UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

PROJECT MANAGEMENT PLAN FOR THE MALARIA RAPID DIAGNOSTIC TEST (RDT) KITS IN POTARO-SIPURUNI (REGION 8), COOPERATIVE REPUBLIC OF GUYANA, PILOT PROJECT

QUACY ASHEEKE GRANT

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

Georgetown, Guyana

July 2019

UNIVERSIDAD PARA LA COOPERACION INTERNACIONAL
(UCI)

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

Sofia Crawford
TUTOR

Fabio Munoz
REVIEWER No.1

Ruben Alzate
REVIEWER No.2

Quacy Asheeke Grant
STUDENT

DEDICATION

I would like to dedicate this thesis/paper to God and to my parents (Eryl and Semoine Grant) for their unconditional love and support throughout the years.

ACKNOWLEDGEMENTS

I would like to express my gratitude to all my tutors who have helped me during this process.

TABLE OF CONTENT

INDEX OF FIGURES

ABBREVIATIONS AND ACRONYMS

- AIDS…….Acquired Immune Deficiency Syndrome
- AMI……..Amazon Malaria Initiative
- ANC…….Antenatal Clinic
- BCC…….Behaviour Change Communication
- CCM……Country Coordinating Mechanism
- CHW……...Community Health Worker
- CRIV……Combined Requisition and Issue Voucher
- CSO……Community Service Officers
- FGP…….Final Graduation Project
- GHSC-PSM……Global Health Supply Chain–Procurement & Supply Management
- GPHC…….Georgetown Public Hospital Corporation
- GTT…….Guyana Telephone and Telegraph
- HIS……..Health Information System
- HIV……..Human Immune Deficiency Virus
- HSA……Health System Assessment
- HRH……Human Resources for Health
- HR……..Human Resources
- IEC…….Information Education and Communication
- IRS…….Indoor Residual Spraying
- LLIN……Long Lasting Insecticide Treated Nets
- LMIS……..Logistics Management Information System
- LMU……Logistics Management Unit
- MALSYS……Malaria Information System
- MIS……Management Information System
- MMU……..Materials Management Unit
- MoC……Ministry of Communities
- MoPH…….Ministry of Public Health

- NCDs…….Non-Communicable Diseases
- NGO……...Non-Governmental Organization
- NMP……National Malaria Programme
- NHSS…….National Health Sector Strategy
- RDC……Regional Democratic Council
- RHA……Regional Health Authority
- PPGHS……..Package of Publicly Guaranteed Health Services
- PAHO…….Pan American Health Organization
- PMBOK…….Project Management Body of Knowledge
- PMI……Project Management Institute
- PSM……...Public Service Ministry
- RDT……Rapid Diagnostic Tests
- SMS……Short Mobile Messaging Service
- SOW……..Statement of Work
- TB……..Tuberculosis
- USAID……United States Agency for International Development
- VCS……Vector Control Services
- VSO……Voluntary Service Officers
- WBS……Work Breakdown Structure
- WHO……..World Health Organization

GLOSSARY

Sensitivity: Specificity is the number of positive test results among the clients/patients who DO have the disease (in this case, malaria).

Specificity: Specificity is the number of negative tests results among the clients/patients who DO NOT have the disease (in this case, malaria).

EXECUTIVE SUMMARY (ABSTRACT)

Malaria in Guyana is endemic in the hinterland where the main economic activities include logging and gold/diamond mining (Ministry of Health-Vector Control Services, 2013). There have been 31,479 new cases of malaria countrywide; 93% of which have come from the hinterland regions of Guyana (Regions 1, 7, 8 and 9). In that same year, Region 8 (Potaro-Sipuruni) accounted for 25% of the total number of malaria cases registered nationally (Malaria Information System [MALSYS], MoPH). This pilot project in Region 8 was developed to test a complementary malaria diagnostic tool to the gold standard for diagnosis (microscopy) in affected areas and will be used as a template for countrywide implementation.

The general objective for this project was to develop a project management plan for the Malaria RDT kits in Potaro-Sipuruni Pilot Project to determine the sensitivity and specificity of RDTs in the public health and private sector (mining/logging population) of Guyana. The specific objectives were to develop an integration management plan to coordinate the various project management activities within their respective project management process groups; to develop a scope management plan to define the work needed to undertake the pilot project; to develop a schedule management plan to establish the policies, procedures and documentation for planning, developing, managing, executing and controlling the schedule of the pilot project; to develop a cost management plan to establish the policies, procedures and documentation for planning, managing, expending and controlling the costs of the pilot project; to develop a quality mangement plan to establish the policies, procedures and documentation for identifying quality requirements and/standards for the pilot project and its deliverables; to develop a project resources management plan to establish the policies, procedures and documentation for the effective use of the persons involved in the pilot project; to develop a communications management plan to establish the processes, procedures and documentation to determine the information and communication needs of the stakeholders of the pilot project; to develop a risk management plan to define how risks will be manged in the pilot project (who will be involved with which responsibilities, which processes will be used, and which activities will be conducted); to develop a procurement plan to outline how the procurements will be managed during the life of the pilot project; and, to develop a stakeholders management plan to define the processes, procedures, tools and techniques to effectively engage stakeholders in project decisions and execution.

The methodology used for the research was analytical or explanatory. The main sources used to gather information included A Guide to the Project Management Body of Knowledge (*PMBOK® Guide*) Sixth Edition and interviews which were held with members from the Ministry of Public Health, Guyana. The information was analyzed to create each subcomponent of the subsidiary plans used to develop the Project Management Plan for the pilot project.

Each element of the Project Management Plan has been created, along with all the tools, techniques, and concepts used to justify each management decision selected for application. In order to increase the successful piloting of the Malaria Rapid Diagnostic Tests, the Project Manager has sought to develop the Project Management Plan by detailing the management of all critical aspects of the project. Each step was coordinated strategically to develop all the subsidiary documents which has been used as a guide during project execution. As a result of the Project managment plan, the Ministry of Public Health (and specifically Vector Control Services) was able to create a cultura of planning for better accountability and transparency, especially at the micro-level where close monitoring and supervisión are essential.

Having explored the objectives highlighted above, the following conclusions can be delineated. A project management plan for the Malaria RDT kits in Potaro-Sipuruni Pilot Project to determine the sensitivity and specificity of RDTs in the public health and private sector (mining/logging population) of Guyana was developed by integrating the knowledge areas described in the specific objectives, such as scope, schedule and cost. A scope management plan was developed using information from the project charter and consutation meetings with the main project stakeholders. The scope statement was defined; and, the WBS was set up as a means of describing the activities to accomplish the project scope. On the other hand, A schedule management plan was created using as base documents the project charter and the scope mangement plan. The schedule management plan was developed through expert judement and meetings to refine the activities list to determine resources needed to accomplish them in the allotted time-frame. A cost management plan was developed utilizing information from the project charter, the scope mangement plan and schedule mananagement plan. The project budget was created through expert judement and consultative meetings with the project team and other pertinent project stakeholders. The success of this project is hinged on the decentralization of the national malaria programme as the pilot is being implemented in one of the malaria-endemic regions of the country (Region 8). This region represents a subset of the malaria situation in the entire country.

As such, it is recommended for the *management of VCS-MoPH* that there be a project management plan to test the decentralization of malaria services in Region 8 prior to piloting this new intervention. Without this, there is a high probability that this project management plan would not be effectively rolled out. As it is widely known, one can have the best plan, however, if the infrastructure is not there to implement the plan, the plan is bound to be a failure. Based on the results of this pilot project, it is recommended that *the funder* (in this case, The Global Fund Fight Against HIV/AIDS, Tuberculosis and Malaria) consider funding a feasibility study be done for the country-wide use of malaria RDTs in public and private sectors. This is important before any attempts are made to scale-up the implementation of this intervention. On this note, it is also recommended that the *management of VCS-MoPH* can then implement the feasibility study as the funding becomes available.

1.0 INTRODUCTION

1.1 Background

The Republic of Guyana is the only English-speaking country in South America and was part of the British Caribbean before gaining independence in 1966. Guyana is bordered by the Atlantic Ocean to the north, Suriname to the east, Venezuela on the west and Brazil to the south-west (PAHO 2009). Most of Guyana's interior is classified as parts of the Amazon Basin. With a land area of approximately 214,000 square kilometers, it is divided into ten administrative regions (Regions 1 to 10) and four geographical regions; the interior savannahs, the highland region, the hilly sand and clay area and the low coastal plain. Guyana has a total population of 747,884. Most of the population 89.1% (666,261) lives in the coastal areas in regions 2, 3, 4, 5, 6 &10. The hinterland regions (1, 7, 8 and 9) have a total of 81,623 which represents 10.9% of the country's population (Ministry of Health-Vector Control Services, 2013).

The national Malaria Eradication Programme began in the early 1950s and focused heavily on the control of malaria in the sugar plantations located on the low coastal plains. Malaria was eliminated from the coastal area and by 1974 the number of malaria cases had decreased to just 72 cases in the entire country, the majority in the southern area of the country (administrative Region 9). With the decrease in mortality and morbidity associated with the disease, a concomitant reduction of expenditure on malaria control resulted in a resurgence of the disease during the mid-1980 to mid-1990 in Regions 1, 7 and 8 with the number of cases peaking to over 84,000 in 1995. The national program was restructured in the late 1980s to a control program with emphasis on early detection and treatment in the hinterland regions; along with strengthen capacity for central supervision and management. Following these changes, there was a subsequent decrease in the number of cases until 1999 with 27,283 cases and maintained until 2004 at an average of 25,900 cases annually. Reported new cases were further reduced during the period 2006 to 2009 following a spike in 2005 with almost 40,000 cases reported with more

people ventured further into the high-risk malaria endemic areas to seek gold (Ministry of Health-Vector Control Services, 2013).

1.2 Statement of the problem

Malaria in Guyana is endemic in the hinterland where the main economic activities include logging and gold/diamond mining (extractive industries). According to the 2013 National Malaria Report published by the Ministry of Public Health (MoPH), there have been 31,479 new cases of malaria countrywide; 93% of which have come from the hinterland regions of Guyana (Regions 1, 7, 8 and 9). In that same year, Region 8 (Potaro-Sipuruni) accounted for 25% of the total number of malaria cases registered nationally (Malaria Information System [MALSYS], MoPH).

Malaria prevention and control has historically been executed as a vertical programme with the Vector Control Services/Unit (VCS) of the MOPH, which is responsible for all aspects of the programme (policy, planning, budgeting, capacity building, implementation, and monitoring and evaluation). The VCS builds the capacity of regional level staff (community health workers (CHWs), laboratory staff, medical extension officers and doctors) to:

a) Diagnose cases of malaria through clinical presentation (mainly fever) and microscopy;
b) Treat positive cases using standard malaria treatment guidelines; and,
c) Report cases using standardized reporting forms.

After cases are reported to the VCS, analysis is usually done by the staff of the Malaria Information System (MIS). Little or no analysis is done at the regional level.

The Cooperative Republic of Guyana could employ an innovative and cost-effective method of malaria diagnosis (Malaria Rapid Diagnostic Test), which does not require the need for skilled personnel for its use. However, before its widespread use, the use of Malaria RDTs must be piloted to test their sensitivity and specificity in the Guyanese context.

1.3 Purpose

It is necessary to support the regional malaria programmes by building capacity regionally and fostering health system strengthening through closer collaboration with relevant stakeholders. This would aid in gaining a better understanding of the population's risk of contracting this disease. This pilot project in Region 8 was developed to address challenges posed to address malaria control in affected areas and will be used as a template for countrywide implementation.

A report will be produced which will highlight the procurement of, among others, the RDT kits for the project; an evaluation of the preparation of the public health system of Region 8 for implementation of the project (considering elements of communications, project resources, cost); the effectiveness of the malaria RDTs in the Guyana/Region 8 context; and, the ability of the stakeholders to correctly use these instruments of diagnosis.

The project management plan set the rules for how this pilot project will be managed, including what processes will be used and how they will be implemented. The rules are set through a set of subsidiary plans (scope management plan, schedule management plan, cost management plan, stakeholders management plan, quality management plan, communications management plan, project resources management plan, risk management plan and procurement management plan) and integration plans.

At Ministry of Public Health-Guyana there are guidelines and minor project management elements, specifically management tools, in use to deliver products. However, the project management approach in use is not sufficient to successfully deliver a health-care service delivery of this magnitude. Due to the size and complexity of the project, it is of great importance to produce an extensive management tool. Each element of the Project Management Plan will be created, along with all of the tools, techniques, and concepts used to justify each management decision selected for application.

In order to increase the successful piloting of the Malaria RDTs, the Project Manager will seek to develop the Project Management Plan by detailing the management of all critical aspects of the project. Each step is to be coordinated strategically to develop all of the subsidiary documents which will be used as a guide during project execution. The research proposal will explore the Project Management Institute's (PMI) guide to effectively create a Project Management Plan, providing justification for the decisions made while developing the project's integration, scope, schedule, cost, quality, project resources, communication, risk, procurement, and stakeholder management plans.

1.4 General Objective

- To develop a project management plan for the Malaria RDT kits in Potaro-Sipuruni Pilot Project to determine the sensitivity and specificity of RDTs in the public health and private sector (mining/logging population) of Guyana.

1.5 Specific Objectives

- To develop an integration management plan to coordinate the various project management activities within their respective project management process groups;
- To develop a scope management plan to define the work needed to undertake the pilot project;
- To develop a schedule management plan to establish the policies, procedures and documentation for planning, developing, managing, executing and controlling the schedule of the pilot project;
- To develop a cost management plan to establish the policies, procedures and documentation for planning, managing, expending and controlling the costs of the pilot project;
- To develop a quality mangement plan to establish the policies, procedures and documentation for identifying quality requirements and/standards for the pilot project and its deliverables;

- To develop a project resources management plan to establish the policies, procedures and documentation for the effective use of the persons involved in the pilot project;
- To develop a communications management plan to establish the policies, procedures and documentation to determine the information and communication needs of the stakeholders of the pilot project;
- To develop a risk management plan to define how risks will be managed in the pilot project (who will be involved with which responsibilities, which processes will be used, and which activities will be conducted);
- To develop a procurement plan to outline how the procurements will be managed during the life of the pilot project; and,
- To develop a stakeholders management plan to define the processes, procedures, tools and techniques to effectively engage stakeholders in project decisions and execution.

2. THEORETICAL FRAMEWORK

This section is comprised of company/enterprise framework and project management.

2.1 Company/Enterprise framework

This sub-section comprises the company/enterprise background, mission statement and vision statement.

2.1.1 Company/Enterprise background

In 2010, the Ministry of Public Health completed a Health System Assessment (HSA) utilizing WHO's six-dimensional framework, led into the framing of Health Vision 2020. Based on the principles of individual empowerment and social participation, Health Vision 2020 also identified *Strategic Partnerships* as a seventh dimension to the health system. This dimension holds tremendous potential for facilitating the achievement of desired health outcomes through enhancing the coverage and delivery of health services as well as supporting sustainable resource mobilization and management in the health system (Ministry of Health-Guyana, 2013a).

Figure 1 World Health Organization Health Systems Framework
[Source: Ministry of Health-Guyana, 2013a]

The Ministry of Public Health is the principal steward of the public resources for health in Guyana and is mandated through the Ministry of Health Act 2005 to ensure effective oversight, regulation, coordination and accountability. Working with relevant sector ministries, notably the Ministry of Communities and the Public Service Ministry, the Ministry of Public Health addresses these responsibilities through its seven programmes namely ministry administration, disease control, primary health care, standards and technical services, health sciences education, rehabilitation services, and regional and clinical services. Key legislation framing the sector includes the Ministry of Health Act 2005, the Public Health Ordinance 1934, the Regional Health Authorities Act 2005, and various acts governing health practitioners. Cabinet sub-committees in health and local government continue to provide high level forums for inter-sectoral discussions, coordination and decision-making on health and public policies (Ministry of Health-Guyana, 2013a).

The National Health Sector Strategy 2008-2012 (NHSS) planned for the decentralization of health services to the Regional Health Authorities (RHAs), the restructuring of the Ministry to focus on its leadership role, and the strengthening of resources and strategic information support services. It sets out a broad plan for providing equitable access to high quality and consumer friendly health services based on the principles of:

- Equity in distribution of health knowledge, opportunity and service;
- Consumer Oriented Services that are people focused and user friendly;
- High quality services that represent good value for money and;
- Accountable provider and government (Ministry of Health-Guyana, 2013a).

During its implementation from 2008 to 2012, the Ministry has identified the following as key challenges regarding the NHSS:

- Failure to strategically address the interlinked nature of elements of the health system led to an inefficient approach to health system strengthening.
- Limited prioritization of major interventions led to poor funding and the inadequate use of limited resources, including resource area.
- Poor linkage between the strategic plan, annual work planning processes, and the absence of a monitoring and evaluation framework led to some disengagement between the strategic objectives and operational realities.
- Increased financial resources were disease-focused and established or strengthened vertical programs often to the detriment of sustainability and capacity building in those and other services areas (Ministry of Health-Guyana, 2013a).

Working collaborations and partnerships with various stakeholder groups and representatives have been organized particularly in addressing key infectious diseases - HIV, TB and Malaria. Inter-sectoral initiatives / collaborations on program development and joint implementation of projects concerning areas of mutual interest have also been convened to streamline overlapping mandates. Current key

partners include the Ministries of Education, Agriculture, Communities, and Indigenous Peoples' Affairs (Ministry of Health-Guyana, 2013a).

The Country Coordinating Mechanism (CCM), which was established under the Global Fund to fight AIDS, Tuberculosis and Malaria, exists as a model from which lessons can be applied to improve the effectiveness of inter-sectoral and multi-stakeholder actions in other issue areas including Non-Communicable Diseases (NCDs). Other mechanisms for inter-sectoral coordination exist but are often inadequately utilized. The Cabinet Subcommittee on Health and the Cabinet Subcommittee on Local Government are forums for the Ministry of Public Health to coordinate in ensuring the effective management and implementation of health services. Public-private partnership arrangements have also been developed on a case by case manner to support the delivery of critical and advanced services such as HIV/TB care, open heart surgery, radiation therapy and dialysis (Ministry of Health-Guyana, 2013a).

While there have been some successes with planning and executing multi-stakeholder actions, bureaucratic, political and capacity challenges still impeded the full realization of the potential of collaborations and partnerships in health. The government is often challenged in taking ownership and leading programs due to overcommitted resource areas. These experiences can contribute to articulating a more strategic approach to partnerships in health and identifying the principles that should guide such engagements (Ministry of Health-Guyana, 2013a).

2.1.2 Mission and vision statements

Vision Statement (Ministry of Public Health): "All people of Guyana are among the healthiest in the Caribbean and the Americas by the year 2020" (Ministry of Health-Guyana, 2013a, p.39).

Mission Statement (Ministry of Public Health): "The Ministry of Public Health will create an enabling framework for full participation and provide leadership in the

integrated delivery of quality, effective and responsive health services and prevention measures to improve the physical, mental and social wellbeing of all peoples in Guyana. The ministry, in collaboration with all stakeholders, will steward national health issues of importance to society through advocating for health in all public policy" (Ministry of Health-Guyana, 2013a, p.39).

The elaboration of a project management plan for the implementation of this pilot project is opportune for the documentation of set the rules for how this pilot project will be managed, including what processes will be used and how they will be implemented. Thus, providing a framework/plan on how Guyanese population can be healthiest among the Caribbean and the Americas in the sphere of malaria and vector control..

2.1.3 Organizational structure

The Vector Control Services (VCS) is the technical body of the Ministry of Public Health responsible for the Ministry of Health's response and for the coordination and technical oversight of the development of the project management plan for the effective implementation of this pilot project. The VCS, through the National Malaria Programme, provides technical assistance and guidance to other implementing agencies, line ministries, and units at the central level.

The Regional Health Departments have the shared responsibility of implementing the malaria programmes and activities with VCS. Assigning implementation to the line units will increase the capacity of the MOPH line departments.

The organogram of the VCS and a representation of the relationship of responsibilities and accountabilities across the VCS and Regional Health Departments are presented in Figures 2.

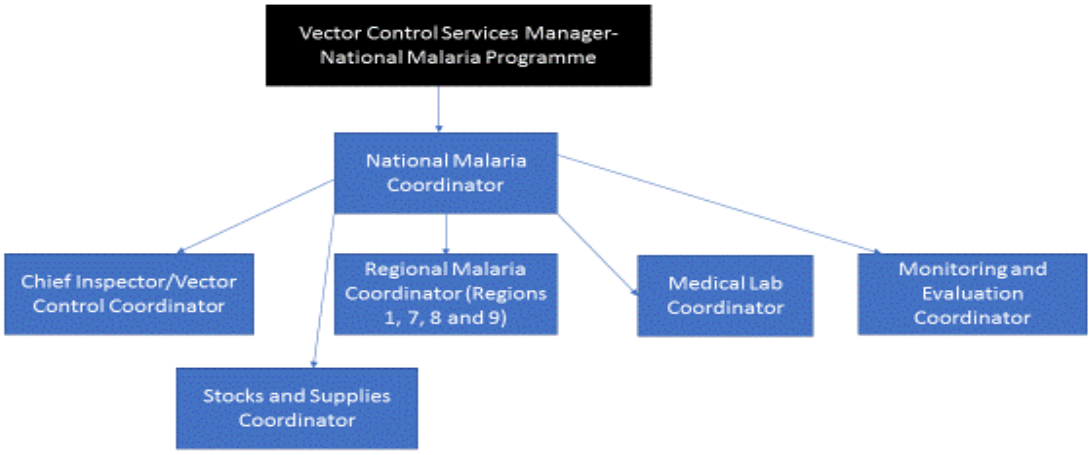


Figure 2 Functional Organization Structure

[Source: Ministry of Health-Vector Control Services, 2013]

2.1.4 Products offered

A. Strategic Information for Health

A robust health information system is among the most important elements across all levels and stages of health services delivery. A well-functioning Health Information System (HIS) will ensure the production, analysis, dissemination and use of reliable and timely information on health determinants, health system performance and health status (Ministry of Health-Guyana, 2013a).

Despite numerous attempts and considerable resource investment, there are still significant challenges in terms of implementing an integrated health information system in the country. However, there are several successful “stand alone” systems that are disease focused. Some of these produce useful reports on a regular basis which are used to guide policy formulation, planning and decision-making. The Ministry of Public Health has recently reiterated that this is an area in which the continued support of the technical partners like Pan American Health

Organization/World Health Organization (PAHO/WHO) would be necessary. To this end, best practices models are being reviewed to determine the lessons that they could provide to help to advance Guyana in addressing its need for an effective health information system. This is important as it would guide the policies, procedures and documentation of the information and communication needs of the stakeholders for their effective engagement in the execution of the project (Ministry of Health-Guyana, 2013a).

B. Drugs and medical supplies

Nationally, drugs and medical supplies are the largest component of the health other-charges budget, averaging 17 percent during 2007 – 2011. During 2008 – 2012, the Government spent over G$58 billion (US$287 million) on drugs and medical supplies. Given the scarcity of fiscal resources and the critical role of medicines in realizing Guyana's health goals, it is imperative that this resource is rationalized, including through the Essential Drugs List, and optimally utilized, through strengthened procurement and supply chain management practices. An inventory management system has been introduced at the Georgetown, Linden, New Amsterdam and Suddie Hospitals and was also scheduled to be implemented in all regional hospitals since the end of 2009. The system allows for more efficient distribution and ready availability of drugs and medical supplies. An essential medicines list is published regularly and there is a national drug formulary committee which works on the preparation of the Guyana National Formulary to include medicines and other supplies and equipment for dental, ophthalmology, surgery, rehabilitation, orthopedics and physiotherapy, among others. The drugs and medical supplies (including the RDTs) needed during the life of the project will guide the procurements to be done and the flow/outline of the procurement process (Ministry of Health-Guyana, 2013a).

C. Service delivery

The Government of Guyana considers health to be the right of every citizen. The responsibility for the health of the people of Guyana rests with the Ministry of Public Health. The Minister of Public Health is the political head of the ministry, the Permanent Secretary (the Accounting Officer) and the Chief Medical Officer have responsibility for all technical and professional aspects of the ministry.

The Ministry of Communities is responsible for managing finances allocated by the central government and for providing services at the regional level through the Regional Democratic Councils (RDCs) which receive technical and professional guidance from the Ministry of Public Health (MoPH). The private sector functions independently but is regulated by the Health Facilities Licensing Regulation (2008), which mandates standards of care and practices. Some NGOs are actively involved in some areas of service delivery, especially with respect to HIV/AIDS.

In 2005, the passage of the Regional Health Authority (RHA) Act and the Ministry of Health Act changed the traditional role and functions of the MoPH from that of a provider of health care to mainly that of regulator. In order to effectively carry out this function the MoPH needs considerable strengthening of the structural and governance arrangements, the establishment of a sector accountability framework, enhancement of the resources planning capacity, improved management capacity of the central ministry and the decentralized entities (Ministry of Health-Guyana, 2013a).

The service delivery model is founded on Primary Health Care principles of equitable distribution of services, inter-sectoral collaboration and community participation. Service delivery in Guyana is managed by the Regional Democratic Councils through five levels of care:

- Levels 1 and 2 offer mainly primary health care services at the community and sub-district levels;

- Level 3 and 4 facilities provide services at the sub-regional (district) and regional levels while; Level 5 consists of national level facilities.

The national referral system is expected to work through and with these facilities to ensure that patients are moved to the appropriate level of care based on their health needs (Ministry of Health-Guyana, 2013a)**.**

Guyana's topography presents a challenge to transportation and communications in all areas of public services and is particularly onerous for regional health services that are underfinanced and under-resourced. In addition, the health system, as in other public services, has difficulty in retaining an adequate number of qualified technical personnel in rural interior locations. These factors have contributed to unevenness in the availability of services identified under the Package of Publicly Guaranteed Health Services (PPGHS). For various social, cultural and economic reasons, the current health services delivery structure also under-serves other segments of the population including men, foreign nationals, frontier and migrant populations, and many in the working population, leading to lost opportunities for prevention and early detection of diseases as well as inadequate care and support. The quality of service delivery required for the project will determine the scope, schedule and cost (triad) of the project. In addition, this will guide the quality requirements for the project and its deliverables (Ministry of Health-Guyana, 2013a).

D. Resources for Health (RH)

In 2010, the Ministry concluded an action plan for strengthening health resources in Guyana for 2011 – 2016. The Action Plan noted that HRH is challenged by urbanization, high attrition rates and out-migration, vacancies and deficiencies in technical and clinical skills particularly affecting Levels 1 to 3 service facilities, and weaknesses in resource information systems, management and development. Worker motivation is adversely affected by existing working conditions, including lack of incentives and inadequate infrastructure. These challenges are compounded by

the absence of an HR information system to inform decision-making (Ministry of Health-Guyana, 2013a).

The Ministry of Public Health has succeeded in increasing the supply of trained health workers through its health science education program. Training programs exist under the Georgetown Public Hospital Corporation (GPHC) and the University of Guyana, in addition to the program for recruiting Cuban doctors and training new doctors in Cuba. Notwithstanding, there is a continuing need for improved training methodologies and modalities to safeguard quality and ensure specialist skills are available as needed. Further there is a need for improved leadership and coordination with the Public Service Ministry (PSM) as well as the Ministry of Communities (MoC) to ensure the timely hiring and retention of HRH. This will guide the documentation of the policies and procedures for the effective use of persons in the pilot project (Ministry of Health-Guyana, 2013a).

2.2 Project management concepts

2.2.1 Project

A project can be defined as “a temporary endeavour undertaken to create a unique product, service, or result” (Project Management Institute, 2017). The piloting of the use of Malaria RDTs in Potaro-Sipuruni (Region 8) of the Cooperative Republic of Guyana is slated to last for a period of six (6) months. The project management plan will set the framework for the rules, policies and procedures that will govern the implementation of same. If this pilot project is successful, then consideration will be given to the nation-wide use of Malaria RDTs.

2.2.2 Project management

“Project management has evolved into a business process” (Kerzner, 2013) being used by companies all over the world to increase corporate value in many ways. For example, it can be used to efficiently deliver services, enhance customer satisfaction, and as a tool to embrace opportunities to expand services (Picariello,

2014). The approach has been used for “thousands of years dating back to the Egyptian epoch” (Appopardi, n.d.). However, the discipline was not formally recognized until the 1950’s (Project Management, n.d.). Within every sector, specifically healthcare, the discipline of project management is integral to success. According to PMI, “ninety percent of global senior executives ranked project management methods as either critical or somewhat important to their ability to deliver successful projects and remain competitive” (Project Management Institute, 2017).

In the field of project management, different methodologies, like Agile, Waterfall, etc., “contain guiding processes for those who are doing project management” (Successful Projects, 2016). Although, each methodology has its advantages, they all agree that “every project management life cycle contains five steps: initiating, planning, execution, monitoring, and controlling & closure” (Picariello, 2015). After initiating the project, planning is seen as “the all-important second step of any successful project management life cycle” (Picariello, 2015). A project’s plan, depending on the project, can be simple or complex. However, in all cases, once completed, it results in a document that contains a fully developed project solution detailing the “steps necessary to meet the project’s objectives” (Watt, 2014).

PMI’s *PMBOK® Guide* is a globally recognized standard (Daley, 2013) that details how to initiate, plan, execute, monitor, and control and close a project. It can be used as a tool to ensure that all project management professionals are speaking the same language and understand the stages and role of the project. For this reason, the *PMBOK® Guide* will be used as the main source of reference to manage the development of the Project Management Plan, and subsequently the implementation of the pilot plan of Malaria RDTs project.

According to PMI, “project management is the application of knowledge, skills, tools, and techniques to project activities to meet the project requirements” (Project Management Institute, 2017). The development of the Final Graduation Project (FGP) will consist of the creation of the Project Management Plan for the piloting of Malaria RDTs in the public health and private sectors and will be managed as a

project. After which, the implementation of the pilot plan of Malaria RDTs project will be managed as another project with five (5) phases. Each phase is identified below:

- PHASE 1: Design Phase
- PHASE 2: Pre-Pilot Phase
- PHASE 3: Pilot
- PHASE 4: Post Pilot Phase
- PHASE 5: Project Closure

The project will commence with the creation of the project charter. Once the charter is reviewed, accepted and formally authorized by the sponsor, the formal identity of the Project Manager will be revealed, authorizing her to “apply organization resources to project activities” (Project Management Institute, 2017).

2.2.3 Project life cycle

A project lifecycle is a “series of phases that a project passes through from its initiation to its closure” (Project Management Institute, 2017). According to Wilson, the project lifecycle is a “natural progression” and the four main stages (phases) in a project lifecycle are concept and approval, planning and preparation, executing work activities, and closing all project activities (Wilson, 2014). However, the *PMBOK® Guide* states that within each phase of a project life cycle, there are five process groups that interact with one another and “could be conducted within a phase” (Project Management Institute, 2017).

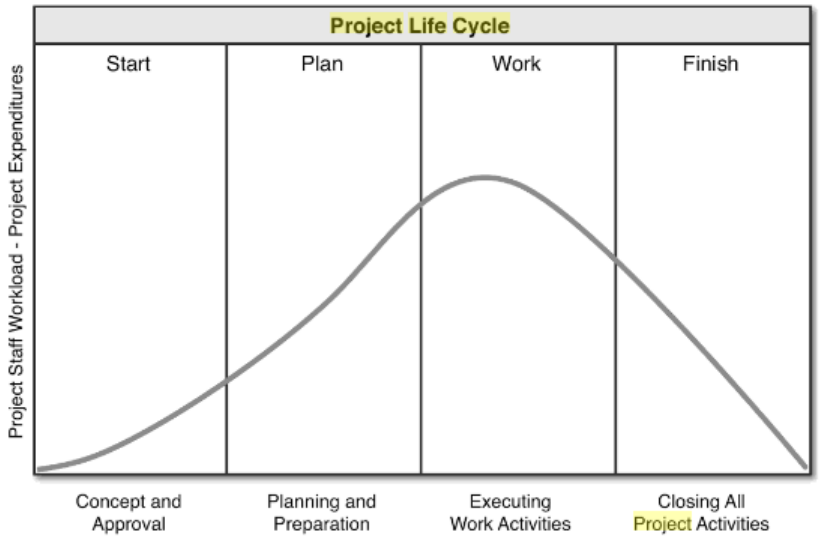


Figure 3 Project life cycle stages of progression

[Source: Daly, 2013]

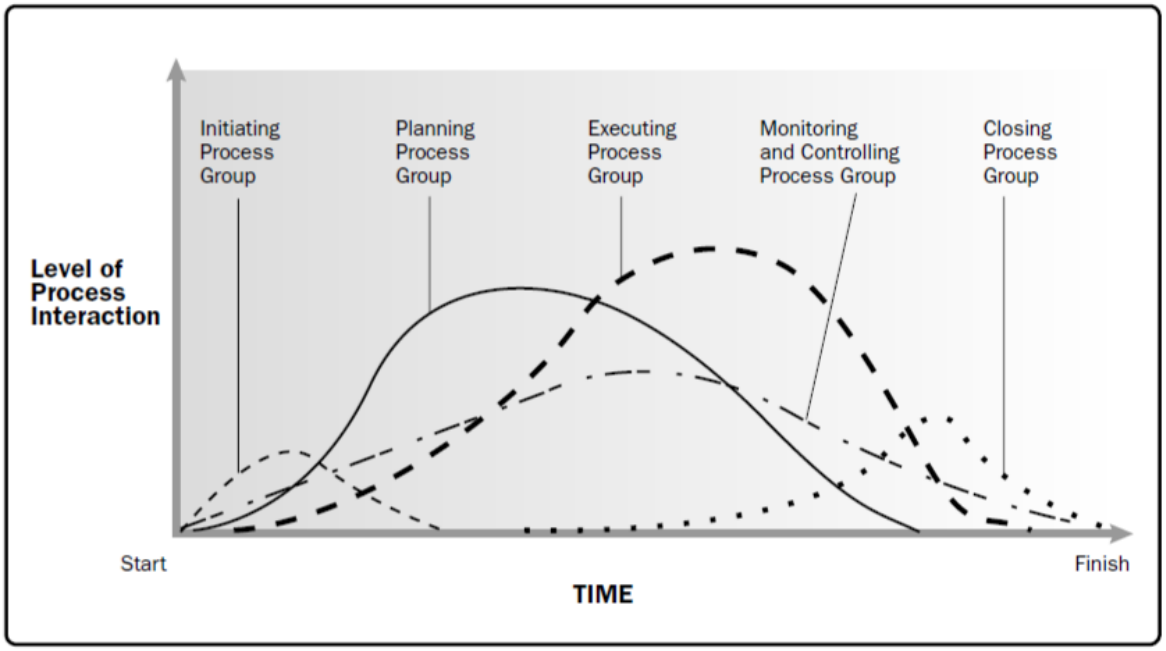


Figure 4 Process groups interact in a Phase or Project

[Source: Project Management Institute, 2017]

2.2.4 Project management processes

Only the processes involved in initiating and planning a project will be used to develop the Project Management Plan for the pilot use of Malaria RDTs in Region 8. A subsidiary document is a document created to support the main document. The Project Management Plan will be a compilation of subsidiary documents. *See* **figure 5** *below*, detailing the processes to be applied during this project.

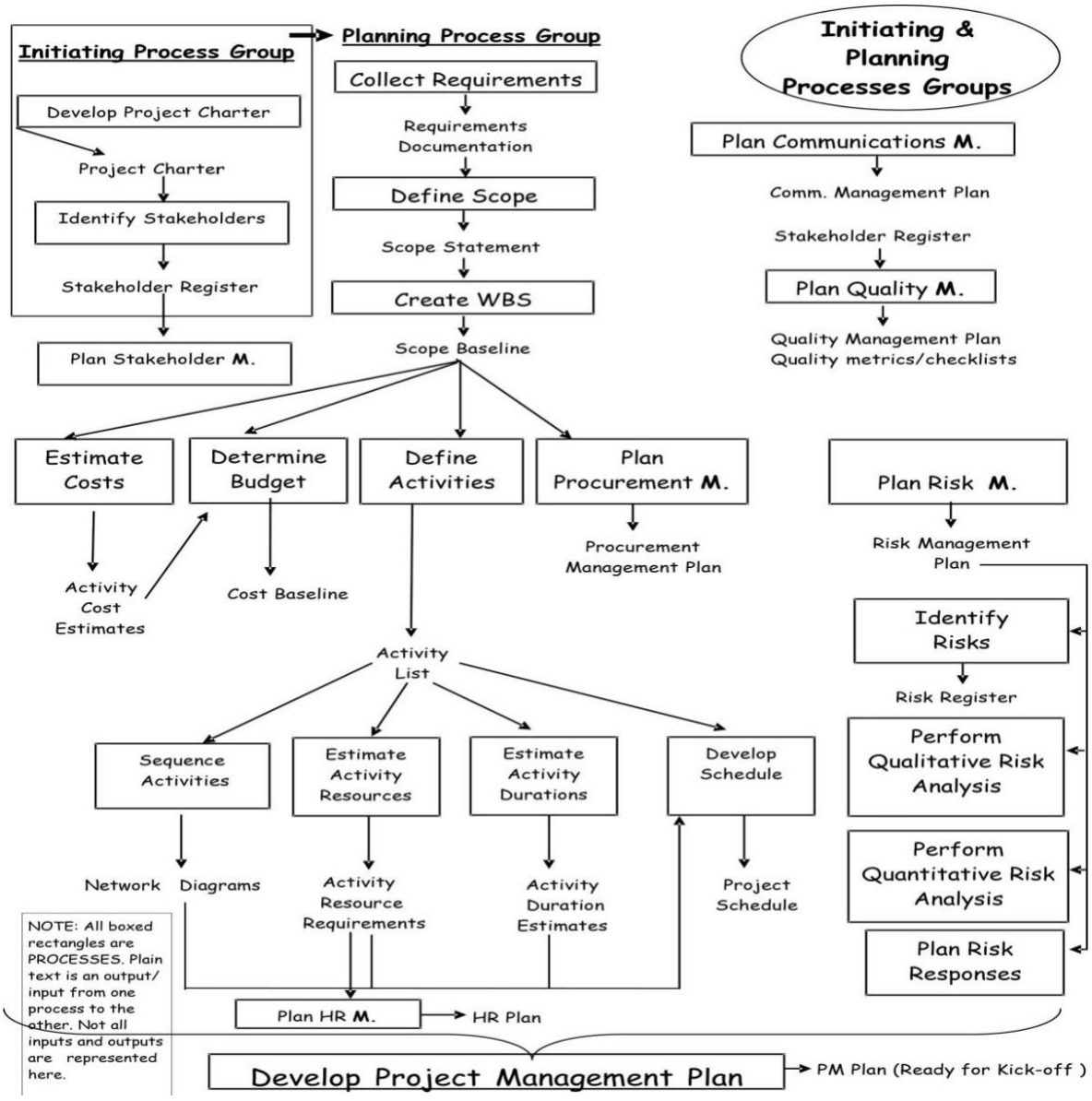


Figure 5 Initiating and Planning Processes

[Source: Project Management Institute, 2017]

2.2.5 Project management knowledge areas

There are “49 project management processes identified in the *PMBOK® Guide*, … [that have been] … grouped into ten separate knowledge areas (Project Management Institute, 2017). All of which will be used during the lifecycle of the FGP. The ten knowledge areas of project management (Project Management Institute, 2017) are as follow:

- Integration management
- Scope management
- Schedule management
- Cost management
- Quality management
- Project Resources management
- Communication management
- Risk management
- Procurement management
- Stakeholder management

2.2.5.1 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). The processes involved in Project Integration Management are outlined in **figure 6** below.

Process 4.1 will be used to develop the project charter that will begin the development of the Project Management Plan for the pilot project. Whereas, Process

4.2 will be used as a guide throughout the development of the FGP results to develop the Project Management Plan.

Key terms that will be used during project integration management are:

a. Project statement of work or Statement of Work (SOW) is “a narrative description of products, services, or results to be delivered by the project”. (Project Management Institute, 2017)

b. Business case is “a documented economic feasibility study used to establish validity of the benefits of a selected component lacking sufficient definition and that is used as a basis for the authorization of further project management activities”. (Project Management Institute, 2017)

c. Agreements are “any document or communication that defines the initial intentions of a project”. (Project Management Institute, 2017).

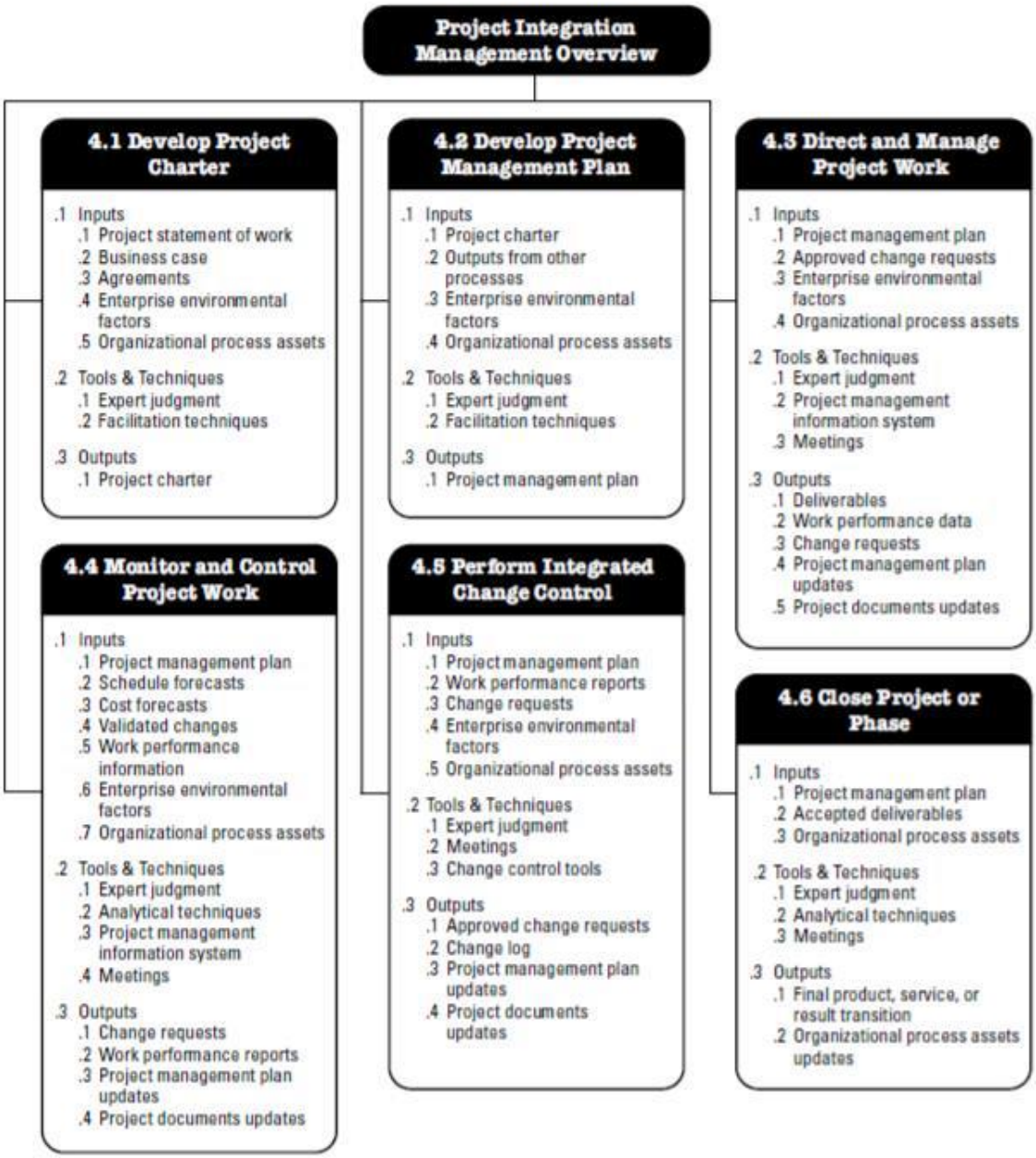


Figure 6 *PMBOK® Guide* Project Integration Management Overview. [Project Management Institute, 2017]

2.2.5.2 Project Scope Management

Project Scope Management is defined as the knowledge area that “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). However, according to Moustafaev “project scope management seems to be one of the most neglected domains in project management” (Moustafaev, 2015). In fact, he states that “a simple omission of just one of these scope components” can lead to project failure (Moustafaev, 2015). To accurately capture the necessary scope to successfully complete the building of the pilot project, the scope of work will be defined and developed to include the work breakdown structure as required in the Project Management Plan. Project scheduling involves a scheduling method, scheduling tool, and outputs from the Project Schedule Management processes. Processes 6.1, 6.2, 6.3, 6.4, 6.5, and 6.6 will be applied to create the Schedule Management Plan, Schedule Baseline, Project Schedule, and Project Calendars.

2.2.5.3 Project Schedule Management

Project Schedule Management includes the processes required to manage the timely completion of the project. **Figure 8** below is an overview of the processes of this knowledge area. Each of the seven (7) processes identified in the figure involve the strategic management of the schedule management plan, which will guide the development of the project’s required activities, and the sequence in which they are to occur.

2.2.5.4 Project Cost Management

“Project Cost Management includes the processes involved in planning, estimating, budgeting, financing, funding, managing, and controlling costs so that the project can be completed within the approved budget” (Project Management Institute, 2017). To develop the Project Management Plan, costs will be estimated to determine the budget of the project.

2.2.5.5 Project Quality Management

“Project Quality Management includes the processes and activities of the performing organization that determine quality policies, objectives, and responsibilities so that the project will satisfy the needs for which it was undertaken” (Project Management Institute, 2017). Only the planning quality management process will be used during project planning to produce the Quality Management Plan that will guide the project’s Quality Assurance.

2.2.5.6 Project Resources Management

Project Resources Management includes the processes that organize, manage, and lead the project team. Only the process of planning project resource management will be used during project planning.

2.2.5.7 Project Communications Management

“Project Communications Management includes the processes that are required to ensure a timely and appropriate planning, collection, creation, distribution, storage, retrieval, management, control, monitoring, and the ultimate disposition of project information” (Project Management Institute, 2017). As such, the project planning will entail the development of the project’s Communication Plan.

2.2.5.8 Project Risk Management

According to PMI, “Project Risk Management includes the processes of conducting risk management planning, identification, analysis, response planning, and controlling risk on a project” (Project Management Institute, 2017). For the development of the Project Management Plan risks that may affect the project will be identified and analyzed so that actions can be taken to mitigate threats or enhance opportunities.

2.2.5.9 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). The procurement management plan will be developed during project planning.

2.2.5.10 Project Stakeholders Management

The Project Management Institute defines a stakeholder as “an individual, group, or organization that may affect, be affected by, or perceive itself to be affected by a decision, activity, or outcome of a project, program, or portfolio” (Project Management Institute, 2017).

Project Stakeholder Management involves four processes needed to identify, classify, plan and manage all project stakeholders and their expectations. Stakeholder Management was introduced as a separate knowledge area in *PMBOK® Guide* 6th edition. The Stakeholder Management Plan is a subsidiary of the Project Management Plan that may be used to help to ensure that project stakeholders are effectively involved in project decisions and its execution. By doing this, the project management team can anticipate the level of influence each stakeholder may have over the project and plan remedies thereby increasing the likelihood of the project’s successful completion. (Project Management Institute, 2017).

Key terms that will be utilized to classify the stakeholders and their level of classification in the Stakeholder Management plan are:

a. Power: stakeholder’s level of authority regarding project outcome (Project Management Institute, 2017).

b. Interest: stakeholder’s level of concern regarding project outcome (Project Management Institute, 2017).

c. Influence: stakeholder’s level of involvement in the project (Project Management Institute, 2017).

d. Impact: stakeholder's ability to effect changes to the project's planning or execution (Project Management Institute, 2017).

e. Communication – "connecting with people by sending information" (Articulous Communications, 2015).

f. Engagement – dialoguing with stakeholders to find out what matters most to them and incorporating their needs into the project (Articulous Communications, 2015).

g. One-way communication – information sent in a straight line from the sender to the receiver. In this case, feedback is not given or required.

h. Two-way engagement – communication between senders and receivers that involves listening by both parties. This dialogue occurs as a means of working together to solve a problem in a manner that both parties can benefit from.

3. METHODOLOGICAL FRAMEWORK

3.1 Information sources

According to the Concise Oxford English Dictionary, information is “facts or knowledge provided or learned” (Information, 2011, page 729) and a source is “a place, person, or thing from which something originates” (Information, 2011, page 1380). Therefore, it can be concluded that an information source is a place, person or thing from which facts or knowledge originate.

There are many places for information to be obtained. One can use library sources, internet sources, organizational sources, government agencies as sources, pictorial sources, and sources from bibliographies, a colleague or sometimes even one’s personal account as a source. Information sources can be printed or presented in an electronic format. Basically, it can be taken from almost anywhere.

No matter where information originates from, there are *only* three types of information sources – primary, secondary, and tertiary (Schmidt, 2013). To develop the Final Graduation Project, primary and secondary sources will be used.

3.1.1 Primary sources

“A primary source is information taken directly from a person, event, location, or material at the point of the occurrence” (Schmidt, 2013, page 62).

For the elaboration of the Final Graduation Project (FGP), the primary information sources that will be used are meeting minutes; personal interviews with members of Vector Control Services (VCS), Ministry of Public Health-Guyana; and, interviews with other stakeholders, such as the miners and loggers. Refer to **Table 1**, for the specific primary information sources that will be used.

3.1.2 Secondary sources

“A secondary source is information that a person provides after he or she has gotten the information from a primary source” (Schmidt, 2013, p. 62). In this case, the person providing the information is not directly involved or is not divulging first-hand knowledge about the incident.

For the elaboration of this Final Graduation Project, secondary sources such as the *PMBOK® Guide*, library databases, and the PMI database will be used. Refer to **Table 1** for the list of secondary sources used for each specific objective.

Table 1 Information sources [Source: Q. Grant, The Author, June 2018]

Objectives	Information sources	
	Primary	**Secondary**
To develop an integration management plan to coordinate the various project management activities within their respective project management process groups.	Meeting minutes and personal interview with lead project manager (expert)	*PMBOK® Guide*, PMI database, and the Internet
To develop a scope management plan to define the work needed to undertake the pilot project.	Meeting minutes and personal interview with lead project manager (expert)	*PMBOK® Guide*, PMI database, and the Internet
To develop a schedule management plan to establish the policies, procedures and documentation for planning, developing, managing, executing and controlling the schedule of the pilot project.	Personal interview with lead project manager (expert).	*PMBOK® Guide* and the Internet
To develop a cost management plan to establish the policies, procedures and documentation for planning, managing, expending and controlling the costs of the pilot project.	Personal interview with lead project manager (expert) and meeting minutes	*PMBOK® Guide*, and PMI database
To develop a quality mangement plan to establish the policies, procedures and documentation for identifying quality requirements and/standards for the pilot project and its deliverables.	Personal interview with lead project manager (expert)	*PMBOK® Guide*
To develop a project resources management plan to establish the policies, procedures and documentation for the effective use of the persons involved in the pilot project.	Personal interview with lead project manager (expert)	*PMBOK® Guide* and the internet
To develop a communications management plan to establish the policies, procedures and documentation to determine the information and communication needs of the stakeholders of the pilot project.	Personal interview with lead project manager (expert)	*PMBOK® Guide* and PMI database
To develop a risk management plan to define how risks will be manged in the pilot project (who will be involved with which responsibilities, which processes will be used, and which activities will be conducted).	Personal interview with lead project manager (expert)	*PMBOK® Guide* and PMI database
To develop a procurement plan to outline how the procurements will be managed during the life of the pilot project.	Procurement Unit, personal interviews with lead project manager (expert)	*PMBOK® Guide*

To develop a stakeholders management plan to define the processes, procedures, tools and techniques to effectively engage stakeholders in project decisions and execution.	Interviews with lead project manager (expert)	*PMBOK® Guide* and textbook.

Table 1 Information sources [Source: Q. Grant, The Author, June 2018]

3.2 Research methods

According to the Concise Oxford English Dictionary, research is defined as "the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions" (Research, 2011, page 1222). The same source defines the word 'method' as "a particular procedure for accomplishing or approaching something" (Method, 2011, page 899). Therefore, it can be said that a research method is a particular procedure to establish facts and reach groundbreaking conclusions. Three examples of research methods include, but are not limited to, analytical method, experimental method and observation. For the purposes of this thesis, we will use the analytical method.

3.2.1 Analytical method

The analytical research method sometimes referred to as the explanatory method "uses facts or information already available and analyze to make a critical evaluation" (Sridhar, 2008, slide 20). With this research method, information from multiple sources will be examined and used to develop the deliverables found in Table 5.

The research method for each specific objective is indicated in Table 2 below.

Table 2 Research methods [Source: Q. Grant, The Author, June 2018]

Objectives	Analytical Research methods

To develop an integration management plan to coordinate the various project management activities within their respective project management process groups.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 1 above, to create the project charter.
To develop a scope management plan to define the work needed to undertake the pilot project.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 2 above, to establish the work needed for the project when creating the documents, which comprise the scope management plan.
To develop a schedule management plan to establish the policies, procedures and documentation for planning, developing, managing, executing and controlling the schedule of the pilot project.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 3 above, to lay out the schedule of the project when creating the documents, which comprise the schedule management plan.
To develop a cost management plan to establish the policies, procedures and documentation for planning, managing, expending and controlling the costs of the pilot project.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 4 above, to lay out the budget of the project when creating the documents, which comprise the cost management plan.
To develop a quality mangement plan to establish the policies, procedures and documentation for identifying quality requirements and/standards for the pilot project and its deliverables.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 5 above, to ensure quality improvement/assurance is built into the project when creating the documents, which comprise the quality management plan.
To develop a project resources management plan to establish the policies, procedures and documentation for the effective use of the persons involved in the pilot project.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 6 above, to ensure that the project staff register (with accompanying roles and responsibilities) is established when creating the documents which comprise the project resources management plan.
To develop a communications management plan to establish the policies, procedures and documentation to determine the information and communication needs of the stakeholders of the pilot project.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 7 above, to establish the channels of communication among stakeholders of the project when creating the documents, which comprise the communications management plan.
To develop a risk management plan to define how risks will be manged in the pilot project (who will be involved with which responsibilities, which processes will be used, and which activities will be conducted).	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 8 above, to identify risks that may arise in the project and plans to mitigate or ehamce same when creating the documents, which comprise the risk management plan.

To develop a procurement plan to outline how the procurements will be managed during the life of the pilot project.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 9 above, to drive decision-making with respect to procurement when creating the documents, which comprise the procurement management plan.
To develop a stakeholders management plan to define the processes, procedures, tools and techniques to effectively engage stakeholders in project decisions and execution.	The analytical method will be employed by using facts or information from the sources identified in Table 1 objective 10 above, to set up a stakeholders' register and terms for engagement when creating the documents, which comprise the stakeholders' management plan.

Table 2 Research methods [Source: Q. Grant, The Author, June 2018]

3.3 Tools

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

Each tool used in the Final Graduation Project is identified and explained below. In addition, the information is summarized in **Table 3**.

a. Project charter template - guides the development of the project charter.

b. Requirements traceability matrix template - ensures that project requirements are necessary and will be met.

c. Work Breakdown Structure (WBS) online generator - breaks down the project into smaller components so it can be more easily managed.

d. Requirements Management Plan template – describes how the requirements will be analyzed, documented and managed.

e. Requirements documentation template - captures the requirements documentation.

f. Scope Management Plan template - guides the development of the scope management plan and all of its subcomponents.

g. Project Management Plan template - guides the development and organization of the project management plan and all its subcomponents.

h. Schedule Management Plan template - guides the development of the project management plan and all its subcomponents.

i. Scheduling tool – developed in Microsoft Project 2016 to create the Project Schedule using Schedule network analysis.

j. Activity List template – captures the list of activities for the project.

k. Cost Management Plan template – develops the cost management plan that will guide the project team during the project's lifecycle.

l. Project Budgeting template – created in Microsoft Excel 2016, develops the project budget and track financial transactions throughout the project's lifecycle.

m. Cost Baseline template – outlines the development of the cost baseline.

n. Quality Management Plan template – outlines the development of the Quality Management Plan.

o. Quality Management tools – examples include cause-and-effect diagrams, flowcharts, check sheets and control charts to be used throughout the project. The use of these tools will be outlined in the Quality Management plan.

p. Project Resource Management Plan template – guides the planning of project resources management.

q. Responsibility Assignment Matrix – identifies team members and assigns them responsibilities.

r. Communications Management Plan template – guides the development of the communications management plan.

s. Communication Matrix – created in Microsoft Excel 2016, plans communications between project team and stakeholder management.

t. Risk Management Plan and Risk Register template – developed in Microsoft Excel 2016, identifies and classifies risks, and plans risk responses.

u. Procurement Management Plan template – aids in identification of contracts and purchasing decisions.

v. Stakeholder Management Plan template – aids in identification and classification of stakeholders and plans stakeholder management.

w. Stakeholder Analysis Chart – aids in analysis and classification of project stakeholders.

x. Stakeholder Register template – aids in identification of project stakeholders.

y. Stakeholder Engagement Assessment Matrix – details how each project stakeholder should be engaged based on their level of involvement in the project.

Table 3 Tools [Source: Q. Grant, The Author, June 2018]

Objectives	Tools
To develop an integration management plan to coordinate the various project management activities within their respective project management process groups.	Project charter template.
To develop a scope management plan to define the work needed to undertake the pilot project.	Requirements traceability matrix template, Microsoft Vision Professional 2016, Requirements Documentation template, Requirements Management Plan template, Work Breakdown Structure generator, and Scope Management Plan template.
To develop a schedule management plan to establish the policies, procedures and documentation for planning, developing, managing, executing and controlling the schedule of the pilot project.	Schedule Management Plan template, Microsoft Project 2016, Microsoft Visio Professional 2016, and Activity List template.
To develop a cost management plan to establish the policies, procedures and documentation for planning, managing, expending and controlling the costs of the pilot project.	Cost Management Plan template, Microsoft Excel 2016 Project Budgeting template, and Cost Baseline template.
To develop a quality mangement plan to establish the policies, procedures and documentation for identifying quality requirements and/standards for the pilot project and its deliverables.	Quality Management Plan template and Quality Management tools (Check sheets).
To develop a project resources management plan to establish the policies, procedures and documentation for the effective use of the persons involved in the pilot project.	Project Resources Management template and Responsibility Assignment Matrix.
To develop a communications management plan to establish the policies, procedures and documentation to determine the information and communication needs of the stakeholders of the pilot project.	Communications Management Plan template and Communications Matrix.
To develop a risk management plan to define how risks will be manged in the pilot project (who will be involved with which responsibilities, which processes will be used, and which activities will be conducted).	Risk Management Plan template, and Risk Register template.
To develop a procurement plan to outline how the procurements will be managed during the life of the pilot project.	Procurement Management Plan template.
To develop a stakeholders management plan to define the processes, procedures, tools and techniques to effectively engage stakeholders in project decisions and execution.	Stakeholder Management Plan template, Stakeholder Analysis Chart, Microsoft Excel 2016, Stakeholder Register template, Stakeholder Engagement Assessment Matrix, Mind tools Online Stakeholder Power/Interest Grid Creator.

3.4 Assumptions and constraints

PMI defines an assumption as “a factor in the planning process considered to be true, real, or uncertain, without proof or demonstration” (Project Management Institute, 2017). It also defines a constraint as “a limiting factor that affects the execution of a project, program, portfolio, or process” (Project Management Institute, 2017). The assumptions and constraints considered on the Final Graduation Project for each specific objective are set out in **Table 5** below.

Table 4 Assumptions and constraints [Source: Q. Grant, The Author, June 2018]

Objectives	Assumptions	Constraints
To develop an integration management plan to coordinate the various project management activities within their respective project management process groups	The relevant stakeholders have disclosed all of the information required to establish the project charter.	Stakeholders’/funders’ timely “buy in” and signing of the charter.
To develop a scope management plan to define the work needed to undertake the pilot project.	The relevant stakeholders have disclosed all of the information required to develop the scope. The scope management plan will identify all work required.	Challenges in the implementation of the project due to the geographical context of the pilot.
To develop a schedule management plan to establish the policies, procedures and documentation for planning, developing, managing, executing and controlling the schedule of the pilot project.	The time allocated for the development of the Project Management Plan and the implementation of the pilot project is sufficient.	The time allocated for the pilot project must not exceed 6 months.
To develop a cost management plan to establish the policies, procedures and documentation for planning, managing, expending and controlling the costs of the pilot project.	The budget created during planning will accurately depict the financial resources required to implement the pilot project.	The cost of the project must not exceed G$22,000,000.00.
To develop a quality mangement plan to establish the policies, procedures and documentation for identifying quality requirements and/standards for the pilot project and its deliverables.	The quality management plan will identify all of the technical and managerial quality requirements of the project.	The cost of the project does not cater for any major failures in the project.

Objectives	Assumptions	Constraints
To develop a project resources management plan to establish the policies, procedures and documentation for the effective use of the persons involved in the pilot project.	The organization has sufficient project resources to complete the project. The team development plans for the project team will be sufficient to initiate the pilot project on time.	Only the project resources identified and planned for will be included in the budget. The regular hours and overtime hours are predetermined.
To develop a communications management plan to establish the policies, procedures and documentation to determine the information and communication needs of the stakeholders of the pilot project.	The Ministry of Public Health-Guyana has the technology required to suffice the communication needs of all stakeholders.	The availability of electricity and consistency of internet access must be dependable, especially in Region 8 (Potaro-Sipuruni-Guyana).
To develop a risk management plan to define how risks will be manged in the pilot project (who will be involved with which responsibilities, which processes will be used, and which activities will be conducted).	There is sufficient information required to adequately identify most, if not all, project risks.	All the project risks need to be identified within the planning phase (stage) or as early as possible.
To develop a procurement plan to outline how the procurements will be managed during the life of the pilot project.	The Ministry of Public Health personnel have identified an initial list of suppliers.	The use of international suppliers should not cause schedule delays.
To develop a stakeholders management plan to define the processes, procedures, tools and techniques to effectively engage stakeholders in project decisions and execution.	The stakeholder Management plan will include a complete list of all stakeholders involved and a plan as to how to properly manage each.	The information required to plan and manage stakeholders must be accurate.

Table 4 Assumptions and constraints [Source: Q. Grant, The Author, June 2018]

3.5 Deliverables

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

Table 5 Deliverables [Source: Q. Grant, The Author, June 2018]

Objectives	Deliverables
To develop an integration management plan to coordinate the various project management activities within their respective project management process groups.	Project charter.
To develop a scope management plan to define the work needed to undertake the pilot project.	Scope Management Plan, Requirements Management Plan, Requirements Document and Requirements Traceability Matrix
To develop a schedule management plan to establish the policies, procedures and documentation for planning, developing, managing, executing and controlling the schedule of the pilot project.	Schedule Management Plan, Activity List, Schedule Network Diagram, Resource assignments and activity durations, and Schedule in Gantt chart
To develop a cost management plan to establish the policies, procedures and documentation for planning, managing, expending and controlling the costs of the pilot project.	Cost Management Plan, Cost Baseline and Project Funding Requirements.
To develop a quality mangement plan to establish the policies, procedures and documentation for identifying quality requirements and/standards for the pilot project and its deliverables.	Quality Management Plan.
To develop a project resources management plan to establish the policies, procedures and documentation for the effective use of the persons involved in the pilot project.	Project Resources Management Plan
To develop a communications management plan to establish the policies, procedures and documentation to determine the information and communication needs of the stakeholders of the pilot project.	Communication Management Plan and Communications Matrix
To develop a risk management plan to define how risks will be manged in the pilot project (who will be involved with which responsibilities, which processes will be used, and which activities will be conducted).	Risk Management Plan and Risk Register
To develop a procurement plan to outline how the procurements will be managed during the life of the pilot project.	Procurement Management Plan
To develop a stakeholders management plan to define the processes, procedures, tools and techniques to effectively engage stakeholders in project decisions and execution.	Stakeholder Management Plan, Stakeholder Analysis Chart, and Stakeholder Register

Table 5 Deliverables [Source: Q. Grant, The Author, June 2018]

4. RESULTS

4.1. Develop Scope Management Plan

It was the first of the planning process group processes to occur, following the development of the Project Charter. The scope Management plan included the scope definition, project scope statement, the Work Breakdown Structure (WBS), WBS dictionary, scope verification and the scope control measures that would guide the project management team throughout the project (Project Management Institute, 2017). The scope management plan included the outputs from the scope definition and creates WBS processes and would later be approved as the scope baseline. Although these processes were identified as occurring after the second process group in scope management, they were conducted concurrently with the development of the scope management plan as the inputs required.

4.1.1 Inputs:

To create the plan, as detailed in the *PMBOK® Guide* 6th edition, the Project Charter was used as an input, along with an interview which was conducted with the lead Project Manager and a review of his meeting minutes, which documented discussions between him and the project sponsor, collected during the clients' requirements meetings (Project Management Institute, 2017). These meetings were held to understand the enterprise environmental factors and the organizational process assets.

4.1.2 Tools and Techniques: consultation meetings were held with project management specialists and project team members for the development of the scope management plan.

4.1.3 Output: Scope Management Plan

4.1.3.1 Introduction

The scope management plan provides the scope framework for this project. This plan documents the scope management approach; roles and responsibilities as it relates to the project scope; scope definition; verification and scope measures; scope change control and the work breakdown structure. Any project communication which pertains to the project scope should adhere to the scope management plan.

The project is the piloting of malaria rapid diagnostic tests in Potaro-Sipuruni (region 8), Guyana. The overall strategic goal of the national malaria programme, in Guyana is to reduce the incidence of malaria among the affected populations. This is an essential step towards the elimination of local transmission. The achievement of this goal will reduce the social and economic impact of malaria on the livelihood of individuals within communities, thus mitigating the negative contributions of the disease to poverty. Any intervention designed to contribute to the achievement of this strategic goal will contribute to national development and improved quality of life for people of the affected communities. One of the national strategies within the NSP addresses the regionalization of the malaria program through collaboration with stakeholders, such as the miners and loggers, in the malaria affected regions as well as further collaboration with health care providers from the private sector.

4.1.3.2 Scope Management Approach

For this project, scope management will be the sole responsibility of the Project Manager. The scope for this project is defined by the Scope Statement, Work Breakdown Structure (WBS) and WBS Dictionary. The Project Manager, Sponsor and Stakeholders will establish and approve documentation for measuring project scope which includes deliverable quality checklists and work performance measurements. Proposed scope changes may be initiated by the Project Manager, Stakeholders or any member of the project team. All change requests will be submitted as change orders to the Project Manager who will then evaluate the requested scope change. Upon acceptance of the scope change request, the Project Manager will submit the scope change request to the Sponsor, Stakeholder, Sub Consultants and/or Subcontractors. The Project Manager is responsible for the approval of scope changes that are strictly technical in nature. Whereas, the Project

Sponsor is responsible for the approval of scope changes affecting schedule and costs parameters. Upon approval of scope changes, the Project Manager will update all project documents and communicate the scope change to all stakeholders through a change directive. Based on feedback and input from the Project Manager and Stakeholders, the Project Sponsor is responsible for the acceptance of the final project deliverables and project scope.

4.1.3.3 Roles and Responsibilities

The Project Manager, Sponsor and Team will all play key roles in managing the scope of this project. As such, the project sponsor, manager, and team members must be aware of their responsibilities in order to ensure that work performed on the project is within the established scope throughout the duration of the project. The table below defines the roles and responsibilities for the scope management of this project.

Name	Role	Responsibilities
The Global Fund	Project Sponsor	a) Approve or deny scope change requests as appropriate b) Evaluate need for scope change requests c) Accept project deliverables
Coordinator, National Malaria Programme	Project Manager	a) Measure and verify project scope b) Facilitate scope change requests c) Facilitate impact assessments of scope change requests d) Organize and facilitate scheduled change control meetings e) Communicate outcomes of scope change requests f) Update project documents upon approval of all scope changes

Vector Control Services (Ministry of Public Health)	Team Members (Assistant Project and Project Team)	a) Participate in defining change resolutions b) Evaluate the need for scope changes and communicate them to the project manager as necessary
Stakeholders (Region 8)	Sub-Recipients	a) Can propose scope changes b) Will execute change directives issued by Project Manager

Table 6: Roles and Responsibilities, Scope Management Plan

[Source: Q. Grant, The Author, June 2018]

4.1.3.4 Scope Definition

The scope for this project was defined through a comprehensive requirements collection process. First, a thorough analysis of all revised project memorandum of understanding and meeting minutes, strategic plans of the organization an/department and documentation relative to the standards of the Ministry of Public Health were completed. From this information, the project manager and assistant project manager developed the requirements traceability matrix for the project specifications. The project deliverables were generated based on the requirements collection process and input from subject matter experts such as the Chief Medical Officer, Deputy Chief Medical Officer, director of Disease Control (all the Ministry of Public Health), Pan American Health Organization/World Health Organization (PAHO/WHO) and The Global Fund Fight against HIV/AIDS, Tuberculosis and Malaria. This process of expert judgement provided feedback on the most effective, safe and cost-effective ways to meet the original requirements of the pilot.

4.1.3.5 Project Scope Statement

The project scope statement provides a detailed description of the project, deliverables, constraints, exclusions, assumptions, and acceptance criteria. Additionally, the scope statement includes what work should not be performed to eliminate any implied but unnecessary work which falls outside the project's scope.

4.1.3.6 Scope Description, Product Acceptance Criteria and Project Deliverables

The project includes the establishment of the epidemiological overview of malaria transmission in region 8 to determine project specifications and exclusion criteria:

EPIDEMIOLOGICAL OVERVIEW OF MALARIA TRANSMISSION IN REGION 8

Malaria continues to be a leading public health challenge in Guyana. Currently, malaria transmission in the country is focalized, mainly in the gold mining and logging areas of the interior, particularly in parts of Regions 1, 7, 8, and 9.

The area of Mahdia (the main town in region 8) stands out when analyzing the top twenty locations with the highest number of registered cases at national level during 2013 (Figure 7). The reason for this high number is because Mahdia has intense mining activities and numerous mining camps around, so patients who suspect a malaria infection come to Mahdia from all over Region 8 to seek treatment. But in fact, transmission levels in Mahdia are very low.

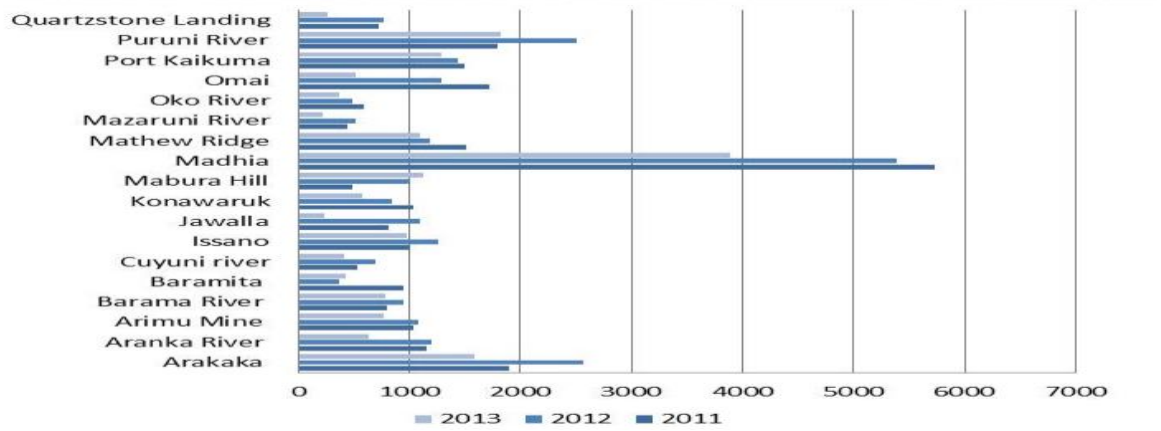
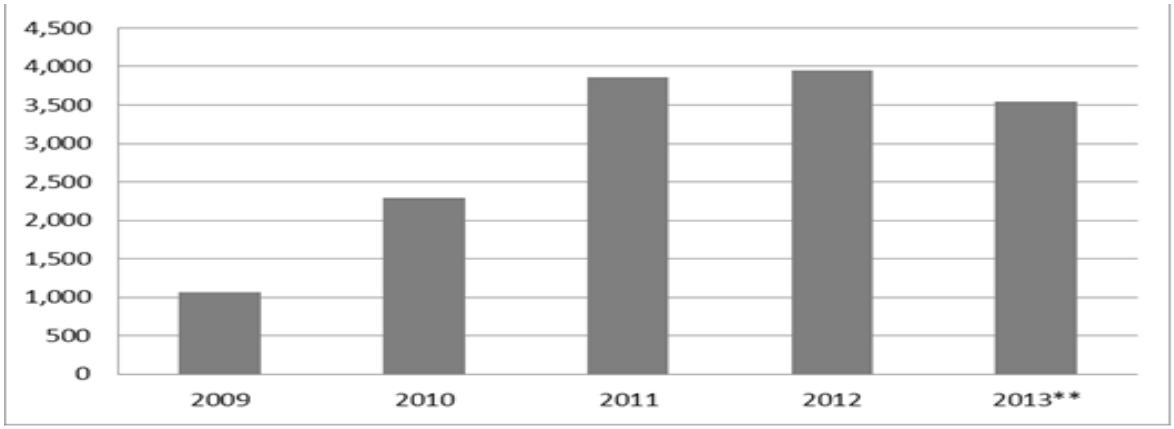


Figure 7: Top 20 areas malaria 'hot spots' for 2011, 2012 & 2013 in Region 8 [Source: Malaria Information System]

Given the numerical evidence here presented, Region 8 was chosen amongst the 4 malaria endemic regions in the country to carry out a pilot strategy for malaria control. Currently there are 20 health facilities (situated in the same number of different localities) that are carrying out malaria diagnosis and hence reporting to the National Malaria Program in Region 8. The total number of Malaria cases in Region 8 started escalating after 2009 precisely coinciding with the increase in world gold prices. This increase motivated the movement of people to the hinterland regions of Guyana rich in gold reserves and specially areas around Region 8 and the town of Mahdia. These economic activities result in land clearing and disruption of the normal mosquito ecology and the creation of suitable for malaria mosquitoes. Alongside with the mining industry a series of associated support services such as transportation, vending, commercial sex trade etc. This mix of socio-economic determinants of transmission forms the basis for sustained malaria endemicity in the affected areas. The people moving in and out of these isolated, difficult-to-traverse and virtually inaccessible areas are vulnerable to repeated infections with one or more of the three species of *Plasmodium*. Global demand and the corresponding upsurge in world gold prices have led to a more than two-fold increase of persons venturing into these vulnerable areas.



**Data missing from October to December 2013

Figure 8: Bar Graph depicting Incidence of malaria in Region 8 for Years 2009-2013

[Source: Malaria Information System]

Although the data here represented for 2013 showed an apparent decrease there is still some data that needs to be transcribed and processed from Region 8 that might change the total number of cases reported for the year. The prices of gold dropped sharply during the first quarter of 2014, so it is possible to expect a decrease in the number of cases as the number of people moving to the hinterland to mine is decreased.

The number of infections by plasmodium species in the last 5 years in region 8 indicates that there was a considerable reduction in the number of cases of *P. falciparum* infections during 2013 compared with the two previous years. In total 39,358 slides were taken across Region 8 during 2013, of those over 64% (25,335) were taken in Mahdia Hospital. The second health post on the list was Micobie Village were only 2,954 slides were taken (7.5% of the total), which indicates that the vast majority of the malaria testing activity is concentrated only in Mahdia and its surrounding areas. This indicates that access to testing facilities is deficient around Region 8. The main age group affected by malaria infection during 2013 was the 15-49 years old confirming the fact that the risk of transmission is most likely associated with mining, the main economic activity in the area. However, it would be necessary to have the total number of slides taken per age group to have a better understanding on the per sample rates. The number of cases detected in children up to 5 years old has been increasing from 2009 and has stabilized during 2012 and 2013. Of the total number of 399 cases reported in children 5 years old and under, over 90% were reported from the localities.

In total 66% of the cases are amongst the male population and 34% of cases were female. The indigenous peoples (American Indians) are the ethnic group that is primarily affected by plasmodium infections, not surprisingly as they represent over 70% of the population in region 8 according to the last census data from 2002. The majority of the Afro-Guyanese cases of malaria in Region 8 represent males moving to the area to be involved in the mining sector.

Based on the 2013 data available Malaria transmission Region 8 is characterized as follows:

- The spread of cases is more concentrated in population groups with higher exposure, in this case the miners;
- Parasite prevalence in children aged 2–9 years < 10%.

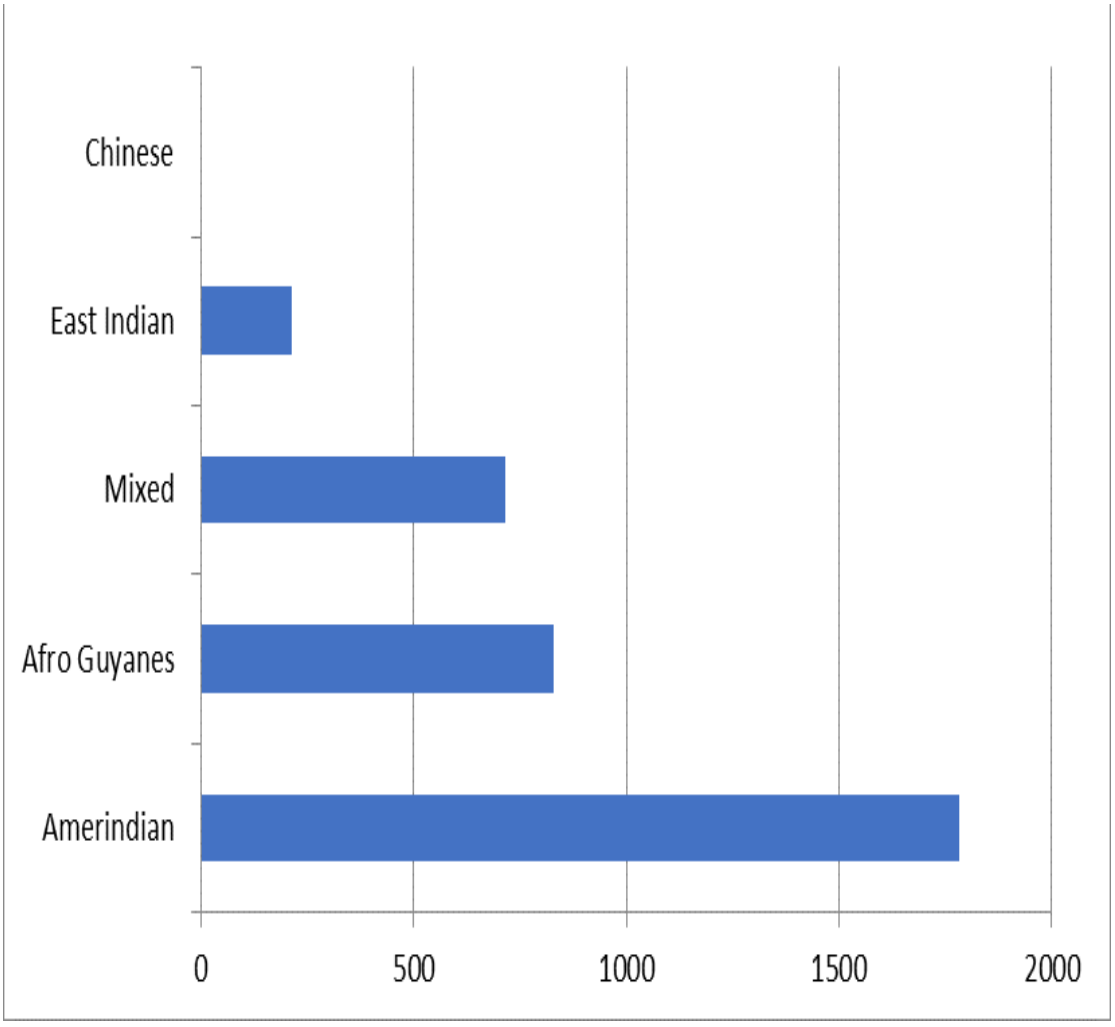


Figure 9: Bar Graph depicting the incidence of malaria in Region disaggregated by Ethnic Group [Source: Malaria Information System]

4.1.3.7 Project Exclusion

The other malaria endemic regions (region one-Barima/Waini; seven-Cuyuni/Mazaruni; and, nine-Upper Takatu/Upper Essequibo) were excluded.

4.1.3.8 Project Constraints

The project sponsor had requested that the project duration does not exceed six (6) months. All other constraints were enumerated in Table 4 in the methodological framework.

4.1.3.9 Project Assumptions

The project assumptions were highlighted in the methodological framework (Table 4).

4.1.3.10 Work Breakdown Structure (WBS).

This is a dissection in a hierarchical manner of the total scope of work to be carried out by the project team to accomplish the project objectives and create the required deliverables. The activities for this project and a diagrammatic representation of the WBS are presented low.

4.1.3.10.1 Activities:

1. Conducting refreshers' training for all thirty-seven (37) health staff already trained in microscopy across the region to improve the quality of the services and to introduce them to the malaria RDTs;
2. Procurement of:
    - Microscopes and laboratory consumables
    - ATVs and 4x4 vehicles
    - Malaria rapid diagnostic tests (RDTs)
    - Anti-malarials
3. Setting up a regional diagnostic reference laboratory
4. Employment of field assistants in the region
5. Testing of all suspected malaria cases

6. Treatment of all confirmed cases of malaria
7. Tracking of all confirmed malaria cases by setting up a data recording and reporting system at the local level

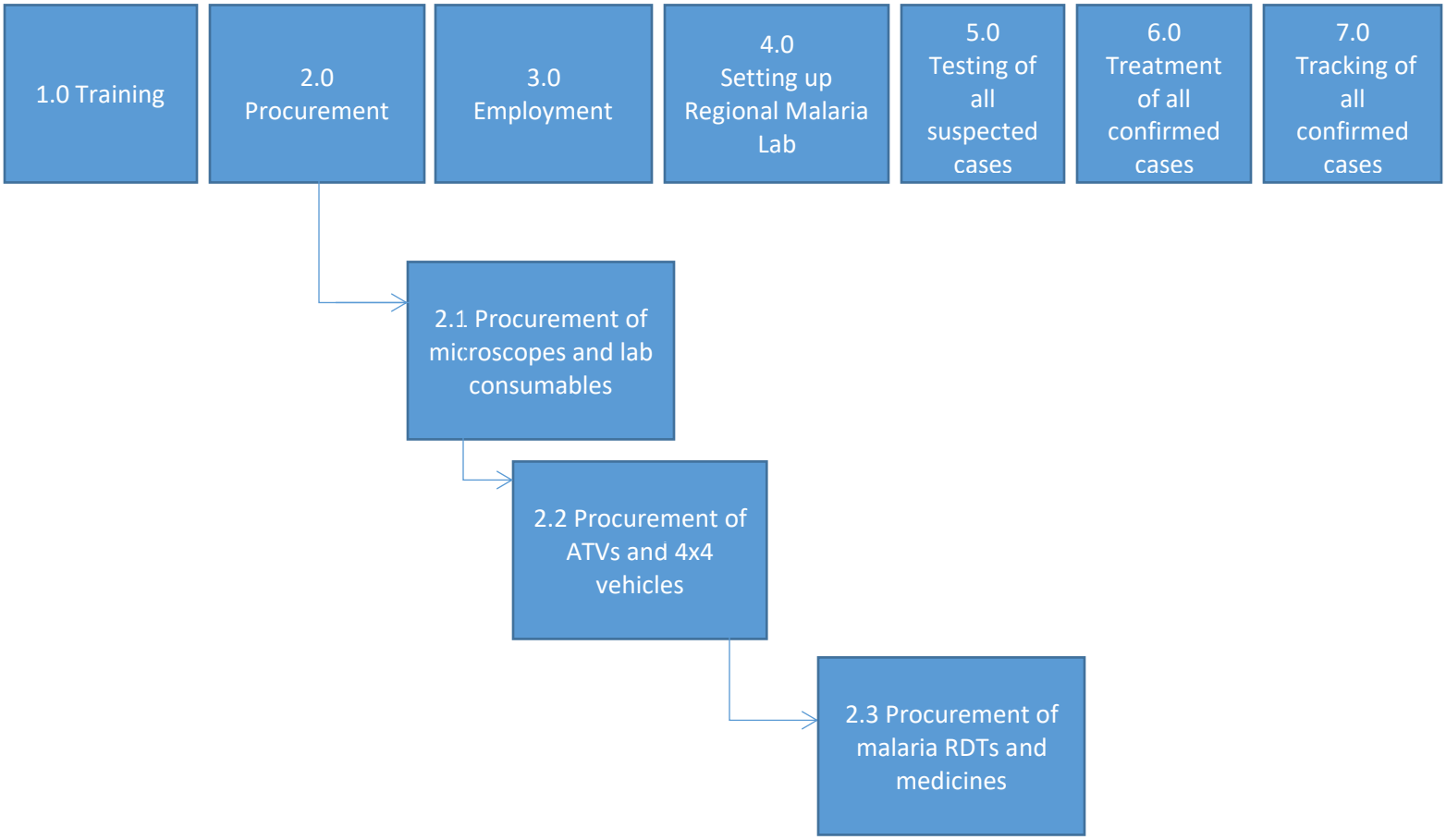


Figure 10: Diagrammatic Representation of the Work Breakdown Structure [Source: Q. Grant, The Author, June 2018]

4.1.3.10.2 WBS Dictionary

This is a document that provides detailed deliverable, activity and scheduling information about each component in the work breakdown structure. The WBS for this project is presented below.

Level		Name	Description
1.0		Training	Conduct refreshers' training for all thirty-seven (37) health staff already trained in microscopy across the region to improve the quality of the services and to introduce them to the malaria RDTs.
2.0		Procurement	
	2.1	Procurement	Procurement of microscope and laboratory consumables.
	2.2	Procurement	Procurement of ATVs and 4x4 vehicles.
	2.3	Procurement	Procurement of malaria RDTs and antimalarial medicines.
3.0		Employment	Employment of field assistants to strengthen the regional malaria team structure.
4.0		Infrastructure	Setting up a regional diagnostic reference laboratory.

5.0		Testing	Testing of all suspected malaria cases.
6.0		Treatment	Treatment of all confirmed cases of malaria.
7.0		Tracking	Tracking all confirmed malaria cases by setting up a data recording and reporting system at the local level

Figure 11: WBS Dictionary

[Source: Q. Grant, The Author, June 2019]

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

4.1.3.11 Scope Validation

This is the process of formalizing acceptance of all project deliverables that have been completed. The main advantage of this process is that it brings objectivity to the acceptance process and increases the chance of the final product, service, or result acceptance by validating each deliverable.

4.1.3.12 Scope Control

The Project Manager and the project team will work together to control the scope of the project. The project team will leverage the WBS Dictionary by using it as a statement of work for each WBS element. The project team will ensure that they perform only the work described in the WBS dictionary and generate the defined deliverables for each WBS element. The Project Manager will oversee the project team and the progression of the project to ensure that the scope control process is followed. If a change to the project scope is needed, the process for recommending changes to the scope of the project must be carried out. Any project team member or sponsor can request changes to the project scope. All change requests must be submitted to the Project Manager in the form of a project **change order (example depicted in figure 12)**. The Project Manager will then review the suggested change to the scope of the project. The Project Manager will then either deny the change request if it does not apply to the intent of the project or convene a change control meeting between the project team and Sponsor to review the change request further and perform an impact assessment of the change. If the change request receives approval by the Project Manager and Sponsor, the Project Manager will then formally submit the change request to the Project Sponsor who will then formally accept the change by signing the **change order**. Upon acceptance of the scope change by the Project Manager and Project Sponsor, the Project Manager will update all project documents and communicate the scope directive to all project team members and stakeholders.

REQUEST FOR PROJECT CHANGE	
NAME OF PROJECT:	
Submitted by:	Date:
Response requested by:	
Description of change requested:	
Effect on project goal:	
Priority of change:	
Risks if implemented:	
Risks if not implemented:	
Impact on staffing:	
Impact on budget:	
Impact on schedule:	
Impact on quality:	
Stakeholders affected:	
Departments affected:	
REVIEWED BY:	DECISION:
REVIEWED BY:	DECISION:
REVIEWED BY:	DECISION:
REVIEWED BY:	DECISION:
REVIEWED BY:	DECISION:

Date to implement:

Figure 12 Change Order Template (Source: www.pmi.org)

4.2 Develop Schedule Management Plan

The project schedule management planning processes were conducted after project scope management. The first process in project schedule management involved developing the schedule management plan that would be used to guide the lifecycle of the project's schedule.

4.2.1 Inputs:

The project charter (project memorandum of understanding) and the scope management plan can be used as inputs to this process to gather information regarding the scope baseline and the summary milestone schedule.

4.2.2 Tools and Techniques:

The tools and techniques used were expert judgement, analytical techniques, and meetings in order to create the schedule management plan. Since there were no organization process assets, a schedule management plan template was derived from another source and modified for this purpose (Project Management Institute, 2017).

4.2.3 Output: Schedule Management Plan

4.2.3.1 Introduction

The project schedule is the guide for how the project will be completed and finished. The schedule is a critical part of this project because it provides the project team and sponsor with a visual picture of the project's standing at any given time. The schedule

management plan is used to define the technique the project team will use in creating the project schedule. This plan also comprises how the team will review the project schedule and manages changes after the standard schedule has been approved. This includes identifying, analyzing, documenting, prioritizing, approving or rejecting, and publishing all schedule-related changes.

4.2.3.2 Schedule Management Approach

Project schedules can be made using Microsoft Project 2016/Project Libre/Microsoft Excel. Activity definition will identify the specific work packages which must be performed to complete each deliverable. Activity sequencing will be used to determine the order of work packages and assign relationships between project activities. Activity duration estimating will be used to calculate the number of work periods required to complete work packages. Resource estimating will be used to assign resources to work packages to complete schedule development.

4.2.3.3 Roles and responsibilities:

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

Once an initial schedule has been developed, the project manager and assistant project manager will assess it cautiously to review assigned project tasks. The project team and resources must agree to the proposed work package assignments,

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

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

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

4.2.3.4 Schedule Control

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

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

The project team is responsible for participating in schedule updates or review meeting sessions. The team must communicate any changes of the actual start/finish dates to the project manager. Finally, the team will participate in schedule variance resolution activities as needed.

The project stakeholder(s) will maintain awareness of the project schedule status and review/approve any schedule change requests submitted by the project manager.

4.2.3.5 Schedule Changes and Thresholds

If any member of the project team determines that a modification to the schedule is essential, the project manager and team will meet to assess and evaluate the change. The project manager and project team must conclude which tasks will be

impacted, any variance resulting from the potential change, and any alternatives or variance resolution activities they may employ to see how they would affect the scope, schedule, and resources. If, after this evaluation is complete, the project manager determines that any change will surpass the established schedule constraints, then a schedule change request must be submitted.

Submittal of a schedule change request to the project stakeholder(s) for approval is required if either of the two following conditions is true:

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

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

The second phase in planning project schedule management was Activity Definition. The schedule and scope management plans containing the Scope Baseline comprised of the WBS, project deliverables, constraints and assumptions were inputs used specifically for activity definition. Of the techniques identified in the *PMBOK® Guide*, decomposition and expert judgement were the ones used during this process. The tool used to capture the information for this, and the remaining processes required to develop the schedule was Microsoft Office Project 2016/Project Libre, identified as scheduling software in the *PMBOK® Guide*. The Activity List seen in the table below is an-output developed from this process and was compiled from the information in the schedule.

According to PMI, an activity list is a comprehensive list with an activity identifier and scope of work description of the schedule activities required to complete each work package (PMI, 2013, p. 152). Also, while defining activities, milestones were added and modified. Subsequently, after defining the activities, the milestone list found in the Project Charter and Schedule Management Plan were updated.

An Activity Attributes list was not developed as an-output to this process, as indicated in the *PMBOK® Guide*, because the information detailed in the Activity Attributes, such as the activity ID, activity description, WBS number, activity responsibility, predecessor scheduling and dependency, activity predecessors and dependencies, and successor scheduling and dependencies were already captured in other plans or matrices included in the FGP (Project Management Institute, 2017).

Activity ID	**Activity Name**	**Description of Work**	**Responsibility**
1.0	Training of regional malaria and/health staff	Conduct refreshers' training for all thirty-seven (37) health staff already trained in microscopy across the region to improve the quality of the services and to introduce them to the malaria RDTs.	Training Officer(s) (Project Management Team)
2.0	Procurement	Procurement of RDTs; drugs and medical supplies; vehicles; microscopes and laboratory consumables.	Ministry of Public Health (Vector Control services)
3.0	Employment of field assistants	The employment of the field assistants is to fill the resource gaps in the region.	Ministry of Public Health (Vector Control services)

4.0	Setting up regional malaria diagnostic reference laboratory	The setting up regional malaria diagnostic reference laboratory is to facilitate quality assure of the tests being done.	Ministry of Public Health (Vector Control Services)
5.0	Testing of all suspected malaria cases	All patients with a fever in the region will be tested either by microscopy or the malaria rapid diagnostic test.	Health workers at the various health facilities
6.0	Treatment of all confirmed malaria cases	All patients confirmed malaria cases will be treated according to National Treatment Guidelines.	Health workers at the various health facilities
7.0	Tracking of all confirmed malaria cases	Track all confirmed malaria cases by setting up a data recording and reporting system at the local level	Health workers at the various heal facilities

Table 7 Activity List [Source: Q. Grant, The Author, June 2019]

ACTIVITY ID	ACTIVITY NAME	TIMELINE
2.0	Procurement of RDTs; drugs and medical supplies; vehicles; microscopes and laboratory consumables. *Milestone: Acquisition of RDTs, drugs and medical supplies,*	Initiated nine (9) months prior to the commencement of the pilot project.

	vehicles, microscopes and laboratory consumables.	
3.0	Employment of field assistants (Advertising of vacancies, Shortlisting, Interviews and Contracting) *Milestone: Signed contracts by newly employed field assistants.*	Initiated three (3) months prior to the commencement of the pilot project.
1.0	Training of regional malaria and/health staff. *Milestone: 37 trained malaria health-care workers in the use of the malaria RDTs and refreshed in malaria microscopy*	Conducted during the first month of the six-month pilot. Four (4) sessions of training (not more than 10 particpants per session).
4.0	Setting up regional malaria diagnostic reference laboratory. *Milestone: Malaria Diagnostic Reference Laboratory extablished at Mahdia.*	During the first month of the six-month pilot.
5.0	Testing of all suspected malaria cases.	Month two (2) to five (5) of the pilot.
6.0	Treatment of all confirmed malaria cases.	Month two (2) to five (5) of the pilot.
7.0	Tracking of all confirmed malaria cases.	Month two (2) to five (5) of the pilot.

Table 8 Project Schedule [Source: Q. Grant, The Author, July 2019]

Once the activities were identified and defined, the third planning process of Project Schedule Management, they were sequenced “identifying and documenting relationships between project activities” (Project Management Institute, 2017). The Schedule Management Plan, Activity list, Milestone list and Project Scope Statement found in Scope Management Plan were used as inputs to this process. In addition, a few meetings were conducted with the project manager to assist in confirming the correct arrangement of each activity. Since, most of the work is being subcontracted, only the resources were assigned to each activity. As more information becomes available, all resources detailed in the *PMBOK® Guide* will be identified for each activity and compiled in a Resource Breakdown Structure. The inputs used to assign Activity Resources were the Schedule Management Plan, Activity List, Resource

Calendar, Risk Register and the Activity Cost Estimates detailed in the WBS Dictionary found in the Scope Management Plan.

4.3 Develop Cost Management Plan

4.3.1 Inputs

The first process of project cost management, Plan Cost Management, was completed after the first process of schedule management, because the scope baseline, along with the schedule management plan was used to develop the cost management plan (Project Management Institute, 2017)**.**

4.3.2 Tools and techniques:

The tools and techniques used to develop the cost management plan were expert judgement, analytical techniques, and meetings. Following this process, documents such as the project charter, scope management plan, and schedule management plan were updated in accordance with the *PMBOK® Guide.*

4.3.3 Output: Cost Management Plan

4.3.3.1 Introduction

The Project Manager will be responsible for managing and reporting on the project's cost throughout the duration of the project. During the bi-monthly project progress meeting, the Project Manager and Assistant Project Manager will meet with Project Sponsors to present and review the project's cost performance for the preceding month. Performance will be measured using earned value management or metrics. The Assistant Project Manager is responsible for preparing the Cost Management Plan and the Cost Baseline. The Project Manager is responsible for accounting for cost deviations and presenting the Project Sponsor with options for getting the project back on budget. The Project Sponsor has the authority to make changes to the project to bring it back within budget.

4.3.3.2 Cost Management Approach

Costs for this project will be managed at the second level of the Work Breakdown Structure (WBS). Control Accounts (CA) will be created at this level to track costs. Earned Value calculations for the CAs will measure and manage the financial performance of the project. Credit for work will be assigned at the work package

level. The percentage (%) of credit granted to each work package will be calculated based on the amount of work completed at a point in time compared to the total costs required to complete the work package. Costs may be rounded to the nearest dollar and work hours rounded to the nearest whole hour.

Cost variances of +/- 0.1 in the cost and schedule performance indexes will change the status of the cost to cautionary; as such, those values will be changed to yellow in the project status reports. Cost variances of +/- 0.2 in the cost and schedule performance indexes will change the status of the cost to an alert stage; as such, those values will be highlighted in red in the project status reports. This will require corrective action from the Project Manager in order to bring the cost and/or schedule performance indexes below the alert level. Corrective actions will require a project change order and must be approved by the Project Sponsor before it can be included within the scope of the project.

4.3.3.3 Measuring Project Costs

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

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

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

financial report by E-mail to the Project Sponsor. During the bi-monthly project progress meeting, the Project Manager and Assistant Project Manager will meet with

Project Sponsors to present and review the project's cost performance for the preceding month. Performance will be measured using earned value management or metrics. The Assistant Project Manager is responsible for preparing the Cost Management Plan and the Cost Baseline. The Project Manager is responsible for accounting for cost deviations and presenting the Project Sponsor with options for getting the project back on budget. The Project Sponsor has the authority to make changes to the project to bring it back within budget.

4.3.3.4 Reporting Format

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

4.3.3.5 Cost Variance Response Process

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

4.3.3.6 Cost Change Control Process

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

4.3.3.7 Project Budget

The costs were estimated for the project. The Cost Management Plan was used as an input to this process. The tools and techniques used were expert judgement, bottom-up, analogous, and parametric estimating, reserve analysis, vendor bid analysis, and a project management software. Meetings were conducted with the expert (the Chief Medical Officer), to determine the most effective means of estimating the budget for the project. The Project Manager was advised to estimate the costs for each component of work (bottom-up estimating) in a modified Microsoft Excel 365 project budget spreadsheet (Project Management Institute, 2017).

In order to determine the cost of each work package, costs were estimated for each related task required to complete the components of work identified during activity definition. To do this, analogous estimating and parametric estimating were utilized, and the data was then compared to the vendors' bids to ensure that estimates were feasible. In addition, the cost estimate included a contingency reserve calculated at 3%. Expert judgement was used to identify the percentage allocated for the contingency reserve. The decision was made to calculate the contingency at the low end of the range, as a result of the number of known unknowns identified in the project charter and risk Management plan and past experience. The software used to calculate the estimated project costs was Microsoft Excel 2016, whereas Microsoft Word 2016 was used to capture the information. Using the information from the activity costs estimates, scope baseline, cost management plan, project schedule, risk register and agreements, the budget was determined by aggregating the costs of each work package. During this process, expert judgement was used along with funding limit reconciliation to ensure that the planned expenditure did not exceed the funds committed to the project by the Project Sponsor.

Table 9 Budget [Source: Q. Grant, The Author, June 2019]

ACTIVITIES	DESCRIPTION AND ASSUMPTIONS/COSTING	TOTAL
1.Strengthen malaria diagnosis by passive surveillance in the 20 health facilities currently set up for malaria diagnosis by carrying out refreshers' training for all 37-health staff already trained in microscopy across the region	• Accommodation for 37 participants and 2 facilitators @ $8,000 for 5 nights • Rental of venue for training for 5 days @ $75,000 • Breakfast (for 37 participants and 2 facilitators) @$1,000 for 5 days • Lunch (for 37 participants and 2 facilitators) @$1,200 for 5 days • Dinner (for 37 participants and 2 facilitators) @$1,200 for 5 days	• G$1,560,000 • G$375,000 • G$195,000 • G$234,000 • G$$234,000
2. Distribute supplies and equipment to all health facilities in region 8	• Hiring a truck from Georgetown to Mahdia twice during the life of the project • Chartering a plane from Mahdia to Kato every month during the life of the project	• G$420,000 • G$1,800,000

	@$300,000 per charter	
3. Procure 40,000 malaria rapid diagnostic tests (RDTs)	Cost for each malaria rapid diagnostic test is US$1.50	G$12,300,000
4. Procure fuel (diesel) for 4x4 Pickup vehicles	2 drums per month for 2 vehicles @$58,000 per drum	G$1,392,000
5. Train 60 personnel on the use of RDTs, malaria surveillance, case recording and reporting	• Accommodation for 60 participants and 2 facilitators @ $8000 per person for 2 nights • Rental of venue for training for 2 days @ $75,000 per day • Breakfast for 60 participants and 2 facilitators for 2 days @$1000 per day • Lunch for 60 participants and 2 facilitators for 2 days @$1200 per day • Dinner for 60 participants and 2 facilitators for 2 days @$1200 per day	• G$992,000 • G$150,000 • G$124,000 • G$148,800 • G$148,800
Print posters with Standards Operating Procedures (SOPs)	• 100 posters printed at size 18”x24” @$13,000 per poster	• G$1,300,000

instructions on the use of the RDTs		
Train a total of 150 miners registered with GGMDA in region 8 to use RDTs.	• Facilitators' fees for training miners	• G$80,000

4.4 Develop Quality Management Plan

The Quality management plan was created to adequately plan and ensure that quality was built into the project's processes and the product. Plan quality management is the only quality management process used during project planning.

4.4.1 Inputs:

The inputs for this process identified in the *PMBOK® Guide* were used to develop the quality management plan. These inputs included the stakeholder register, risk register, and the requirements documentation previously developed by the Assistant Project Manager.

4.4.2 Tools and Techniques

The tools and techniques that will be used are cause-and-effect diagram (Ishikawa/fishbone diagram), PLAN-DO-CHECK-ACT (PDSA) checklist and meetings (Project Management Institute, 2017).

4.4.3 Output: Quality Management Plan

4.4.3.1 Introduction

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

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

4.4.3.2 Quality Planning Approach

The quality management approach for the implementation of the RDT pilot project will ensure quality is planned for both the product and process. In order to be successful, this project will meet its quality objectives by utilizing an integrated quality approach to define quality standards, measure quality and continuously improve quality.

Product quality for the implementation of the RDT pilot project will be defined by the Ministry of Public Health's current standards and criteria based on government standards. The focus is on the project's deliverable and the standards and criteria being used will ensure the product meets established quality standards and client satisfaction. Process quality for the RDT pilot project will focus on the processes by which the project deliverable will be designed and constructed. Establishing process quality standards will ensure that all activities conform to organizational and regulatory standards which results in the successful delivery of the product. The Project Manager will define and document all organizational and project specific quality standards for both product and processes. All quality documentation will become part of the Project Management Plan and will be transitioned into an operational management document upon the successful completion of the project.

4.4.3.2.1 Problem Statement

The problem statement typically describes the problem as a gap to be or as an objective to be achieved. For this pilot, the problem statement that would affect the quality of the pilot is present below:

In Latin America and the Caribbean there has been an increase in the prevalence of adolescent pregnancy, which makes this person a vulnerable group for malaria in malaria endemic regions in Guyana. The health issues associated with adolescent pregnancy range from complications during pregnancy, increased maternal and child mortality, increased risk for eclampsia, puerperal endometritis and systemic infections. On the other hand, babies who were born to adolescent mothers face higher risks of low birthweight, preterm delivery among other neonatal complications. The social, emotional and financial cost associated with adolescent pregnancy is

also a public health concern for the individual, community and Guyana. Adolescent pregnancy in Guyana is prevalent in the hinterland regions (including region 8) and, therefore, would affect the quality of the pilot as malaria in pregnancy for adolescents is management as special cases.

4.4.3.2.2 Root Cause Analysis

The causes of the problem are found by looking at the problem statement and asking "why" until the actionable root cause has been identified. A root cause analysis of the problem was attempted below:

Based on the problem, the Ministry of Public Health in collaboration with the Ministry of Education conducted a root cause analysis to understand the factors contributing the increasing trend of adolescent pregnancy in Guyana. The main causes of adolescent pregnancy were categorized into six broad categories. These are socio economic status, environmental factors, education, family characteristics, student/patient characteristics and primary healthcare.

Under the heading of environmental factor, one of the causes of teenage pregnancy is social media which includes but not limited to: Facebook, WhatsApp, Twitter among others. During the teenage years (15 – 19) there are still some significant changes occurring which may inhibit the self-regulatory capacity of teenagers which often increase their vulnerability to peer pressure and experimentation. High-risk behaviours associated with social media include sexual text communication (Sexting), pornography and cyber bullying. Obstetrician-Gynaecologist have included screen for high-risk sexual behaviours associated with social media as part of their differential diagnosis for adolescent pregnancy.

Under the category of education, the limited sex and reproductive health education in schools, plays an important role in preventing adolescent pregnancy. This teaches children about human sexuality, including intimate relationships, human sexual anatomy, sexual reproduction, sexually transmitted infections, sexual activity, sexual orientation, gender identity, abstinence, contraception, and reproductive rights and responsibilities. The knowledge, skills and attitudes gained during a sex and

reproductive health workshop will empower children/adolescents/teenagers to make informed, positive, and safe choices about healthy relationships, responsible sexual activity, and their reproductive health.

4.4.3.2.3 Ishikawa Diagram

At the head of the fishbone diagram, the problem is placed as the genesis to trace the problem's source back to its actionable root cause. Fishbone diagrams often prove useful in connecting the undesirable effects seen as special variation to the assignable cause upon which project teams should implement corrective actions to eliminate the special variation detected in a control chart.

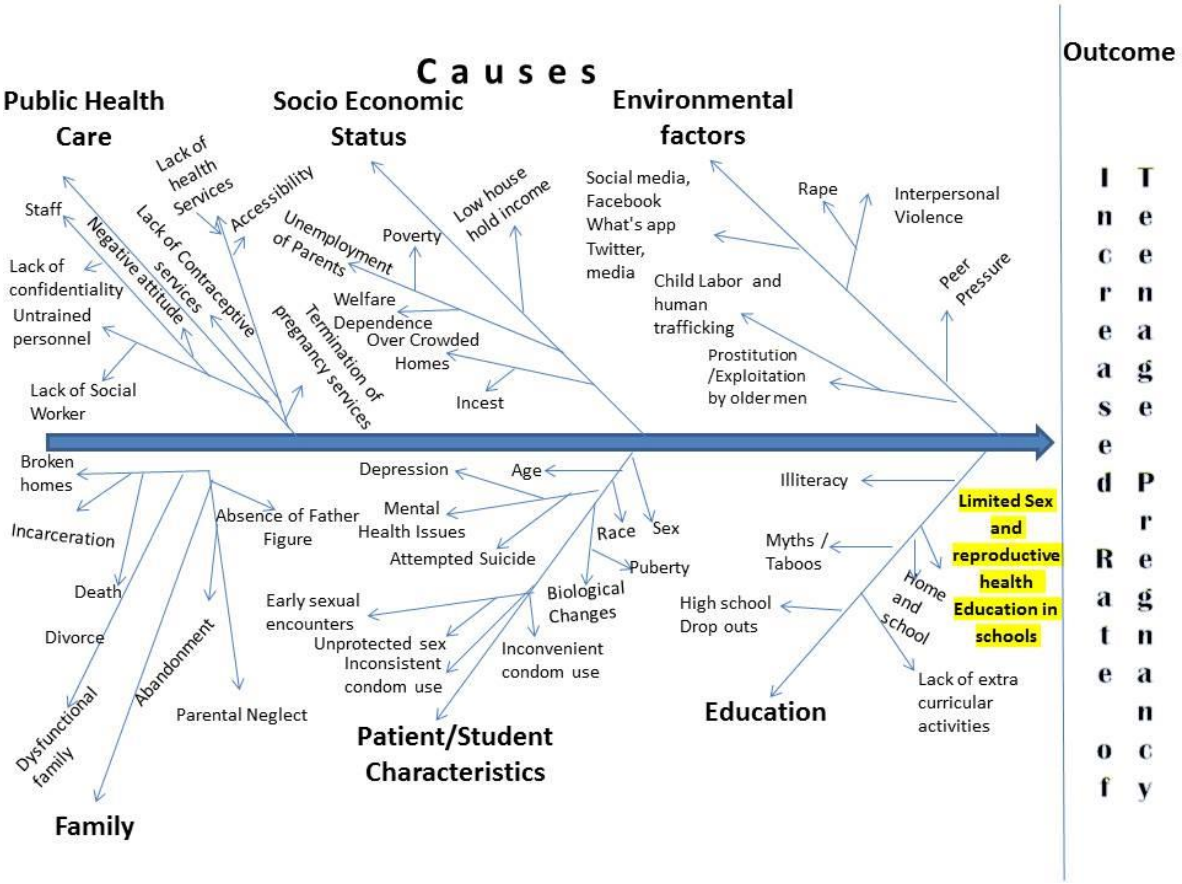


Figure 13: Ishiwaka Diagram for the problem statement

[Source: Q. Grant, The Author, June 2019]

4.4.3.2.4 Quality Objective

To reduce the prevalence of adolescent pregnancy by 10% relative to 2016 in the malaria endemic region (Region 8) through an eight-module training with grade six (6) students at Mahdia Primary School so that 85% of these students would have comprehensive knowledge about their sexual reproductive health.

4.4.3.2.5 PDSA Cycle

To address the root cause of limited sexual awareness/education among adolescents, our team decided to the use the PDSA cycle to develop an eight-module sexual and reproductive training with the students of the grade six (6) level at the school in Region 8. There is an average of 50 students in grade six (6) at the school in Region 8.

1. Plan:
    - Have a total of eight (8) training sessions, two times weekly during the month of May.
    - Conduct training with twenty-five (25) students of the grade six level of the school.
    - These sessions will be held on Tuesdays and Thursdays for no longer than forty-five (45) minutes.
    - Teaching methods will vary to ensure students' interaction and participation.
    - The modules will be facilitated by persons who are knowledgeable on their respective topics.
    - Towards the end of the training, the students will be placed in groups to develop posters (one per group) on a topic of interest of the training.
    - A pre-and post-training test/quiz is planned to assess students' comprehensive knowledge on sexual and reproductive health.
2. Do:
    - All sessions were completed.
    - Our first session had an attendance of twenty (20) students, with the pre-training test/quiz being completed by all.

- The baseline comprehensive knowledge of the students on sexual and reproductive health was 40% (obtained from the pre-training test/quiz).
- The remaining sessions had full attendance.
- Two sessions started at least twenty-five (25) minutes late and one started at least forty-five (45) minutes late, this was due to the facilitators arriving late. The allotted time for one session was reduced due to the facilitator having prior engagements.
- There was a shortage of materials for the development of posters, therefore, students were placed into larger groups.
- The post-training quiz/test was completed by all 25 students.

3. Study:
   - Despite the glitches, eighty-six (86%) of the students of grade six responded correctly to the questions that assessed comprehensive knowledge on the material in the post-training test/quiz.
   - The class teacher/head teacher should call facilitators prior to their respective sessions to ensure that there are no conflicts of interest and so that the sessions can start on time.
   - There should be a back-up plan in the event a facilitator may arrive late or cannot attend a session.
   - All materials required for the training should be obtained at the beginning to ensure that there are no shortages during the process.
4. Act:
   - The observations made during this first cycle were incorporated into the second cycle with the remaining students of grade six (6).

1. Plan:
   - Have a total of eight (8) training sessions, two times weekly during the month of June.
   - Conduct training with twenty-five (25) students of the grade six level of the school.

- These sessions will be held on Tuesdays and Thursdays for no longer than forty-five (45) minutes.
- Teaching methods will vary to ensure students' interaction and participation.
- The modules will be facilitated by persons who are knowledgeable on their respective topics.
- Towards the end of the training, the students will be placed in groups to develop posters (one per group) on a topic of interest of the training.
- A pre-and post-training test/quiz is planned to assess students' comprehensive knowledge on sexual and reproductive health.

2. Do:
    - All sessions were completed.
    - Our first session had an attendance of all twenty-five (25) students, with the pre-training test/quiz being completed by all.
    - The baseline comprehensive knowledge of the students on sexual and reproductive health was 50% (obtained from the pre-training test/quiz).
    - The remaining sessions had full attendance.
    - All sessions on time.
    - There was no shortage of materials for the development of posters.
    - The post-training quiz/test was completed by all 25 students.
3. Study:
    - Ninety-six (96%) of the students of grade six responded correctly to the questions that assessed comprehensive knowledge on the material in the post-training test/quiz.
4. Act:
    - Discussions to be held with the Ministry of Education so that this training can be incorporated in the grade six (6) curriculum of the coastland schools and piloted in the hinterland schools.

4.4.2 Quality Assurance Approach

Quality assurance focuses on the processes utilized in the project efficiently to

generate quality project deliverables. Quality assurance of a malaria laboratory or diagnostic programme is designed to improve the efficiency, cost–effectiveness and accuracy of test results continuously and systematically. The quality assurance unit at the VCS was created to guarantee standardized and good quality diagnosis of malaria by microscopy or RDT that is accessible to the population and to facilitate clinical management of the patient. The quality assurance unit should identify and immediately address issues affecting the quality of microscopy such as:

- Inadequate maintenance of microscopes;
- Limited training and skill of laboratory personnel;
- Sub-optimal preparation of thick and thin films and staining of slides with Giemsa;
- Use of poor-quality reagents or their incorrect storage of the same;
- Labelling of blood samples;
- Excessive workload that affects output; and,
- Poor data quality in the daily malaria case register (data should be complete and accurate).

In the case of this pilot project, quality is assured through the proper storage of the malaria rapid kits. These kits should be stored in a cool, dry environment away from direct sunlight so that the quality of the results will not be compromised. In addition, during the pilot project all patients tested using the malaria rapid test, will also be tested via microscopy (which is the gold standard for malaria diagnosis here in Guyana).

4.4.3 Quality Control and Quality Improvement

Quality control is the process of monitoring and recording the results of executing the quality activities to assess performance and recommend necessary changes. In this pilot project, experts (experienced microscopists) will inspect the results of the tests performed, whether by rapid testing or microscopy. Microscopist at all levels should be able to detect the presence or absence of malaria parasites (in a slide set of 10 negative and 10 positive slides) with more than 90% accuracy. Regional

laboratory focal points and field supervisors must undergo training and accreditation before undertaking supervision (and training). They should be able to assess laboratory standards and must provide on-site feedback of their findings, recommendations for improvements and on the spot trouble-shooting, when indicated. National and regional level trainers should have recognized competence in their areas of expertise and be accredited. They should be supported by a group of experts and validators at central level (both at the VCS and the National Laboratory of Public Health) who have demonstrated measurable expertise.

There are two types of quality control in this pilot, namely internal and external. The internal quality control is carried out by the microscopist and/or laboratory supervisor for each blood smear produced and entails the evaluation of all the routine procedures performed to ensure that the technical quality of the thick smear and the thin smear (performed in microscopy) is adequate. In laboratories with more than one microscopist, a second microscopist may review the quality of smears and re-examine the slides under a microscope for confirmatory purposes and to ensure that a consensus is reached in the laboratory about the test results. The evaluation is carried out with the objective of identifying problems and immediate errors so that corrective measures can be implemented in a timely fashion. In the internal control, the correct identification of the films, the size and location of the thick film, the quality of the thin smear and the Giemsa stain are evaluated each time it is performed, also controlling for the presence of precipitate or other contaminants/artefacts, which also allows for the determination of the quality of the buffer used and if the pH of the solution is adequate. The results of this evaluation are compiled in a report and sent to the national malaria programme/VCS.

Parameters	Acceptable standard
Identification of samples	Code/ID and patient's name are legible
Sample size	Thick smear = 1cm in diameter; thin smear = 3cm long
Location of sample	Thick smear = 1-5cam from end of the slide Thin smear = if done on the same slide as the thick smear is located from the centre of the slide to the end of the slide

Thickness of the sample (quality)	Thick smear = 10-20 White Blood Cells; Thin smear = with head, body and tail
Dehemoglobinization	Free Red Blood Cells background
Staining	Follows the tonality of the cell elements
Precipitate	Absence of precipitate of the Giemsa stain in the entire sample

Figure 14 depicting acceptable parameters to be evaluated during the internal quality control [Source: Q. Grant, The Author, June 2019]

External quality control, on the other hand, refers to re-examination of slides produced during routine diagnosis in health facilities by the regional and/or national reference lab to determine whether there is concordance of microscopy results and to engage corrective measures that are necessary. Therefore, existing laboratories must submit 100% of positive slide and 10% of negative slides produced during normal daily malaria diagnosis for confirmation to the regional reference laboratory. However, new microscopists should be requested to submit 100% of both positive and negative slides for evaluation until such a time when their results under the external quality control scheme conforms to national standards, after which 100% of positives and 10% of negatives should be submitted as is the case with already existing labs.

4.5 Develop Project Resources Management Plan

4.5.1 Inputs:

The activity resource requirements derived from the work packages seen in *figure 1.1 Work Breakdown Structure* of the Scope Management Plan and the *Stakeholder Analysis Register* of the Stakeholder Management Plan were used as inputs to this process. In addition, expert judgement and meetings, in the form of a personal interview, were the tools and techniques utilized to identify the resources required, the roles and responsibilities of each, and how they will be managed throughout the project lifecycle.

Plan Project Resource Management is the only process from the Project Resources Management knowledge area that will be used during the planning process.

4.5.3 Output: PROJECT RESOURCES MANAGEMENT PLAN

4.5.3.1 Introduction

Project resources management is an important part of this pilot being undertaken by the Ministry of Public Health. The project resources management plan is a tool which will aid in the management of this project's project resources activities throughout the project until closure. The project resources management plan includes:

- Roles and responsibilities of team members throughout the project; and;
- Staff Management Plan

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

4.5.3.2 Roles and Responsibilities

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

- **MEDICAL EXTENSION OFFICER (MEDEX)/PROJECT MANAGER**

RANGE OF ACTIVITIES:

- Advise the community on good health practices.
- Perform certain tasks within a Health Centre or Health Station in keeping with a prescribed protocol, more particularly as regards community problems especially in relation to prevention.
- Conduct medical examination, and if necessary, refer patients to supervising physician or to a hospital.
- Prescribe medicines, administer drugs and give other forms of medical treatment for common diseases and minor injuries.

- Provide obstetric services, carry out specified laboratory procedures and manage specified dental procedures.

RESOURCE MANAGEMENT:

- The incumbent is responsible for medical equipment and a stock of drugs which must be stored under prescribed conditions in order to maintain potency. Such pharmaceuticals and medical equipment are valued at millions of dollars. The job holder is responsible for community health workers when such persons are in his/her region.
- The incumbent communicates frequently with the Regional Health Officer, other medical personnel, members of the community and patients in the discharge of his duties. He/she should be confidential and use tact in communicating on sensitive medical matters.

- **MICROSCOPIST I**

RANGE OF ACTIVITIES:

- Assist in Microscopic examination in the Field and Laboratory.
- Assist in the compilation of weekly diagnostic reports.
- Examine slides under a compound microscope.
- Mix stains and other solutions and use same for pre-staining, and staining slides for microscopic examination.
- Maintain microscope in good working order.

RESOURCE MANAGEMENT:

- The job holder supervises Laboratory Staff - three (3) persons and other collaborating Microscopists periodically in Regions.
- The job holder communicates with the public and other Government Officers to facilitate the work of the Department especially in the locales most suspected to the breeding of the disease-carrying mosquitoes.

- **MICROSCOPIST II**

RANGE OF ACTIVITIES:

- Determine the adequacy of staining techniques, prepare materials for Field personnel, and check for inaccuracies / accuracies.
- Control the supply and utilization of materials/ reagents at Regional Level and maintain adequate stocks.
- Maintain Microscopes in good working order.
- Plan and supervise the orderly, prompt and accurate processing of Malaria blood smears in the Parasitological Laboratory.
- Recheck percentages of positive smears for reliability of Microscopic diagnosis.
- Responsible for the issue of equipment, supplies and drugs to field laboratories.
- Assist in the organizing of training in Microscopy and refresher training for Microscopist and Laboratory staff.
- Assist in the supervision of malaria epidemiological activities and in training of evaluators and collaborators.
- Visit Regional Laboratories to evaluate work and assist in identification of parasites.
- Complete weekly, monthly and yearly progress reports on case detection, treatment and follow-up of cases.

RESOURCE MANAGEMENT:

- The post holder supervises five (5) Microscopists in malaria endemic regions and two (2) lab staff totaling seven (7) persons. He/she is not the budget holder. He is responsible for all equipment and supplies under his control in the regions.
- The post holder communicates with Field Staff, personnel from other agencies and the general public.

- **SENIOR MICROSCOPIST**

RANGE OF ACTIVITIES:

- Ensure that microscopists follow set rules.

- Motivate and train staff and collaborators in Microscopy.
- Recheck percentage of positive and negative smears from all microscopists for reliability.
- Assist in training of epidemiological staff and collaborators.
- Compiles weekly/monthly diagnostic reports on all Laboratories.
- Conduct drugs susceptibility tests to Malaria parasites.
- Plan and supervise the prompt and accurate processing of blood smears.
- Issue equipment, supplies and drugs to field Laboratories

RESOURCE MANAGEMENT:

- The job holder supervises technically twenty-nine (29) Microscopists (staff) and other auxiliary personnel throughout Guyana. He/she is responsible for supplies and equipment (approximately $4,000,000.) under his control. The job holder communicates with the public periodically and contacts agencies re: Scientific information relevant to Malaria Microscopy. He/she relates with Police/Army re: Training of personnel in Microscopy and Surveillance.

- **OPERATOR INSPECTOR**

RANGE OF ACTIVITIES:

- Ensure the collection of malaria blood smears and submit to lab for testing.
- Ensure treatment of positive malaria cases.
- Keep and update information on fogging exercises.
- Compile and submit reports on drugs issued (monthly/weekly)
- Carry out daily supervision of Field Assistants in Aedes Programme.
- Maintain constant revision of work done.
- Visit homes and carry out general mosquito surveys.

RESOURCE MANAGEMENT:

- The post holder supervises five (5) Field Assistants and two (2) laborers (spraymen) totaling seven (7) persons.
- He/she is also responsible for equipment and supplies to the approximate cost of ($100,000).

- The post holder communicates with other officers of the unit, Regional Officers and members of the general public.

- **SENIOR INSPECTOR**

RANGE OF ACTIVITIES:

- Assist in planning effective malaria control measures.
- Ensure effective deployment of personnel to critical malaria areas.
- Assist in budget preparation.
- Supervise all field personnel especially those involved in capture and identification of the various types of mosquitoes.
- Investigate complaints and settle disputes among field officers and supervisors.
- Ensure public health measures are adhered to especially in fogging exercises.
- Ensure that adequate stocks of necessary materials are readily available and accounted for.
- Receive and evaluate field reports.

RESOURCE MANAGEMENT:

- The post holder supervises the Charge Operator Inspector and Senior Operator Inspectors, totaling six (6). He/she is accountable for equipment/supplies etc., approximately G$5,000,000.
- The post holder communicates with other senior officers at a similar level in other ministries and regions and the general public.

- **CHIEF INSPECTOR**

RANGE OF ACTIVITIES:

- Plan and direct the administrative and technical functions of the entire operations, laboratories and office staff throughout Guyana.

- Plan river trips, accommodation, approval of leave and deployment of personnel to interior.
- Control the use of all equipment, supplies and materials authorizing their use, distribution, issue, replacement or repairs.
- Check on weekly laboratory/operational reports and return from the regions and coastlands.
- Plan and coordinate control operations related to malaria throughout the interior/coastlands.
- Supervise control operations related to filariasis surveys and clinics.
- Supervise and coordinate the operations related to Malaria/Aedes Aegypti Control programme.
- Review the efficiency and scientific aspects of the activities with PAHO/WHO technical officers or consultants to evaluate and recommend changes when necessary.
- Prepare financial estimates for the entire service as a guide for the Ministry's annual estimate.
- Conduct preservice and in-service training to enhancing Vector Control staff, Environmental Health Officers, Guyana Defense Force, Guyana National Service, Medical Extension Officer and other health staff and collaborators.
- Attend to routine correspondence, compiles monthly, quarterly and yearly reports for continuity of action, reference and reports.

RESOURCE MANAGEMENT:

- The post holder supervises directly 2 senior inspectors and a senior microscopist and indirectly a total staff of 192 persons. He is accountable for the department budget of approximately $6,000,000. dollars and the preparation of same and for equipment, supplies, material, drugs etc., to the total value of approximately $15,000,000. dollars.

The job holder communicates with staff at all levels inside/outside of the service, members of the public, PAHO/WHO consultants, technicians and other officers of similar levels within the regional system and general health service.

- **PHARMACY ASSISTANT**

RANGE OF ACTIVITIES:

- Assists in the dispensing of prescriptions to consumers under the supervision of the Pharmacist.
- Participates in drug distribution activities at the Pharmacy and in the Hospital Ward.
- Informs Pharmacist of stock situations e.g., needs, shortages etc.
- Interprets Ward Charts and dispenses the stipulated drugs.
- Assists in the proper storage and safety of Pharmaceuticals.

RESOURCE MANAGEMENT:

- The job holder does not supervise any subordinate staff. He/she is not a budget holder or is responsible for any cash or equipment.
- Apart from all levels of staff in the unit, the job holder relates to Health Care Workers on matters relating to queries, drugs distribution and dispensing.

- **PHARMACIST**

RANGE OF ACTIVITIES:

- Review and process prescription from prescribers.
- Inspect and assess pharmacies and manufacturing facilities.
- Provide information and advice to patients with minor illnesses and often to those with more chronic conditions who are on established maintenance therapy.
- Control the quality of pharmaceuticals produced.
- Train other health professionals in the use of essential drugs.

RESOURCE MANAGEMENT:

- The incumbent does not supervise any subordinate staff. While not being a budget holder, he/she has to manage stocks of pharmaceuticals or manufacturing and analytical equipment depending upon his/her area of responsibility. The job holder communicates with all levels of staff in the unit on

technical information and with the students during training programmes. Also communicates with pharmaceutical manufacturers and distributors.

- **FIELD TECHNICIAN**

RANGE OF ACTIVITIES:

- Investigate complaints of mosquito nuisance and advice on their control/eradication.

- Supervise the collection of *Aedes* mosquito larvae.

- Supervise the application of Ultra Low Volume (ULV) fogging in urban areas.

- Identify larvae/eggs of mosquito under microscope laboratory.

- Responsible for maintenance of ULV equipment after use.

- Train and develop staff in use and maintenance of equipment for VCS.

- Compile reports on evaluation of work done.

RESOURCE MANAGEMENT:

- The job holder supervises Operator Inspector/ Field Assistants and Labourers engaged in house inspection and ultraviolet fogging in urban areas and is responsible for equipment - ($100,000.00). The job holder communicates with the Public for permission/ cooperation and contracts other Government agencies in relation to collaboration of activities within urban areas.

RACI Chart	**ACTIVITY**					
Roles	Training	Procurement	Employment of field assistants	Setting up of Regional Lab	Testing and Tracking	Treating

Medical Extension Officer	C	R	A	R	C	C
Microscopist					R	R
Senior Microscopist	R		C	C		
Operator Inspector						
Senior Inspector	R	C				
Chief Inspector	A	C	R			
Pharmacist/Assistant		C				R
Field Technician					R	I

R=Responsible A=Accountable C=Consult I=Inform

Figure 15 RACI Chart [Source: Q. Grant, The Author, June 2019]

4.5.3.3 Human Resources Plan

This is ultimately a document that describes the project resources requirements will be met for both staff management and employees alike. It allows projects to be successful by properly managing various teams to complete tasks effectively and efficiently.

4.5.3.3.1 Staff Acquisition

Staff already working with MoPH or with Regional Democratic Council (Region 8) under the umbrella of the regional malaria programme will be seconded to the project. Staff will be distributed across all the health facilities in Region 8 and will report to the regional malaria team located in the town of Mahdia (central location in Region 8). The type of staff located at the health facility is directly related to the level of care t the given health facility.

4.5.3.3.2 Resource Calendar

All staff will work on weekdays (Mondays to Fridays) from 8.00hrs to 16.30hrs except for Fridays whereby work ends at 15.30hrs. Staff will be allowed one (1) hour lunch break. Thus, staff will work seven (7) and a half hours per day; thirty-six (36) and a half hours per week; one hundred and forty-six (146) hours per month; and, eight hundred and seventy-six (876) hours during the six (6) months of the pilot project.

4.5.3.3.3 Training Needs

- Training in surveillance is paramount: Weekly data analysis is encouraged at all levels of the health system to promote timely implementation of response actions. At the level of health facilities, the microscopists or other assigned persons will collect, compile and report on a weekly basis all the required data listed using the appropriate tools. Equally on a weekly basis, they will identify the most affected localities and compare the number of cases in the current week with that of the previous week. Changes in affected areas and number of cases are reported to the regional malaria team. Malaria personnel at regional level should conduct similar but region-wide analyses and use the results for micro planning at that level while sharing the findings with VCS for technical inputs and coordination.
- Guidelines on proper storage of anti-malarial medicines and commodities. For instance:

- The storage room/place for RDTs and medicines should be clean and dry at all times.
- The area should be well lit, ventilated and away from direct sunlight, humidity, water penetration and from any seepage in the walls, roof, doors and windows, especially during rainy season.
- Room temperature should not be more than 40^{o}C; RDTs can be stored at ~35°C.
- Stack cartons with their arrows pointing up and ensure that identification labels, manufacturing dates, and expiry dates are visible (RDTs may have a shelf life of up to 24 months).
- Store all drugs, RDTs and other commodities such that they can follow the

following rules:

- First in first out (FIFO); and,
- First expiry first out (FEFO) rules; drugs and supplies that expire first must be used up first.

- Stack cartons in steel racks/slotted angles and at least 10 cm(4 inch) off the floor, 30 cm (1ft) away from the walls and other stacks and no more than 2.5 m (8ft) high.
- Store drugs and medical supplies away from insecticides, chemicals and other materials.
- Monitor product quality (visually inspect commodities, expiry dates and physical verification of quantities.
- Separate damaged and expired stocks from the usable stock and move the expired stock to secure area and dispose of these products without delay as per the established procedure.
- Monitor stock levels, stock quantities and safety stocks and update stock ledger/records regularly and maintain the files safe custody.

4.5.3.3.4 Performance Review

This can be conducted during the course of the project on a weekly basis (weekly meetings) and can include clarification of roles and responsibilities, constructive feedback to team members, discovery of unknown or unresolved issues and the establishment of specific goals for future time periods.

4.5.3.3.5 Project Team Changes

If any member of the project team or any other high interest/high power stakeholder determines that a modification to the project team is essential, the project manager and team will meet to assess and evaluate the change. The project manager and project team must conclude which roles and responsibilities will be impacted, any variance resulting from the potential change, and any need for re-assignment of roles and responsibilities or advertisement of the vacant position to see how this would affect the scope, schedule, and resources. If, after this evaluation is complete, the project manager determines that any change will surpass the established schedule

constraints, then a schedule change request must be submitted as described under the section ‘Schedule Changes and Threshold’.

The project manager will be responsible for the approval of any changes in the project team after consulting with the sponsor/funders/donors. Advertisement of any vacant position should be carried for at least three (3) weeks, followed by shorltisting, then interviewing/evaluation and contracting of services.

4.5.3.4 Materials Management

As detailed in the procurement plan, the materials management is centralized under the Ministry of Public Health in one unit called the Materials Management Unit (MMU), spearheaded by a director.

4.6 Develop Communications Plan

To ensure that information communicated about the project during the project lifecycle will be disseminated to the appropriate parties at the correct time, the Communications Management Plan was developed using the *PMBOK® Guide*. The plan details how each stakeholder would receive information from members of the project team, the frequency of communication, the information that would be communicated to them and the person responsible for ensuring that the correct information was received by the communication sent (Project Management Institute, 2017).

An interview was conducted with the Project Manager, to ascertain the communication types and delivery methods previously used by the company. The information gathered, along with a communications requirements analysis completed by the Assistant Project Manager, are included in the Communication Matrix.

4.6.1 Communications Plan

4.6.1.1 Introduction

The purpose of the communication plan is to guide the development, implementation, and monitoring of the communication and behavior change component of malaria prevention and control. This communication plan considers current knowledge, beliefs, and practices, to better contribute to the success of the pilot.

4.6.1.2 Specific Communication Objectives

- Promote behavior changes that reduce risks for malaria transmission and reduce malaria breeding sites through various interventions, including Information, Education, and Communication (IEC) methods.
- Promote malaria prevention and control through improved institutional communication, outreach, and community mobilization.
- Present AMI's evidence-base and recommended practices to policymakers to guide the development of long-term policies and budgets for malaria prevention and control. Increase the visibility of malaria in Guyana:
    - Raise awareness among mining populations and stable populations in endemic regions about the dangers of improper antimalarial medicine. use. Warn health care consumers of the dangers of purchasing antimalarial medicines without a prescription.
    - Raise awareness about malaria among the next generation of Guyanese and promote preventive behaviors.
    - Raise awareness about malaria among key decision makers in Georgetown to increase their understanding of the continuing importance of disease surveillance, diagnosis, and treatment.
- Engage NGOs, the private sector, and schools as partners in sustainable, community-based malaria prevention and control.

4.6.1.3 Communication Methodologies and Technologies

4.6.1.3.1 Primary Audiences.

Heads of households in malaria endemic regions: Particularly targeting men as they play a critical role in their family's decisions around healthcare and can also have a positive influence on their families' use of LLINs, acceptance of IRS, and can influence their wives' ANC attendance behavior.

Pregnant women living in the country especially those in endemic regions: Pregnant women in highly endemic areas can be asymptomatic of malaria infection and may not recognize that they are a risk group for malaria.

Mobile populations, especially miners and loggers: Particularly targeting the mobile populations is important to increase awareness of their vulnerability to malaria infection and risk of transmission.

The general population and communities living in malaria endemic regions in the country: Communication activities will encourage widespread use of LLINs and increase the general awareness of the dangers of malaria.

Care givers in households with children less than five years and adults over 70 years in the malaria endemic zones. Caregivers need communication to improve symptoms recognition and take the necessary care seeking behavior.

4.6.1.3.2 Influencing Audiences.

Health service providers: Nurses, clinicians and laboratory technicians. They are an influential source of information to communities, and their knowledge, attitudes and behaviors can affect uptake of services and their role in the community.

Community leaders: These include Toshaos, chiefs, community chairpersons, religious leaders and politicians/political players. They have influence on what their communities do and can play a significant role in encouraging the adoption of protective behaviors in the malaria program. They are also usually better skilled and educated and can be a useful channel for delivering information to the rest of the community.

Community health workers: This includes community health workers, village health volunteers, extension workers, and public health technicians. As frontline actors, they are in close touch with the community and can influence their behavior significantly. It is therefore important that they understand the key issues around

malaria prevention and appropriate treatment so that they can include promotion activities in their work-plans.

Pharmacists: They provide an important 'first contact' with the community members and can be useful channels for disseminating information about correct case management.

Policy makers in government (central and regional government) and political leaders – this will be a target audience for advocacy messages identified in the needs analysis.

Local media: These include the national and community media.

NGOs, international organizations, professional bodies and community groups working in malaria or related areas.

4.6.1.3.3 Key Messages and Themes

The key message is grouped into 2 thematic areas for the different target audiences. These themes are malaria prevention and vector control, and diagnosis and treatment.

Theme 1: Malaria prevention and vector control

Target Audiences	Key Messages	Desired Behaviour
Families/general population, pregnant women, caregivers and heads of households in malaria-prone areas	**LLIN Use** • Where to obtain LLINs • How to use - Hang LLINs correctly over sleeping space • Sleeping under of LLINs can help prevent malaria	Correct and consistent use of LLINs

Target Audiences	Key Messages	Desired Behaviour
	IRS use • The benefits of IRS in the community • Preparing homes before spraying • Acceptance of sprayers inside home • Discourage re-plastering or covering of walls after spraying	Accept IRS, and allow spraying of their homes Avoid re-plastering or covering
	Environmental Care • Drain stagnant water around the community to discourage mosquito breeding • Bury all empty containers, to reduce mosquito breeding grounds • Cover all water containers	Eliminate breeding grounds for mosquitoes around home
Health service providers, health volunteers, community-based health workers and public health technicians	**LLINs Use** • Promote use of LLINs during ANC visits, postnatal visits, wellness checks and home visits etc.) • Give information on how/when to use LLIN, as	Health workers promote LLINs to all clients visiting health facility

Target Audiences	Key Messages	Desired Behaviour
	well as practical demonstrations • Distribute information materials available for the community on where to get LLINs	
	IRS • Support IRS and discuss its benefits at health talks with community	Promote IRS in community
	Environmental Care • Encourage environmental sanitation during home visits	Supports proper waste disposal to reduce mosquito breeding grounds
Community leaders, and NGOs and all other community organizations implementing malaria control activities in malaria endemic areas	**LLINs** • Promote LLINs during community meetings, health talks, and special events like sporting events in the villages • Demonstrate use, hanging, and care of LLINs	Community leaders and NGOs and CBOs support and promote use of LLINs

Target Audiences	Key Messages	Desired Behaviour
	IRS • Support and facilitate spraying within their communities • Encourage households to allow spraying • Discourage re-plastering or covering of sprayed walls	Advocate for IRS in community Mobilize community to allow sprayers
	Environmental Care • Encourage proper waste disposal in communities	Communities and families adopt alternative approaches to eliminating mosquitoes
Policy makers, political leaders, and opinion leaders	**LLINs Use** • Ensure adequate supplies of LLINs are available at facilities in malaria areas and in the community • Support a coordinated and harmonized LLIN distribution strategy at national level and in the local community	Leaders support universal distribution of LLINs Leaders support and promote use of LLINs
	IRS • Include funding for IRS as a malaria prevention strategy in local district plans	Promote IRS for malaria control and prioritize financing for IRS

Target Audiences	Key Messages	Desired Behaviour
	Environmental Care • Include clean up campaigns at community and district levels in community development plans • Supervise mining activities in the endemic regions to cover up holes after digging, to reduce mosquito breeding grounds	Promote environmental care and proper waste management
Mobile Populations, miners and loggers	**LLINs Use** • Cover all hammocks with LLINs • Always Sleep under LLINs • Use personal protective measures like long clothing, and repellents	Consistent use of LLINs
Pregnant women and their family members.	**LLINs Use** • Always sleep under a LLINs • Seek early treatment for malaria-like symptoms from health facility	Consistent Use of LLINs
	Environmental Care • Keep your environments clean	Proper disposal of waste

Target Audiences	Key Messages	Desired Behaviour
	• Use personal protective measures like long clothing, and repellents	

Table 10 Key Messages on Malaria Prevention and Vector Control [Source: Q. Grant, The Author, June 2019]

Theme 2: Diagnosis and Treatment

Target Audiences	Key Message	Desired Behaviour
Families/general population, caregivers and heads of households in malaria-prone areas	• Malaria is a serious disease. Seek medical help for all fevers and malaria related symptoms • Seek early diagnosis and treatment from a health facility • Take complete dose of malaria treatment • Avoid self-diagnosis and treatment. It can lead to drug resistance and complication • Avoid over the counter medications. Use only recommended medicines for malaria (ACTs) from health facility/health post • Malaria diagnosis and treatment is free at any public health facility or health post	Easily recognizes malaria symptoms and danger signs Seeks early diagnosis and treatment from health facility Knowledge on availability malaria treatment Takes complete malaria treatment

Health service providers, community health workers and public health technicians	• Educate clients on benefits of ACT and early diagnosis • Provide accurate information on medicine use and dosage • Update treatment guide and discontinue prescribing outdated medicines	All service providers provide treatment upon diagnosis Give the recommended treatment for confirmed malaria cases Educate clients on case management
Chemists and pharmacists	• Sell only the approved prescribed malaria medicine and desist from not selling of non-recommended medicines • Encourage clients to seek laboratory testing for confirmation of malaria • Provide clients with clear and simplified information on treatment dosage	Sells only the approved malaria medicines
Pregnant Women and their families	• Seek early treatment for malaria-like symptoms from health facility	Pregnant women recognize malaria symptoms and seek early treatment from health facility
Mobile Populations, miners and loggers	• Educate all trained testers on proper use of RDT • Educate trained testers on malaria symptoms and treatment • Test all fever cases for malaria who have travel history from malaria endemic region	Recognizes fevers and malaria symptoms Administer correct medication Treatment is taken in complete doses

	• Administer recommended treatment and correct dosage • Encourage miners and mobile populations to complete treatment	
Policy makers and Opinion leaders	• Enforce policy on diagnosis-based treatment • Simplify treatment guidelines and disseminate to health staff • Ensure adequate supplies of medication are available at facilities • Support resource mobilization for malaria related supplies • Support resource mobilization for capacity building of community health workers	Support resource mobilization Updates treatment guidelines following WHO recommendations
Community leaders	• Understand the dangers of malaria in community • Encourage pregnant women to attend ANC • Support local health facilities outreach activities to promote early diagnosis and treatment	Support and encourage community response to early diagnosis and treatment

Table 11 Key Messages on Malaria Diagnosis and Treatment [Source: Q. Grant, The Author, June 2019]

4.6.1.3.4 Expected Results

The expected results of communication and advocacy for malaria control are:

- Increase in awareness among target populations on malaria prevention, diagnosis, and treatment.
- Reduction in the total number of new malaria infections among key populations, including pregnant women and children.
- Reduction in the demand for non-approved, over-the-counter antimalarial medicines such as Artecom.
- Reduction in the supply of non-approved, over-the-counter antimalarial medicines such as Artecom.
- Improvement in the access to information on malaria across different government entities.
- Increase in partnerships for malaria control through the collaboration with associations, researchers and academic institutions, NGOs, the private sector, cooperation agencies, and other stakeholders.
- Increase in resources for malaria control through establishment of Program activities together with NGOs and private companies.
- Strengthened information sharing with other Guyana Shield countries and international partners.

The key messages will be delivered to the primary and secondary audiences in the most effective ways known to have significant impact on behaviour. The communication approaches to be used is IEC –information education and communication. This approach is accompanied by its supporting activities and tools.

4.6.1.3.5 Information Education and Communication (IEC)

Information, education and communication (IEC) activities are excellent in raising awareness and knowledge, as well as change behaviors. IEC activities will be used to improve the flow of information on prevention to key target audiences, raise awareness and knowledge on symptoms recognition, and to reinforce positive

behavior in treatment-seeking, timely initiation of treatment and completion of treatment.

Supporting Activities**:**

1. Develop an IEC campaign on proper diagnosis and treatment. Consider developing or IEC materials in different predominant languages especially Spanish and Portuguese for the mining camp.
2. Hold in-person informational sessions to train pharmacy and shop owners about proper use of antimalarial medicines. Leave behind additional IEC materials (brochures, posters, etc.).
3. Present alternative products to be sold by these vendors in remote areas, such as RDTs and/or approved medicines. This will provide an alternative financial incentive for vendors to stop supplying potentially harmful over-the-counter medicines.
4. Subsequently, perform exit interviews checks of pharmacy and shop owners who have participated in trainings.
5. Partner with stakeholders like USAID to conduct qualitative research on the behaviors of miners and other populations in mining areas to determine best communication approaches to use. Consider innovative methods of inquiry such as key informant interviews, photo-voice, social media, etc.
6. Design and launch IEC/BCC campaign on malaria prevention, diagnosis and treatment targeting endemic regions.
7. Identify communities with existing health committees or clubs, and send regional VCS staff to speak with them about malaria control.
8. Enlist the support of Community Service Officers (CSOs), Voluntary Service Officers (VSOs), US Peace Corps volunteers, and NGOs to support these school committees and clubs together with the schools' headmasters and parents.

9. Work with health committees and clubs to organize specific annual school-based activities for students across all regions with particular emphasis on endemic regions. Ideally, awareness days in the schools should coincide with Malaria Day in the Americas celebrated each year on November 6. Activities may include quizzes on malaria, debates on malaria, play back, demonstration of the proper use of mosquito nets, games, and theater presentations to provide malaria education.
10. Develop a weekly radio program on malaria to answer questions from all Guyanese people on malaria and malaria related topics.
11. Organize health fairs in communities and invite all stakeholders involved in the fight against malaria.
12. Organize periodic campaigns addressing different concerns associated to malaria.

Note: Gatherings for Mashramani in February, rodeos and other sporting events, Amerindian heritage festivities in September, as well as Christmas and New Year's should be taken into consideration to raise awareness through information booths, speakers, and performances.

IEC Tools

The IEC strategy will use the following tools and approaches. A summary of the various IEC tools and products that will be used for each audience group is included at the end of this chapter.

*Mass media – local/regional radio, newspapers and television***:** The NMP and its internal and external partners will use the established media in Guyana to disseminate the key messages targeting the primary audience as well some of the secondary audiences. The message format will vary, to suit the different groups, but will include television and radio spots, press releases, Public Service Announcements, news coverage on malaria, special program productions, interactive talk-shows and appearances of resource persons. With print media, the message format will include advertorials, feature stories and special coverage.

Radio: Radio remains the most popular medium of communication in Guyana, over 450,000; Guyanese across the country have access to radio. There are multiple radio broadcasters, -government and private owned, as well as community-based radio stations, serving the hinterland regions. Radio shall me used to disseminate IEC messages targeting the primary and secondary audiences.

Television:

Television is another medium that would be used to reach the primary and secondary audiences across the country with key messages on malaria. Although not all television signals are not well received in the hinterlands (poor signals), the NMP will make extensive use of the urban presence to reach out to stakeholders as well as some primary and secondary audience.

Special thematic campaigns and public events: The NMP will launch periodic campaigns around specific themes in malaria control, prevention and treatment. These campaigns will further education and influence the public's knowledge and behavior. Public events will also be exploited to disseminate key messages to target audiences. For example, the World Malaria Day for the Americas will be used to bring together stakeholders and partner organizations to assess current situation and plan on the way forward.

Short Mobile-messaging Service (SMS):

The use of mobile phones has grown rapidly in the nation with 95% of the total population covered by cellular networks. 539000 people have access to mobile phones. This makes short mobile messaging (SMS) an important channel of communication for the LLINs mass distribution campaign. SMS will be used to circulate reminders on use of LLINs, and weekly IEC messages fostering the campaign. The cellular networks that are likely to create a greater impact include Digicel and Cell Link by GT&T because they have a wider outreach.

Interpersonal communication will be an instrumental tool for delivering key messages to key audiences on a more intimate manner. The NMP will use interpersonal communication to leverage on the audience perceptions and address the myths surround malaria control, treatment and prevention. Interpersonal communication will be done through health talks, community meetings and events.

Providers will be trained and given simple and easy-to-use IEC materials with the key messages on malaria, for use in patient education.

Other Activities

Capacity-building of healthcare service providers and medicine vendors will ensure that key players in the implementation process receive the appropriate skills and information. Thus, healthcare service providers, community health workers, and pharmacists/chemists will be trained to increase their knowledge on current diagnosis and treatment policy, malaria preventive and treatment measures and to strengthen their skills in interpersonal communication for better community/client education and counseling. Supportive visual aids and information materials will be given to enable them counsel clients appropriately. The national treatment guidelines will be simplified and equally translated into local languages where necessary for better understanding and use by the health staff.

4.6.1.4 Manage and Control Communications

Monitoring of communication activities consists of the regular collection and analysis of performance indicators (see below). Monitoring, or formative evaluation, provides evidence as to whether activities are on the right track toward achieving a target, or if adjustments are needed.

The following indicators measure the activities carried out and the results of the activities

Program Activity	**Output Indicator**	**Impact Indicator**	**Source of Information**	**Frequency of Data collection**
Advocacy	Number of: • Advocacy events organized • Press statements	-Sufficient funding for malaria program -Adequate media coverage of NMP activities	Minutes from meetings Implementation reports	Annually

Program Activity	**Output Indicator**	**Impact Indicator**	**Source of Information**	**Frequency of Data collection**
	• Media briefings • Workshops and Press conferences • Number of leaders reached • Type of information shared	-Reduced malaria burden -Integration of malaria interventions into day to day programming.	Appraisal reports	
Social Mobilization	-Number of partners and agencies identified -Number of meetings held with identified partners -Number of partners and leaders supported to plan and conduct community mobilization -Proportion of resources continuously available to support the work of NMP	Reduced malaria burden Widespread integration of malaria interventions in everyday projects and activities Joined efforts in planning and implementation of malaria activities and campaigns	Minutes from meetings Appraisal reports Activity reports	Quarterly

Program Activity	Output Indicator	Impact Indicator	Source of Information	Frequency of Data collection
	-Number and type of IEC materials disseminated to partners and local leaders Proportion of persons using LLINs			
Information Education and Communication	Number of IEC materials printed annually Number of IEC materials distributed Number of persons reached with malaria messages through TV, radio, SMS Number of thematic campaign activities organized Number of health talks organized in the communities	Increase in knowledge on malaria symptoms Faithful to treatment Increased use of LLINs Increased use of other preventive measures (IRS and repellants) Increased interest in early diagnosis and treatment	Stock reports; Activity reports	Quarterly

Table 12 Key Monitoring of Communication Activities [Source: Q. Grant, The Author, June 2019]

4.7 Develop Risk Management Plan

4.7.1 Introduction

The Risk Management Process consists of a series of steps that, when undertaken in sequence, enable continual improvement in decision-making.

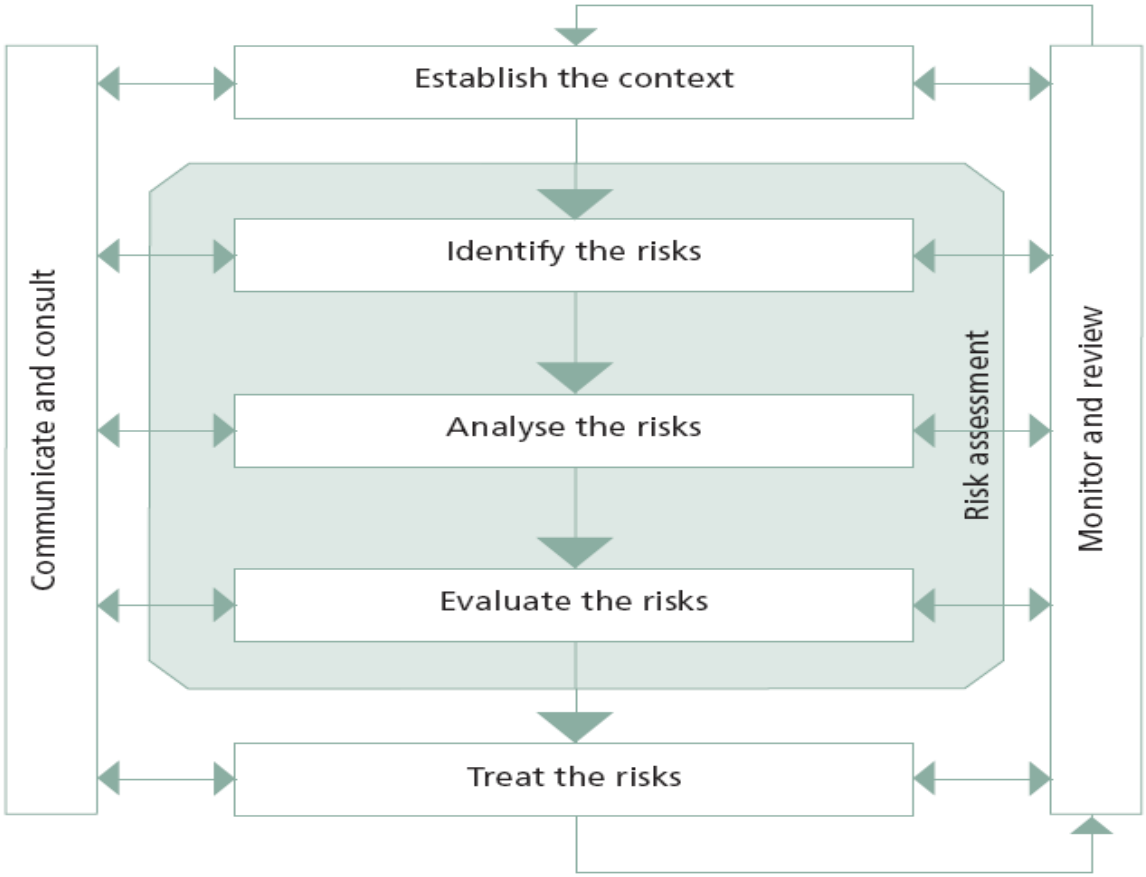


Figure 16 depicting the steps in the risk management process (Source www.pmi.org)

Risk is the chance of something happening that will impact on the project objectives. As such, the objectives and goals of the project should first be identified to ensure that all significant risks are understood. This ensures that risk decisions always support the broader goals and objectives of the project. This approach encourages long-term and strategic thinking. Establishing the external context defines the overall environment in which the project operates and includes an understanding of the patients' perceptions of the services being offered. An analysis of these factors will identify the strengths, weaknesses, opportunities and threats to the project in the external environment.

Before beginning a risk identification exercise, it is important to define the limits, objectives and scope of the project under examination. For example, in conducting

a risk analysis for a new project, such as this pilot, it is important to clearly identify the parameters for this pilot to ensure that all significant risks are identified.

Developing risk criteria allow a project to clearly define unacceptable levels of risk. Conversely, risk criteria may include the acceptable level of risk for a specific activity or event. In this step the risk criteria may be broadly defined and then further refined later in the risk management process.

4.7.2 Risk Identification

Risk cannot be managed unless it is first identified. Once the context of the project has been defined, the next step is to utilize the information to identify as many risks as possible. The aim of risk identification is to identify possible risks that may affect, either negatively or positively, the objectives of the project and the activity under analysis. There are two main ways of idenifying risks:

- Identifying retrospective risks: retrospective risks are those that have previously occurred, such as incidents or accidents. Retrospective risk identification is often the most common way to identify risk, and the easiest. It is easier to believe something if it has happened before. It is also easier to quantify its impact and to see the damage it has caused; and,
- Prospective risks are often harder to identify. These are things that have not yet happened but might happen sometime in the future.

Risk identification should include all risks, whether they are currently being managed or not. The rationale here is to record all significant risks and monitor or review the effectiveness of their control. Upon brainstorming with the project team, the following risks were identified as shown in the table below.

Retrospective Risks	Prospective Risks
Increased rainfall resulting in flooding, increased mosquito population and malaria outbreak.	Antimicrobial resistance resulting in decreased drug efficacy.

Malaria in pregnancy/adolescent pregnancy.	
Malaria in children under five (5) years.	

Table 13 Risk Identification [Source: Q. Grant, The Author, June 2019]

4.7.3 Risk Evaluation and Analysis

During the risk identification step, the project manager may have identified many risks and it is often not possible to try to address all those identified. The risk analysis step will assist in determining which risks have a greater consequence or impact than others. Risk analysis involves combining the possible consequences, or impact, of an event with the likelihood of that event occurring. The result is a 'level of risk'.

There are three categories or types of analysis can be used to determine level of risk:

- Qualitative
- Semi-quantitative
- Quantitative.

The most common type of risk analysis is the qualitative method. The type of analysis chosen will be based upon the area of risk being analyzed. The analysis of the risks identified above is seen below.

Risk	Qualitative Analysis
Increased rainfall resulting in flooding, increased mosquito population and malaria outbreak	High

Malaria in pregnancy/adolescent pregnancy.	High
Malaria in children under five (5) years.	High
Antimicrobial resistance resulting in decreased drug efficacy.	High

Table 14 Risk Analysis [Source: Q. Grant, The Author, June 2019]

Risk evaluation involves comparing the level of risk found during the analysis process with previously established risk criteria and deciding whether these risks require treatment. The result of a risk evaluation is a prioritized list of risks that require further action. This step is about deciding whether risks are acceptable or need treatment. The risks analyzed above are all qualitatively ranked as high, and thus, need treatment.

4.7.4 Risk Response Planning

- Mass LLIN distribution campaign before the rainy so that eighty percent (80%) of the entire population of Region 8 (permanent and mobile inhabitants) are protected against the mosquito, thus, avoiding the likelihood of an outbreak occurring. This is the main form of vector control intervention. LLIN mass distribution can be conducted every three (3) years (as the lifespan a LLIN is three (3) years. LLIN distribution will be complemented by information, education and communication (IEC) campaigns before and during the mass LLIN distribution. Indoor Residual Spraying (IRS) will be a complementary measure to control malaria outbreaks. The strengthening of vector surveillance and Insecticide Resistance Monitoring is currently being addressed through technical support from PAHO. Mass LLINs distribution campaigns are a cost-effective way to rapidly achieve high and equitable coverage. This will be complemented with continuous or routine distribution on a smaller scale to satisfy coverage gaps which appear through damage to or deterioration of the nets or in instances of increases in population sizes. The nets distributed to the population at risk during mass campaigns every

three (3) years and routine distributions will aid in achieving universal coverage in Guyana. Twenty percent (20%) of the total LLINs will be made available at health facilities for continuous distribution. The hammock nets distribution to the mobile (mining and logging) population will be implemented mainly through the mass campaign with the special support from the private sector including the mining and logging associations.

- Malaria in pregnancy and/ adolescent pregnancy and malaria in children under five (5) years can result in complications and even death if these cases are managed carefully. Therefore, early diagnosis of these are cases are paramount. As a result, to change the likelihood of complications, and even death, occurring in these special cases of malaria all pregnant women are screened for malaria in the antenatal clinics whether the mother has symptoms of malaria or not. This similar action/treatment is taken with children under five (5) years.
- Treatment efficacy studies are conducted every two (2) to three (3) years to test drug sensitivity. This informs the national treatment guidelines. Measures are also taken reduce this form of antimicrobial resistance such as enforcement of ‘test and treat’ policies as opposed to self-medication.

4.7.5 Risk Monitoring and Control

Monitor and control/review are essential and integral steps in the risk management process. A project manager must monitor risks and review the effectiveness of the treatment plan, strategies and management system that have been set up to effectively manage risk. Risks need to be monitored periodically to ensure changing circumstances do not alter the risk priorities. Very few risks will remain static, therefore the risk management process needs to be regularly repeated, so that new risks are captured in the process and effectively managed. The risk response plans highlighted above would have a monitoring and evaluation component as part of the plans.

4.8 Develop Procurement Management Plan

4.8.1 Introduction

Project Procurement Management was conducted after Project Cost, Schedule and Project Resource Management. To develop a Procurement Management Plan, a template was used. As documented in the *PMBOK® Guide,* the Requirements Documentation, Risk Register, Stakeholder Register and Project Charter were the

inputs used in the process. The tools and techniques were expert judgement and meetings, in the form of a personal interview with the lead Project Manager (Project Management Institute, 2017).

The plan details how procurement would be addressed by the project team throughout the lifecycle of the project. As Procurement Management is integral to the success of the project, and subject to financial and scheduling constraints, it was imperative that all items being purchased by the project team were done efficiently and effectively, thus providing enough time for delivery, within budget and of an acceptable standard of quality. Since most of the materials for the project, including the drugs and medical supplies, were to be purchased from international suppliers, it was important that the procurement management plan identified the items that would be outsourced. For the purpose of this project, a procurement statement of work was not developed.

Procurement Management Plan

4.8.2.1 Procurement Roles and Responsibilities

The objective of this procurement plan, a subset of the MOPH supply chain management framework, is to present the VCS/MoPH's procurement and supply management capacity and strategies specifically in the ordering, inventory management, and distribution of Global Fund financed health products. It should be emphasized that the Global Fund Fight against AIDS, Tuberculosis and Malaria is the funding agent for this pilot. The VCS is the MoPH department responsible for executing the GF grant for Malaria in Guyana and conforms to the MoPH integrated supply chain management framework of public health commodities.

The Materials Management Unit (MMU) plays a leading role in the central coordination of the MOPH's supply chain management framework. The LMU, a specialized unit within the MMU centrally coordinates Phase I Logistics Management Information Systems (LMIS) that informs the respective components of the framework such as product selection, forecasting and procurement, warehousing, inventory management, order fulfilment and distribution and consumption and use.

Staffed with five data entry clerks, ten pharmacy logistics officers and one manager, the LMU collaborates with the ten regional health administrations (this include Region 8), and MoPH programme and activities leads, to promote and support LMIS compliance by the public health facilities nationally. LMU is the what, why, and how of the central coordination of supply chain management for the MOPH and has five distinct yet interrelated functions, namely, [1] Logistics data management, [2] Quantifications, [3] Monitoring and evaluation, [4] Supervision and [5] Systems design, implementation and training.

A daily function of the LMU is to validate the Combined Requisition and Issue Vouchers (CRIVs) submitted to the MMU by the health facilities, for compliance with LMIS norms. The CRIV reports essential inventory management data such as; (1) quantity received (2) losses and adjustments (3) actual dispensed-to-patient (consumption) and (4) stock on hand for the reporting period, which is either monthly or quarterly. The CRIV also serves as the order request form, and a standard formula employed to calculate the quantity reordered (demand).

4.8.2.2 Procurement Definition (Policies, systems and capacity)

All public procurement of goods (pharmaceuticals, health products and technologies) and services by the Ministry of Public Health (MoPH) are governed by the Procurement Act 2003 and its Regulations of 2004, with amended Regulations of 2004 and 2016. In addition, the standard operating procedures (SOPs) for public procurement are delineated in the (1) Guyana Public Procurement Guide, 2009 and (2) Guyana Procurement Planning Guide, 2009.

Guyana National Procurement & Tender Administration Board (NPTAB) is the key regulator of public procurements in Guyana. Established in October 2016, Public Procurement Commission's (PPC) purpose, as outlined in Article 212W of Guyana's Constitution: "is to monitor public procurement and the procedure therefore in order to ensure that the procurement of goods and services and execution of works are conducted in a fair, equitable, transparent, competitive and cost effective manner, according to law and such policy guidelines as may be determined by the National Assembly".

As a national procuring entity, the MoPH established its Procurement Unit (PU) in July of 2017. This unit conforms to all laws, regulations and SOPs governing public procurement in Guyana. The NPTAB and the USAID Global Health Supply Chain – Procurement & Supply Management (GHSC-PSM) project, trained the newly recruited staff in procurement best practices and the national procurement laws, regulations and procedures. In 2016 GHSC-PSM developed the MoPH Procurement Strengthening Roadmap and in 2017, GHSC-PSM developed the MoPH Procurement Process Flow. Both were approved and endorse by the respective Ministers of Public Health and implementation commenced thereafter. The procurement process flow, delineates the product selection, forecasting and procurement stages of the MoPH supply chain management cycle and align these processes with the national budgeting cycle annually to improve the availability of pharmaceuticals, health products and technologies nationally.

Immediate Plans:

- With USAID GHSC-PSM support continue procurement strengthening
- Full compliance with all national procurement laws, regulations and procedures as well as international best practices.
- Procure only WHO prequalified medicines using Global Fund funding, while all other essential medicines must be registered with the Government Analyst-Food and Drug Department (GA-FDD).
- Use WAMBO (an online procurement platform) and alternatively PAHO Strategic Fund for the procurement of critically vital pharmaceuticals and health products financed by the Global Fund.

The Government Analyst – Food & Drug Department (GA-FDD) is the Guyana's NDRA with its mandate articulated in the Food & Drugs Act 1971 and it has the sole responsibility of registering all drugs imported for use in Guyana. However, the department does not have the resources capital and skilled capacity to conduct the technical reviews of the drug dossiers presented by manufacturers and distributors necessary for drug registration. To this end in 2015, the MoPH signed a Memorandum of Understanding with the Caribbean Regulatory System (CRS), an

initiative of the Caribbean Community and Common Market (CARICOM) managed as a regulatory unit within CARICOM's regional public health body, the Caribbean Public Health Agency (CARPHA). Once the CRS recommends a drug for registration, GA-FDD accepts that recommendation and registers the drug in Guyana. CRS uses the WHO prequalification as the foundations of recommending drugs for registration in the region. Additionally, all pharmaceuticals procured under any Global Fund grant for Malaria are all WHO prequalified.

With its drug chemistry laboratory, the GA-GDD conducts WHO levels 1-3 testing. Level II – mini-lab testing is used specifically for the anti-malarials since the early 2000, when PAHO presented the department with three mini-labs. The Quality Assurance Department of the MMU also has a mini-lab capable of performing Level II testing on 80 essential medicines including anti-malarials. To assure quality of anti-malarials and other vital medicines, the MoPH through the GA-FDD will enforce drug registration through its MOU with CRS.

4.8.2.3 Procurement Methods and Approvals

Since 2010, the MOPH in collaboration with and through funding from USAID Supply Chain Management Systems (SCMS) implemented its Phase I, Logistics Management Information Systems (LMIS). The primary objectives of Phase I, LMIS are; (1) to improve and standardize the management of logistics data at the primary care facilities and (2) to improve inventory management of essential medicines and medical supplies at primary care facilities and (3) to strengthen the public health supply chain for equitable primary health care delivery nationally. Optimal compliance with LMIS at the primary care facilities will ultimately result in the reduction of expiries and elimination of stock outs of essential medicines and medical supplies and improve universal access to these commodities by all Guyanese. *Phase I LMIS* is a manual paper-based system of collecting, maintaining and reporting logistics data of all essential medicines and medical supplies used in primary health care delivery, using six (6) standard registers. These records are as follow:

1. Stock Ledger – complies with the Guyana Stores Regulation for all receipts and issues of stock within a government own facility.
2. Daily Issues Register – records all “issues to patients’ data and the source of actual consumption, days out of stock and losses and adjustment data to inform forecasting and re-ordering.
3. Donations Register – records all donations of pharmaceuticals and health products made to health facilities.
4. Expired & Damaged Products Register – records all expired and damaged pharmaceuticals and health products at health facilities.
5. Inter-Facility Transfer Voucher – records any loans or transfer of stock to another health facility.
6. Combined Requisition and Issues Voucher (CRIV) – sole authorized re-ordering and reporting form.

As part of MoPH LMIS, each health facility, regional stores or programme stores are required to conduct physical counts of all pharmaceuticals, health products and technologies including Global Fund financed ones, in their respective control, update their stock ledger and report to the MMU via the CRIV at the end of each reporting period.

Re-ordering of all pharmaceuticals, health products and technologies including GF financed commodities are done using the CRIV. The CRIV has a reorder formula, which considers actual monthly consumption, stock on hand, and prospective scale up to treatment. VCS validates each CRIV from the malaria endemic regions for conformity to the LMIS norms and its epidemiological reports, authorizes the CRIV for MMU to fulfill the order. Additionally, the LMU has a simple validation tool that is used to verify the accuracy of each CRIV before it is sent to the warehouse for order fulfillment.

4.8.2.4 Selection Criteria

VCS in collaboration with PAHO would, as the need requires conduct a review of the national treatment guidelines for malaria and revise to meet the international acceptable standards of treatment. The last revision of the malaria Standard

Treatment Guidelines (STGs) was in 2016. Following this exercise, the national "Essential Medicines List" (EML) will be amended to reflect any additional medicines. Currently MOPH is preparing for PAHO's support in revising the existing Guyana EML.

4.8.2.5 Procurement Metrics for Procurement Activities

The LMU in collaboration with all MOPH programmes and activities conducts their respective annual forecast at the national or regional level. Since 2015, MoPH has a "Quantifications Manual" prepared by USAID/SCMS. The LMU uses this manual to conduct forecasting training with all MoPH programmes and the regions periodically. This manual contains the standard operating procedures for conducting quantification using any of four methods of forecasting. For GF-financed anti-malarial medicines, Malaria Rapid Diagnostic Tests and Long-Lasting Insecticidal Nets (LLINs), LMU collaborates with VCS to conduct national five (5) yearly quantifications on an annual basis. PAHO provides guidance on the assumptions that guide these forecasts. The forecasting process commences with validation of the data submitted through the weekly epidemiological production reports to the VCS – Malaria Information System (MIS) from the malaria endemic regions. The weekly reporting would have already completed the data collection step, the first in the forecasting process.

Key assumptions are developed by LMU, VCS and PAHO to inform the forecasted requirements of medicines and LLINs. Using the internationally recognized tool QUANTIMED and the morbidity method of forecasting, these quantifications are completed. Data from the VCS – MIS guides the assumptions and projected trends (scale up) for each category of patient (adults or pediatrics) and for each of the thirty-six (36) regimens for the three main types of malaria treated in Guyana. Treatment regimens are in accordance to the national treatment guidelines.

The results of the quantifications inform the MoPH and its developmental partners of the financial requirements for the quantity of pharmaceuticals, health products and technologies forecasted.

Product quantities derived from the quantification exercises are used to establish the procurement plan for malaria medicines, LLINs and Malaria RDTs. This procurement plan is informed by the current months of stock on hand of each medicines, RDT or LLINs, while considering the respective projected monthly requirements. The inventory management policy of the MoPH is never to fall below our national minimum stock level of less than 6 months of stock (MOS) nor to go above our national maximum stock level of 12 MOS. In accordance with international best practice, the MoPH requires shipments arrive each time our national stock levels reach its minimum of 6 MOS.

The quantities required and supply plan with scheduled shipment dates are submitted to MoPH for procurement. Currently 70% of the health products for VCS are procured through the PAHO Strategic Fund and 30% financed by the GF are procured through WAMBO. WAMBO, an online procurement platform, is an innovative tool developed by the Global Fund to grant increased access to quality-assured, affordable health products to countries. WAMBO builds upon the Pooled Procurement Mechanism (PPM) and the estimated time to delivery after approval of the procurement request is six to nine months. The quotations are requested from the suppliers and upon agreement of prices, approved by the MoPH, the products are shipped to Guyana.

Global Fund-financed pharmaceutical, health products and technologies will be managed by the MoPH Procurement Unit and will continue to use the PAHO Strategic Fund and WAMBO for their respective procurements. The supply planning and procurement will be aligned with the Global Fund financial year as well as the Government of Guyana’s budgetary cycle.

4.8 Develop Stakeholders' Management Plan

4.9.1 Introduction

Stakeholder management focuses on continuous communication with stakeholders to understand their needs and expectations, addressing issues as they occur, managing conflicting interests and fostering appropriate stakeholder engagement in

project decisions and activities. Stakeholder satisfaction should be managed as a key project objective (Project Management Institute, 2017).

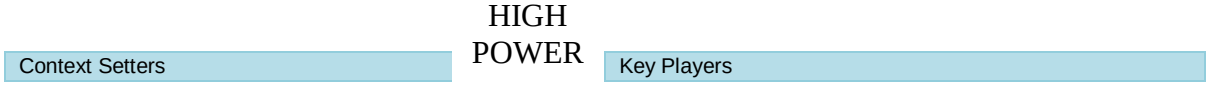
4.8.2 Identify Stakeholders

The process of identifying the persons, groups or organizations that could impact or be impacted by a decision, activity or outcome of the project; and analyzing and documenting relevant information regarding their interests, involvement, interdependencies, influence and potential impact on project success (Project Management Institute, 2017). The external stakeholders identified for the malaria programme are as follow:

- Minister of Public Health
- Chief Medical Officer, MoPH
- Director of Disease Control, MoPH
- Director of Vector Control Services, MoPH
- Director of Regional Health Services, MoPH
- Maternal and Child Health Officer, MoPH
- National Malaria Programme Focal Point, MoPH
- Director of Medical and Professional Services, Georgetown Public Hospital Corporation (GPHC)
- Regional Health Officers for Regions 1, 7, 8 and 9
- Executive Director, Health Sector Development Unit, MoPH
- Programme Manager, National Tuberculosis Programme, MoPH
- Programme Manager. National AIDS Programme Secretariat, MoPH
- Representative from Guyana Geology and Mines Commission
- Representative from Guyana Gold and Diamond Miners' Association
- Representative from Guyana Forestry Commission
- Representative from Iwokrama Environmental Protection
- Representative from the Ministry of Education
- Representative from the Ministry of Communities
- Representative from the Ministry of Indigenous Affairs

- Representative from the National Toshaos' Council
- Representative from The Guyana Red Cross
- Representative from Guyana Police Force
- Representative from Guyana Defense Force
- Representative from Pan American Health Organization/World Health Organization (PAHO/WHO)
- Representative from the United Nations Children's Fund (UNICEF)
- Representative from the University of Guyana, Faculty of Health Sciences
- Representative from the Country Coordinating Mechanism for The Global Fund in Guyana
- Representative from the International Organization for Migration (IOM)

Figure 17 Power/Interest Grid with both external and internal stakeholders [Source: Q. Grant, The Author, June 2019]



• Directors of Private Hospitals • Medical Director, GPHC • Maternal and Child Health Officer • Heads of department of Vector Control Services • Director of Budget, Ministry of Finance • Programme Manager, National Tuberculosis Programme • Programme Manager. National AIDS Programme Secretariat • Representative from Guyana Geology and Mines Commission • Representative from Guyana Gold and Diamond Miners' Association • Representative from Guyana Forestry Commission • Representative from Iwokrama Environmental Protection • Representative from the Ministry of Education • Representative from the Ministry of Communities • Representative from the Ministry of Indigenous Affairs • Representative from the National Toshaos' Council • Representative from The Guyana Red Cross • Representative from Guyana Police Force • Representative from Guyana Defense Force • Representative from the University of Guyana, Faculty of Health Sciences • Representative from the Country Coordinating Mechanism for The Global Fund in Guyana • Representative from the International Organization for Migration (IOM)	• Minister of Public Health • Chief Medical Officer • Director of Disease Control • Director of Vector Control services • Director of Regional Health Services • RHOs from Regions 1, 7, 8 and 9 • Malaria Programme Focal Point • Executive Director, Health Sector Development Unit • Representative from Pan American Health Organization/World Health Organization (PAHO/WHO)
Bystanders • Residents of the population in regions 1, 7, 8 and 9 • Mining and logging communities • Foreigners	Winners/Losers • Doctors, Medical Extension Officers, Hospital Nurse, Quality Control Technicians, Pharmacists and Pharmacy Assistants • Microscopists and Community Health Workers • Monitoring and Evaluation Officers • Surveillance staff and Data Entry Clerks • Drivers

LOW INTEREST

HIGH INTEREST

LOW POWER

4.8.3 Plan Stakeholder Management

This is the process of developing appropriate management strategies to effectively engage stakeholders throughout the project life cycle, based on the analysis of their needs, interests and potential impact on project achievements (Project Management

Institute, 2017). A National Malaria Oversight Committee (NMOC), established during the life of the project, is designed to provide strategic guidance and well-thought technical advice to the pilot project through widened and integrated stakeholders' participation in decision-making processes.

Activities

The National Malaria Oversight Committee (NMOC) seeks to review the implementation of the pilot project and participate in:

- Promotion of inter and intra-institutional coordination;
- Drug policy decision-making processes;
- Identification of in-vivo studies for both baseline and monitoring data for anti-malarial medicines;
- Identification of priority areas for anti-malarial activities within the context of national targets; and,
- Recommendation of topics for field research in malaria.

Roles

The role of the national malaria oversight members is to provide recommendations and technical oversight on the pilot project to the national malaria programme and, by extension, the Ministry of Public Health in the following areas:

- Strategic direction of the project;
- Priority areas of the project; and,
- Policy-related issues.

In order to foster an understanding of the pilot project and its population of focus, oversight committee members are encouraged to:

- Participate in advocacy forums and meetings;
- Participate in any related national events;
- Attend post-event review meetings where applicable;
- Act as guest speakers at related events;
- Plan and participate in workplace, school and community promotional events;
- Act as ambassadors of the program in the community;
- Mentor and advise on how to become involved in the programme;
- Provide regular updates on trends and opportunities in the field; and,

- Research and provide recommendations on issues.

Deliverables

The oversight committee members will have contributed to the following results:

- Increased stakeholders' (public, Government, private and civil society) mobilization in support of the programme
- Concrete actions, commitments, financing and investment catalyzed at community, regional and country levels; and,
- Enhanced effectiveness and sustainability of the programme

4.8.4 Manage Stakeholders Engagement

This is the process of communicating and working with stakeholders to meet their expectations/needs; address issues as they occur; and, foster appropriate stakeholder engagement in project activities throughout the project life cycle (Project Management Institute, 2017). This is accomplished through the oversight committee meetings, emails and telephone calls.

4.8.5 Control Stakeholder Engagement

This is the process of monitoring overall project stakeholder relationships and adjusting strategies and plans for engaging stakeholders. This is accomplished through the monitoring of committee members roles, activities and deliverables.

CONCLUSIONS

- A project management plan for the Malaria RDT kits in Potaro-Sipuruni Pilot Project to determine the sensitivity and specificity of RDTs in the public health and private sector (mining/logging population) of Guyana was developed by integrating the knowledge areas described in the specific objectives.
- A scope management plan was developed using information from the project charter and consutation meetings with the main project stakeholders. The scope statement was defined; and, the WBS was set up as a means of describing the activities to accomplish the project scope.
- A schedule management plan was created using as base documents the project charter and the scope mangement plan. The schedule management plan was developed through expert judement and meetings to refine the activities list to determine resources needed to accomplish them in the allotted time-frame.
- A cost management plan was developed utilizing information from the project charter, the scope mangement plan and schedule mananagement plan. The project budget was created through expert judement and consultative meetings with the project team and other pertinent project stakeholders.
- A quality mangement plan was created using the fishbone diagram to determine cause and effect and the PLAN-DO-CHECK-ACT (PDSA) checklist through internal stakeholders' meetings to address public health issues as adolescent pregnacy that could affect the quality of the pilot. A quality management approach and quality control techniques were also postulated.
- A project resources management plan was developed where the roles and resposnibilities of the project team were presented. A RACI chart was created and the staff management plan highlighted, above all, the training needs of the project.
- A communications management plan was created highlighting specific communication objectives, communication methodologies and technologies; and, a monitoring and evaluation component for the effective managaement of these during the life of the project.

- A risk management plan defined how project risks were identified; analyzed and evaluated; and, treated in the form of risk response planning in the pilot project.
- Using as inputs the project charter and the risk register, a project procurement plan was developed outlining procurement roles and responsibilities; procurement definition; procurement methods and approvals; selection criteria; and, procurement metrics that would guide the procurement of commodities for the pilot.
- A stakeholders' management plan was created where a stakeholders' register was developed and strategies outlined for the effective management and control of same.

RECOMMENDATIONS

The following recommendations are being made after careful consideration of the strengths and weaknesses of this project management plan:

- The success of this project is hinged on the decentralization of the national malaria programme as the pilot is being implemented in one of the malaria-endemic regions of the country (Region 8). This region represents a subset of the malaria situation in the entire country. As such, it is recommended for the *management of VCS-MoPH* that there be a project management plan to test the decentralization of malaria services in Region 8 prior to piloting this new intervention. Without this, there is a high probability that this project management plan would not be effectively rolled out. As it is widely known, one can have the best plan, however, if the infrastructure is not there to implement the plan, the plan is bound to be a failure.
- Based on the results of this pilot project, it is recommended that *the funder* (in this case, The Global Fund Fight against HIV/AIDS, Tuberculosis and Malaria) consider funding a feasibility study be done for the country-wide use of malaria RDTs in public and private sectors. This is important before any attempts are made to scale-up the implementation of this intervention.
- On this note, it is also recommended that the *management of VCS-MoPH* can then implement the feasibility study as the funding becomes available.
- Another recommendation to the *management of VCS-MoPH and the funders* the need to begin the procurement process well in advance prior to the commencement of the pilot project. The procurement process in Guyana (especially at the Ministry of Public Health) is undergoing some modifications so as to correct the flaws in the system. As such, it is advisable to commence the procurement process for the items needed for the pilot project nine (9) months or even one (1) year bfore the commencement of the pilot to counteract any delays to the commencement of the project.
- A similar recommendation is being made to *the project manager and the management of VCS-MoPH*, with respect to the procurement of services/employment of members of the project team. In Guyana, there is

usually difficulty in recruiting qualified persons to work from the hinterland regions (for exampke, Region 8) due to the fact that there are still major disparities in access to quality education in these rural areas. This would result in acquiring adequate skill set for the project, which wwould result in delays in the commencement of the.project. Therefore, it is being suggested that this recruitment process commence at least three (3) months before the start of the project (lead time) to cater for any delays due to what was outlined above.

BIBLIOGRAPHY

1. Action plan for strengthening health human resources in Guyana for 2011 – 2016. MOH-Guyana, Georgetown. (Unpublished).
2. Bureau of Statistics Guyana Census 2012. Available at http://www.statisticsguyana.gov.gy/
3. Canadian High Commission. (2012). Mining Information Toolkit for Guyana, 1–114.
4. Daley, Scott. (2013). *Microsoft Project 2013 and the Project Management Domain.* Retrieved from http://www.quepublishing.com/articles/article.aspx?p=2130297&seqNum=2
5. Douine, M., Lazrek, Y., Blanchet, D., Pelleau, S., Chanlin, R., Corlin, F., … Musset, L. (2018a). Predictors of antimalarial self-medication in illegal gold miners in French Guiana: A pathway towards artemisinin resistance. *Journal of Antimicrobial Chemotherapy*, *73*(1), 231–239. https://doi.org/10.1093/jac/dkx343
6. Douine, M., Sanna, A., Galindo, M., Musset, L., Pommier De Santi, V., Marchesini, P., … Garancher, L. (2018b). Malakit: An innovative pilot project to self-diagnose and self-treat malaria among illegal gold miners in the Guiana Shield. *Malaria Journal*, *17*(1), 1–8. https://doi.org/10.1186/s12936-018-2306-5
7. Forte, J. (1999). Karikuri: the evolving relationship of the Karinya people of Guyana to gold mining. *New West Indian Guide*, *73*, 59–82.
8. Global Fund (2015). Global Fund Grants: Guyana. Available at: http://portfolio.theglobalfund.org/en/Country/Index/GUY
9. Government of Guyana. The National Development Strategy – Guyana: A Civil Society Document. Available at: http://www.ndsguyana.org/downloads.html (under review).

10. Government of Guyana (2014). Guyana Population and Housing Census: Preliminary Report. (in press).

11. Guyana-Multiple Indicator Cluster Survey (MICS) 2014. Available at http://microdata.worldbank.org/index.php/catalog/2731

12. Heemskerk, M. (2001). Maroon gold miners and mining risks in the Suriname Amazon. *Cultural Survival Quarterly*, *25*(1), 25–29. Retrieved from http://www.mariekeheemskerk.org/Publications/CultSurvival.pdf

13. Heemskerk, M., & Duijves, C. (2012). *Looking for gold, finding malaria: Assessment of changes in malaria-related knowledge, attitudes, and practices resulting from the Ministry of Health malaria program in small-scale gold mining areas in Suriname*. Retrieved from http://www.socialsolutions.net/content/images/reports/looking_for_gold_finding_malaria.pdf

14. History of Malaria. Available at https://www.cdc.gov/malaria/about/history/index.html

15. Information. (2011). In *Concise Oxford English Dictionary* (12th edition). New York: Oxford Press Inc.

16. Kerzner, Harold. (2013). *Project Management: A Systems Approach to Planning, Scheduling and Controlling* – *(*11th ed.). Hoboken, New Jersey: John Wiley & Sons, Inc. Retrieved from http://honestyets.pbworks.com/f/Project+Management++A+Systems+Approach+-+10thEd.pdf

17. Kurup, R., Deonarine, G., & Ansari, A. (2017). Malaria trend and effect of rainfall and temperature within Regions 7 and 8, Guyana. *International Journal of Mosquito Research*, *4*(6), 48–55.

18. MEASURE Evaluation. (2014). *Guyana Biobehavioral Surveillance Survey (BBSS)*.

19. Ministry of Finance – Guyana (2002). Guyana Poverty Reduction Strategy Paper. MOF, Georgetown. Available at: http://www.finance.gov.gy/images/Docs/Government%20Documents/Policy%20Documents/PRSP.pdf

20. Ministry of Health – Guyana (2008). National Health Sector Strategy 2008-2012. MOH-Guyana, Georgetown.

21. Ministry of Health Guyana, Bureau of Statistics, & ICF Macro. (2010). *Guyana Demographic and Health Survey 2009*. *Guyana Demographic and Health Survey*. Retrieved from https://dhsprogram.com/publications/publication-fr232-dhs-final-reports.cfm

22. Ministry of Health – Guyana (2013a). Health Vision 2020: A National Health Strategy for Guyana. MOH-Guyana, Georgetown. http://www.paho.org/guy/index.php?option=com_docman&task=doc_download&gid=123&Itemid=

23. Ministry of Health Guyana. (2013b). Country Perspective of Malaria: 2013.

24. Ministry of Health – Vector Control Services. The National Malaria Control Programme Strategic Plan 2008-2013. MOH-VCS, Georgetown.

25. Ministry of Public Health Guyana. (2018b). *Malaria Control Program Region 8 (Draft)*.

26. PAHO (2009). Guyana Country Cooperation Strategy 2010-2015. PAHO, Georgetown. Available at: http://www.who.int/countryfocus/cooperation_strategy/ccs_guyana_2010_2015.pdf

27. PAHO (2009). Guyana Country Cooperation Strategy 2010-2015. PAHO, Georgetown. Available at: http://www.who.int/countryfocus/cooperation_strategy/ccs_guyana_2010_2015.pdf

28. Pan American Health Organization (2011). Regional Strategy and Plan of Action in the Americas 2011-2015. Available at: http://www.paho.org/hq/index.php?option=com_docman&task=doc_view&gid=15005&Itemid=&lang=en

29. Pan American Health Organization. RAVREDA/AMI Project. Available at: http://www.paho.org/hq/index.php?option=com_content&view=category&layout=blog&id=1988&Itemid=2150

30. Pan American Health Organization / World Health Organization (2012). Test Treat Track Initiative. Available at: http://www.who.int/malaria/areas/test_treat_track/en/

31. Pan American Health Organization (2015). PAHO Framework for the Prevention, Containment, and Elimination of Artemisinin Resistance in South America. PAHO, Washington DC (in press).

32. PAHO (2015). Rapid Assessment of the Malaria Surveillance System in Guyana. (Unpublished).

33. PAHO. (2016a). *Framework for Artemisinin Resistance Prevention, Containment, and Elimination in South America*.

34. PAHO. (2016b). Report on the Situation of Malaria in the Americas, 128.

35. Palmer, C., Validum, L., Loeffke, B., Laubach, H., Mitchell, C., Cummings, R., & Cuadrado, R. (2002). HIV Prevalence in a Gold Mining Camp in the Amazon Region, Guyana. *Emerging Infectious Diseases*, *8*, *No. 3*(3), 330–331.

36. Pasha, S., Wenner, M., & Clarke, D. (2017). *Toward the Greening of the Gold Mining Sector in Guyana: Transition Issues and Challenges*.

37. Picariello, G. (2014). *The Top Ten Benefits of Project Management.* Retrieved from http://www.brighthubpm.com/project-planning/2350-the-top-ten-benefits-of-project-management/

38. Picariello, G. (2015). *The Project Management Life Cycle – Successfully Guide Your Projects to Completion.* Retrieved from http://www.brighthubpm.com/monitoring-projects/1907-successfully-guide-your-projects-to-completion-with-the-pm-life-cycle/

39. Project Management Institute (PMI). 2010. *The Value of Project Management.* Retrieved from http://www.pmi.org/-/media/pmi/documents/public/pdf/white-papers/value-of-project management.pdf

40. Project Management Institute (PMI). 2016. *PMI Lexicon of Project Management Terms.* Newton Square, Pennsylvania: Project Management Institute, Inc.

41. Project Management Institute. 2017. *A Guide to the Project Management Body of Knowledge (PMBoK® Guide)* – (6th edition). Project Management Institute, 2017.

42. Project Management. (n.d.). Retrieved from https://en.wikipedia.org/wiki/Project_management

43. Recht, J., Siqueira, A., Monteiro, W., Herrera, S., Herrera, S., & Lacerda, M. (2017). Malaria in Brazil, Colombia, Peru and Venezuela: Current challenges in malaria control and elimination. *Malaria Journal*, *16*(1), 1–18. https://doi.org/10.1186/s12936-017-1925-6.

44. United Nations (2015). UN Millennium Development Goals (UN MDGs). Available at: http://www.un.org/millenniumgoals/reports.shtml

45. United Nations (2015). UN Sustainable Development Goals for 2030. Available at: https://sustainabledevelopment.un.org/post2015/transformingourworld

46. World Health Organization (2010). Monitoring the building blocks of health systems. WHO, Geneva.

47. World Health Organization (2011). Global Plan for Artemisinin Resistance Containment (GPARC). WHO, Geneva. Available at: http://apps.who.int/iris/bitstream/10665/44482/1/9789241500838_eng.pdf?ua=1

48. World Health Organization on behalf of the Special Programme for Research and Training in Tropical Disease (2011). Implementation research for the control of infectious diseases of poverty. WHO, Geneva.

49. World Health Organization (2012). Handbook for Integrated Vector Management (IVM). WHO, Geneva. Available at: http://apps.who.int/iris/bitstream/10665/44768/1/9789241502801_eng.pdf

50. World Health Organization (2012). Global Plan for Insecticide Resistance Management for Malaria Vectors (GPIRM). WHO, Geneva. Available at: http://apps.who.int/iris/bitstream/10665/44846/1/9789241564472_eng.pdf

51. World Health Organization on behalf of the Special Programme for Research and Training in Tropical Disease (2014). Implementation Research Toolkit (WorkBook). WHO, Geneva.

52. World Health Organization (2015). Global Technical Strategy for Malaria 2016-2030. WHO, Geneva. Available at: http://www.who.int/malaria/areas/global_technical_strategy/en/

53. World Malaria Report 2017. Available at http://www.who.int/malaria/media/world-malaria-report-2017/en/

APPENDICES

Appendix 1: FGP Charter

PROJECT CHARTER **Formalizes the project start and confers the project manager with the authority to assign company resources to the project activities. Benefits: it provides a clear start and well defined project boundaries.**	
Date	**Project Name:**
June 26, 2017.	Project Management Plan for the Malaria Rapid Diagnostic Test (RDT) kits in Potaro-Sipuruni (Region 8), Cooperative Republic of Guyana, pilot project.
Knowledge Areas / Processes	**Applicacion Area (Sector / Activity)**
Knowledge areas: Integration, Scope, Time, Cost, Quality, Project Resources, Communications, Risks, Procurement and Stakeholders. **Process groups:** Initiation and Planning.	Public Health.
Start date	**Finish date**
June 26, 2017	October 26, 2017
Project Objectives (general and specific)	

General objective: To develop a project management plan for the Malaria RDT kits in Potaro-Sipuruni Pilot Project to test the sensitivity and specificity of RDTs in the public health and private sector (mining/logging population) of Guyana.

Specific objectives:

1. To develop a scope management plan to define the work needed to undertake the pilot project;
2. To develop a schedule management plan to establish the policies, procedures and documentation for planning, developing, managing, executing and controlling the schedule of the pilot project;
3. To develop a cost management plan to establish the policies, procedures and documentation for planning, managing, expending and controlling the costs of the pilot project;
4. To develop a quality mangement plan to establish the policies, procedures and documentation for identifying quality requirements and/standards for the pilot project and its deliverables;
5. To develop a project resources management plan to establish the policies, procedures and documentation for the effective use of the persons involved in the pilot project;
6. To develop a communications management plan to establish the policies, procedures and documentation to determine the information and communication needs of the stakeholders of the pilot project;
7. To develop a risk management plan to define how risks will be manged in the pilot project (who will be involved with which responsibilities, which processes will be used, and which activities will be conducted);
8. To develop a procurement plan to outline how the procurments will be managed during the life of the pilot project; and,
9. To develop a stakeholders management plan to define the processes, procedures, tools and techniques to effectively engage stakeholders in project decisions and execution.

Project purpose or justification (merit and expected results)

Malaria in Guyana is endemic in the hinterland where the main economic activities include logging and gold/diamond mining (extractive industries). According to the 2013 National Malaria Report published by the Ministry of Public Health (MoPH), there have been 31,479 new cases of malaria countrywide; 93% of which have come from the hinterland regions of Guyana (Regions 1, 7, 8 and 9). In that same year, region 8 (Potaro-Sipuruni) accounted for 25% of the total number of malaria cases registered nationally. It is necessary to support the regional malaria programmes by building capacity regionally and fostering health system strengthening through closer collaboration with relevant stakeholders. This would aid in gaining a better understanding of the population's risk of contracting this disease. This pilot project in Region 8 was developed to address challenges posed to address malaria control in affected areas and will be used as a template for countrywide implementation

The project management plan set the rules for how this pilot project will be managed, including what processes will be used and how they will be implemented. The rules are set through a set of subsidiary plans (listed below in the project final deliverables) and integration plans.

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

A report will be produced which will highlight the procurement of, among others, the RDT kits for the project; an evaluation of the preparation of the public health system of region 8 for implementation of the project (considering elements of communications, project resources, cost); the effectiveness of the malaria RDTs in the Guyana/Region 8 context; and, the ability of the stakeholders to correctly use these instruments of diagnosis.

The project final deliverables are the subsidiary management plans, which include scope management plan, schedule management plan, cost management plan, stakeholders management plan, quality management plan, communications management plan, project resources management plan, risk management plan and procurement management plan.

Assumptions

- It is assumed that the MoPH will allow to do the Final Graduation Project (FGP) within Region 8; and,
- It is assumed that the MoPH will provide all the required information to perform the analisis.

Constraints

Relevant historical information

Malaria prevention and control has historically been executed as a vertical programme with the Vector Control Services/Unit (VCS/U) of the MOPH, which is responsible for all aspects of the programme (policy, planning, budgeting, capacity building, implementation, and monitoring and evaluation). Usually, VCS/U builds the capacity of regional level staff (community health workers [CHWs], laboratory staff, medical extension officers and doctors) to:

d) Diagnose cases of malaria through clinical presentation (mainly fever) and microscopy;
e) Treat positive cases using standard malaria treatment guidelines; and,
f) Report cases using standardized reporting forms.

After cases are reported to the VCS/U, analysis is usually done by the staff of the Malaria Information System (MIS). Little or no analysis is done at the regional level.

There has been no previous works or similar efforts related to the project.

Stakeholders

Direct stakeholders: Miners, loggers, regional health staff

Indirect stakeholders: Patients/Clients, MoPH officials

Project Manager:	**Signature:**
Authorized by:	**Signature:**

Time: The FGP process development will need to comply with the dates and time periods established by the university; and,

Confidentiality: MoPH propriety information will need to be kept confidential.

Preliminary risks

A poor project management plan with its subsidiary management plans would affect the succesful implementation of the pilot project.

Budget

Number of Malaria RDT kits need: 7870 kits

Cost per Kit: US$1.99

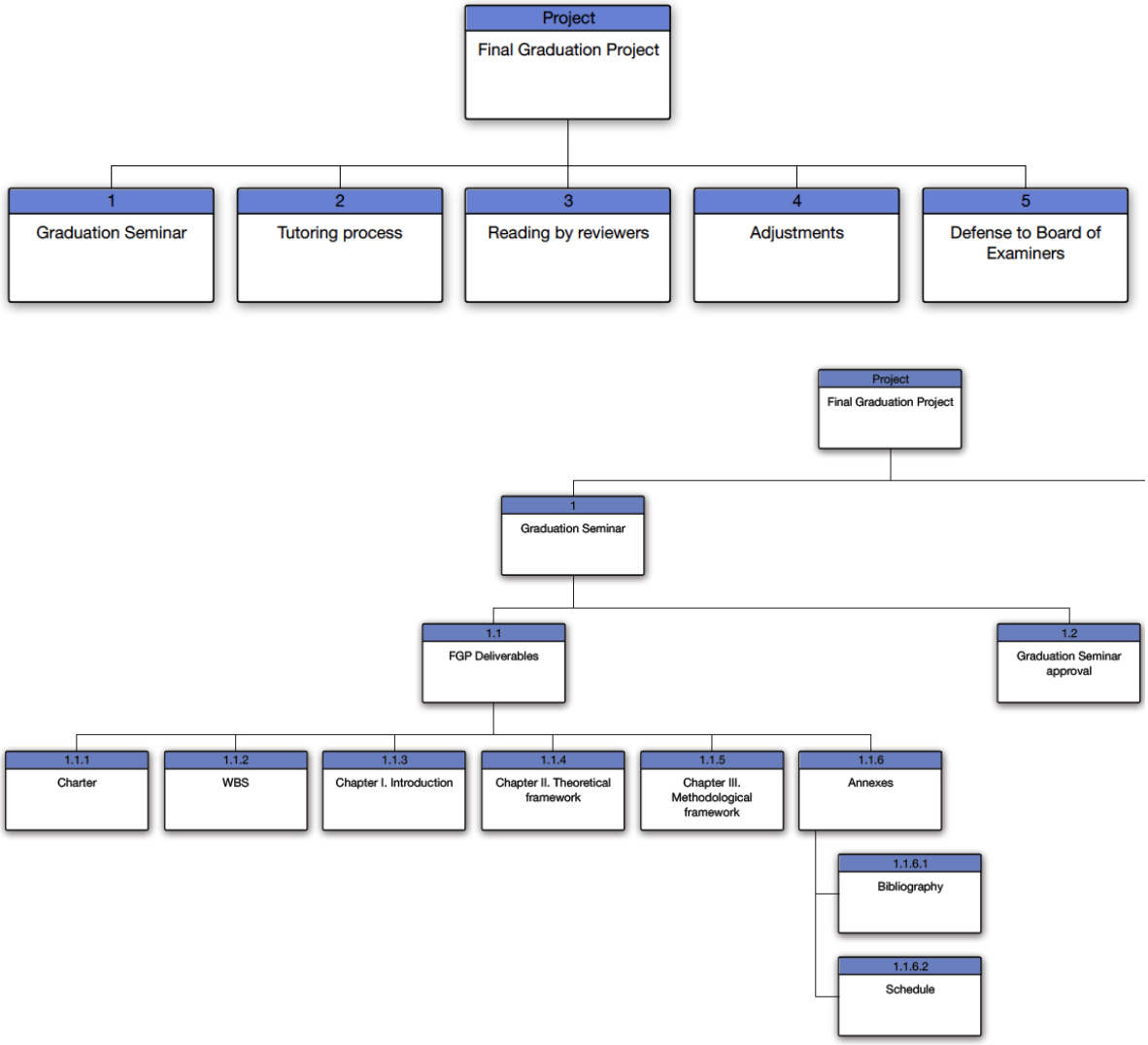
TOTAL COST: US$15,661.30

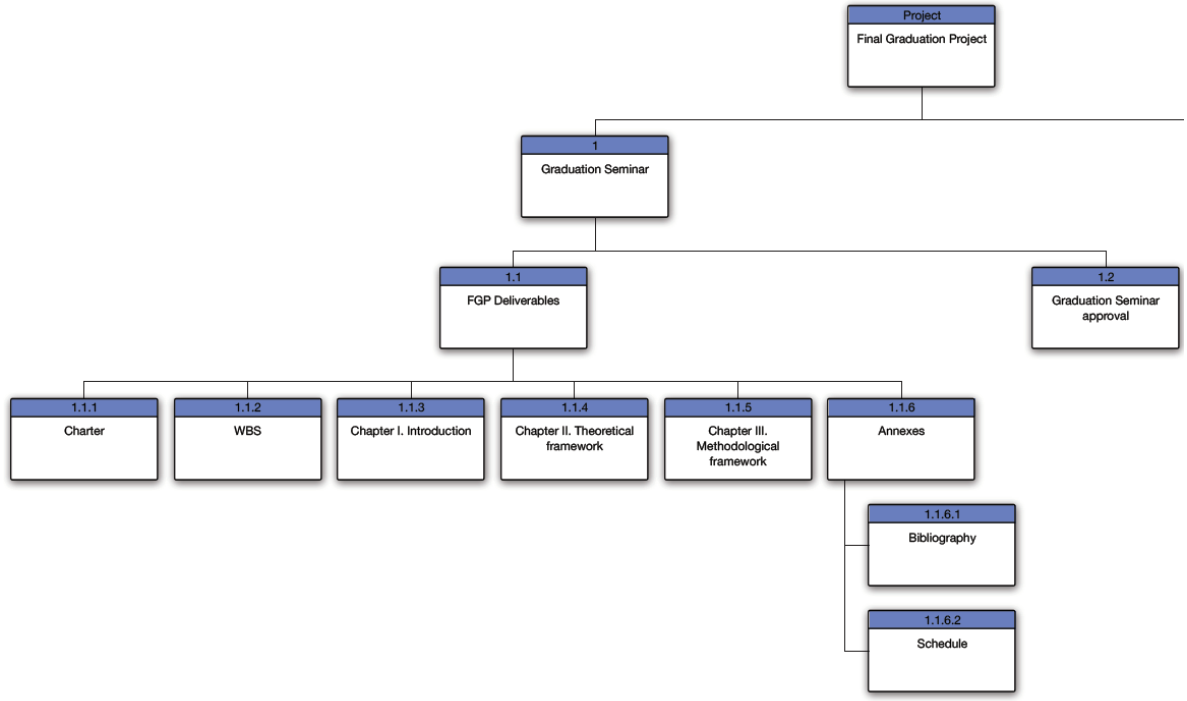
An evaluation will also be conducted of the health budget for malaria (Region 8) to determine if it can absorb full implementation of the project.

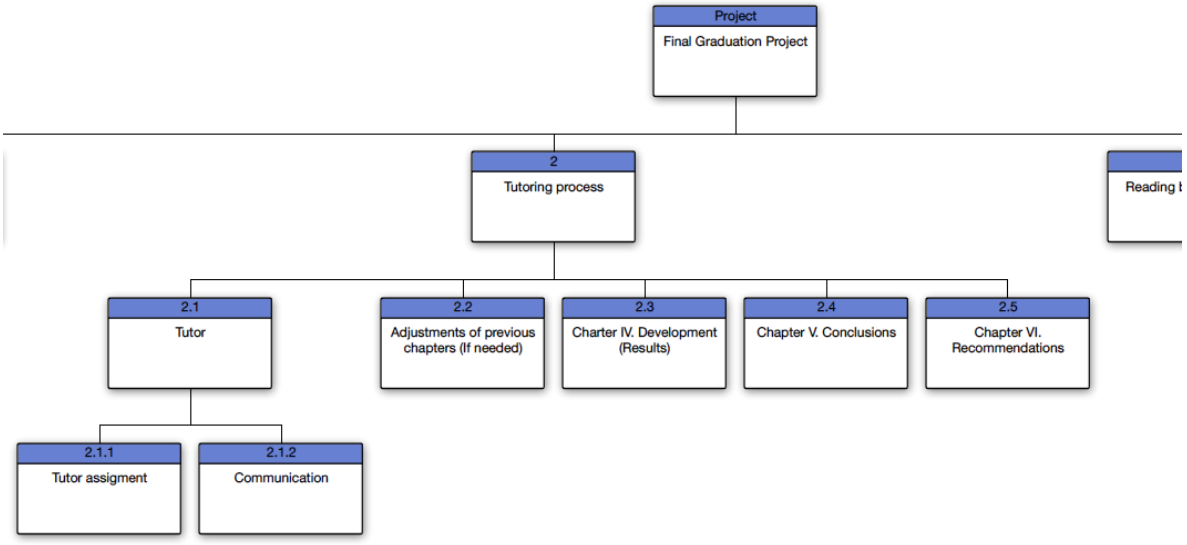
Milestones and dates

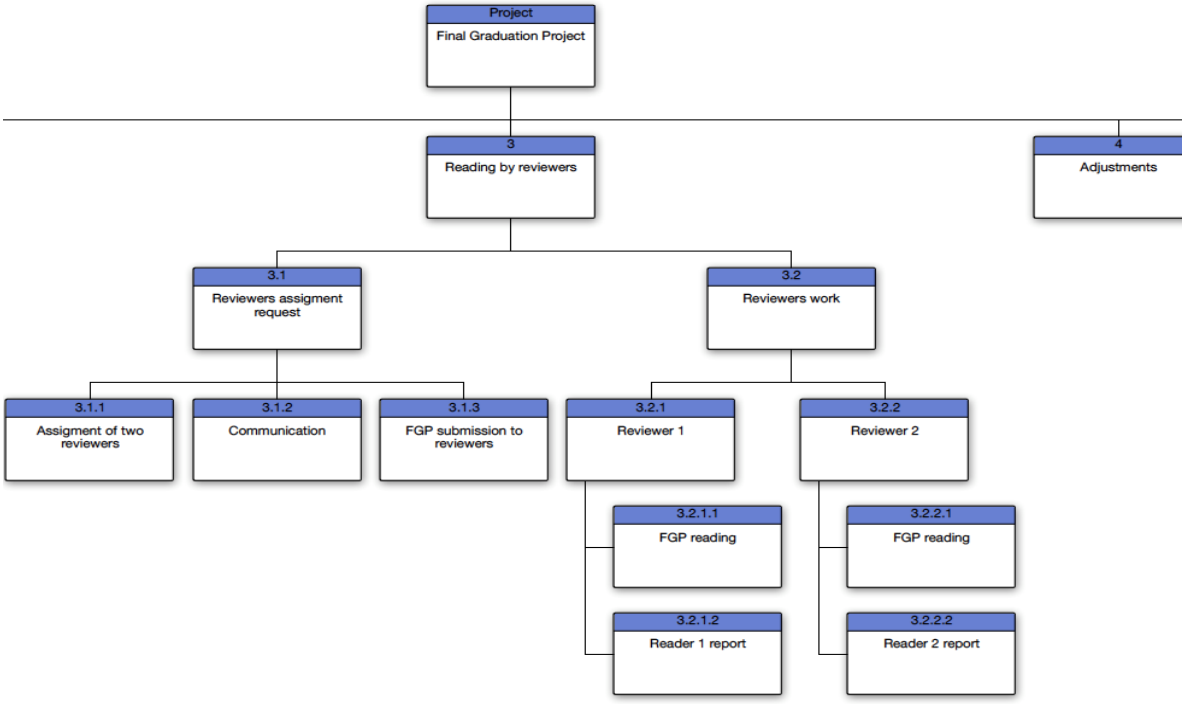
Milestone	Start date	End date
PSM Plan/Evaluation of Region 8 Health System	June 26, 2017	July 25, 2017
Training of Stakeholders to use Malaria RDT Kits; Monitoring and Evaluation	July 26, 2017	September 25, 2017
Compilation of Report Findings	September 26, 2017	October 26, 2017

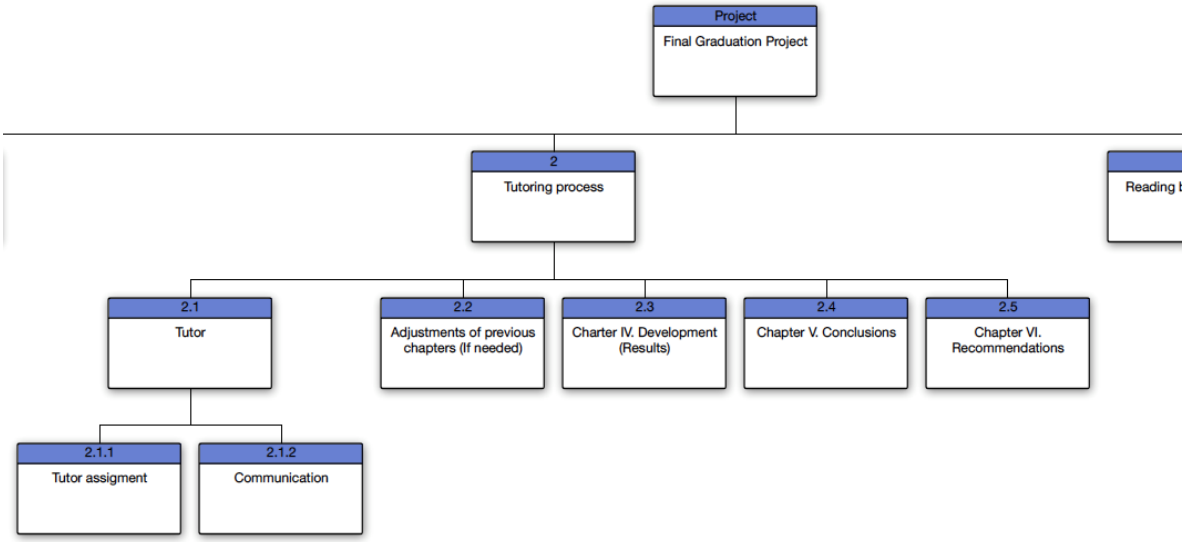
Appendix 2: FGP WBS

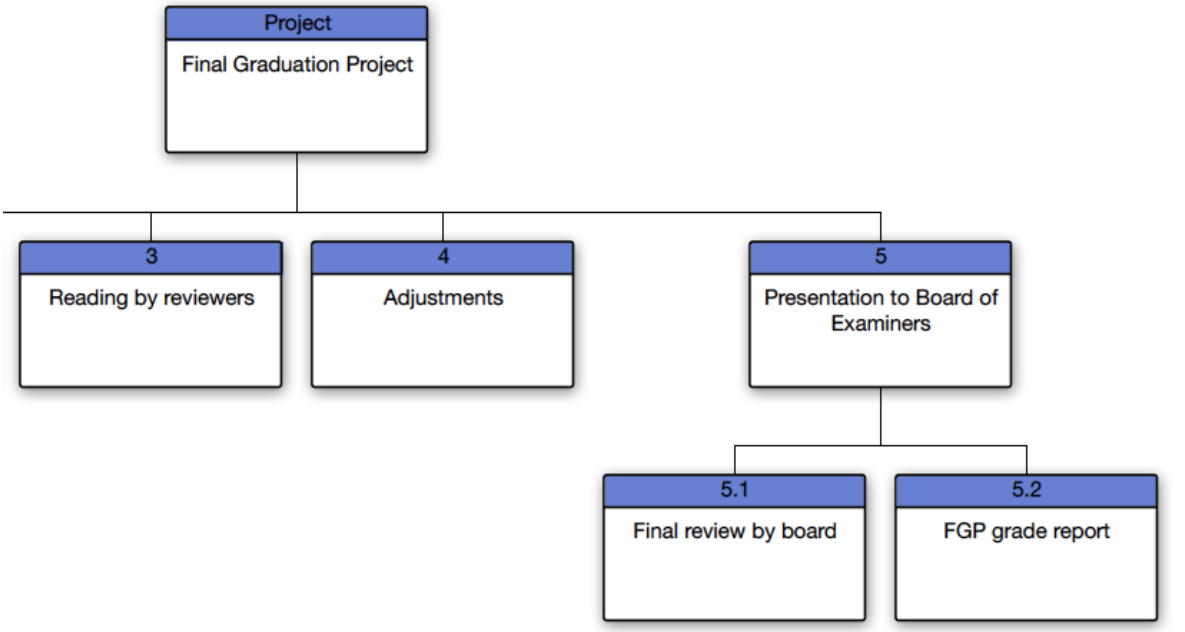


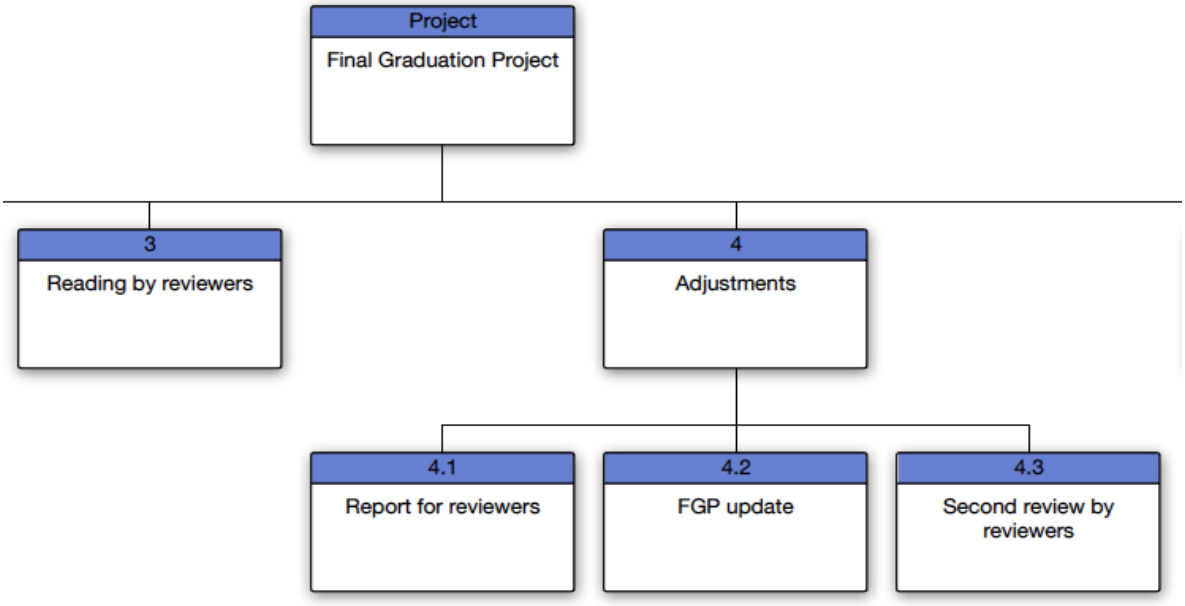

Project
Final Graduation Project
1
Graduation Seminar
1.1
FGP Deliverables
1.2
Graduation Seminar approval
1.1.1
Charter
1.1.2
WBS
1.1.3
Chapter I. Introduction
1.1.4
Chapter II. Theoretical framework
1.1.5
Chapter III. Methodological framework
1.1.6
Annexes
1.1.6.1
Bibliography
1.1.6.2
Schedule


Project
Final Graduation Project
2
Tutoring process
2.1
Tutor
2.2
Adjustments of previous chapters (If needed)
2.3
Charter IV. Development (Results)
2.4
Chapter V. Conclusions
2.5
Chapter VI. Recommendations
2.1.1
Tutor assigment
2.1.2
Communication


Project
Final Graduation Project
3
Reading by reviewers
4
Adjustments
3.1
Reviewers assigment request
3.2
Reviewers work
3.1.1
Assigment of two reviewers
3.1.2
Communication
3.1.3
FGP submission to reviewers
3.2.1
Reviewer 1
3.2.2
Reviewer 2
3.2.1.1
FGP reading
3.2.1.2
Reader 1 report
3.2.2.1
FGP reading
3.2.2.2
Reader 2 report


Project
Final Graduation Project
2
Tutoring process
2.1
Tutor
2.2
Adjustments of previous chapters (If needed)
2.3
Charter IV. Development (Results)
2.4
Chapter V. Conclusions
2.5
Chapter VI. Recommendations
2.1.1
Tutor assigment
2.1.2
Communication


Project
Final Graduation Project
3
Reading by reviewers
4
Adjustments
5
Presentation to Board of Examiners
5.1
Final review by board
5.2
FGP grade report


Project
Final Graduation Project
3
Reading by reviewers
4
Adjustments
4.1
Report for reviewers
4.2
FGP update
4.3
Second review by reviewers

Appendix 3: Language Specialist Letter

UNIVERSITY of GUYANA

Faculty of Education & Humanities
Turkeyen Campus, Turkeyen, Greater Georgetown, P.O. Box 101110, Guyana, South America
Website: www.uog.edu.gy
Tel: + (592) 222-5501/222-4924/222-4930 Ext: 2270/2274

29 May, 2019

Academic Advisor
Masters Degree in Project Management (MPM)
Universidad para la Cooperacion Internacional (UCI)

Dear Academic Advisor

RE: Philological Review of Final Graduation Project submitted by Quacy Grant in partial fulfillment of the requirements for the Masters in Project Management (MPM) Degree.

I wish to confirm that Quacy Grant has made the necessary corrections to the Final Graduation Project document as I have advised. I believe that the document now meets the literary and linguistic standards expected of a student reading for a degree at the Masters level.

Sincerely,

Mark Mc Gowan (B.A, M.A)
English Lecturer
Department of Language and Cultural Studies

Appendix 4: FGP Schedule

ACTIVITY	TIMELINE
Degree Graduation Seminar • Development of Charter • Development of WBS • Development of Chapter I • Develoment of Chapter II • Development of Chapter III • Development of Annexes *Milestone: Degree Graduation Seminar approval*	One (1) month (Completed in a previous cohort)
Tutoring Process • Tutor Assignment and Communication • Adjustment of previous chapters • Development of Chapter IV • Development of Chapter V • Development of Chapter VI • Development of Bibliography • Refinement of Annexes *Milestone: Approval of FGP by the Tutor*	February 18-June 18, 2019
Review and Defense Phase • Reading of FGP by Reviewers • Presentation of Readers' Report • Adjustments of FGP • Defense to Examiners *Milestone: FGP Grade Report*	June 18-July 7