifespan	Ethical Behavior	Green Claims and Greenwashing	Green Claims transparency	Percentage - Measures the percentage of honey enterprises who are accurate and reliable in their disclosure of their sustainable activities.
Planet	Lifespan	Transport	Local Procurement	Support to local suppliers	Count- Measures the reliance on local suppliers and a decline in reliance on imported items .

P5 Domain	Lens	Category	Element	KPI	Metric
	Effectiveness	Energy	Renewable Energy & Clean Energy Return	Utilization of modernized tools	Rating -Measures the project's dedication to environmental sustainability and lower carbon emissions through modernized tools that indicate a greater reliance on clean and renewable energy sources.
	Effectiveness	Land, Air and Water	Biological Diversity	Reduction of ecological vulnerability	Count - Determines the degree to which unsustainable behaviors have reduced ecological vulnerability.
	Servicing	Consumption	Recycling and Reuse	Recycle initiatives	Count -Measures the degree of suppliers' willingness to recycle and re-use materials used to build bee boxes.
Prosperity	Lifespan	Project Feasibility	Financial Analysis	Cost Variance Percentage	Currency – Financials - To show either spending that exceeds the costs that were budgeted or, if the proportion is negative, cost savings.
	Efficiency	Business Agility	Resilience	Crisis Response Time	Weeks – Months -To demonstrate the stakeholders' ability to manage and bounce back from difficulties and unfavorable project feedback.
	Fairness	Market and Economic Simulation	Local Economic Impact	Waste Management Job Creation	Rating- To assess the extent of direct job growth brought about by the Honey Project.

Note. This chart was sourced from A. Mejia, Author, 2023. Own Work

4.11.6 Impact of Scop Exclusions on Sustainability

The Honey Project was written with the aim of advancing sustainability and promoting environmental consciousness, but it is still necessary to consider any potential scope exclusions and their potential effects on the initiative's overall sustainability.

One identifiable scope exclusion is the consequences of suppliers not using environmentally and sustainable products to build the bee boxes needed for the project's success. Whilst the contractual agreement states that all boxes must be produced using these means it does not state what would be the consequences if these agreements were not adhered to after the close of the contractual period. Another scope exclusion is the upgrading of the infrastructure to get to these apiaries. Many beekeepers keep their hives in remote and secured locations for several reasons including public safety. This exclusion can affect the profitability of the beekeepers if they are unable to get to their apiaries on time. Lastly, the constant supply of materials and equipment needed to operate a beekeeping enterprise needs to be imported. This lack of supply locally can prove challenging for beekeepers who depend on beekeeping for livelihood. This scope exclusion can have negative consequences if not addressed with some sort of urgency. Beekeepers will need to replenish some materials on a timely basis and importers will only import based on request.

4.11.7 Reviews and Reporting

Meetings for the purpose of discussing and making decisions on the sustainability of the Honey Project will be held monthly. These meetings will be chaired by the Project Manager in collaboration with the technical team to ensure the Sustainability Management Plan is being adhered to and followed as the project works advances. Identifiable deviances will be dealt with as per indications within the SMP and the risk owners. This will be accompanied by the pre-agreed processes and procedures as stated in the Risk Management and Communication Plans.

The following forms will be used for documenting risk management activities:

- Risk Assessment Form.
- Risk Management Plan.
- Risk Register
- Environmental Impact Assessment.
- Sustainable Performance Tracking Form
- Stakeholder Engagement Log
- Lesson learnt register

4.11.8 P5 Impact Analysis

Figure 22

People (Social) Impacts

People (social) Impacts							
Category	**Labor Practice and Decent Work**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
1.1	Employment and Staffing	Inadequate skilled staff to ensure effective project implementation	Inferior quality works and expensive re-dos due to mistakes	4	Ensure staff re-assigned for project have prior beekeeping training	5	1
1.2	Training and Qualifications	Staff may not have the adequate training to train beekeepers	Training to beekeepers may be sub-standard leading to wastage	3	Ensure staff are properly trained prior to conduct beekeepers training	5	2
1.3	Equal Opportunities	Salary of some staff members are higher than others and doing the same work	Inferior quality output from lower paying staff	3	Ensure equity in works distribution so everyone provide equal output	5	2
Category	**Society and Customers**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
2.1	Community Engagement	Beekeepers' location may be close to residential areas	May cause blow-back from residence and forced to re-locate causing economic losses	3	Project manager to ensure beekeepers have their hives far from residential areas	5	2

2.2	Product safety and labeling	Beekeepers selling their products without proper testing and labeling.	Can cause public health safety concerns and a cease-and-desist order from authorities.	4	Train beekeepers in honey standards and labeling	5	1
Category	**Human Rights**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
3.1	Harassment and Discrimination	Beekeepers conducting labor practices that are not in line with the labor laws of Belize.	Can cause project delays and poor-quality production of honey.	2	Train beekeepers in Labor Laws of Belize	4	2
3.2	Age-Appropriate Labor	Beekeepers hiring under-aged laborers to manage their apiaries	Non-compliance with labor laws and potential economic losses	1	Ensure hiring practices by beekeepers are in line with the labor laws.	4	3
Category	**Ethical Behavior**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
4.1	Sustainable Procurement and Contracts	Sustainable procurement practices not adhered to and followed.	Delays in time and scope due to re-works in procurement practices.	3	Adherence to Best Procurement Practices throughout the project's lifecycle.	5	2
4.2	Anti-corruption	Non-adherence to procurement best practices.	Potential legal obligations and re-work that affects time and schedule.	3	Adherence to Best Procurement Practices throughout the project's lifecycle.	5	2
4.3	Fair Competition	Inadequate advertisement or project procurement requirements	Potential legal obligations and re-work that affects time and schedule.	2	Adherence to Best Procurement Practices throughout the project's lifecycle.	5	3
			People Average	**2.8**		**4.8**	**2**

Note. This Figure was sourced from A. Mejia, Author, 2023. Own Work

Figure 23

Planet (Environmental) Impacts

Planet (Environmental) Impacts							
Category	**Transport**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
5.1	Local Procurement	There is currently no policy to ensure goods and services are given first preference to be procured locally.	Inferior quality goods can be imported that can delay project schedule and impact costs.	3	Creation of policy to ensure local products are given first preference	5	2
5.2	Digital Communication	There is no digital platform to trace bees' movements and population control.	Bees can swarm leading to re-work and budget overrun	2	Establish a contractual agreement with a web-developer to create a traceability platform	4	2
5.3	Traveling and Commuting	There is no mechanism in place to monitor project team movement to project sites.	Increase in costs and potential budget overrun	3	Establish a carpooling and efficiency schedule.	5	2
Category	**Energy**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
6.1	Energy Consumption	Use of diesel consuming vehicle to manage project activities.	Increase in CO2 emissions into the atmosphere	2	Use fuel efficient vehicles.	5	3

6.2	Renewable and clean energy return	Increase in operating costs by beekeepers' high use of non-renewable energy	Increase in costings and can create project delays.	3	Promote the use of solar energy in the beekeeping industry.	5	2
Category	**Land, Air and Water**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
7.1	Biological Diversity	Lack of compliance to environmental laws and regulations.	Creating an imbalance to the ecosystems and project delays	3	Implement strict guidelines to environmental laws and regulations by creating a checklist.	4	1
7.2	Water Consumption	No limit to the quantity of water used during apiary management.	Unhealthy quantity of water consumption and increase in Cost of Production.	2	Project manager to create a water use guidelines and train beekeepers on its importance.	4	2
			People Average	**2.6**		**4.6**	**2**

Note. This Figure was sourced from A. Mejia, Author, 2023. Own Work

Figure 24

Prosperity (Economic) Impacts

Prosperity (Economic) Impacts							
Category	**Return on Investment**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
8.1	Direct Financial Benefits	There is no documentation of actual cost savings measures taken by beekeepers.	Costs overruns	3	Establish record sheets for beekeepers to keep tract of expenditures.	4	1
8.2	Net Present Value	Project phases not completing on time.	Project delays and costs overruns	2	Project Manager to ensure each phase is completed on time.	5	3
Category	**Business Agility**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							
9.1	Flexibility	Project team not allowed to work on weekends and overtime.	This is created for project delays.	3	Project Manager to negotiate with senior management to allow team to work on weekends and over time.	4	1
9.2	Increased Business Flexibility	Lack flexibility from business stakeholders on project activities	Project delays and costs overruns	4	Establish a networking relationship with entrepreneurs.	4	0
Category	**Economic Stimulation**	**Description (Cause)**	**Potential Sustainability Impact**	**Initial Impact Score**	**Proposed Response**	**New Impact Score**	**Change**
Element							

10.1	Local Economic Impact	Lack of local business selling beekeeping products and by products.	Project delays and costs overruns	4	Project team to propose local businesses to venture into beekeeping marketing.	5	1
10.2	Indirect Benefits	Industry is still small and needs more investments.	Over production and market contraction.	2	Promotion of beekeeping industry to wider public.	4	3
			People Average	**3.0**		**4.3**	**1.5**

Note. This Figure was sourced from A. Mejia, Author, 2023. Own Work

4.11.9 Interpretation of P5 Impact Analysis

According to (GPM® Global.,2022) The guideline to interpreting the P5 Impact Analysis Template is as follows:

5 = Strongly agree 4 = Agree 3 = Neutral 2 = Disagree 1 = Strongly disagree

Strongly agree indicates that the impact will improve the project's outcome(s) from a sustainability perspective.

Neutral indicates that the impact is not expected to affect the project's outcome(s) from a sustainability perspective.

Strongly disagree indicates that the impact will worsen the project's outcome(s) from a sustainability perspective.

Based on the P5 Impact Analysis that was conducted for the Honey Project, the average as follows:

People averaged 2.8

Planet averaged 2.6

Prosperity averaged 3.0

This result proves that the Honey Project is in favor of sustainability and regeneration and is expected to contribute positively to the environment.

5 CONCLUSIONS

The Honey Production Redevelopment Support Project (Honey Project) was developed to provide economic opportunities to women and marginalized youths in Belize. The Ministry of Agriculture, Food Security and Enterprise (MAFSE) in collaboration with the CARICOM Development Fund (CDF) strategized and developed this project with the ultimate goal of re-developing the Beekeeping Industry in Belize. This materialized with the formation of a skilled and well experienced project team and beekeepers who were willing to learn and adopt Best Beekeeping Practices. It is anticipated that the development of this Project Management Plan will create for effective management and control of all activities leading to completion of the project lifecycle. Having successfully developed the Project Management Plan provides a template useful to guiding and impacting progress and processes leading to project success. Conclusions as per project's objectives are as follows:

1. The Project Charter highlighted the overall project purpose that included the alignment of stakeholders with their roles and responsibilities whilst developing the project from its inception to completion. The charter also provided a clear understanding of the project's purpose, timeframe, risks, deliverables, assumptions, and stakeholders responsibilities that are all intertwined towards the successful completion of this project. This charter plays a vital role for the implementation of the Honey Project and future projects implemented by the MAFSE in Belize because of its informative approach at project execution to generate stakeholders'

assurance of the efficiency of project processes to meet predefined objectives and deliverables.

2. The Scope Management Plan focused on the pre-defined works required to complete the Honey Project. This included the work breakdown structure which is a tool that clearly defines and decomposes work packages and tasks that are required to complete this project. This plan is important as it establishes parameters to manage stakeholders' expectations, schedule and cost variances, resource management, and overall project outcome. This process prevents Scope Creep and provides efficiency during project execution. This process also provides for collecting and logging assumptions, documenting lessons learned, and creating an enabling environment to plan, control and properly utilize equipment, material, services and finances necessary to complete this project.

3. The Schedule Management Plan was developed to ensure that this project is completed within the specified time frame as agreed during the planning stage. The critical path and cost baseline assisted in tracking, controlling, and managing the project activities while simultaneously measuring performance, tools and procedures being utilized throughout the projects' execution.

4. The Cost Management Plan was developed to provide guidance in estimating, allocating and controlling the project's costs through the application of the cost

baseline. This assisted the project team to keep the budget within the stimulated quantities while at the same time measuring and reporting on overall expenditures and providing reports on budgetary allocations.

5. The Quality Management Plan helped in formalizing quality parameters, procedures, and criteria for managing quality throughout the project lifecycle. Quality influences the cost and schedule of the project by providing standards and quality requirements throughout the project. Quality planning helped the Project Manager and team to determine the metrics to be used for measuring scope and maintaining quality as required by the stakeholders of the project.

6. The Resource Management Plan provided classification and efficient use of resources allocated to the project. This also provided for the allocation of team members, identification of their skills, weaknesses and developing methodologies for building their capacities to meet project requirements. This plan also established approaches to planning, scheduling, distribution and controlling of project resources whilst simultaneously evaluating and documenting resource management.

7. The Communications Management Plan highlighted communication methodologies between project team members and other stakeholders for unimpeded and efficient dissemination of information during the project implementation and through its lifecycle. The Communication Management Plan enabled sound team management

by identifying individual team members' roles and responsibilities within the plan which included the effective use of tools such as the issues-log and escalation template for tracking arising issues, documenting required actions needed and escalating issues beyond their scope of assignment.

8. The Risk Management Plan for the Honey Project defined planning for risks, managing and controlling all risks which may occur during the project lifecycle. This plan included the creation of a Risk Breakdown Structure (RBS) and the Probability and Impact Matrix to establish risk ownership, impact probabilities and risk control mechanisms. The plan also included a Risk Register that is important since it prioritizes risks and highlights risk triggers that can be used to control potential risks. This plan is important because it allows for the Project Manager and team to engage in risk planning, risks identification and management. This process allows for each member to take ownership of assigned risks and manage them as planned.

9. The Procurement Management Plan allowed for the ethical management of the procurement practices and adherence to procurement regulations in Belize. This included methodologies for planning, conducting, and controlling procurements for the Honey Project. The Procurement Management Plan assisted in identifying and procuring human resources, services, and goods needed for the successful completion of the project.

10. The Stakeholder Management Plan highlighted the relationship between stakeholders, which included the project team, project steering committee, organizations and beneficiaries. The stakeholders were characterized into their respective roles, influence, interest, and competence in the project. The plan also included methodologies for stakeholders' engagement that detailed their contribution to the project's success by informing them of their requirements and expectations. This was important so that each stakeholder was aware of their contributions to the project and the role they played in ensuring that the project was successful.

11. A validation of the project in the field of regenerative and sustainable development was conducted through the application of P5 Impact Analysis (P5IA) to assess or establish favorable or unfavorable end results to regenerative and Sustainable development. The process was conducted through a tabulated analysis of People , Planet, Prosperity, Process, Products (P5) that involved the situation, the causes , potential impact of the cause and a proposed response. A grading coefficient was applied based on the effects of the impact before and after impact response using an interpretation guideline ranging from 5 (strongly agree) to 1 (strongly disagree). The overall Impact score after responding to individual Impacts was 4.56 which is a strong indication that the project favored sustainability and regenerative development.

6 RECOMMENDATIONS

1) The Ministry of Agriculture, Food Security and Enterprise (MAFSE), who is directly responsible for the execution of agricultural projects in Belize should incorporate project integration planning, including the development of a project charter, as part of their project design and execution. This would create an environment of cohesion among stakeholders and resources available for specific projects. The inclusion of a project charter in project planning can contribute to greater project success that can realize insurmountable impact on the beneficiaries.

2) The MAFSE is infamous for implementing projects without clear directions that can lead to project success. This can be corrected with the adaptation of a Scope Management Plan that can serve as a guide for operational and technical execution of project works that can avoid scope creep. A properly functioning Scope Management Plan can add needed value to projects through the implementation of effective project management processes.

3) Scheduling of project activities is important to avoid costly mistakes and scope creep due to inefficiency and lack of planning. The Project Manager and his team must ensure that the works stated in the Project Management Plan are conducted as

planned. The MAFSE must request a Project Work Schedule and implement a guiding mechanism to ensure that the works match with the present schedule.

4) The MAFSE does not include management reserves into project planning, and this has proven challenging given the current economic climate where inflation is at an all-time high. This realization is coupled with the fact that the MAFSE lacks the will to control costs and conduct cost variance exercises that are important to ensure that projects are being implemented within budget. Implementing these practices can ensure projects are being implemented within a pre-determined budget.

5) Planning, managing and controlling quality have proven challenging for the MAFSE in Belize and this is due to challenges with human resources availability. A well-thought-out Quality Management Plan in conjunction with effective project management practices can improve the quality of deliverables presented to stakeholders. It is strongly recommended that the MAFSE create a Quality Management Plan for all projects to ensure that quality considerations are included in all aspects of the project phases including the costs and schedule management processes.

6) In most cases the in-house staff of the MAFSE are utilized to execution projects, which is done in conjunction with their already assigned responsibilities within the Ministry. This is normally the case since most projects were designed this way and

lack the financial availability to hire external staff. The MAFSE can benefit from the implementation of a resource management plan by establishing a resource breakdown structure and a resource calendar that can aide in tracking, assigning and controlling resources during project implementation.

7) Communication during the implementation of projects within the MAFSE is done using conventional means and not properly organized and documented. It is recommended that the MAFSE establish a Communication Management Plan that includes a Communication Matrix that highlights the roles and responsibilities of stakeholders and the methodology to communicate with each one. This should be strengthened with proper documentation, verification, control and management of communication to foster a strong relationship among stakeholders.

8) Government projects in Belize are rarely properly analyzed to determine the level of risks associated with them and control mechanisms that can prevent them. The MAFSE should conduct in-depth risk management exercises that identify risks, and also perform qualitative and quantitative risk analysis, and implement risk responses for controlling risk as they occur throughout the project's lifecycle. The documentation and management of these risks is important to determine the outcome of the project deliverables.

9) The MAFSE has a procurement officer that is aided by the finance officer who is responsible for all procurement activities related to project management. The procurement officer is responsible for the collection of project requirements, calling for bids, awarding of contracts and monitoring against infringement of contractual obligations. It is recommended that the MAFSE establish a procurement unit within the MAFSE to ensure ethical and efficient procurement practices are conducted to align procurement procedures with cost and schedule requirements.

10) A well-planned Stakeholders' Management Plan can contribute to the unity as projects are being implemented. The MAFSE should start to incorporate stakeholders' management as part of project designs. Stakeholders must be properly identified, assigned roles and responsibilities and kept informed. This can be done by conducting a stakeholders' engagement and management plans that will deliver remarkable success for project delivery.

11) The MAFSE is not using the P5 tool to analyze projects for sustainability and regeneration during planning and implementation phases of projects . It is strongly recommended that the MAFSE incorporate the use of the P5IA tool for project viability in the fields of regenerative and sustainable development to proactively assess and address the impacts of project impacts on sustainability.

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

Execution of the Honey Project in Belize aligns with the Sustainable Development Goals. These goals aspire for no poverty, zero hunger, good health and well-being, quality education, gender equality, clean water and sanitation, affordable and clean energy, decent work and economic growth, industry, innovation and infrastructure, reduced inequalities, sustainable cities and communities, responsible consumption, and production etc. The project also aligns with the Regenerative Development Approach that integrates the six processes of regeneration which includes Environmental, that speaks about regeneration of the ecosystems, and biodiversity, the social aspects that deals with inclusive and equitable societies, and the Economic aspect that includes fair and equitable economy. The Political aspect of the regeneration model includes participatory governance, transparency, and ethics. The last two processes include cultural and spiritual that entails cultural diversity and local knowledge and values, ethics and society that cares, respectively. Through the development of a Project Management Plan for the Honey Project in Belize the beneficiaries will benefit from resources to create a micro-enterprise thus improving their financial capacities while at the same time increasing the number of bees into the environment for pollination of crops. The dual purpose of this project will be to create equitable opportunities for the beneficiaries whilst improving the environment and increasing crop production within society. The efficient management of this project will ensure that wastes are minimized, and efficiency is improved. The Honey Project was written with environmental considerations and is people centered.

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APPENDICES

Appendix 1: FGP Charter

CHARTER OF THE PROPOSED
FINAL GRADUATION PROJECT (FGP)

1. Student name

Andrew Ambrosio Mejia

2. FGP name

Project Management Plan for the Efficient Implementation of the Honey Production Re-development Support Project (Honey Project) in Belize.

3. Application Area (Sector or activity)

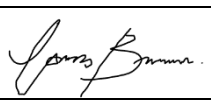
Agriculture

4. Student signature

5. Name of the Graduation Seminar facilitator

Ing. Carlos Brenes Mena

6. Signature of the facilitator



7. Date of charter approval

N/A

8. Project start and finish date

29/08/23	N/A

9. Research question

Can the components of a Project Management Plan contribute to the successful implementation of the Honey Production Redevelopment Support Project in Belize?

10. Research hypothesis

Is it possible to improve project execution efficiency of the Honey Production Redevelopment Support Project in Belize by using a Project Management Plan?

11. General objective

To develop a Project Management Plan to implement the Honey Production Redevelopment Support Project in Belize successfully and efficiently.

12. Specific objectives

1. To create a project charter to properly define key input for the development of the Project Management Plan.
2. To develop a Scope Management Plan to ensure the project includes all the work required to complete the project successfully and only the work required by the project.
3. To develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project.
4. To create a Cost Management Plan that will define budget management for the successful completion of the project within budget.
5. To develop a Quality Management Plan for managing and controlling quality within the project.
6. To develop a Resource Management Plan to ensure the timely availability of required resources for the successful completion of the project.
7. To design a Communication Management Plan to ensure all stakeholders, including the project team, are properly and timely informed on project progress.
8. To develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success.
9. To create a Procurement Management Plan to conduct fair and ethical purchasing of goods, services, or results for the successful completion of the project.
10. To design a Stakeholders Management Plan to identify and manage stakeholders who directly or indirectly impact the successful completion of the project.

11. To validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.

13. FGP purpose or justification

Belize was a major exporter of honey during the 1980s, but due to several reasons including climate change and the invasion of the aggressive Africanized bees, the production of honey went from roughly 700,000 pounds to less than 100,000 pounds by the year 2000. This rapid decline saw the Ministry of Agriculture in Belize scrambling for ways to revive the industry. The search for a remedy saw the birth of the Honey Production Redevelopment Support Project. This project is targeting one hundred new beekeepers which must include 50% of women and youth.

Through the implementation of this project, it is expected that honey production will increase from 90,000 lbs. (2023) to 150,000 lbs. within the first three years (2025) and also increase the number of beekeepers by 100% (75 – 150) within that same time period. The yield is also expected to increase from 49 lbs. per hive to 55 lbs. per hive by the year 2025. With the efficient implementation of this project, it is expected that the honey demand of Belize, which is approximately 300,000 lbs./year will be met by the year 2028. This increase will contribute to poverty reduction and food security for the country of Belize.

Since there are no projects within the auspices of the Ministry of Agriculture in Belize that are being implemented using a Project Management Plan, one will be developed for the effective and efficient implementation of the Honey Project. The key benefit of developing this plan is the production of a comprehensive document that defines the basis of all project work and how the work will be performed. This integrated document is needed to guide the Project Manager and project team on project requirements, timing, and budgetary considerations for each activity during project implementation.

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

1. Graduation Seminar
    1.1 FGP Deliverables
    1.1.1 Charter Items 1-10, Preliminary Bibliographical Research
    1.1.2 Charter Items 11-12, FGP WBS, Self-Assessment
    1.1.3 Corrections, Charter Items 13-19
    1.1.4 Corrections, Chapter 2 Theoretical Framework, Charter Item 20, Self-Assessment 2
    1.1.5 Corrections, Chapter 3 Methodological Framework, Charter Item 21
    1.1.6 Corrections, Introduction, Chapter 7 Project Validation in Regenerative and Sustainable Design, Charter Item 22, FGP Schedule
    1.1.7 Corrections, Executive Summary, Abstract, Indexes, signed FGP Charter
    1.2 Graduation Seminar Approval
2. Tutoring Process
    2.1 Tutor
        2.1.1 Tutor Alignment
        2.1.2 Communication
    2.2 Adjustments to previous chapters (If necessary)
    2.3 Chapter IV. Development (Results)
        2.3.1 Signed Charter
        2.3.2 Scope Management Plan
        2.3.3 Schedule Management Plan
        2.3.4 Cost Management Plan
        2.3.5 Quality Management Plan
        2.3.6 Resource Management Plan
        2.3.7 Communications Management Plan
        2.3.8 Risk Management Plan
        2.3.9 Procurement Management Plan
        2.3.10 Stakeholders Management Plan
        2.3.11 Project Validation in Regenerative/Sustainable perspective
    2.4 Chapter V. Conclusions
    2.5 Chapter VI. Recommendations
3. Reading by reviewers
    3.1 Reviewers Assignment Request
        3.1.1 Assignment of two reviewers
        3.1.2 Communication
        3.1.3 FGP Submission to reviewers
    3.2 Reviewers work
        3.2.1 Reviewer 1
            3.2.1.1 FGP Reading
            3.2.1.2 Reader 1 Report
        3.2.2 Reviewer 2

3.2.2.1 FGP Reading
3.2.2.2 Reader 2 Report
4. Adjustments
4.1 Report for reviewers
4.2 FGP update
4.3 Second review by reviewers
5. Presentation to Board of Examiners
5.1 Final review by board
5.2 FGP Grade report

15. FGP budget

Printing (Paper & ink) – $90 USD

Binding - $20 USD

Gas - $80 USD

Shipping – $335 USD

Total cost - $525 USD

16. FGP planning and development assumptions.

1) The researcher will dedicate at least 15 hours per week to developing the FGP.
2) There will be constant communication between project facilitators and researcher.
3) Information about beekeeping will be readily available to develop FGP.
4) The Project Management Plan will be useful during the implementation of the Honey Project in Belize.

17. FGP constraints

1) The maximum time frame to finalize the FGP is 5 months.
2) The FGP must be completed within the budget.
3) The quality of the FGP is dependent on the quality of information received.
4) Resource availability is limited to only the researcher.

FGP development risks

1) Unexpected illness of the researcher might delay FGP delivery.

2) Facilitators' unavailability can delay the FGP successful completion.

3) Technical difficulties with computer and other electronics can cause project delays.

4) The project timeline may experience delays due to slow feedback from FGP facilitators.

18. FGP main milestones

Deliverable	**Finish estimated date**
Charter Items 1-10, Preliminary Bibliographical Research	September 4th , 2023
Charter Items 11-12, FGP WBS, Self-Assessment	September 11th , 2023
Corrections, Charter Items 13-19	September 18th , 2023
Corrections, Chapter 2 Theoretical Framework, Charter Item 20, Self-Assessment 2	September 25th , 2023
Corrections, Chapter 3 Methodological Framework, Charter Item 21	October 2nd , 2023
Corrections, Chapter 1 Introduction, Chapter 7 Project Validation in Regenerative and Sustainable Design, Charter Item 22, FGP Schedule	October 9th , 2023
Corrections, Executive Summary, Abstract, Indexes, signed FGP Charter	October 16th , 2023
Graduation Seminar Approval	October 23rd , 2023
Tutoring Process	January 30th , 2023
Reading by reviewers	February 20th, 2023
Adjustments	March 19th , 2024
Presentation to Board of Examiners	March 26th , 2024
Final review by board	March 21st , 2024
FGP grade report	March 26th , 2024

19. Theoretical framework

19.1 Estate of the "matter"

Honey production in Belize has been on the decline since the 1980s and the need to re-vitalize the industry prompted the Ministry of Agriculture to submit project proposals to International Funding Agencies for beekeeping revitalization projects. A proposal was approved by the CARICOM Development Fund (CDF) for the redevelopment of the honey industry in Belize. One of the greatest setbacks in project management within the Ministry of Agriculture is the lack of a Project Management Plan for the effective implementation of projects. With the inclusion of a Project Management Plan for the Honey Project it is expected that the project will be executed effectively and efficiently for project success.

19.2 Basic conceptual framework

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

Examples: Project Management, Green Agriculture Production, Sustainable Production, Regenerative Inclusion

20. Methodological framework

Objective	Name of deliverable	Information sources	Research method	Tools	Restrictions
To create a project charter to properly define key input for the development of the Project Management Plan.	Project charter	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative •Mixed	•Expert Judgement •Work Breakdown Structure •Activity List •Integration Management Plan •Requirements Traceability Matrix	Limited information available for the development of the project charter.
To develop a Scope Management Plan to ensure the project includes all the work required to complete the project successfully and only the work required by the project.	Scope Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative Mixed	•Expert Judgement •Data Analysis •Meetings •Scope Management Plan Template •Requirements Traceability Matrix •Work Breakdown Structure •Work Breakdown Structure Dictionary	•Project sponsors disorganized. •Scope definition is not clear due to missing information.
To develop a Schedule Management Plan which will define execution methodologies for the timely completion of the project.	Schedule Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative Mixed	•Expert Judgement •Data Analysis •Meetings •Activity List •MS Projects •Schedule Management Plan •Expert Judgement	•Project must observe deadlines and milestones. •Deadlines on certain activities uncertain.

				•Data Analysis •Meetings •Bottom – Up Estimation •Cost Management Plan Template	
To create a Cost Management Plan that will define budget management for the successful completion of the project within budget.	Cost Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative Mixed	•Expert Judgement •Data Analysis •Meetings •Bottom – Up Estimation •Cost Management Plan Template	•Project budget is limited. •Funds distribution from project sponsors.
To develop a Quality Management Plan for managing and controlling quality within the project.	Quality Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative Mixed	•Expert Judgement •Data gathering •Data analysis •Decision making •Data representation •Test and inspection planning •Meetings •Quality Activities Matrix Template •Quality Management Plan Template	•Lack of information from stakeholders. •Internal policies from project sponsors.
To develop a Resource Management Plan to ensure the timely availability of required resources for the successful	Resource Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals	•Qualitative •Quantitative Mixed	•Expert Judgement •Data representation •Organizational Theory •Meetings •RACI	•Project resources unavailable when needed. •Poor distribution of

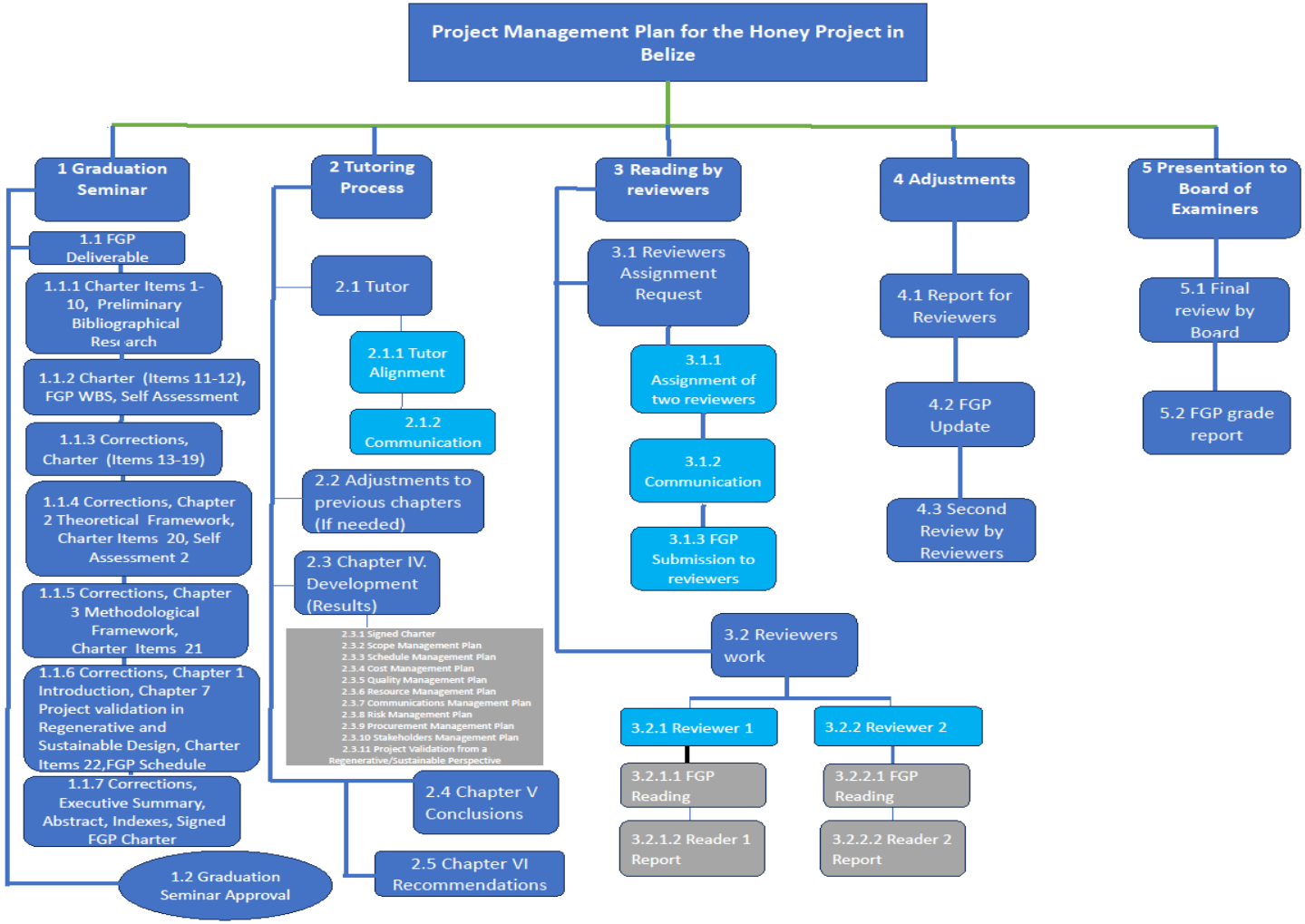
completion of the project.		-Historical data and information		•Resource management Plan Template	allocated resources.
To design a Communication Management Plan to ensure all stakeholders, including the project team, are properly and timely informed on project progress.	Communication Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative Mixed	•Expert Judgement •Communication requirements analysis •Communication technology •Communication models •Communication methods •Interpersonal and team skills •Data representation •Meetings	•Lack of response from stakeholders •Project sponsors communication policies
To develop a Risk Management Plan to identify potential risks and identify risk owners to mitigate negative risks and capitalize on positive risks to increase chances of project success.	Risk Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative Mixed	•Expert Judgement •Data Analysis •Meetings •Risk Register Template •Risk Management Plan Template	•Limited information on historical risks since the project is new. •Severe natural disasters.
To create a Procurement Management Plan to conduct fair and ethical purchasing of goods, services, or	Procurement Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals	•Qualitative •Quantitative Mixed	•Expert Judgement •Data gathering •Data analysis •Source selection analysis •Meetings	•Capacity of local suppliers •International shipping issues.

results for the successful completion of the project.		-Historical data and information		•Procurement Management Plan Template	
To design a Stakeholders Management Plan to identify and manage stakeholders who directly or indirectly impact the successful completion of the project.	Stakeholders Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative Mixed	•Expert Judgement •Data gathering •Data analysis •Data representation •Meetings •Stakeholder Register Template •Stakeholder Assessment Matrix •Stakeholder Management Plan Template	•Stakeholders not responding to project requirements. •Organizational structure of project stakeholders.
To validate the project from a regenerative and sustainable perspective to assess the impact of the project and its deliverables in regenerative and sustainable development.	Sustainable and Regenerative Management Plan	PMBOK 6th (2017) & 7th (2021) Editions -Lecture Notes -Conference -Papers Journals -Historical data and information	•Qualitative •Quantitative Mixed	•Sustainable Management Plan Template •Expert Judgement •Data gathering •Data analysis •P5 Impact Analysis	Local suppliers are able to supply equipment and materials that are sustainable and regenerative in nature.

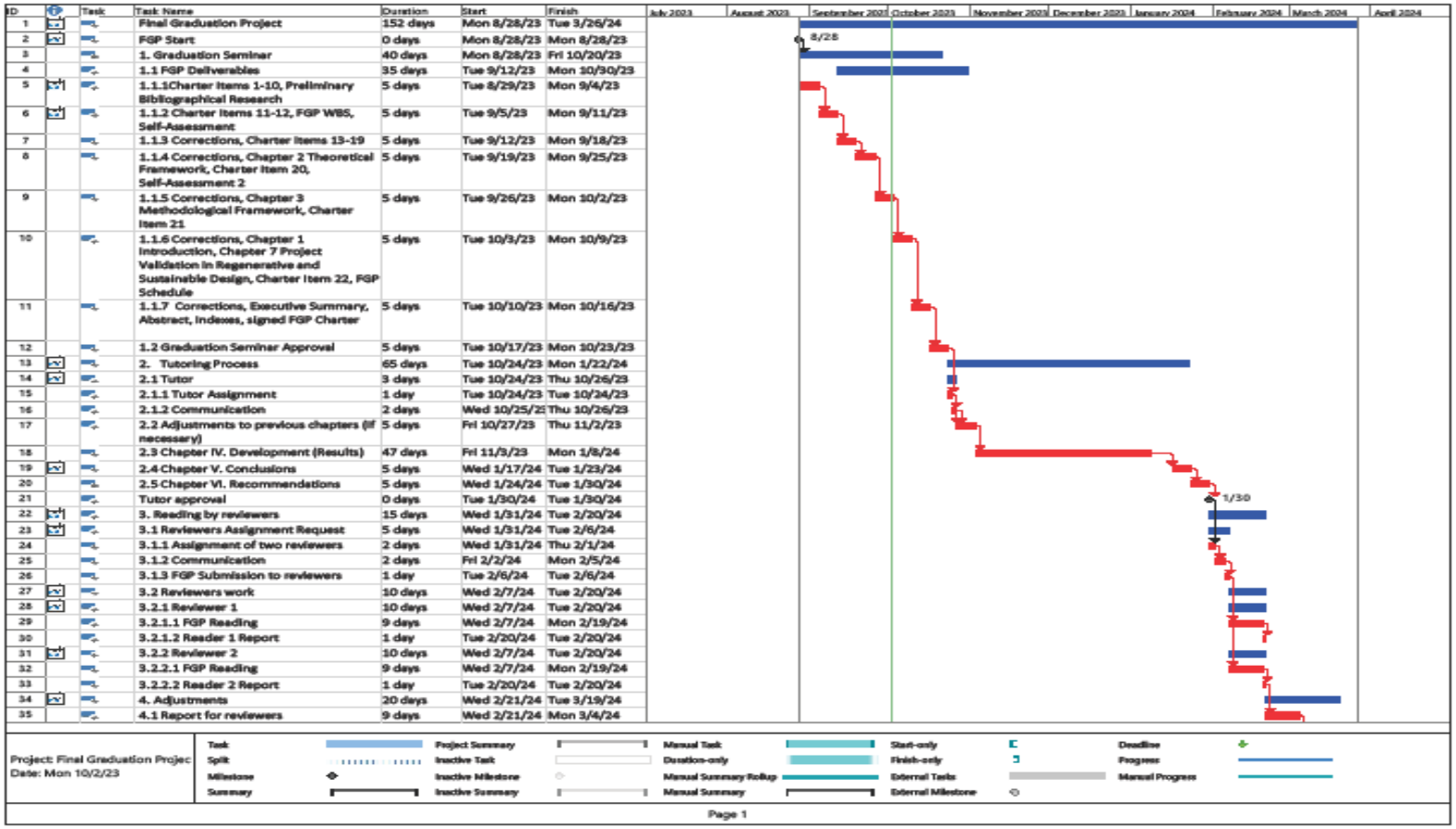
21. Validation of the work in the field of the Regenerative and Sustainable Development.

Through the development of a Project Management Plan for the Honey Project in Belize the beneficiaries will benefit from resources to create a micro-enterprise thus improving their financial capacities while at the same time increasing the number of bees into the environment for pollination of crops. The dual purpose of this project will create equitable opportunities for the beneficiaries while at the same time improving the environment and increasing crop production within society. The efficient management of this project will ensure that wastes are minimized, and efficiency is improved. The Honey Project was written with environmental considerations and is people centered. In order to measure the contributions to the sustainable and regenerative development, Key performance Indicators (KPIs) could be monitored such as the distribution of gender planned within the personnel assignments, usage of materials versus what was planned originally and overall project performance through monitoring of time, scope and quality and the overall effects on the environment.

Appendix 2: FGP WBS

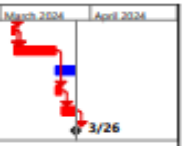


Appendix 3: FGP Schedule



ID	Task Name	Duration	Start	Finish
1	Final Graduation Project	152 days	Mon 8/28/23	Tue 3/26/24
2	FGP Start	0 days	Mon 8/28/23	Mon 8/28/23
3	1. Graduation Seminar	40 days	Mon 8/28/23	Fri 10/20/23
4	1.1 FGP Deliverables	35 days	Tue 9/12/23	Mon 10/30/23
5	1.1.1Charter Items 1-10, Preliminary Bibliographical Research	5 days	Tue 8/29/23	Mon 9/4/23
6	1.1.2 Charter Items 11-12, FGP WBS, Self-Assessment	5 days	Tue 9/5/23	Mon 9/11/23
7	1.1.3 Corrections, Charter Items 13-19	5 days	Tue 9/12/23	Mon 9/18/23
8	1.1.4 Corrections, Chapter 2 Theoretical Framework, Charter Item 20, Self-Assessment 2	5 days	Tue 9/19/23	Mon 9/25/23
9	1.1.5 Corrections, Chapter 3 Methodological Framework, Charter Item 21	5 days	Tue 9/26/23	Mon 10/2/23
10	1.1.6 Corrections, Chapter 1 Introduction, Chapter 7 Project Validation in Regenerative and Sustainable Design, Charter Item 22, FGP Schedule	5 days	Tue 10/3/23	Mon 10/9/23
11	1.1.7 Corrections, Executive Summary, Abstract, Indexes, signed FGP Charter	5 days	Tue 10/10/23	Mon 10/16/23
12	1.2 Graduation Seminar Approval	5 days	Tue 10/17/23	Mon 10/23/23
13	2. Tutoring Process	65 days	Tue 10/24/23	Mon 1/22/24
14	2.1 Tutor	3 days	Tue 10/24/23	Thu 10/26/23
15	2.1.1 Tutor Assignment	1 day	Tue 10/24/23	Tue 10/24/23
16	2.1.2 Communication	2 days	Wed 10/25/23	Thu 10/26/23
17	2.2 Adjustments to previous chapters (if necessary)	5 days	Fri 10/27/23	Thu 11/2/23
18	2.3 Chapter IV. Development (Results)	47 days	Fri 11/3/23	Mon 1/8/24
19	2.4 Chapter V. Conclusions	5 days	Wed 1/17/24	Tue 1/23/24
20	2.5 Chapter VI. Recommendations	5 days	Wed 1/24/24	Tue 1/30/24
21	Tutor approval	0 days	Tue 1/30/24	Tue 1/30/24
22	3. Reading by reviewers	15 days	Wed 1/31/24	Tue 2/20/24
23	3.1 Reviewers Assignment Request	5 days	Wed 1/31/24	Tue 2/6/24
24	3.1.1 Assignment of two reviewers	2 days	Wed 1/31/24	Thu 2/1/24
25	3.1.2 Communication	2 days	Fri 2/2/24	Mon 2/5/24
26	3.1.3 FGP Submission to reviewers	1 day	Tue 2/6/24	Tue 2/6/24
27	3.2 Reviewers work	10 days	Wed 2/7/24	Tue 2/20/24
28	3.2.1 Reviewer 1	10 days	Wed 2/7/24	Tue 2/20/24
29	3.2.1.1 FGP Reading	9 days	Wed 2/7/24	Mon 2/19/24
30	3.2.1.2 Reader 1 Report	1 day	Tue 2/20/24	Tue 2/20/24
31	3.2.2 Reviewer 2	10 days	Wed 2/7/24	Tue 2/20/24
32	3.2.2.1 FGP Reading	9 days	Wed 2/7/24	Mon 2/19/24
33	3.2.2.2 Reader 2 Report	1 day	Tue 2/20/24	Tue 2/20/24
34	4. Adjustments	20 days	Wed 2/21/24	Tue 3/19/24
35	4.1 Report for reviewers	9 days	Wed 2/21/24	Mon 3/4/24

ID	Task	Task Name	Duration	Start	Finish
36		4.2 FGP update	1 day	Tue 3/5/24	Tue 3/5/24
37		4.3 Second review by reviewers	10 days	Wed 3/6/24	Tue 3/19/24
38		5. Presentation to Board of Examiners	5 days	Wed 3/20/24	Tue 3/26/24
39		5.1 Final review by board	2 days	Wed 3/20/24	Thu 3/21/24
40		5.2 FGP Grade report	3 days	Fri 3/22/24	Tue 3/26/24
41		FGP End	0 days	Tue 3/26/24	Tue 3/26/24



Project: Final Graduation Projec
Date: Mon 10/2/23

Task
Split
Milestone
Summary
Project Summary
Inactive Task
Inactive Milestone
Inactive Summary
Manual Task
Duration-only
Manual Summary Rollup
Manual Summary
Start-only
Finish-only
External Tasks
External Milestone
Deadline
Progress
Manual Progress

Page 2

Appendix 4: Preliminary bibliographical research

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Appendix 5: Philologist Review Report

ALICE LOREEN MEDARD
Union
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1758-284-0496

January 22, 2024

TO WHOM IT MAY CONCERN:

This is to certify that I the undersigned, Alice Loreen Medard, having possessed a Bachelor of Education Degree in Language Education and Literacy Studies, have reviewed the final project of Mr. Andrew Ambrosio Mejia which was completed in partial fulfillment for the requirement to complete a Master's Degree in Project Management.

I hereby confirm that Mr. Andrew has made all the requested corrections to the Final Graduation Project document. It is my professional opinion that Mr. Andrew Ambrosio Mejia's work meets the literary and linguistic standards expected by a student completing a degree at the Master's level.

Yours respectfully,

Alice L. Medard