UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

# PROJECT MANAGEMENT PLAN FOR ECO DATA VISUALIZATION AND MONITORING PROJECT- GRENADA

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## DEDICATION

This research project is dedicated to my family and friends for giving me more than one reason to continue to strive for excellence. To my mom, Stephanie Baptiste, thank you being my biggest supporter and the driving force pushing me to be a better woman.

## ACKNOWLEDGMENTS

I would like to acknowledge the contributions and assistance made by some persons who without their help this Final Graduation Project would not have been successfully completed.

Firstly, I thank Mr. Jorgé Trejos (my advisor) for his invaluable assistance, technical support and expertise in the field of Project Management that he readily shared with me. Notwithstanding numerous setbacks, his dedication to assisting ensured I was able to produce and complete this project via his edits and comments on the project.

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## ABBREVIATIONS AND ACRONYMS

- CEO – Chief Executive Officer
- DRR – Disaster Risk Reduction
- FGP – Final Graduation Project
- GEF – Global Environment Facility
- GSWMA – Grenada Solid Waste Management Authority
- IT – Information Technology
- NGO – Non-Governmental Organization
- PMI – Project Management Institute
- PMBOK – Project Management Book of Knowledge
- UCI – Universidad para la Cooperación Internacional
- WBS – Work Breakdown Structure

## EXECUTIVE SUMMARY (ABSTRACT)

Make a Way Foundation Inc. is a relatively new Non-Governmental Organization (NGO) in Grenada. The organization started about three (3) years ago with the aim of improving the lives of the most vulnerable within communities by developing solutions to better the environmental conditions in which we exist.

Being a relatively new organization, they have only implemented one nationwide project on the island. From this project the organization has identified that it does have minor project management elements which include project management tools and approaches to be used to successfully deliver projects. The organization was pre-approved to implement an Eco Visualization and Monitoring Project. Consequently, it was very important that an extensive management tool be developed to guide the successful implementation and completion of the project.

Many NGO projects across the world report more project failures than project success because of a lack of top management support, culture, schedule and commitment. To successfully deliver the Eco Visualization and Monitoring Project a Project Management Plan was developed that elaborated in detail the management of all essential and critical aspects of the project.

The general objective was to develop a Project Management Plan that follows the set of good practices of the Project Management Institute (PMI), to be used to manage the implementation of the Eco Data Visualization and Monitoring Project – Grenada. The specific objectives were: to create a Project Charter to formally authorize and provide the project manager with the authority to use organizational resources for the project and produce the project management plan; to create a Scope Management Plan to define all the scope of work required to successfully complete the project; to create a Time/Schedule Management Plan to support and manage the project schedule to ensure the project stays within and is completed within the time constraints; to create a Cost Management Plan to define the development and management of the project budget to ensure the project stays and is completed within the budget constraints; to develop a Quality Management Plan to highlight the quality requirements of the project to ensure results meet expectations and approval within the scope, time and cost constraints; to create a Resource Management Plan to ensure all required resources are identified and managed effectively to ensure the completion of the project within the scope, time and cost constraints; to develop a Communication Management Plan to ensure effective and timely communication of key project information and status to relevant personnel; to create a Risk Management Plan to adequately identify, examine, manage and minimize negative risk while at the same time exploit share and enhance and or accept the positive risk to ensure the successful completion of the project; to develop a Procurement Management Plan to be used to procure products, services or results required for the successful completion of the project; and to develop a Stakeholder Management Plan to effectively identify, manage and engage all project stakeholders to ensure successful completion of the project.

The methodology used for the research was analytical. The main sources used to extract information included A Guide to the Project Management Body of Knowledge (PMB*OK*® Guide) Sixth Edition and interviews which were held with members from Make a Way Foundation Inc. The information gathered was analyzed and used to create all subcomponenets of the subsidiary plan used to develop the project management plan for the implementation of the Eco Data Visualization and Monitoring Project.

The Project Management Plan, developed using A Guide to the Project Management Body of Knowledge (PMB*OK*® Guide) Sixth Edition provided a new methodology for the Make a Way Foundation Inc. project team to build a more thorough project plan for the Eco Data Visualization and Monitoring Project to improve the way they manage and implement projects. The plan successfully achieved all the specific and general objectives of the Final Graduation project (FGP) developing all the adequate tooles and procedures to guide the successful implementation of this project.

It is recommended that the organization consider utilizing the planning process and documents developed during the creation of the Project Management Plan for the Eco Data Visualization and Monitoring Project, as a basis for future projects. Additionally, Make a Way Foundation Inc. should seek to use a storage and documentation management system to organize, store and easily retrieve project documents and other organizational documents in the future.

# INTRODUCTION

## 1.1. Background

Make a Way Foundation Inc. is a relatively new Non-Governmental Organization (NGO) currently existing in Grenada. It officially started about three (3) years ago and is operated by a three (3) member board of directors all coming from various backgrounds: an Accountant, Information Technology (IT) Engineer and Public Health Specialist/ Project Manager. Make a Way Foundation Inc. is aimed at improving the lives of the most vulnerable within our community by developing solutions to better the environment and conditions in which we exist. They have taken on the responsibility to develop, organize and implement sustainable community initiatives using information and communication technology, improve knowledge of human rights, and establish a network of local nonprofit organizations in aid of supporting community projects.

Before the foundation was registered its executive board was involved in a nationwide climate change project in Grenada. They developed two children's books that tackled the issues of climate change and Disaster Risk Reduction (DRR) and created a platform for both teachers, students and parents to discuss the issue of climate change. The books were also integrated into an interactive mobile application that was made available to both Android and Apple users free of charge. These resources created increased awareness among Grenadians, both young and old, on the causes, impacts and possible adaptation measures that can be taken in regard to climate change and DRR.

To continue meeting their strategic goals and vision as an organization, Make a Way Foundation Inc. has applied and was pre-approved to implement the Eco Data Visualization and Monitoring Project – Grenada. This project will involve two (2) separate but connected elements. The first is the development of a Smart Waste Management System through the use of Smart Garbage

Bins. These Smart Bins are proposed to be placed in public parks and schools in selected locations, which will be used to track waste disposals, while teaching schools and students best practices in waste management. The bins will be able to measure garbage levels in real time and alert the necessary authority when filled.

| Australia, Adelaide | Singapore | New York, USA |
|---|---|---|
| | | |



**Figure 1 Smart Bins Implemented in Australia, Singapore and New York (Source: City of Australia; The Straits Times; Huffpost)**

The data collected from these bins will also feed back into the interactive data website, which will be available to the public and will fit into the second element of the development of an interactive, visually driven data website populated with information related to climate change research. Essentially, the project will provide the platform for assisting in the reduction of litter and awareness of citizens on the detrimental effects of poor waste management on the environment. This will be achieved as the bins will be outfitted with anti-pollution messages and instructions on how to properly dispose of waste. The system will allow the project team and the Grenada Solid Waste Management Authority (GSWMA) to gather data on the garbage levels of schools in terms of scheduling collection.

This project will be the largest and first ever since the organization was registered and by following the Project Management Plan created as a result of this research project, it is anticipated that the level of success will be

improved significantly from the previously implemented project. If this plan is completed successfully it will considerably improve the reputation of the organization and improve its chances of gaining future grant funding to meet its strategic goals.

## 1.2. Statement of the problem

Make a Way Foundation Inc. is a relatively new Non-Governmental Organization (NGO) and to date has only implemented one nationwide project, which was successful. However, there were a lot of challenges and lessons learnt from this previous project. One of the lessons learnt was that the organization has minor project management elements which include project management tools and approaches to be used to successfully deliver projects. Consequently, with the upcoming Eco Visualization and Monitoring Project – Grenada, it is very important that an extensive management tool be developed to guide the successful implementation and completion of the project. All elements of the Project Management Plan will be created detailing all the critical management aspects of the project. The plan will include all the tools, techniques and concepts used to justify each management decision selected for application.

## 1.3. Purpose

A project's performance is one of the most important indications that the project funds have been used appropriately to achieve the project's goals and targets. However, despite the growth and advances that have occurred within the field of project management, a large number of projects still fail to perform and meet their objectives. According to Njeri D. and Were S. (2017) many NGO projects across the world often report more project failures than project success due to a lack of top management support, culture, schedule and commitment. On this basis, to increase the success rate of the Eco Visulization and Monitoring Project – Grenada, the project manager will seek

to create and develop the Project Management Plan, elaborating in detail the management of all essential and critical aspects of the project. All the steps within the Project Management Plan will be strategically coordinated to ensure all subsidiary documents are developed to guide successful project execution. This research project will be guided by the Project Management Body of Knowledge (PMBOK), a guide and set of good practices for Project Management, to create the Project Management Plan and provide all necessary justification for decisions made. Ten (10) sub-management plans (integration, scope, time, cost, quality, resource, communication, risk procurement and stakeholder) will be developed under the Project Management Plan for use during project implementation to ensure optimal project success.

## 1.4. General objective

To develop a Project Management Plan to manage the Eco Data Visulization and Monitoring Project – Grenada, that is within the Project Management Body of Knowledge (PMBOK), a guide and set of good practices for Project Management

## 1.5. Specific objectives

1. To create a Scope Management Plan to define all the scope of work required to successfully complete the project.
2. To create a Schedule Management Plan to support and manage the project schedule to ensure the project stays within and is completed within the time constraints.
3. To create a Cost Management Plan to define the development and management of the project budget to ensure the project stays and is completed within the budget constraints.
4. To develop a Quality Management Plan to highlight the quality requirements of the project to ensure results meet expectations and approval within the scope, time and cost constraints.

5. To create a Resource Management Plan to ensure all required resources are identified and managed effectively to ensure the completion of the project within the scope, time and cost constraints.
6. To develop a Communication Management Plan to ensure effective and timely communication of key project information and status to relevant personnel.
7. To create a Risk Management Plan to adequately identify, examine, manage and minimize negative risk, while at the same time exploit share and enhance and or accept the positive risk to ensure the successful completion of the project.
8. To develop a Procurement Management Plan to be used to procure products, services or results required for the successful completion of the project.
9. To develop a Stakeholder Management Plan to effectively identify, manage and engage all project stakeholders to ensure successful completion of the project.

# THEORETICAL FRAMEWORK

## 1.1 Company/Enterprise framework

### 1.1.1 Company/Enterprise background

Make a Way Foundation Inc. is a relatively new Non-Governmental Organization (NGO) that is committed to improving the lives of individuals through education and sustainable innovative solutions. The board members of Make a Way Foundation Inc. successfully completed a nation-wide project in the past. However, this project will be the first and the largest to date since the organization was registered. The organization has been pre-approved for a grant by the Global Environment Facility (GEF) Small Grants Program due to its Board of Directors' track record on successful project implementation through the tri-island state of Grenada. Therefore, in order to successfully complete this Eco Data Visualization and Monitoring project a comprehensive project implementation and execution strategy is needed. As such the Managing Director of the organization has agreed that there is a need for a project management plan to be developed to successfully guide the process. (R. Bernard, personal communication, May 28, 2019).

### 1.1.2 Mission and vision statements

**Mission**

Make a Way Foundation Inc. is devoted to bettering our communities through education and innovation in a sustainable manner. We strive to establish long-term relationships with communities by providing them with knowledge, technology and sustainability alternatives to increase their resilience to co-exist with the environment to aid in its preservation and regeneration for generations to come (R. Bernard, personal communication, May 28, 2019).

**Vision**

Our vision at Make a Way Foundation Inc. is to improve the lives of the most vulnerable within our communities and develop solutions to better the environment in which we exist (R. Bernard, personal communication, May 28, 2019).

### 1.1.3 Organizational structure

Currently, Make a Way Foundation Inc. is a relatively small organization that was established to meet the needs of communities by developing and implementing innovative solutions through projects to boost education and awareness and improve living conditions for individuals. The organization comprises of three (3) full time devoted members, which can increase to ten (10) operational and project management team members while executing the Eco Data Visualization and Monitoring Project – Grenada. The numbers identified include subcontracted and site workers (R. Bernard, personal communication, May 28, 2019).

The organizational structure of Make a Way Foundation Inc. is depicted below in **Figure 1.** The organization is headed by the board of directors and executive director. Mr. Rohan Bernard is the executive director, lead accountant and project manager and oversees the entire organization's operations. There are three main departments: Administrative, Communication and Dissemination, and Programme.

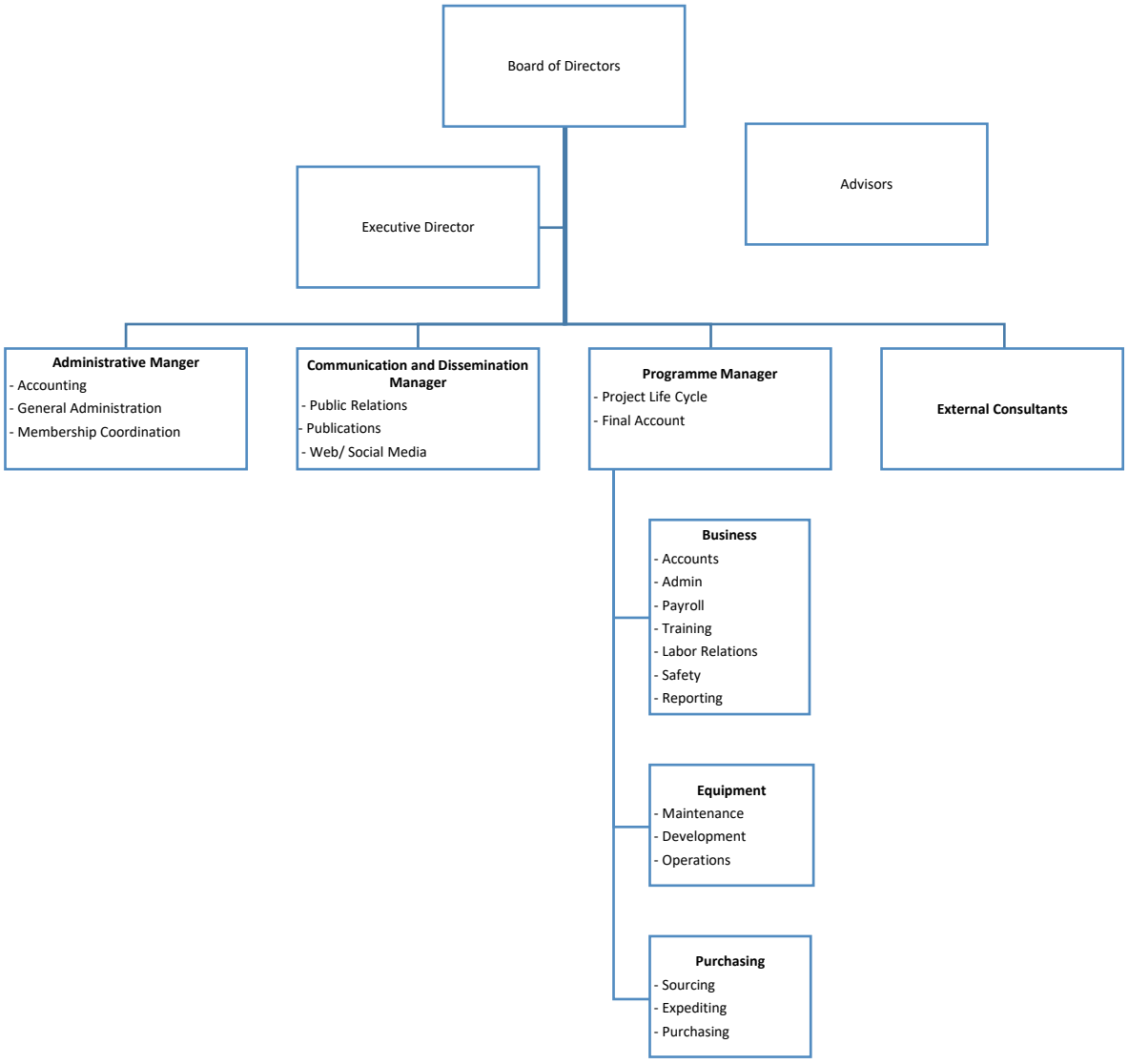



**Figure 2 Organizational structure (Source: R. Bernard, personal communication, May 28, 2019)**

### 1.1.4 Products offered

Make a Way Foundation Inc. offers to develop, organize and implement sustainable community initiatives using information and communication technology, improve knowledge of human rights, and establish a network of local non-profit organizations in aid of supporting community projects (R. Bernard, personal communication, May 28, 2019).

## 1.2 Project Management concepts

### 1.2.1 Project

According to the PMBOK Guide, “a project is a temporary endeavor undertaken to create a unique product, service, or result” (Project Management Institute, 2017, p.542). A project can take many forms whether from the construction of a building or improvement of service or an increase of knowledge through education and awareness.

Make a Way Foundation Inc. defines a project in the same regard as the PMBOK Guide and their projects are completed using project management strategies to the best of their ability. This is done by acknowledging that the project management practices can be applied to both products, improvement of services, as well as result in the production of both tangible and intangible things.

### 1.2.2 Project management

Before the profession of project management came on stream there were numerous projects, however, they did not share the foundation that holds project management together today (Project Manager, n.d.). More recently, there has been an increasing need for a structure in the construction, manufacturing and transportation industries that led to the start of project management. Project Management, according to PMBOK, is “the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements” (Project Management Institute, n.d.). Project management has evolved tremendously over the years and is used by many companies to guide their operations and increase their corporate value.

There are many different methodologies that can be used in project management to ensure the successful completion of a project. However, despite the numerous methodologies that exist it is agreed that every project management lifecycle contains five (5) basic steps: initiation, planning, executing, monitoring and controlling, and closing (Project Management Institute, n.d.). The PMBOK Guide by

the Project Management Institute is a set of good practices that is globally recognized that guides in detail these five (5) steps.

The Development of this FGP will include the development of the Project Management Plan for the Eco Data Visualization and Monitoring Project – Grenada. It will be guided by the PMBOK Guide and used as the main source of reference for the development of the Project Management Plan, and subsequently the implementation of the Eco Data Visualization and Monitoring Project – Grenada. The project cycle of initiation, planning, execution, monitoring and controlling, and closing stages for the creation of the Project Management Plan will occur during the development of the Final Graduation Project (FGP) as seen in **Figure 2** in the next section in accordance with the sequential progression of each subsidiary.

### 1.2.3 Project life cycle

A project life cycle is the “series of phases that a project passes through from its start to its completion” (Project Management Institute, 2017, p. 19). Essentially it provides the basic framework for managing the project. The PMBOK Guide defines four (4) generic phases in a project life cycle. These four (4) phases are as follows: Starting the project, organizing and preparing, carrying out the work, and ending the project. However, not everything is this generic, and the guide also states that within each of the project life cycle phases there are five (5) process groups that can be conducted within a phase and interact within one another.

At Make a Way Foundation Inc., their project life cycle follows the four generic phases that can be seen in **Figure 2** below. They follow clearly defined phases with one progressing into the other. Additionally, each of the clearly defined phases have a sequence of activities that are similar to the five (5) process groups seen in **Figure 3** below.

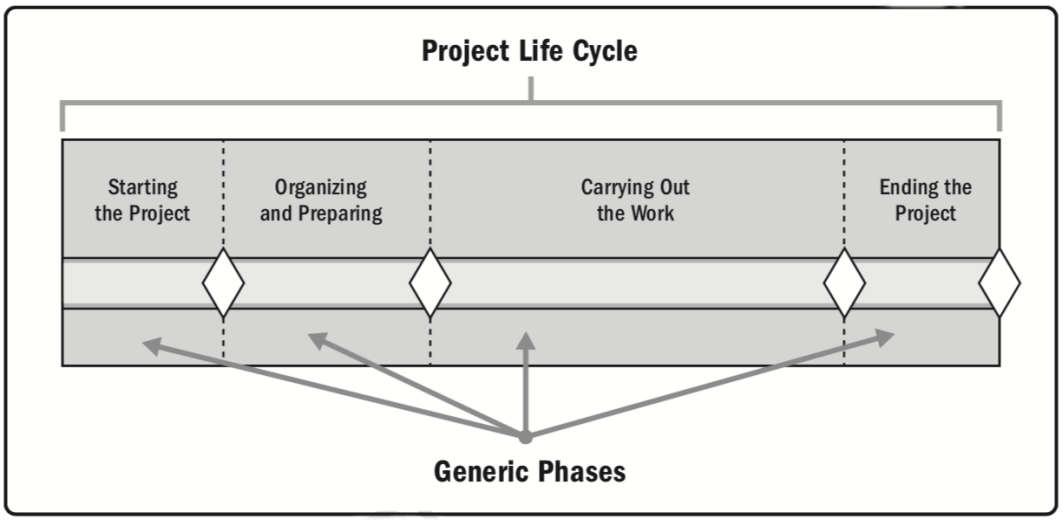



**Figure 3 Generic Project life cycle phases. Reprinted from A Guide to the Project Management Body of Knowledge (p. 548), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

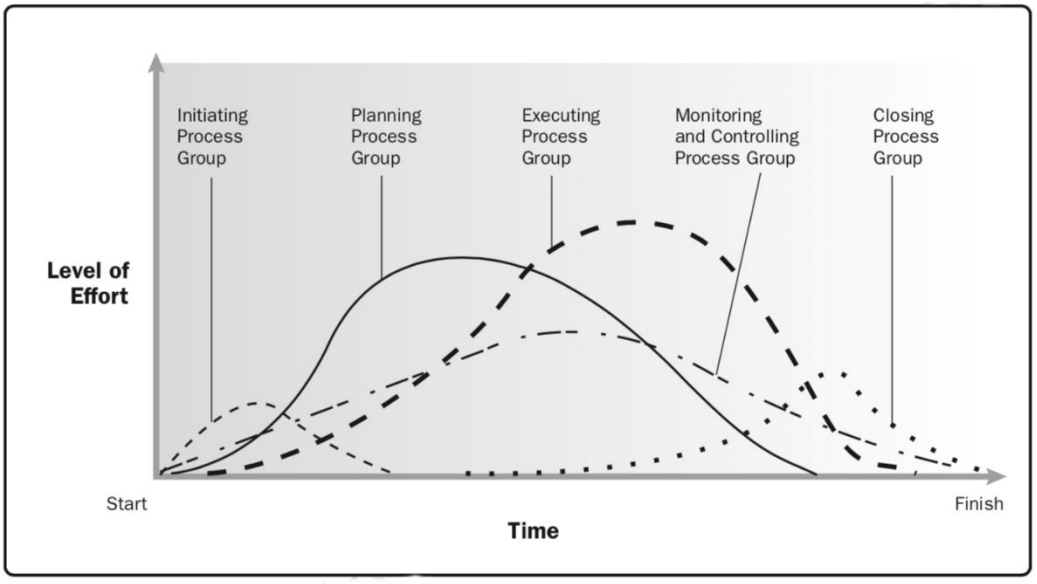



**Figure 4 Process groups interactions in a phase or project. Reprinted from A Guide to the Project Management Body of Knowledge (p.555), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.4 Project management processes

The process involved with initiating and planning a project will only be used to develop The Project Management Plan for the Eco Data Visualization and Monitoring

Project – Grenada. The Project Management Plan will comprise of subsidiary documents developed for each initiating and planning process activity. The subsidiary documents will be documents created to support and work along with the main documents. **Figure 4** below details the process to be applied during the development of this project.

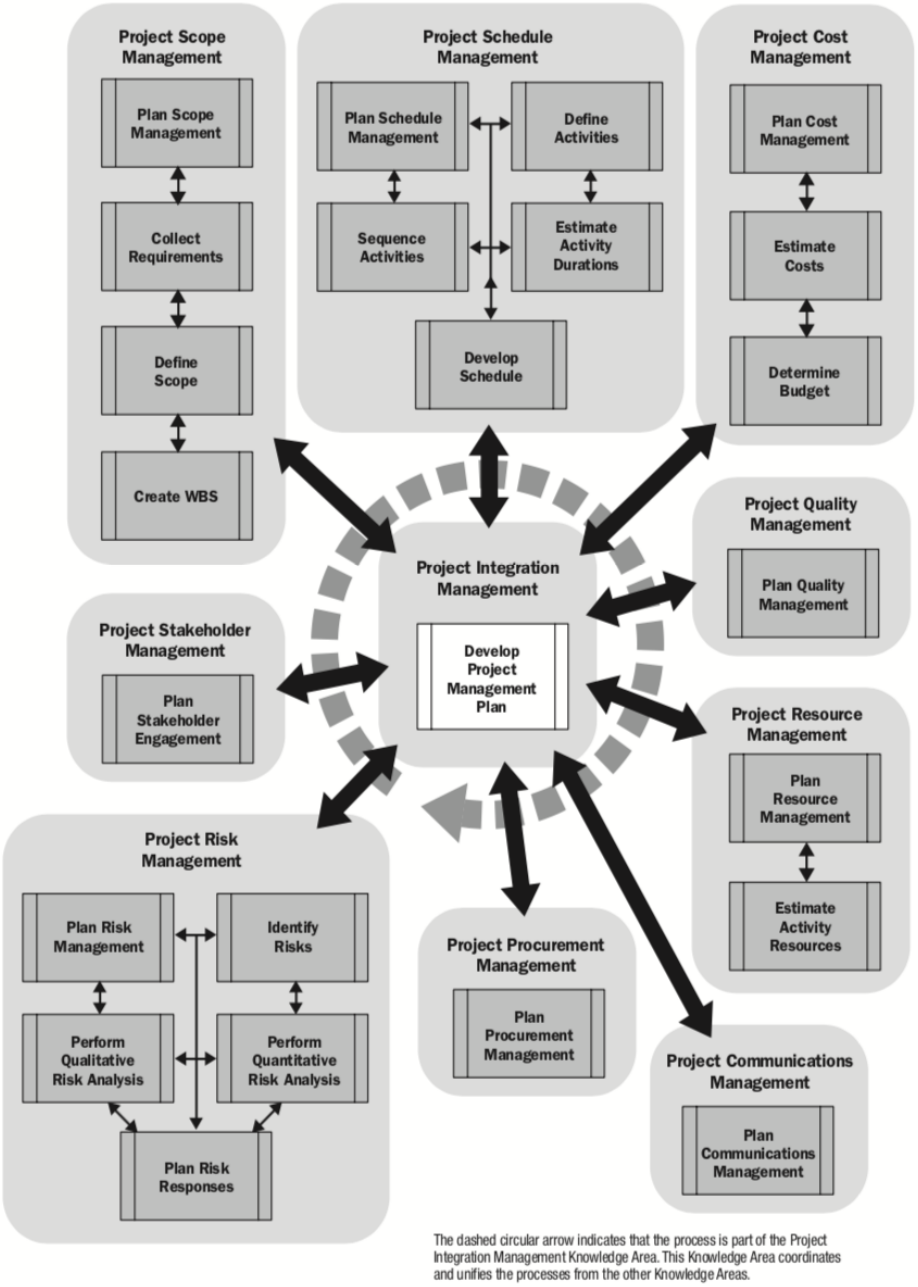



**Figure 5 Initiating and Planning Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 566), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

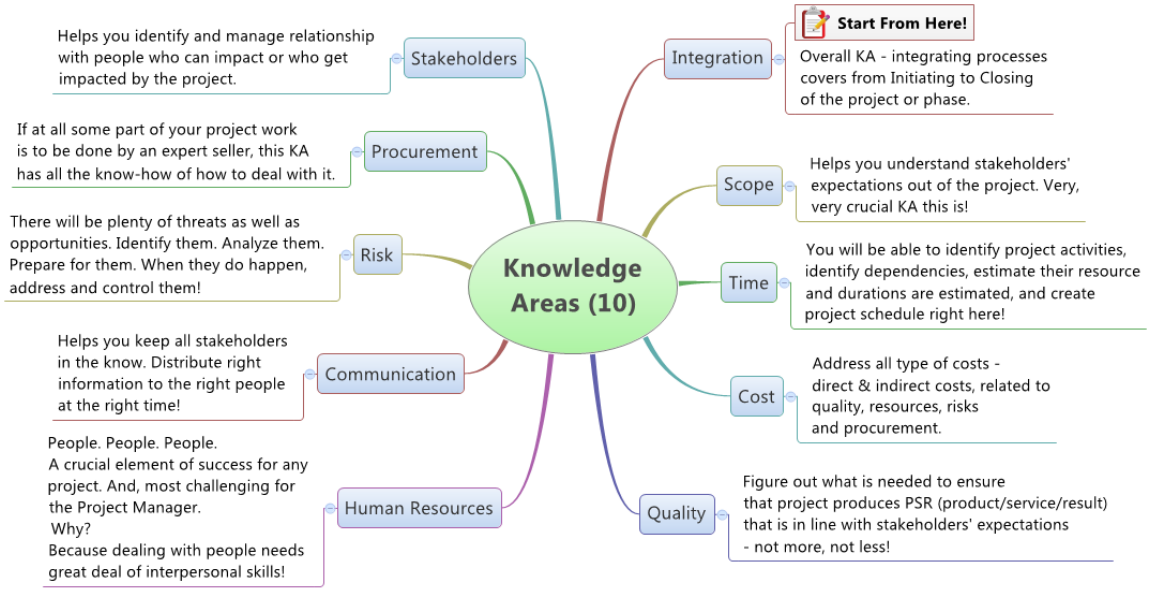



**Figure 6 PMI PMBOK Guide 10 Knowledge Areas. Reprinted from PM Exam Smartnotes. By S. Shenoy, n.d., Retrieved from https://www.pmexamsmartnotes.com/project-management-body-of-knowledge/ . Copyright 2016 by PMExamSmartNotes.com**

### 1.2.5 Project management knowledge areas

According to the PMBOK Guide 6th Edition, there are 49 project management processes that have been grouped into ten (10) separate knowledge areas (Project Management Institute, 2017, p.556). All of these will be used during the lifecycle of the FGP.

The ten knowledge areas of project management, (Project Management Institute, 2017) as defined in **Figure 5** above, are as follows:

1. Integration Management
2. Scope Management
3. Schedule Management
4. Cost Management
5. Quality Management
6. Resource Management

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

#### 1.2.5.1 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” (Project Management Institute, 2017, p. 69). The processes involved in Project Integration Management are outlined in **Figure 6** below.

Since the project charter was developed by the Make a Way Foundation Inc. prior to the development of this Final Graduation project, process 4.1 shown in **Figure 6** below will be skipped and process 4.2 will be used as a guide throughout the development of the FGP results to develop the Project Management Plan.

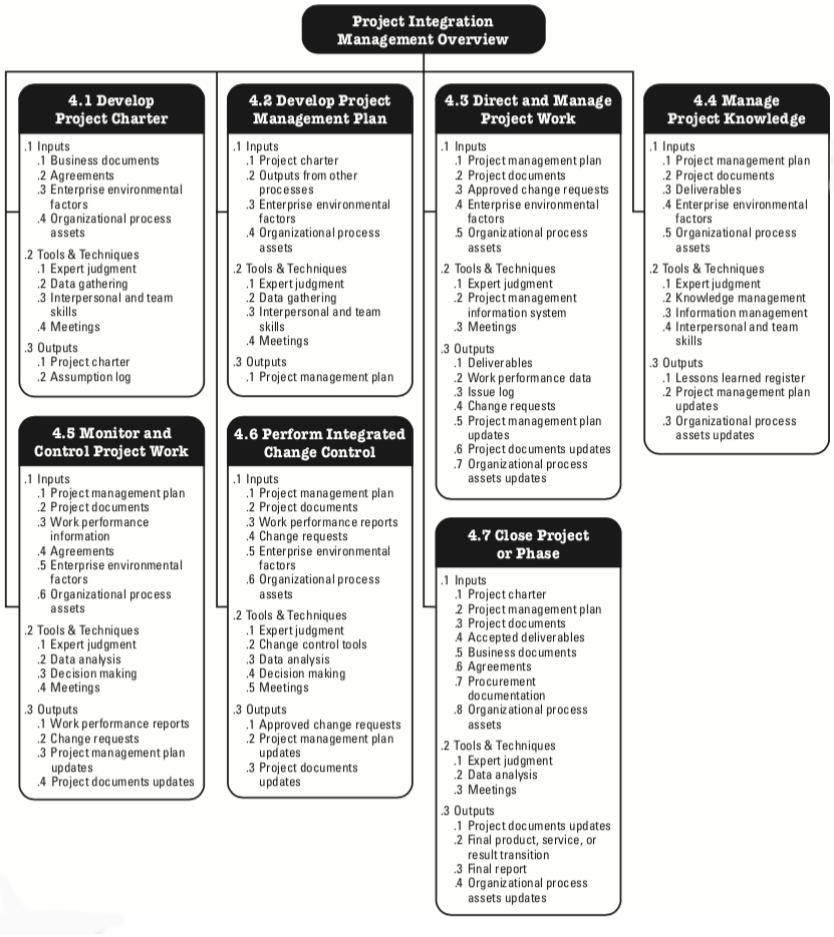


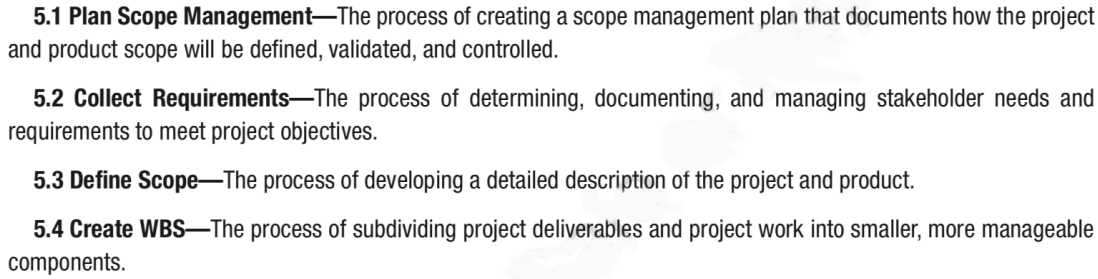

**Figure 7 PMBOK Guide Project Integration Management Overview. Reprinted from A Guide to the Project Management Body of Knowledge (p. 71), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.5.2 Project Scope Management

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” (Project Management Institute, 2017, p. 129).

There are six (6) project scope management processes. However, in an effort to accurately capture the necessary scope to successfully complete the Eco Data Visualization and Monitoring Project – Grenada, only 4 processes will be applied

when developing the Project Management Plan. These four (4) processes can be seen below in **Figure 8**.



**5.1 Plan Scope Management—**The process of creating a scope management plan that documents how the project and product scope will be defined, validated, and controlled.

**5.2 Collect Requirements—**The process of determining, documenting, and managing stakeholder needs and requirements to meet project objectives.

**5.3 Define Scope—**The process of developing a detailed description of the project and product.

**5.4 Create WBS—**The process of subdividing project deliverables and project work into smaller, more manageable components.

**Figure 8 PMBOK Guide Project Scope Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 129), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.5.3 Project Schedule Management

Project Schedule Management includes “the processes required to manage the timely completion of the project” (Project Management Institute, 2017, p. 173). According to PMBOK there are seven (7) processes involved with the management of the time schedule management plan that guide the development of the project required activities and the order they will occur. Of these seven (7) processes seen below in **Figure 9**, processes 6.1 – 6.6 will be used to create the schedule management plan, schedule baseline, project schedule and project calendars.

**Figure 9 PMBOK Guide Project Schedule Management overview. Reprinted from A Guide to the Project Management Body of Knowledge (p. 174), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.5.4 Project Cost Management

Project Cost Management includes “the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling cost so that the project can be completed within the approved budget” (Project Management Institute, 2017, p. 231).

There are four (4) cost management processes. However, to develop the project management plan for the Eco Data Visualization and Monitoring Project – Grenada

only three (3) of these processes will be used. These three (3) processes can be seen in **Figure 10** below.

**7.1 Plan Cost Management—**The process of defining how the project costs will be estimated, budgeted, managed, monitored, and controlled.

**7.2 Estimate Costs—**The process of developing an approximation of the monetary resources needed to complete project work.

**7.3 Determine Budget—**The process of aggregating the estimated costs of individual activities or work packages to establish an authorized cost baseline.

**Figure 10 PMBOK Guide Project Cost Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 231), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.5.5 Project Quality Management

Project Quality Management includes "the processes for incorporating the organization's quality policy regarding planning, managing, and controlling project and product quality requirement in order to meet stakeholders' objectives" (Project Management Institute, 2017, p. 271).

There are three (3) processes for the management of quality according to Project Management Institute. However, only process 8.1 will be used during project planning to develop the quality management plan that will guide the project quality assurance. The process that will be used can be seen in **Figure 11** below.

**8.1 Plan Quality Management—**The process of identifying quality requirements and/or standards for the project and its deliverables, and documenting how the project will demonstrate compliance with quality requirements and/or standards.

**8.2 Manage Quality—**The process of translating the quality management plan into executable quality activities that incorporate the organization's quality policies into the project.

**8.3 Control Quality—**The process of monitoring and recording the results of executing the quality management activities to assess performance and ensure the project outputs are complete, correct, and meet customer expectations.

**Figure 11 PMBOK Guide Project Quality Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 271), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.5.6 Project Resource Management

Project Resource Management includes “the processes to identify, acquire, and manage the resources needed for the successful completion of the project” (Project Management Institute, 2017, p. 307).

There are six (6) processes for Project Resource Management according to Project Management Institute. However, only process 9.1 will be used during project planning to develop the resource management. The process that will be used can be seen in **Figure 12** below.

**9.1 Plan Resource Management—**The process of defining how to estimate, acquire, manage, and utilize physical and team resources.

**9.2 Estimate Activity Resources—**The process of estimating team resources and the type and quantities of material, equipment, and supplies necessary to perform project work.

**9.3 Acquire Resources—**The process of obtaining team members, facilities, equipment, materials, supplies, and other resources necessary to complete project work.

**9.4 Develop Team—**The process of improving competencies, team member interaction, and the overall team environment to enhance project performance.

**Figure 12 PMBOK Guide Project Resource Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 307), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.5.7 Project Communication Management

Project Communication 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 Management Institute, 2017, p. 359).

There are three (3) processes for the management of communication according to Project Management Institute. However, only process 10.1 will be used during project planning to develop the communication management plan. The process that will be used can be seen in **Figure 13** on the next page.

**10.1 Plan Communications Management**—The process of developing an appropriate approach and plan for project communication activities based on the information needs of each stakeholder or group, available organizational assets, and the needs of the project.

**10.2 Manage Communications**—The process of ensuring timely and appropriate collection, creation, distribution, storage, retrieval, management, monitoring, and the ultimate disposition of project information.

**10.3 Monitor Communications**—The process of ensuring the information needs of the project and its stakeholders are met.

**Figure 13 PMBOK Guide Project Communication Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 359), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.5.8 Project Risk Management

Project Risk Management includes "the processes of conducting risk management planning, identification, analysis, response planning, response implementation, and monitoring risk on a project" (Project Management Institute, 2017, p. 395).

There are seven (7) processes for Project Risk Management according to Project Management Institute. However, only processes 11.1 – 11.5 will be used during project planning to develop the risk management plan. The processes that will be used can be seen in **Figure 14** below.

**11.1 Plan Risk Management**—The process of defining how to conduct risk management activities for a project.

**11.2 Identify Risks**—The process of identifying individual project risks as well as sources of overall project risk, and documenting their characteristics.

**11.3 Perform Qualitative Risk Analysis**—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.

**11.4 Perform Quantitative Risk Analysis**—The process of numerically analyzing the combined effect of identified individual project risks and other sources of uncertainty on overall project objectives.

**11.5 Plan Risk Responses**—The process of developing options, selecting strategies, and agreeing on actions to address overall project risk exposure, as well as to treat individual project risks.

**11.6 Implement Risk Responses**—The process of implementing agreed-upon risk response plans.

**11.7 Monitor Risks**—The process of monitoring the implementation of agreed-upon risk response plans, tracking identified risks, identifying and analyzing new risks, and evaluating risk process effectiveness throughout the project.

**Figure 14 PMBOK Guide Project Risk Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 395), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

### 1.2.5.9 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 Management Institute, 2017, p. 459).

**Figure 15** below shows the Procurement Management Processes outlined by the Project Management Institute. Only process 12.1 will be used to develop the procurement management plan during project planning.

**12.1 Plan Procurement Management—**The process of documenting project procurement decisions, specifying the approach, and identifying potential sellers.

**12.2 Conduct Procurements—**The process of obtaining seller responses, selecting a seller, and awarding a contract.

**12.3 Control Procurements—**The process of managing procurement relationships, monitoring contract performance, making changes and corrections as appropriate, and closing out contracts.

**Figure 15 PMBOK Guide Project Procurement Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 459), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

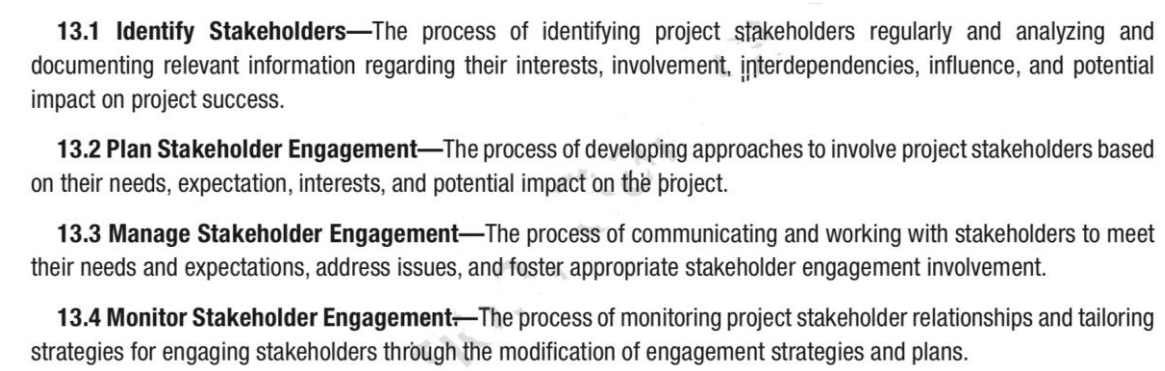
### 1.2.5.10 Project Stakeholder Management

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” (Project Management Institute, 2017, p. 503).

There are four (4) processes needed to identify, classify, plan and manage all project stakeholders and their expectations which are shown in **Figure 16** on the following page. However, only processes 13.1 and 13.2 are required to develop the project management plan.

There are a few key terms that will be used to classify all stakeholders in the stakeholder management plan at the various classification levels. These terms are as follows:

a. Power: stakeholder's ability to influence the outcome of an organization, deliverable or project (Forman J., Discenza R., 2012).
b. Interest: Stakeholder level of concern of project outcome (Forman J., Discenza R., 2012).
c. Influence: Stakeholder level of involvement in project (Forman J., Discenza R., 2012).
d. Impact: Stakeholder ability to effect change in project planning or execution (Forman J., Discenza R., 2012).
e. Unaware: unaware of the project potential impacts (Project Management Institute, 2017, p. 521).
f. Resistant: Aware of the project and potential impacts but resistant to any change that may occur as a result of outcomes of the project (Project Management Institute, 2017, p. 521).
g. Neutral: aware of the project but neither supportive nor unsupportive (Project Management Institute, 2017, p. 521).
h. Supportive: aware of the project and potential impacts and supportive of the work and its outcomes (Project Management Institute, 2017, p. 521).
i. Leading: Aware of the project and potential impacts and actively engaged in ensuring that the project is a success (Project Management Institute, 2017, p. 521).



**13.1 Identify Stakeholders**—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.

**13.2 Plan Stakeholder Engagement**—The process of developing approaches to involve project stakeholders based on their needs, expectation, interests, and potential impact on the project.

**13.3 Manage Stakeholder Engagement**—The process of communicating and working with stakeholders to meet their needs and expectations, address issues, and foster appropriate stakeholder engagement involvement.

**13.4 Monitor Stakeholder Engagement**—The process of monitoring project stakeholder relationships and tailoring strategies for engaging stakeholders through the modification of engagement strategies and plans.

**Figure 16 PMBOK Guide Project Stakeholder Management Processes. Reprinted from A Guide to the Project Management Body of Knowledge (p. 503), Project Management Institute, 2017, Project Management Institute. Copyright 2017 by Project Management Institute, Inc.**

# METHODOLOGICAL FRAMEWORK

## 1.3 Information sources

Information, as defined by the Oxford English Dictionary, is “facts provided or learned about something or someone” (Oxford Online English Dictionary, 2019). Source is “a place, person, or thing from which something originates or can be obtained” (Oxford Online English Dictionary, 2019). Putting the two definitions together we can define Information source as a place person or thing from which facts are provided or learned about something or someone.

Information sources can be obtained from numerous places such as the internet, pictures, library or even an individual. They can come in various forms such as printed, audio or electronic. Generally, information sources are classified into three (3) types: Primary, Secondary and Tertiary (Ashikuzzaman M.D., 2016). For the development of this Final Graduation Project only primary and secondary information sources will be used.

### 1.3.1 Primary sources

A primary source of information is “original materials, they are from the time period involved and have not been filtered through interpretation or evaluation” (Ashikuzzaman M.D., 2016).

The primary source of information that will be used for this Final Graduation Project will be personal interviews and meeting minutes with Make a Way Foundation Inc. members. **Chart 1** on the following page shows a summary of the specific primary sources of information that will be used.

### 1.3.2 Secondary sources

Secondary sources of information are “interpretations and evaluations of primary sources” (Ashikuzzaman M.D., 2016).

The secondary sources of information for this Final Graduation Project will be the PMBOK Guide, PMI database and internet library database. **Chart 1** below shows a summary of the specific secondary sources of information that will be used.

**Chart 1 Information sources (Source: R. Baptiste, The Author, May 2019)**

| **Objectives** | **Information sources** | |
|---|---|---|
| | **Primary** | **Secondary** |
| 1. To create a Scope Management Plan to define all the scope of work required to successfully complete the project. | Minutes from meeting / personal interviews with lead project manager (expert) | PMBOK Guide, PMI data base and internet |
| 2. To create a Time/Schedule Management Plan to support and manage the project schedule to ensure the project stays within and is completed within the time constraints. | Personal interviews with lead project manager (expert) | PMBOK Guide, PMI data base and internet |
| 3. To create a Cost Management Plan to define the development and management of the project budget to ensure the project stays and is completed within the budget constraints. | Minutes from meeting / personal interviews with lead project manager (expert) | PMBOK Guide and PMI data base |

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| 4. To develop a Quality Management Plan to highlight the quality requirements of the project to ensure results meet expectations and approval within the scope, time and cost constraints. | Personal interviews with lead project manager (expert) | PMBOK Guide |
| 5. To create a Resource Management Plan to ensure all required resources are identified and managed effectively to ensure the completion of the project within the scope, time and cost constraints. | Personal interviews with lead project manager (expert) | PMBOK Guide and the internet |
| 6. To develop a Communication Management Plan to ensure effective and timely communication of key project information and status to relevant personnel. | Personal interviews with lead project manager (expert) | PMBOK Guide and PMI database |
| 7. To create a Risk Management Plan to adequately identify, examine, manage and minimize risk to ensure the successful completion of the project. | Personal interviews with lead project manager (expert) | PMBOK Guide and PMI database |

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| 8. To develop a Procurement Management Plan to be used to procure products, services or results required for the successful completion of the project. | Personal interviews with lead project manager (expert) | PMBOK Guide |
| 9. To develop a Stakeholder Management Plan to effectively identify, manage and engage all project stakeholders to ensure successful completion of the project. | Personal interviews with lead project manager (expert) | PMBOK Guide, PMI Database and internet |

## 1.4 Research methods

Research is “the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions” (Oxford Online English Dictionary, 2019). Methods is “a particular procedure for accomplishing or approaching something, especially a systematic or established one” (Oxford Online English Dictionary, 2019). Putting the two definitions together we can define research methods as a particular procedure accomplishing or establishing facts and reaching new conclusions.

### 3.2.1 Analytical method

Analytical Research “involves critical thinking skills and the evaluation of facts and information relative to the research being conducted” (Reference, n.d.). With this type of research method being used for the Final Graduation Project, information from various sources can be critically evaluated to produce the final deliverables outlined in **Chart 5** on page 38.

**Chart 2** below indicates the research method that will be used for each objective in more detail.

**Chart 2 Research methods (Source: R. Baptiste, The Author, May 2019)**

| **Objectives** | **Analytical Research Method** |
|---|---|
| 1. To create a Scope Management Plan to define all the scope of work required to successfully complete the project. | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 1 page 24 to guide the decision making when creating the scope management plan. |
| 2. To create a Time/Schedule Management Plan to support and manage the project schedule to ensure the project stays within and is completed within the time constraints. | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 2 page 24 to guide the decision making when creating the time/schedule management plan. |
| 3. To create a Cost Management Plan to define the development and management of the project budget to ensure the project stays and is completed within the budget constraints. | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 3 page 24 to guide the decision making when creating the cost management plan. |
| 4. To develop a Quality Management Plan to highlight the quality requirements of the project to ensure results meet expectations | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 4 page 25 to guide the decision making when creating the quality management plan. |

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| and approval within the scope, time and cost constraints. | |
| 5. To create a Resource Management Plan to ensure all required resources are identified and managed effectively to ensure the completion of the project within the scope, time and cost constraints. | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 5 page 25 to guide the decision making when creating the resource management plan. |
| 6. To develop a Communication Management Plan to ensure effective and timely communication of key project information and status to relevant personnel. | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 6 page 25 to guide the decision making when creating the communication management plan. |
| 7. To create a Risk Management Plan to adequately identify, examine, manage and minimize risk to ensure the successful completion of the project. | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 7 page 26 to guide the decision making when creating the risk management plan. |
| 8. To develop a Procurement Management Plan to be used to procure products, services or results required for the successful completion of the project. | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 8 page 26 to guide the decision making when creating the procurement management plan. |
| 9. To develop a Stakeholder Management Plan to effectively identify, manage and engage all | The analytical method will be utilized using the facts and information from the sources identified in Chart 1 objective 9 page 26 to |

| | | |
|---|---|---|
| | project stakeholders to ensure successful completion of the project. | guide the decision making when creating the stakeholder management plan. |

## 1.5 Tools

A Tool is “something tangible, such as a template or software program, used in performing an activity to produce a product or result” (Project Management Institute, 2017, p.725).

The tools used in the Final Graduation Project are identified and explained below and, in addition, summarized in **Chart 3**. The tools are as follows:

a. Project Management Plan template – guides development of project management plan and all necessary subcomponents
b. Scope management plan template – guides development of scope management plan and all necessary subcomponents
c. Requirements traceability matrix template – ensures project requirements are necessary and will be met
d. Work Breakdown Structure (WBS) online generator – dissects the project into smaller components that are easier to manage
e. Requirements management plan template – describes how requirements are managed, documented and analyzed
f. Requirements documentation – captures requirements documentation
g. Schedule management plan template – guides development of schedule/time management plan and all necessary subcomponents
h. Scheduling tool – Microsoft Project 2016 is used to develop project schedule
i. Activity list template – captures all project activities
j. Cost Management plan template – guides development of cost management plan and all necessary subcomponents

k. Project budget template – created in Microsoft Excel 2019 to develop project budget and track project financing
l. Cost baseline template - outlines cost baseline development
m. Quality management plan template – guides development of quality management plan and all necessary subcomponents
n. Quality management tools – e.g. cause-and-effect diagram, flowcharts, check sheets, control charts
o. Resource management plan template – guides the development of the resource management plan and all necessary subcomponents
p. Responsibility assignment matrix – identifies team members and their responsibilities
q. Communication management plan template – guides development of communication management plan and all necessary subcomponents
r. Communication matrix – developed in Microsoft Excel 2019 to plan communication between project team and stakeholders
s. Risk management plan template – guides development of risk management plan and all necessary subcomponents
t. Risk register – developed in Microsoft Excel 2019 to identify, classify and plan for risk
u. Procurement management plan template – guides development of procurement management and all necessary subcomponents
v. Stakeholder management plan template – guides development of stakeholder management and all necessary subcomponents
w. Stakeholder analysis chart – guides analysis and classification of project stakeholders
x. Stakeholder register template – identification of project stakeholders
y. Stakeholder engagement assessment matrix – details how each stakeholder should be engaged based on their level of involvement

**Chart 3 Tools (R. Baptiste, The Author, May 2019)**

| Objectives | Tools |
|---|---|
| 1. To create a Scope Management Plan to define all the scope of work required to successfully complete the project. | Scope management plan template, requirements traceability matrix template, requirements documentation template, requirements management plan, and work breakdown structure generator |
| 2. To create a Schedule Management Plan to support and manage the project schedule to ensure the project stays within and is completed within the time constraints. | Schedule management plan template, Microsoft Project 2016, activity list template, schedule network diagram and Gantt Chart. |
| 3. To create a Cost Management Plan to define the development and management of the project budget to ensure the project stays and is completed within the budget constraints. | Cost management plan template, Microsoft Excel 2019 budgeting template, Earned Value Management and cost baseline template. |
| 4. To develop a Quality Management Plan to highlight the quality requirements of the project to ensure results meet expectations and approval within the scope, time and cost constraints. | Quality management plan template |

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| 5. To create a Resource Management Plan to ensure all required resources are identified and managed effectively to ensure the completion of the project within the scope, time and cost constraints. | Resource management template and responsibility assignment matrix |
| 6. To develop a Communication Management Plan to ensure effective and timely communication of key project information and status to relevant personnel. | Communication management plan template and communications matrix. |
| 7. To create a Risk Management Plan to adequately identify, examine, manage and minimize risk to ensure the successful completion of the project. | Risk management plan template and risk register template. |
| 8. To develop a Procurement Management Plan to be used to procure products, services or results required for the successful completion of the project. | Procurement management plan template. |
| 9. To develop a Stakeholder Management Plan to effectively identify, manage and engage all | Stakeholder management plan template, Stakeholder analysis chart, Stakeholder register template, |

| | |
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| project stakeholders to ensure successful completion of the project. | stakeholder engagement assessment matrix, Microsoft Excel 2019, Online Stakeholder Power/Interest grid creator |

## 1.6 Assumptions and constraints

An assumption is “a factor in the planning process that is considered to be true, real, or certain, without proof or demonstration” (Project Management Institute, 2017, p.699). A constraint is “a limiting factor that affects the execution of a project, program, portfolio, or process” (Project Management Institute, 2017, p. 701).

**Chart 4** below summarizes the assumptions and constraints considered for each objective of the Final Graduation Project

**Chart 4 Assumptions and constraints (Source: R. Baptiste, The Author, May 2019)**

| Objectives | Assumptions | Constraints |
|---|---|---|
| 1. To create a Scope Management Plan to define all the scope of work required to successfully complete the project. | All required information to develop the scope of the project will be disclosed by the relevant persons.<br>The scope management plan will define project scope | Scope may change as the project progresses |
| 2. To create a Time/Schedule Management Plan to support and manage the project schedule to | Time required to develop project management plan | Time allocated to implement the Eco Data Visualization and |

| Objectives | Assumptions | Constraints |
|---|---|---|
| ensure the project stays within and is completed within the time constraints. | and the implementation of the Eco Data Visualization and Monitoring Project – Grenada is sufficient. A realistic plan will be developed | Monitoring Project – Grenada must not exceed 16 months. |
| 3. To create a Cost Management Plan to define the development and management of the project budget to ensure the project stays and is completed within the budget constraints. | The cost management plan will have a budget that accurately shows the financial resource required to implement the Eco Data Visualization and Monitoring Project – Grenada. | The budget for the implementation of the Eco Data Visualization and Monitoring project must not exceed $50,000 US Dollars. |
| 4. To develop a Quality Management Plan to highlight the quality requirements of the project to ensure results meet expectations and approval within the scope, time and cost constraints. | The Quality Management Plan will identify all technical and managerial quality requirements for the project. | There may be no international standards available |
| 5. To create a Resource Management Plan to ensure all required resources are identified and managed effectively to ensure the | There is sufficient resource within Make a Way Foundation Inc. to complete the project. The | Some resources may not be available locally. |

| Objectives | Assumptions | Constraints |
|---|---|---|
| completion of the project within the scope, time and cost constraints. | implementing team will develop project plans and subcontractors will be sufficient to implement aspects of the project. | |
| 6. To develop a Communication Management Plan to ensure effective and timely communication of key project key information and status to relevant personnel. | Make a Way Foundation has the technology required to adequately communicate and meet the communication needs of all stakeholders. | The organization is only going to use the services that are currently being provided in every specific site and is not going to improve or add to the services of internet and electricity of the sites being used. |
| 7. To create a Risk Management Plan to adequately identify, examine, manage and minimize risk to ensure the successful completion of the project. | There is sufficient information available to adequately identify most of the project risks to adequately prepare and budget for. | Additional risk may occur because of other constraints. |
| 8. To develop a Procurement Management Plan to be used to procure products, services or results required for the successful completion of the project. | A pre-identified list of suppliers has been established by Make a Way Foundation Inc. | Supplier list may not have the required goods and services available locally. |

| Objectives | Assumptions | Constraints |
|---|---|---|
| 9. To develop a Stakeholder Management Plan to effectively identify, manage and engage all project stakeholders to ensure successful completion of the project. | Stakeholder management list will contain all stakeholders involved and plan how to properly manage and meet stakeholder requirements. | Stakeholder requirements and level of interest may change during the project. |

## 1.7 Deliverables

A deliverable is “any unique and verifiable product, result, or capability to perform a service that is required to be produced to complete a process, phase, or project (Project Management Institute, 2017, p.101).

**Chart 5** below indicated the deliverables that will be developed for each objective in more detail.

**Chart 5 Deliverables (Source: R. Baptiste, The Author, 2019)**

| Objectives | Deliverables |
|---|---|
| 1. To create a Scope Management Plan to define all the scope of work required to successfully complete the project. | Scope Management Plan |
| 2. To create a Time/Schedule Management Plan to support and manage the project schedule to ensure the project stays within and is completed within the time constraints. | Schedule Management Plan, Activity List, Schedule Network Diagram, Activity duration and Schedule in Gantt Chart. |
| 3. To create a Cost Management Plan to define the development and management of the project budget to ensure the project stays and is completed within the budget constraints. | Cost Management Plan, Cost Baseline and Project Funding Requirements |
| 4. To develop a Quality Management Plan to highlight the quality requirements of the project to ensure results meet expectations and approval within the scope, time and cost constraints. | Quality Management Plan |

| | |
|---|---|
| 5. To create a Resource Management Plan to ensure all required resources are identified and managed effectively to ensure the completion of the project within the scope, time and cost constraints. | Resource Management Plan |
| 6. To develop a Communication Management Plan to ensure effective and timely communication of key project information and status to relevant personnel. | Communication Management Plan and Communication Matrix. |
| 7. To create a Risk Management Plan to adequately identify, examine, manage and minimize risk to ensure the successful completion of the project. | Risk Management Plan and Risk Register |
| 8. To develop a Procurement Management Plan to be used to procure products, services or results required for the successful completion of the project. | Procurement Management Plan |
| 9. To develop a Stakeholder Management Plan to effectively identify, manage and engage all project stakeholders to ensure | Stakeholder Management Plan, Stakeholder Management Matrix and Stakeholder Register. |

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| successful completion of the project. | |

## RESULTS

### 4.1. Project Scope Management Plan

#### *Introduction*

The project scope management plan provides a framework for which the project will run. It documents the scope management approach, roles and responsibilities in regard to the project scope, scope definitions, verification and control measures, scope change controls and the work breakdown structure.

#### *Project Requirements*

Throughout every project, requirements are identified and documented as a basis to ensuring that all stakeholder needs and expectations are met. The full requirements of this project are still unknown as approval is still being sought by the funding agency. Nevertheless, discussions with the organization's CEO and project manager have provided insight into the scope and initial extent of the project.

#### *Scope Management Approach*

For the Eco Data Visualization and Monitoring project the sole responsibility of the scope management will be on the project manager. The scope is defined in the scope statement, Work Breakdown Schedule (WBS) and WBS Dictionary. The project sponsors and manager will be responsible for establishing and approving documentation for measuring project scope such as the quality checklist and performance measurements. Changes to the scope will be initiated by the project manager, stakeholders or any team member, however all requests will be submitted as change orders to the project manager who will evaluate the scope change requested. If the change is accepted the change will be submitted to the sponsor, stakeholder, consultants and contractors. Changes that are technical will be the

responsibility of the project manager to accept or deny, and those that will affect the time and cost parameters of the project will be the responsibility of the project sponsors to approve or deny. Once changes are approved the project manager will be responsible for updating all project documents and communicating changes to all stakeholders. Upon feedback from both project manager and stakeholders the sponsor has the responsibility to accept the final project deliverable and scope.

***Roles and Responsibilities***

The Project Manager, Team and Project Sponsor will all play key roles in managing the project scope. Thus, they must be aware of their various responsibilities in order to ensure that the work done is within the established scope throughout the project lifecycle. The table below defines the roles and responsibilities for the scope management of this Eco Data Visualization and Monitoring Project.

**Chart 6 Scope Management Roles and Responsibilities (Source: R. Baptiste, The Author, 2019**

| Name | Role | Responsibilities |
|---|---|---|
| GEF Small Grants | Project Sponsor | a. Accept and evaluate need for scope change request<br>b. Approve or deny scope requests as appropriate<br>c. Accept project deliverables |
| Rohan Bernard | Project Manager | a. Measure and verify project scope<br>b. Facilitate scope change requests<br>c. Facilitate impact assessment of various scope change requests<br>d. Organize and facilitate change control meetings as required |

| | | |
|---|---|---|
| | | e. Update project documents upon approval of scope changes |
| Assistant Project Manager and Project Team | Team Members | a. Aid in defining change resolutions<br>b. Evaluate the need for scope changes and communicate to the project manager as required |
| Stakeholders | Contractors/ consultants/ Community members | a. Can propose scope changes<br>b. Execute change directives issued by project manager |

***Scope Definition***

The scope definition is a detailed description of the project provided by the client. The dates included will have to be reviewed along with the scope as the funding agency has not yet approved the budget and design of the project thus additional planning will have to occur.

<u>Project initial scope:</u>

- Proposed location of the smart bins
    - Make a Way Foundation Inc. intends on implementing the bins in 3 schools within Grenada and 2 public spaces.
- Description of the project
    - Development of a Smart Waste Management System through the use of Smart Garbage Bins. These bins will be placed in schools and public spaces.
    - Development of an interactive visually driven data website populated with information related to climate change research.
- Proposed date and duration of Project

- Start date: January 2019
- Duration: 248 days

TOTAL PROJECT COST: $151,200 XCD

Equipment

- Smart Bins – 5

***Activity List***

**Chart 7 Activity List (Source: R. Baptiste, The Author, 2019)**

| **Eco Data Visualization and Monitoring Project - Grenada** | | |
|---|---|---|
| **WBS ID** | **Activity (Level 2)** | **Activity (Level 3)** |
| 1 | Preliminary | 1.1 Receive notice to proceed and sign contract<br>1.2 Prepare and submit project schedule<br>1.3 Prepare and submit schedule of cost<br>1.4 Obtain permits to place bins in public spaces and schools<br>1.5 Stakeholders briefing to initiate project implementation<br>1.6 Research on smart bins and methods of installation<br>1.7 Submit monthly requests for payments |
| 2 | Design | 2.1 Design layout of bin placement<br>2.2 Design environmental messages, tips and slogans to outfit bins |
| 3 | Procurement | 3.1 Order smart bins<br>3.2 Order environmental messages, tips or slogans for smart bin outfitting |
| 4 | Site | 4.1 Identify sites for bin placements<br>4.2 Prepare and clear site for smart bin installment<br>4.3 Install bins<br>4.4 Outfit bins with environmental messages, tips and slogans |
| 5 | Interactive website | 5.1 Website development<br>5.2 Website coding |

| | | |
|---|---|---|
| | | 5.3 Web application development<br>5.4 Website and CRM integration<br>5.5 Mobile optimized website development<br>5.6 QA & software testing<br>5.7 Full life cycle software testing<br>5.8 QA outsourcing and software testing<br>5.9 Integration of bin software and communication system to website |
| 6 | Complete Final Inspections | 6.1 Complete installation and setup of smart bins and interactive website<br>6.2 Site clean up<br>6.3 Final inspection and test run<br>6.4 Issue final completion documents, reports and warranties<br>6.5 Issue final request for payment |
| 7 | Project Management | 7.1 Planning<br>7.2 Scheduling<br>7.3 Accounting<br>7.4 Reporting<br>7.5 Meetings<br>7.6 Site and stakeholder management |

**Work Breakdown Structure**

The work breakdown structure shown below has been created to decompose the project deliverables into manageable units that will help to determine what aspects of the work will be subcontracted. It also provides a graphical representation of the project and helps the team to plan and organize the work effectively. To be noted, however, is that elements at different levels are not necessarily in the order in which work will be done.

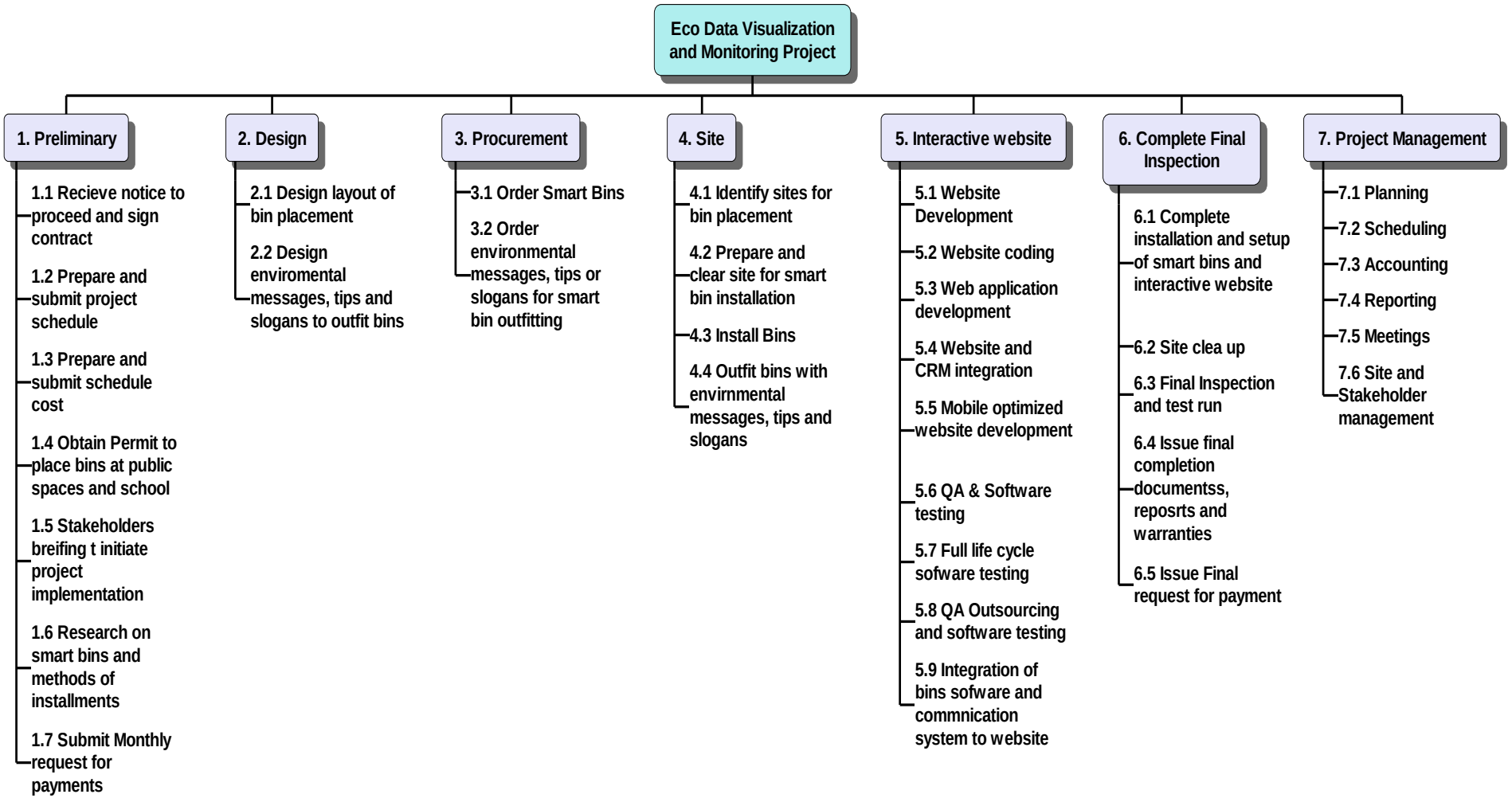



**Figure 17 Work Breakdown Structure (Source: R. Baptiste, The Author, 2019)**

***Work Breakdown Structure Dictionary***

The Work Breakdown Structure Dictionary is a document that provides more defined detailed information about a work package. It will include an entry for each WBS element. This information will include a unique WBS code, cost, duration, quality requirements and who is responsible for carrying out the work. The WBS Dictionary will be used by the project team as a statement of work for each WBS element. Below is the template that will be used for assigning work packages to resources.

**Chart 8 Work Breakdown Dictionary (Source: R. Baptiste, The Author, 2019)**

| **WBS Dictionary** | |
|---|---|
| **Project Name:** Eco Data Visualization and Monitoring Project | **Comments** |
| **WBS ID:** | |
| **Work Package Name:** | |
| **Responsible Organization:** | |
| **Cost:** | |
| **Duration:** | |
| **Work Package Description:** | |
| **Assumption and Constraints:** | |
| **Quality Metrics:** | |
| **Resources Assigned:** | |
| **Schedule Milestones:** | |

| | |
|---|---|
| **Approved by: _____ Date: _____** | |

***Scope Verification***

At various intervals of the project implementation, the project manager will verify the project deliverables against the original scope as defined in the scope, WBS and WBS Dictionary. Once it is verified by the project manager that the scope meets the requirements defined in the project plan, the project manager and sponsor will arrange to formally accept the deliverable. The project manager will present the deliverable to the project sponsor who will then sign the project deliverable acceptance document to formally accept the deliverable presented. This will allow for the project work to remain within the scope throughout the duration of the project.

***Scope Control***

The project manager along with his team will work together to control the scope of the project. The project team will use the WBS Dictionary template to develop the statement of work for each WBS element. They will ensure that the work they perform is only the work described in the WBS dictionary and generate the deliverable for each WBS element. The project manager will oversee the team and the progress of the project to ensure that the scope control process is followed.

If changes to the scope of the project are required, the process for recommending changes must be carried out. Any project team member, sponsor or stakeholder can request a change to the scope and all changes must be submitted to the project manager in the form of a change order. The project manager will review the change suggested and will either deny, if it does not meet the intent of the project, or accept and bring to the project team and sponsor for review and perform an assessment of the change. If the change is approved after assessment, the project manager will formally submit it to the project sponsor who will then formally accept the change by signing off the change order form. Here after the project manager will update all

project documents as necessary and communicate the scope directive to all stakeholders and project team members.

## 4.2. Project Schedule Management Plan

### *Introduction*

The project schedule management plan is a very critical component of the project as it provides the project team and sponsors a visual picture of the projects at any given time. The schedule management plan is used to define the technique the project team will use in creating the project schedule, how the schedule will be reviewed and managed, as well as changes after the schedule has been approved.

### *Schedule Management Approach*

The project schedule will be made using Microsoft Project and the activity definition will identify the specific work packages which must be performed to complete each deliverable. Thereafter activity sequencing will be used to determine the order of work packages and assign relationships between the various project activities. The duration of activities will be estimated to calculate the number of work periods required to complete the work packages. Once the initial project schedule is developed, the project manager and assistant will review, then the project sponsor will review and approve the schedule and it will be baselined.

The following are the designated milestones for the project schedule:

1. Project initiation
2. Conceptual bin outfit design commences
3. Project defined
4. Site investigation report completed
5. Bin outfit design completed
6. Website design commences
7. Website design completed
8. Approval of Project Charter
9. Baseline Project Schedule

10. Project Management Plan completed
11. Procurement and sourcing commences
12. Bin placement begins
13. Website development begins
14. Bin installation
15. Website development and bin integration completed
16. Final test and inspection of website and bins
17. Final account
18. End of Project

***Roles and responsibility for schedule development***

It will be the responsibility of the project manager to facilitate the breakdown of work packages into activities that will provide the basis for sequencing and estimating duration and resources with the project team. The project manager will also manage the project schedule and seek validation with the stakeholders, sponsor and project team. When approval is obtained for the schedule, the project manager is also responsible for baselining the schedule.

The project team would be responsible for participating in work, duration and resource estimating. The team will also review and validate the proposed schedule provided by the project manager and perform the assigned activities once they are approved.

The stakeholders and sponsor will be a part of the review process of the proposed project schedule and assist in the schedule validation and approve the final schedule before it is baselined.

***Activity Definition and Sequencing***

**Chart 9 Activity Definition and Sequencing (Source: R. Baptiste, The Author, 2019)**

| WBS | Task Name | Duration | Predecessors | Start | Finish |
|---|---|---|---|---|---|
| 1 | **Eco Data Visualization and Monitoring Project** | 248 days | | Mon 1/6/20 | Wed 12/16/20 |

| | | | | | |
|---|---|---|---|---|---|
| 2 | **Preliminary** | 17 days | 1 | Mon 1/6/20 | Tue 1/28/20 |
| 3 | Receive notice to proceed and sign contract | 1 day | 2 | Mon 1/6/20 | Mon 1/6/20 |
| 4 | Prepare and submit project schedule | 5 days | 3 | Tue 1/7/20 | Mon 1/13/20 |
| 5 | Prepare and submit schedule cost | 7 days | 4 | Tue 1/14/20 | Wed 1/22/20 |
| 6 | Obtain permit to place bins at public spaces and school | 5 days | 3 | Tue 1/7/20 | Mon 1/13/20 |
| 7 | Stakeholders briefing to initiate project implementation | 2 days | 3 | Tue 1/7/20 | Wed 1/8/20 |
| 8 | Research on smart bins and methods of installments | 7 days | 5 | Thu 1/23/20 | Fri 1/31/20 |
| 9 | Submit monthly request for payments | 1 day | 3 | Tue 1/7/20 | Tue 1/7/20 |
| 10 | **Design** | 7 days | 3 | Tue 1/14/20 | Wed 1/22/20 |
| 11 | Design layout of bin placement | 2 days | 10 | Thu 1/9/20 | Fri 1/10/20 |
| 12 | Design environmental messages, tips and slogans to outfit bins | 5 days | 10 | Thu 1/9/20 | Wed 1/15/20 |
| 13 | **Procurement** | 40 days | 3 | Wed 1/22/20 | Tue 3/17/20 |
| 14 | Order smart bins | 40 days | 13 | Thu 1/9/20 | Wed 3/4/20 |
| 15 | Order environmental messages, tips or slogans for smart bin outfitting | 25 days | 13 | Thu 1/9/20 | Wed 2/12/20 |
| 16 | **Site** | 38 days | 3 | Fri 2/14/20 | Tue 4/7/20 |
| 17 | Identify sites for bin placement | 10 days | 6,16 | Tue 1/14/20 | Mon 1/27/20 |
| 18 | Prepare and clear site for smart bin installation | 10 days | 17 | Tue 1/28/20 | Mon 2/10/20 |
| 19 | Install bins | 12 days | 14 | Thu 3/5/20 | Fri 3/20/20 |
| 20 | Outfit bins with environmental messages, tips and slogans | 12 days | 19 | Mon 3/23/20 | Tue 4/7/20 |
| 21 | **Interactive website** | 102 days | 3 | Mon 3/23/20 | Tue 8/11/20 |
| 22 | Website development | 21 days | 14 | Thu 3/5/20 | Thu 4/2/20 |

| | | | | | |
|---|---|---|---|---|---|
| 23 | Website coding | 21 days | 22 | Fri 4/3/20 | Fri 5/1/20 |
| 24 | Web application development | 20 days | 23 | Mon 5/4/20 | Fri 5/29/20 |
| 25 | Website and CRM integration | 14 days | 24 | Mon 6/1/20 | Thu 6/18/20 |
| 26 | Mobile optimized website development | 20 days | 25 | Fri 6/19/20 | Thu 7/16/20 |
| 27 | QA & software testing | 7 days | 26 | Fri 7/17/20 | Mon 7/27/20 |
| 28 | Full life cycle software testing | 14 days | 27 | Tue 7/28/20 | Fri 8/14/20 |
| 29 | QA outsourcing and software testing | 14 days | 28 | Mon 5/4/20 | Thu 5/21/20 |
| 30 | Integration of bins software and communication system to website | 20 days | 28 | Mon 8/17/20 | Fri 9/11/20 |
| 31 | Complete final inspection | 41 days | 28 | Mon 9/14/20 | Mon 11/9/20 |
| 32 | Complete installation and setup of smart bins and interactive website | 7 days | 31 | Tue 11/10/20 | Wed 11/18/20 |
| 33 | Site clean up | 7 days | 32 | Thu 11/19/20 | Fri 11/27/20 |
| 34 | Final inspection and test run | 7 days | 32,33 | Mon 11/30/20 | Tue 12/8/20 |
| 35 | Issue final completion documents, reports and warranties | 3 days | 34 | Wed 12/9/20 | Fri 12/11/20 |
| 36 | Issue final request for payment | 3 days | | Mon 12/14/20 | Wed 12/16/20 |

## *Schedule Network Diagram*

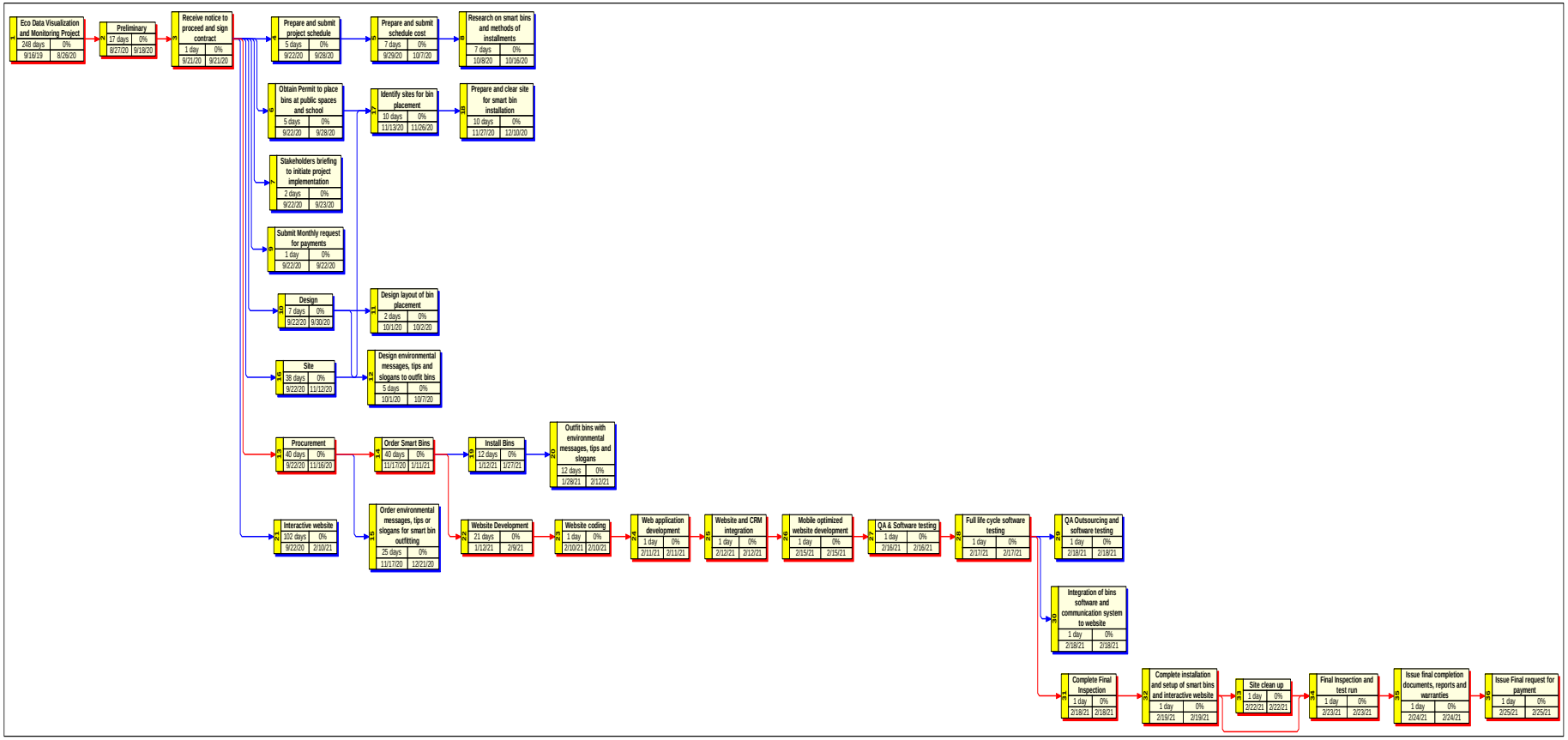
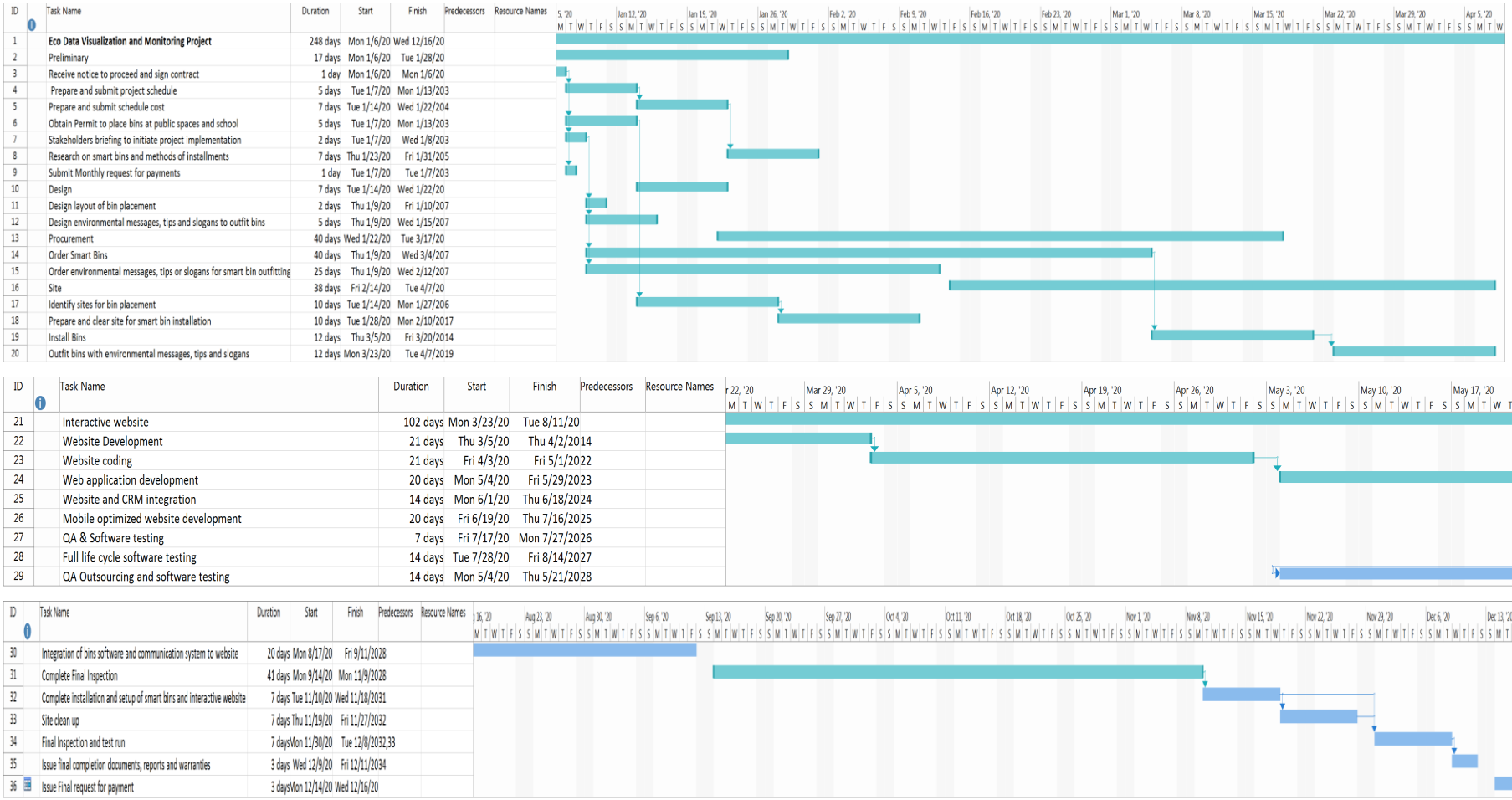



**Figure 18 Eco Data Visualization and Monitoring Project Network Diagram (Created in WBS Schedule Pro)**

## *Gantt Chart*



| ID | Task Name | Duration | Start | Finish | Predecessors | Resource Names |
|---|---|---|---|---|---|---|
| 1 | **Eco Data Visualization and Monitoring Project** | 248 days | Mon 1/6/20 | Wed 12/16/20 | | |
| 2 | Preliminary | 17 days | Mon 1/6/20 | Tue 1/28/20 | | |
| 3 | Receive notice to proceed and sign contract | 1 day | Mon 1/6/20 | Mon 1/6/20 | | |
| 4 | Prepare and submit project schedule | 5 days | Tue 1/7/20 | Mon 1/13/203 | | |
| 5 | Prepare and submit schedule cost | 7 days | Tue 1/14/20 | Wed 1/22/204 | | |
| 6 | Obtain Permit to place bins at public spaces and school | 5 days | Tue 1/7/20 | Mon 1/13/203 | | |
| 7 | Stakeholders briefing to initiate project implementation | 2 days | Tue 1/7/20 | Wed 1/8/203 | | |
| 8 | Research on smart bins and methods of installments | 7 days | Thu 1/23/20 | Fri 1/31/205 | | |
| 9 | Submit Monthly request for payments | 1 day | Tue 1/7/20 | Tue 1/7/203 | | |
| 10 | Design | 7 days | Tue 1/14/20 | Wed 1/22/20 | | |
| 11 | Design layout of bin placement | 2 days | Thu 1/9/20 | Fri 1/10/207 | | |
| 12 | Design environmental messages, tips and slogans to outfit bins | 5 days | Thu 1/9/20 | Wed 1/15/207 | | |
| 13 | Procurement | 40 days | Wed 1/22/20 | Tue 3/17/20 | | |
| 14 | Order Smart Bins | 40 days | Thu 1/9/20 | Wed 3/4/207 | | |
| 15 | Order environmental messages, tips or slogans for smart bin outfitting | 25 days | Thu 1/9/20 | Wed 2/12/207 | | |
| 16 | Site | 38 days | Fri 2/14/20 | Tue 4/7/20 | | |
| 17 | Identify sites for bin placement | 10 days | Tue 1/14/20 | Mon 1/27/206 | | |
| 18 | Prepare and clear site for smart bin installation | 10 days | Tue 1/28/20 | Mon 2/10/2017 | | |
| 19 | Install Bins | 12 days | Thu 3/5/20 | Fri 3/20/2014 | | |
| 20 | Outfit bins with environmental messages, tips and slogans | 12 days | Mon 3/23/20 | Tue 4/7/2019 | | |

| ID | Task Name | Duration | Start | Finish | Predecessors | Resource Names |
|---|---|---|---|---|---|---|
| 21 | Interactive website | 102 days | Mon 3/23/20 | Tue 8/11/20 | | |
| 22 | Website Development | 21 days | Thu 3/5/20 | Thu 4/2/2014 | | |
| 23 | Website coding | 21 days | Fri 4/3/20 | Fri 5/1/2022 | | |
| 24 | Web application development | 20 days | Mon 5/4/20 | Fri 5/29/2023 | | |
| 25 | Website and CRM integration | 14 days | Mon 6/1/20 | Thu 6/18/2024 | | |
| 26 | Mobile optimized website development | 20 days | Fri 6/19/20 | Thu 7/16/2025 | | |
| 27 | QA & Software testing | 7 days | Fri 7/17/20 | Mon 7/27/2026 | | |
| 28 | Full life cycle software testing | 14 days | Tue 7/28/20 | Fri 8/14/2027 | | |
| 29 | QA Outsourcing and software testing | 14 days | Mon 5/4/20 | Thu 5/21/2028 | | |

| ID | Task Name | Duration | Start | Finish | Predecessors | Resource Names |
|---|---|---|---|---|---|---|
| 30 | Integration of bins software and communication system to website | 20 days | Mon 8/17/20 | Fri 9/11/2028 | | |
| 31 | Complete Final Inspection | 41 days | Mon 9/14/20 | Mon 11/9/2028 | | |
| 32 | Complete installation and setup of smart bins and interactive website | 7 days | Tue 11/10/20 | Wed 11/18/2031 | | |
| 33 | Site clean up | 7 days | Thu 11/19/20 | Fri 11/27/2032 | | |
| 34 | Final Inspection and test run | 7 days | Mon 11/30/20 | Tue 12/8/2032 | 33 | |
| 35 | Issue final completion documents, reports and warranties | 3 days | Wed 12/9/20 | Fri 12/11/2034 | | |
| 36 | Issue Final request for payment | 3 days | Mon 12/14/20 | Wed 12/16/20 | | |

**Figure 19 Eco Data Visualization and Monitoring Project Gantt Chart (Created in Microsoft Project)**

***Schedule Control***

As information is added or deleted to the project documents, the schedule will be reviewed and updated as necessary. It will be the responsibility of the project manager to have schedule update and review meetings to determine schedule modifications. Submitting schedule changes and status reports will be also left up to the project manager.

The project team will participate in schedule update and review meetings and communicate changes of the actual start and finish dates to the project manager. The team will also participate in schedule variance resolution activities for the project as required.

The stakeholders will be required to review, approve or deny any schedule change requests submitted by the project manager.

Changes to the project schedule can be submitted by any member of the team, sponsors or stakeholders through a change request. The project team and manager will meet and assess and evaluate the change. The project team and manager will determine what task will be impacted by the changes and alternative solutions and how they may affect the scope, schedule and resources. After review of the change if the project manager determines the change surpasses constraints the request change will be submitted to the stakeholders and sponsors for approval. Approval will be granted if either the proposed change is estimated to reduce the duration of an individual work package by 20% or more or increase the duration by 10% or more. Approval will also be granted if the proposal is estimated to reduce the duration of the overall baseline schedule by 10% or more or increase it by 2% or more.

Changes that are within or less than the threshold must be submitted by the project manager for approval. If changes are approved, the project manager will be responsible for adjusting the schedule and communicating the change to the project team, stakeholders and sponsor.

## 4.3. Project Cost Management

### *Introduction*

Throughout the duration of the project, the project manager will be responsible for the managing and reporting of project cost. He will send out weekly financial reports to the project sponsors and during bi-monthly progress meetings the project manager, along with the assistant project manager, will present to the project sponsor and review the project cost performance for the previous months.

The assistant project manager will have the responsibility of preparing the cost management plan and cost baselines while the project manager will account for cost deviation and develop options for getting the project budget back on track when necessary. The project sponsor will have all rights and authority to make any changes to the project at any time to bring it back within the agreed budget parameters.

### *Cost Management Approach*

The project cost will be managed at the second level of the Work Breakdown Structure (WBS). There will be the development of Control Accounts (CA) to track cost. The Earned Value calculations for the Control Accounts (CA) will measure and manage the financial performance of the project. Credit for work will be assigned at the work package level and the percentage (%) of credit given for each work package will be calculated based on the amount of work completed at the point in time compared to the total cost required to complete the work package. This cost value will be rounded up or down to the nearest dollar and the work hour to the nearest whole hour.

A positive cost variance will indicate that the project is under cost. A neutral one will indicate that the project is on planned cost and a negative value will mean it is over the planned cost. Instances where these indexes are not on planned cost will require corrective action on the part of the project manager to ensure that the cost

performance and schedule performance index is brought below the alert levels. These corrective measures will require a change order, and this must be approved by the project sponsor before it can be included in the scope of the project.

Additionally, the project team will utilize a S-Curve which will be helpful in monitoring the success of the project. This curve can be utilized to evaluate performance and make cash-flow forecast. Actual, real time cumulative data, such as cost, can be compared with projected data and the degree of alignment between the two reveals of there is any progress or not and can be used if corrective measures need to be implemented and well as it will aid in identifying them.

***Measuring Project Cost***

Project cost performance will be measured using Earned Value Management. The four Earned Value Metrics that will be used to measure the project's cost performance are:

1. Schedule Variance (SV)
2. Cost Variance (CV)
3. Schedule Performance Index (SPI)
4. Cost Performance Index (CPI)

If the Cost Performance or Schedule Performance index has a variance over the threshold, the project manager must report the reason for this. If the SPI or CPI has a variance way greater than threshold margins, the project manager must report the reason for this and provide a detailed corrective plan to bring the project's performance back to acceptable levels.

***Reporting Format***

Cost Management Reporting will be included in the bi-monthly project progress report. This report will contain a section labelled "Cost Management". This section will include the Earned Value Metrics identified above. All the cost variances outside of the thresholds identified will be reported on and it will include any corrective

measures that are planned. Change orders which are prompted based on project cost overruns will be identified and tracked in this report.

***Cost Variance Response Process***

If the cost indexes indicate that the project reaches the threshold, a cost variance correction action plan is required. The project manager will be responsible for presenting corrective actions to the project sponsors within one (1) week from when the cost variances are reported. The project sponsor will be given four (4) days to review the options and select the most suitable and viable action. Thereafter the project manager will provide and present a formal cost variance action plan of the action selected detailing all the necessary procedures to be followed in order to bring the project back within its budget.

***Cost Change Control Process***

The cost change control process will take the same format as established for the project change order process. Approvals for the project budget must and will be approved by the project sponsor.

***Project Budget***

**Chart 10 Project Budget (Source: R. Baptiste, The Author)**

| Expenditure Category | Project Cost | | | Project Financing | | |
|---|---|---|---|---|---|---|
| | Unit Cost (XCD$) | No. | Total Cost (XCD$) | GEF /SGP Contribution | Contribution from community or group (XCD$) | |
| | | | | | Cash | Kind |
| **Personnel Labour** | | | | | | (XCD$) |
| Accountant | 200/hr | 40 | 8,000.00 | 8,000.00 | | |
| Landscaper | 200/hr | 20 | 4,000.00 | 4,000.00 | | - |
| Graphic Designer | 200/hr | 10 | 2,000.00 | 2,000.00 | | - |
| Website Designer / IT Technician | 200/hr | 20 | 4,000.00 | 2,000.00 | | 2,000.00 |
| Project Assistant | 1000/Mth | 10 | 10,000.00 | 10,000.00 | | - |
| Project Manager | 2000/Mth | 14 | 28,000.00 | 14,000.00 | | 14,000.00 |
| | | | | | | |
| **Equipment** | | | | | | |
| Smart Bins | 13,750 | 5 | 68,750 | 68,750 | | |
| Desktop Publishing Software | | | | | | 1,000.00 |

| | | | | | | |
|---|---|---|---|---|---|---|
| Website Domain years | 116.1 | 5 | 581 | 580.50 | | |
| Hosting 5 years | 513 | 5 | 2,565 | | | 2,565.00 |
| | | | | | | |
| **Materials** | | | | | | |
| Building Material | | | 2,000 | 2,000 | | |
| Printing Services | 1500 | 5 | 7,500 | 7,500 | | |
| | | | | | | |
| | | | | | | |
| **Workshops/Seminars** | 2000 | 2 | 4,000 | 4,000 | | |
| **Local Travel** | | | 5,000 | 2,000 | | 3,000 |
| **Transportation (Equipment)** | | | 5,000 | 5,000.00 | | |
| **Monitoring and Evaluation; report preparation** | | | 2000 | 1,500.00 | | 500 |
| | | | | | | |
| Other | | | | | | |
| **Marketing Campaign** | | | | 5,000.00 | | |
| | | | | | | |
| **Total EC** | | | **153,395.50** | **136,330.50** | | **23,065.00** |
| **Total US** | | | **56,813.15** | **50,492.78** | | **8,542.59** |

## 4.4. Project Quality Management

### *Introduction*

The quality management plan for the Eco Data Visualization project will establish the activities, processes and procedures for ensuring a quality product upon the conclusion of the project. This plan will ensure that quality is planned, define how it will be managed, define quality assurance and control activities, as well as define acceptable quality standards.

### *Quality Management Approach*

The quality management approach for the Eco Data Visualization project will ensure that quality is planned for both the product and process. In order to be successful, this project will meet its quality objectives by utilizing an integrated quality approach to define quality standards, measure quality and improve quality.

Product quality of the Eco Data Visualization project will be defined by the criteria based on the industry standards. The focus is on the project's deliverables thus the standards and criteria used will ensure that the products meet the established quality standards and satisfaction.

Process quality will focus on the process used by the project to design the deliverables. These process quality standards will ensure that all activities conform to the organization's standards thus resulting in a successful delivery of all project deliverables.

The project manager, along with the web designer and assistant project manager, will define and document all the organizational and specific quality standards for the product and process. All these quality documents will make up part of the Eco Data Visualization and Monitoring Project Management Plan.

The project manager, along with the assistant project manager, will work along with the project team to establish and define the metrics that will be used to measure quality throughout the project life-cycle. These metrics will be used as the criteria in determining the success of the project. They will include: Website design, Schedule, Resources, Cost, Process performance, Product performance, Customer satisfaction.

Quality improvements will be identified by any member of the project team and each recommendation will be reviewed to determine the cost versus benefits of implementing the improvements and how it will affect the deliverable. If improvements are accepted and implemented the project manager, along with the assistant project manager, will be responsible for updating the project documents to ensure the improvements are included.

***Quality Requirements/ Standards***

*Product Quality*

The product quality standards and requirements will be determined by the project manager. Since this project will be the first of its kind in the Caribbean region, the standards will be primarily based on the documented standards documented from the US case study from the Bigbelly Waste and Recycling Smart Solutions for Cities. Bigbelly Solar is the world leader in smart waste and recycling solutions and has taken on a major expansion of its use of solar powered waste and recycling units that were originally piloted in the US. Since these standards are not currently part of the organizational standards, the project manager and assistant project manager will review these and incorporate them into organizational documentation once approved. These new standards will also be incorporated into the project management plan and communicated with all stakeholders.

*Process Quality*

The process quality standards and requirements will be determined also by the project manager and assistant project manager. These will be based on existing

company process standards. The project team will work along with the project manager to establish any additional standards and document them to ensure they are included into the organizational standards and the Eco Data Visualization and Monitoring Project Management Plan. All these standards will be communicated to all relevant stakeholders.

***Quality Assurance***

The quality assurance of the Eco Data Visualization Project focuses on the processes used in the development of the integrated website of the project. In order to ensure quality and iterative quality process will be sued throughout the project lifecycle. This iterative process will include measuring process metrics, analyzing process data and improving the processes on a continuous basis.

The project team, along with the project manager, will perform assessments at planned intervals throughout the project to ensure all processes are being implemented and executed correctly. The table below provides key quality assurance metrics for the project.

**Chart 11 Key Quality Assurance Metrics**

| Process Action | Acceptable Process Standards | Process Phase | Assessment Interval |
|---|---|---|---|
| Requirements Testing | Client requirements used to evaluate layout, prototype and/or alpha version of website | Development | Throughout development phase |
| Design Evaluation | Website appearance in line with proposed | Development/ Design | Browser testing and mobile testing |

| | | | |
|---|---|---|---|
| | design and overall layout | | |
| Functionality Testing | User interface and user experience ensures link, button, forms and all features are operating | Development/ Design | Final testing |

***Quality Control***

The project team, along with the project manager, will provide the day-to-day quality management and conduct process audits weekly, monitor performance and ensure all processes comply with the project standards. If there are any discrepancies identified the project manager will review and take necessary actions to have them rectified with the relevant implementing party.

The assistant project manager will schedule regular project management and document reviews. These reviews and agenda items will include a review of project processes, discrepancies and findings, and will include a discussion on improvement process.

Process improvements are an essential and important part of quality assurance. Quality assurance reviews and findings should always result in process improvements and in turn product improvements. All process improvements must be implemented, documented and communicated to all stakeholders as changes are made.

***Quality Control Measurements***

All of the project's deliverables and processes must be measured and fall within the established standards. The log below will be used by the project team to ensure

quality is maintained and for use as supporting documentation for project acceptance.

**Chart 12 Quality Assurance Log**

| Process Inspection #1 | Date | Process Measured | Acceptable (Y/N) | Recommendation | Date Resolved |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

**Chart 13 Quality Control Log**

| Deliverable #1 | Date | Item Measured | Acceptable (Y/N) | Recommendation | Date Resolved |
|---|---|---|---|---|---|
| | | | | | |
| | | | | | |
| | | | | | |

## 4.5. Project Resource Management

### *Introduction*

The resource management plan is an important part of the Eco Data Visualization and Monitoring Project and it will aid in the management of the project's resources throughout the project lifecycle. The resource management plan will aid in the project achieving success by ensuring the appropriate resources and skill sets are acquired. It will also allow for the necessary training to occur to fill any gaps in skills that are identified. It also clearly defines team building strategies and ensures team activities are effectively managed.

This resource management plan will include the roles and responsibilities of the team members, project organizational charts, how resources will be acquired,

timeline for resources/skill sets, training required to develop skills, how performance reviews will be conducted and the recognition and reward system.

***Resource Management Approach***

The project manager and the assistant project manager will be responsible for communicating the scope of work, formation of different team along with the development and distribution of tasks to each team. The assistant project manager will call meetings to ensure that everyone understands and is on track as roles and responsibilities are not very clear yet.

To manage interpersonal conflict between staff, the project manager and assistant project manager will create some policies and rules to manage conflicts, understand the nature of the conflict by listening carefully to both sides, focus on behavior and events, not on personalities, identify points of agreement and disagreement, prioritize the areas of conflict, talk with the staff, and develop a plan to work on each conflict.

***Identification of Resources***

**Chart 14 Activity list, resources needed, and time required for each resource (Source: R. Baptiste, The Author)**

| Task/ Activity | Resource | Quantity (Days) Required |
|---|---|---|
| Receive notice to proceed and sign contract | Project Manager | 17 days |
| Prepare and submit project schedule | Project Manager & Assistant Project Manager | 1 day |
| Prepare and submit schedule cost | Project Manager & Assistant Project Manager | 5 days |
| Obtain permit to place bins at public spaces and schools | Project Manager & Assistant Project Manager | 7 days |
| Stakeholders briefing to initiate project implementation | Project Manager & Assistant Project Manager | 5 days |
| Research on smart bins and methods of installments | Project Manager & Assistant Project Manager | 2 days |
| Submit monthly request for payments | Project Manager | 7 days |
| Design layout of bin placement | Project Team | 2 days |

| | | |
|---|---|---|
| Design environmental messages, tips and slogans to outfit bins | Graphic designer | 5 days |
| Order smart bins | Procurement Officer | 40 days |
| Order environmental messages, tips or slogans for smart bin outfitting | Procurement Officer | 25 days |
| Identify sites for bin placement | Project Manager &Assistant Project Manager | 10 days |
| Prepare and clear site for smart bin installation | Landscaper | 10 days |
| Install bins | Web developer, project team | 12 days |
| Outfit bins with environmental messages, tips and slogans | Graphic designer | 12 days |
| Website development | Web Developer | 21 days |
| Website coding | Web Developer | 21 days |
| Web application development | Web Developer | 20 days |
| Website and CRM integration | Web Developer | 14 days |
| Mobile optimized website development | Web Developer | 20 days |
| QA & software testing | Web Developer | 7 days |
| Full life cycle software testing | Web Developer | 14 days |
| QA outsourcing and software testing | Web Developer | 14 days |
| Integration of bin software and communication system to website | Web Developer | 20 days |
| Complete installation and setup of smart bins and interactive website | Web Developer | 7 days |
| Site clean up | Landscaper | 7 days |
| Final inspection and test run | Web Developer | 7 days |
| Issue final completion documents, reports and warranties | Project manager & Assistant Project Manager | 3 days |
| Issue final request for payment | Project manager | 3 days |

***Roles and Responsibilities***

*Project Manager:*

- Prepares the project management plan and revision(s)
- Participates in and manages project planning activities
- Manages, reviews, and prioritizes the project work plan with objective to stay on time and budget
- Provides status progress reviews to sponsors and receives directions
- Manages and supervises project team

- Brings issues to the sponsors as needed and makes recommendations
- Identifies required project team members and forms project team
- Motivates and coaches project team members
- Monitors contract compliance
- Manages change order
- Conducts risk management analysis
- Meets facility and resource requirements
- Reviews deliverables

*Assistant Project Manager:*

- Creates project planning documents (i.e. Project Management Plan)
- Takes meeting minutes
- Reports to the PM on changes and updates made to the project for approval
- Manages the procurement process
- Collects daily reports from the project team
- Broadcasts daily site reports to relevant stakeholders as directed by the Project Manager.

*Accountant:*

- Responsible for all financial transactions and financial reporting pertaining to the project.

*Graphic Designer:*

- Responsible for design and outfitting of environmental messages, tips and slogans

*Web Developer:*

- Responsible for all work involved with the development of interactive website, integration with smart bins and bin installation

***Project Organizational Chart***

**Chart 15 RACI chart showing relationship between project task and team members**

| | Project Manager | Assistant Project Manager | Accountant | Graphic designer | Web developer |
|---|---|---|---|---|---|

| | | | | | |
|---|---|---|---|---|---|
| Requirements Gathering | A | R | | | |
| Smart Bins Outfitting design | A | I | | R | |
| Outfitting of Smart Bins | A | I | | R | C |
| Change requests | A | R | C | | |
| Contract Administration | A | R | I | | |
| Permits/ Approval | A | R | C | | |
| Project quality | A | R | | I | I |
| Stakeholder Management | A | R | | | |
| Accounting | A | I | R | | |
| Project Communications | A | R | I | I | I |
| Project Scope | A | R | I | I | I |
| Website Development | A | I | | C | R |
| Website and smart bin integration | A | I | | C | R |
| Procurement | A | R | I | I | I |

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

### *Acquiring resources*

For the Eco Data Visualization and Monitoring Project the staff will consist mainly of internal resources from Make a Way Foundation Inc. There will be outsourcing of a landscaper to prepare the areas for bin installation and site cleanup. The project manager will coordinate with the assistant manager in order to identify and assign resources in accordance with the project organization structure. All resources will and must be approved by the project manager before a resource may begin work on the project. Additionally, all resources must sign a contract/agreement with the performing organization before the resource may begin any project work.

### *Resource Calendar*

The Eco Data Visualization and Monitoring Project will last for a total of 248 days. The resource calendar histogram below illustrates the number of days each of the resources will be required to complete the project management, design, installation and setup of the smart bins and the interactive website.

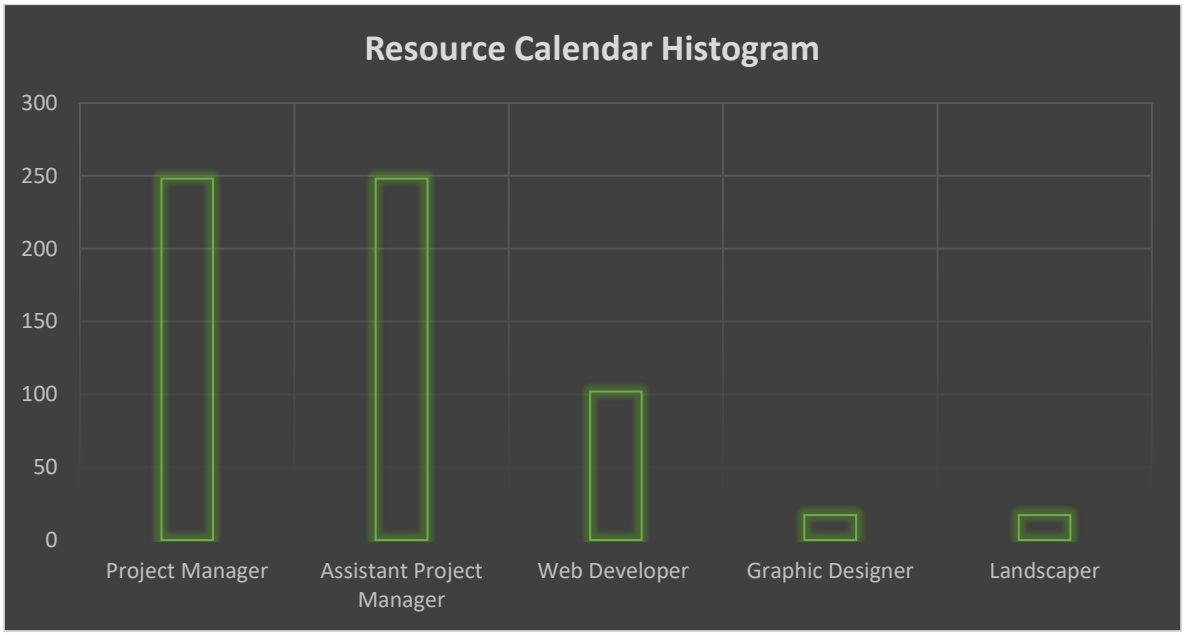



**Figure 20 Resource Calendar Histogram (created in Microsoft Excel)**

### *Training*

Currently there is no training scheduled with regards to the implementation of this project as Make a Way Foundation Inc. has adequate staff with the required skill sets. Nevertheless, if there are any training requirements identified, funding will be provided from the project reserve to facilitate any such training.

### *Performance Reviews*

The assistant project manager will conduct reviews of each of the project team members' assigned work activities at the start of the project and communicate all expectations of work to be performed. She will evaluate each team member throughout the project based on their performance as well as how effectively they are able to complete the task assigned to them. Before the release of project resources, the project manager will also meet with the project manager and provide her feedback on the employee's performance. Thereafter the project manager will conduct his formal performance review of each team member and present them with a copy of their reviews for their perusal.

### *Recognition and Rewards Plan*

Currently the scope of the project does not allow enough time or potential for monetary rewards or incentives, however there are several items that will be planned to recognize and reward project team members for their effort and performance. The following are a list of items that will be done for the project team members upon project completion: a party/social will be held for the project team members and their families to celebrate the success of each team member after project completion; team members who successfully complete all assigned work packages on time will receive a small token and certificate of thanks from the CEO of Make a Way Foundation Inc; and the top two performers on the project will also receive a gift certificate for themselves and their families.

## 4.6. Project Communication Management Plan

### Introduction

This communication plan will serve as a guide to assist in the communication between the stakeholders of the Eco Data Visualization and Monitoring Project – Grenada. The project manager and the assistant will take the primary role of ensuring there is effective communication during the project lifecycle. The communication matrix is a major component of this plan as it documents what is required for communication, the information being communicated, the audience for each communication, the frequency, and the individual responsible for communication and/or dissemination of information to the appropriate audience.

### Audiences

The major audiences for this project are listed below.

- Project Sponsors
- Project Manager
- Assistant Project Manager
- Project Team
- Consultants/ subconsultants
- Financial Advisor

- Stakeholders

**Communication Delivery Methods and Technologies**

The primary communication vehicles are email, phone, face to face, meetings, conference calls, reports, presentations and announcements.

**Communication Matrix**

**Chart 16 Project Team Communication Matrix**

| ***Project Team Communication Matrix*** | | | | | | | |
|---|---|---|---|---|---|---|---|
| *Communication type* | *Objective of communication* | *Medium* | *Frequency* | *Audience* | *Owner* | *Deliverable* | *Format* |
| Kickoff Meeting | Introduce the project team and the project. Review project objectives and management approach | Face to face | Once | Project sponsor<br>Project team<br>Stakeholders | Project Manager | Agenda<br>Meeting Minutes | Soft copy archived on project website & Share point |
| Project Team meetings | Review status of the project with the team | Face to face<br>Conference Call | Weekly | Project team | Project Manager | Agenda<br>Meeting Minutes<br>Project Schedule | Soft copy archived on project website & Share point |
| Technical Design Meeting | Discuss and develop technical design solutions for the project | Face to face | As needed | Project technical staff | Technical lead | Agenda<br>Meeting Minutes | Soft copy archived on project website & Share point |
| Project Status meeting | Report on status of the project to | Face to face | Twice a month | PMO | Project Manager | Project schedule | Soft copy archived on project |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | management | Conference call | | | | | website& Share point |
| Project status report | Report the status of the project including activities, progress, cost and issues | Email | Monthly | Project sponsor<br>Project team<br>Stakeholders<br>PMO | Project Manager | Project status report<br>Project schedule | Soft copy archived on project website & Share point |

**Communication Standards**

*There are currently no organizational communication standards*.

## 4.7. Project Risk Management

### *Introduction*

The Risk Management Plan briefly describes the purpose, terminology and process of risk management for the project. This plan is intended to be used by the project manager and assistant manager to deal with risk within the project.

### *Identifying Risk*

Risks will be identified initially during the project charter however, during the creation of subsidiary plans a comprehensive risk register will be completed. During risk identification the risk register will be reviewed to include or remove any risk that may or may no longer be applicable to the project. The assistant project manager, along with the project manager, will create the risk register.

### *Analyzing Risk*

The impact and probability of risks within the project will be evaluated using a probability impact matrix during qualitative risk analysis. There will be a response

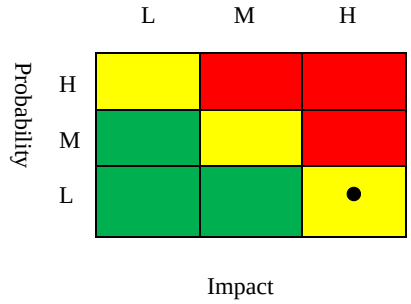
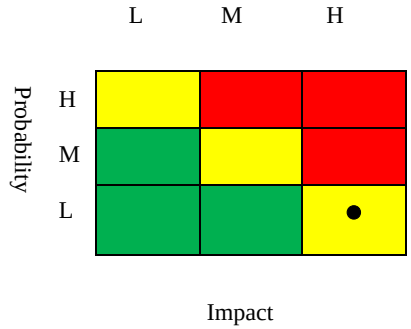
plan developed for all risks identified as having any impact on the project whether negative or positive.

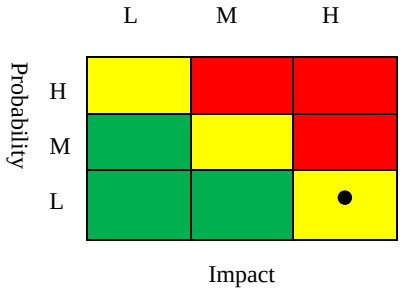
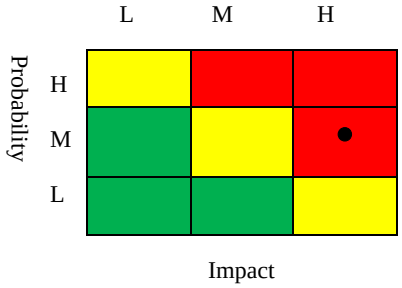
***Planning Risk Response***

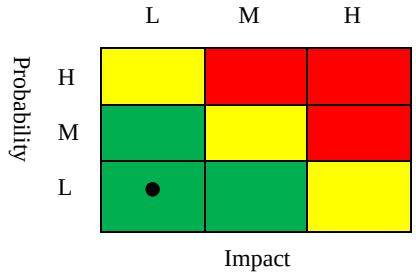
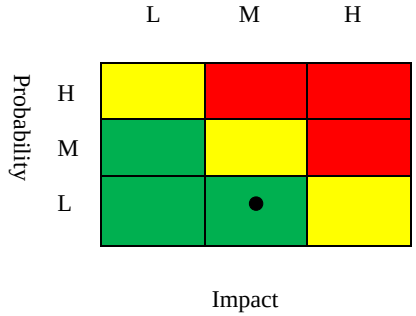
The project team will identify and assist with planning risk response. The project manager and assistant will be in charge of planning risk response, managing data collection and storage.

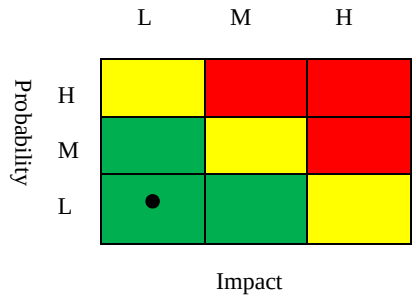
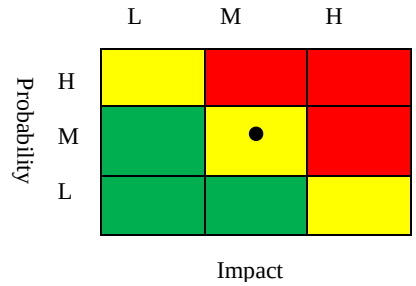
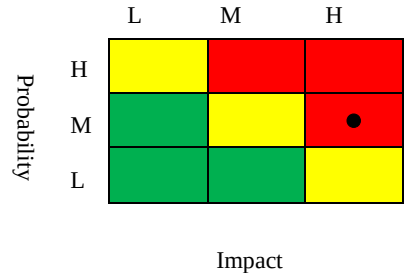
***Risk Register***

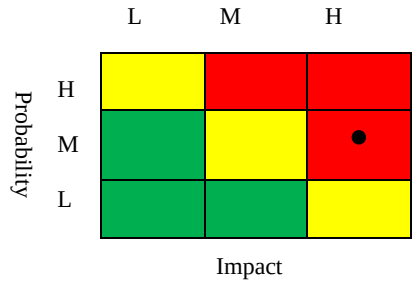
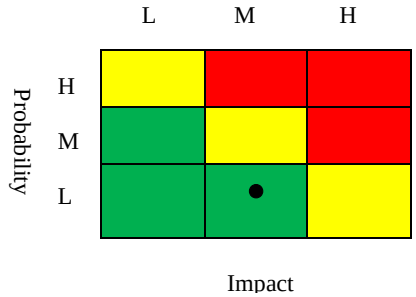
**Chart 17 Risk Register (Source: R. Baptiste, The Author, November 2019)**

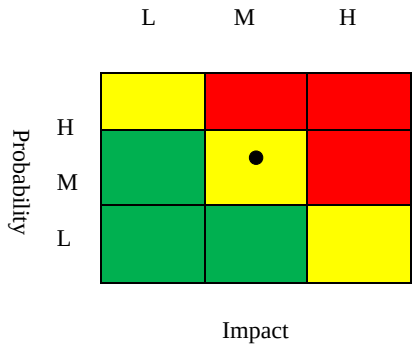
| Risk Identification | | | Risk Matrix | Risk Effect | | Risk Response | | |
|---|---|---|---|---|---|---|---|---|
| Risk # | Risk Description | Risk Category | | Cause | Consequences | Risk Response | Trigger | Risk Owner |
| 1 | Price increase on materials over time | Financial |  | Inflation | Rush to seek alternate option. Budget can no longer procure items resulting in project delays. | Avoid/Mitigate: Firm fixed price contracts are issued for procurement of goods and services | Increase in purchase price of items being procured | Project Manager/ Assistant Project Manager |
| 2 | Damage of materials in shipping and on-site storage | Financial |  | Human error, improper storage, handling and weather | Materials may not be usable after damage, more funding required for repurchase that would not have been budgeted for. Rush to seek alternatives. Delay in | Avoid/Transfer: Warranty or insurance that covers damage of materials. Ensure proper storage and care taken with transport of materials | Physical damage to materials or repurchasing of materials | Assistant Project Manager |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | project implementation | | | |
| 3 | Underestimating of Project Cost | Financial |  | Human error | Project budget not accurately calculated resulting in insufficient funds to complete activities and ultimately project | Avoid: Contingency added to budget to deal with this issue. Both project manager and assistant manager review and check budget multiple times to ensure accuracy | Cost Deviations/ increases | Project manager/ Assistant project manager |
| 4 | Shipping Delays | Scheduling |  | Human error, natural environmental occurrences (Weather changes, storms hurricanes etc.) | Schedule delays resulting in project materials missing shipping and arrival dates | Avoid/Mitigate: Allocate two weeks scheduling contingency. Have all items scheduled to be shipped no less than five weeks before use and follow up with vendor daily to check on status of procured goods | Shipping Date of materials delayed | Assistant Project Manager |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 5 | Design Delay | Scheduling |  | Graphic and web Designer underestimate time required to complete work | Schedule delays | Avoid / Mitigate: Scheduling Contingency, ensure that there is enough planning time in the schedule. | Missed design deadline | Project manager/ Assistant Project Manager |
| 6 | Communication | Project/Team Management |  | Inadequate/ improper communication skills | Disagreements between team members. Improper messages being communicated. These result in delays in project implementation and dissatisfied stakeholders | Avoid: Development and implementation of communication plan | Breakdown in communication between project team members as well as project team and stakeholders | Project Team |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 7 | Inadequate resources | Project/ Team Management |  | Improper resource management | Rush to seek alternatives. Cause delays in the project | Avoid/ Mitigate: Ensure project procurement team is monitoring resource carefully and address resource issues as they arise | Project resources reach trigger level | Project Team |
| 8 | Quality | Technical |  | Relied on vendor quality | Dissatisfied client and poor project quality | Avoid/ mitigate: Ensure vendors selected are reputable and they have a good quality history record | Poor Quality goods and services | Project Manager/ Assistant Project Manager |
| 9 | Engineer, design and built | Technical |  | Bin sensors have a life span of 5 years and may last longer due to proper engineering design, build and technology | Positive impact on the stakeholders and organization. Stakeholders may spread word to other individuals and | | Cutting-edge top-quality materials design, built and technology being used | Project team |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | | | agencies on the organizations project exceeding expectations | | | |
| 10 | Reliability of Technology | Technical |  | Improper internet connections and resources for proper set up of smart bins and website | Rush to seek alternative. Delays in project. Smart bins and monitoring system and website improperly set up | Avoid / Mitigate: Work with service providers to ensure that adequate resources are available to properly set up website and smart bins | Technology Malfunction | Project Team |
| 11 | Change in requirement | Client |  | Poor communication | Rush to seek alternative options. Can result in dissatisfied stakeholders | Avoid/ Mitigate: Use change requirements log and controls for approval | Client request changes to particular aspects of the project | Project Team |
| 12 | Non-Compliant Vendor | Scheduling | | Vendor does not perform according to | Schedule delays | Avoid/ Mitigate: detail specific criteria | Vendor falling behind on established | Assistant Project Manager |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | |  | contracts. Vendor underestimates task or project | | to ensure vendor can perform and complete task. Ensure vendor has experience and resources to perform the task before selecting them. Contingency: use one of the unselected qualified vendors to complete the task. | timelines and limits or does not have adequate resource to complete activity | |

***Key Terms:***

**Risk:** The risk stated in a complete sentence which states the cause of the risk, the risk, and the effect that the risk causes to project

**Risk Category:** Categorization of risk by area of the project affected, source of risk or another useful category

**Probability:** The likelihood that a risk or opportunity will occur (scale from 0 to 10 with 10 being the highest)

**Impact:** The impact of the risk on the project if the risk occurs (scale from 0 to 10 with 10 being the highest)

**Risk Score:** Determined by multiplying probability and impact (scale from 0 to 10 with 10 being the highest)

**Risk Ranking:** A priority list which is determined by the relative ranking of the risks (by their scores) within the project with the number one being the highest risk score.

**Risk response:** The action which is to be taken if the risk occurs

**Trigger:** Something which indicates that a risk is about to occur or has already occurred

**Risk Owner:** The person who the project manager assigns to watch for triggers and manage the risk response if the risk occurs.

**Risk Matrix Key:** L (Low); M (Medium); H (High)

**Monitoring and Controlling Risk**

The project manager, along with the assistant, will monitor the status of risk by comparing the data collected during project execution with that of the risk register and risk analysis summary. The risk register will be updated weekly and communicated to project team and sponsors. The project manager will also be responsible in deciding when a risk response should and will be executed.

## 4.8. Project Procurement Management

### *Introduction*

The procurement management plan provides the framework by which procurement for the project will follow. It will serve as the guide for managing procurement throughout the lifecycle of the project and will be updated as needs change. This plan identifies and outlines the items to be procured, contracts to be used, contract approval process and decision criteria.

### *Procurement Management Approach*

The assistant project manager will provide oversite and management for all activities relating to procurement under this project. She will work along with the project manager to identify all items to be procured for the completion of the project. The project manager will then review the procurement list developed before purchasing of items which will be done by the assistant project manager. The project manager will review the procurement items and the assistant project manager will begin vendor selection, purchasing and the contracting process. The following project team members are authorized to approve purchases for the project team: Project Manager and Project Assistant.

### *Procurement Definition*

The table below highlights the procurement items and/or services that have been determined to be essential for the project completion.

**Chart 18 Project Procurement List, Justification and Timeline (Source: R. Baptiste, The Author)**

| Item/Service | Justification | Needed By |
|---|---|---|
| Landscaper | Preparation of spot for bin installation and site cleanup after installation | 1/28/20 |
| Graphic Designer | Design of environmental message, tip or slogan for bin outfitting | 1/9/20 |
| Smart Bins | Installed at sites to collect waste and to be integrated with the interactive website | 2/12/20 |
| Bin outfitting design with environmental message, tip or slogan | For placement on smart bins to raise awareness on environmental issues | 3/23/20 |
| Web developer | To develop interactive website and integrate smart bin and website | 3/5/20 |

***Contract type to be used***

Firm Fixed Price (FFP) Contract will be used under this project. This contract type provides supplies or services for a specific price not subject to any adjustment on the basis of the contractor's incurred costs. This contract type imposes minimum administrative burden.

Service contracts will be provided for work on the project such as web development and graphic design. These contracts will be for a specified task and shall terminate on completion of the task and no notice of termination shall be required of either

party. The project team will work closely with the assistant project manager to define in detail the types, quantities, services and required delivery dates for deliverables.

The assistant project manager will be responsible for soliciting bids from various vendors. Procurement will commence once vendors are selected and items and/or services are within the required timeframe, cost and contract conditions.

***Procurement Risks***

All activities surrounding procurement carry with it some type of risk which must be managed for the successful implementation of the project. Although all project risk will be managed under the risk management plan there are some specific risks associated with procurement that must be considered. These risks include unrealistic schedule and cost expectations from vendors, manufacturing capacity of vendors, potential delays in shipping and impacts on cost and schedule and potential that final product received does not meet the required specifications.

Do note however that these risks identified above are not all inclusive and the standard risk management process of identifying, documenting, analyzing, mitigating and managing risk will be used.

***Cost Determination***

Request for Quotes (RFQ) will be issued to solicit bids/ proposals from vendors which will describe how they will meet the project requirements and their cost to meet deliverables. The vendors will provide an outline of how the work will be done, who will perform, their experience in providing the goods and/or services, background, resume, line item breakdown of all cost involved and a WBS and schedule to show their understanding of the work to be performed and their time line to meet deliverable schedule expectations.

All the information listed in the previous paragraph must be provided in each vendor proposal and will be used as the foundation for selection. Those proposals in which information is omitted or are considered incomplete will not be considered.

***Standardized Procurement Documentation***

Standardized documentation will be used for all steps of the procurement management process. These standard documents will be developed and revised over a period of time in order to continually improve procurement efforts. The documents should provide substantial details which will allow easier comparison of proposal, pricing, responses and management of vendors and contracts.

The Assistant Project Manager will be responsible for developing and maintaining the repository of the standard project management and procurement documentation that will be used during the implementation of this project. A list of standardized documents that will be used for the procurement activities is outlined below.

1. Standard request for proposal template
    a) Background
    b) Proposal Process
    c) Statement of work
    d) Terms and conditions
    e) Timeline
    f) Guidelines
    g) Format and media
    h) Selection criteria
    i) Price form
2. Internal selection evaluation forms
3. Non-disclosure agreements
4. Contract types
5. Procurement Audit form
6. Procurement performance evaluation form
7. Lessons learned form
8. Vendor performance evaluation form

***Procurement Constraints***

*Schedule*

- The project schedule is not flexible and procurement activities, contract administration and fulfilment must be completed within the established timeframes.

*Cost*

- Although the project does have a contingency reserve, it may not be applied to procurement as reserves are only to be used in the event of an approved scope change.

*Scope*

- All activities within procurement must be in unison with the approved project scope. Anything outside the scope would be considered a deviation and be disapproved.

*Resources*

- All procurement must be performed and managed by the organization current staff as no personnel will be hired to support the procurement process of the project.

***Decision Criteria***

All decisions under the procurement process will follow this criterion.

1. Quality
2. Cost
3. Expected delivery date
4. Ability of vendor to provide all required items by delivery date
5. Past Performance

This process will be done by both the project manager and assistant manager; however, the final decision will be based on the above criteria and available resources.

***Vendor Management***

The project manager and assistant manager will be responsible for managing vendors. They will meet weekly with vendors to discuss progress either in-person or using some external means such as video or voice call. They will review development of items or services provided to ensure it complies with established requirements as well ask questions, make modifications to contracts or requirements to prevent delays in delivery.

***Procurement Performance Metric***

The table below will be used for vendor performance for the procurement activities under this project. The vendors will be rated on a scale of 1-3 as indicated below. In addition to the rating, actual values will be noted in order to build a past performance database for selecting vendors for future procurement activities by Make a Way Foundation Inc.

**Chart 19 Vendor Performance (Source: R. Baptiste, The Author)**

| Vendor | Product Quality | On time Delivery | Documentation Quality | Development Costs | Development time | Cost per unit | Transactional Efficiency |
|---|---|---|---|---|---|---|---|
| 1 | | | | | | | |
| 2 | | | | | | | |
| | | | | | | | |

***Scale***

1– Unsatisfactory

2– Acceptable

3– Exceptional

## 4.9. Project Stakeholder Management

***Introduction***

Stakeholder management includes all the processes required to identify the people, groups and organizations that can affect or be affected by the project. It also analyses stakeholder expectations and their impact on the project and allows for the development of appropriate strategies to effectively engage stakeholders in the most appropriate way based on their interest and involvement in the project. This

Management Plan helps ensure that all the project's stakeholders are effectively involved in project decision and execution throughout the lifecycle of the project. This ensures that the project gains the necessary support and anticipates resistance, conflict and/or competing objectives among the project stakeholders.

**Chart 20 Stake holder register (Source: R. Baptiste, The Author)**

| STAKEHOLDER REGISTER | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| IDENTIFICATION INFORMATION | | | | | | COMMUNICATION | | ASSESSMENT INFORMATION | | | STAKEHOLDER CLASSIFICATION | |
| ID | Name | Position | Role | Contact Information | Location | Communication Types | Communication Vehicles | Requirements | Outlook on Project | Influence | Impact (H,M,L) | Internal / external |
| 1 | R. Bernard | CEO / Project manager | Plan project activities | | St. George | Meetings, Personal Communication Reports Presentations Announcements | Email, face to face, phone, video conference | H | Positive | H | H | Internal |
| 2 | R. Baptiste | Assistant Project manager | Procurement, assist in planning project activities | | St. George | Meetings, Personal Communication Reports Presentations Announcements | Email, face to face, phone, video conference | H | Positive | H | H | Internal |
| 3 | D. Twum-Barimah | Web Designer | Website development & smart bin setup and integration | | St. George | Meetings, Personal Communication Reports Presentations Announcements | Email, face to face, phone, video conference | H | Positive | H | H | Internal |
| 4 | | Graphics Designer | Design environmental slogan, message, tip | | St. George | Meetings, Personal Communication Reports Presentations Announcements | Email, face to face, phone, video conference | H | Positive | M | H | Internal |
| 5 | | Landscaper | Preparation for bin installment and site clean up | | St. George | Personal Communication Reports | Face- to face | H | Positive | L | L | External |
| 6 | Community | | | | Nationwide | Meetings, Personal Communication | Town-hall, Face to face | H | Neutral | H | H | External |

| | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | Reports Presentations Announcements | | | | | | |
| 7 | Solid waste authority | | | | St. George | Meetings, Personal Communication Reports Presentations Announcements | Email, face to face, phone, video conference | H | Positive | M | H | External |
| 8 | Government of Grenada | | | | St. George | Meetings, Personal Communication Reports Presentations Announcements | Email, face to face, phone, video conference | H | Positive | M | M | External |
| 9 | GEF Small Grants | Project Sponsor | | | St. George | Meetings, Personal Communication Reports Presentations Announcements | Email, face to face, phone, video conference | H | Positive | H | H | External |

### *Stakeholder Analysis and Level of Engagement*

**Chart 21 Stakeholder Analysis and Level of Engagement (Source: R. Baptiste, The Author)**

| Stakeholder Name/Group | Key interests or stake in the change and degree of impact (H, M or L) | Level of influence over the change (H, M or L) | Present attitude to the change (in favor or opposed) | Stakeholder management strategies | Key points for stakeholder engagement and management plan |
|---|---|---|---|---|---|
| CEO | Interest - High Impact - High | H | Favor | Consult, involve and keep informed | Two-way engagement essential |
| Financial Advisor | Interest - High Impact - Medium | M | Favor | Keep informed, support | One-way communication |
| Project Manager | Interest - High Impact - High | H | Favor | Involve and keep informed | Two-way engagement essential |
| Assistant Project Manager | Interest - High | M | Favor | Involve and keep informed | Two-way engagement essential |

| | | | | | |
|---|---|---|---|---|---|
| | Impact - Medium | | | | |
| Make a Way Foundation Inc. Project team | Interest - High Impact - High | M | Favor | Involve and keep informed | One-way communication |
| Contractors | Interest - High Impact - High | M | Favor | Consult, involve and keep informed | Two-way engagement essential |
| Supplier | Interest – High Impact - High | M | Favor | Consult, involve and keep informed | Two-way engagement essential |
| Regulatory Bodies | Interest - Low Impact - High | M | Neutral | Consult and involve | Two-way engagement essential |
| Community | Interest - Low Impact - High | L | Neutral | Keep informed | One-way communication |

Many persons will have varying degrees of power influence, interest and level of impact on the project. The team recognized that many of the project's suppliers are both local and international, as well as various governmental entities that will be responsible for providing permits and inspecting compliance. These suppliers and agencies can both be potential sources of issues that can delay and prevent project execution and completion and can increase project budget if not identified and managed effectively throughout the lifecycle of the project.

***Power Interest Classification***

The power interest grid analyzes stakeholder groups in a visual manner to further establish stakeholders' level of interest or concern and their ability to influence the project outcomes.

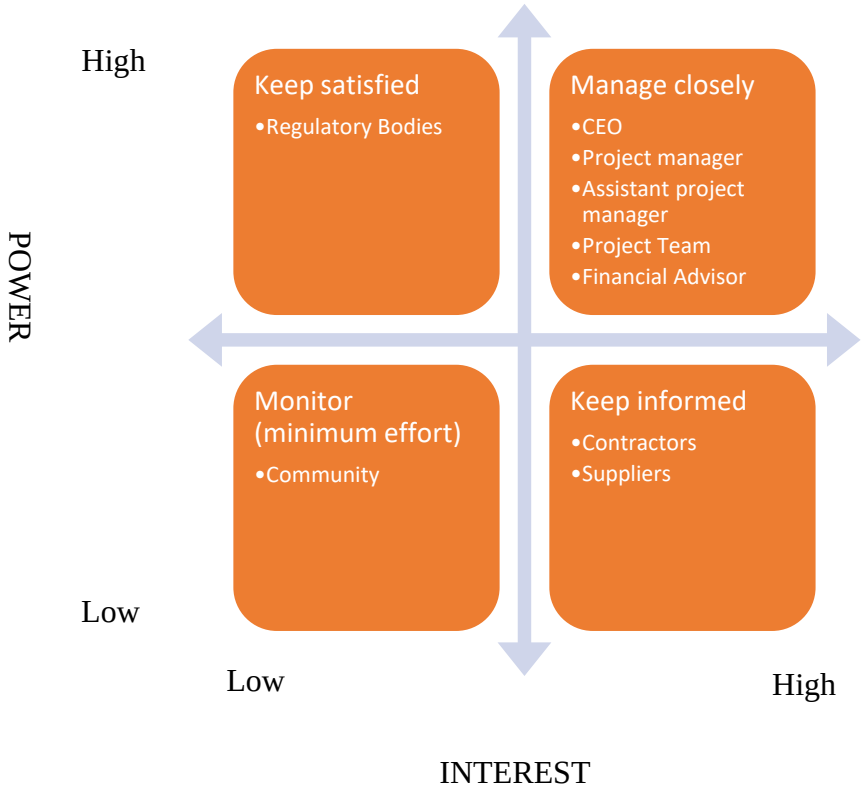



**Figure 21 Power/ Interest Classification (Source: R. Baptiste, The Author)**

***Plan Stakeholder Engagement***

The project manager will be responsible for engaging stakeholders throughout the project. Level of engagement for each stakeholder may vary throughout the project lifecycle. At the start it may be necessary to engage more frequently as it will be critical for project kick-off, gaining buy-in and clearing any doubts or concerns that may arise. It is to be noted that as the project progresses the level of engagement will shift from the key stakeholders to the broader project team and end-users.

***Stakeholder Engagement***

The PMBOK Stakeholder Engagement Assessment Matrix will be used by the project manager to analyze the current levels of engagement by each stakeholder and to ensure that the correct level of engagement is being achieved. Each stakeholder will be assessed based on their current and desired level of engagement.

**Chart 22 Stakeholder Engagement Assessment Matrix (Source: R. Baptiste, The Author)**

| Stakeholder | Unaware | Resistant | Neutral | Supportive | Leading |
|---|---|---|---|---|---|
| CEO / Project Manager | | | | | C D |
| Assistant Project Manager | | | | | C D |
| Web Designer | | | | | C D |
| Graphics Designer | | | | C D | |
| Landscaper | | | | C D | |
| Community | C | | D | | |

**Key**

C – Current level of engagement

D – Desired level of engagement

### *Manage Stakeholder Engagement*

To ensure effect stakeholder management, the project will utilize the communication plan and strategies to communicate all relevant project information to stakeholders and ensure that they are involved and aware of what is happening in a timely manner. This will help to increase the probability of the project success since it will

ensure that all stakeholders clearly understand the project scope, goals, objectives, benefits and risks.

***Monitor Stakeholder Engagement***

The project will allow for ongoing direct feedback from key stakeholders either via email, personal communication, side meetings, status meetings or community meetings. All stakeholders will be encouraged to voice their questions and concerns. The most serious concerns and issues that are raised will be addressed in a formal and rigorous process through the issue and risk logs.

***Stakeholder Plan Updates***

The Stakeholder Management Plan is not a static document. The stakeholders identified in the stakeholder analysis register will be reviewed on a monthly basis to ensure the plan meets the project expectation and to make any relevant modifications as necessary.

## CONCLUSIONS

1. The Project Management Plan was created using the analytical research method and the Sixth edition of the PMBOK Guide, to be used as a developmental tool for the Eco Data Visualization and Monitoring Project management team.
2. The Scope Management Plan, the deliverable created for specific objective number one, along with the WBS and WBS Dictionary template, were developed for capturing the information gathered during meetings with the project's stakeholders and from the review of available project documents.
3. The Schedule Management Plan, the output from specific objective number two, was created along with Activity definition and sequencing, Schedule Network Diagram and Gantt Chart, in order to adequately identify and orchestrate each project activity to ensure the project is completed within the time constraints.
4. The Cost Management Plan, the output from specific objective number three, was created using a template in Microsoft Excel to develop the project budget along with another template that captured the Cost Management Plan. This will guide the development of cost management performance measures and other documents such as cost baselines and project funding requirements.
5. The Quality Management Plan, the output from specific objective number four, was created to identify the project's quality management approach, requirements/standards, quality assurance and control that will be used throughout the project to ensure that quality was built into the project's processes and products.
6. The Resource Management Plan, the output from specific objective number five, was created to outline all resources required to complete the project. These resources were identified and classified in a thorough list based on responsibilities and roles. Additionally, the project organization chart was developed and a comprehensive outline of how resources will be managed for the duration of the project are outlined.

7. The Communication Management Plan, the output of specific objective number six, was created along with major audience list and communication matrix ensuring that the means of sharing information at the right time, format and person are properly outlined for the duration of the project.
8. The Risk Management Plan, the output of specific objective number seven, was created to capture and classify project risk to ensure that effective risk response could be planned. In addition, a risk register was created for the plan.
9. The Procurement Management Plan, the output of specific objective number eight, was created to identify the approach for procurement during the project, the types of contracts and approval process. Procurement risk was identified along with management strategies.
10. The Stakeholder Management Plan, the output of specific objective number nine, was developed outlining project stakeholders, their classification, management and engagement during the project's lifecycle.
11. Make a Way Foundation Inc. has a relatively small project management team, thus, the writer, in her role as assistant project manager, developed all subsidiary documents, plans, and templates. The writer also conducted meeting with key persons within the organization and reviewed the minutes and all other relevant project documents.

## RECOMMENDATIONS

1. Make a Way Foundation Inc. should implement formal project management methods to increase the success rate in completing projects.
2. Make a Way Foundation Inc. should develop standard project management initiation and planning documents before the execution of any project.
3. All projects managed by Make a Way Foundation Inc. should be run by a project management team using the standard project planning documents tailored for that project.
4. Make a Way Foundation Inc. should use a Project Management Guide to guide the development of all their project management tools.
5. The project team of Make a Way Foundation Inc. should use absolute care and caution when developing subsidiary plans for their project management plan to ensure that the plan is accurate and comprehensive.
6. Make a Way Foundation Inc. should utilize a storage and document management system to store and organize all documents created for review in the future.
7. The directors of Make a Way Foundation Inc. should ensure a project team is hired before any project is started to allow for the team to conduct project planning activities in order to enhance the project management process during the project's lifetime.
8. The planning process and templates developed during the development of this plan should be considered by Make a Way Foundation Inc. as a basis for an implementation methodology for future projects by the organization.

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APPENDICES

## Appendix 1: FGP Charter

| PROJECT CHARTER<br>Formalizes the project start and confers the project manager with the authority to assign company resources to the project activities. Benefits: it provides a clear start and well defined project boundaries. | |
|---|---|
| **Date** | **Project Name:** |
| 13 May 2019 | Project Management Plan for Eco Data Visulization and Monitoring Project – Grenada |
| **Knowledge Areas / Processes** | **Applicacion Area (Sector / Activity)** |
| **Knowledge areas:** Project integration Management, Project Scope Management, Project Time Management, Project Cost Management, Project Quality Management, Project Resource Management, Project Risk Management, Project Procurement Management, Project Communication Management Project Stakeholder Management<br><br>**Process groups:** Initiation, Planning, Monitoring and Controlling | Climate Change/ Information technology |
| **Start date** | **Finish date** |
| 29 July 2019 | November 2019 |
| **Project Objectives (general and specific)** | |
| General objective:<br>**To develop a Project Management Plan to manage the Eco Data Visuilization and Monitoring Project – Grenada, that is within the Project Management Body of Knowledge (PMBOK), a guide and set of good practices for Project Management.**<br><br>Specific objectives:<br>1. To create a Scope Management Plan to define all the scope of work required to successfully complete the project.<br>2. To create the Schedule Management Plan to support and manage the project schedule to ensure the project stays within and is completed within the time constraints.<br>3. To create a Cost Management Plan define the development and management the project budget to ensure the project stay and is completed within the budget constraints.<br>4. To develop a Quality Management Plan to highlight the quality requirements of the proejct to ensure results meet expectations and approval within the scope, time and cost constraints.<br>5. To create a Resource Management Plan to ensure all required resources are identifed and managed effectively to ensure the completion of the project within the scope, time and cost constraints. | |

6. To develop a Communication Management Plan to ensure effective and timely communication of project key information and status to relevant personnel.
7. To create a Risk Management Plan to adequately identify, examine, manage and minimize negative risk, while at the same time expolit, share and enhance and or accept the positive risk to ensure the successful completion of the project
8. To develop a Procurement Management Plan to be used to procure products, services or results required for the successful completion of the project.
9. To develop a Stakeholder Management Plan to effectively identify, manage and engage all project stakeholders to ensure successful completion of the project.

## Project purpose or justification (merit and expected results)

This project to develop a project mangement plan for the Eco  Data Visulization and Monitoring Project – Grenada is required to create all necessary documents to be used by the project management team during the implementation, monitoring and controlling, and colsing to effectively manage and sucessfully complete the project. The GEF Small Grants Program has Granted the Make a Way Foundation Inc. the opportunity to develop and execute this project. This Eco Data Visulization and Monitoring project involves two separate, but connected elements. The first is the development of a Smart Waste Management System through the use of Smart Garbage Bins; the second the development of an interactive, visually driven data website populated with information related to climate change research.

Research conducted in Grenada and published by Deutshe Gesellschaft für Internationale Zusammenarbiet (GIZ) GmbH in December 2015, titled Reducing the input of plastic litter into the ocean around Grenada, stated that the number one source of littering in Grenada is poorly maintained bins. The research also went on to indicate that the overflowing of bins and the behaviour of citizens resulted in siginificant littering in public areas. This project will provide the platfrom for assisting in the reduction of litter and awareness of citizens on the detrimental effects of poor waste management on the environment.

The project manager and management team understand fully the importance of this project and as such the importance of proper planning and management of this project to ensure its successful completion. During this project the project manager will develop all necessary documents related to the project management plan for the Eco Data Visulization and Monitoring Project – Grenada to ensure it meets all its scope, time, cost and quality constraints.

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

The Project Maangement plan for the Eco Data Visulization and Monitoring Project containing all subsidary documents.

## Assumptions

Project can be completed within stipulated three (3) months time frame.
Project can be completed by one (1) person.

## Constraints

Time: Sixteen (16) weeks for completion no room for extension
One (1) person required to complete all project requirments

## Preliminary risks

1. If project milestone schedule is not adhered to, the project management plan may not be completed and subsequently impact the quality of the project
2. If support from tutor/advisor/supervisor is tardy, the project management plan may not be completed subsequently impact the quality of the project
3. If permission or access to required information is hindered it can affect completion time and subsequently the quality of the project.
4. If there is inadequate approval of deliverables this can delay project completion time.

## Budget

The budget will constitute of financial resources required to print, bind and ship Final Graduation Project to Costa Rica

## Milestones and dates

| Milestone | Start date | End date |
|---|---|---|
| Tutoring | 29 July 2019 | 18 October 2019 |
| Tutor Assignment | 29 July 2019 | 29 July 2019 |
| Communication | 16 August 2019 | 16 August 2019 |
| Previous Chapter Adjustments | 17 August 2019 | 17 August 2019 |
| Chapter IV: Development (Results) | 17 August 2019 | 27 August 2019 |
| - Project Integration: Project Management Plan | 17 August 2019 | 17 August 2019 |
| - Scope Management Plan | 19 August 2019 | 20 August 2019 |
| - Schedule Management Plan | 21 August 2019 | 22 August 2019 |
| - Cost Management Plan | 29 August 2019 | 30 August 2019 |
| - Quality Management Plan | 31 August 2019 | 5 September 2019 |
| - Resource Management Plan | 28 August 2019 | 30 August 2019 |
| - Communication Management Plan | 19 August 2019 | 29 August 2019 |
| - Risk Management Plan | 6 September 2019 | 13 September 2019 |
| - Procurement Management Plan | 23 August 2019 | 28 August 2019 |
| - Stakeholder Management Plan | 17 August 2019 | 19 August 2019 |
| Chapter V: Conclusion | 2 September 2019 | 6 September 2019 |
| Chapter VI: Recommendations | 9 September 2019 | 13 September 2019 |
| Tutor Approval | 13 September 2019 | 13 September 2019 |
| FGP Submission to Review | 16 September 2019 | 4 October 2019 |
| Review | 16 September 2019 | 20 September 2019 |
| Adjustments | 7 October 2019 | 1 November 2019 |
| Presentation to Board | 4 November 2019 | 8 November 2019 |

## Relevant historical information

Make a Way Foundation Inc. is a relatively new non-profit organization that seeks to improve the lives of the most vulnerable within their community and the development of the environment in which we exist. Before the foundation was registered its executive board has been involved in a nationwide climate change project on the island of Grenada, Carriacou and Petite Martinque. They developed and created two children's books that tackled the issues of climate change and disaster risk reduction and created a platform for both students, teachers and parents to dicuss the pressing issue of climate change. They also developed an integrated mobile application for both the books that was made availabe on both the Google and Apple app stores for free downloads. These two resources have allowed for the increased education and awareness of Grenada's children on the cause, impacts and possible adaption mesaures that can be taken in regards to climate change and disaster risk reduction.
Sine then the foundation has been registered and is currently seeking new ways that it can address pressing issues within the communities of Grenada and ensuring the country's resilience is built on the community level in regards to cliamte change and environmental protection.

## Stakeholders

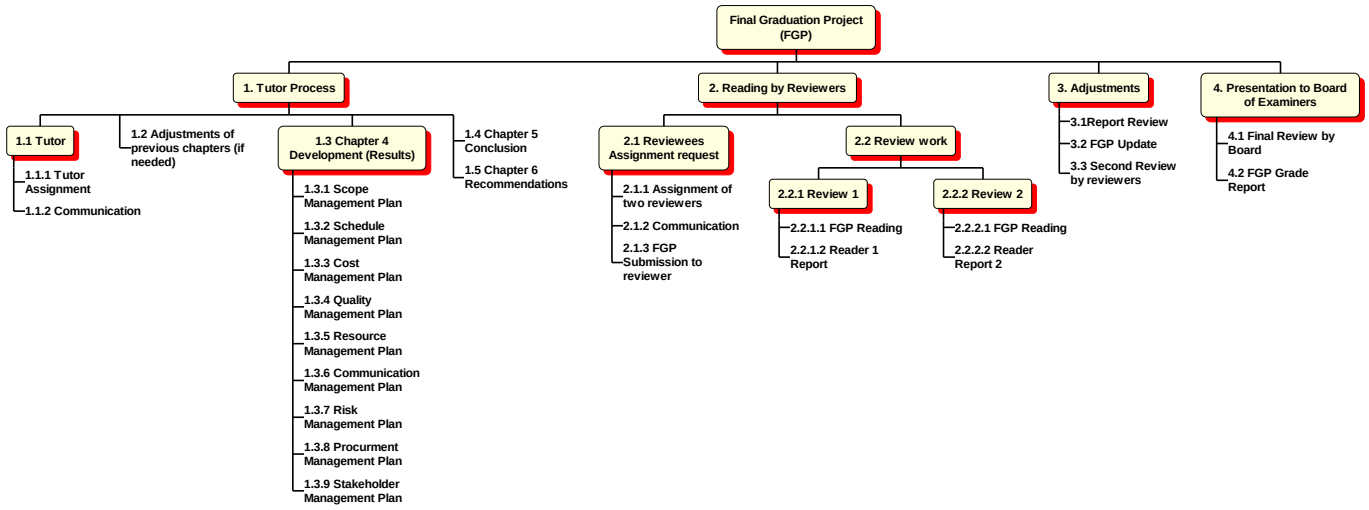
Direct stakeholders:
Project Manager
Project Management Team of Make a Way Foundation Inc.
FGP Lecture
FGP Tutor

Indirect stakeholders:
Government of Grenada
Community Members/ Citizens of Grenada
Academic Assistant
Reviewers

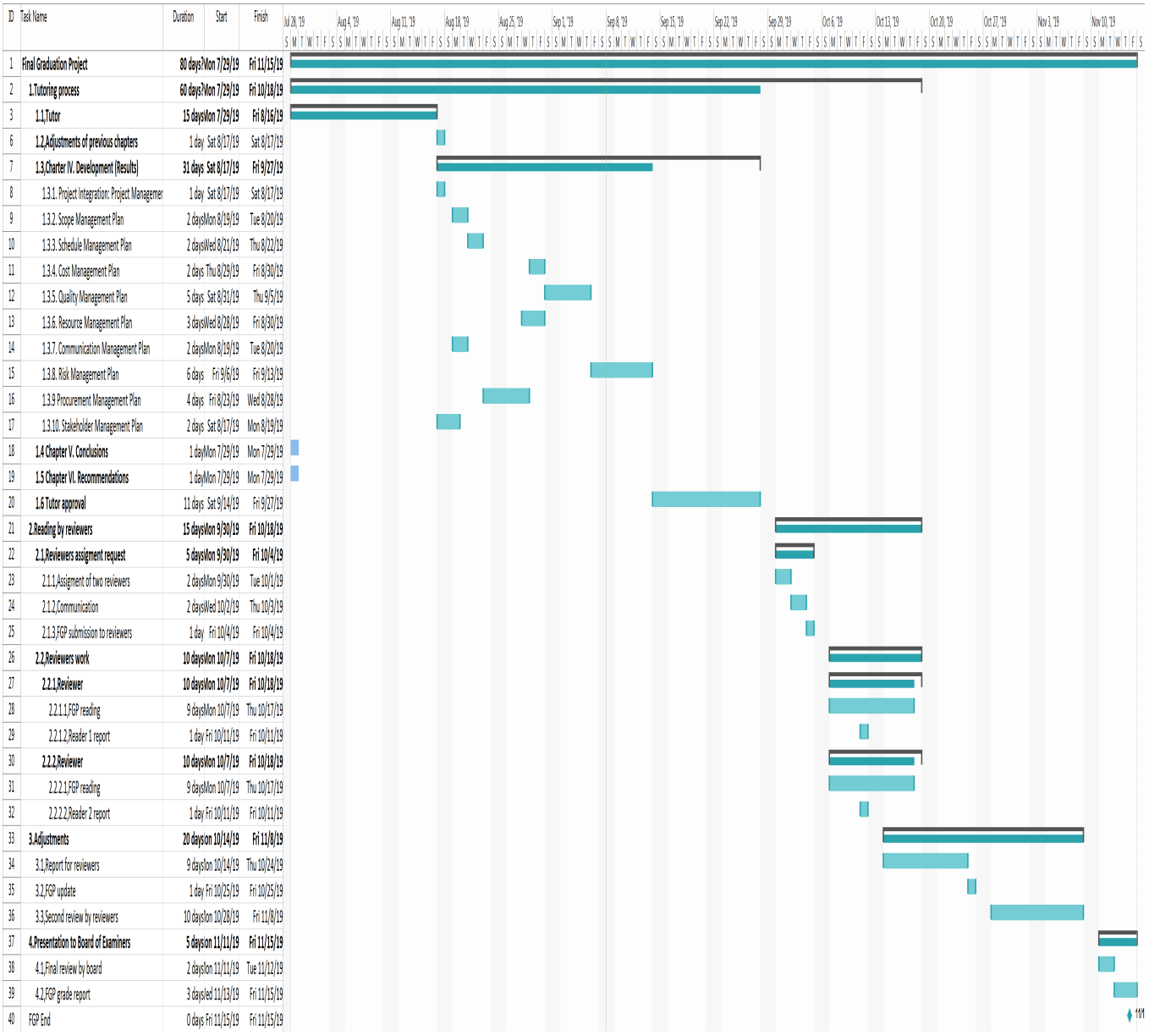
| | |
|---|---|
| **Project Manager: Renae Baptiste** | **Signature:** |
| **Authorized by:** | **Signature:** |

## Appendix 2: FGP WBS

| WBS | Name |
|---|---|
| **0** | **Final Graduation Project (FGP)** |
| **1** | **Tutor Process** |
| **1.1** | **Tutor** |
| 1.1.1 | Tutor Assignment |
| 1.1.2 | Communication |
| 1.2 | Adjustments of previous Chapters (if needed) |
| 1.3 | Chapter 4 Development (Results) |
| 1.3.1 | Scope Management Plan |
| 1.3.2 | Schedule Management Plan |
| 1.3.3 | Cost Management Plan |
| 1.3.4 | Quality Management Plan |
| 1.3.5 | Resource Management Plan |
| 1.3.6 | Communication Management Plan |
| 1.3.7 | Risk Management Plan |
| 1.3.8 | Procurement Management Plan |
| 1.3.9 | Stakeholder Management Plan |
| 1.4 | Chapter 5 Conclusion |
| 1.5 | Chapter 6 Recommendations |
| **2** | **Reading by reviewers** |
| **2.1** | **Reviewees assignment request** |
| 2.1.1 | Assignment of two reviewers |
| 2.1.2 | Communication |
| 2.1.3 | FGP submission to reviewer |
| **2.2** | **Reviews work** |
| **2.2.1** | **Review 1** |
| 2.2.1.1 | FGP reading |
| 2.2.1.2 | Reader 1 report |
| **2.2.2** | **Reviewer 2** |
| 2.3.2.1 | FGP Reading |
| 2.2.2.2 | Reader 2 report |
| **3** | **Adjustments** |
| 3.1 | Report for reviewers |
| 3.2 | FGP update |
| 3.3 | Second review by reviewers |
| **4** | **Presentation to Board of examiners** |
| 4.1 | Final review by board |
| 4.2 | FGP grade report |


Final Graduation Project (FGP)
1. Tutor Process
1.1 Tutor
1.1.1 Tutor Assignment
1.1.2 Communication
1.2 Adjustments of previous chapters (if needed)
1.3 Chapter 4 Development (Results)
1.3.1 Scope Management Plan
1.3.2 Schedule Management Plan
1.3.3 Cost Management Plan
1.3.4 Quality Management Plan
1.3.5 Resource Management Plan
1.3.6 Communication Management Plan
1.3.7 Risk Management Plan
1.3.8 Procurment Management Plan
1.3.9 Stakeholder Management Plan
1.4 Chapter 5 Conclusion
1.5 Chapter 6 Recommendations
2. Reading by Reviewers
2.1 Reviewees Assignment request
2.1.1 Assignment of two reviewers
2.1.2 Communication
2.1.3 FGP Submission to reviewer
2.2 Review work
2.2.1 Review 1
2.2.1.1 FGP Reading
2.2.1.2 Reader 1 Report
2.2.2 Review 2
2.2.2.1 FGP Reading
2.2.2.2 Reader Report 2
3. Adjustments
3.1Report Review
3.2 FGP Update
3.3 Second Review by reviewers
4. Presentation to Board of Examiners
4.1 Final Review by Board
4.2 FGP Grade Report

## Appendix 3: FGP Schedule



| ID | Task Name | Duration | Start | Finish |
|---|---|---|---|---|
| 1 | **Final Graduation Project** | **80 days** | **Mon 7/29/19** | **Fri 11/15/19** |
| 2 | **1.Tutoring process** | **60 days** | **Mon 7/29/19** | **Fri 10/18/19** |
| 3 | **1.1.Tutor** | **15 days** | **Mon 7/29/19** | **Fri 8/16/19** |
| 6 | **1.2.Adjustments of previous chapters** | 1 day | Sat 8/17/19 | Sat 8/17/19 |
| 7 | **1.3.Charter IV. Development (Results)** | **31 days** | **Sat 8/17/19** | **Fri 9/27/19** |
| 8 | 1.3.1. Project Integration: Project Managemer | 1 day | Sat 8/17/19 | Sat 8/17/19 |
| 9 | 1.3.2. Scope Management Plan | 2 days | Mon 8/19/19 | Tue 8/20/19 |
| 10 | 1.3.3. Schedule Management Plan | 2 days | Wed 8/21/19 | Thu 8/22/19 |
| 11 | 1.3.4. Cost Management Plan | 2 days | Thu 8/29/19 | Fri 8/30/19 |
| 12 | 1.3.5. Quality Management Plan | 5 days | Sat 8/31/19 | Thu 9/5/19 |
| 13 | 1.3.6. Resource Management Plan | 3 days | Wed 8/28/19 | Fri 8/30/19 |
| 14 | 1.3.7. Communication Management Plan | 2 days | Mon 8/19/19 | Tue 8/20/19 |
| 15 | 1.3.8. Risk Management Plan | 6 days | Fri 9/6/19 | Fri 9/13/19 |
| 16 | 1.3.9 Procurement Management Plan | 4 days | Fri 8/23/19 | Wed 8/28/19 |
| 17 | 1.3.10. Stakeholder Management Plan | 2 days | Sat 8/17/19 | Mon 8/19/19 |
| 18 | **1.4 Chapter V. Conclusions** | 1 day | Mon 7/29/19 | Mon 7/29/19 |
| 19 | **1.5 Chapter VI. Recommendations** | 1 day | Mon 7/29/19 | Mon 7/29/19 |
| 20 | **1.6 Tutor approval** | 11 days | Sat 9/14/19 | Fri 9/27/19 |
| 21 | **2.Reading by reviewers** | **15 days** | **Mon 9/30/19** | **Fri 10/18/19** |
| 22 | **2.1.Reviewers assigment request** | **5 days** | **Mon 9/30/19** | **Fri 10/4/19** |
| 23 | 2.1.1.Assigment of two reviewers | 2 days | Mon 9/30/19 | Tue 10/1/19 |
| 24 | 2.1.2.Communication | 2 days | Wed 10/2/19 | Thu 10/3/19 |
| 25 | 2.1.3.FGP submission to reviewers | 1 day | Fri 10/4/19 | Fri 10/4/19 |
| 26 | **2.2.Reviewers work** | **10 days** | **Mon 10/7/19** | **Fri 10/18/19** |
| 27 | **2.2.1.Reviewer** | **10 days** | **Mon 10/7/19** | **Fri 10/18/19** |
| 28 | 2.2.1.1.FGP reading | 9 days | Mon 10/7/19 | Thu 10/17/19 |
| 29 | 2.2.1.2.Reader 1 report | 1 day | Fri 10/11/19 | Fri 10/11/19 |
| 30 | **2.2.2.Reviewer** | **10 days** | **Mon 10/7/19** | **Fri 10/18/19** |
| 31 | 2.2.2.1.FGP reading | 9 days | Mon 10/7/19 | Thu 10/17/19 |
| 32 | 2.2.2.2.Reader 2 report | 1 day | Fri 10/11/19 | Fri 10/11/19 |
| 33 | **3.Adjustments** | **20 days** | **on 10/14/19** | **Fri 11/8/19** |
| 34 | 3.1.Report for reviewers | 9 days | on 10/14/19 | Thu 10/24/19 |
| 35 | 3.2.FGP update | 1 day | Fri 10/25/19 | Fri 10/25/19 |
| 36 | 3.3.Second review by reviewers | 10 days | on 10/28/19 | Fri 11/8/19 |
| 37 | **4.Presentation to Board of Examiners** | **5 days** | **on 11/11/19** | **Fri 11/15/19** |
| 38 | 4.1.Final review by board | 2 days | on 11/11/19 | Tue 11/12/19 |
| 39 | 4.2.FGP grade report | 3 days | ed 11/13/19 | Fri 11/15/19 |
| 40 | FGP End | 0 days | Fri 11/15/19 | Fri 11/15/19 |

# Appendix 4: Philology Letter

Alyssa M.J. Bierzynski, MA

Morne Jaloux, St. George, Grenada
Email: aly.bierzynski@gmail.com
Tel: 1473.407.3217

January 10, 2020

To Whom It May Concern:

**Re: Final Graduation Project prepared by Ms. Renae Baptiste**

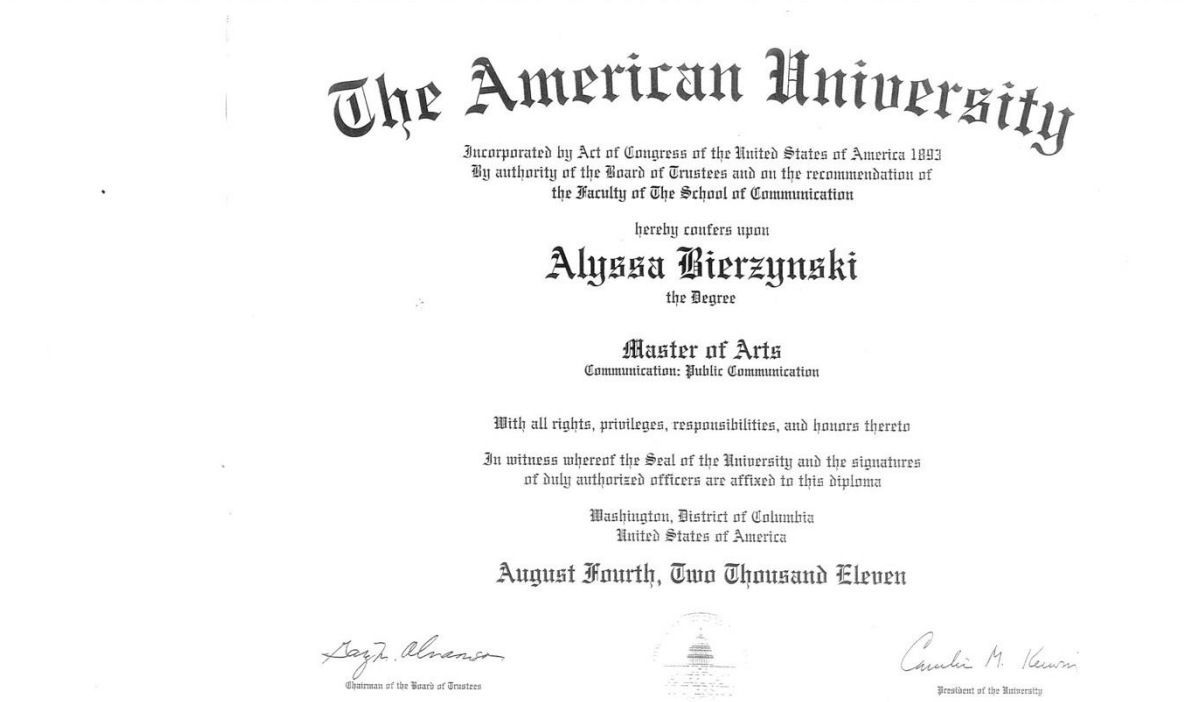
This letter confirms that I have conducted a thorough review for the use of English of the final graduation project (FGP) prepared by Ms. Renae Baptiste in partial fulfillment of the requirements of the Master in Project Management degree from Universidad Para La Cooperacion Internacional.

I am a former university instructor of English who now provides writing and editing support to clients in Grenada. I hold a Bachelor of Arts degree in Liberal Studies with a specializatio n in English Language and a Master of Arts degree in Public Communication.

Kind regards,

Alyssa Bierzynski

## Appendix 4: Philology Qualifications



The American University

Incorporated by Act of Congress of the United States of America 1893
By authority of the Board of Trustees and on the recommendation of
the Faculty of The School of Communication

hereby confers upon

Alyssa Bierzynski

the Degree

Master of Arts
Communication: Public Communication

With all rights, privileges, responsibilities, and honors thereto

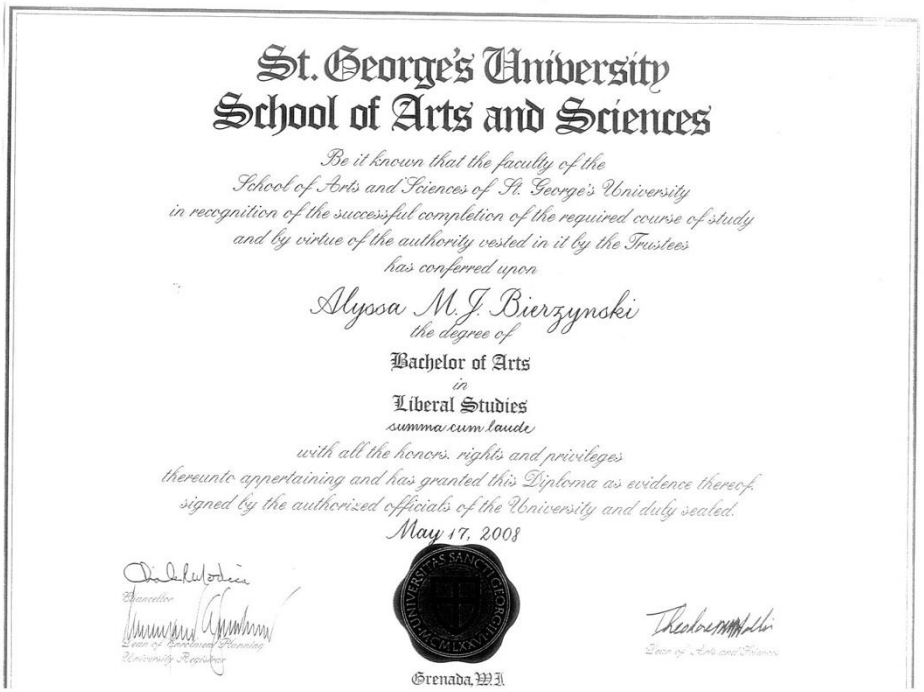
In witness whereof the Seal of the University and the signatures
of duly authorized officers are affixed to this diploma

Washington, District of Columbia
United States of America

August Fourth, Two Thousand Eleven

Chairman of the Board of Trustees

President of the University



St. George's University
School of Arts and Sciences

*Be it known that the faculty of the*
*School of Arts and Sciences of St. George's University*
*in recognition of the successful completion of the required course of study*
*and by virtue of the authority vested in it by the Trustees*
*has conferred upon*

*Alyssa M.J. Bierzynski*
*the degree of*

Bachelor of Arts
*in*
Liberal Studies
*summa cum laude*

*with all the honors, rights and privileges*
*thereunto appertaining and has granted this Diploma as evidence thereof*
*signed by the authorized officials of the University and duly sealed.*

*May 17, 2008*

Grenada, WI