







PROJECT FOR THE CONSERVATION OF MARINE RESOURCES IN CENTRAL

AMERICA

Funding Agreement: (2010 66 836)

BIENNIAL WORK PLAN 2016-2017

South Water Caye Marine Reserve

Belize

1. LOGICAL FRAMEWORK OF THE PROJECT

INTERVATION LOGIC	VERIFIABLE INDICATORS	SOURCES AND MEANS OF VERIFICATION	HYPOTHESIS			
MAIN OBJECTIVE (MO)						
To contribute to the conservation of the ecological functions of the Mesoamerican Reef System (MRS).	Mangrove areas in the project's CMPA equal to or greater than those of the baseline.	Baseline study and final study.				
	Seagrass areas of the project's CMPA equal to or greater than those of the baseline.	Baseline study and final study.				
PROJECT OBJECTIVE (PO)						
To consolidate the CMPA selected in the project's region and ensure the use of coastal and marine resources in the medium-term.	PO VIO1: The financial gap does not increase in 100% of the CMPAs included in the programme.	Baseline study and final study.	 The MAR ecosystem does not suffer irreparable damage by the effects of climate change. Countries with participation in the MAR coordinate their strategy. The four governments maintain and promote policies which support the protection and conservation of natural resources. Worldwide and domestic macroeconomic conditions do not adversely affect the financial resources available for the CMPAs. Social, migratory and population stability do not impose disproportionate pressures on the natural resources of the MAR. There are supportive policies for the tourism sector and the volume of tourist visits to the countries and protected areas is stable. 			
	PO VIO2: Management plans are updated and under implementation in 100% of the CMPAs included in the programme.	Five MP developed; qualitative analysis of the programme / sub programme running.				
	PO VIO3: The CMPAs included in the programme have natural sustainable resources use plans under implementation.	Monthly and annual Project reports, informes de seguimiento de los fondos miembros.				

INTERVATION LOGIC	VERIFIABLE INDICATORS	SOURCES AND MEANS OF VERIFICATION	HYPOTHESIS
RESULTS			
R1: The protection and conservation of the coastal -marine ecosystems in the marine area are secured.	R1 VIO1 : At least 12 initiatives for marine and terrestrial infrastructure built or rehabilitated and put into operation by the end of the third year (2017) and that will be used properly in accordance with their original purpose until the conclusion of the project.	Inventories and monthly and institutional reports; visitor records; patrol reports; Number of participants trained; user manuals. Photos.	
	R1 VIO2: The acquired facilities are being used properly and have regulation and usage logs.	Inventories; usage regulations; usage logs; operation and maintenance manuals; maintenance logs; biological monitoring reports; training reports. Photos	
	R1 VIO3: The park rangers (officers and community members) receive at least two training sessions per year on the protection and conservation of natural resources.	Certificates/registration records/training reports and lists of participants.	VIO3 & VIO4: There are sufficient funds to maintain human resources of the CMPAs.
	R1 VIO4: A control and supervision planning scheme exists and is being implemented in accordance with the operational capabilities of each area.	Reports on the planning and scheduling of control and surveillance activities; Patrol reports, logs.	
	R1 VIO5 : At the end of 2015 (second year) five management plans (programs) exist and are being implemented (over the lifetime of the project).	5 Management Plans produced; qualitative analysis of the ongoing programs/sub-programs.	The five governments maintain policies which support the protection and conservation of natural resources. The CMPAs maintain their current
	R1 VIO6 : At the end of the Project, the five CMPAs have improved their socio-economic and governance indicators by x%.	Baseline studies using the Management Effectiveness Assessment/final measurement.	
R2: Best management practices and the sustainable use of marine-coastal resources are applied.	R2 VIO1: The five CMPAs have a strategy/community development plan for the end of the second year.	5 strategies developed; qualitative analysis of activities in progress as part of the project.	VIO1 & VIO2: There is community interest in participating in the project's actions; There is general macroeconomic stability (input costs/sales prices/open markets); Other entities (NGOs, local governments, academia) are interested in supporting productive initiatives that strengthen communities and grassroots organizations.
	R2 VIO2: 100% of the proposed productive initiatives have undergone feasibility/market and business studies/plans, in addition to studies on business aspects and training and technical support mechanisms.	Complete proposals (support studies).	
	R2 VIO3: Increased number of community members trained, accredited and involved in activities that support	Accreditation reports and records, lists of participants; activity reports.	VIO3 & VIO4: There is community interest in participate.

INTERVATION LOGIC	VERIFIABLE INDICATORS	SOURCES AND MEANS OF VERIFICATION	HYPOTHESIS
	daily management tasks (biological monitoring; control and surveillance) of protected areas. R2 VIO4: The 5 CMPAs have mechanisms (community advisory committees or equivalents) which ensure the participation of local stakeholders in decision-making guidance regarding the management of the areas and	·	
R3: Communication and effective exchanges to promote the adoption of new practices.	R3 VIO1: At the end of the project, at least six (6) small regional projects implemented and monitored by the Member Funds: Three of them in a first call in 2015 and the other 3 in a second call in 2016.	Technical and financial reports; monitoring reports of the Member Funds.	There is an interest of proponents to participate in small grants projects. The respective national authorities have shown interest in participating in regional meetings and monitoring the implementation of the agreements reached. There is interest in participating.
	R3 VIO2: At least two regional meetings have been held and a strategy for monitoring the implementation of the agreements has been reached.	Meeting minutes, list of participants; activity report; statement of the agreements reached and monitoring plan.	
	R3 VIO3 : At the end of the project, at least five exchanges of experiences between area managers and/or other stakeholders from each CMPA have been encouraged.	Visit report, list of participants.	

2. CONTEXT AND ATTENTION POINTS (SENSITIVE POINTS)

Risks and assumptions that may interfere with the projected execution timeline of the project include Natural Disasters, Delay of funds on time, and change in management of the CMPA. A Natural Disaster depending on the amount of damage caused may provoke a delay in the timeline as priorities may need to change to address whatever local/National issues we are faced with at the time. The delay in one activity may cause the delay in other activities that depend on the first ones completion. A change in management may cause a delay as the new management will have to assume the responsibilities of the previous management and this usually takes an adjustment period.

The results of the erosion study of the Twin Cayes to be developed with the support of this project will also define a big portion of the investment planned for this work plan.

During these two years, the Marine Climate Change Adaptation Project (MCCAP) Project will begin supporting the economic alternatives identified for the coastal communities that fish within SWCMR. The idea is that the MAR Fund project continues, on 2018, to build on the economic alternatives that were successful during these two years and provides the support to consolidate them.

3. ACTIVITIES TO DEVELOP

RESULT 1. THE PROTECTION AND CONSERVATION OF MARINE-COASTAL ECOSYSTEMS IN THE MARINE AREA ARE SECURED

South Water Caye Marine Reserve has been designated as one of seven components of the Belize Barrier Reef System - World Heritage Site, in recognition of the uniqueness of its contribution to Belize's reef system, the largest, and possibly the least impacted reef complex in the Atlantic—Caribbean area (UNESCO, 1996). The protected waters of the reserve provide nursery and feeding habitats for at least twenty four species of international concern, recognized under the IUCN Red list as Critically Endangered, Endangered or Vulnerable (Table 5; IUCN, 2008), including five species of coral, three species of turtle, fifteen species of fish and the vulnerable West Indian manatee.

The overall goal for the management of South Water Caye Marine Reserve is: To provide for the protection, wise use, understanding, and enjoyment of the natural resources of South Water Caye Marine Reserve in perpetuity. Also the national objectives for conservation revolve around the protection, conservation and rational use of Belize's natural resources within the context of sustainable human development.

Since the creation of the marine reserve in 1996 the Fisheries Department embarked on formulating a management structure. Erosion has been drastically affecting the Caye and has resulted in substantial investment in order to minimize land loss. For this reason an environmental engineer or consultant will be hired to carry out studies that may assist in the design of an erosion control

mechanism. With a new and improved design on erosion control a Beach containment apparatus will be installed at Twin Caye in order so that the land reclaimed is not lost.

In 2007 a fire completely destroyed the headquarters along with all the enforcement, monitoring and electrical equipment, and the existing infrastructure is rustic and barely accommodates the staff in a comfortable setting. The main headquarters is used as a base to house the staffs who conduct the day to day management at the marine reserve. This includes the enforcement activities, visitor impact management, collection of visitor's fee, and the day to day outreach carried out to fishers and visitors. These activities that are carried out on a daily basis allow for the protection of important commercial species and coral life. By having presence in the Marine Protected Area we will achieve all the goals set out in the management plan. It helps deter illegal tourism practices and ensure guides follow the regulations with their tourist and at the same time we ensure our education and outreach to fishers and the local and international visitors is continued. The new facilities and equipment will allow the staff to be well rested and perform their duties in a timely and professional manner on a daily basis. The construction of this building will enhance productivity of the staff and raise the management effectiveness of the MPA.

The biologist along with the help of the other staff members conduct monitoring activities which help in making management decision. The monitoring activities carried out by the staff require specific monitoring equipment. With the acquisition of this equipment the staff will be able to conduct their monitoring activities in a timely and effective manner. Thus, improving the data use for management decision of the fishery industry. Awareness is also conducted as it's important to educate fishers on the importance of protecting our marine resources. The SWCMR staff has been working with limited resources and the provision of these resources will allow them to achieve more in this 5 years Project. The project will enhance staff moral and the better living and working conditions will enhance productivity from the MPA staff.

BS.1.01 Investments in infrastructure

A new headquarters is to be built on the island of Twin Cayes which has been strategically chosen for its location. This will enhance the protection and conservation of the coastal marine ecosystem in the marine area. The strategic location of this headquarters will help the department achieve the countries national and reserves management goals. Currently the Reserve headquarters is a rustic building that lies on the island of Twin Caye which has eroded over the years. The island is to be reclaimed and a new dock is to be built as the one currently at the station is deteriorated. This new infrastructure along with the reclamation of the island will invite visitors to come and spend the day at the reserve base, pay their visitor fees, visit the visitor centre and be able to purchase items from the gift shop. The new facilities will allow the staff to be able to do their presentation on education and outreach with visitors more easily and encourage a better working relationship with our local stakeholders. The new reserve headquarters will also be able to accommodate enforcement agencies (Coast Guard, Belize defence force, Tourism, Police, Customs and Immigration) that assist the department in enforcement activities.

A second infrastructure will be constructed in the Pelican Caye area. Currently enforcement patrols are carried out but due to the fuel cost they are not as often as should be. The construction of this new outpost will allow the staff to properly enforce the second conservation zone area in the MPA hence allowing the department to protect and conserve the ecosystems in the marine area. The

second facility will allow the department to achieve its goals along with the national goals outlined in the management plan.

BS.1.01.01 Twin Cayes Beach erosion study

Erosion has been drastically affecting the Caye and has resulted in substantial investment in order to minimize land loss. For this reason an environmental engineer or consultant will be hired to carry out studies that may assist in the design of an erosion control mechanism. Similar studies have been carried out at other MPA's that are facing the same problem which the Department will utilize to help in the design of this study. Total cost for the consultancy is US\$9,000.00 to be covered by the project and will commence in December 2015 and conclude in February 2016.

BS.1.01.01 Containment and Reclamation

Using the recommendations arising from the erosion control study a mechanism to mitigate the impacts of erosion will be constructed. The erosion study will ensure that the land reclaimed will not be lost and the new headquarters facilities along with it. This will incorporate presently used mechanisms as well as innovative or internationally recommended codes. After the studies and designs have been approved for the containment of the land; a land reclamation activity to gain the land lost to erosion and to accommodate the new infrastructure will be embarked. The land reclaimed will provide areas for the visitors to spend the day and recreate before going on dives or snorkels and Bar B Q. This time spent on the island will also allow the staff to give presentations on the reserve and the collection of visitor fees and the sale of gift shop items. Mainly a low level impact study will be carried out and cleared with the Department of the Environment prior to completion of this activity. The total containment and reclamation cost is US\$50,593 of which \$10,000 will be covered as counterpart from Fisheries, US\$15,000 covered by MCCAP for assisting in payment of reclamation effort and the remainder US\$25,593 will be covered by the Project for a service contract and will commence in March 2016 and conclude in April 2016.

BS.1.01.01 Construction of Main Headquarters

A headquarters 24'X52' two story building, will be built on the property belonging to the Fisheries Department on the island of Twin Cayes to facilitate the stay of staff and other enforcement agencies. An architect will be hired to design the blue print of the building along with the pier under BS.1.01.03. The architect will also supervise the work of the contractor to ensure that the building is built according to the blue print and meets the Central Building Authority codes. The building will be designed with a visitor's center on the lower flat along with a small office and living barracks on the upper flats. With the construction of this new facility the visitor center shall become the store room. In the store room all equipment will be stored and safe guarded. The structure will also include a small office space to be used in the day to day management programs and a solar system room in its lower flat. The construction of this building will enhance productivity of the staff and raise the management effectiveness of the MPA. The structure will also allow visitors an area to recreate at the base hence allowing the relationship of the staff to better grow with stakeholders using the MPA. The new infrastructure will have available space for other enforcement agencies that collaborate with the Department. The presence of these enforcement agencies commands respects and helps to deter illegal activities. The new infrastructure will allow the officers to spend a well-rested night ready for the day's operations. A local company will be contracted to construct the building. The costs for the construction of the building and the architect will be covered by the project in the amount of US\$173,150. The counterpart contribution of the department is the land which has a value of US\$100,000.00. The department is committed to spending in materials and supplies for maintenance after completion of the building. In the first year of the project the department will spend on the upkeep of the existing facility so that it is in livable condition for the staff prior to construction of the new building. The Fisheries Department has a caretaker hired whom is in charge of the day to day maintenance of the facilities. The department procures the needed items and the caretaker along with the staff ensures that the facilities are being properly maintained. The construction will commence in June 2016 and will be completed by December 2016.

BS.1.01.03 Pier

The access pier at the headquarters will be replaced to improve the landing operations of the park rangers and visitors. A 30" high off normal tide level, 90' long x 8' width pier with a 'L' on the end 20' X 8' and a 10' x10' shed of zinc roof will be built. The department has recently invested through a small grants project with the National Protected Areas System Plan for the upgrade of the visitor centre and the purchasing of gift shop items. A new safer pier will allow visitors that are spending the overnight a safe harbour from bad weather conditions. The total cost of the pier is U\$\$15,000 and will be covered by the project for labour, treated wood, pipes, nails, bolts, cement to construct the pier. Counterpart funding provided by the Belize Fisheries Department for the upkeep and maintenance of this structure will be U\$\$6,000.00 in materials and supplies. In the first year of the project the department will spend on the upkeep of the existing pier at the island so that it is safe for staff and visitors. A local company will be contracted to construct the pier. The Fisheries Department has a caretaker hired whom is in charge of the day to day maintenance of the facilities. The department procures the needed items and the caretaker along with the staff ensures that the facilities are being properly maintained. The pier will be constructed in May 2016 and will conclude June 2016.

BS.1.01.05 Complementary of Solar System for Main Headquarters

A generator to complement the solar system for the main headquarters will be purchased. This will complement the supply of energy as needed and reduce excess use of the solar system. Hence improving the daily management of the reserve and also increasing the management effectiveness. This new generator will complement/upgrade the solar system financed by the project in 2014. Total US\$4,000 covered by the project, will be used for the acquisition of the generator in January 2016. Counterpart of US\$10,000 will be used for maintenance of the solar system by the Fisheries Department.

BS.1.02 Investments in equipment

The equipment to be procured trailer, computers, enforcement gears, engine and trailers are all to be used for the more efficient management and daily operations at the marine reserve. The equipment procured will be used for the daily management needs of the reserve. Engines have a lifetime of 3 years at a reserve and are one of the key equipment needed in order to protect and conserve the area. Trailers are needed to be able to pull up the vessels for maintenance and safe keeping. The enforcement gears are essential for the staff to carry out their daily enforcement

activities. The equipment will also allow staff to look and conduct daily enforcement/other activities more professionally and in a timely manner. Computers allow for the faster processing of court cases. The acquisition of audio visual equipment will greatly assist in fulfilling our commitment by building our capacity for our education and outreach component of this project and our national and management goals.

BS.1.02.03 Equipment for Park Ranger/Gears

The five staff will receive the equipment needed for patrolling the sea at any time. The procurement of this equipment's will improve control of the area and motivate park rangers who carry out enforcement patrols. This much needed equipment will enhance enforcement and allow the staff to be more professional in carrying out there daily duties. It will help the staff deter illegal activities hence increasing the protection of the commercial species and the reef creatures along with corals. This will allow the staff to reach the management goals and management effectiveness of the reserve. The equipment will comprise of 5 field kits (binoculars, flashlights, raincoats, dry bags, spotlights). The total cost of the kits will be US \$4,000 to be covered by the Project. These will be distributed as US\$2,000 expenses in June 2016.

BS.1.02.04 Office Furniture/Equipment

Materials and equipment to furnish the facility for the new headquarter at Twin Caye will be procured, which will improve the operations of the headquarters and increase the management effectiveness of the marine protected area. The lower flat of the headquarters building will be used as an office space to collect park fees and to welcome visitors to the Marine Protected Area (MPA). The office will be used to quickly process case files for court cases. US\$4,250.00 will be used to purchase office furniture (tables, chairs, computer desk, office desk, filing cabinets, fans), which will be covered as counterpart by the department. Two laptop computers will be purchased, which will facilitate the data entry of monitoring activities and report writing, and also facilitate the administrative day to day role. The cost of a computer is US\$1,750 to be financed as counterpart by the department. The computers are purchase based on their lifespan in the saline conditions. A computer will be purchased in April 2016 and the second laptop and office furniture will be purchased in January 2017.

BS.1.02.04 Internet

The fisheries department is currently in negotiations for the installation of a new phone line out at the reserve along with Internet. Internet is an integral part of the daily management of the reserve management. A new smart system is being installed for enforcement patrols. This will be used as a means of communication and it will also be used to disseminate important information. The cost of the internet and phone line is of US\$150.00, monthly to be covered by the department for a total cost of US\$3,600.00. The department will cover the cost of the internet for daily management of the reserve for the lifetime of the project. This will also be a key piece of equipment in ensuring that the project is a success.

BS.1.02.05 Dive Tanks

The department has purchased 15 dive tanks. In year two the department will cover the cost of servicing dive tanks to complement the air compressor being purchased under the project. The dive tanks will greatly assist in the monitoring activities that are carried out on a monthly basis at the reserve. Also as a part of the education and outreach program being implemented under the project the dive tanks will be used for the community researchers, and the training for specialised tour guides. This will help the department achieve its national and management goals. It will ensure that monitoring is continuously done for decision making that will assist and enhance the protection and conservation of the marine ecosystems. The department will also allocate a total of US \$450.00 for the inspection and maintenance of these dive tanks in June 2016 and June 2017.

BS.1.02.05 Air Compressor

An air compressor will be bought to assist the department in conducting monitoring activities. Currently the reserve staff rent dive tanks from the local resorts at a cost of BZ\$30.00 per dive tank. This does not include the fuel that is consumed to pick up the tanks from the dive shops. During the monitoring of spawning aggregations the staff utilizes 10 tanks in one day, and the monitoring is conducted for (7) seven days. The purchasing of this equipment will assist in the pumping of dive tanks for monitoring activities, and will facilitate the monitoring activities performed by the reserve staff along with the community researchers carried out within the MPA. The cost of this air compressor will be US\$5,500, to be covered by the Project and purchased in January 2016. The department will contribute as counterpart for the quarterly maintenance of the compressor US\$500. The department will procure the needed items and the staff will be trained to do the basic maintenance of the compressor (change filters, oil etc.). Total counterpart contribution for the project is US\$3,000 for the 2 years.

BS.1.02.06 Vessel Trailer

The purchase of 26 foot trailer for the SWCMR vessels to support the maintenance of the vessel, as the trailer currently in use is rented and generates high costs in schedule maintenance for the vessel. The trailer will be used with the vehicle being purchased under the project as currently vehicle is also rented. The cost of the trailer will be covered by the Department as counterpart in the amount of US\$6,250 in June 2016.

BS.1.02.07 Land base Vehicle for enforcement and to visit stakeholder communities

The purchase of a 4X4 Toyota Hilux vehicle will support on responding to reports received of poaching and illegal fishing in a faster way. Glover's Reef Marine Reserve could benefit from this vehicle. The vehicle will also be used to conduct the education and outreach to our stakeholder communities, to do land based enforcement operations and any fisheries related matters for the SWCMR MPA.

With the purchase of the vehicle under the project the community awareness consultant will be able to visit and reach more communities. The reserve staff will also be able to travel to communities to conduct meeting and workshop with communities surrounding the MPA. The vehicle is also needed to use the trailer to take the boat to have its schedule maintenance and during

hurricane season. At present not much land based enforcement is being done but there is a need for this.

The maintenance and insurance of the vehicle will be covered by the Fisheries Department. The costs of the vehicle will be US\$40,000 to be financed by the project in January 2017. Counterpart contribution from the department will be US\$10,000 for duty free exemption and general sales tax and a total of US\$5,000.00 per year in maintenance (insurance, fuel, tires, oil change, filters, etc.). A map displaying all the local stakeholder communities in the area where the vehicle would assist in education and outreach, and enforcement activities can be reviewed in figure 1.

BS.1.02.08 Water Quality equipment

A water quality multi parameter sonde is needed for integration into the National Coral Reef Monitoring Network work plan and will assist staff in carrying out monthly data collection. This will increase the quality of data currently being collected at the MPA. The data will assist in better management decisions for the MPA. The costs of this water Quality equipment will to be covered by the Fisheries Department in counterpart of US\$10,000 by December 2016.

BS.1.03 Generation/update of the MCPA management plans.

The guiding document for all marine protected areas is the management plan. The management plan is a document that is created using baseline data from the area. The baseline data is from previous years looking at the management aspect of the protected areas. The management plan is then created to be a guiding document for the next five years of the protected area. Currently the South Water Caye Marine Reserve has a management plan that will expire in 2015. The management plan needs to be revised using the current data from the protected area. The management plan will provide best recommendations for the effective management of the area for the next five years.

BS.1.03.01 Management Plan Update

The management plan of the SWCMR expires in 2015 and as a result an update of this guiding document for the protected area will commence on May 2016 and finalized in June 2016. This process of the updating of the management plan began in December 2015. This update will provide tools for the development of short, medium and long-term actions to be implemented within the protected area. It also provides an opportunity to prioritise specific lines of strategic actions and strategies on major topics in the Management Plan. Having an updated management plan will enhance the capacity of the area management team as well as local, regional and national institutions to manage the area. Workshops will be organized by the Fisheries Department and the local communities for the socialization of the Management Plan. These workshops will require local organisations and a technician from the department to participate and validate the process. The cost of these workshops includes transport, travel, snack, and conference room and consultant fee. The costs of this activity will be US\$15,000. A total of US\$8,000 will be funded by the project to cover the consultancy from May 2016 to July 2016. A total of US\$7,000.00 as counterpart will be used to cover GIS mapping, ground truthing and to finalize the zoning scheme from January 2016 to

April 2016. The management plan also has strategies that need to be incorporated at the end of each monitoring year for the effective management of the reserve.

BS.1.04 Support for the implementation of the control and surveillance system.

A very important component for the conservation of the ecological functions in the South Water Caye Marine Reserve is enforcement. The Fisheries Department has invested in the management of the Marine protected area for five staff members to be present in the marine reserve all year round. The staff works on two weeks duty and one week off. At all times we have a minimum of three staff at the MPA. Part of the staff's daily management activities is to conduct enforcement activities. During the enforcement duties the staffs ensures the parks and fisheries regulations are upheld and respected. Other activities that will ensure the conservation of the ecosystems is training of the officers in enforcement. To ensure that the staff responsible for the area carries out their surveillance duties in a professional manner the department will ensure they go through enforcement training. Another activity that will ensure that enforcement activities are continued will be the response to community based concerns. To build community support of the protected area we need to respond to confidential reports received of poaching and illegal fishing at South Water Caye Marine reserve destined to the black market on the mainland. Other reports are also received of stash houses with illegal products that are located deep within local communities.

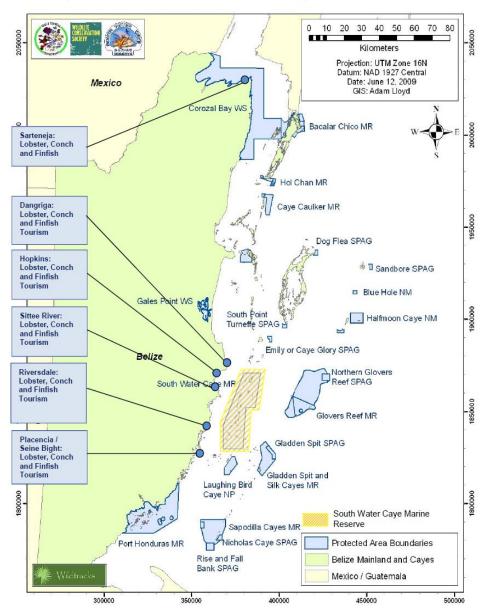
BS.1.04.03 Enforcement and surveillance activities

Part of the staff's daily management activities is to conduct enforcement activities. The staff head out on enforcement activities on a daily basis that cover the most important areas of the reserve. This includes the conservation zone 1 where we usually encounter many individuals trying to do poaching. The area is very fisheries productive area hence the need for heavy enforcement. Under our mandate the officers are able to conduct arrest summons and prosecute individuals breaking the law. The cost per annum for fuel to do enforcement at the MPA is US\$16,200.00. This is a total counterpart contribution of US \$32,400.00 to conduct enforcement activities in the MPA which will be conducted in a monthly basis throughout the 2 years.

BS.1.04.06 Enforcement training for staff

The enforcement training will include other enforcement agencies of the area. Topics to be covered for the training are: Fisheries Act and its regulations, procedures of conducting an arrest and for filling complaints. This should minimize the amount of courts case dismissed or loss due to technical issues. A staff evaluation will be held at the beginning of each workshop to identify their level of knowledge about the subject and also to assess what they have learned throughout the year. The trainings will assist to achieve the management goals of the reserve and its guidelines in the management plan. The trainings are improved every year as lesson learned methods and laws that have changed are incorporated as components of the trainings. The cost of these workshops will be US \$2,000.00 per year to be covered by the department. This will include lodging, food, venue and instructors. This training will be conducted in November 2016 and 2017.

Figure 1 Primary Stakeholder Communities of South Water Caye Marine Reserve



BS.1.05 Support for the implementation of evaluation and monitoring systems

The National coral reef monitoring network has identified water quality as a data gap. Especially the southern node which includes South Water Caye Marine Reserve due to the land based sources of pollutants. Over the years we have found that an algal bloom spread over the coast line of Belize. This caused an immediate reaction from all the protected area managers, no one knew how and where the bloom had originated. The purchasing of water quality equipment is key for monitoring as these can tell if any external factors are influencing the water quality. This will in turn allow managers to take the necessary steps to assist in the mitigation of these blooms.

Conchs Baseline data showed that the area between Tobacco Caye and South Water Caye is a nursery ground and hence is designated a conservation zone. It is an area important for the replenishment of mature conchs to the fishery industry. The monitoring program we have focuses on habitat, abundance and distribution for conch, corals, SPAGs, lobster, sea cucumber, whelks, sharks, sea grass and mangrove data is used from Smithsonian institute. Great efforts are put into making these data collection and analysis to be used in management decision making. This data is used to determine catch quotas which allows a sustained fishery.

BS.1.05.01 Generation of a baseline of mangrove cover and marine grassland in the five MCPAs

Based on the consultancy results of Phase I of the Project and in order to use the same methodology for the base line analysis of mangrove cover and marine grassland, a remote sensing consultancy will be hired to conduct this activity, using satellite imagery to determine the extent of mangrove and sea grass cover in the marine protected area. MAR Fund will be hiring the consultant and the payment of this contract will done by the MPA. This consultancy will begin in January 2016. A total of US\$15,000 of the Project funds will be used to cover the cost of the activity.

BS.1.05.01 Ground thruthing for mangrove cover and marine grasslands as required by the project.

One of the main objectives of the project is to contribute to the conservation of the ecological functions of the Mesoamerican reef system. As a part of this strategy the project indicators being used are mangrove areas and sea grass lands. In order to create a baseline; Satellite imagery will be used to scan the area. The SWCMR staff will conduct the ground thruthing of the data collected by the satellite imagery. This will include the staff going out to the mangrove areas and grass lands to verify that these are indeed mangrove areas and a monitoring exercise will be conducted to ensure the validity. We will conduct analysis of the data collected as a part of this activity. We will verify that the data being shown by the satellite images is accurate by randomly selecting sites and going to collect data from these sites. The department will cover the fuel and equipment to conduct these analyses in counterpart contribution of US\$660.00 in fuel (110 gals) in February 2016. Note: We will need to quantify the value of studies completed with partners.

BS.1.05.04 Monitoring of Reef Health

Fisheries management started in Belize with species protection having size limits, closed seasons and no take zones. However realistically is has been converting into an ecosystem approach. Thus

we have monitoring programs that focus on habitat, abundance and distribution for conch, corals, lobster, sea cucumber, whelks and sharks, sea grass and mangrove cover. Great efforts are put into making these data collection and analysis to be used in management decision making. This data is used to determine catch quotas, size limits, close seasons, abundance and distribution estimates which allows managing a sustained fishery. The department uses the MBRS protocols for monitoring of fish abundance, Spawning Aggregations Monitoring (SPAGs), and coral health. Conchs, Lobster, Sea cucumber, and whelks have their own protocols. Mangrove and sea grass monitoring are being monitored by the Smithsonian Institute over the last twenty years using the CARICOMP protocol. The cost of these monitoring is US\$8,000 to be covered by the Belize Fisheries Department in March and November 2016 and March and November 2017

BS.1.05.06 Monitoring Species of Commercial Importance

On an annual basis during the peak spawning times of Nassau grouper in December- February for 10 days after the full moon the team conducts visual surveys to quantify spawning population. The spawning site is located approximately one hour from the main headquarters making it costly and exhausting. Night patrols are also conducted to ensure the compliance of the closed season. The cost of this survey is US\$1,000, to be covered by the Belize Fisheries Department in January and February, 2016 and January and February 2017.

BS.1.05.07 Monitoring of Water Quality and Key Parameters

Water quality monitoring in the marine reserve is vital. The Department will use the water quality equipment purchased under BS1.02.02 to establish a water quality monitoring program. Water quality monitoring is important to identify key changes in water parameters that affect healthy ecosystems. The total cost of the water quality monitoring will be US\$2,520, to be covered by the Belize Fisheries Department on a monthly basis throughout 2017.

BS.1.06 Protection of fragile ecosystems

On a daily basis the reserve receives visitors which include catamarans, yachts and other live aboard vessels. These vessels usually find anchoring areas close to the reef in sea grass beds where they are also sheltered from storms by the islands. In following the guidelines of the management plan the reserve staff shall deploy mooring buoys for these vessels to safely anchor in front of the islands. By anchoring at these designated buoys we will also be able to protect the sea grass beds and corals in the area.

BS.1.06.01 Purchasing, Installation and Maintenance of Mooring buoys and arrays

Mooring buoys and arrays for the safe anchoring on sea beds will assist in reaching the management goals under the management plan strategies for protection of the sea beds and corals. The total MCCAP counterpart contribution for these activity is US\$14,100, which will cover maintenance of the existing buoys for two years. Maintenance of buoy systems will commence in April 2016 on a quarterly basis (April, August and December 2016 and January, April, August and December 2017).

BS.1.06.02 Placement and Maintenance of Demarcation buoys and arrays

Demarcation buoys in the area is important as it informs visitors of the perimeter of the no take boundaries and encourages them to respect the rules and regulations of the reserve. The demarcation buoys will assist in the enforcement of the protected areas hence protection of the commercial species and coral species in the no take zones. This will assist the reserve staff in achieving the management goals of the protected area. There is a portion of the reserve that is already demarcated, however, some demarcation buoys are often lost and replacement are always needed. The total MCCAP counterpart contribution for these activity is US \$14,100, which will cover the maintenance of the existing buoys for two years. Maintenance of buoy systems will commence in April 2016 on a quarterly basis (April, August and December 2016 and January, April, August and December 2017).

BS.1.08 Institutional Strengthening for Area Managers.

For reserve staff refresher courses are necessary to keep the old staff and new staff updated on new enforcement methods, tools, strategies and laws. The enforcement and data analysis trainings will assist the biologist, manager and staff in data handling, new analysis and interpretation for decision making in the reserve. This will assist the department meet its national and area management goals. It will ensure that the technical staff will make the necessary decisions based on best management practices to ensure the protection and conservation goals are achieved at South Water Caye Marine Reserve.

BS.1.08.03 Dive Safety Training for Staff

The department will conduct dive safety training for the staff. The manager, biologist and rangers conduct diving for monitoring. It is imperative that the staff take dive safety refresher courses to minimize diving accidents as diving is part of their annual activities at the reserve. Furthermore with the implementation of the community researchers the staff will be able to hand down first-hand knowledge to the community researchers ensuring their safety. The total cost of the training will be of US\$4,000.00, US\$2,000 per training, which will be covered as counterpart by the Fisheries Department. This will include lodging, food, venue and instructors. The training will be in July 2016 and 2017.

BS.1.08.03 Data analysis Training for staff

The data analysis training is important for the reserve staff. With this training staff members will be able to analyze the data gathered during monitoring activities. The training will allow them to interpret and present their data for better management decision purposes. The cost of the training will be US\$4,000 to be covered as counterpart by the Fisheries Department to be conducted in May 2016 and 2017.

BS.1.08.03 Staging of Community Awareness-raising Campaigns by Conducting Public Presentations and Consultations

An education consultant will be hired to conduct educational outreach programs with the different stakeholders in their communities. Also with the signing of the Fisheries Aquatic Resource Bill there will be the need of much education outreach activities to educate and inform stakeholders. The reserve staff is currently the one responsible for informing and educating the stakeholders on these matters. Having an individual responsible only for outreach will make it possible to reach all stakeholders. The contracted worker will assist in the creation of a comprehensive education and outreach strategy and be responsible to liaise with all stakeholders including educational institutions. They will play a key role in starting an active education and outreach component community involvement and an integral part in the continuation of the programs after the project has finalized.

The person hired under the project will also become a fisheries officer and assist the department with other management activities when not conducting outreach. The person will also assist in the new community researcher's involvement and implementation of a community rangers program. The cost of the contract will be US\$20,000 to be funded by the project and this person will be hired from a community that buffers the protected area for January through December of 2016 and 2017. This will complement the current education and outreach program in place. The department will initiate the process for absorption into the public service when the person is hired.

RESULT 2: APPLIED BEST MANAGEMENT PRACTICES AND SUSTAINABLE USE OF MARINE-COASTAL RESOURCES.

The South Water Caye Marine Reserve is currently carrying out the day to day management of the marine reserve using its Management Plan. Every year the reserve manager prepares an implementation plan which focuses on activities stated in its Management Plan. The Management Plan of the reserve is valid for 5 years. The South Water Caye Management Plan will need to be updated in 2015. Stakeholder's engagement is very important to have updated information on the uses of the marine reserve and stakeholders. An updated management plan is needed to have adequate activities needs to be implemented for better management of the reserve. Areas of concern need to be highlighted in the updated management plan. The updated plan will assist the reserve staff in continuing implementing the adequate measures to manage the reserve and work with stakeholders. This will also ensure that the results will be met for the project. Under component two a sea weed project will be embarked on as an alternative livelihood for the fishermen of the area. This will assist in decreasing the fishing pressure in the reserve. Another project under component two that will greatly assist the fishermen and the department is the lobster casitas project and the tourism specialization guide training. This will ensure that fishermen can follow the fisheries regulations and engage in best fishing practices. A community researchers and rangers training will be embarked on. Schools and other educational clubs will be invited to visit the marine reserve on field trips. This is to assist in the education and outreach component for the reserve. A consultant will also be hired to create a community development strategy. In order to move forward and strengthen our commitment to working with the community a guiding document is needed to address where we have lacked and where to better address the issues.

BS.2.01 Development of the productive fabric of communities/associations.

Upon the creation of the marine reserve some fishers were displaced from their fishing grounds. As part of the strategic measures through this project we will assist fisher folk from the reserve by giving them an alternative/supplementary avenue to generate income. Providing the communities with different resources of income will help reduce the fishing pressure, through a sea weed project and lobster casitas, and the specialisation in marine tour guiding will assist locals to be able to practice tour guiding in a professional safe atmosphere. Through this project we will also be able to create new opportunities for young and older people who have an interest in the tourism industry. This project will also assist by decreasing the fishing pressure on the reserve.

BS.2.01.01 Sea Weed Project

As a part of the strategic measures to reduce the fishing pressure the department will embark on a supplementary income generating activity for fishers. The South Water Caye marine reserve displaced some fishers from their fishing grounds creating a loss in their income. A sea-weed project will be launched with the local associations and stakeholders that use the reserve with the aim to maximize their income generation. The department will hire a consultant to assist in the training for growth, production and sales of the final product. The department will also assist the project by helping source the seedlings from our sister reserve Glovers reef. The benefit of assisting the local stakeholders through this project is that in protecting and enforcing their crops they will become stewards for the reserve and hence achieving the projects goals. A feasibility study will be conducted and a business plan will be created. This will be counterpart funded under the MCCAP for a total value of US\$50,000 for training, purchasing of material plant, collecting seedling, fuel, consultant, to commence in January - December 2016.

BS.2.01.02 Building of Lobster Casitas with the Local Fisherman Association to Benefit Fishermen in the Community

The department will assist the local fishermen utilize SWCMR area by building lobster casitas. This joint project with the fishermen will not only allow for best fishing practices, but will allow for the removal of the current destructive shades being used inside the reserve. This project with the reserve fishermen will allow us to meet the project output by not only allowing best fishing practices but also in reducing the surveillance efforts made as the fishermen will be able to select the lobster size more easily without causing further damage to the live animals. The department will also host workshops for the local fishermen to train them on the new fishing method. This method will also allow the fisher folk to be selective of the lobsters they are harvesting. This in-turn will assist the fisher-folk to be able to respect the laws without excuses as the lobster are trapped in nets and not harmed therefore the undersize, tar spot and berried lobster can be released. The total cost of this project is of US\$30,000.00 to be covered by the project. The cost will include the training for fishermen in Riversdale, Hopkins, Sittee River and Dangriga. This cost includes the building of the casitas, workshops, instructors and fuel. The counterpart contribution will be done in labour by the association members US\$50.00 per day at least 15 fishermen by 20 days to construct the shades and removal of old shades. Total counterpart US \$30,000 for both years. This will be done in March 2016 and March 2017.

BS.2.02.04. Specialisation in marine tour guiding certification issued by Belize Tourism Board

The Fisheries department has seen the need to give an alternative to fishermen from the South Water Caye Marine Reserve. The increase in fishermen in the country has also applied fishing pressure to the reserve as more fishermen are in the area. As a part of this the department with the assistance of the project will provide assistance for the training and Specialisation in marine tour guiding certification issued by Belize Tourism Board. The training will provide an income generating livelihood to fishermen that will benefit them and their families. This will assist the South Water Caye Marine Reserve by decreasing the fishing pressure on the reserve. The local resorts need more trained and certified locals to carry out tours in the reserve. The total cost of the project is US\$44,500 to be covered by the project and includes the purchase of studying materials, stationary, venues, instructors, and food. The cost per person is US\$1,483.33, by the end of the project there should be a total of 10 people specialised in marine tour guiding per year and at the end of year three a total of 30 people will be trained guides. The counterpart contribution is calculated at US \$50.00 per day per person attending the seminars for 15 days at a total of US \$22,500.00. This will be done in August and September of 2016 and 2017.

BS.2.03 Participation of organized community groups in the management of natural resources

Under the projects guidelines for the successful implementation of the project there are activities that need to be achieved such as an education and outreach program, more trained community members involved in the day to day management of the MPA, as well as a community strategy to move forward and strengthen our commitment to working with the community. Programs will be adopted to involve the current stakeholders and create stewardship through these programs that will encourage participation and an empowered sense of ownership of the reserve. A consultant will also assist in the education and outreach program with all communities. Schools and active environmental clubs will be targeted, as well as primary, secondary and tertiary institutions for training purposes will be targeted. Firstly through the project a comprehensive outreach program will be designed using pamphlets, flyers, posters, and signage to educate the local public and students. Students will be identified to be trained to become community volunteers that will assist in monitoring activities. A strengthening of community ties will happen as we will seek to involve the local stakeholders and empower them to assist as community rangers. Lastly we will assist local institutions to get to know their South Water Caye Marine reserve by taking out school trips to the reserve. This will enhance and promote students interest and knowledge in marine ecosystems, and reserves.

BS.2.03.02 Education and Outreach Trips to the Cayes with Local Educational Institutions/environmental Clubs, 4h-formation of Environmental Clubs with Assistance of Outreach Person.

Through the project we will seek to educate and provide the opportunity to many local stakeholders to visit the South Water Caye Marine Reserve. Through these trips not only will we grant them the opportunity to visit a marine reserve but will seek to encourage more interest in the protection and conservation of the marine ecosystems. A part of the requirement for the groups to be accepted as potential visitors to the MPA they must assist and participate in a Twin Caye garbage rehabilitation activity. Another element of this would be to conduct it also on the reef at South Water Caye Marine Reserve. The trips will hopefully also encourage more students to study marine ecology, and natural

resource management. The cost to be covered by the project is of US \$12,000.00 that will cover fuel, boat captain and deck hand boat, and counterpart funding of US\$2,000.00 will cover for use of boats, fuel, educational material, screen and projector. This will be carried out in September and November 2016 and 2017.

BS.2.03.06 Staging of Awareness-raising Campaigns Focusing on the Existing MPA Regulations by Conducting Public Presentations and Consultations, Signage, Brochures, Posters

The consultant will be responsible for creating outreach material that will be used to target fishers, visitors and students. The consultant will conduct quarterly informational meeting or as needed on all the fishing community that utilizes the reserve so as to keep them informed and updated on issues affecting the reserve. The consultant will also take part in public presentation events as means to reach as much stakeholders, and will create brochures, posters and signage of the marine reserve using updated information on the reserve. The project will contribute a total of US\$14,000 for the successful implementation of the program. This will commence on May to July 2016 and 2017.

BS.2.03.08 Training of Community Members to Assist in Enforcement Activities as Community Rangers.

In an effort to create community stewardship the project will seek to empower local stakeholders as community rangers. This will greatly assist the department as one of our weaknesses in management is the inability to conduct enforcement 100% of the time. The program will seek to give stakeholders the ability to do enforcement on behalf of the department and at the same time give them a sense of ownership. This will assist the department to reach it management goals by assistance in protection and conservation of the marine ecosystems and strengthening community relationship. With a total cost of US\$8,000.00, of which US\$ 4,000.00 will be covered by the project, which includes venue, transportation, training material, food and fuel for 8 people, and a total counterpart of \$4,000.00, as in kind contribution by Fisheries Department that will cover, fuel and lodging. This will be conducted on July 2016 and July 2017.

BS.2.03.09 Training of Community Members/local Educational Institutions for Assistance with Monitoring

Through the project the department will enhance and create community awareness through environmental education/training of community researchers via the local educational institutions. The community researchers will be young students from the stakeholder community colleges that have an interest in environmental issues. They will be taught to dive, and conduct all the biological monitoring protocols that the department currently carries out. After training, the community researchers will assist in the collection of important biological data for the reserve. As a result this will help the project achieve its goal by having an increased number of community members trained, accredited and involved in activities that support the daily management of the MPA. The training of these 8 volunteers to be conducted by the Fisheries Department will facilitate the monitoring activities performed by the reserve staff along with the community researchers. The total cost of this activity is US\$26,666 to be covered by the project. The cost of these dive trainings will include the certification of the researchers to a minimum of advanced open water, the rental of equipment and the consultant. Training of the 8 community researchers will be conducted during June and July 2016 and 2017. A small stipend will be paid out to the 8 community researchers to assist in the

monitoring activities (US\$50.00) from the project funds. This will be paid throughout the lifetime of the work plan.

BS.2.03.11 Community Development Strategy

In partnership with the Wildlife Conservation Society a consultant will be hired to create a community development strategy. In order to move forward and strengthen our commitment to working with the community, a guiding document is needed to address where we have lacked and where to better address the issues. The Wildlife Conservation Society has currently been engaged with the department on this very issue with our sister reserve Glovers Reef Marine Reserve. As both reserves have the same users and communities we will engage the communities for the South Water Caye Marine reserve also. The total cost for this activity is US\$6,000 to be covered by the Fisheries Department. This will commence in January 2016 through June 2016.

BS.2.04 Strengthening of Communities/Associations.

The advisory committee is an essential part to the management strategy of the South Water Caye Marine Reserve. On a quarterly basis the board meets and issues affecting the reserve are discussed. The primary role of the board is to assist the management of the reserve by giving recommendations. The board is made up of all the key stakeholders of the reserve and hence is a tool to disseminate information to all the relevant stakeholders of the reserve.

BS.2.04.01 Strengthening of Community Associations through Support to the SWCMR Advisory Committee

Over the last three years through the commitment of Wildlife Conservation Society the advisory board was reactivated. All expenses have been covered through the partnership of the Fisheries Department and the society. The board is essential in building the relationship and partnership of the department with the local stakeholders. The Wildlife Conservation Society will assist by counterpart funding the advisory meetings. This in turn will create better communication amongst Fisheries Department, reserve staff, SWCMR advisory committee and the stakeholders of the reserve. Total cost per meeting is of US\$800.00 and per annum is of US\$3200.00. This comes to a total cost of US\$6400.00 for both years and it will be counterpart from the Fisheries Department for food, fuel and venue.

I.6 Unforeseen expenses

I.6.01.01 Unforeseen expenses

Throughout the projects lifetime the prices of materials and supplies may increase due to global changes in the market. As a contingency a small amount of money from the project is set aside to cater for these activities. These will also cover the expenses incurred from the transfer of funds, and bank charges. A total of US\$ 13,452.27 to be covered by the project is set aside.

4. SUSTAINABILITY

• INSTITUTIONAL SUSTAINABILITY.

The Fisheries department is a ministry in the government of Belize, it is endowed with enactments that are geared at sustainable development. In this vision the government of Belize has mandated that the Fisheries Department, along with its policies and laws that govern the fisheries resources, fortify and consolidate its resources for the sustainable management of the people's fishery. With this mandate it has also given the department most of the resources needed to carry out that mandate. This project will enhance the mission and vision of the department by allocating more needed resources. The Department currently has a total of six staff hired for the sole purpose of the management of the area. It has invested in a building and boats that are used for enforcement activities. Under UNESCO and National Protected Areas System (NPAS), the department has embarked on other projects for education and outreach, and financial sustainability. The department will also be able to generate funds with the rent of dive tanks from the dive shop acquired under the project.

• FINANCIAL SUSTAINABILITY.

As has been mentioned before the Fisheries Department is a ministry in the government of Belize. The project will enhance the current work being done by the fisheries department. Currently the department is funded by the government of Belize. There is a variety of ways that the department contributes back to the government and as such is an asset to the country not only the Government. The management of the CMPA contributes to the country's tourism industry by maintaining pristine areas that appeal to tourist, that in turn then contribute to the country's revenue. The protection of the CMPA ensures a strong sustainable fishery which contributes to the country's revenue consolidated funds. The department also collects a park fee from visitors that visit the CMPA. Through another project with National Protected Areas System (NPAS) the department has managed to acquire items that are to be sold to visitors. These funds will be used for the assistance and management of the area, also to assist some students from the local communities with scholarships. The program has not been as successful as projected due to the fact, that the base does not have a good pier. This project will enhance the CMPA base and allow for more revenue to be collected as the boats will be able to dock at the base visit the reserve station, purchase items from the gift shop, pay their park fees.

• ENVIRONMENT.

Environmental considerations are being made and all appropriate standards will be met for the construction of both buildings. All the items in the project being made are with due consideration to all the environment risks and environmental impact studies and all other environmental rules and regulations will be adhered to. The project will also not have any negative human effects.

• APPROPRIATE TECHNOLOGY.

The technology being introduced at the CMPA is consistent with the traditions, capacities and knowledge of the stakeholders. Some of the technology being introduced will enhance and be environmentally sound.

• SOCIOCULTURAL SUSTAINABILITY.

The project has taken into consideration the stakeholders of the CMPA and their needs. The project will greatly benefit the stakeholder communities in the area through the education and outreach component, the sea-grass project, community researchers, the specialised tour guide seminars and the casitas project. For many years the fishers of this community have been seeking the assistance from the department through projects such as this. Due to the high number of fisher folk and decrease in fishing product they have been seeking other alternatives. The project will not only assist but enhance the working relationship of the department with its stakeholders. The project will also provide many needed jobs to the local stakeholders. The projects do not discriminate in any way and seeks to benefit women children and men of all ages that are to be engaged through the project activities.

5. BWP's Annex 1: Development table format (Excel file).

In annex 1 (Excel format) you can find the development table.

6. BWP's Annex 2: Financial Planning Matrix (Excel file).

For the Biennial Work Plan, the planning has a single plan sheet, which has united both general and project expenses and you can find it in Annex 2.