UNITED NATIONS DEVELOPMENT PROGRAMME

GLOBAL ENVIRONMENT FACILITY

PROJECT NO. MAR/03/G35/A/1G/99

BLUE BAY MARINE PARK




MANAGEMENT PLAN

MINISTRY OF FISHERIES & RODRIGUES
REPUBLIC OF MAURITIUS

SEPTEMBER 2012

ANNEX

Blue Bay Marine Park (southern area): La Cambuse and Le Chaland

APPENDIX A
PARTICIPATORY PROCESS AND SWOT ANALYSIS

APPENDIX A BLUE BAY MARINE PARK MANAGEMENT PLAN
PARTICIPATORY PROCESS AND SWOT ANALYSIS

The Partnerships for Marine Protected Areas in Mauritius and Rodrigues Project (GoM, RRA, UNDP, GEF) was designed to foster sustainable use and equitable sharing of benefits from MPAs through broad based participation of stakeholders. The Project was designed as a demonstration to allow for the development of policies, institutional frameworks and co-management arrangements at three MPAs in Mauritius (Blue Bay, Balaclava and SEMPA). The vision of the project aimed toward a functioning co-managed MPA at SEMPA on Rodrigues and, based on lessons derived from this pilot, inform MPA management for the whole of Mauritius, including Blue Bay & Balaclava Marine Parks.

Specific objectives of the Project were to:

(i) develop an enabling policy and institutional framework for sustainably co-managed MPAs throughout the Republic of Mauritius

(ii) develop innovative co-management arrangements for MPAs and adapt them at a representative demonstration site in Rodrigues.

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For Blue Bay, the management plan was designed in consultation with the **Blue Bay Marine Park (BBMP) Sub-working Group**, comprised of MoFR scientific and technical staff, NGOs, water sports operators, hotels and other government agency representatives.

Participants of the Blue Bay Marine Park Sub-working Group for management planning included:

1. Art Mitchell, UNDP, Management Planner (Consultant)
2. D. Rumjeet, Ministry of Fisheries & Rodrigues (MoFR), Albion Fisheries Research Centre (AFRC), Scientific Officer
3. N. Bheemul, MoFR, AFRC, Technical Officer
4. Mira Hurbungs, MoFR, AFRC, Division Scientific Officer
5. Yajoshi Basant Rai, MoFR, AFRC, Division Scientific Officer
6. Dhanisha Gopaul, MoFR, AFRC, Technical Officer
7. Ravi Mohit, MoFR, AFRC, Scientific Officer
8. Mira S. Koonjul, MoFR, AFRC, Scientific Officer
9. Sanjeev Leckraz, MoFR, AFRC, Blue Bay Marine Park Centre, Technical Officer
10. Ramesh Ujoodha, Blue Bay Marine Park Center, Principal Fisheries Protection Officer
11. Priya Ramnauth, Ministry of Tourism and Leisure, Tourism Enforcement Officer
12. Captain Dookhun, Tourism Authority, Examiner
13. V. S. Gopal, NPCS (National Parks Conservation Service), RDO (Research Development Officer/Wildlife)
14. H. B. Naujeer, NPCS (National Parks Conservation Service), RDO (Research Development Officer/ Wetlands)
15. R. Rampudaruth, Beach Authority, Technical Officer
16. Doris Seneque, Eco-Sud, Secretary
17. Jacqueline Sauzier, Mauritius Marine Conservation Society, President
18. Sergeant Pultoo (Ps7173), National Coast Guard, Blue Bay
19. Laurent Victoire, Shandrai Hotel, Water Sports Office
20. Remy Ram Tohul, Shandrani Hotel, Boathouse Supervisor
21. Jocelin Orange, Totot, Glass Bottom Boat Operator
22. Kersley Mirbelle, Kersley and Azur Boat Tours, Boat Operator

23. S. Leelachand, Speed Boat Operator, Director
24. Joseph Armininiaud, Boat Operator
25. Jerico Apollon, Blue Lagoon Hotel, Entertainment
26. Rakesh Dookhee, Blue Lagoon Beach Hotel, Night Manager,
27. Mario DelEstrac, Île des Deux Cocos, Naiade, General Manager,
28. Woes Bakker, Eco-Sud Lagon Bleu, Project Manager
29. Ira Ovesen, UNDP, Programme Analyst (Environment)

Reports were prepared for each of seven (7) **Sub-Working Group meetings** and submitted to UNDP and all SWG participants. Meetings were held in July and August 2011:

I.	13 July	Albion Fisheries Research Centre
II.	20 July	Blue Lagoon Hotel, Blue Bay
III.	26 July	Blue Lagoon Hotel, Blue Bay
IV.	3 August	Shandrani Hotel, Training Centre
V.	9 August	Shandrani Hotel, Conference Room
VI.	16 August	Shandrani Hotel, Conference Room
VII.	23 August	Blue Lagoon Beach Hotel, Conference Room

In addition, larger combined **Project Working Group meetings** or workshops for both Blue Bay and Balaclava participants were held on **27 April** and **30 August, 2011**. Other informal meetings were held with other stakeholders either in groups or individually, including boat operators, hotel staff and government agencies.

Strengths, Weaknesses, Opportunities and Threats (SWOT) for five main issues pertaining to BBMP were identified by the Sub-working Group during meetings or workshops. The SWOT analysis results were prepared as a matrix (following) that developed during the planning period. Issues that were analyzed with SWOT were:

1. Governance, including:
   Implementation arrangements, roles and responsibilities and collaborative or co-management
2. Recreation and Tourism
3. Financing and Funds Management
4. Management Zones
5. Awareness

BLUE BAY MARINE PARK

Management Planning SWOT Matrix

No.	Issues	Current Situation		Opportunities	Threats
		Strengths	Weaknesses		
1.	**Governance** Including: implementation arrangements, roles and responsibilities, and collaborative or co-management (27/4/11) (*edited – entries not directly relevant to Governance are moved to other Issues*)	• Structure in place involving institutions like Fisheries, etc. • Area already demarcated • Adequate regulations and manpower • Act, Regulations, enforcement and accountability in place • Committee for management of BB is existing with involvement of various stakeholders (NGOs, fushermen, Ministries and other authorities • A Blue Bay Steering Committee is already in place • Cross-sectoral Government representation • Good amount of people for law enforcement • Good governance • Appropriate manpower to enforce the laws and regulations in the MP • Regular consultations with Min. of Fisheries and Coast Guard to know if existing regulations are being properly enforced • Coast Guard regularly establishes contraventions for proper management	• No coordination (working as individuals; need more synergy) • Permit system is not fully operating • Inadequate staff and funding • Slow decision-making • Limited stakeholders involvement • Lack of transparency	• NGOs willing to participate • Educate fishermen and other people on the importance of the Marine Park • Using volunteers to help in management • Co-management is possible • International recognition as a Ramsar site • International cooperation and support because it is a Ramsar Site (wetland of international importance) • Many people are willing to help and change • Government can facilitate meetings in Mahébourg • Strengthening networking at the regional level • Exchange of information and expertise	• Lack of funds/funding • Lack of political will • Lack of capacity for enforcement of Laws • No community support • Changes in management • Political decisions to use more of the site for tourist development and construction of more hotels • Political interference • Conflicts of interest among co-management stakeholders • Potential for uncontrolled development • People are not keen to change if they do not receive economic benefits
2.	**Recreation and Tourism** (26/7/11)	• Maurice Île Durable • Mauritius as a tourist destination • Easily accessible • Beautiful environment • Employment for local community • Attraction • Involvement of local community: boat operators are on board • Safe	• Lack of staff • Not enough communication and awareness • Not well advertised • Excess boat traffic • Number of boats operating • Lack of adequate equipment for proper patrolling and enforcement	• Product development • Infrastructure development • Proper management • Control and monitoring • Type of motors (electric?) • Capacity building for law enforcement • Include BBMP in adverts of Mauritius to attract ecotourists • Use income generated from tourism in	• Having no cooperation of the hotels • Lack of funding • Pollution could occur on a larger scale • Political interference • Non-permissible activities (e.g., feeding fish, loud noise) • Corruption • Pollution, speeding, environment

No.	Issues	Current Situation		Opportunities	Threats
		Strengths	Weaknesses		
	Recreation and Tourism (continued)	• Job creation • Existing zoning plan • Existing regulations enforcement in place • Spectacular escape (landscape?) • Lots of visitors - BBMP is a popular brand • Internationally recognized • Park demarcated • Development (infrastructure) • Emergency Response Service • Social development (entertainment) • Income /financial (Government and community) • Economic development • Generating employment for local people • Ministry has already published info about the Park through pamphlets • Zoning plan • Collaboration of the local community • Sensitization of the community • Tourism and recreation • Zones for permissible activities • Regulations are in place	• Type of motors in operation (polluting) • Beach hawkers (pester tourists) • Littering • Lack of adequate equipment for enforcement • Lack of training for officers • No respect of the law in front of the tourists (bad image) • Pollution in different ways • No proper management • No collaboration or co-management • No proper monitoring/enforcement • Too many activities • Lack of information • Too many pleasure craft boats • Park is small • Lack of control of movement of persons, swimmers • Need for defined regulations • Insufficient enforcement • No radar to track speeding boats • Poaching & illegal fishing	BBMP to improve enforcement in the park/CSR • Review permissible activities • Phasing out line fishing on the shore and in the permissible zones • Regulate and control the number of boat operators • Efficient management • Discipline • Responsible behavior through awareness • Better control of the individuals//persons	degradation • Coral bleaching • Increased illegal operators/ not controlling illegal operators • Conflict between boat operators • Negative reaction form certain stakeholders • Introduction of alien spices • Increase in predators (e.g., barracuda) • Aircraft crash • Run-off water from residential areas • Exceeding carrying capacity • Negative impacts from climate change • Erosion of the beach • Limited public access • BBMP will be only a “paper park” • Pollution risks • Misleading information • Vested interests of promoters • More conflicts • Overdevelopment in the residential zone • Waste water? • Boats breaking corals with anchor • Too accessible to the pubic= too open • Public beach • Degradation of the marine environment • Corruption • Mismanagement • Protest from the public for having to pay user fees • No corporation/association for users (e.g., paying fees) • Depriving leisure activities to the poor communities

No.	Issues	Current Situation		Opportunities	Threats
		Strengths	Weaknesses		
3.	**Financing and Funds Management** (27/6/11)	• Dedicated staff in the Ministry • Fee structure in place for activities • "Fund" already allocated in the Ministry of Forestry & Rodrigues • Specific unit at the Ministry dedicated to BBMP • MoFR annual budget requests from Treasury are usually met	• Daily fee mechanism not yet functional to make park sustainable • MPA fund not in place • Payment of fees at the HQ in Port Louis • No payment by beach users = public • No transparency of money spent • Collection of daily fees permit not in place • Mismanagement of funds (wastage) • Funds not integrated/ use for providing infrastructure/ facilities to operators/public • Daily fee is not in place • Daily activities not yet introduced • Revenue from permits goes to central Treasury	• Revenue generation • CSR fund to NGOs • BBMP "bank account", not consolidated fund • Self-financing • Funds allocated to park should be managed by responsible bodies • Everybody must pay, also beach users • Introduce some minimal fee to beach users to pay for park services • Exit tax paid by visitors/ tourists at airport to be directed towards BBMP fund • Contribution to (from?) a national fisheries fund • Parking fees	• Corruption • Mismanagement • Protest from the public for having to pay user fees • No corporation/association for users (e.g., paying fees) • Depriving leisure activities to the poor communities
4.	**Management Zones** (3/8/11)	• Zones identified with the fishermen (1990's) • Demarcation buoys in place • Activities are controlled • Better control (enforcement of carrying capacity) • Facilitate management • Facilitate awareness • Management of buoys done once a week • Zones already demarcated with buoys and are being regularly maintained • MPA Regulations in place • Users awareness of the zoning system in place	• Mooring system of buoys not eco-friendly • Lack of enforcement • MPA fund not in place • Demarcation buoys need constant maintenance • Buoys are costly with high maintenance • User conflicts • Not respected by people • Overlapping of activities within zones making control difficult • Understaffing • Little information about	• Restriction of activities • More sensitization about the different zones to the communities • Research work can easily be done • Need different buoys that are more resistant to cyclones • Funding for specific zones • No transfer of fuel or oil that may cause pollution • No anchoring (more mooring buoys) • Use of eco-friendly mooring systems (pins, helix, manta) • Additional mooring buoys for boats (6 now available) • Park rangers for guiding tourists within	• Lack of funding • Lack of political will • Illegal fishing due to lack of staff • Number of boats are not controlled • Resistance from users • User conflicts • Flexibility restricted • Outdated regulations • New fertilizers used by sugar cane estates impacting Zone B • Continued fish feeding inside Zone A • Storm-water sedimentation entering the conservation zone • Tourists are not aware of regulations inside BBMP

No.	Issues	Current Situation		Opportunities	Threats
		Strengths	Weaknesses		
	Management Zones (continued)		zones to people coming from outside • Limited access to public • Misconduct • No clear boat lane - boats taking their own route	Conservation Zones • Permits should be issued to skippers not boat owners (This will help better control persons individually. Should they do anything wrong they will be penalized.) • Leaflets to raise awareness of zones • Enforce speed limitations • Better equipment for controlling activities • New techniques for buoy placement, new buoys, less maintenance, environmentally friendly • New regulations (law enforcement) to current speed, more controlled • Penalty should be to cancel their license or restrict them from having access for a certain period of time • Recruitment of MPA staff, rangers (enforcement) • More training to MPA staff rangers (enforcement) • Signboards to be explicit (e.g., Replication of Shandrani Hotel's sign boards to other locations within BBMP) • Only 4-stroke or electric outboard motors • Regularly review and evaluation of zoning boundaries • Create no-take areas • Infrastructure in place • Signs to make people aware of the different activities allowed and not allowed in the zones • Place a sign on the end of the jetty with regulations • Coordination and collaboration among the different institutions concerned with BBMP	• Different authorities exist for management of BBMP. Their points of view may differ causing lack of any action

No.	Issues	Current Situation		Opportunities	Threats
		Strengths	Weaknesses		
5.	**Awareness** (3/8/11)	• NGO in place • TV programmes (media) • Media, newspaper, radio • Participation of NGOs. • Pamphlets in BBMP are distributed to tourists and visitors • Sign boards and sign posts already in place at specific locations • RAMSAR site (international recognition) • School children visiting the marine park are briefed on the importance of the park and some basic safety measures at the sea by NCG • Key stakeholders are known • Awareness campaign initiated • Articles in press • Key stakeholders are known • Workshops for teachers and students	• Sign boards not at the right place • Level of participation low • Skippers do not know anything about MPA • Lack of promotion of BBMP • No coordination with locals due unfulfilled promises in the past • Awareness campaign is not reaching the rural community	• More information on RAMSAR site in media (proper presentation) • Upgrade the visits at AFRC and park center (touch pool) • Inventory of the park (biodiversity) • Inclusion of BBMP in the science curriculum of secondary schools and on marine conservation in primary schools • Regular guided visits by school children • Benefits can be derived by the local communities • While training skippers, Tourism Authority to make them aware of the MPA regulations • Training of skippers as eco-guides • Training of teachers • Local, regional and global recognition • Awareness to all users of the MP • Specific website for BBMP • Annual "open days" at BBMP on specific dates (e.g., World Environment Day, Earth Day, Ocean Day) • Development of documentaries by international media • Permits only for English speaking skippers and those that have the most knowledge about the lagoon • Visits for ladies organizations • Strengthen collaboration among institutions working for the MPA • Celebration of environment events • Have a BBMP boat from the visitor center – tickdet receipt will give a 10% discount in the BBMP gift shop • Awareness campaign to reach remote coastal areas	• Lack of continuity • Lack of funding • Locals do not want to be involved • Lack of will at various levels and institutions • Hotels not supporting management or fully recognizing problems in BBMP

APPENDIX B
IUCN CATEGORY II
NATIONAL PARK

APPENDIX B

IUCN CATEGORY II: "NATIONAL PARK" DESCRIPTION AND EXAMPLES

From: *Guidelines for Protected Area Management Categories.* IUCN World Commission on Protected Areas with the assistance of the World Conservation Monitoring Centre - WCMC (IUCN 1994)

CATEGORY II: *National Park: protected area managed mainly for ecosystem protection and recreation*

Definition

Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.

Objectives of Management

- to protect natural and scenic areas of national and international significance for spiritual, scientific, educational, recreational or tourist purposes
- to perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources, and species, to provide ecological stability and diversity
- to manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will maintain the area in a natural or near natural state
- to eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation
- to maintain respect for the ecological, geomorphologic, sacred or aesthetic attributes which warranted designation
- to take into account the needs of indigenous people, including subsistence resource use, in so far as these will not adversely affect the other objectives of management

Guidance for Selection

- The area should contain a representative sample of major natural regions, features or scenery, where plant and animal species, habitats and geomorphological sites are of special spiritual, scientific, educational, recreational and tourist significance.
- The area should be large enough to contain one or more entire ecosystems not materially altered by current human occupation or exploitation.

Organizational Responsibility

Ownership and management should normally be by the highest competent authority of the nation having jurisdiction over it. However, they may also be vested in another level of government, council of indigenous people, foundation or other legally established body which has dedicated the area to long-term conservation.

Equivalent Category in 1978 System: National Park

EXAMPLES OF PROTECTED AREA CATEGORY II: NATIONAL PARK
Protected Area Managed Mainly for Ecosystem Protection and Recreation

CANAIMA NATIONAL PARK, Venezuela

National designation Canaima was established as a national park in 1962 under the *Forest Law of Lands and Water, 1943*. It presently covers 3,000,000ha of the Gran Sabana and the mid-Río Caroní. Land is owned by the Venezuelan government, although the traditional occupants, the Pemón, have claimed land rights.

Legal basis for management Provisions for a national park under the 1983 *Organic Law of Territorial Planning* include protection of Canaima as a natural area unaffected by human disturbance, and encouragement of recreation, educational activities and research. Hunting and collection of wildlife is forbidden.

***In situ* management** Objectives formulated in the management plan include provisions for indigenous agricultural production under strict regulation. Tourism is encouraged but restricted to designated areas.

Geography Canaima includes the uplands of the Gran Sabana and the eastern tepuis (table mountains) of the Roraima Range, as well as the sandstone plateau of Chimantá and Auyán-Tepui and the north-western Canaima lowlands. A main road from Ciudad Bolívar runs along the eastern border of the park, bisecting its south-east corner. There are no other metalled roads within the park, the western section being accessible only by air.

Nature conservation values The Guayana Shield, formed some 600 million years ago, exhibits an extraordinary geomorphology produced by weathering processes. The Gran Sabana is an undulating plateau between 800m and 1500m, from which rise the tepuis up to 2000m above the plateau. The tepuis are flat-topped mountains with almost 90? slopes. There are numerous waterfalls, including Angel Falls, the world's highest with a free fall of 1002m. The high degree of endemism found on the summits of the tepuis has led to the recognition of *Pantepui* as a unique biogeographical entity. For example, *Pantepui* is home to 35–40 endemic bird species, most of which occur within the park.

Cultural and social values The park protects the headwaters of the Caroní River which supplies Guri, the country's largest hydroelectric power station and source of 60% of the nation's energy. The park is sparsely inhabited, mostly by indigenous people and with less than one person per km?. The forests and savannas have been occupied for centuries by various groups of Amerindians of the Carib family, collectively known as the Pemón. Many Pemón maintain traditional lifestyles of swidden agriculture, hunting and gathering. They also trade tools and artifacts. The park currently receives 100,000 visitors per year.

Reasons for classification as II (National Park) Canaima is an exceptionally beautiful natural landscape, centred on the Guayana Shield, with its unique and fragile geological, biological and cultural features. As one of the largest national parks in the Neotropics, it is of sufficient size to conserve ecosystems representative of the Guayana Shield. It is protected, with legal provisions for research, education and recreation, and rights granted to the indigenous inhabitants.

KAKADU NATIONAL PARK, Australia

National designation Kakadu was established as a national park in three successive stages from 1979 to 1987, with additions in 1989 and 1991, under the *National Parks and Wildlife Conservation Act, 1975*. Approximately one-third of the 2,027,710ha is owned by two Aboriginal Land Trusts, although this is leased to the Australian Nature Conservation Agency for management as a national park. The rest of the park is owned by the Federal Government.

Legal basis of management The *National Parks and Wildlife Conservation Act* provides the primary legal basis for the protection of natural regions, scenery, flora and fauna for scientific, educational and recreational purposes, although six other legal instruments are relevant to the park.

***In situ* management** Management is overseen by the Australian Nature Conservation Agency and a Board of Management with an Aboriginal majority. Consultation with the traditional Aboriginal landowners is extensive. The general management principles are: to allow the Aboriginal landowners to exercise their rights; to conserve natural and cultural features; to provide for public appreciation without conflicting with the first two principles; and to promote the park's values to visitors.

Geography Situated between Wildman and East Alligator rivers in the Northern Territory, Kakadu lies 200km east of Darwin. Conditions range from a wet coastal belt facing the Van Diemen Gulf to a drier interior.

Nature conservation values Kakadu supports a significant fraction of Australia's flora and fauna, with more than 51 mammal, 275 bird, 75 reptile, 25 frog and over 55 freshwater and estuarine fish species. This extremely rich fauna includes 33% of Australia's bird species and 25% of its fish species. The wetlands are an important wintering habitat for non-breeding Asiatic waders. Over 1000 species of plants, representing 13 communities, have been recorded in preliminary surveys.

Cultural and social values The area is outstanding in the antiquity and quality of its 1000 archaeological sites, some dating back 25,000 years. Approximately 3000 rock art sites have been located so far, but it is estimated that there are double this number of such sites in the park. Excavated sites have revealed evidence of the earliest human settlement in Australia and the world's oldest evidence for the technology of edge ground axes; occupation appears to date back some 69,000 years. Many sites continue to hold religious significance for the Aboriginal people. Visitors may exceed 40,000 in peak months.

Reasons for classification as II (National park) Kakadu's spectacular landscape reflects Australia's historic interactions with New Guinea and Asia, resulting in an exceptionally diverse flora and fauna. The area is relatively pristine and includes a complete river system and representative landforms, habitats and associated species, all of which are protected for scientific, educational and recreational purposes. Kakadu is an important Aboriginal site; provision is made for Aboriginal landowners to continue to exercise their rights.

RAS MOHAMMED NATIONAL PARK, Egypt

National designation Ras Mohammed was notified as a **national marine park** under *Decree No. 1067* in 1983. Subsequently, in 1989, it was classified as a national park and extended to 61,500ha to encompass Tiran Island, becoming the largest marine park in the region.

Legal basis of management The site is protected under *Presidential Law concerning Natural Protectorates No. 102, 1983* and *Decree No. 1067, 1983*. Hunting and fishing are prohibited, as is the removal of any material from the park, or the construction of buildings or roads.

***In situ* management** has increased in intensity and effectiveness since 1988, based on a series of management plans. Parts of the park are closed to the public, while areas accessible by road or close to boat moorings are designated for intensive visitor use. Following considerable initial investments, the park is now becoming self-financing through a system of entrance fees. There are a number of full-time, highly qualified rangers, equipped with vehicles and boats. Camping is restricted to one small site.

Geography Ras Mohammed lies at the southernmost tip of the Sinai Peninsula. The terrestrial area is dominated by raised fossil reefs ranging in age from 20 million to 75,000 years. Offshore are the shallow waters (95m) of the Gulf of Suez to the west and the 1800m deep Gulf of Aqaba to the north-east. Fringing coral reefs encircle most of the site, and in a number of places the reef front is vertical or overhangs for at least 100m. Tiran Island is dominated by arid mountains, with small areas of salt marsh on the coastline. Fringe reefs again dominate the coastline, with four large patch reefs in the Tiran Straits. Tides and strong currents occur in the 70–1000m wide channels between the reefs and islands.

Nature conservation values Ras Mohammed is a rich and vulnerable marine environment, representing one of the few protected coral reefs and mangrove forests in the region. An interesting and unusual feature is the relationship between pelagic fish communities and typical northern Red Sea coral reef communities in the deep offshore waters. Tiran and it neighbouring islands possess the world's second largest colony of osprey.

Cultural and social values For centuries the Bedouins have used the area for fishing although few, if any, still fish within the confines of the park. The park is uninhabited and now being developed for tourism, particularly diving activities. Tens of thousands of tourists visit the park annually from nearby towns, most of who snorkel or dive to see the coral reefs.

Reasons for classification as II (National Park) Ras Mohammed is an important coastal site, incorporating large areas of diverse fringing coral reefs typical of the northern Red Sea. It also features one of the most northerly mangrove communities in the western Indo-Pacific. Large and uninhabited, the park is legally protected and provides for recreation.

TONGARIRO NATIONAL PARK, New Zealand

National designation The summits of Tongariro, Ngauruhoe and Ruapehu were constituted as New Zealand's first national park in 1894, the central volcano area having previously been gifted to the government in 1887. The *Tongariro National Park Act, 1922* provides for the establishment of the park, which currently covers 79,596ha of government-owned land.

Legal basis of management Under the *National Parks Act, 1980* Tongariro is to be preserved in as natural a state as possible, but with provision for public access.

***In situ* management** The principal management goals are: to preserve the natural scenery and resources; to promote an appreciation of nature and cultural and historic values; and to provide for recreation. The park is zoned into natural environment, two wilderness zones, three service areas and some 18 sites of unique biological or geological interest. Ski-field development has been restricted by zoning. Maori interests are represented by a permanent seat on the Tongariro/Taupo National Parks & Reserves Board. Native flora have been reduced or eliminated by exotic herbivores such as red deer and possum. Invasive lodgepole pine threatened to convert native plant communities into forest but control measures have been taken.

Geography Tongariro occupies the central volcanic plateau of North Island in the Tongariro and Wanganui regions. The park boundary encircles the Ruapehu, Ngauruhoe and Tongariro mountain massif at an altitude of 500-1550m. An outlier, 3km north of the main park area and separated from it by Lake Rotoaira, includes Lake Rotopounamu, Mount Pihanga and Mount Kakaramea.

Nature conservation values The crater lake on Ruapehu is unique due to its high frequency of eruption and glacial setting. It is an excellent example of the interaction of magma and lake water. The park also protects deposits from the Taupo eruption 1800 years ago, the most powerful volcanic eruption ever known. Habitats are diverse, ranging from remnants of rain forest to nearly barren icefields. Podocarp-broadleaf rain forest, beech forest, scrub and tussock are the predominant communities. The vertebrate fauna is restricted to mainly birds, some threatened. Native mammals are represented by two bat species.

Cultural and social values The area has been occupied by Maoris since they first arrived from Polynesia. Ethnic mythology identifies the mountains in the park with 'tupuna' or god-like ancestors. Until the land was given to the nation in 1887, the area was occupied by the Tu Wharetoa. European attempts to introduce sheep farming ceased by the 1920s. Recreation is important to the local economy.

Reasons for classification as II (National Park) Tongariro is one of the most spectacular volcanic sites in the South-West Pacific, with the most frequently active composite volcanoes in the world. The park is protected to preserve its natural scenery and resources, and to provide for recreation.

WATERTON LAKES NATIONAL PARK, Canada

National designation Waterton Lakes was established as a national park in 1911. It is protected under the *National Parks Act, 1930*. Land (totaling 50,000ha) is federally owned and under the jurisdiction of Parks Canada, apart from 1648ha of timber reserve managed by the Blood Indian Band. In 1932, Waterton Lakes was combined with Glacier National Park, Montana to become the world's first “International Peace Park”.

Legal basis of management Under the *National Parks Act,* Waterton Lakes protects significant biological and archaeological features, while encouraging tourism, local employment opportunities, and scientific research. Industrial activities are prohibited.

***In situ* management** The park is zoned[1] in accordance with the 1978 management plan. Class I zones comprise the most unique sites, afforded the highest degree of protection. Class II and III zones provide for the preservation of wilderness and natural environments, respectively. Class IV and V zones are reserved for recreation and visitor service centres, respectively. Grazing of livestock, logging and commercial fishing are not allowed in the park.

[1] These zones (Class I-V) bear no relation to the IUCN Protected Area Management Categories described in these guidelines.

Geography The Park lies on the eastern margin of the Rocky Mountains, Clark and Border ranges, in the south-western corner of Alberta Province. An obvious feature of the park is the sudden transition from prairie to mountain landscape: a contrast which is emphasised by the virtual absence of intervening foothills. The dominant landforms are of glacial origin.

Nature conservation values Waterton Lakes represents a species-rich locale, lying at the intersection of several important floristic regions. Some 870 species of vascular plants, 182 bryophytes and 218 lichens have been recorded. The small area of grasslands is one of only a few good examples protected in the Canadian national parks system. Waterton Lakes is noted for its abundance of wildlife, and features seasonal migrations of large ungulates.

Cultural and social values Waterton Lakes is one of the most significant archaeological areas in Alberta, with over 200 sites identified. A heavily-used resort town lies within the park. In 1986, more than 500,000 people visited the park.

Reasons for classification as II (National Park) Together with the contiguous Glacier National Park in Montana, U.S.A., Waterton Lakes protects an important ecological unit while providing for tourism.

SAGARMATHA NATIONAL PARK, Nepal

Sagarmatha is a large (114,800ha), ecologically discrete unit of geological, biological and cultural importance. Geologically one of the most interesting regions in the world, with outstanding scenic and wilderness qualities, it includes the world's highest peak, Mt Everest. Under the *National Parks and Wildlife Conservation Act, 1973*, Sagarmatha is designated for conservation, management and utilisation of its plants, animals and landscape. Prohibited activities include damage to plants or animals, residence and livestock grazing. Management is directed towards watershed protection to safeguard the wildlife and the interests of the resident Sherpas, as well as those communities living further downstream. The park is zoned into undisturbed cores and other areas, which provide for tourism and sustainable resource use by the indigenous Sherpas. The 63 Sherpa enclaves within the park are exempt from park regulations. Agro-pastoralism is still practised, but goats have been removed from the park to minimise overgrazing. Tourism is now an integral part of the local economy. A Park Advisory Committee provides a mechanism for residents to participate in the park's management.

TATRANSKY NATIONAL PARK, Slovakia

The park lies in the Tatra Mountains, relatively young (late-Tertiary) and part of the Carpathian Range. It features a mix of species, some endemic, from northern and southern Europe. Covering 74,111ha and established as a national park under the *Slovak National Council Act, 1948*. Tatransky is protected under the *State Nature Conservancy Act, Law 1/SNR 1955* as an area valued for its natural resources and recreational importance and little influenced by human activities. The legislation provides for zoning, with recreational development restricted to a controlled area. Hunting is prohibited. Over 50% of the land is owned by the government, the rest is under municipal, private and church ownership. About 4,000 people reside within three villages inside the park. Part of the core area was traditionally used for pastoralism. The main pressure today is from the four million annual visitors. Park management has developed strong research and public education programmes.

APPENDIX C
RAMSAR CONVENTION AND CRITERIA FOR WETLANDS OF INTERNATIONAL IMPORTANCE

APPENDIX C
RAMSAR CONVENTION AND CRITERIA FOR WETLANDS OF INTERNATIONAL IMPORTANCE

The **Convention on Wetlands** (Ramsar, Iran, 1971), called the "**Ramsar Convention**", is an intergovernmental treaty that embodies the commitments of its member countries to maintain the ecological character of their Wetlands of International Importance and to plan for the "wise use", or sustainable use, of all of the wetlands in their territories. Unlike the other global environmental conventions, Ramsar is not affiliated with the United Nations system of Multilateral Environmental Agreements (MEAs), but it works very closely with the other MEAs and is a full partner among the "biodiversity-related cluster" of treaties and agreements.

More information may be found at the Ramsar website: http://www.ramsar.org/.

The Ramsar Mission: "the conservation and wise use of all wetlands through local and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world".

Definition of Wetlands: The Convention uses a broad definition of the types of wetlands covered in its mission, including lakes and rivers, swamps and marshes, wet grasslands and peatlands, oases, estuaries, deltas and tidal flats, **near-shore marine areas, mangroves and coral reefs**, and human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans.

At the centre of the Ramsar philosophy is the "wise use" concept. The wise use of wetlands is defined as "the maintenance of their ecological character, achieved through the implementation of ecosystem approaches, within the context of sustainable development". "Wise use" therefore has at its heart the conservation and sustainable use of wetlands and their resources, for the benefit of humankind.

Blue Bay was nominated and then declared a Ramsar site, a wetland of international importance, in September 2008. Blue Bay meets the criteron for "*Sites containing representative, rare or unique wetland types*" and six of the nine specific critera for "*Sites of international importance for conserving biological diversity"*.

THE CRITERIA FOR IDENTIFYING WETLANDS OF INTERNATIONAL IMPORTANCE

(01/08/1999) Adopted by the 7th (1999) and 9th (2005) Meetings of the Conference of the Contracting Parties, superseding earlier Criteria adopted by the 4th and 6th Meetings of the COP (1990 and 1996), to guide implementation of Article 2.1 on designation of Ramsar sites.

Group A of the Criteria. Sites containing representative, rare or unique wetland types

- *Criterion 1*: A wetland should be considered internationally important if it contains a representative, rare, or unique example of a natural or near-natural wetland type found within the appropriate biogeographic region.

Group B of the Criteria. Sites of international importance for conserving biological diversity

Criteria based on species and ecological communities:

- *Criterion 2*: A wetland should be considered internationally important if it supports vulnerable, endangered, or critically endangered species or threatened ecological communities.
- *Criterion 3*: A wetland should be considered internationally important if it supports populations of plant and/or animal species important for maintaining the biological diversity of a particular biogeographic region.
- *Criterion 4*: A wetland should be considered internationally important if it supports plant and/or animal species at a critical stage in their life cycles, or provides refuge during adverse conditions.

Specific criteria based on waterbirds:

- *Criterion 5*: A wetland should be considered internationally important if it regularly supports 20,000 or more waterbirds.
- *Criterion 6*: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of waterbird.

Specific criteria based on fish:

- *Criterion 7*: A wetland should be considered internationally important if it supports a significant proportion of indigenous fish subspecies, species or families, life-history stages, species interactions and/or populations that are representative of wetland benefits and/or values and thereby contributes to global biological diversity.
- *Criterion 8*: A wetland should be considered internationally important if it is an important source of food for fishes, spawning ground, nursery and/or migration path on which fish stocks, either within the wetland or elsewhere, depend.

Specific criteria based on other taxa:

- *Criterion 9*: A wetland should be considered internationally important if it regularly supports 1% of the individuals in a population of one species or subspecies of wetland-dependent non-avian animal species.

BLUE BAY MARINE PARK NOMINATED SECOND RAMSAR SITE

GIS - Sept 10, 2008: Blue Bay Marine Park which covers a marine area of 353 hectares was officially nominated this morning as the Second RAMSAR Site for Mauritius in the presence of the Minister of Agro Industry and Fisheries, Dr. Arvin Boolell. The listing of the Blue Bay Marine Park under the RAMSAR Convention is based on established criteria as the site supports habitats for vulnerable species, threatened ecological communities and high bio-diversity of fish.

The first proclaimed RAMSAR Site for Mauritius is the *Rivulet Terre Rouge Estuary Bird Sanctuary*. The Blue Bay Marine Park was proclaimed National Park under the Wild Life and National Parks Act in October 1997. It was then declared a Marine Protected Area and designated a Marine Park in June 2000, under the Fisheries and Marine Resources Act 1998. The Fisheries and Marine Resources (Marine Protected Areas) Regulations were amended in 2007, through a zoning system to control permissible activities in the marine park.

The Park includes the lagoon and extends one kilometre seaward from the reef crest. It harbours mangroves, algae, sea grasses, corals, fish and other marine organisms. Presently, 38 species of corals and 72 species of fish have been identified in the Park. The RAMSAR Convention's mission is the conservation and wise use of all wetlands through local, regional and national actions and international cooperation, as a contribution towards achieving sustainable development throughout the world.

The Convention adopted in the Iranian city of Ramsar in 1971 and which came into force in 1975 is the only global environmental treaty that deals with a particular ecosystem. The Convention uses a broad definition of the types of wetlands covered in its mission, including swamps and marshes, lakes and rivers, wet grasslands and peat lands, oases, estuaries, deltas and tidal flats, near-shore marine areas, mangroves, coral reefs, and also human-made sites such as fish ponds, rice paddies, reservoirs, and salt pans.

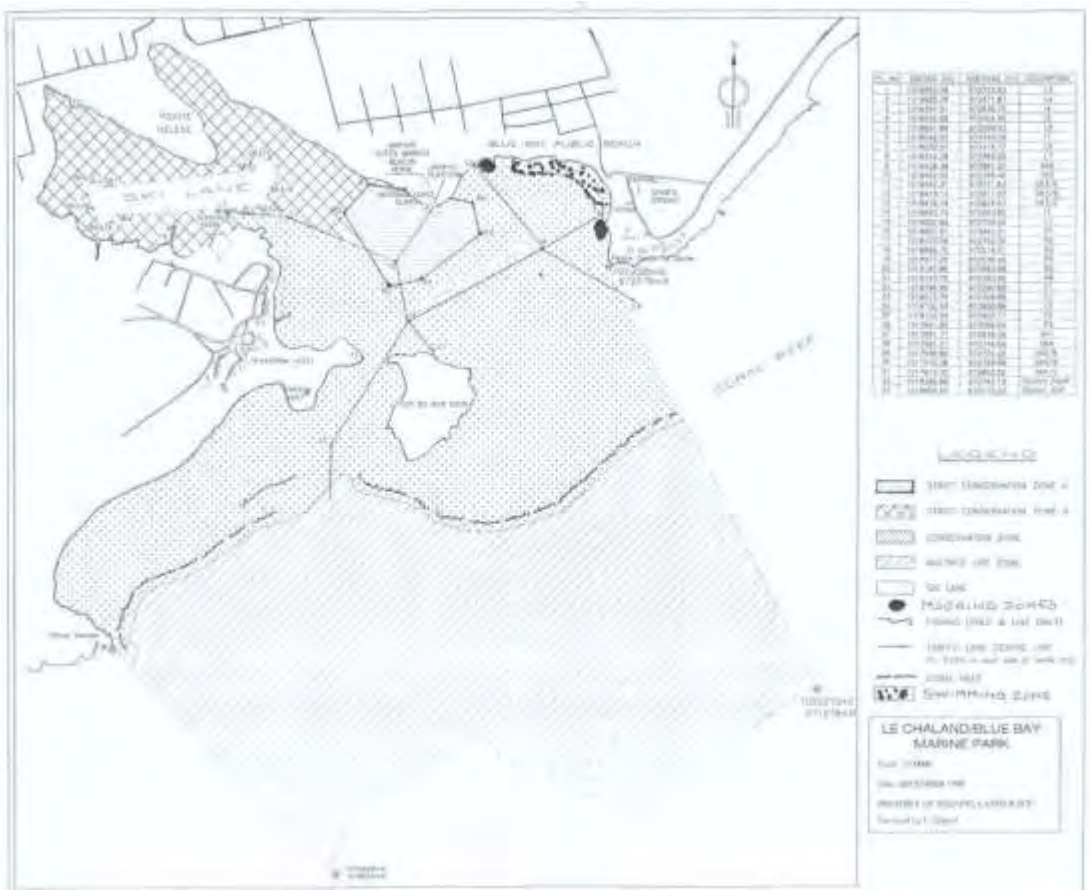
Government Information Service, Prime Minister's Office, Level 6, New Government Centre, Port Louis, Mauritius. Email: infserv@intnet.mu

Note: BBMP was nominated and declared a Ramsar site, Wetland of International Importance, on 31 January 2008. The above article describes the inauguration ceremony.

APPENDIX D
MAPS

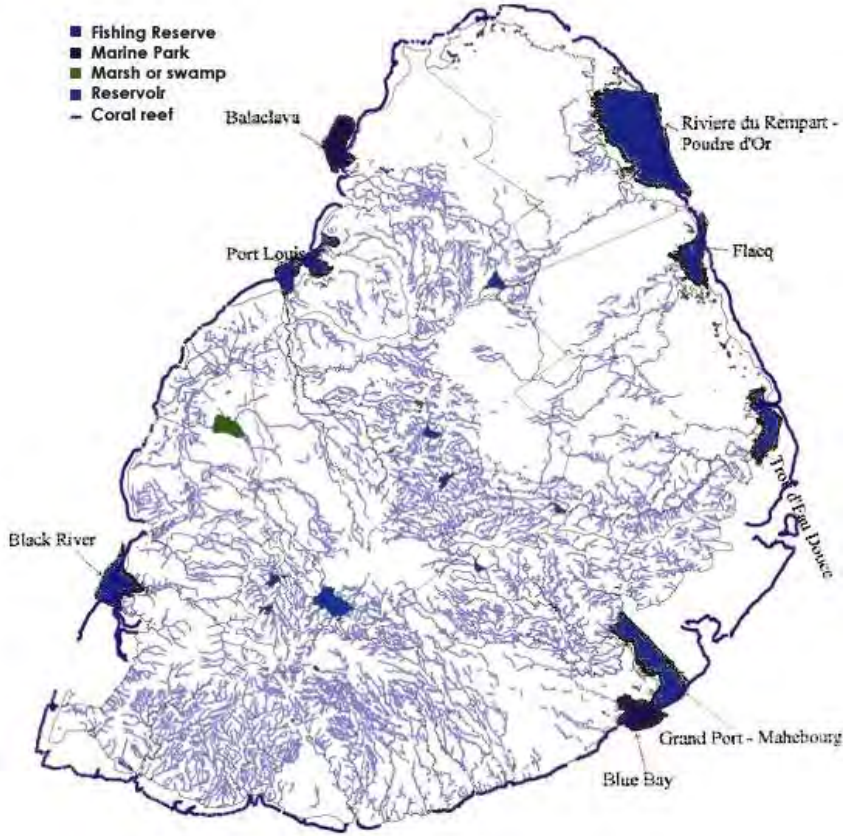
D-1: Location of Blue Bay, Mauritius
(http://mauritiusattractions.com/mauritius-topographic-map-i-65.html)

D-2: Satellite image of Blue Bay Marine Park



D-3: Boundary and management zones (MoFR)

D-4: Shandrani boat house map of Blue Bay Marine Park (Shandrani Hotel)



D-5: Location of Mauritius fishing reserves, including Grand Port-Mahebourg Fishing Reserve (CBD 2004)
Note that a small portion of this Fishing Reserve, south of Blue Bay Marine Park, is not shown

APPENDIX E
JOB DESCRIPTION:
IEC PROGRAMME AND
VISITORS CENTRE COORDINATOR

APPENDIX E

JOB DESCRIPTION: INFORMATION, EDUCATION & COMMUNICATION (IEC) PROGRAMME AND VISITORS CENTRE COORDINATOR

POST: **INFORMATION, EDUCATION & COMMUNICATION (IEC) PROGRAMME AND VISITORS CENTRE COORDINATOR**

ORGANISATION: Ministry of Fisheries and Rodrigues, Marine Conservation Division

DEPARTMENT: Blue Bay Marine Park

DUTY STATION: Blue Bay

EFFECTIVE DATE: January 2013

QUALIFICATIONS:

- A degree from a recognised institution in Education, Environmental Science, Communication, Marine Biology, Sustainability Studies or equivalent preferred OR a Cambridge Higher School Certificate (HSC) with credit in at least two subjects including English and French
- At least 3 years of relevant experience in Education and Communication and as an environmental or outdoor educator with experience in operating a Visitors Centre, including exhibits design and maintenance
- Familiarity with marine ecosystems, marine biology, environmental science and sustainable systems as well as Marine Protected Areas activities
- Customer service experience and general office skills
- Computer literate (Microsoft: Word, Excel, Access, PowerPoint, Publisher) with specific knowledge of databases and inputting of data into a database
- Excellent written and verbal communication skills and ability to effectively communicate with the public
- Fluent spoken and written English and French; fluency in Mauritian Creole would be an asset

Other Skills and Experience will be considered an advantage:

- Experience with community participation in coastal and marine management
- Experience with environmental sustainability or alternative energy (e.g., wind, solar)
- Experience with coral and reef fish identification
- Demonstrated ability in swimming and snorkeling
- SCUBA certified preferred but not required

DUTIES:

1. Responsible for the Environmental Awareness (IEC) Programme for BBMP, including:
   - Develop and implement educational activities for schools and BBMP public and private stakeholders
   - Collaborate with other national and international institutions in planning educational events in marine conservation.
   - Develop community participation activities in the management of BBMP and promote gender involvement
   - Coordinate volunteers for the IEC Programme
2. Responsible for *IEC Campaign Action Plan* implementation for BBMP, including:
   - Establish and regularly update and upgrade the BBMP website in English and French
   - Prepare a BBMP Newsletter in collaboration with the BBMP Management Unit
   - Collate Annual Report for BBMP in collaboration with respective unit/section.

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- Write press releases, organize media events at national and international level, and define marketing strategies to support and enhance a BBMP communication campaign
- Develop and maintain excellent relations with local and international media
- Organise and attend meetings, workshops, conferences on BBMP and other MPA activities and in environmental awareness at local, national and international level
- Coordinate media activities with the BBMP Management Unit, respond to media inquiries and serve as spokesperson when needed.
- Produce news stories, features, simple videos, blogs, and other media in both English and French

3. Responsible for coordinating the day to day operations of the BMP Visitors Centre (*Coastal & Marine Sustainability Center* - CMSC), including:
   - Provide a friendly environment by greeting visitors, distributing park information and brochures, and other administrative duties as needed
   - Understand and promote the principle of co-management and engage and work with SEMPA stakeholders as appropriate
   - Establish and maintain contacts with international sustainability centers for technical support
   - Coordinate volunteers for the CMSC
   - Maintain exhibits and alternative energy generators (solar, wind)
   - Maintain accurate counts of visitors, email, and phone inquiries
   - Produce monthly visitor count reports and record visitor questions, comments/suggestions
   - Conduct visitor surveys as necessary
   - Maintain gift shop and receives payment of any materials sold as well as donations, and creates daily deposit slips, reconciles revenue intake daily/weekly
   - Keep detailed records of all sales/donations and submits to Financial Officer
4. Support and where appropriate participate in giving training
5. Understand and promote the principle of co-management and engage and work with BBMP stakeholders as appropriate
6. Assist with coastal and marine research, monitoring and work projects
7. Perform any other duties directly related to the main duties listed above or related to the delivery of expected outputs and results

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APPENDIX F
REGULATIONS

REGULATIONS

THE FISHERIES AND MARINE RESOURCES ACT 2007 [2]
Act No. 27 of 2007
I assent **SIR ANEROOD JUGNAUTH**
26 December 2007 President of the Republic
An Act *To amend and consolidate the law relating to the management, conservation, protection of fisheries and marine resources and protection of the marine ecosystems*
ENACTED by the Parliament of Mauritius
————————————————————

ARRANGEMENT OF SECTIONS
Section

[2] www.gov.mu/portal/goc/fisheries/file/fisheriesAct2007.pdf

77. Photographic evidence
78. Position fixing instrument
79. Repeal
80. Transitional provisions
81. Consequential amendment
82. Commencement

————————————————————

PART II – MANAGEMENT OF FISHERIES AND ADMINISTRATION

3. Consultative Committees

(1) The Minister may set up such Consultative Committees as he thinks fit –
(a) for discussions and advice on matters of general policy relating to fisheries, marine resources, aquaculture and marine conservation;
(b) for inquiring into matters relating to fisheries and marine resources.
(2) A Consultative Committee shall consist of –
(a) the Minister, who shall be the Chairperson;
(b) such other persons as the Minister may appoint.
(3) Where the Minister is unable to attend a meeting of the Consultative Committee, he shall designate a member to chair the meeting.
(4) The Chairperson of a Consultative Committee may co-opt at a meeting any person who, in his opinion, may assist the Committee on the subject under deliberation at that meeting.
(5) No member of the Consultative Committee, other than the representative of a Ministry, shall be deemed to hold a public office by virtue only of his appointment as member.
(6) A member of the Consultative Committee shall be appointed by the Minister on such terms and conditions as he may determine.

4. Marine Protected Areas

(1) The Minister may, by regulations, declare –
(a) any area of the maritime zones including the seabed underlying such zones;
(b) any land associated with the maritime zones; or
(c) any wetland, to be a Marine Protected Area.
(2) The Minister may, by regulations, made under subsection (1), designate a Marine Protected Area to be –
(a) a Fishing Reserve;
(b) a Marine Park; or
(c) a Marine Reserve.

5. Marine Protected Area Fund

(1) There is established for the purposes of this Act a Marine Protected Area Fund.
(2) The Permanent Secretary shall be responsible for the management and administration of the Fund.
(3) The Fund shall consist of –
(a) such sums of money as may be appropriated by the National Assembly for any of the purposes of this Act;
(b) any grant or donation made to the Fund;
(c) any sum that may lawfully accrue to it;
(d) any money that is payable under this Act including all fees, rent and other charges arising from the authorised use of a Fishing Reserve, a Marine Park or a Marine Reserve.
(4) The assets of the Fund shall be applied towards the payment of expenses which may be incurred in the management of a Marine Protected Area.
(5) Article 910 of the Code Civil Mauricien shall not apply to the Fund.

6. Record of fishing boats and fishing vessels

(1) The Permanent Secretary shall keep a record of fishing boats less than 12 metres in which shall be entered –
(a) the identification mark assigned to the boat;
(b) the name and address of the owner; and

(c) such other particulars as he thinks fit.

(2) The Permanent Secretary shall keep a record of fishing boats of 12 metres or more in length overall and fishing vessels licensed under sections 34 and 36.

(3) The record shall contain so far as is applicable –

(a) the name of the fishing boat or fishing vessel;
(b) the port and country of registration;
(c) any identification mark assigned to the boat or vessel;
(d) previous registration details;
(e) communication details;
(f) the Lloyds/IMO registration number;
(g) the international radio call sign;
(h) the length overall, draft and beam;
(i) the engine power;
(j) the net and gross registered tonnage;
(k) the type of refrigeration system;
(l) the material of build;
(m) the boat or vessel type and fishing method and gears;
(n) the hold capacities in cubic metres;
(o) the date of build;
(p) the number of crew, including fishermen and persons commonly known as "frigoboys";
(q) the name and address of the agent in Mauritius;
(r) the name, address and nationality of any natural or legal person with beneficial ownership of the fishing boat or fishing vessel;
(s) particulars of any previous offences committed by the use of the fishing boat or fishing vessel; and
(t) any other information as the Permanent Secretary may determine.

7. Confidentiality

A fishery control officer or any officer having access by virtue of his functions to any information under this Act shall not use or disclose such information except for the purposes of –

(a) this Act;
(b) fulfilling the obligations of Mauritius under any international agreement or convention.

———————————————————

THE FISHERIES AND MARINE RESOURCES ACT 1998

Government Notice No. 172 of 2011

Fisheries and Marine Resources (Marine Protected Areas) Regulations 2001

Regulations made by the Minister under sections 7(3) and 73 of the Fisheries and Marine Resources Act 1998

PART I - PRELIMINARY

1. Short Title

These regulations may be cited as the Fisheries and Marine Resources (Marine Protected Areas) Regulations 2001.

2. Interpretation

In these regulations –

- "***A-flag***" means the international navigational signaling flag for the letter "A";
- "***Act***" means the Fisheries and Marine Resources Act 1998;
- "***anchor***" includes a mooring device;
- "***conservation zone***" means a zone described in regulation 19(1);
- "***Fishing Reserve***" means that part of the sea, including any land found within that part of the sea, which is designated as a Fishing Reserve under section 7 of the Act;
- "***marine fauna***" means any dead or live animal, including the skeleton or shell of such animal, which normally lives, below the high-water tide mark in the sea;
- "***marine flora***" means any dead, or live, flowering, or non-flowering, plant which normally lives below the high-water tide mark in the sea;
- "***Marine Park***" means that part of the sea, including any land found within that part of the sea, which is designated as a Marine Park under section 7 of the Act;
- "***Marine Reserve***" means that part of the sea, including any land found within that part of the sea, which is designated as a Marine Reserve under section 7 of the Act;
- "***mooring zone***" means a zone described in regulation 23(1) ;
- "***multiple use zone***" means a zone described in regulation 18(1);
- " ***Permanent Secretary***" means the Permanent Secretary of the Ministry responsible for the subject of fisheries;
- "***permit***" means a permit issued by the Permanent Secretary for a specific purpose under these regulations;
- "***ski lane***" means a zone described in regulation 22(1);
- "***strict conservation zone***" means a zone described in regulation 20(1);
- "***structure***" includes a building, fence, gate, notice, sign, marker, post, jetty, buoy, float, mooring or cairn;
- "***swimming zone***" means a zone described in regulation 24;
- "***traffic lane***" means a zone described in regulation 21(1).

PART II - ADMINISTRATIVE PROVISIONS

3. Application for Permits

(1) A person who requires a permit under these regulations shall apply in writing to the Permanent Secretary.

(2) The Permanent Secretary may, on payment by the applicant of an approved fee into the Marine Protected Area Fund, issue a permit subject to such terms and conditions as he may decide.

4. Charges

The Permanent Secretary may, with the approval of the Minister, impose charges for -
(a) the admission to any Marine Park or Marine Reserve or to any building situated therein;

(b) the use of any building, dock, mooring or other structure, or of any equipment in a Marine Park or Marine Reserve;
(c) the provision of any services or assistance to any visitor to a Marine Park or Marine Reserve;
(d) the issue of any permit or grant of any authority under these regulations.

PART III – GENERAL PROVISIONS FOR THE PRESERVATION OF MARINE PROTECTED AREAS

5. Interference in Marine Protected Areas

(1) No person shall -
(a) build or place any dam, pier, dock, jetty, sign, mooring device or any other structure;
(b) interfere with, dig up, collect or remove any sand, mud, rock, rubble, mineral or other natural substance;
(c) remove, or otherwise interfere with, any object of archaeological or historical interest, in a Marine Protected Area, unless he holds a permit.

(2) No person shall, in any Marine Protected Area -
(a) discharge or deposit any waste, oily liquid, acid or other chemical or toxic or polluting substance;
(b) damage, deface, or otherwise interfere with any marine flora or fauna, rock or infrastructure by writing or marking it in any way.

(3) No person shall, in any Marine Park or Marine Reserve, engage in any commercial activity, unless he holds a permit.

(4) No person shall, in any Marine Park or Marine Reserve,
(a) take any photograph;
(b) shoot any film, by way of video-recording or otherwise, for a commercial purpose, unless he holds a permit.

PART IV - GENERAL PROHIBITIONS WITHIN SPECIFIC MARINE PROTECTED AREAS

6. Prohibition within Fishing Reserves

(1) Subject to paragraph (2), no person shall -
(a) fish with any net in a Fishing Reserve;
(b) beat the surface of water in a Fishing Reserve for the purpose of catching fish or luring fish to leave such an area.

(2) A person may fish with a bait gear in a Fishing Reserve if he holds a licence issued under section 31 of the Act authorizing him to do so.

(3) No person shall fish with a basket trap in a Fishing Reserve unless he holds -
(a) a licence issued under section 31 of the Act;
(b) a permit.

7. General prohibition within a Marine Reserve

Subject to regulation 8, the Permanent Secretary shall not issue any permit -
(a) for any extractive use;
(b) for any search, excavation or drilling operation, in any Marine Reserve.

8. Protection of flora and fauna in Marine Parks and Marine Reserves

No person shall –
(a) take or kill any marine flora or fauna;
(b) fish;
(c) feed any marine fauna;
(d) have in his possession any fishing equipment;
(e) carry out any research or survey work, in a Marine Park or Marine Reserve, unless he holds a permit.

9. Prohibition of introducing animals or plants into Marine Parks and Marine Reserves

(1) No person shall –
(a) introduce any animal, or plant, in;
(b) cause any animal, or plant, to be introduced into; or
(c) allow any animal, or plant, to remain in, any Marine Park or Marine Reserve, unless he holds a permit.

(2) An officer may remove or cause to be removed from any Marine Park or Marine Reserve, any animal or plant introduced without the permission of the Permanent Secretary.

10. Interference with structure in Marine Parks and Marine Reserves

(1) No person shall destroy, damage, deface, move, or otherwise interfere with, any structure placed by an officer in any Marine Park or Marine Reserve.

(2) No person shall erect any sign, display, or cause to be displayed, any writing in any Marine Park or Marine Reserve, unless he holds a permit.

11. Rubbish

No person shall deposit or leave any object, including any rubbish or litter, in any Marine Park or Marine Reserve, except in a receptacle or place provided for that purpose.

12. Use of Vessels

(1) No person in charge of a boat or vessel shall enter a Marine Park or Marine Reserve in that boat or vessel unless he holds a permit for that boat or vessel.

(2) The Permanent Secretary may authorise a boat or vessel to enter into a specified zone within a Marine Park or Marine Reserve.

(3) Any person in charge of any boat or vessel authorized to enter a Marine Park or Marine Reserve shall not, in the Marine Park or Marine Reserve -
(a) use a passage other than one demarcated for entry into a Marine Park or Marine Reserve;
(b) exceed speed limits as determined for any zone;
(c) drop anchor in a place other than a mooring zone;
(d) discharge any waste from toilets;
(e) except in case of emergency –
(i) discharge contaminated bilge water;
(ii) empty any water-holding tanks;
(f) spill or discharge any fuel or oil;
(g) engage in any boat race or competition;
(h) cause the boat or vessel to be moored to any device, other than a device specifically placed for the purpose of mooring a boat or vessel;
(i) cause the boat or vessel to be moored to any mooring device, placed specifically for the use of boats or vessels transporting divers or snorkellers, for any continuous period longer than 90 minutes;
(j) allow any diver or snorkeller to enter the water or remain in the water unless the boat or vessel is flying the "A- flag".

(4) An officer may give directions to any person in charge of a boat or vessel for the purpose of -
(a) regulating the use of boats and vessels in any Marine Park or Marine Reserve;
(b) avoiding inconvenience or risk of danger to persons having access to any Marine Park or Marine Reserve, and that person shall comply with those directions.

(5) Notwithstanding paragraph (3)(c), when the safety of a boat or vessel or of a person on board a boat or vessel so requires, the person in charge of the boat or vessel may drop anchor in a Marine Park or Marine Reserve.

13. Use of Aircraft

(1) No person in charge of an aircraft shall, except in an emergency, land, or take off from any place in any Marine Park or Marine Reserve.

(2) No person shall -
(a) drop any article from an aircraft into any Marine Park or Marine Reserve;
(b) fly an aircraft over any Marine Park or Marine Reserve for the purpose of dropping, or allowing a person to drop, any article from the aircraft into that Marine Park or Marine Reserve.

14. Limited access to certain areas in Marine Parks and Marine Reserves

No person shall enter into, or remain in, any Marine Park or Marine Reserve, or zone thereof, where a sign is displayed prohibiting or restricting public access, unless he holds a permit.

15. Disturbance within Marine Parks and Marine Reserves

(1) No person shall, in any Marine Park or Marine Reserve, play any radio, musical instrument or other similar device capable of emitting sound, at a volume above that authorised by an officer.

(2) An officer may refuse admission to any person to, or request any person to leave, any Marine Park or Marine Reserve where, in the opinion of the officer, the person -
(a) is intoxicated, inebriated or is in such other similar condition as would be likely to be offensive, or to cause annoyance, to other persons in a Marine Park or Marine Reserve;
(b) has caused, or is likely to cause disturbance to marine flora or fauna in the Marine Park or Marine Reserve; or
(c) has contravened, is contravening, or is likely to contravene these regulations.

16. Symbol of Marine Parks and Marine Reserves

No person shall, for any commercial purpose, copy, publish or otherwise use any symbol adopted by any Marine Park and Marine Reserve or any device that closely resembles that symbol, unless he holds a permit.

PART V – GENERAL PROVISIONS APPLYING TO DIFFERENT ZONES

17. Marine Park zoning

A Marine Park shall comprise different zones which may be designated as –
(a) a multiple use zone;
(b) a conservation zone;
(c) a strict conservation zone;
(d) a traffic lane;
(e) a ski lane;
(f) a mooring zone;
(g) a swimming zone.

18. Multiple use zone

(1) A multiple use zone shall be a zone within a Marine Park in which -
(a) a specified range of recreational activities is permitted;
(b) the fishing techniques to be used are limited;
(c) marine transportation is permitted.

(2) No person shall, in any multiple use zone, practise any type of fishing except by line and basket trap unless he holds a permit.

19. Conservation zone

(1) A conservation zone shall be a zone within a Marine Park which is designated for conservation of important ecosystems and resources and in which a limited number of recreational activities is permitted.

(2) No person shall enter into, or remain in, any conservation zone unless he holds a permit.

(3) Subject to regulations 26 and 29, no person shall, in any conservation zone, practise any type of fishing.

(4) No person in charge of any boat or vessel shall, in any conservation zone, cause the boat or vessel to move at a speed -
(a) which causes a wash or a wake; or
(b) which exceeds 3 knots.

20. Strict conservation zone

(1) A strict conservation zone shall be a zone within a Marine Protected Area, which is designated primarily for conservation of sensitive or special ecosystems, resources or natural features, and within which a limited number of recreational activities is permitted.

(2) No person shall enter into or remain in any strict conservation zone unless he holds a permit.

(3) Subject to regulation 27, no person shall, in any strict conservation zone, practise any type of fishing or use any boat, craft or vessel.

(4) No person authorised to use any boat or vessel shall in a strict conservation zone cause or allow the boat or vessel to move at a speed-
(a) which causes a wash or a wake; or
(b) which exceeds 3 knots.

21. Traffic lane

(1) A traffic lane shall be a zone within a Marine Protected Area which is designated for entry into or passage through the Marine Protected Area by a motorised boat or vessel.

(2) No person shall, in any traffic lane, practise any type of fishing.

(3) No person shall, in any traffic lane, swim, snorkel or dive.

(4) Subject to paragraph (5), no person shall, in any traffic lane, operate or use any non-motorised boat or vessel.

(5) Any person operating a motorised craft in a traffic lane shall give right of way to any non-motorised boat or vessel crossing the traffic lane.

(6) No person in charge of any boat or vessel shall in any traffic lane, cause or allow the boat or vessel to move at a speed
(a) which causes a wash or a wake; or
(b) which exceeds 3 knots.

22. Ski lane

(1) A ski lane shall be a zone within a Marine Protected Area designated for water skiing.

(2) Any part of a traffic lane may be designated as a ski lane.

(3) A person shall not within a Marine Protected Area practise water skiing -
(a) other than in a ski lane;
(b) except with a permit from the Permanent Secretary;
(c) at such times as set out in a time schedule by the Permanent Secretary.

(4) No person shall practise any type of fishing in any ski lane.

(5) Subject to paragraph (6), no person shall operate or use any boat or vessel in a ski lane other than for the purpose of skiing.

(6) Where a ski lane is contiguous with a traffic lane, a person operating a ski boat in the ski lane –
(a) shall give right of way to any boat or vessel in the traffic lane;
(b) may, notwithstanding regulation 21 (6) allow the boat to travel at a speed of more than 3 knots.

(7) No person shall swim, snorkel or dive in any ski lane while skiing is in progress.

23. Mooring zone

(1) A mooring zone shall be a zone within a Marine Protected Area designated for mooring of boats and vessels.

(2) A mooring zone shall be demarcated at sea with white mooring buoys.

(3) A person may cause his boat or vessel to enter and remain in a mooring zone but he shall not engage in any activity detrimental to a Marine Protected Area.

(4) No person in charge of any boat or vessel shall, in any mooring zone, cause or allow the boat or vessel to move at a speed -
(a) which causes a wash or a wake; or
(b) which exceeds 3 knots.

24. Swimming zone

(1) A swimming zone shall be a zone within a Marine Protected Area designated for swimming.

(2) A swimming zone shall be demarcated on the seaward front by a line of yellow coloured floats and buoys.

(3) No person shall, in a swimming zone, operate a motorized or non-motorized boat, craft, pedalo, kayak, surfboard or similar device.

(4) No person shall, in a Marine Protected Area, swim elsewhere than in a swimming zone.

(5) No person shall fish in a swimming zone.

PART VI – SPECIFIC PROVISIONS FOR BLUE BAY MARINE PARK

25. Blue Bay Marine Park

(1) The description of the boundaries of the Blue Bay Marine Park is set out in the First Schedule.

(2) The different zones of the Blue Bay Marine Park are shown in the map set out in the Second Schedule.

(3) The description of the boundaries of the respective zones within the Blue Bay Marine Park is set out in the Third Schedule.

26. Permissible fishing within a conservation zone

A person may, within the conservation zone of the Blue Bay Marine Park, fish by means of pole and line from the shore found within the area described in Part I of the Fourth Schedule.

27. Permissible activities within a strict conservation zone

(1) For the purposes of this regulation, strict conservation zone A means the strict conservation zone referred to in Part I of the Third Schedule.

(2) A person may, within the strict conservation zone A, use a glass bottom boat or a boat transporting snorkellers or divers for the purpose of snorkelling or diving within the zone.

(3) The Permanent Secretary may, for the purposes of paragraph (2), set a time schedule during which diving, snorkelling and glass bottom boating shall be permitted.

(4) For the purposes of this regulation, strict conservation zone B means the strict conservation zone referred to in Part II of the Third Schedule.

(5) A person may, within the strict conservation zone B of the Blue Bay Marine Park, fish by means of pole and line from the shore found within the area described in Part II of the Fourth Schedule.

PART VII – SPECIFIC PROVISIONS FOR BALACLAVA MARINE PARK

28. Balaclava Marine Park

(1) The description of the boundaries of the Balaclava Marine Park is set out in the Fifth Schedule.

(2) The different zones of the Balaclava Marine Park are shown in the map set out in the Sixth Schedule.

(3) The description of the boundaries of the respective zones within the Balaclava Marine Park is set out in the Seventh Schedule.

29. Permissible activities within conservation zone of Balaclava Marine Park

(1) A person may, within the conservation zone of the Balaclava Marine Park, fish by means of pole and line from the shore.

(2) Subject to regulation 19(2), a person may, within the conservation zone, use a glass-bottom boat or a boat transporting snorkellers and divers for the purpose of snorkelling and diving within the zone.

(3) The Permanent Secretary may, for purposes of paragraph (2), set a time schedule during which diving, snorkelling and glass-bottom boating shall be permitted.

PART VIII – OFFENCES AND PENALTIES

30. Offences and Penalties

A person who contravenes these regulations or fails to comply with any conditions of a permit or licence issued under these regulations, shall commit an offence and shall, on conviction, be liable -

(a) in the case of a first conviction, to a fine of not less than 2000 rupees and not more than 20,000 rupees;

(b) in the case of a second conviction, to a fine of not less than 20,000 rupees and not more than 35,000 rupees and to imprisonment for a term not exceeding six months;

(c) in the case of a third or subsequent conviction, to a fine of not less than 35,000 rupees and not more than 50,000 rupees and to imprisonment for a term not exceeding two years.

FIRST SCHEDULE (regulation 25(1))

DESCRIPTION OF BOUNDARIES OF BLUE BAY MARINE PARK

The Blue Bay Marine Park is bounded as follows:

Towards the East - Starting from a point at 1019589mE, 972579mN on the seashore, the boundary runs along an imaginary line bearing an angle of 153° 26' up to the coral reef, thence in the same direction to a point one kilometre from the coral reef.

Towards the South - From the last mentioned point, the boundary runs along another imaginary line parallel to and at a distance of one kilometre from the coral reef to a point on a third imaginary line bearing an angle of 135° from a point at 1017971mE, 971350mN on the seashore.

Towards the West - From the last mentioned point, the boundary runs along the said imaginary line parallel to the seashore.

Towards the North - From the last mentioned point, the boundary follows generally north east along the seashore up to the starting point.

SECOND SCHEDULE (regulation 25(2))

ZONING MAP OF BLUE BAY MARINE PARK

THIRD SCHEDULE (regulation 25(3))

DESCRIPTION OF BOUNDARIES OF THE ZONES IN BLUE BAY MARINE PARK

PART I

Strict conservation zone A

This zone, of an approximate extent of 8.899 Ha is bounded as follows:

Starting from a point R6 located off Blue Bay coast and having plane co-ordinates 1019144mE, 972784mN the boundary runs south south easterly along an imaginary line to a point R5 located by 1019168mE, 972684mN, then south westerly to a point R4 located by 1018977mE, 972539mN, then west south westerly to a point R3 located by 1018867mE, 972516mN, then north westerly to a point R2 located by 1018723mE, 972752mN, then north easterly to a point R1 located by 1018808mE, 972842mN. From the last mentioned point the boundary runs towards the above mentioned starting point R6 along an imaginary line having a bearing of 99° 54'26" until it meets the shoreline. The boundary then follows the coast until it meets the point where it intersects line R1-R6. The boundary then runs along this line to reach point R6.

PART II

Strict conservation zone B

This zone, of an approximate extent of 29.655 Ha is bounded as follows:

Starting from a point R1 located by 1018808mE, 972842mN, the boundary runs south westerly along an imaginary line to a point R2 located by 1018723mE, 972752 mN, then south easterly until it intersects line I1-I2 at a point located by 1018974mE, 972635mN. The boundary then runs north westerly to a point I1 located by 1018542mE, 972740mN, then west north westerly to a point L7 located on the coast by 1018342.3mE, 972762.9mN. It then follows the coastline passing through points F2 and F3 hereinafter described, goes round Pointe Helene and then runs in a general south easterly direction along the coast until it intersects line R1-R6. From the last mentioned point the boundary then runs west northwesterly until it reaches the above mentioned starting point R1.

Observation is hereby made that the ski lane hereinafter described shall be excluded from the said Strict Conservation Zone B.

PART III

Conservation zone

This zone, of an approximate extent of 146Ha is bounded as follows:

Starting from a point at Pointe Corps de Garde located by 1019589mE, 972579mN the boundary runs along an imaginary line bearing an angle of 153° 26' up to the coral reef. The boundary then runs along the coral reef to a point on an imaginary line bearing an angle of 135° from a point at Pointe Vacoas located by 1017971mE, 971350mN. It then runs north westerly along the said line until it meets the above mentioned point at Pointe Vacoas. The boundary then follows the coastline in a general north easterly direction passing through point F1 hereinafter described, continues in a general westerly direction, then runs in a general northerly direction along the coast to reach a point L7 located by 1018342.3mE, 972762.9mN. The boundary then runs east south easterly along an imaginary line to a point I1 located by 1018542mE, 972740mN, then east south easterly until it intersects line R2-R3 at a point located by 1018794mE, 972635mN. It then runs south easterly along the above mentioned line to reach point R3 located by 1018867mE, 972516mN then east north easterly to a point R4 located by 1018977mE, 972539mN, then north easterly to a point R5 located by 1019168mE, 972684mN, then north north westerly to a point R6 located by 1019144mE, 972784mN. The boundary then runs west north westerly along line R6-R1 until it meets the coastline. It then follows the coastline in a general easterly direction, passing in front of the public beach and then in a general southerly direction to reach the above mentioned starting point at Pointe Corps de Garde.

Observation is hereby made that (1) Ilot des Deux Cocos is wholly situated within the above described conservation zone, (2) the part of the waters lying seawards and contained within a distance not exceeding one hundred metres off the outer edge of the coral reef shall be deemed to form part of the above described conservation zone.

PART IV

Multiple use zone

This zone, of an approximate extent of 162 Ha is bounded as follows:

Starting from a point lying on an imaginary line bearing an angle of 153° 26' from a point at Pointe Corps de Garde located by 1019589mE, 972579mN and situated at a distance of one hundred metres measured from the outer edge of the coral reef along the said line, the boundary runs along the said imaginary line to a point located at a distance of one kilometre off the coral reef. From the last mentioned point, the boundary runs along another imaginary line parallel to and at a distance of one kilometre from the coral reef to a point on a third imaginary line bearing an angle of 135° from a point at Pointe Vacoas located by 1017971mE, 971350mN. From the last mentioned point, the boundary runs along the said third imaginary line to a point lying at a distance of one hundred metres measured from the outer edge of the coral reef. From the last mentioned point, the boundary then runs in a general north easterly direction along an imaginary line parallel to and at a distance of one hundred metres from the coral reef up to the above starting point.

PART V

Ski lane

All water skiing shall be confined to the ski lane as demarcated on the map as set out in the Second Schedule.

The ski lane, of an approximate extent of 6.583 Ha is bounded as follows:

Starting from a point SK1 located by 1017952mE, 972836mN, the boundary runs along a curve passing through points SK4/C located by 1017910mE, 972853mN, SK4/B located by 1017910mE, 972767mN, SK4/A located by 1017967mE, 972724mN and SK4 located by 1017987mE, 972747mN. From the last mentioned point, the boundary then runs along a straight line to reach a point SK3 located by 1018402mE, 972769mN. It then runs along a curve passing through points SK3/A located by 1018443mE, 972770mN, SK3/B located by 1018478mE, 972811mN, SK3/C located by 1018479mE, 972925mN and SK2 located by 1018428mE, 972892mN. From the last mentioned point the boundary then runs along a straight line to reach the above mentioned starting point SK1.

PART VI

Traffic lane

All motorised navigation shall be confined to the traffic lanes as laid out on the map in the Second Schedule. The traffic lanes shall be ten metres wide. The centre line layout of the traffic lanes are described as follows:

Jetty L3 to the open sea

Starting from a point L3 located on the coast by 1019563.49mE, 972745.93mN the traffic lane centre line proceeds in a south westerly direction passing through a point I4 located by 1019368mE, 972637mN until it reaches a point I3 located by 1018933mE, 972405mN. From the last mentioned point, the lane then proceeds southwesterly until it reaches a point L5 located by 1018682mE, 972009mN. From the last mentioned point, the lane then proceeds southerly through the pass out into the open sea.

Jetty L7 to the open sea

Starting from a point L7 located on the coast by 1018342.28mE, 972762.95mN the traffic lane centre line proceeds in an east south easterly direction until it reaches a point I1 located by 1018542mE, 972740mN. From the last mentioned point, the lane then proceeds south easterly until it reaches a point I2 located by 1018894mE, 972594mN. From the last mentioned point, the lane then proceeds south south easterly until it reaches a point I3 located by 1018933mE, 972405mN. From the last mentioned point, the lane then proceeds southwesterly until it reaches a point L5 located by 1018682mE, 972009mN. From the last mentioned point, the lane then proceeds southerly through the pass out into the open sea.

Jetty L6 to the open sea

Starting from a point L6 located on the coast by 1018520.51mE, 972414.17mN the traffic lane centre line proceeds in a north north easterly direction until it reaches a point I1 located by 1018542mE, 972740mN. From the last mentioned point, the lane then proceeds south easterly until it reaches a point I2 located by 1018894mE, 972594mN. From the last mentioned point, the lane then proceeds south south easterly until it reaches a point I3 located by 1018933mE, 972405mN. From the last mentioned point, the lane then proceeds southwesterly until it reaches a point L5 located by 1018682mE, 972009mN From the last mentioned point, the lane then proceeds southerly through the pass out into the open sea.

Jetty L1 to the open sea

Starting from a point L1 located on the National Coast Guard landing platform by 1019007.66mE, 972756.42mN the traffic lane centre line proceeds in a south westerly direction until it reaches a point I2 located by 1018894mE, 972594mN. From the last mentioned point, the lane then proceeds south south easterly until it reaches a point I3 located by 1018933mE, 972405mN. From the last mentioned point, the lane then proceeds southwesterly until it reaches a point L5 located by 1018682mE, 972009mN. From the last mentioned point, the lane then proceeds southerly through the pass out into the open sea.

Jetty L2 to L4

Starting from a point L2 located on the coast by 1019150.63mE, 972900.88mN the traffic lane centre line proceeds in a south easterly direction until it reaches a point I4 located by 1019368mE, 972637mN. From the last mentioned point, the lane centre line then proceeds east south easterly to reach point L4 located by 1019665mE, 972472mN.

Jetty L1 to jetty C1 (on Ilot des Deux Cocos)

Starting from a point L1 located on the National Coast Guard landing platform by 1019007.66mE, 972756.42mN the traffic lane centre line proceeds in a south westerly direction until it reaches a point I2 located by 1018894mE, 972594mN. From the last mentioned point, the lane then proceeds south south easterly until it reaches a point I3 located by 1018933mE, 972405mN. From the last mentioned point, the lane then proceeds southeasterly to reach point C1 located by 1019015.74mE, 972309.66mN.

FOURTH SCHEDULE (regulation 26)

POLE AND LINE FISHING AREAS FROM THE SHORE

PART I

DESCRIPTION OF POLE AND LINE FISHING AREA IN THE BLUE BAY MARINE PARK FROM THE SHORE WITHIN THE CONSERVATION ZONE

Starting from a point located at Pointe Vacoas by 1017971mE, 971350mN the fishing area runs in a general north easterly direction along the coast to reach a point F1 located by 1018786.80mE, 972290.86mN.

F1 refers to the point so marked in the map set out in the Second Schedule.

PART II

DESCRIPTION OF POLE AND LINE FISHING AREA IN THE BLUE BAY MARINE PARK FROM THE SHORE WITHIN THE STRICT CONSERVATION ZONE B

Starting from a point F2 located by 1018152.20mE, 972655.77mN the fishing area runs in a general northerly direction along the coast to reach a point F3 located by 1017841.90mE, 973088.99mN.

F2 and F3 refer to the point so marked in the map set out in the Second Schedule.

FIFTH SCHEDULE (regulation 28(1))

DESCRIPTION OF BOUNDARIES OF BALACLAVA MARINE PARK

The Balaclava Marine park is bounded as follows:

Towards the East - Starting from a point MPL16 having coordinates 999 196m E, 1 015 498m N on the seashore, the boundary runs generally South West along the seashore up to a point at MPL1 at 997 896m E, 1 011 883m N.

Towards the South - From the last mentioned point, the boundary runs towards the West along an imaginary line up to the coral reef, hence again in the same direction to a point one kilometer from the coral reef.

Towards the West - From the last mentioned point, the boundary runs generally North East along another imaginary line parallel to and at a distance of one kilometre from the coral reef up to a point on a third imaginary line running due west from the starting point.

Towards the North - From the last mentioned point, the boundary runs east along the said imaginary line to the starting point.

SIXTH SCHEDULE (regulation 28(2))

ZONING MAP OF BALACLAVA MARINE PARK

SEVENTH SCHEDULE (regulation 28(3))

DESCRIPTION OF BOUNDARIES OF THE ZONES IN BALACLAVA MARINE PARK

PART I

Multiple use zone

The multiple use zone of the approximate extent of 313 ha is described as follows:

Towards the South - Starting from a point MPL2 having coordinates 997 655m E,1 011 883m N being approximately one hundred metres measured seaward from the reef crest and run along an imaginary line at a bearing of 270o up to point MPL3 having coordinates 996 759m E, 1 011 883m N being 1000m measured seaward from the reef crest.

Towards the west - Starting from the last mentioned point the boundary runs along an imaginary line through points MPL 4 having coordinates 997 178m E, 1 012 754m N; MPL5 having coordinates 997 000m E, 1 012 892m N; MPL6 having coordinates 996 864m E, 1 013 221m N; MPL7 having coordinates 996 876m E, 1 013 585m N; MPL8 having coordinates 997 006m E, 1 013 792m N; MPL9 having coordinates 997 156m E, 1 013 973m N; MPL10 having coordinates 997 285m E, 1 014 348m N; MPL11 having coordinates 997 512m E, 1 014 000m N; MPL12 having coordinates 997 885m E, 1 015 046m N; MPL13 having coordinates 997 885m E, 1 015 046m N and finally to point MPL14 having coordinates 998 014m E, 1 015 498m N.

Towards the North - Starting from the last mentioned point the boundary runs along a line at a bearing of 90o up to point MPL15 having coordinates 998 912m E, 1 015 498m N, being approximately one hundred metres measured seaward from the reef crest.

Finally towards the East - Starting from the last mentioned point the boundary runs along an imaginary line up to point MPL2.

PART II

Conservation zone

The Conservation zone of the approximate extent of 167 ha is described as follows:

Towards the South - Starting from a point MPL1 having coordinates 997 896m E, 1 011 883m N, the limit runs along an imaginary line at a bearing of 270o up to a point MPL2 having coordinates 997 655m E, 1 011 883m N being located approximately one hundred metres measured seaward from the reef crest.

Towards the West - Starting from the last mentioned point the limit runs along an imaginary line in a general northerly direction approximately 100m parallel to the reef crest seaward up to a point MPL 15 having coordinates 998 912m E, 1 015 498m N.

Towards the North - Starting from the last mentioned point, the limit runs along an imaginary line at a bearing of 90o up to a point MPL 16 having coordinates 999 196mE, 1 015 498m N.

Finally towards the East - Starting from the last mentioned point, the limit runs generally along the high water mark of the sea up to point MPL1.

PART III

Ski lane

All water skiing shall be confined to the two ski lanes demarcated on the maps as set out in the Sixth Schedule.

Ski lane in Pointe aux Piments Lagoon

The Pointe aux Piments Ski lane of the approximate extent of 3 ha is described as follows:

Towards the South-East - Starting from a point SKLV19 having coordinates 998 652m E, 1 014 286m N the boundary line runs along an imaginary line to a point SKLV20 having coordinates 998 621m E, 1 014 254m N at a bearing of 223o 21' 34" and from this point to another point SKLV21 having coordinates 998 582m E, 1 014 206m N at a bearing of 218o 45' 42" and from this point to another point SKLV22 having coordinates 998 544m E, 1 014 157m N at a bearing of 218o 16' 27"and from this point to another point SKLV23 having coordinates 998 472m E, 1 014 058m N at a bearing of 215o 56' 15"and from this point to another point SKLV24 having coordinates 998 398m E, 1 013 956m N at a bearing 215o 49' 48".

Towards the South West - Starting from the last mentioned point the boundary runs along a curve through points SKLV25 having coordinates 998 381m E, 1 013 903m N, SKLV 1 having coordinates 998 370m E, 1 013 849m N, SKLV2 having coordinates 998 361m E, 1 013 838m N, SKLV3 having coordinates 998 347m E, 1 013 835m N, SKLV4 having coordinates 998 317m E, 1 013 845m N, SKLV5 having coordinates 998 290m E, 1 013 862m, SKLV 6 having coordinates 998 285m E, 1

013 899m N, SKLV7 having coordinates 998 301m E, 1 013 932m N and SKLV8 having coordinates 998 355m E, 1 013 975m N .

Towards the North West - Starting from the last mentioned point the limit runs along an imaginary line to a point SKLV9 having coordinates 998 424m E, 1 014 055m N at a bearing of 40o 39' 00" and from this point to another point SKLV10 having coordinates 998 492m E, 1 014 136m N at a bearing of 40o 31' 20"and from there to a point SKLV11 having coordinates 998 548m E, 1 014 212m N at a bearing of 35o 42' 51" and from this point to another point SKLV 12 having coordinates 998 0601m E, 1 014 287m N at a bearing 35o 42' 09".

Finally towards the North East - Starting from the last mentioned point the limit run along a curve through the following coordinates namely SKLV13 having coordinates 998 617m E, 1 014 317m N SKLV 14 having coordinates 998 622m E, 1 014 350m N , SKLV15 having coordinates 998 635m E, 1 014 377m N, SKLV16 having coordinates 998 676m E, 1 014 381m N, SKLV17 having coordinates 998 696m E, 1 014 354m N, SKLV18 having coordinates 998 683m E, 1 014 318m N and SKLV19 having coordinates 998 652m E, 1 014 287m N.

Ski lane in Turtle Bay

The Turtle Bay ski lane of the approximate extent of 2 ha is described as follows:

Towards the South - starting from a point SKLM1 having coordinates 998 605m E, 1 012 388m N the boundary runs along an imaginary line to a point SKLM2 having coordinates 998 446m E, 1 012 363m N at a bearing of 333o 46' 54" and from this point to another point SKLM3 having coordinates 998 292m E, 1 012 338m N at a bearing of 333o 46' 54".

Towards the West - Starting from the last mentioned point the boundary runs along a curve through the coordinates namely SKLM4 having coordinates 998 274m E, 1 012 333m N, SKLM5 having coordinates 998 261m E, 1 012 324m N, SKLM6 having coordinates 998 220m E, 1 012 307m N, SKLM7 having coordinates 998 174m E, 1 012 363m N, SKLM8 having coordinates 998 223m E, 1 012 407m N, SKLM9 having coordinates 998 268m E, 1 012 382m N, SKLM10 having coordinates 998 280m E, 1 012 371m N and SKLM11 having coordinates 998 295m E, 1 012 369m N.

Towards the North - Starting from the last mentioned point the boundary runs along an imaginary line to a point SKLM12 having coordinates 998 445m E, 1 012 393m N at a bearing of 80o 47' 12" and from this point to another point SKLM13 having coordinates 998 596m E, 1 012 418m N at a bearing of 80o 47' 12".

Finally towards the East - Starting from the last mentioned point to a point SKLM1 having coordinates 998 606m E, 1 012 388m N at a bearing of 161o 33' 54".

PART IV

Traffic lane

All motorised navigation shall be confined to the Traffic lanes as laid out on the six maps set out in the Sixth Schedule. The traffic lanes shall be 10 metres wide. The centre line layout of the Traffic lanes are described as follows:

Starting from a point TL1 having coordinates 998 945m E, 1 014 656m N the centre line runs along an imaginary line to another point TL2 having coordinates 998 865m E, 1 014 590m N at a bearing of 230o 18' 33" and from this point to another point TL3 having coordinates 998 843m E, 1 014 567m N at a bearing of 224o 09' 22" and from this point to another point TL4 having coordinates 998 862m E, 1 014 517m N at a bearing of 159o 50' 59" and from this point to another point TL6 having coordinates 998 764m E, 1 014 424m N at a bearing of 226o 21' 52" and from this point to another point TL7 having coordinates 998 661m E, 1 014 357m N at a bearing of 236o 56'16" and from this point to another point TL8 998 603m E, 1 014 284m N at a bearing of 218o 25' 35" and from this point to another point TL9 having coordinates 998 529m E, 1 014 204m N at a bearing of 222o 28' 56" and from this point to another point TL10 having coordinates 998 426m E, 1 014 048m N at a bearing of 213o 33' 06" and from this point to another point TL11 having coordinates 998 367m E, 1 013 930m N at a bearing of 225o 27'45" and from this point to another point TL12 having coordinates 998 225m E, 1 013 812m N at a bearing of 214o 22' 17" and from this point to another point TL13 having coordinates 998 196m E, 1 013 742m N at a bearing of 225o 18' 40" and from this point to another point TL14 having coordinates 998 163m E, 1 013 633m N at a bearing of 196o 54' 09" and from this point to another point TL15 having coordinates 998 131m E, 1 013 473m N at a bearing of 191o 18' 33" and from this point to another point TL16 having coordinates 998 107m E, 1 013 234m N at a bearing of 185o 40' 21" and from this point to another point TL17 having coordinates 998 108m E, 1 013 127m N at a bearing of 179o 41' 06" and from this point to another point TL18 having coordinates 998 150m E, 1 012 910m N at a bearing of 168o 45' 35" and from this point to another point TL19 having coordinates 998 208m E, 1 012 788m N at a bearing of 154o 47' 09" and from this point to another point TL20 having coordinates 998 041m E, 1 012 748m N at a bearing of 256o 26' 26" and from this point to another point TL21 having coordinates 998 024m E, 1 012 464m N at a bearing 183o 29' 08" and from this point to another point TL22 having coordinates 998 299m E, 1 012 163m N at a bearing of 137o 29' 44" and to a last point TL23 having coordinates 998 390mE,1 012 041m N at a bearing of 143o 29' 24".

A Traffic lane which lead to the sea through a pass the centre of which starts from a point TL4 having coordinates 998 862m E, 1 014 517m N to another point TL5 having coordinates 998 762m E, 1 014 522m N at a bearing of 272o 57′ 58″.

A Traffic lane starts from a point TL21 having coordinates 998 024m E, 1 012 464m N to another point TL24 having coordinates 998 740m E, 1 012 424m N at a bearing of 93o 08′ 05″.

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Charges for Marine Protected Area Permits:

Including the amendments to charges for Marine Protected Areas Permits as per the Fisheries and Marine Resources (Marine Protected Areas) (Amendments) Regulations 2007.

1 Basket trap permit in fishing Re. - 6(3) (b)	No charge will be levied for registered fishermen
2 Permissible activities permit within Marine Parks / Marine Reserves Re. - 8(a-e)	Rs 200 yearly
3 Plant/ Animal introduction permit in Marine Parks/Marine Reserves Re. - 9(1)	Rs 1 000 yearly
4 Display permit in Marine Parks / Marine Reserves Re. - 10(2)	Rs 10 000 yearly
5 Boat/Vessel permits in Marine Parks/Marine Reserves Re. - 12(1)	
AF - Artisanal fishing for registered fishermen	No charge
AF - Artisanal fishing boat	Rs 5 000 yearly
PPC - Private pleasure craft	Rs 5 000 yearly
PB - Pleasure boat	Rs 5 000 yearly
PC - Pleasure craft	No charge
PC - Catamaran	Rs 5 000 yearly
BG - Big game fishing	Rs 5 000 yearly
6 Interference permit in Marine Protected Areas Re. 5(1)	A charge of not less than Rs 50 000 will be levied depending on the merits of each application.
7 Commercial activity permit in Marine Parks/Reserves (Glass bottom boating) Re. -5(3)	Rs 5 000 yearly
8 Photography for commercial purposes permit in Marine Parks/Marine Reserves Re. - 5(4)	Rs 5 000 yearly
9 Access permit to restricted zones within Marine Parks/Marine Reserves Re.-14	Per day - Rs 1 000
10 Marine Parks/Marine Reserves symbol permit Re.- 16	Not less than Rs 20 000 depending upon merits of the application
11 Recreational permit in Multiple Use Zone and Conservation (e.g., pedalo, kayak, laser, windsurfing, hobbiecat, diving) Re. -18(1) (a), 19(1)	Rs 1 000 yearly
12 Line / Basket trap fishing permit in Multiple Use Zone Re. -18(2)	No charge will be levied for registered fishermen.
13 Access permit to Conservation zone Re. - 19(2)	Per day - Rs 100
14 Access permit to Strict Conservation Zone Re. - 20 (1) (2)	Per day - Rs 100
15 Ski permit in Marine Protected Areas Re.22 (3) (b)	Per hour - **Rs** 200

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Application form for permit(s)

http://www.gov.mu/portal/site/fisheries/menuitem.40a3cb904590624e7f7a98ada0208a0c/

Note:

- Duly filled in application forms for permit(s) **other than** Blue Bay Marine Park should be submitted together with three passport size photographs of the applicant to the Albion Fisheries Research Centre, Albion, Petite Rivière.
- Application for permits for activities within the Blue Bay Marine Park should be made at the Blue Bay Marine Park Patrol and Visitors' Centre, Coastal Road, Blue Bay.

CONTACT DETAILS

Albion Fisheries Research Centre, Albion, Petite Rivière.
Tel No: (+230) 238 4829 (+230) 238 4829 & (+230) 238 4100 (+230) 238 4100
Fax No: (+230) 238 4184
E-mail: fisheries@mail.gov.mu

Blue Bay Park Patrol and Visitors' Centre
Coastal Road, Blue Bay
Phone/Fax: (+230) 631 2416 (+230) 631 2416

APPENDIX G
DRAFT TORS FOR SPECIALISTS

- COMMERCIAL USE CARRYING CAPACITY ASSESSMENT
- WATERSHED MANAGEMENT ASSESSMENT
- VISITORS CENTRE INFORMATION DISPLAY DESIGN
- CONSERVATION TRUST FUND ESTABLISHMENT

APPENDIX G

DRAFT TERMS OF REFERENCE (ToRs) FOR SPECIALISTS:

- COMMERCIAL USE CARRYING CAPACITY ASSESSMENT
- WATERSHED MANAGEMENT ASSESSMENT
- VISITORS CENTRE INFORMATION DISPLAY DESIGN
- CONSERVATION TRUST FUND ESTABLISHMENT

COMMERCIAL USE CARRYING CAPACITY ASSESSMENT SPECIALIST DRAFT TERMS OF REFERENCE

Duty Stations: Mauritius Island (Blue Bay and Balaclava), Rodrigues Island (SEMPA)

Starting Date: TBD

Contract Duration: 45 working days over 3 months (TBD)

Background

The UNDP/GEF/GoM funded Project *Partnerships for Marine Protected Areas in Mauritius and Rodrigues*, aims at promoting sustainable use and equitable sharing of derivable benefits from Marine Protected Areas (MPAs) throughout Mauritius through the broad-based participation of all stakeholders. The specific objectives of the Project are to:

- develop an enabling policy and institutional framework to sustainably co-manage MPAs throughout the Republic of Mauritius (Outcome 1)
- develop and adapt innovative co-management arrangements for MPAs at a representative demonstrative site in Rodrigues (Outcome 2)

Blue Bay Marine Park (353 ha) was proclaimed in 1997 as a National Park under the Wildlife and National Parks Act 1993. It was declared a Marine Protected Area and designated as a Marine Park in June 2000 under the Fisheries and Marine Resources (FMR) Act 1998. Moreover, the Blue Bay Marine Park was, in January 2008, listed as a Ramsar site, a Wetland of International Importance.

Balaclava Marine Park (485 ha) was proclaimed as a National Park in October 1997 under the Wildlife and National Park Act 1993. In June 2000 Balaclava was proclaimed as a Marine Protected Area and designated a Marine Park under the Fisheries and Marine Resources (FMR) act 1998.

South East Marine Protected Area (SEMPA) seascape is approximately 4,247 ha in area and was gazetted in 2009. SEMPA is located on Rodrigues Island about 650 km to the northeast of the island of Mauritius. SEMPA covers most of the southern and eastern parts of the Rodrigues lagoon. The SEMPA Management Unit (SMU) Headquarters is located at Port Sud Est

As outputs of the UNDP/GEF/GoM funded Project, a management plan has been prepared for SEMPA (November 2011), and management plans for Blue Bay and Balaclava Marine Parks are expected to be finalized by the end of 2011. Visitor Centres are planned for Blue Bay, Balaclava and SEMPA.

The benefits of tourism to MPAs can be significant, including the potential for generating revenue to support management. However, like other human activities in MPAs, tourism has environmental impacts. Damage to coral reefs from careless boaters and divers, as well as pollution and other ecosystem impacts from recreational vessels, are among the range of tourism effects.

The carrying capacity of a commercial activity in relation to MPA management planning is the capacity of natural systems to handle development initiatives without deterioration of the resources or the ecosystem.

A commercial activity is any enterprise existing or proposed and within or adjacent to the MPAs that has a potential positive or negative impact on the values and integrity of the protected ecosystem. In this case, commercial activities may include those primarily related to developments in tourism and recreation.

Controlling these impacts can be as important an element for MPA management as any other. A potential key to management lies in assessing the number of visitors that an MPA can sustainably support, i.e. its carrying capacity. Assessing an MPA's carrying capacity involves a number of factors for the management of its different zones and habitat types such as coral reefs.

Task

Carrying capacity analysis is a basic technique used to define the ability of an area to accept a maximum level of acceptable development and has been used to guide decision-making in resource-use allocation and planning. For example, tourism carrying capacity seeks to limit the number of people visiting a site to prevent deterioration of natural resources and social conditions.

The Expert will prepare a final report, "*Sustainable Commercial Use Carrying Capacity Assessment Report*", taking into account the geology, hydrology and environmental impacts caused by the types of marine-based tourism generally occurring within Blue Bay and Balaclava marine parks (high intensity) and to a lesser extent at SEMPA on Rodrigues (low intensity).

The report will focus on the positive and negative impacts of current, proposed and projected future commercial and recreational activities on biodiversity, local economy and management within and adjacent to each of the two MPAs. The assessment will help guide current and future management of the MPAs as well as promote effective, appropriate and sustainable biodiversity management.

Scope of Work

To accomplish this task and help mitigate impacts from human activities on the MPAs, a *Sustainable Commercial Use Carrying Capacity Assessment Specialist* will be needed to carry out assessments for the three MPAs on Mauritius and Rodrigues. The Expert should have wide experience with conducting marine-use commercial and ecological carrying capacity studies for protected areas.

Specifically the Expert will:

- conduct field assessments to estimate the carrying capacity for sustainable commercial and recreational activities *vis-à-vis* biodiversity conservation and limitations to growth;
- identify and assess the types of commercial and recreational activities (e.g., existing conditions, tourism and recreational uses, facilities and management)
- define and evaluate ecological carrying capacities and threshold limits with respect to tourism and recreational developments, i.e. limits of acceptable change for quality of recreational experience, boating types and use levels, boating pollution, boating safety, waterskiing and other water sports as well as the maximum acceptable number of visitors, boats and other recreational activities each zone can sustain
- prepare recommendations and guidelines for sustainable commercial use activities based on these findings for consideration during policy and legislative reviews as well as MPA management plan development

- propose maximum effectiveness by outlining ways in which various sector stakeholders can better coordinate efforts and decisions pertaining to zoning, regulations and limits of acceptable change
- plan, organize and conduct a short one-day training for selected stakeholders on how to define and evaluate the ecological carrying capacities and monitor ecological thresholds as well as establishing guidelines and procedures for monitoring impacts of visitors
- develop visitors risk assessment guidelines for emergency procedures
- prepare and submit deliverables to be agreed upon with UNDP and partner agencies in Mauritius to include draft and final assessment reports, *Sustainable Commercial Use Carrying Capacity Assessment Report* to include all requirements, above

Expertise Required

The successful candidate must have the following profile:

- Possess an advanced degree in marine biology, coastal management, environmental impact assessment or any other related field with at least 5 years of relevant working experience.
- Have an excellent understanding of the challenges linked to biodiversity conservation *vis-à-vis* commercial tourism use and environmental impact assessment
- Fluent in written and spoken English and fully IT literate.

Other Skills

- Excellent inter-personal skills and understanding of cross-cultural sensitivities
- Ability to communicate effectively and demonstrate a good working relationship with Government Agencies, NGOs, community groups, hotel managers and boat operators
- Be highly motivated and capable of working independently
- Possess strong verbal and written communication skills
- Fluency in French and Mauritian Creole would be an asset but not a requirement
- The candidate would preferably be located in the Indian Ocean region

Reporting

The consultant will work closely with the Divisional Scientific Officer (DSO) of the Ministry of Fisheries and Rodrigues (MoFR) on Mauritius and the Departmental Head of the Commission for Marine Parks within the Office of the RRA Chief Commissioner on Rodrigures. All reports will be submitted to the DSO on dates as may be agreed in the work plan. The draft report shall be submitted as soft copies while the final report will be submitted as a soft copy and five (5) hard copies with coloured figures and photographs if required.

Procedures for Submission of Proposals

Interested Consultancy firms or independent consultants should submit their Expression of Interest detailing their experience in carrying out similar assignments, academic qualifications, curriculum vitae, statement of capability and a draft about how he/she suggests to carry out the consultancy. Proposal details are available from UNDP – Mauritius and Seychelles.

Confidentiality and Ownership/Property Rights

The selected candidate shall treat as confidential, information which comes into his/her possession as a result of or in the performance of this contract. Any reports, research materials, data or intellectual property produced or obtained by the contractor in the course of the assignment shall become and remain the property of the Government of Mauritius. Prior permission for using data must be obtained from the Government of Mauritius.

WATERSHED MANAGEMENT ASSESSMENT SPECIALIST
DRAFT TERMS OF REFERENCE

Duty Station: Balaclava (75%), Blue Bay (25%), Mauritius
Starting Date: ASAP
Contract Duration: 45 working days over 2 months

Background

The UNDP/GEF/GoM funded Project *Partnerships for Marine Protected Areas in Mauritius and Rodrigues*, aims at promoting sustainable use and equitable sharing of derivable benefits from Marine Protected Areas (MPAs) throughout Mauritius through the broad-based participation of all stakeholders. The specific objectives of the Project are to:

- develop an enabling policy and institutional framework to sustainably co-manage MPAs throughout the Republic of Mauritius (Outcome 1)
- develop and adapt innovative co-management arrangements for MPAs at a representative demonstrative site in Rodrigues (Outcome 2)

Balaclava Marine Park (485 ha) was proclaimed as a National Park in October 1997 under the Wildlife and National Park Act 1993. In June 2000 Balaclava was proclaimed as a Marine Protected Area and designated a Marine Park under the Fisheries and Marine Resources (FMR) Act 1998.

Blue Bay Marine Park (353 ha) was proclaimed in 1997 as a National Park under the Wildlife and National Parks Act 1993. It was declared a Marine Protected Area and designated as a Marine Park in June 2000 under the Fisheries and Marine Resources (FMR) Act 1998. Moreover, the Blue Bay Marine Park was, in January 2008, listed as a Ramsar site, a Wetland of International Importance.

Task

Management plans for Balaclava and Blue Bay Marine Parks are currently being prepared and intend to take an integrated, inter-sectoral governance approach that includes the watersheds of these MPAs. To help mitigate the impact of human activities on the MPAs the Project is seeking the services of an Expert Specialist to carry out watershed assessments to aid development of the integrated management plans.

Watershed management is the process of organizing the use of resources within a watershed to provide desired goods and services without harming soil, water and biodiversity resources. The relationships among land, soil, water and biodiversity conservation as well as the linkages between upstream and downstream areas are recognized in watershed concepts. Watershed systems are not only sources of economic value but also suppliers of environmental services that guarantee healthy ecosystem functions. Any disruption to watershed systems in general can easily create not only economic problems for local residents but also environmental and health problems. Solving these problems is urgently required to stop further bigger environmental and economic problems.

Land use changes as well as domestic and industrial pollution along the Rivière Citron at Balaclava, in particular, and its tributaries are the main drivers of environmental change within the Balaclava watershed that ultimately affect the health of the MPA's biodiversity. These drivers are also capable of altering the livelihoods of local people and the local tourism industry by increasing their economic and environmental vulnerabilities. It is therefore imperative that management takes an integrated governance approach to include a wide variety of public and private stakeholders as well as integrating watershed and MPA management.

If holistic, comprehensive, and integrated approaches are applied in management, it is possible to solve the problems within the watershed and the MPA simultaneously. Therefore, a model watershed that can demonstrate integrated management and be replicated elsewhere in Mauritius is needed. This calls for new and innovative approaches that engage relevant stakeholders in a holistic way into MPA and watershed management. The Project aims to strengthen and improve watershed functions of land use and local livelihoods as well as ecosystem resilience and integrated institutional capacities by investing in a sustainable MPA and watershed management strategy.

Scope of Work

Taking into account the existing and potential impacts on the marine environment caused by watershed-based activities and hydrology, the Specialist will prepare a detailed "*Balaclava Marine Park Watershed Management Assessment Report*" and a less detailed assessment report on the Blue Bay Marine Park's watershed. The report will focus on positive and negative impacts of current and projected future commercial and domestic activities on biodiversity, local economy, health and management within and adjacent to each MPA. Recommendations from the assessment will help guide current and future management of the MPAs as well as promote effective, appropriate and sustainable watershed management.

The Specialist will work closely with the Ministry of Fisheries and Rodrigues (MoFR), which is responsible for MPA management in Mauritius. However, watershed issues cannot be resolved by MoFR alone. Therefore, watershed and MPA management will require close coordination among other relevant ministries and governmental agencies as well as the private sector.

The Watershed Management Assessment Specialist will carry out the following tasks in close collaboration with the MoFR, other government ministries, agencies, NGOs and the private sector:

- Conduct field assessments to identify the locations, types and potential impacts of commercial and domestic activities within the watershed
- Conduct a stakeholders' analysis to determine key watershed stakeholders and their stakes in the watershed
- Analyse the policy, administrative and legislative context of watershed management in Mauritius
- Prepare recommendations and guidelines for sustainable watershed management based on these findings for consideration during policy and legislative reviews as well as MPA management plan development
- Describe threats, underlying causes of problems, weaknesses and opportunities for watershed management
- Analyse current land use patterns and describe key links between these activities and MPA biodiversity protection
- Review existing government water quality monitoring programmes and monitoring stations in the watershed, identify long term water quality trends and the sources and types of pollutants and provide recommendations for coordination, improvement and public accessibility to reports
- Assess waste and runoff water management programs used by all hotels along the Balaclava Marine Park shoreline
- Define the collaborative institutional set-up or mechanism necessary for achieving integrated MPA/watershed management goals and assess the capacity of institutions involved

- Propose maximum effectiveness by outlining ways in which various sector stakeholders can better coordinate efforts and decisions pertaining to zoning, regulations, pollution control, monitoring and limits of acceptable development (e.g., through a Balaclava Watershed Management Council, or its equivalent, and other stakeholder groups)
- Collect all relevant maps of the area and prepare consolidated watershed map(s) indicating, among others, locations of settlements, farming, industries, existing and potential threats and water quality monitoring stations
- Plan, organize and conduct a one-day training for selected stakeholders on establishing coordinated guidelines and procedures for monitoring pollution and other impacts

Expertise Required

The successful candidate must have the following profile:

- Possess an advanced degree in coastal management, water resources management, environmental impact assessment or any other related field
- Have at least 5 years relevant work experience in the fields of integrated watershed management, natural resources and common property resources management of which a part has preferably been gained in Mauritius
- Have an excellent understanding of the challenges linked to marine biodiversity conservation *vis-à-vis* watershed management and environmental impact assessment
- Fluent in written and spoken English and fully IT literate

Other Skills

- Excellent inter-personal skills and ability to communicate effectively with public and private stakeholders (e.g., government ministries and agencies, local residents, scientists, technical experts, tourism operators, hotels, commercial industries)
- Field and working experience in similar watershed assessment projects
- Experience in data base creation and analysis
- Experience in local level participatory planning processes, advocacy and partnerships development
- Fluency in French and Mauritian Creole would be an asset
- The candidate would preferably be recruited from the Indian Ocean region

Reporting

The consultant will work closely with the MoFR Divisional Scientific Officer (DSO). All reports will be submitted to the DSO on dates as may be agreed in the work plan. The draft report shall be submitted as soft copies while the final report will be submitted as a soft copy and five (5) hard copies with coloured maps, figures and photographs.

Procedures for Submission of Proposals

Interested Consultancy firms or individual experts should submit their Expression of Interest detailing their experience in carrying out similar assignments, academic qualifications, *curriculum vitae*, statement of capability and methodology about how the consultancy will be implemented.

Confidentiality and Ownership/Property Rights

The selected candidate shall treat as confidential, information, which comes into his/her possession as a result of, or in the performance of this contract. Any report, research materials, data or intellectual property produced or obtained by the contractor in the course of this contract shall become and remain the property of the Government of Mauritius. Prior permission for use of such data must be obtained from the Government of Mauritius.

VISITORS CENTER INFORMATION DISPLAY DESIGN SPECIALIST DRAFT TERMS OF REFERENCE

Duty Stations: Mauritius Island (Blue Bay and Balaclava) and Rodrigues Island (SEMPA)

Starting Date: TBD

Contract Duration: 135 working days (45 days per Centre x 3) over 9 months (TBD)

Background

The UNDP/GEF/GoM funded Project *Partnerships for Marine Protected Areas in Mauritius and Rodrigues*, aims at promoting sustainable use and equitable sharing of derivable benefits from Marine Protected Areas (MPAs) throughout Mauritius through the broad-based participation of all stakeholders. The specific objectives of the Project are to:

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South East Marine Protected Area (SEMPA) seascape is approximately 4,247 ha in area and was gazetted in 2009. SEMPA is located on Rodrigues Island about 650 km to the northeast of the island of Mauritius. SEMPA covers most of the southern and eastern parts of the Rodrigues lagoon. The SEMPA Management Unit (SMU) Headquarters is located at Port Sud Est

As outputs of the UNDP/GEF/GoM funded Project, a management plan has been prepared for SEMPA (November 2011), and management plans for Blue Bay and Balaclava Marine Parks are expected to be finalized by the end of 2011. Visitor Centres are planned for Blue Bay, Balaclava and SEMPA.

Task

The main task is to assist with establishing, operating and maintaining three visitors' centres *(Coastal and Marine Sustainability Centres)* Specifically, expertise is required to design and install attractive, informative, simple and interactive displays and exhibits for three planned centres at three MPAs in Mauritius (Blue Bay, Balaclava and SEMPA). The intention is to have interactive and state-of-the art interpretive exhibits and a self-sufficient, sustainable and nonpolluting (off-the-grid) energy system (e.g., solar photovoltaic, wind). Information to be conveyed will include facts about the MPA and coastal, marine and climate change issues. Exhibits will be supportive of the GoM's *Maurice Île Durable* (MID – "Towards a National Policy for a Sustainable Mauritius") and the "Sustainable Integrated Development Plan for Rodrigues" (SIDPR).

As a clearing house for information on coastal and marine issues and sustainable practices, the CMSC will demonstrate linkages between ecosystem health and human well-being. The design of each CMSC is intended to provide an example or model of replicable green building practices that use recycled and sustainably-sourced building materials combined with a self-sufficient and sustainable, nonpolluting energy system derived from passive photovoltaic solar and vertical wind

electric generators. Each CMSC will also have a gift shop in support of MPA income generation. Thus, the CMSC would not only serve to inform the public about the MPAs but also serve as a model to promote sustainable, eco-friendly practices and affordable alternative energy sources throughout the island.

The CMSC exhibits should be designed to be as simple and interactive as possible. It is not recommended to develop expensive and high-maintenance exhibits. Exhibits should not only explain the ecology, history and regulations of each MPA but also inform the public of the importance of sustainable use of resources with the motto of the Three R's (Reuse, Recycle and Regreen). The importance of managing watersheds, integrated with MPA management, for both ecosystem health and public safety will be a main focus.

During both the design and operation of the CMSC contacts with international sustainability centres must be established for technical support and to engage in international networks that are attempting to change the way the world's population uses its resources.

Scope of Work

To accomplish this task, a *Visitors Center Information Display Design Specialist* will be needed. The Expert should have wide experience designing, establishing and preferably also managing visitor interpretation centres for protected areas. The Expert should be very familiar with techniques for designing interactive, visitor friendly displays as opposed to passive information boards.

Specifically the Expert will:

- Identify the most relevant themes and subjects for interpretation
- Determine the most appropriate medium and presentation, including visitor center displays and wayside interpretation.
- Prepare bi-lingual texts in both English and French
- Design and oversee construction and installation of exhibits and displays
- Research and integrate appropate alternative energy sources into visitor center exhibitry
- Prepare guidelines and specifications and provide overall supervision and quality control over construction/production of displays
- Establish contacts with international sustainability centers for technical support
- Assist in improving the quality of existing display material in the MPAs
- Establish the day-to-day operation guidelines of the Visitors Centres
- Develop and implement a procedure to receive feedback on visitor service facilities
- Draft final job description for Visitors Centre Coordinators
- Provide training inputs as required

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Deleted: Install and maintain exhibits and possibly alternative energy generators (solar, wind)

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Expertise Required

The successful candidate must have the following profile:

1. Possess a degree in marine biology, coastal management, environmental impact assessment or any other related field. The expert may have a wide variety of different backgrounds (e.g., industrial design, product design, architecture, interior design, graphic design).
2. At least 5 years proven experience with designing state of the art interpretation materials and information displays for visitors centres
3. Knowledge of a wide range of design and visual concepts, principles and techniques gained through a combination of study and work experience

4. Understanding of basic communication skills and techniques as well as the limits and capabilities of exhibits, audiovisual devices, publications, and other interpretive media to communicate ideas and concepts
5. Experience in, for example, conceptual design, Computer Aided Design (CAD) and 3D visualisation and model making skills
6. Knowledge of a wide range of specialized outdoor and indoor materials and construction techniques
7. Ability to produce rendered drawings, study and presentation models, construction drawings, graphic layouts, type specifications, lighting plans, and material specifications for exhibit installations
8. Knowledge of contracting procedures for art, technical services and printing
9. Experience with on the job training
10. Relevant experience in protected area or natural resource management, biodiversity conservation and environmental protection
11. Have an excellent understanding of the challenges linked to biodiversity conservation *vis-à-vis* local development and tourism

Other Skills

- Excellent inter-personal skills and understanding of cross-cultural sensitivities
- Ability to communicate effectively and demonstrate a good working relationship with Government Agencies, NGOs, community groups and Academic Institutions
- Be highly motivated and capable of working independently
- Possess strong verbal and written communication skills
- Fluent in written and spoken English and fully IT literate; French and Mauritian Creole would be an advantage but not required

Reporting

The consultant will work closely with the Divisional Scientific Officer (DSO) of the Ministry of Fisheries and Rodrigues (MoFR) on Mauritius and the Departmental Head of the Commission for Marine Parks within the Office of the RRA Chief Commissioner on Rodrigues. All reports will be submitted to the DSO on dates as may be agreed in the work plan. If relevant to this position, the draft report shall be submitted as soft copies while the final report will be submitted as a soft copy and five (5) hard copies with coloured figures and photographs if required.

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Confidentiality and Ownership/Property Rights

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CONSERVATION TRUST FUND ESTABLISHMENT SPECIALIST
DRAFT TERMS OF REFERENCE

Duty Stations: Port Louis, Mauritius, and Port Sud Est, Rodrigues

Starting Date: ASAP

Contract Duration: 35 working days over 2 months (TBD)

Background

The UNDP/GEF/GoM funded Project *Partnerships for Marine Protected Areas in Mauritius and Rodrigues*, aims at promoting sustainable use and equitable sharing of derivable benefits from Marine Protected Areas (MPAs) throughout Mauritius through the broad-based participation of all stakeholders. The specific objectives of the Project are to:

- Develop an enabling policy and institutional framework to sustainably co-manage MPAs throughout the Republic of Mauritius (Outcome 1); and
- Develop and adapt innovative co-management arrangements for MPAs at a representative demonstrative site in Rodrigues (Outcome 2)

Blue Bay Marine Park (353 ha) was proclaimed in 1997 as a National Park under the Wildlife and National Parks Act 1993. It was declared a Marine Protected Area and designated as a Marine Park in June 2000 under the Fisheries and Marine Resources (FMR) Act 1998. Moreover, the Blue Bay Marine Park was, in January 2008, listed as a Ramsar site, a Wetland of International Importance.

Balaclava Marine Park (485 ha) was proclaimed as a National Park in October 1997 under the Wildlife and National Park Act 1993. In June 2000 Balaclava was proclaimed as a Marine Protected Area and designated a Marine Park under the Fisheries and Marine Resources (FMR) act 1998.

South East Marine Protected Area (SEMPA) seascape is approximately 4,247 ha in area and was gazetted in 2009. SEMPA is located on Rodrigues Island about 650 km to the northeast of the island of Mauritius. SEMPA covers most of the southern and eastern parts of the Rodrigues lagoon. The SEMPA Management Unit (SMU) Headquarters is located at Port Sud Est

As outputs of the UNDP/GEF/GoM funded Project, a management plan has been prepared for SEMPA (November 2011), and management plans for Blue Bay and Balaclava Marine Parks are expected to be finalized by the end of 2011. It is likely that revenue generated from user fees and annual government budgets will be insufficient to optimally and sustainably implement the management plans. External bilateral or multilateral donor funding is also expected to be necessary to begin implementation and to develop these mechanisms. It has been noted that there is no lack of funding sources, but there are inadequate mechanisms in place to access these sources.

A *Conservation Trust Fund* (CTF) is a legal and independent institution with the objective of raising, administering and disbursing grant funds for conservation purposes and is often established as a foundation or nonprofit corporation. The main purpose of establishing most large CTFs is to provide stable, long-term funding for a country's protected area system or for a specific PA. A CTF would provide small grants to NGOs and CBOs for projects aimed at sustainable natural resource management, biodiversity conservation and PA management support. A CTF is not intended to replace government funding but rather complement these sources of support.

Fund administration may be through several types of accounts: (i.) *trust funds* where the principle is maintained and only the interest is available for grant-making; (ii.) *sinking funds* where initial seed capital is spent over time and not replenished or (iii.) *revolving funds* where income generated from user fees, concessions, gate fees or fines enter the account until spent. The type of fund account established is usually dependent upon donor requirements.

A CTF Board of Directors typically has a non-government majority with government representatives limited to 40% or less. This is typically a donor requirement. When a CTF provides the majority of total operating costs to manage a protected area or PA system it may sometimes play a lead role in planning and priority setting for that PA or system either at the request of the government or by default, i.e. in the absence of any other institution. Staffing levels and administrative overheads are typically kept to a minimum, and a recently established CTF might only have a director and a secretary with other staff (e.g., administrative and project officers) brought on as the CTF's administration and implementation mandate grows.

Task

The main task is to determine the feasibility and mechanisms for establishing a *Conservation Trust Fund* (CTF) in support of MPA sustainable financing either on a country-wide or MPA-specific support basis. A study of CTFs is required to determine the most appropriate CTF for the MPAs to receive external multilateral, bilateral and philanthropic foundation funding support. This would be in addition to currently rather minor user fees revenue. The intention is to eventually move beyond the current limited annual government allocations.

Other actions will include (i.) identifying and establishing the legal framework for the CTF, its Board and CTF management responsibilities, (ii.) exploring with the Rodrigues Regional Assembly (RRA) the possibility of an airport departure "conservation tax" with revenues going into the SEMPA Fund or a CTF and (iii.) ultimately (within five-years) achieving an efficient self-financing CTF mechanism for future sustainable financial support to MPA management.

Scope of Work

To accomplish this task, a *Conservation Trust Fund Establishment Expert* will be needed. The Expert should have wide experience establishing and preferably also managing conservation financing mechanisms, especially trust funds. The Expert should be very familiar with endowment, sinking and revolving fund mechanisms and the experience of other countries with regard to the same.

Specifically the Expert will:

- develop a detailed work plan for delivery of the contracted work
- collaborate with business and finance experts, legal specialists, public awareness specialist and other relevant stakeholders to establish participation and local perspectives for successful outputs
- organise and implement stakeholder meetings on proposed CTF operations and management
- review and document international and national lessons learned and best practices in implementing CTFs and other sustainable funding mechanisms for protected areas
- support drafting new CTF legislation or make amendments to existing laws as needed
- prepare necessary documentation (e.g., outlines for operational manuals, guidelines, analysis of key issues and options) for implementing proposed CTF activities
- design and implement training curricula, modules and workshops for key stakeholders to increase understanding of MPA sustainable funding options, mechanisms and management
- prepare and submit deliverables to be agreed upon with UNDP and partner agencies in Mauritius to include draft and final report(s) on CTF review and feasibility including recommendations on institutional and beneficiary arrangements, cash inflow mechanisms, fund management and steps to be taken sequentially to establish and manage a proposed CTF for MPAs in Mauritius if its establishment is feasible and recommended

Expertise Required

The successful candidate must have the following profile:

12. Possess an advanced degree in environmental law, economics, business management, finance or any other related field
13. At least 10 years proven experience with Trust Funds including analysis of Trust Funds, recommendations of types of Trust Funds and capitalization of Trust Funds, with emphasis on financing for environmental protection and natural resources management
14. Fluent in written and spoken English and fully IT literate.
15. Relevant experience in protected area management planning, biodiversity conservation, environmental protection and natural resource management

Other Skills

- Excellent inter-personal skills and understanding of cross-cultural sensitivities
- Ability to communicate effectively and demonstrate a good working relationship with Government Agencies, NGOs, International Development Partners, Multi-lateral and Bi-lateral Agencies and Academic Institutions
- Be highly motivated and capable of working independently
- Possess strong verbal and written communication skills
- Fluency in French and Mauritian Creole would be an asset but not a requirement

Reporting

The consultant will work closely with the Divisional Scientific Officer (DSO) of the Ministry of Fisheries and Rodrigues (MoFR) on Mauritius and the Departmental Head of the Commission for Marine Parks within the Office of the RRA Chief Commissioner on Rodrigures. All reports will be submitted to the DSO on dates as may be agreed in the work plan. The draft report shall be submitted as soft copies while the final report will be submitted as a soft copy and five (5) hard copies with coloured figures and photographs if required.

Procedures for Submission of Proposals

Interested Consultancy firms or independent consultants should submit their Expression of Interest detailing their experience in carrying out similar assignments, academic qualifications, curriculum vitae, statement of capability and a draft about how he/she suggests to carry out the consultancy. Proposal details are available from UNDP – Mauritius and Seychelles.

Confidentiality and Ownership/Property Rights

The selected candidate shall treat as confidential, information which comes into his/her possession as a result of or in the performance of this contract. Any reports, research materials, data or intellectual property produced or obtained by the contractor in the course of the assignment shall become and remain the property of the Government of Mauritius. Prior permission for using data must be obtained from the Government of Mauritius.

APPENDIX H
FIVE-YEAR BUDGET AT CORE AND OPTIMAL LEVELS

APPENDIX H

TO INSERT ALL TOTALS INTO TABLE

BLUE BAY MARINE PARK FIVE-YEAR BUDGET AT CORE AND OPTIMAL LEVELS

No.	BUDGET CATEGORY	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		5-YEAR TOTALS	
		Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal
1.	**Office**												
	Equipment												
	Utilities												
	Publications and Stationary												
	Supplies												
2.	**Maintenance**												
	Buildings												
	Equip. & Vehicles												
	Fuel & oil												
	Boundary & mooring buoys												
3.	**Infrastructure / Buildings**												
	BB Park Office												
	Visitors Center												
	Watch Towers x 2 at Office & La Cambuse												
	Boat House at Office												
4.	**Equipment and Vehicles**												
	Boats												
	Outboard motors												
	Quad-bike												
	Automobiles												
	Boundary & mooring buoys												

No.	BUDGET CATEGORY	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		5-YEAR TOTALS	
		Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal
5.	**Staff Salaries and Allocations**												
	Basic salaries *												
	Extra remuneration												
	Allowances												
	End-of-Year bonuses												
	Traveling & transport												
	Overtime												
	Staff welfare												
	Uniforms												
6.	**Training and Capacity Building**												
	Staff Training												
	Community Training												
	Study Tours & Cross-Visits												
7.	**Technical Specialists**												
	Carrying Capacity Assessment Specialist												
	Watershed Management Assessment Specialist												
	Visitors Center Information Display Design Specialist												
	Conservation Trust Fund Establishment Specialist												

No.	BUDGET CATEGORY	YEAR 1		YEAR 2		YEAR 3		YEAR 4		YEAR 5		5-YEAR TOTALS	
		Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal	Core	Optimal
8.	Stipends and Allowances for Community Partners												
9.	Information, Education and Communication Programme												
	Posters & brochures												
	Visitors Centre displays												
	Gift Shop stock												
10.	Monitoring and Research												
	Specialized equipment												
11.	Insurance												
12.	Imprest												
13.	Miscellaneous Expenses												
	TOTALS (MUR)												
	MUR 28 = USD (USD)												

*** New staff member (beginning 2013), *IEC Programme and Visitors Center Coordinator*, is included in salary calculation.**

APPENDIX I
STRATEGIC FRAMEWORK

STRATEGIC FRAMEWORK

VISION: Blue Bay Marine Park will be an ecologically and economically sustainable ecosystem through responsible management that conserves coastal and marine biodiversity for the benefit of the local community.

GOAL: To balance a healthy marine ecosystem with economically sustainable uses within the Blue Bay Marine Park and its coast

PURPOSE: To integrate Blue Bay Marine Park biodiversity conservation and sustainable livelihoods through a functional collaborative management system that uses effective governance, sustainable financing and awareness

P = Priorities: 1 = highest / urgent, 2 = moderate, 3 = lowest **at end of this Appendix: Key to Responsibilities**

P	No.	Programmes, Objectives and Actions	Assumptions	Indicators	Responsibilities
	1	**GOVERNANCE THROUGH CO-MANAGEMENT PROGRAMME**			
3	**1.**	***LEGISLATION AND STATUS*: To maintain the requirements of the Ramsar Convention to ensure BBMP remains a wetland of international importance**			
	1.1	Regularly review and maintain Ramsar requirements for BBMP	**1:** *BBMP upholds the Ramsar criteria, and there is the political will to maintain this status*	BBMP remains a Ramsar site in good standing	**OIC, PFPO**
	1.2	Regularly review appropriate legal status and requirements for changes to national Fisheries & Marine Act regulations	- ditto -	Annual enforcement review reports	**OIC, PFPO**
1	**2.**	***INSTITUTIONAL ARRANGEMENTS*: To establish a collaborative or co-management framework with clear roles, rights & responsibilities for all institutions comprising the framework**			
	2.1	Strengthen the BBMP Management Unit	**2:** *There is open communication and trust among local community, NGO and GA stakeholders and BBMU for co-management*	Number of meetings, workshops and co-management participants (institutions & individuals)	**OIC, PFPO, NGO**
	2.2	Ensure that the management framework is clear, well-publicised and flexible	- ditto -	Number of meetings, workshops and co-management participants (institutions & individuals)	**OIC, PFPO, NGO**
	2.3	Establish MOUs with NGOs and the private sector for implementation of specific activities	- ditto -	Number of co-management MOUs established	**OIC, PFPO, NGO, PS**
	2.4	Strengthen the BBMP Steering Committee (Board) to make it more effective and with well defined objectives, roles, rights and responsibilities	- ditto -		**OIC, PFPO, NGO, PS, GA**
	2.5	Clarify the role and responsibility of the National Coast Guard (NCG) as an effective partner in BBMP management	- ditto -		**OIC, PFPO, GA (NCG)**
2	**3.**	***PUBLIC PARTICIPATION*: To ensure public participation by establishing clear public rights and responsibilities in support of the BBMP co-management framework**			
	3.1	Work with the local community to establish clear limits, rights and responsibilities	**3:** *Local communities participate directly in making decisions relating to BBMP co-management*	Number of meetings, workshops and co-management participants	**OIC, PFPO, NGO**
	3.2	Publicise rights and responsibilities for community co-management partnerships	- ditto -	Number of meetings and workshops	
1	**4.**	***PUBLIC-PRIVATE PARTNERSHIPS*: To promote the private sector (e.g., local hotels) in BBMP management activities**			
	4.1	Establish public-private partnership MOU's and agreements (e.g., for rehabilitation, ecotourism, environmental education, training, income generation, park maintenance)	***4:*** *There can be regular contact between BBMU & private businesses and land users, and substantial management co-operation*	Number of public-private partnership MOUs and agreements	**OIC, PS, NGO**
	4.2	Establish partnerships between local hotels and the BBMP Management Unit	- ditto -	Number of partnerships and agreements	**OIC, PS, NGO**
1	**5.**	***ADMINISTRATION AND STAFFING*: To ensure effective administration and adequate staffing levels for BBMP management**			
	5.1	Recruit additional staff for effective MPA management	**5:** *Staff numbers and personnel management are adequate for management implementation*	Staff recruitment	**OIC**
	5.2	Establish clear job descriptions with limits and responsibilities for all staff	- ditto -	All staff with clear job descriptions and coordinated monthly and annual work plans; evaluation reports	**OIC, PFPO**

P	No.	Programmes, Objectives and Actions	Assumptions	Indicators	Responsibilities
1	6.	***STAFF CAPACITY BUILDING AND TRAINING*: To build the capacity of all BBMP staff through regular training and site visits to other MPAs**			
	6.1	Ensure FPO capacity building through training and site visits to other national and international MPAs	**6:** *Staff training and skills are in line with BBMP management needs and with anticipated future needs*	Number of FPO trainings/up-grading and site visits; evaluation reports	**OIC, PFPO, SO**
	6.2	Provide regular training on BBMP regulations to both FPOs and partner community groups	- ditto -	Number of FPO trainings/up-grading	**OIC, PFPO**
	6.3	Ensure all staff capacity building through regular training and refresher courses	- ditto -	Number of FPO trainings/up-grading	**OIC, PFPO, SO**
2	7.	***COMMUNITY CAPACITY BUILDING AND TRAINING*: To strengthen BBMP community groups as effective management partners to ensure efficient protection and management**			
	7.1	Develop and implement an empowerment, capacity building and training programme for specific community groups to ensure that they eventually have equal power	**7:** *There is open communication and trust between local community stakeholders and the BBMU*	Number of community trainings, participants, evaluation reports	**OIC, PFPO, NGO**
	7.2	Ensure adequate and regular on-site community partner training for co-management	- ditto -	Number of community trainings, participants, evaluation reports	**OIC, PFPO, NGO**
	7.3	Provide training for boat operators and fishermen as BBMP eco-guides	- ditto -	Number of trainings, participants, evaluation reports	**OIC, PFPO, NGO**
1	8.	***INFRASTRUCTURE AND EQUIPMENT*: To ensure adequate infrastructure and equipment required to effectively manage BBMP**			
	8.1	Maintain the BBMP Headquarters and Visitors Centre	**8:** *Adequate budget will be made available for civil works and equipment and their maintenance*	Renovations made	**OIC, PFPO, SFPO, FPO**
	8.2	Construct one FPO surveillance and public awareness post at La Cambuse	- ditto -	Three NCG watchtowers constructed	**OIC, PFPO, FO**
	8.3	Construct 2 watchtowers, one at the BBMP HQ & one at the La Cambuse post	- ditto -	Visitors Centre constructed	**OIC, PFPO, FO**
	8.4	Design and maintain the BBMP Visitors Center (*Coastal & Marine Sustainability Centre*)	- ditto -	Number of additional buoys established	**OIC, VC**
	8.5	Purchase all required equipment, including, but not limited to, FPO surveillance boats, quad-bike, van, 2 motorcycles, diving equipment & air compressor	- ditto -		**OIC, FO**
	8.6	Ensure routine maintenance for effective management	- ditto -		**PFPO, SFPO, FPO**
1	9.	***REGULATIONS*: To implement and publicise clear and appropriate regulations for managing BBMP**			
	9.1	Enforce national Fisheries Act regulations at BBMP	***9:*** *Coordinated mechanisms to enforce regulations that control inappropriate resource use and activities in BBMP exist and are being effectively implemented*	Number of incidents and arrests – reduced over time	**PFPO, SFPO, FPO**
	9.2	Regularly review appropriate requirements for changes to regulations	- ditto -	Annual reports, monitoring & evaluation reports	**PFPO, SFPO, FPO**
	9.3	Review and revise the current regulations to encourage and accommodate community participation in BBMP law enforcement, surveillance and other co-management activities	- ditto -	Meetings and workshops, number of participants	**PFPO, SFPO, FPO, PS**
	9.4	Establish institutional arrangements for coordinated regulations enforcement (e.g., NCG)	- ditto -	Meetings and workshops, number of participants, meetings with hotel surveillance officers	**PFPO, SFPO, FPO, PS, GA**
1	10.	***SURVEILLANCE, ENFORCEMENT AND CONFLICT RESOLUTION*: To ensure adequate and coordinated performance with strong supervision for surveillance, law enforcement and conflict resolution**			
	10.1	Establish a system and protocol for FPOs to conduct effective patrols, surveillance, enforcement, communication, conflict resolution and reporting	**10:** *FPOs are mandated for BBMP regulations enforcement and surveillance and can establish good cooperation with hotel security officers and NCG*	Coordinated FPO work plans & patrol schedules	**PFPO, SFPO**
	10.2	Provide regular training on the BBMP regulations and existing fisheries regulations to both FPOs and the community	- ditto -	Coordinated FPO work plans & patrol schedules	**OIC, PFPO, SFPO**
	10.3	Establish good cooperation among FPOs, NCG, Beach Authority, local residents and government agencies through a co-management system that supports effective regulations compliance	- ditto -	Meetings and workshops (BBMU, NCG, GAs, PS-hotels)	**PFPO, SFPO, FPO, GA, PS, NGO**

P	No.	Programmes, Objectives and Actions	Assumptions	Indicators	Responsibilities
	10.4	Establish a system and protocol for effective FPO patrols, communication and reporting (**= 10.1**)	- ditto -	Coordinated FPO work plans & patrol schedules	**PFPO, SFPO**
	10.5	Recruit community members, registered fishers and amateur/unregistered fishers to support FPOs and complement the existing surveillance framework	- ditto -	Meetings and workshops (BBMU, NCG, GAs, PS-hotels)	**PFPO, SFPO, FPO, GA, PS, NGO**
2	**11.**	***MONITORING MANAGEMENT EFFECTIVENESS*: To establish a monitoring and evaluation programme to ensure effective implementation of the BBMP management plan**			
	11.1	Establish an integrated long-term monitoring and evaluation programme for MPA management effectiveness (METT) to measure impacts from implementing activities and progress towards achieving objectives	**11:** *There is adequate capacity and understanding to make periodic and standardized METT assessments*	Improvements of BBMP METT scores (Year 5)	**SO, OIC, PFPO**
	11.2	Ensure monthly FPO work plans with clear milestones and targets are coordinated by the PFRO or Officer-in Charge/Park Manager	- ditto -	Coordinated FPO work plans & patrol schedules	**OIC, PFPO**
1	**12.**	***MANAGEMENT PLAN REVIEW PROCESS*: To establish a clear and regular management plan review process and adapt activities to changing circumstances**			
	12.1	Prepare quarterly, annual and *ad hoc* adaptive management evaluations of implementation progress as part of the M&E programme and establish the mechanism to quickly respond to changing circumstances	**12:** *There is adequate capacity and understanding of adaptive management to make periodic and standardized management plan reviews*	Quarterly and annual adaptive management evaluation reports	**OIC, PFPO, SO**
	2	**BIODIVERSITY CONSERVATION PROGRAMME**			
2	**13.**	***BOUNDARY AND AREA*: To maintain and publicize the demarcated boundary of BBMP**			
	13.1	Replace old buoys with eco-friendly and weather-resistant buoys	**13:** *The BBMP boundary is known by the hotel, boat operators and local residents and is appropriately demarcated*	Surveillance and evaluation reports	**PFPO, SFPO, FPO**
	13.2	Ensure regular maintenance of buoys	- ditto -	Annual budgets	**PFPO, SFPO, FPO**
	13.3	Review traffic lanes and required modifications	- ditto -	Traffic lanes modified as appropriate	**PFPO, SFPO, FPO**
1	**14.**	***MANAGEMENT ZONES*: To maintain a system of management zones ranging from conservation to multiple-use (e.g., tourism and recreation, fishing, restoration)**			
	14.1	Enforce regulations for Multiple-use and Conservation zones	**14:** *Management zones are respected and will achieve objectives for biodiversity conservation*	Surveillance and evaluation reports	**PFPO, SFPO, FPO**
	14.2	Post signs at strategic points explaining location and zone regulations	- ditto -	Signs upgraded & placed at high visitor-use areas	**PFPO, SFPO, FPO**
	14.3	Review adequacy of management zones boundaries after the first 3 years using the results of the monitoring programme and research, and make recommendations for amendments to the zones as needed	- ditto -	Monitoring and evaluation reports	**PFPO, SFPO, FPO**
1	**15.**	***SUPPORT AREA*: To facilitate and promote the development of acceptable guidelines for the types and extent of development activities in the watershed and develop partnerships**			
	15.1	Promote and facilitate partnerships with hotels, community groups, sugar plantations, NCG, Beach Authority, Coastal Zone Management Unit, Mauritius Ports Authority and others as necessary for Support Area management	**15:** *The importance of the watershed to BBMP is understood, and there is the political will to establish and implement the Watershed Board*	*Blue Bay Watershed Board* established; number of meetings and participants	**OIC, NGO, GA, PS, PFPO**
	15.2	Promote and facilitate establishment of a *Blue Bay Watershed Board* comprised of representatives from government agencies, NGOs and community groups with activities within the watershed that will: (i.) coordinate to provide special management status to the area, (ii.) facilitate development of legal guidelines for development within the area and (iii.) review Ministry of Housing & Lands coastal zone management guidelines for appropriateness for BBMP	- ditto -		**OIC, NGO, GA, PS, PFPO**
1	**16.**	***LINKAGES TO OTHER CONSERVATION AREAS*: To maximise the positive impact of BBMP protection by linking its management to that of an adjacent conservation areas (Grand Port Fishing Reserve) to form an integrated protected system**			
	16.1	Expand BBMP management activities (e.g., surveillance, monitoring, awareness) to southern and northern sectors of the Grand Port Fishing Reserve	**16:** *There is the willingness for BBMU to cooperate with managers of Grand Port Fishing Reserve, local government and marine resource users to extend and*	Number of MOUs for integrated conservation and protected area management	**OIC, PFPO, SFPO, FPO, GA**

P	No.	Programmes, Objectives and Actions	Assumptions	Indicators	Responsibilities
			improve protection and management of Grand Port Fishing Reserve, linked to BBMU capacity & resources		
1	17.	***TOURISM AND RECREATIONAL USE*: To ensure the carrying capacity of tourism and recreational use neither exceeds acceptable limits nor harms the environment**			
	17.1	Implement with hotels carrying capacity guidelines	***17:** There can be excellent co-operation between BBMU and tourism operators to enhance visitor experiences, protect values and resolve carrying capacity issues*	Sustainable commercial-use carrying capacity study completed and implemented; meetings with hotels	**CC, PS, PFPO**
	17.2	Promote with Tourism an integrated strategy that links marine conservation with tourism development and conducts periodic assessments of impacts and visitor carrying capacity	- ditto -	BBMU & Tourism meetings; Tourism integrated strategy; impact assessment reports; carrying capacity study	**CC, PS, PFPO**
	17.3	Promote with Tourism rules and guidelines for tourism use and safety in designated areas	- ditto -	BBMU, hotels & Tourism meetings; integrated strategy/guidelines; carrying capacity study	**CC, PS, GA, PFPO**
	17.4	Promote with Tourism guidelines that limit the number of hotels and rooms	- ditto -	BBMU, hotels & Tourism meetings; integrated strategy/guidelines; carrying capacity study	**CC, PS, GA, PFPO**
	17.5	Promote with the government eco-friendly and sustainable forms of water use, waste removal and energy efficiency	- ditto -	BBMU, hotels & GA meetings; Tourism integrated strategy / guidelines	**OIC, PFPO, PS, GA**
	17.6	Promote and enhance existing inspection procedures of hotel wastewater treatment plants and discharge by relevant authorities	- ditto -	BBMU & hotels meetings	**OIC, PFPO, PS, GA**
	17.7	Promote BBMP rules and regulations within hotels	- ditto -	BBMU & hotels meetings	**OIC, PFPO, PS**
	17.8	Control boating and enforce use of mooring buoys rather than anchoring in sensitive coral reefs	- ditto -	Mooring buoys guidelines enforced	**PFPO, SFPO, FPO, PS**
	17.9	Review locations of mooring buoys & identify suitable locations for & implement a system of mooring buoys to minimize damage to sensitive lagoon habitats	- ditto -	Mooring buoys guidelines enforced	**PFPO, SFPO, FPO, PS**
	17.10	Add mooring buoys in the lagoon north of BBMP along Cape D'Esny (within Grand Port Fishing Reserve)	- ditto -	Mooring buoys in place within Grand Port FR and guidelines enforced	**PFPO, SFPO, FPO**
2	18.	***ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION*: To contribute to the appraisal of proposed developments within and adjacent to BBMP by monitoring each EIA process**			
	18.1	Monitor the legal requirements and review the mechanism for conducting a transparent EIA and post-construction monitoring protocols for all developments that potentially impact BBMP and its watershed	**18:** *The EIA process in Rodrigues is transparent and responsive to potential impacts*	Number of proposed development EIAs reviewed and BBMU feedback submitted to GAs	**OIC, PFPO, SO**
	18.2	Ensure BBMP Steering Committee (Board) and national Ramsar Committee have involvement in EIA reviews	- ditto -	Number of proposed development EIAs reviewed and BBMU feedback submitted to GAs	**OIC, PFPO, SO**
	18.3	Develop habitat specific guidelines for preservation and sustainable use of habitats of conservation importance (e.g., coral, seagrass, mangrove) to be used as the basis for an EIA as appropriate	- ditto -	Guidelines established	**SO, PFPO, SFPO**
2	19.	***SUSTAINABLE FISHERIES MANAGEMENT*: To ensure that fishing within BBMP is done under established guidelines and below the capacity of the ecosystem to sustain it**			
	19.1	Establish and maintain ecosystem and catch monitoring	**19:** *BBMU and community groups can cooperate to improve fisheries management for the long term*	Surveillance and evaluation reports	**SO, PFPO, SFPO**
	19.2	Improve surveillance and law enforcement of local fisheries	- ditto -	Surveillance and evaluation reports	**PFPO, SFPO, FPO**
	19.3	Implement a ban on pole fishing within the lagoon	- ditto -	Surveillance and evaluation reports	**PFPO, SFPO, FPO**
	19.4	Implement a programme to address illegal fishers	- ditto -	Surveillance and evaluation reports	**PFPO, SFPO, FPO**
1	20.	***MARINE MANAGEMENT*: To support the recovery and rehabilitation of marine biodiversity and resources through adaptive ecosystem management**			
	20.1	Develop an action plan for removal of invasive and alien species	**20:** *Requirements for adaptive management of marine ecosystems, species and values can be substantially or fully addressed*	Guidelines and action plan established	**SO, PFPO**

P	No.	Programmes, Objectives and Actions	Assumptions	Indicators	Responsibilities
	20.2	Organize regular beach-cleans to remove rubbish	- ditto -	Number of beach-cleans; Monitoring and evaluation reports	**PFPO, SFPO, FPO, NGO, PS**
	20.3	Organize regular underwater clean-up operations in partnership with local divers to remove rubbish (e.g., discarded fish-traps and other missing gear) that may cause further damage	- ditto -	Number of underwater clean-up operations Monitoring and evaluation reports	**PFPO, SFPO, FPO, NGO, PS**
	20.4	Address the growth of algae at the source of the problem and on coral in the lagoon	- ditto -	Monitoring and evaluation reports	**SO, PFPO, SFPO, FPO**
	20.5	Restock the lagoon with herbivorous fish (e.g., species)	- ditto -	Monitoring and evaluation reports	**SO, PFPO, SFPO, FPO**
	20.6	Develop w/ government guidelines to manage & avoid accidental or intentional damage to natural habitats w/in BBMP due to development of in-water infrastructure that would not be subject to EIA (e.g., jetties, mooring buoys)	- ditto -	Guidelines established; Number of meetings	**OIC, SO, PFPO, GA, PS**
	20.7	Establish a volunteer programme to assist with marine management	- ditto -	Volunteer Prog. established & volunteers recruited	**OIC, VC, NGO, GA**
3	**21.**	***ÎLE DES DEUX COCOS MANAGEMENT*: To integrate the management of Île des Deux Cocos with BBMP collaborative management to enhance ecosystem conservation and recreational activities**			
	21.1	Coordinate Naiade management of Île des Deux Cocos with BBMP	**21:** *There is the political will to extend BBMP management to Île des Deux Cocos and to delegate mgmt. responsibility jointly to BBMU and Naiade*	BBMU agreements and MOUs established with Naiade (PS) and NGO	**OIC, PFPO, PS**
	21.2	Develop an action plan with Naiade for vegetation and beach management	- ditto -	MOU with Naiade & NGO; Île des Deux Cocos management /action plan prepared & evaluated	**OIC, PFPO, PS, NGO**
1	**22.**	***COASTAL WATERSHED MANAGEMENT*: To promote and contribute to coordinated management measures taken by the government that ensures all land-use protects the watershed of BBMP and promote reforestation and appropriate agricultural practices**			
	22.1	Coordinate management of BBMP with other agencies and plantations that have activities within the watershed (establishment of a Blue Bay Watershed Management Board)	**22:** *The importance of the watershed to BBMP is understood, and there is the political will to establish and implement an action programme coordinated by a Watershed Board*	*Watershed Board* established and a coordinated action programme prepared	**OIC, PFPO, NGO, GA, PS**
	22.2	Address the issue of run-off containing fertilizer and pesticides	- ditto -	Monitoring and evaluation reports	**SO, PFPO, SFPO, PS, GA**
	22.3	Promote and facilitate a programme with Forestry and private landowners to reforest and rehabilitate at critical points around the lagoon where run-off from sugar plantations is common and reduce sedimentation flow into the lagoon	- ditto -	Number of meetings and agreements for forestry extension support	**SO, PFPO, SFPO, GA**
	22.4	Promote indigenous tree nurseries with Forestry and private land owners that ensures adequate protection & maintenance of transplanted seedlings for tree planting around the coast and at the Blue Bay & La Cambuse public beaches	- ditto -	Number of nurseries and area replanted with FD and community	**SO, PFPO, SFPO, GA**
	22.5	Establish a Volunteer Programme to assist with watershed management	- ditto -	Volunteer Prog. established & volunteers recruited	**OIC, VC, NGO, GA**
2	**23.**	***ADAPTING MANAGEMENT TO CLIMATE CHANGE*: To support activities that assist in adaptation to climate change by modifying as appropriate the conservation zones and other management actions to increase resilience in response to research and monitoring**			
	23.1	Establish a long-term monitoring programme on the ecological and sociological impacts of climate change for adaptive management	**23:** *Impacts from climate change on the marine ecosystem can be recognized & mgmt. can respond*	Baseline for monitoring programme established	**SO, OIC, PFPO**
	23.2	Establish linkages and partnerships with national and international scientific institutions to enhance the local climate change programme	- ditto -	Linkages and partnerships established	**SO, OIC, PFPO**
2	**24.**	***BIODIVERSITY RESEARCH*: To promote and facilitate conservation and management oriented biodiversity research in support of BBMP management**			
	24.1	Develop rules, regulations and protocol for marine research within BBMP	**24:** *There are the capacity and resources to conduct a mgmt. oriented research programme*	*Biodiversity Research Action Plan* prepared	**SO**

P	No.	Programmes, Objectives and Actions	Assumptions	Indicators	Responsibilities
	24.2	Develop a *Biodiversity Research Action Plan* that identifies priority research areas in support of BBMP management (to be reviewed on an annual basis and in response to key issues identified during the monitoring programme)	- ditto -	*Biodiversity Research Action Plan* prepared	**SO**
	24.3	Promote implementation of priority research projects within BBMP through building a network with suitable academic institutions and attendance at workshops, conferences and other suitable forums	- ditto -	Research linkages and partnerships established	**SO, PFPO, SFPO, FPO, NGO**
1	**25.**	***MONITORING ECOSYSTEM HEALTH*: To establish a technical and scientific monitoring and evaluation programme to ensure effective health and identify measures for recovery of the marine ecosystem**			
	25.1	Prepare and implement a *Biodiversity Monitoring Action Plan*	**25:** *A good monitoring and evaluation system exists, is well implemented and can be used in adaptive mgmt.*	*Biodiversity Monitoring Action Plan* prepared	**SO**
	25.2	Maintain the ecological coral reef monitoring sites and increase monitoring to every three months	- ditto -	Number of trainings and participants; monitoring & evaluation reports	**SO, PFPO, SFPO, FPO**
	25.3	Implement a monthly water quality monitoring programme especially at critical points along the coast of BBMP	- ditto -	Monitoring & evaluation reports	**SO, PFPO, SFPO, FPO**
	25.4	Implement a full biodiversity assessment and ecological monitoring survey with suitably qualified experts after 4.5 years and review monitoring methods and survey design	- ditto -	Monitoring & evaluation reports; Surveys confirm that measured reef condition (e.g., fish & coral diversity, relative damage from human & natural causes) improves beyond established baseline	**SO, PFPO, SFPO, FPO**
	25.5	Develop a rapid response plan for natural and man-made threats (e.g., coral bleaching events, cyclones, crown-of-thorns starfish outbreaks)	- ditto -	Monitoring & evaluation reports	**SO, PFPO, SFPO, FPO**
	25.6	Establish a monitoring programme for seagrass beds on a bi-monthly basis to detect seasonal changes	- ditto -	Monitoring & evaluation reports	**SO, PFPO, SFPO, FPO**
2	**26.**	***COMMUNITY-BASED RESOURCE MONITORING*: To support and build the capacity of the BBMP community for a community-based resource monitoring programme**			
	26.1	Initiate and implement a capacity building and training programme for interested local people to enable them to safely conduct the Participatory Resource Monitoring Programme under the supervision of the AFRC Scientific Officers	**26:** *Good community cooperation and capacity can exist and be sustained in support of resource monitoring for BBMP management*	Number of trainings and participants; monitoring & evaluation reports	**SO, PFPO, NGO**
	3	**SUSTAINABLE LIVELIHOODS PROGRAMME**			
1	**27.**	***LOCAL COMMUNITY DEVELOPMENT*: To contribute to the appraisal and implementation of measures taken by local community development NGO's and government agencies for extension services and training in communities adjacent to BBMP**			
	27.1	Establish partnerships with local community development NGO's and government agencies for extension services and training and in support of BBMP and government policies	**27:** *Agreements can be made with affected land owners with incentives, and MOU's can be made with NGO's and GAs for extension*	MOU with NGO and GAs established; Number of workshops, trainings, participants	**OIC, PFPO, NGO, GA**
	27.2	Promote more equitable and just opportunities for local people to benefit from BBMP	- ditto -	Number of workshops, trainings, participants	**OIC, PFPO, NGO, GA, PS**
	27.3	Establish a Volunteer Programme to assist with local community development	- ditto -	Volunteer Prog. established & volunteers recruited	**OIC, VC, NGO, GA**
2	**28.**	***BUILDING SUSTAINABLE LIVELIHOODS*: To contribute to the appraisal and implementation of sustainable livelihood initiatives for BBMP communities and in support of the MID framework**			
	28.1	Promote a program with government and NGO partners for improving entrepreneur skills, managing SMEs (e.g., production, marketing), market research for local products and alternative energy installation (solar, wind) as well as exchanges and cross-visits with other communities for alternative income generation	**28:** *There is the political will to fund and implement a* Livelihoods Action Plan*, and agreements and MOU's can be made with NGO's and GAs*	There is a significant or major flow of economic benefits to local communities from activities in and around BBMP (e.g., local employment, locally operated commercial tours, etc)	**OIC, PFPO, NGO, GA**
	28.2	Establish a volunteer programme to assist with the livelihoods programme	- ditto -	Volunteer Prog. established & volunteers recruited	**OIC, VC, NGO, GA**

P	No.	Programmes, Objectives and Actions	Assumptions	Indicators	Responsibilities
2	29.	***GENDER CONSIDERATIONS*: To ensure constraints are minimised and opportunities maximised for both men and women to participate in and benefit from management interventions**			
	29.1	Establish a monitoring programme to ensure that both men and women are represented in co-management decision-making, empowerment and equitable benefits derived from BBMP	**29:** *MOUs can be established with NGO to ensure gender equality*	Gender equality monitoring programme established	**OIC, PFPO**
3	30.	***COMMUNITY-BASED SOCIO-ECONOMIC MONITORING*: To establish a monitoring and evaluation programme with public participation through community-based social monitoring**			
	30.1	Develop a capacity building and training programme for community partners to effectively implement community-based socio-economic monitoring to evaluate benefits from BBMP to the community	**30:** *Community partners will continue to implement monitoring and will be able to evaluate benefits*	Number of participants, trainings and workshop evaluation reports	**OIC, PFPO**
	4	**ENVIRONMENTAL AWARENESS PROGRAMME**			
1	31.	***INFORMATION, EDUCATION AND COMMUNICATION PROGRAMME*: To maximise the potentials of BBMP for public environmental awareness by strengthening its information, education and communication programme**			
	31.1	Design and implement an *IEC Strategy* on the importance of BBMP, and develop publications, pamphlets, posters and audio-visual materials directed toward target groups	**31:** *There can be a coordinated and effective* IEC Strategy *and a programme that is linked to the objectives and needs of BBMP*	IEC Strategy prepared; number of awareness workshops and recipients of awareness materials	**VC, OIC**
	31.2	Develop a research-based communication programme (e.g., public perceptions and attitudes) focusing on instilling a sense of awareness and pride among local and national citizens	- ditto -	Evaluation reports	**VC, OIC**
	31.3	Establish regular contacts with TV stations, radio stations and newspapers	- ditto -	Number of media contacts	**VC, OIC**
	31.4	Establish and regularly update the BBMP website with additional external links for more information (e.g., local hotels, NGOs)	- ditto -	BBMP website established, regularly updated and maintained	**VC**
	31.5	Publicise the BBMP regulations using a variety of media to ensure that residents and visitors are aware of the regulations	- ditto -	Number of materials produced and workshops	**VC, OIC**
	31.6	Conduct regular public events in and around BMP, such as Open Days, Clean-Ups and Ocean Day, Earth Day, Environment Day other awareness-raising activities	- ditto -	Number of events organised	**VC, PFPO, SFPO, FPO**
	31.7	Establish an outreach programme to schools and other institutions	- ditto -	Number of schools participating in outreach programme	**VC, PFPO, SFPO, FPO**
	31.8	Promote conservation in the local school curriculum and establish links with regional environmental education networks and other MPAs in the region (e.g., Mauritius, Seychelles, Comoros, Réunion, Madagascar, Maldives)	- ditto -	Number of linkages, site visits and evaluation reports	**VC**
	31.9	Establish a programme of *Marine Conservation Clubs* in primary and secondary schools to promote marine and coastal conservation as well as sustainability	- ditto -	Number of Clubs established	**VC**
	31.10	Establish a Volunteer Programme to assist with the IEC Programme	- ditto -	Volunteer Prog. established & volunteers recruited	**VC**
2	32.	***VISITORS CENTRE*: To establish, operate and maintain the visitors centre as a *Coastal and Marine Sustainability Centre* (CMSC)**			
	32.1	Establish the visitors centre at BBMP headquarters	**32:** *Funding can be acquired to design, construct, equip and operationalise the CMSC*	Visitor Centre facilities constructed and services in place	**OIC, VC**
	32.2	Contract the services of a professional visitors centre information display design specialist	- ditto -	Visitors Centre information displays designed and constructed	**VCD, OIC**
	32.3	Establish contacts with international sustainability centres for technical support	- ditto -	Number of contacts and support	**VCD, VC**
	32.4	Operationalise and staff the visitors centre	- ditto -	Staff in place	**OIC, VC**
	32.5	Install and maintain exhibits and alternative energy generators (solar, wind)	- ditto -	Exhibits & alternative energy generators installed	**VC, VCD, OIC**

P	No.	Programmes, Objectives and Actions	Assumptions	Indicators	Responsibilities
	5	**SUSTAINABLE FINANCING PROGRAMME**			
1	**33.**	***FINANCIAL PLANNING, INCOME GENERATION AND FUNDS MANAGEMENT*: To ensure financial planning, income generation and BBMP funds management for effective implementation**			
	33.1	Develop a self-financing programme for five-year implementation drawing from several sources (e.g., hotel and private sector contributions, guided tours, mooring, gift shop revenues) in addition to annual government allocations	**33:** *There is a secure MoFR budget for BBMP and its management needs on a multi-year cycle*	Financial management system; monthly and quarterly income and expense reports	**FO, OIC, PS**
	33.2	Build funds management and income generation capability (e.g., donor search and grant proposal writing) through regular finance staff training and up-grading	- ditto -	Fees collection mechanism established and generating income to MPA Fund	**FO, OIC**
3	**34.**	***CONSERVATION TRUST FUND*: To determine the feasibility and mechanism for establishing a *Conservation Trust Fund* in support of BBMP sustainable financing**			
	34.1	Contract the services of a consultant to conduct a study of *Conservation Trust Funds* set up for protected areas throughout the world to determine the most appropriate CTF for BBMP to receive external multilateral, bilateral and philanthropic foundation funding support	**34:** *A strategy can be designed for long term financial sustainability to include a local or national level CTF*	Feasibility study made and recommendations approved	**CTF, OIC, FO**
	34.2	Establish the legal framework for the Conservation Trust Fund, its Board and CTF management responsibilities	- ditto -	Legislation drafted or amended	**CTF, OIC**
	34.3	Explore the possibility of an airport departure "conservation tax" with revenues going into the BBMP Fund or the CTF for management of all Mauritius MPAs/PAs	- ditto -	Decision made by GoM to implement collection of a "conservation tax"	**CTF, OIC**
	34.4	At the end of the five-year period have in place an efficient self-financing CTF mechanism, with minimal government funding inputs, for future sustainable financial management support	- ditto -	Efficient self-financing CTF mechanism, with reduced GoM funding inputs, for future sustainable financial management support	**OIC, FO**

KEY TO RESPONSIBILITIES: BBMU=Blue Bay Management Unit, **FO**=Financial Officer / Accountant, **FPO**=Fisheries Protection Officers, **GA**=Government Agency partners, **NGO**=Non-governmental Organisation partners, **OIC**=Officer-in-Charge, **PFPO**=Principal Fisheries Protection Officer, **PS**=Private Sector partners, **SFPO**=Senior Fisheries Protection Officers, **SO**=Scientific Officer, **VC**=IEC Programme & Visitors Centre Coordinator; ***Technical Specialists*: CC**=Carrying Capacity Assessment Specialist, **CTF**=Conservation Trust Fund Establishment Specialist, **VCD**=Visitors Center Information Display Design Specialist, **WM**=Watershed Management Assessment Specialist

APPENDIX J
IMPLEMENTATION SCHEDULE

IMPLEMENTATION SCHEDULE

* = Indicates an action that is expected to be **on-going** throughout most or all of the five years of implementation
An action that begins with "*Coordinate*", "*Enforce*", "*Ensure*", "*Maintain*" or "*Promote*" usually requires on-going implementation (no priority score) for most or all the next 5 years.

*	No.	Programmes, Objectives and Actions	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	1	**GOVERNANCE THROUGH CO-MANAGEMENT PROGRAMME**																				
	1.	***LEGISLATION AND STATUS*: To maintain the requirements of the Ramsar Convention to ensure BBMP remains a wetland of international importance**																				
*	1.1	Regularly review and maintain Ramsar requirements for BBMP																				
*	1.2	Regularly review appropriate legal status and requirements for changes to national Fisheries Act regulations								■				■				■				■
	2.	***INSTITUTIONAL ARRANGEMENTS*: To establish a collaborative or co-management framework with clear roles, rights and responsibilities for all institutions comprising the framework**																				
*	2.1	Strengthen the BBMP Management Unit																				
*	2.2	Ensure that the management framework is clear, well-publicised and flexible																				
*	2.3	Establish MOUs with NGOs and the private sector for implementation of specific activities																				
*	2.4	Strengthen BBMP Steering Committee (Board) to make it more effective & with well defined objectives, roles, rights & responsibilities			■	■	■															
	2.5	Clarify the role and responsibility of the NCG as an effective partner in BBMP management			■																	
	3.	***PUBLIC PARTICIPATION*: To ensure public participation by establishing clear public rights and responsibilities in support of the BBMP co-management framework**																				
*	3.1	Work with the local community to establish clear limits, rights and responsibilities																				
*	3.2	Publicise rights and responsibilities for community co-management partnerships																				
	4.	***PUBLIC-PRIVATE PARTNERSHIPS*: To promote the private sector (e.g., local hotels) in BBMP management activities**																				
*	4.1	Establish public-private partnership MOU's and agreements (e.g., for rehabilitation, ecotourism, environmental education, training, income generation, park maintenance)																				
*	4.2	**Establish** partnerships between local hotels and the BBMP Management Unit				■	■			■	■											
	5.	***ADMINISTRATION AND STAFFING*: To ensure effective administration and adequate staffing levels for BBMP management**																				
*	5.1	Recruit additional staff for effective MPA management					■															
	5.2	Establish clear job descriptions with limits and responsibilities for all staff		■	■																	
	6.	***STAFF CAPACITY BUILDING AND TRAINING*: To build the capacity of all BBMP staff through regular training and site visits to other MPAs**																				
*	6.1	Ensure FPO capacity building through training and site visits to other national and international MPAs																				
*	6.2	Provide regular training on BBMP regulations to both FPOs and partner community groups				■				■				■				■				■
*	6.3	Ensure all staff capacity building through regular training and refresher courses																				
	7.	***COMMUNITY CAPACITY BUILDING AND TRAINING*: To strengthen BBMP community groups as effective management partners to ensure efficient protection and management**																				

*	No.	Programmes, Objectives and Actions	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
*	7.1	**Develop** and implement an empowerment, capacity building and training programme for specific community groups to ensure that they eventually have equal power						■	■													
*	7.2	Ensure adequate and regular on-site community partner training for co-management																				
*	7.3	Provide training for boat operators and fishermen as BBMP eco-guides				■				■				■				■				■
	8.	***INFRASTRUCTURE AND EQUIPMENT*: To ensure adequate infrastructure and equipment required to effectively manage BBMP**																				
*	8.1	Maintain the BBMP Headquarters and Visitors Centre																				
	8.2	Construct one FPO surveillance and public awareness post at La Cambuse					■	■														
	8.3	Construct 2 watchtowers, one at the BBMP HQ and one at the La Cambuse post				■	■	■														
*	8.4	Design and maintain the BBMP Visitors Center (*Coastal & Marine Sustainability Centre*)																				
*	8.5	Purchase all required equipment, including, but not limited to, FPO surveillance boats, quad-bike, van, 2 motorcycles, diving equipment & air compressor																				
*	8.6	Ensure routine maintenance for effective management		■																		
	9.	***REGULATIONS*: To implement and publicise clear and appropriate regulations for managing BBMP**																				
*	9.1	Enforce national Fisheries Act regulations at BBMP																				
*	9.2	Regularly review appropriate requirements for changes to regulations																				
*	9.3	Review and **revise** the current regulations to encourage and accommodate community participation in BBMP law enforcement, surveillance and other co-management activities					■	■														
	9.4	**Establish** institutional arrangements for coordinated regulations enforcement (e.g., NCG)					■	■														
	10.	***SURVEILLANCE, ENFORCEMENT AND CONFLICT RESOLUTION*: To ensure adequate and coordinated performance with strong supervision for surveillance, law enforcement and conflict resolution**																				
*	10.1	**Establish** a system and protocol for FPOs to conduct effective patrols, surveillance, enforcement, communication, conflict resolution and reporting		■																		
*	10.2	Provide regular training on the BBMP regulations and existing fisheries regulations to both FPOs and the community																				
*	10.3	Establish good cooperation among FPOs, NCG, Beach Authority, local residents and government agencies through a co-management system that supports effective regulations compliance																				
*	10.4	**Establish** a system and protocol for effective FPO patrols, communication and reporting (**= 10.1**)		■																		
*	10.5	Recruit community members, registered fishers and amateur/unregistered to support FPOs and complement the existing surveillance framework																				
	11.	***MONITORING MANAGEMENT EFFECTIVENESS*: To establish a monitoring and evaluation programme to ensure effective implementation of the BBMP management plan**																				
*	11.1	**Establish** an integrated long-term monitoring and evaluation programme for MPA management effectiveness (METT) to measure impacts from implementing activities and progress towards achieving objectives				■																
*	11.2	Ensure monthly FPO work plans with clear milestones and targets are coordinated by the PFRO or Officer-in Charge/Park Manager																				
	12.	***MANAGEMENT PLAN REVIEW PROCESS*: To establish a clear and regular management plan review process and adapt activities to changing circumstances**																				
*	12.1	Prepare quarterly, annual and *ad hoc* adaptive management evaluations of implementation progress as part of the M&E programme and establish the mechanism to quickly respond to changing circumstances				■				■				■				■				■

*	No.	Programmes, Objectives and Actions	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	2	**BIODIVERSITY CONSERVATION PROGRAMME**																				
	13.	***BOUNDARY AND AREA*: To maintain and publicize the demarcated boundary of BBMP**																				
	13.1	Replace old buoys with eco-friendly and weather-resistant buoys						■	■													
*	13.2	Ensure regular maintenance of buoys																				
	13.3	Review traffic lanes and required modifications			■																	
	14.	***MANAGEMENT ZONES*: To maintain a system of management zones ranging from conservation to multiple-use (e.g., tourism and recreation, fishing, restoration)**																				
*	14.1	Enforce regulations for Multiple-use and Conservation zones																				
	14.2	Post signs at strategic points explaining location and zone regulations			■		■															
	14.3	Review adequacy of management zones boundaries after the first 3 years using the results of the monitoring programme and research, and make recommendations for amendments to the zones as needed													■							
	15.	***SUPPORT AREA*: To facilitate and promote the development of acceptable guidelines for the types and extent of development activities in the watershed and develop partnerships**																				
*	15.1	Promote and facilitate partnerships with hotels, community groups, sugar plantations, NCG, Beach Authority, Coastal Zone Management Unit, Mauritius Ports Authority and others as necessary for Support Area management																				
*	15.2	Promote and facilitate **establishment** of a *Blue Bay Watershed Board* comprised of representatives from government agencies, NGOs and community groups with activities within the watershed that will: (i.) coordinate to provide special management status to the area, (ii.) facilitate development of legal guidelines for development within the area and (iii.) review Ministry of Housing & Lands coastal zone management guidelines for appropriateness for BBMP					■	■														
	16.	***LINKAGES TO OTHER CONSERVATION AREAS*: To maximise the positive impact of BBMP protection by linking its management to that of an adjacent conservation areas (Fishing Reserve) to form an integrated protected system**																				
*	16.1	Expand BBMP management activities (e.g., surveillance, monitoring, awareness) to southern and northern sectors of the Grand Port Fishing Reserve				■	■															
	17.	***TOURISM AND RECREATIONAL USE*: To ensure the carrying capacity of tourism and recreational use neither exceeds acceptable limits nor harms the environment**																				
	17.1	Implement with hotels carrying capacity guidelines							■	■												
*	17.2	Promote with Tourism an integrated strategy that links marine conservation with tourism development and conducts periodic assessments of impacts and visitor carrying capacity																				
*	17.3	Promote with Tourism rules and guidelines for tourism use and safety in designated areas																				
*	17.4	Promote with Tourism guidelines that limit the number of hotels and rooms																				
*	17.5	Promote with the government eco-friendly and sustainable forms of water use, waste removal and energy efficiency																				
*	17.6	Promote and enhance existing inspection procedures of hotel wastewater treatment plants and discharge by relevant authorities																				
*	17.7	Promote BBMP rules and regulations within hotels																				
*	17.8	Control boating and enforce use of mooring buoys rather than anchoring in sensitive coral reefs																				
*	17.9	Review locations of mooring buoys and identify suitable locations for and implement a system of mooring buoys to minimize damage to sensitive lagoon habitats																				
	17.10	Add mooring buoys in the lagoon north of BBMP along Cape D'Esny			■		■															

*	No.	Programmes, Objectives and Actions	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	18.	***ENVIRONMENTAL IMPACT ASSESSMENT AND MITIGATION*: To contribute to the appraisal of proposed developments within and adjacent to BBMP by monitoring each EIA process**																				
*	18.1	Monitor the legal requirements and review the mechanism for conducting a transparent EIA and post-construction monitoring protocols for all developments that potentially impact BBMP and its watershed																				
*	18.2	Ensure BBMP Steering Committee and national Ramsar Committee have involvement in EIA reviews																				
	18.3	Develop habitat specific guidelines for preservation and sustainable use of habitats of conservation importance (e.g., coral, seagrass, mangrove) to be used as the basis for an EIA as appropriate			■	■	■															
	19.	***SUSTAINABLE FISHERIES MANAGEMENT*: To ensure that fishing within BBMP is done under established guidelines and below the capacity of the ecosystem to sustain it**																				
*	19.1	**Establish** and maintain ecosystem and catch monitoring			■	■																
*	19.2	Improve surveillance and law enforcement of local fisheries																				
*	19.3	**Implement** a ban on pole fishing within the lagoon			■	■																
*	19.4	Implement a programme to address illegal fishers																				
	20.	***MARINE MANAGEMENT*: To support the recovery and rehabilitation of marine biodiversity and resources through adaptive ecosystem management**																				
	20.1	Develop an action plan for removal of invasive and alien species					■	■														
*	20.2	Organize regular beach-cleans to remove rubbish																				
*	20.3	Organize regular underwater clean-up operations in partnership with local divers to remove rubbish (e.g., discarded fish-traps and other missing gear) that may cause further damage																				
*	20.4	Address the growth of algae at the source of the problem and on coral in the lagoon																				
*	20.5	Restock the lagoon with herbivorous fish (e.g., species)				■			■				■				■				■	
	20.6	Develop with the government guidelines to manage and avoid accidental or intentional damage to natural habitats within BBMP due to the development of in-water infrastructure that would not be subject to an EIA (e.g., jetties, mooring buoys)						■														
*	20.7	Establish a volunteer programme to assist with marine management					■															
	21.	***ÎLE DES DEUX COCOS MANAGEMENT*: To integrate the management of Île des Deux Cocos with BBMP collaborative management to enhance ecosystem conservation and recreational activities**																				
	21.1	Coordinate Naiade management of Île des Deux Cocos with BBMP			■																	
*	21.2	Develop an action plan with Naiade for vegetation and beach management					■	■														
	22.	***COASTAL WATERSHED MANAGEMENT*: To promote and contribute to coordinated management measures taken by the government that ensures all land-use protects the watershed of BBMP and promote reforestation and appropriate agricultural practices**																				
*	22.1	Coordinate management of BBMP with other agencies and plantations that have activities within the watershed (establishment of a Blue Bay Watershed Management Board)																				
*	22.2	Address the issue of run-off containing fertilizer and pesticides																				
*	22.3	Promote and facilitate a programme with Forestry and private landowners to reforest and rehabilitate at critical points around the lagoon where run-off from sugar plantations is common and reduce sedimentation flow into the lagoon																				
*	22.4	Promote indigenous tree nurseries with Forestry and private land owners that ensures adequate protection and maintenance of transplanted seedlings for tree planting around the coast and at the Blue Bay and La Cambuse public beaches																				
*	22.5	Establish a Volunteer Programme to assist with watershed management																				

*	No.	Programmes, Objectives and Actions	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	23.	***ADAPTING MANAGEMENT TO CLIMATE CHANGE*: To support activities that assist in adaptation to climate change by modifying as appropriate the conservation zones and other management actions to increase resilience in response to research and monitoring**																				
	23.1	**Establish** a long-term monitoring programme on the ecological and sociological impacts of climate change for adaptive management			■	■	■															
*	23.2	Establish linkages & partnerships with national and international scientific institutions to enhance the local climate change programme																				
	24.	***BIODIVERSITY RESEARCH*: To promote and facilitate conservation and management oriented biodiversity research in support of BBMP management**																				
	24.1	Develop rules, regulations and protocol for marine research within BBMP			■	■																
	24.2	Develop a *Biodiversity Research Action Plan* that identifies priority research areas in support of BBMP management (to be reviewed on an annual basis and in response to key issues identified during the monitoring programme)			■	■																
*	24.3	Promote implementation of priority research projects within BBMP through building a network with suitable academic institutions and attendance at workshops, conferences and other suitable forums																				
	25.	***MONITORING ECOSYSTEM HEALTH*: To establish a technical and scientific monitoring and evaluation programme to ensure effective health and identify measures for recovery of the marine ecosystem**																				
	25.1	Prepare and implement a *Biodiversity Monitoring Action Plan*			■																	
*	25.2	Maintain the ecological coral reef monitoring sites and increase monitoring to every three months																				
*	25.3	Implement a monthly water quality monitoring programme especially at critical points along the coast of BBMP																				
	25.4	Implement a full biodiversity assessment and ecological monitoring survey with suitably qualified experts after 4.5 years and review monitoring methods and survey design																		■		
*	25.5	**Develop** a rapid response plan for natural & man-made threats (e.g., coral bleaching events, cyclones, crown-of-thorns outbreaks)					■	■														
	25.6	**Establish** a monitoring programme for seagrass beds on a bi-monthly basis to detect seasonal changes				■																
	26.	***COMMUNITY-BASED RESOURCE MONITORING*: To support and build the capacity of the BBMP community for a community-based resource monitoring programme**																				
*	26.1	**Initiate** and implement a capacity building and training programme for interested local people to enable them to safely conduct the Participatory Resource Monitoring Programme under the supervision of the AFRC Scientific Officers						■														
	3	**SUSTAINABLE LIVELIHOODS PROGRAMME**																				
	27.	***LOCAL COMMUNITY DEVELOPMENT*: To contribute to the appraisal and implementation of measures taken by local community development NGO's and government agencies for extension services and training in communities adjacent to BBMP**																				
*	27.1	Establish partnerships with local community development NGO's and government agencies for extension services and training and in support of BBMP and government policies																				
*	27.2	Promote more equitable and just opportunities for local people to benefit from BBMP																				
*	27.3	Establish a Volunteer Programme to assist with local community development					■	■														
	28.	***BUILDING SUSTAINABLE LIVELIHOODS*: To contribute to the appraisal and implementation of sustainable livelihood initiatives for BBMP communities and in support of the MID framework**																				
*	28.1	Promote a program with government and NGO partners for improving entrepreneur skills, managing SMEs (e.g., production, marketing), market research for local products and alternative energy installation (solar, wind) as well as exchanges and cross-visits with other communities for alternative income generation																				
	28.2	Establish a volunteer programme to assist with the livelihoods programme					■	■														

*	No.	Programmes, Objectives and Actions	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	29.	***GENDER CONSIDERATIONS*: To ensure constraints are minimised and opportunities maximised for both men and women to participate in and benefit from management interventions**																				
	29.1	Establish a monitoring programme to ensure that both men and women are represented in co-management decision-making, empowerment and equitable benefits derived from BBMP			■																	
	30.	***COMMUNITY-BASED SOCIO-ECONOMIC MONITORING*: To establish a monitoring and evaluation programme with public participation through community-based social monitoring**																				
*	30.1	Develop a capacity building and training programme for community partners to effectively implement community-based socio-economic monitoring to evaluate benefits from BBMP to the community						■				■				■				■		
	4	**ENVIRONMENTAL AWARENESS PROGRAMME**																				
	31.	***INFORMATION, EDUCATION AND COMMUNICATION PROGRAMME*: To maximise the potentials of BBMP for public environmental awareness by strengthening its information, education and communication programme**																				
*	31.1	Design and implement an *IEC Strategy* on the importance of BBMP, and develop publications, pamphlets, posters and audio-visual materials directed toward target groups					■	■		■	■											
	31.2	Develop a research-based communication programme (e.g., public perceptions and attitudes) focusing on instilling a sense of awareness and pride among local and national citizens					■	■														
*	31.3	Establish regular contacts with TV stations, radio stations and newspapers																				
*	31.4	**Establish** and regularly update the BBMP website with additional external links for more information (e.g., local hotels, NGOs)				■																
*	31.5	Publicise the BBMP regulations using a variety of media to ensure that residents and visitors are aware of the regulations																				
*	31.6	Conduct regular public events in and around BMP, such as Open Days, Clean-Ups and Ocean Day, Earth Day, Environment Day other awareness-raising activities																				
*	31.7	Establish an outreach programme to schools and other institutions																				
*	31.8	Promote conservation in the local school curriculum and establish links with regional environmental education networks and other MPAs in the region (e.g., Mauritius, Seychelles, Comoros, Réunion, Madagascar, Maldives)																				
	31.9	Establish a programme of *Marine Conservation Clubs* in primary and secondary schools to promote marine and coastal conservation as well as sustainability						■	■													
	31.10	Establish a Volunteer Programme to assist with the IEC Programme							■	■												
	32.	***VISITORS CENTRE*: To establish, operate and maintain the visitors centre as a *Coastal and Marine Sustainability Centre* (CMSC)**																				
	32.1	Establish the visitors centre at BBMP headquarters				■	■																
	32.2	Contract the services of a professional visitors centre information display design specialist						■		■												
*	32.3	Establish contacts with international sustainability centres for technical support						■	■	■												
	32.4	Operationalise and staff the visitors centre							■	■												
*	32.5	Install and maintain exhibits and alternative energy generators (solar, wind)								■	■	■										
	5	**SUSTAINABLE FINANCING PROGRAMME**																				
	33.	***FINANCIAL PLANNING, INCOME GENERATION AND FUNDS MANAGEMENT*: To ensure financial planning, income generation and BBMP funds management for effective implementation**																				
	33.1	Develop a self-financing programme for five-year implementation drawing from several sources (e.g., hotel and private sector contributions, guided tours, mooring, gift shop revenues) in addition to annual government allocations		■	■																	
*	33.3	Build funds management and income generation capability (e.g., donor search and grant proposal writing) through regular finance staff training and up-grading																				

*	No.	Programmes, Objectives and Actions	YEAR 1				YEAR 2				YEAR 3				YEAR 4				YEAR 5			
			1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
	34.	***CONSERVATION TRUST FUND*: To determine the feasibility and mechanism for establishing a *Conservation Trust Fund* in support of BBMP sustainable financing**																				
	34.1	Contract the services of a consultant to conduct a study of *Conservation Trust Funds* set up for protected areas throughout the world to determine the most appropriate CTF for BBMP to receive external multilateral, bilateral & philanthropic foundation funding support									■	■										
	34.2	Establish the legal framework for the Conservation Trust Fund, its Board and CTF management responsibilities										■										
	34.3	Explore the possibility of an airport departure "conservation tax" with revenues going into the BBMP Fund or the CTF for management of all Mauritius MPAs/PAs										■	■									
	34.4	At the end of the five-year period have in place an efficient self-financing CTF mechanism, with minimal government funding inputs, for future sustainable financial management support																				■

* = Indicates an action that is expected to be **on-going** throughout most or all of the five years of implementation

APPENDIX K
ECO-SUD AND ITS LAGON BLEU PROJECT

APPENDIX K BLUE BAY MARINE PARK MANAGEMENT PLAN

ECO-SUD AND ITS LAGON BLEU PROJECT

The following is extracted from the website: Eco-Sud and Lagon Bleu:
http://www.ecosud.mu/lagonbleu/index-eng.htm

Eco-Sud
Villa Badaniers
Route Royal, Blue Bay, Mauritius
Telephone/Fax: +230 631 1994
Portable: +230 250 2729
Email: lagonbleu@ecosud.mu

History of NGO ECO-SUD

The NGO was officially registered with the Registry of Associations under the name ECO-SUD on the 11th February 2000. It is located in Blue-Bay and has 65 members. ECO-SUD has been affiliated to MACOSS (Mauritius Council of Social Service) since 2001. In 2008, ES joined other organisations dealing directly and indirectly with the sea environment under the aegis of the MSDA (Mauritius Scuba Diving Association).

ECO-SUD's objectives are to:

1. Defend all species and/or sites threatened by damage or destruction on the Mauritian territory
2. Protect the environment
3. Raise public awareness on ecological issues
4. Promote equilibrium between economic development and environmental protection

Over its past 10 years of existence, Eco-Sud has led 3 important combats against some deemed "un-environmental" projects - and offered alternative solutions to the promoters:

- From 1999 to 2001 - Opposition to the *Follies* hotel project situated on *l'île aux Deux Cocos* right in the marine park of Blue Bay.
- In 2005 - Opposition to the Ferney motorway project that would have passed through the last original endemic forest of Mauritius.
- In 2009 - Opposition to a waste incinerator. Proposition to reduce waste, implement waste selection at home, recycling, compost and methanisation provided to the government.

Eco-Sud is not a scientific organisation and does not have any member with scientific background. What brings all Eco-Sud members together is love of nature (and the sea more specifically). It is that love that fuelled our combats, motivated us to take up strong positions in the past and talk and communicate them to the general public.

From the beginning, the NGO has had good working relation with the Ministry of Fisheries, the Research Center in Albion (AFRC), the Mauritius Oceanography Institute (MOI) and the specialised NGOs MMCS (Mauritius Marine Conservation Society), the MUG (Mauritius Underwater Group), the MSDA (Mauritius Scuba Diving Association), Reef Mauritius, Forever Blue and Shoals Rodrigues. Eco-Sud often worked with the above mentioned organisations to promote marine environment protection.

The NGO has also developed good relations with local fishermen and boat-men. The blue Lagoon project will be an opportunity for us to strengthen our relationship with these local actors and to work together with them, and so, in their best interest.

The project "*LAGON BLEU - Preservation of the marine and coastal ecosystem of Blue Bay and Pointe d'Esny*", written by the NGO Eco-Sud, aims at contributing to the restoration of the ecological and biological integrity of the above site by:

- sensitizing fishermen, tourist operators and coastal zones residents to the importance of marine biodiversity and to the protection of the marine ecosystem,
- encouraging fishermen to preserve traditional fishing methods and local know-how so as to contribute to the conservation of species, thus contributing to sustainable fishing.

Context

The site of Blue Bay and Pointe d'Esny is situated to the south-east of Mauritius, not far from Mahébourg, between the two subdivisions of Grand Port Fishing Reserve. The Blue Bay Marine Park has been declared as "National Park" in October 1997. It was next declared as "Marine Protected Area" and designated as "Marine Park" in June 2000. The park occupies a marine zone of 352 hectares and hosts a large diversity of corals to which are associated rich and varied fauna and flora (mangroves, algae, sea weeds, fish and other marine organisms). At present 38 species of corals and 72 species of fish have been identified in the park. It is also because of its unique ecosystem of reefs and of the biological habitat linked to it that on 10th September 2008, Blue Bay marine park was officially classified as a Ramsar site for Mauritius. Marine protected areas are specific zones intended for the protection of coastal ecosystems. As for Blue Bay marine park, legal regulations have been published but for various reasons have been only partly implemented or have proved insufficient in practice.

The project aims in particular at protecting the marine environment from biodiversity degradation in coastal marine ecosystems and coral reefs, a degradation which is linked mainly to human activities.

The threats which hang on this marine zone are mainly:

- non recycled discharge (plastic waste, used lubricants, etc),
- pollution (domestic and beach users)
- mechanical or chemical destruction of the habitat of corals, fish and other marine species present on the site,
- decrease in fish stock due for a great part to improper - even illegal - fishing practices, and to unscrupulous use of the lagoon and of the coastal zone by some tourist operators.

The site of the project, one of the most beautiful of Mauritius, is moreover a source of income in the Mauritian economy and needs therefore to be preserved. This project is an integral part of the ambitious "Maurice Ile Durable" concept.

Project justification

Meetings have been conducted with stakeholders and potential partners to the project "Lagon Bleu", namely fishermen, representatives from the Fisheries Division of the Ministry of Agro Industry, tourist operators and local residents. Numerous views were shared from which the following points emerged:

1. The project site is characterized by a unique ecosystem which invites all stakeholders to have an active role to play in the protection and safeguard of that ecosystem which has become fragile.
2. The ecological system and consequently coastal fishing are threatened by improper - even illegal - practices of users of the sea.
3. Control over those users is insufficient, despite the existence of legal conditions for a balanced management of that zone.

Taking into account the above observations, the National Environmental Strategy and Action Plan, the "*Programme régional de gestion durable des zones côtières des pays de l'Océan Indien*", and the GEF SGP, Eco-Sud - an NGO which has acted for years for the protection and safeguard of the environment in Mauritius - has worked out this project. After consulting the above-named stakeholders, Eco-Sud has defined the actions which must be initiated as a matter of priority on the site to protect the marine ecosystem and traditional fishing practices.

Global objective of the project

To promote sustainable management of the marine and coastal zones of Blue Bay and Pointe d'Esny by sensitization to the conservation of marine and coastal biodiversity and of traditional fishing practices.

Specific objectives

- To conduct a survey aiming at a better understanding of the state of the site's marine environment, and to identify threatened species;
- To work out an appropriate protection and monitoring strategy, supported by strict and certified scientific data;
- To set up a marine observatory for the monitoring of the environment and sensitization of its stakeholders;
- To sensitize, inform and train fishermen, tourism operators and the population at large on the importance of the protection of the marine and coastal ecosystem;
- To sensitize and train teachers and students from primary schools of Mahébourg and its neighbouring region;
- To encourage and help fishermen to preserve traditional fishing methods and local know-how so as to guarantee sustainable fishing;
- To support government in the working out of a legislation for an appropriate protection.

Consequently a series of sensitization tools and sensitization/training workshops will have to be developed in order to emphasize namely:

- the importance of the challenges and of the objectives of marine and coastal environment conservation,
- the ecological and socioeconomic threats, on medium as well as long term, represented by practices which are disrespectful of the rules for the sustainable management of a specific and fragile marine ecosystem.

It will be a must, among other things, to contribute to the reorganization of the struggle against irresponsible behaviors which destroy marine resources and flora.

Milestone	Activity	Result/Objective
1.	**Sensitization/Awareness** 1. Organization of workshops for all the national and international stakeholders 2. Four interactive workshops with the fishermen and tourist operators 3. The organization of four sensitization campaigns to raise awareness among the public. Distribution of information to public by the	1. Stakeholders are being sensitized to the issues and play an active role in the project. The stakeholders are invited to determine the scope of their engagement and their duties in the framework of the project. A methodology work and a communication strategy will be set up. 2. Fishermen and tourist operators are attending the workshops and they are regularly being trained to behave according to the code of conduct. Sensitization has been created to show respect for the resources of the lagoon, the fauna and flora; waste, marine pollution and coastal degradation are declining. 3. An aware, sensitized and informed community participates to the good "beach and sea" management practices. 4. All necessary equipment and visual support for information dissemination have been produced (brochures, posters, leaflets, and website); the messages for the local radios have been created and broadcasted.

Milestone	Activity	Result/Objective
	organization and implementation of various initiatives such as concert, sail boat race, etc. 4. Equipment and visual support for information dissemination will be designed and produced.	
2.	Lagoon scientific monitoring	Annual studies are undertaken to create a database that will be used to analyze the biodiversity of corals and fish species so that threatened species can be identified and assessed.
3.	1. Organize training sessions for the Eco Guides 2. Supervision of the Eco Guides & Buying all necessary equipment for the setting up of the Eco Guide Observatory	1. Trained, qualified and certified Eco Guides that will work on the marine and coastal regions of Blue Bay and Pte d'Esny. The Eco Guides will create awareness, inform and sensitize the community, stakeholders and tourists about a cleaner and healthier marine environment. 2. The Eco Guide observatory has been set up and is operational.
4.	1. Organization of Workshops for primary schoolchildren and teachers 2. Discovery mornings with glass bottom boats on the Blue Bay Marine Park 3. Planting Mangroves	Awareness of primary schoolchildren and teachers
5.	Workshop, production and installation of octopus breeding sites	Octopus breeding sites installed and fishermen are informed
6.	1. Placing of FAD outside the reef 2. Workshops to convinced fishermen to fish outside the reef	FAD has been installed, is being maintained and is active. Fishermen are motivated to fish beyond the reef.
7.	1. Activities monitoring 2. Organization of two intermediate interactive assessment panels 3. Organization of a final interactive assessment panel at the end of the four years	Interactive Stakeholders panel to assess project performances.

(These milestones/activities/results are linked to the time work plan and budget)

***** Click here to view a 4 year milestone planner*** - see jpeg file

VOLUNTEERS – SURVEYS: Lagon Bleu has 2 projects currently under way:

• THE GREEN TURTLE OF BLUE BAY

Summary

During the project, volunteers will follow the Green turtles allowing participants to gather and analyse data on the turtle's ecology and behaviour. This is an endangered species on our coastline.

Introduction

Initially a census of the Green turtles in the Marine Park of Blue Bay will be introduced. This will highlight the present situation and steps for the future; we want the local population to be involved to get a better knowledge of the turtles and how they can be better protected. The first objective will be to expand the data bank of the Marine Park environment of the project site. This evaluation of the threats and causes will facilitate an appropriate strategy of protection and surveillance being put into place. A marine observatory will be put in place to allow for data collection and organisation of monitoring and surveillance. The operators of the marine observatory, members of Eco-Sud as well as volunteers will be trained in methods of data collection. A lightweight speed boat and fishing canoe will be used for data collection.

Location

The action zone can be found south east of Maurice Island and particularly Blue Bay in Mauritius. This area is constantly being developed with more and more activities being carried out within the marine park. The Marine Park of Blue Bay was classified a National Park of Wildlife in October 1997. It was then declared a Marine Protection Zone and classed as a Marine Park in June 2000. The park covers 353 hectares and has very high diversity if corals as well as many animals and plant varieties (mangroves, algae, marine herbs, fish and other marine organisms). In fact 38 species of coral and 72 species of fish have been identified within the park. To protect the ecosystems of the reefs and biological habitats the site was officially classified as a RAMSAR site for Maurice on the 10th September.

The Species

The project is interested in the protection of Green Turtles.

Involvement

You will be involved in the monitoring of Green turtles in the area.

Accommodation

The team will stay in Pointe D'Esny in boarding houses. The nearest town is Mahèbourg, 20 minutes away by bus.

Requirements

No experience is necessary. You must be over 18. You must be able to work in conditions that are occasionally difficult. You must be friendly, communicative and able to work in groups.

Travel Information

You must be able to make your own way to Mauritius airport where you will be collected and taken to your accommodation.

Dates & Prices

Per week €250. The price includes accommodation.

The project can accommodate 5 volunteers at once.

Registration

To register for the project you must fill out a form that you send by email.

lagonbleu@ecosud.mu

• REEF HEALTH MONITORING

Protecting the Reef:

Introduction

Protection of the blue lagoon environment includes the reefs which are home to the fish, corals and turtle species found here. With development of the local area, the reefs have become damaged or affected by bleaching. To prevent overpopulation of crown-of-thorns causing widespread destruction to coral reef habitats, we have implemented a variety of control measures.

Injecting sodium bisulphate into the starfish is the most efficient measure in practice. Sodium bisulphate is deadly to crown-of-thorns, but it does not harm the surrounding reef and oceanic ecosystems.

When under stress the crown-of-thorns can create outbreaks and, if dismembered, can regenerate from each severed or damaged limb, creating more sea stars. Therefore, controlling the crown-of-thorns is difficult and much care is required.

All of these factors need addressing through monitoring and the removal of threats.

Implications

Volunteers will be involved in the monitoring of the status of the reef. This will include regular dives along the 8KM reef noting any changes to the reef. Where possible/necessary volunteers will also help with the removal of threats.

Accommodation

The team will stay in Pointe D'esny in boarding houses. The nearest town is Mahebourg, 20 minutes away by bus.

Requirements

No experience is necessary. You must be over 18. You must be able to work in conditions that are occasionally difficult. You must be friendly, communicative and able to work in groups.

Travel Information

You must be able to make your own way to Mauritius airport where you will be collected and taken to your accommodation.

Dates & Prices

Per week €250. The price includes accommodation.

The project can accommodate 5 volunteers at once.

Registration: To register for the project you must fill out a form that you send by email.

lagonbleu@ecosud.mu

MINISTRY OF FISHERIES AND RODRIGUES
UNITED NATIONS DEVELOPMENT PROGRAMME
GLOBAL ENVIRONMENT FACILITY

BLUE BAY MARINE PARK

MANAGEMENT PLAN

PREPARED FOR THE MINISTRY OF FISHERIES AND RODRIGUES
OF THE GOVERNMENT OF MAURITIUS

FINANCIAL SUPPORT PROVIDED BY
UNITED NATIONS DEVELOPMENT PROGRAMME
AND GLOBAL ENVIRONMENT FACILITY

PROJECT NO. MAR/03/G35/A/1G/99

SEPTEMBER 2012

BLUE BAY MARINE PARK MANAGEMENT PLAN

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PART TWO: BACKGROUND AND CURRENT CONDITIONS

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***Citation*:** MoFR and UNDP (2012). *Blue Bay Marine Park Management Plan: Operations Manual,* "Partnership for Marine Protected Areas in Mauritius and Rodrigues" (Project No. MAR/03/G35/A/1G/99). Ministry of Fisheries and Rodrigues, GEF, UNDP-Mauritius & Seychelles, Port Louis

Prepared for MoFR by UNDP consultant for MPA management planning, Dr. Arthur H. Mitchell

Cover Photos: A. H. Mitchell

EXECUTIVE SUMMARY

OVERVIEW

The Marine Protected Area (MPA) Management Plan[1] intends to guide management of the *Blue Bay Marine Park* (BBMP) through implementing a set of objectives and actions. The Operations Manual covers a five-year implementation period from 2012/13 to 2016/17. Implementation of management actions are based on the assertion that sustainable use of marine resources with equitable and clear sharing of costs, benefits and responsibilities leads to effective biodiversity conservation. A management plan should be seen as part of a dynamic, adaptive and on-going planning process.

Blue Bay, Mauritius

This *Operations Manual* addresses how to implement phased actions required for effective, appropriate and sustainable environmental, social and financial management. Included are a five-year *Budget*, *Implementation Schedule* and *Strategic Framework*, which provide phased implementation timetables, priorities, assumptions, indicators and responsibilities for objectives and their actions. Implementation of the plan is also intended to be linked to that of other existing and proposed conservation areas in Mauritius.

Stretching from Pointe Corps de Garde in the north to Pointe Vacoas in the south, BBMP is comprised of 353 ha of coral reef, open sea, mangroves, sand beaches and shoreline to the high-water mark in southeast Mauritius (*Appendix D-1*). BBMP is bordered north and south by the much larger *Grand Port- Mahébourg Fishing Reserve* (1,828 ha). Blue Bay Marine Park will need to be managed together with this adjacent and ecologically important Fishing Reserve. When managing BBMP over the next five years it is important to take a broader landscape or watershed approach as what happens in the watershed can greatly affect the marine ecosystem.

BBMP harbours a marine ecosystem that is rich in marine fauna and flora especially in terms of its coral assemblage. Coral species diversity is high. Approximately 38 coral species, representing 28 genera and 15 families, and at least 72 fish species have been recorded. However, surveys are incomplete and when completed will likely show much greater diversity. The patch reef is the only location where convoluted *Montipora aequituberculata* has been recorded. Dense growth of table corals, cactus corals, staghorn corals and fire corals alternate and co-exist. However, this rich biodiversity is under tremendous pressures from watershed pollution in particular.

[1] Citation: MoFR and UNDP (2012). *Blue Bay Marine Park Management Plan: Operations Manual,* "Partnership for Marine Protected Areas in Mauritius and Rodrigues" (Project No. MAR/03/G35/A/ 1G/99). Ministry of Fisheries and Rodrigues, GEF, UNDP-Mauritius & Seychelles, Port Louis

BBMP was first proclaimed as a National Park in 1997 under the *Wildlife and National Parks Act, 1993*. It was then declared a Marine Protected Area (MPA) and subsequently a Marine Park in June 2000 under the *Fisheries and Marine Resources Act, 1998*. This Act was repealed and replaced with the current *Fisheries and Marine Resources Act* (Act No. 27 of 2007), which was enacted "*to amend and consolidate the law relating to the management, conservation, protection of fisheries and marine resources and protection of the marine ecosystems*".

VISION

Blue Bay Marine Park will be an ecologically and economically sustainable ecosystem through responsible management that conserves marine and coastal biodiversity for the benefit of the local community.

Blue Bay Marine Park
(Blue Lagoon Beach Hotel)

MANAGEMENT GOAL

To balance a healthy marine ecosystem with economically sustainable uses within the Blue Bay Marine Park and its coast

MANAGEMENT PURPOSE

To integrate Blue Bay Marine Park biodiversity conservation and sustainable livelihoods through a functional collaborative management system that uses effective governance, sustainable financing and awareness

MANAGEMENT PRINCIPLES

Common management principles or "implementation pillars" are intended to guide management decisions of the Blue Bay Marine Park Management Unit (BBMU) and its partners. The principles are supportive of decentralization and good environmental governance for biodiversity conservation, just socio-economic development and wise-use of marine and coastal resources, among others, at BBMP. The ten common principles for BBMP management, in no order of importance, have been identified as:

- Partnerships
- Stakeholder participation and power-sharing
- Decentralisation
- Adaptive management
- Sustainable development
- Precautionary principle
- Advocacy and awareness
- Gender
- Transparency
- Social justice

MANAGEMENT PROGRAMMES, OBJECTIVES AND ACTIONS

From the *Purpose*, five main *Management Programmes* are identified:

1. **Governance through co-management**
2. **Biodiversity conservation**
3. **Sustainable livelihoods**
4. **Environmental awareness**
5. **Sustainable financing**

Each *Management Programme* has a set of *Objectives* with *Actions*. The **34** Objectives and **117** Actions listed under the following programme descriptions are not in any order of priority. Priorities are identified, however, in the *Strategic Framework* and the *5-Year Implementation Schedule* appendices.

1. GOVERNANCE THROUGH CO-MANAGEMENT PROGRAMME

Blue Bay Marine Park (BBMP) is a designated Ramsar site, a wetland of international importance. From *Guidelines for Protected Area Management Categories* of the IUCN World Commission on Protected Areas, BBMP would be considered a protected area governed as *Category II: National Park*, i.e. "a protected area managed mainly for ecosystem protection and recreation". The definition of a Category II PA is a "natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible."

Collaborative or Co-management is defined by The World Parks Congress (WPC), Durban 2004, as a management system for protected areas (as per IUCN categories I-VI) "*where management authority, responsibility and accountability are shared among two or more stakeholders, including government bodies and agencies at various levels, indigenous and local communities, non-governmental organisations and private operators, or even among different state governments as in the case of trans-boundary protected areas*."

While the definition implies increased local stakeholder involvement in management, it must be stressed that involvement here is not intended to be a process of token participation in which community leaders, for example, have been coerced into agreeing to developments but rather a true process of participatory and transparent power-sharing through collaborative decision-making and implementation with explicit rights and responsibilities.

The current proposed BBMP Board governance arrangement may be viewed as an early stage of "consultative" management, one of the three main co-management categories. In this case, the *Fisheries Protection Service* (FPS) is required to consult with civil society partners to the co-management arrangement within a formal framework but has the ultimate power to veto decisions. Thus, to "consult" implies that the advice given from partners does not have to be taken. This would be expected to become a stumbling block for any effective BBMP co-management mechanism that is true to the definition.

Three from among several key factors that are important for developing good MPA governance will need particular attention during management implementation; namely,

- provision of *sustainable economic development* opportunities within or adjacent to MPAs

- *political will and capacity* for passing and enforcing laws and regulations that provide for effective MPA management
- strong sense of *stewardship* of the MPA among *communities and users.*

BBMP co-management partners can come from **government agencies** (e.g., Forestry, Fisheries, Agriculture, Social Affairs, Education), **NGOs** (e.g., Eco-*Sud*, its *Lagon Bleu* programme and the Mauritius Marine Conservation Society or MMCS), the **private sector** (e.g., hotels, water sports operators) and mobilised **community groups** for a variety of environmental awareness and extension services development initiatives.

GOVERNANCE THROUGH CO-MANAGEMENT: OBJECTIVES AND ACTIONS

Objectives (12)	Actions (37)
1. *Legislation and status*: To maintain the requirements of the Ramsar Convention to ensure BBMP remains a wetland of international importance	1.1. Regularly review and maintain Ramsar requirements for BBMP 1.2. Regularly review appropriate legal status and requirements for changes to national Fisheries Act regulations
2. *Institutional arrangements:* To establish a collaborative or co-management framework with clear roles, rights and responsibilities for all institutions comprising the framework	2.1. Strengthen the BBMP Management Unit 2.2. Ensure that the management framework is clear, well-publicised and flexible 2.3. Establish MOUs with NGOs and the private sector for implementation of specific activities 2.4. Strengthen the BBMP Steering Committee to make it more effective and with well defined objectives, roles, rights and responsibilities 2.5 Clarify the role and responsibility of the NCG as an effective partner in BBMP management
3. *Public participation*: To ensure public participation by establishing clear public rights and responsibilities in support of the BBMP co-management framework	3.1.Work with the local community to establish clear limits, rights and responsibilities 3.2.Publicise rights and responsibilities for community co-management partnerships
4. *Public-private partnerships*: To promote the private sector (e.g., local hotels) in BBMP management activities	4.1. Establish public-private partnership MOU's and agreements (e.g.,for rehabilitation, ecotourism, environmental education, training, income generation, park maintenance) 4.2. Establish partnerships between local hotels and the BBMP Management Unit
5. *Administration and staffing*: To ensure effective administration and adequate staffing levels for BBMP management	5.1. Recruit additional staff for effective MPA management 5.2. Establish clear job descriptions with limits and responsibilities for all staff
6. *Staff capacity building and training*: To build the capacity of all BBMP staff through regular training and site visits to other MPAs	6.1. Ensure FPO capacity building through training and site visits to other national and international MPAs 6.2. Provide regular training on BBMP regulations to both FPOs and partner community groups 6.3. Ensure all staff capacity building through regular training and refresher courses
7. *Community capacity building and training*: To strengthen BBMP community groups as effective management partners to ensure efficient protection and management	7.1. Develop and implement an empowerment, capacity building and training programme for specific community groups to ensure that they eventually have equal power-sharing in co-management decision-making 7.2. Ensure adequate and regular on-site community partner training for co-management 7.3. Provide training for boat operators and fishermen as BBMP eco-guides with incentives
8. *Infrastructure and equipment*: To ensure adequate infrastructure and equipment required to effectively manage BBMP	8.1. Maintain the BBMP Headquarters and Visitors Centre 8.2. Construct one FPO surveillance and public awareness post at La Cambuse 8.3. Construct 2 watchtowers, one at the BBMP HQ and one at the La Cambuse post 8.4. Design and maintain the BBMP Visitors Center (*Coastal & Marine Sustainability Centre*) 8.5. Purchase all required equipment, including, but not limited to, FPO surveillance boats, quad-bike, van, 2 motorcycles, diving equipment & air compressor 8.6. Ensure routine maintenance for effective management

Objectives (12)	Actions (37)
9. *Regulations*: To implement and publicise clear and appropriate regulations for managing BBMP	9.1. Enforce national Fisheries Act regulations at BBMP 9.2. Regularly review appropriate requirements for changes to regulations 9.3. Review and revise the current regulations to encourage and accommodate community participation in BBMP law enforcement, surveillance and other co-management activities 9.4. Establish institutional arrangements for coordinated regulations enforcement (e.g., NCG)
10. *Surveillance, enforcement and conflict resolution*: To ensure adequate and coordinated performance with strong supervision for surveillance, law enforcement and conflict resolution	10.1. Establish a system and protocol for FPOs to conduct effective patrols, surveillance, enforcement, communication, conflict resolution and reporting 10.2. Provide regular training on the BBMP regulations and existing fisheries regulations to both FPOs and the community 10.3. Establish good cooperation among FPOs, NCG, Beach Authority, local residents and government agencies through a co-management system that supports effective regulations compliance 10.4. Establish a system and protocol for effective FPO patrols, communication and reporting 10.5. Recruit community members, registered fishers and amateur/unregistered to support FPOs and complement the existing surveillance framework
11. *Monitoring management effectiveness*: To establish a monitoring and evaluation programme to ensure effective implementation of the BBMP management plan	11.1. Establish an integrated long-term monitoring and evaluation programme for MPA management effectiveness (METT) to measure impacts from implementing activities and progress towards achieving objectives 11.2. Ensure monthly FPO work plans with clear milestones and targets are coordinated by the PFRO or Officer-in Charge/Park Manager
12. *Management plan review process*: To establish a clear and regular management plan review process and adapt activities to changing circumstances	12.1. Prepare quarterly, annual and *ad hoc* adaptive management evaluations of implementation progress as part of the M&E programme and establish the mechanism to quickly respond to changing circumstances

2. BIODIVERSITY CONSERVATION PROGRAMME

The three main BBMP zone categories are defined in the Regulations (*Appendix F*), which also specify the activities that are permitted and forbidden in each zone:

- ***Conservation Zone*:** a zone meant for conservation purposes and where no extractive use is allowed except for research purposes. No person shall, within a CZ, fish by any means except for research purposes and subject to the authorization of the Commissioner and may not anchor any boat, vessel or craft.
- ***Strict Conservation Zones A and B:*** set aside due to their particular sensitivity and species diversity
- ***Multiple-Use Zone*:** a zone where boating and fishing are permitted by any legal methods authorised under the Regulations

In addition, there are **Traffic Lanes** that are intended to separate boats from non-compatible conservation priorities. Fishing and most recreational activities are not allowed in these lanes, the locations of which will be revised by the BBMU in 2012. One **Ski Lane** is located within the bay on the western side of Shandrani Hotel. No other activities are permitted while water skiing is in progress.

The watershed of BBMP, a **Support Area**, needs to be managed together with BBMP but does not fall within its legally gazetted boundaries. It therefore does not fall within the jurisdiction of the BBMU. It is intended to be managed through partnerships. The role of the

BBMU is to serve as a catalyst, facilitator or promoter of such partnerships. It must also work with the MoFR and other government agencies (e.g., Agriculture, Forestry, Lands & Housing, Environment) to develop legal guidelines for development within the zone and ultimately to achieve special management status that is compatible with biodiversity conservation within BBMP.

Opportunities for management-oriented ecological research within BBMP are significant. A proposed *Biodiversity Research Action Plan* will support and guide adaptive management. One category of marine research will include long-term systematic surveys and studies of populations and habitats of specific taxa (e.g., population estimates, detailed distribution data, population dynamics).

BIODIVERSITY CONSERVATION OBJECTIVES AND ACTIONS

Objectives (14)	Actions (52)
13. *Boundary and area*: To maintain and publicize the demarcated boundary of BBMP	13.1. Replace old buoys with eco-friendly and weather-resistant buoys 13.2. Ensure regular maintenance of buoys 13.3. Review traffic lanes and required modifications
14. *Management zones*: To maintain a system of management zones ranging from conservation to multiple-use (e.g., tourism and recreation, fishing, restoration)	14.1. Enforce regulations for Multiple-use and Conservation zones 14.2. Post signs at strategic points explaining location and zone regulations 14.3. Review adequacy of management zones boundaries after the first 3 years using the results of the monitoring programme and research, and make recommendations for amendments to the zones as needed
15. *Support area*: To facilitate and promote the development of acceptable guidelines for the types and extent of development activities in the watershed and develop partnerships	15.1. Promote and facilitate partnerships with hotels, community groups, sugar plantations, NCG, Beach Authority, Coastal Zone Management Unit, Mauritius Ports Authority and others as necessary for Support Area management 15.2. Promote and facilitate establishment of a *Blue Bay Watershed Board* comprised of representatives from government agencies, NGOs and community groups with activities within the watershed that will: (i.) coordinate to provide special management status to the area, (ii.) facilitate development of legal guidelines for development within the area and (iii.) review Ministry of Housing & Lands coastal zone management guidelines for appropriateness for BBMP
16. *Linkages to other conservation areas*: To maximise the positive impact of BBMP protection by linking its management to that of an adjacent conservation areas (Fishing Reserve) to form an integrated protected system	16.1. Expand BBMP management activities (e.g., surveillance, monitoring, awareness) to southern and northern sectors of the Grand Port- Mahébourg Fishing Reserve
17. *Tourism and recreational use*: To ensure the carrying capacity of tourism and recreational use neither exceeds acceptable limits nor harms the environment	17.1. Implement with hotels carrying capacity guidelines 17.2. Promote with Tourism an integrated strategy that links marine conservation with tourism development and conducts periodic assessments of impacts and visitor carrying capacity 17.3. Promote with Tourism rules and guidelines for tourism use and safety in designated areas 17.4. Promote with Tourism guidelines that limit the number of hotels and rooms 17.5. Promote with the government eco-friendly and sustainable forms of water use, waste removal and energy efficiency 17.6. Promote and enhance existing inspection procedures of hotel wastewater treatment plants and discharge by relevant authorities. 17.7. Promote BBMP rules and regulations within hotels 17.8. Control boating and enforce use of mooring buoys rather than anchoring in sensitive coral reefs 17.9. Review locations of mooring buoys and identify suitable locations for and implement a system of mooring buoys to minimize damage to sensitive lagoon habitats 17.10. Add mooring buoys in the lagoon north of BBMP along Cape D'Esny

Objectives (14)	Actions (52)
18. *Environmental impact assessment and mitigation*: To contribute to the appraisal of proposed developments within and adjacent to BBMP by monitoring each EIA process	18.1. Monitor the legal requirements and review the mechanism for conducting a transparent EIA and post-construction monitoring protocols for all developments that potentially impact BBMP and its watershed 18.2. Ensure BBMP Steering Committee and national Ramsar Committee have involvement in EIA reviews 18.3. Develop habitat specific guidelines for preservation and sustainable use of habitats of conservation importance (e.g., coral, seagrass, mangrove) to be used as the basis for an EIA as appropriate
19.*Sustainable fisheries management*: To ensure that fishing within BBMP is done under established guidelines and below the capacity of the ecosystem to sustain it	19.1. Establish and maintain ecosystem and catch monitoring 19.2. Improve surveillance and law enforcement of local fisheries 19.3. Implement a ban on pole fishing within the lagoon 19.4. Implement a programme to address illegal fishers
20. *Marine management*: To support the recovery and rehabilitation of marine biodiversity and resources through adaptive ecosystem management	20.1. Develop an action plan for removal of invasive and alien species 20.2. Organize regular beach-cleans to remove rubbish 20.3. Organize regular underwater clean-up operations in partnership with local divers to remove rubbish (e.g., discarded fish-traps and other missing gear) that may cause further damage 20.4. Address the growth of algae at the source of the problem and on coral in the lagoon 20.5. Restock the lagoon with herbivorous fish 20.6. Develop with the government guidelines to manage and avoid accidental or intentional damage to natural habitats within BBMP due to the development of in-water infrastructure that would not be subject to an EIA (e.g., jetties, mooring buoys) 20.7.Establish a Volunteer Programme to assist with marine management
21. *Île des Deux Cocos management*: To integrate the management of Île des Deux Cocos with BBMP collaborative management to enhance ecosystem conservation and recreational activities	21.1. Coordinate Naiade management of Île des Deux Cocos with BBMP 21.2. Develop an action plan with Naiade for vegetation and beach management
22. *Coastal watershed management*: To promote and contribute to coordinated management measures taken by the government that ensures all land-use protects the watershed of BBMP and promote reforestation and appropriate agricultural practices	22.1. Coordinate management of BBMP with other agencies and plantations that have activities within the watershed (establishment of a Blue Bay Watershed Management Board) 22.2. Address the issue of run-off containing fertilizer and pesticides 22.3. Promote and facilitate a programme with Forestry and private landowners to reforest and rehabilitate at critical points around the lagoon where run-off from sugar plantations is common and reduce sedimentation flow into the lagoon 22.4. Promote indigenous tree nurseries with Forestry and private land owners that ensures adequate protection and maintenance of transplanted seedlings for tree planting around the coast and at the Blue Bay and La Cambuse public beaches 22.5. Establish a Volunteer Programme to assist with watershed management
23. *Adapting management to climate change*: To support activities that assist in adaptation to climate change by modifying as appropriate the conservation zones and other management actions to increase resilience in response to research and monitoring	23.1. Establish a long-term monitoring programme on the ecological and sociological impacts of climate change for adaptive management 23.2. Establish linkages and partnerships with national and international scientific institutions to enhance the local climate change programme
24. *Biodiversity research programme*: To promote and facilitate conservation and management oriented biodiversity research in support of BBMP management	24.1. Develop rules, regulations and protocol for marine research within BBMP 24.2. Develop a *Biodiversity Research Action Plan* that identifies priority research areas in support of BBMP management (to be reviewed on an annual basis and in response to key issues identified during the monitoring programme) 24.3. Promote implementation of priority research projects within BBMP through building a network with suitable academic institutions and attendance at workshops, conferences and other suitable forums

Objectives (14)	Actions (52)
25. *Monitoring ecosystem health*: To establish a technical and scientific monitoring and evaluation programme to ensure effective health and identify measures for recovery of the marine ecosystem	25.1. Prepare and implement a *Biodiversity Monitoring Action Plan* 25.2. Maintain the ecological coral reef monitoring sites and increase monitoring to every three months 25.3. Implement a monthly water quality monitoring programme especially at critical points along the coast of BBMP 25.4. Implement a full biodiversity assessment and ecological monitoring survey with qualified experts after 4.5 years & review monitoring methods & survey design 25.5. Develop a rapid response plan for natural and man-made threats (e.g., coral bleaching events, cyclones, crown-of-thorns starfish outbreaks) 25.6. Establish a monitoring programme for seagrass beds on a bi-monthly basis to detect seasonal changes
26. *Community-based resource monitoring*: To support and build the capacity of the BBMP community for a community-based resource monitoring programme	26.1. Initiate and implement a capacity building and training programme for interested local people to enable them to safely conduct the Participatory Resource Monitoring Programme under the supervision of the AFRC Scientific Officers

3. SUSTAINABLE LIVELIHOODS PROGRAMME

There is a strong linkage between ecosystem health, on the one hand, and community development, human health, prosperity and well-being on the other. To help people who live in high-risk coastal areas adapt to the effects of climate change, assistance is required to help them identify and support diverse and acceptable alternative livelihood options. Supporting the development of strategic skill sets, encouraging experimentation by offering financial incentives and learning by facilitating networks are other ways to help bring about change. Necessary initiatives to mitigate impacts and prepare local adaptation strategies include reduced dependency on marine resources, promotion of alternative livelihoods, investments in disaster preparedness response systems and strengthening human rights and social justice, especially for women who have potentially a big role in changing current practices at Blue Bay.

Community-based Natural Resource Management (CBNRM) within and adjacent to BBMP will be promoted with government agencies and NGOs. CBNRM may be defined as management by local communities of a natural resource in which they have a vested community development and livelihoods improvement interest but with support from relevant authorities, institutions or organisations with expertise and authority for national natural resources management.

SUSTAINABLE LIVELIHOODS: OBJECTIVES AND ACTIONS

Objectives (4)	Actions (7)
27. *Local community development*: To contribute to the appraisal and implementation of measures taken by local community development NGO's and government agencies for extension services and training in communities adjacent to BBMP	27.1. Establish partnerships with local community development NGO's and government agencies for extension services and training and in support of BBMP and government policies 27.2. Promote more equitable and just opportunities for local people to benefit from BBMP 27.3. Establish a Volunteer Programme to assist with local community development
28. *Building sustainable livelihoods*: To contribute to the appraisal and implementation of sustainable livelihood initiatives for BBMP communities and in support of the MID framework	28.1. Promote a program with government and NGO partners for improving entrepreneur skills, managing SMEs (e.g., production, marketing), market research for local products and alternative energy installation (solar, wind) as well as exchanges and cross-visits with other communities for alternative income generation 28.2. Establish a Volunteer Programme to assist with the livelihoods programme

Objectives (4)	Actions (7)
29. *Gender considerations*: To ensure constraints are minimised and opportunities maximised for both men and women to participate in and benefit from management interventions	29.1 Establish a monitoring programme to ensure that both men and women are represented in co-management decision-making, empowerment and equitable benefits derived from BBMP
30. *Community-based socio-economic monitoring*: To establish a monitoring and evaluation programme with public participation through community-based social monitoring	30.1. Develop a capacity building and training programme for community partners to effectively implement community-based socio-economic monitoring to evaluate benefits from BBMP to the community

4. ENVIRONMENTAL AWARENESS PROGRAMME

The environmental awareness or *Information, Education and Communication* (IEC) programme forms the critical factor that supports successful implementation of management objectives. There is still a lack of understanding about the needs and methods to protect marine resources through implementing an MPA. The IEC programme needs to extend beyond the borders of the MPA and its coastal communities. While much attention must be paid to local residents as resource users, many other target groups need attention. In particular, focused attention needs to be directed toward government policy and decision-makers to help generate the political will to fully support the vision, goal, purpose and objectives of BBMP. An **IEC Strategy and Action Plan** needs to be prepared to guide these important supportive activities over the next five-years.

Establishing a Visitors Interpretation Centre (**Coastal and Marine Sustainability Centre** or **CMSC)** at Blue Bay is recommended. It will have interactive interpretive exhibits and a self-sufficient, sustainable and nonpolluting (off-the-grid) energy system (e.g., photovoltaic, wind) as well as composting toilets. It is strongly recommended that design of the CMSC provide an example or model of green building practices that use recycled or sustainably-sourced building materials combined with a self-sufficient and sustainable, nonpolluting energy system derived from passive photovoltaic and vertical wind electric generators. The CMSC will also have a gift shop in support of BBMP income generation. Thus, the CMSC would not only serve to inform the public about Blue Bay but also serve as a model to promote sustainable, eco-friendly building practices and much needed affordable alternative energy sources throughout the island.

The CMSC would also provide an opportunity for the MoFR to support a significant programme in line with implementing *Maurice Île Durable* (MID), the sustainable integrated development guideline for Mauritius. As a clearing house for information on sustainable practices, the CMSC will demonstrate linkages between ecosystem health and human well-being.

ENVIRONMENTAL AWARENESS: OBJECTIVES AND ACTIONS

Objectives (2)	Actions (15)
31. *Information, education and communication:* To maximise the potentials of BBMP for public environmental awareness by strengthening its information, education and communication programme	31.1. Design and implement an *IEC Strategy* on the importance of BBMP, and develop publications, pamphlets, posters and audio-visual materials directed toward target groups 31.2. Develop a research-based communication programme (e.g., public perceptions and attitudes) focusing on instilling a sense of awareness and pride among local and national citizens 31.3. Establish regular contacts with TV stations, radio stations and newspapers

Objectives (2)	Actions (15)
	31.4. Establish and regularly update the BBMP website with additional external links for more information (e.g., local hotels, NGOs) 31.5. Publicise the BBMP regulations using a variety of media to ensure that residents and visitors are aware of the regulations 31.6. Conduct regular public events in and around BMP, such as Open Days, Clean-Ups and Ocean Day, Earth Day, Environment Day other awareness-raising activities 31.7. Establish an outreach programme to schools and other institutions 31.8. Promote conservation in the local school curriculum and establish links with regional environmental education networks and other MPAs in the region (e.g., Mauritius, Seychelles, Comoros, Réunion, Madagascar, Maldives) 31.9. Establish a programme of *Marine Conservation Clubs* in primary and secondary schools to promote marine and coastal conservation as well as sustainability 31.10..Establish a Volunteer Programme to assist with the IEC Programme
32. *Visitors centre*: To establish, operate and maintain the Visitors Centre as a *Coastal and Marine Sustainability Centre*	32.1. Establish the Visitors Centre (CMSC) at BBMP headquarters 32.2. Contract the services of a professional visitors centre display design specialist 32.3. Establish contacts with international Sustainability Centres for tech. support 32.4. Operationalise and staff the Visitors Centre 32.5. Install and maintain exhibits and alternative energy generators (solar, wind)

5. SUSTAINABLE FINANCING PROGRAMME

The key to ensuring effective implementation of BBMP management hinges upon political will, adequate annual budget allocations and alternative funding sources. An analysis of financial sustainability for an effective management system and establishing sustainable and alternative funding options are essential to effective long-term management. The Fisheries Act Regulations provides for an island-wide **MPA Fund.**

The BBMP Board will be responsible for reviewing and endorsing budgets and accounts. The BBMU will be responsible for preparing budgets and accounts for MoFR approval and will also be responsible for the day to day management of funds. Revenue generated from user fees represents one important source of income.

It is recommended that a feasibility study be conducted for establishing a **Conservation Trust Fund (CTF)**. The study should determine the most appropriate CTF to support BBMP and other MPAs in Mauritius to receive external multilateral, bilateral and philanthropic foundation funding in addition to government allocations and user fees revenue. The main task is to determine the feasibility and mechanisms for establishing the most appropriate and effective CTF that will support MPAs either on a country-wide or MPA-specific support basis.

Other actions will include (i.) identifying and establishing the legal framework for the CTF, its Board and CTF management responsibilities, (ii.) exploring with GoM the possibility of an airport departure "conservation tax" with revenues going into the MPA Fund or a new CTF and (iii.) ultimately (within five-years) achieving an efficient self-financing mechanism for sustainable financial support to BBMP management.

SUSTAINABLE FINANCING: OBJECTIVES AND ACTIONS

Objectives (2)	Actions (6)
33. *Financial planning, income generation and funds management*: To ensure financial planning, income generation and BBMP funds management for effective implementation	33.1. Develop a self-financing programme for five-year implementation drawing from several sources (e.g., hotel and private sector contributions, guided tours, mooring, gift shop revenues) in addition to annual government allocations 33.2. Build funds management and income generation capability (e.g., donor search and grant proposal writing) through regular finance staff training and up-grading
34. *Conservation Trust Fund*: To determine the feasibility and mechanism for establishing a *Conservation Trust Fund* in support of BBMP sustainable financing	34.1. Contract the services of a consultant to conduct a study of *Conservation Trust Funds* set up for protected areas throughout the world to determine the most appropriate CTF for BBMP to receive external multilateral, bilateral and philanthropic foundation funding support 34.2. Establish the legal framework for the Conservation Trust Fund, its Board and CTF management responsibilities 34.3. Explore the possibility of an airport departure "conservation tax" with revenues going into the BBMP Fund or the CTF for management of all Mauritius MPAs/PAs 34.4. At the end of the five-year period have in place an efficient self-financing CTF mechanism, with minimal government funding inputs, for future sustainable financial management support

ACRONYMS (within the *Operations Manual* and/or Annex)

AFRC	–	Albion Fisheries Research Centre
ASCLME	–	Aghulhas and Somali Current Large Marine Ecosystem
BA	–	Beach Authority
BBMP	–	Blue Bay Marine Park
BBMPC	–	Blue Bay Marine Park Centre
BBMU	–	Blue Bay Marine Park Management Unit
BIP	–	Biodiversity Indicators Partnership
CAC	–	Community Advisory Council
CAMCAM	–	Canada-Mauritius Coastal and Marine Conservation and Management Project
CBD	–	Convention on Biological Diversity
CBNM	–	Conservatoire Botanique Nationale de Mascarin
CBNRM	–	Community-based Natural Resource Management
CBO	–	Community-based Organization
CBPM	–	Community-based Participatory Monitoring
CBRM	–	Community-based Resource Monitoring
CBSM	–	Community-based Social Monitoring
CCSE	–	California Center for Sustainable Energy
CITES	–	Convention on International Trade in Endangered Species of Wild Fauna and Flora
CMSC	–	Coastal and Marine Sustainability Centre
COI	–	Commission de l'Océan Indien = IOC
CPUE	–	Catch per Unit Effort
CRC	–	Community Resource Committee
CRO	–	Community Resource Observer
CSR	–	Corporate Social Responsibility
CSVPA	–	Cultural and Spiritual Values of Protected Areas Specialist Group (WCPA)
CZ	–	Conservation Zone
EC	–	European Commission
EEZ	–	Exclusive Economic Zone
EIA	–	Environmental Impact Assessment
EPA	–	Environmental Protection Act
EU	–	European Union
FAD	–	Fish Aggregating Device
FITEC	–	Fishing Training and Extension Centre
FLS	–	Fish Landing Station
FPO	–	Fisheries Protection Officer
FPS	–	Fisheries Protection Service
FRTU	–	Fisheries Research and Training Unit
FS	–	Forestry Service
GA	–	Government Agency
GEF	–	Global Environment Facility
GIS	–	Geographical Information System
GoM	–	Government of Mauritius
GPS	–	Geographical (Global) Positioning System
GVI	–	Global Vision International
IAS	–	Invasive Alien Species
ICRM	–	Integrated Coastal Resources Management
ICZM	–	Integrated Coastal Zone Management
IEC	–	Information, Education and Communication
IOC	–	Indian Ocean Commission = COI
IPCC	–	Intergovernmental Panel on Climate Change
IRBM	–	Integrated River Basin Management
IUCN	–	International Union for the Conservation of Nature (World Conservation Union)
M&E	–	Monitoring and Evaluation
MEA	–	Multilateral Environmental Agreement
METT	–	Management Efficiency Tracking Tool
MFR	–	Ministry of Fisheries and Rodrigues

MID	–	Maurice Île Durable (GoM sustainability plan)
MMCS	–	Mauritius Marine Conservation Society
MoA	–	Ministry of Agriculture, Food Technology and Natural Resources
MoFEE	–	Ministry of Finance and Economic Empowerment
MoFR	–	Ministry of Fisheries and Rodrigues
MoHL	–	Ministry of Housing and Lands
MoTL	–	Ministry of Tourism and Leisure
MOU	–	Memorandum of Understanding
MPA	–	Marine Protected Area
MPAF	–	Marine Protected Area Fund
MPAM	–	Marine Protected Area Manager
MTEF	–	Medium Term Expenditure Framework
MUR	–	Mauritian Rupees
MUZ	–	Multiple Use Zone
MWF	–	Mauritian Wildlife Foundation
NGO	–	Non-Governmental Organization
NCG	–	National Coast Guard
NEAP	–	National Environment Action Plan
NPCS	–	National Parks and Conservation Service
NRM	–	Natural Resources Management
NTZ	–	No-Take Zone
PA	–	Protected Area
PBB	–	Programme-Based Budgeting
PFPO		Principal Fisheries Protection Officer
PRMP	–	Participatory Resource Monitoring Programme
PSC	–	Project Steering Committee
RCM	–	Reef Conservation (Mauritius)
SDSIDS	–	Sustainable Development of Small Island Developing States
SEHDA	–	Small Enterprises and Handicraft Development Authority
SEMPA	–	South East Marine Protected Area, Rodrigues
SFPO	–	Senior Fisheries Protection Officer
SGP	–	Small Grants Programme, GEF
SIDS	–	Small Island Developing States
SMEDA	–	Small and Medium Enterprises Development Authority
SO	–	Scientific Officer
SWOT	–	Strengths, Weaknesses, Opportunities and Threats Analysis
TA	–	Technical Assistance
TA	–	Tourism Authority
TO	–	Technical Officer
TOR	–	Terms of Reference
UNCC	–	United Nations Convention on Climate Change
UNCLOS	–	United Nations Convention on the Laws of the Sea
UNDP	–	United Nations Development Programme
UNEP	–	United Nations Environment Programme
UNFCCC	–	United Nations Framework Convention on Climate Change
WCED	–	The World Commission on Environment and Development
WCMC	–	World Conservation Monitoring Centre, UNEP
WCPA	–	World Commission on Protected Areas, IUCN

PART ONE: OPERATIONS MANUAL

1. INTRODUCTION

Blue Bay Marine Park (BBMP) legal status, boundary, zones, staff and regulations are in place and have been well formulated. The intention of Part One of the management plan, presented here as an *Operations Manual*, is to further guide the *Blue Bay Marine Park Management Unit* (BBMU) managers over the next five years through a set of strategic objectives and actions.

The participatory process and analysis of current conditions during planning have assisted to identify management strengths, weaknesses, opportunities, threats and recommended actions that form the basis of this *Operations Manual*. The analysis resulted in a management framework, which includes the vision, goal and purpose of the management plan as well as a set of objectives, each with specific actions, for implementing five BBMP management programmes. The five programmes are (i.) governance through co-management, (ii.) biodiversity conservation, (iii.) sustainable livelihoods, (iv.) environmental awareness and (v.) sustainable financing.

This *Operations Manual* addresses how to implement phased actions required for effective, appropriate and sustainable environmental, social and financial management. Included are a five-year *Budget*, *Implementation Schedule* and *Strategic Framework*, which provide phased implementation timetables, priorities, assumptions, indicators and responsibilities for objectives and their actions. Implementation of the plan is also intended to be linked to that of other existing and proposed conservation areas in Mauritius.

A management plan should be seen as part of a dynamic, adaptive and on-going planning process. This management plan replaces the ten-year plan prepared in 1996 by Tom van't Hof under the TA project, *Marine Protected Areas Component* of the *Canada-Mauritius Coastal and Marine Conservation and Management* (CAMCAM). The current plan, presented here as a guide or *Operations Manual*, must be kept under regular review by the BBMU and with adjustments as needed to take into account the results of monitoring, changing priorities and emerging issues.

Ideally, management planning should not be restricted to the MPA boundary, but rather should also take into account the wider context of planning and management, notably in its associated coastal watershed. BBMP is bordered north and south by the much larger *Grand Port-Mahébourg Fishing Reserve* (1,828 ha). Blue Bay Marine Park will need to be managed together with this adjacent and ecologically important Fishing Reserve. When managing BBMP over the next five years it is important to take a broader marine landscape and watershed approach as what happens in the watershed can greatly affect the marine ecosystem.

Biodiversity conservation must address a balance between the needs of maintaining healthy biodiversity, on the one hand, and local sustainable livelihoods, equity and good environmental governance, on the other. It is important to ensure that MPA planning takes into account the adjacent natural and human-induced factors and their influence on the MPA. It must be

ensured that the MPA management objectives are taken into account within the wider land-use and local development planning processes.

2. VISION, GOAL AND PURPOSE

Vision

Blue Bay Marine Park will be an ecologically and economically sustainable ecosystem through responsible management that conserves marine and coastal biodiversity for the benefit of the local community.

Management Goal

To balance a healthy marine ecosystem with economically sustainable uses within the Blue Bay Marine Park and its coast

Management Purpose

To integrate Blue Bay Marine Park biodiversity conservation and sustainable livelihoods through a functional collaborative management system that uses effective governance, sustainable financing and awareness

Management Programmes

From the *Purpose*, five main *Management Programmes* are identified:

1. *Governance through Co-management*
2. *Biodiversity Conservation*
3. *Sustainable Livelihoods*
4. *Environmental Awareness*
5. *Sustainable Financing*

Each *Management Programme* has a set of **OBJECTIVES** with **ACTIONS**. The **34** Objectives and **117** Actions is the following sections are not arranged in any order of priority. Priorities are identified in the *Strategic Framework (Appendix I*) and the 5-Year *Implementation Schedule* (*Appendix J*).

3. PROGRAMMES AND OBJECTIVES

PROGRAMME 1. GOVERNANCE THROUGH CO-MANAGEMENT

Objective 1. ***Legislation and status*****:** To maintain the requirements of the Ramsar Convention to ensure BBMP remains a wetland of international importance

Objective 2. ***Institutional arrangements*****:** To establish a collaborative or co-management framework with clear roles, rights and responsibilities for all institutions comprising the framework

Objective 3. ***Public participation*****:** To ensure public participation by establishing clear public rights and responsibilities in support of the BBMP co-management framework

Objective 4. ***Public-private partnerships***: To promote the private sector (e.g., local hotels) in BBMP management activities

Objective 5. ***Administration and staffing*****:** To ensure effective administration and adequate staffing levels for BBMP management

Objective 6. ***Staff capacity building and training*****:** To build the capacity of all BBMP staff through regular training and site visits to other MPAs

Objective 7. ***Community capacity building and training*****:** To strengthen BBMP community groups as effective management partners to ensure efficient protection and management

Objective 8. ***Infrastructure and equipment*****:** To ensure adequate infrastructure and equipment required to effectively manage BBMP

Objective 9. ***Regulations*****:** To implement and publicise clear and appropriate regulations for managing BBMP

Objective 10. ***Surveillance, enforcement and conflict resolution*****:** To ensure adequate and coordinated performance with strong supervision for surveillance, law enforcement and conflict resolution

Objective 11. ***Monitoring management effectiveness*****:** To establish a monitoring and evaluation programme to ensure effective implementation of the BBMP management plan

Objective 12. ***Management plan review process*****:** To establish a clear and regular management plan review process and adapt activities to changing circumstances

PROGRAMME 2. BIODIVERSITY CONSERVATION

Objective 13. ***Boundary and area*****:** To maintain and publicize the demarcated boundary of BBMP

Objective 14. ***Management zones*****:** To maintain a system of management zones ranging from conservation to multiple-use (e.g., tourism and recreation, fishing, restoration)

Objective 15. ***Support area*****:** To facilitate and promote the development of acceptable guidelines for the types and extent of development activities in the watershed and develop partnerships

Objective 16. ***Linkages to other conservation areas*****:** To maximise the positive impact of BBMP protection by linking its management to that of an adjacent conservation areas (Fishing Reserve) to form an integrated protected system

Objective 17. ***Tourism and recreational use*****:** To ensure the carrying capacity of tourism and recreational use neither exceeds acceptable limits nor harms the environment

Objective 18. ***Environmental impact assessment and mitigation***: To contribute to the appraisal of proposed developments within and adjacent to BBMP by monitoring each EIA process

Objective 19. ***Sustainable fisheries management*****:** To ensure that fishing within BBMP is done under established guidelines and below the capacity of the ecosystem to sustain it

Objective 20. ***Marine management*****:** To support the recovery and rehabilitation of marine biodiversity and resources through adaptive ecosystem management

Objective 21. ***Île des Deux Cocos management*****:** To integrate the management of Île des Deux Cocos with BBMP collaborative management to enhance ecosystem conservation and recreational activities

Objective 22. ***Coastal watershed management*****:** To promote and contribute to coordinated management measures taken by the government that ensures all land-use protects the watershed of BBMP and promote reforestation and appropriate agricultural practices

Objective 23. ***Adapting management to climate change*****:** To support activities that assist in adaptation to climate change by modifying as appropriate the conservation zones and other management actions to increase resilience in response to research and monitoring

Objective 24. ***Biodiversity research*****:** To promote and facilitate conservation and management oriented biodiversity research in support of BBMP management

Objective 25. ***Monitoring ecosystem health*****:** To establish a technical and scientific monitoring and evaluation programme to ensure effective health and identify measures for recovery of the marine ecosystem

Objective 26. ***Community-based resource monitoring*****:** To support and build the capacity of the BBMP community for a community-based resource monitoring programme

PROGRAMME 3. SUSTAINABLE LIVELIHOODS

Objective 27. ***Local community development*****:** To contribute to the appraisal and implementation of measures taken by local community development NGO's and government agencies for extension services and training in communities adjacent to BBMP

Objective 28. ***Building sustainable livelihoods*****:** To contribute to the appraisal and implementation of sustainable livelihood initiatives for BBMP communities and in support of the MID framework

Objective 29. ***Gender considerations*****:** To ensure constraints are minimised and opportunities maximised for both men and women to participate in and benefit from management interventions

Objective 30. ***Community-based socio-economic monitoring*****:** To establish a monitoring and evaluation programme with public participation through community-based social monitoring

PROGRAMME 4. ENVIRONMENTAL AWARENESS

Objective 31. ***Information, education and communication*****:** To maximise the potentials of BBMP for public environmental awareness by strengthening its information, education and communication programme

Objective 32. ***Visitors centre*****:** To establish, operate and maintain the visitors centre as a *Coastal and Marine Sustainability Centre* (CMSC)

PROGRAMME 5. SUSTAINABLE FINANCING

Objective 33. ***Financial planning, income generation and funds management*****:** To ensure financial planning, income generation and BBMP funds management for effective implementation

Objective 34. ***Conservation trust fund*****:** To determine the feasibility and mechanism for establishing a *Conservation Trust Fund* in support of BBMP sustainable financing

4. MANAGEMENT PRINCIPLES

Common management principles or "implementation pillars" for the *Blue Bay Marine Park Management Unit* (BBMU) and its co-management partners are intended to guide decisions. The principles are supportive of decentralization and good environmental governance for biodiversity conservation, just socio-economic development and wise-use of marine and coastal resources, among others, at BBMP. The ten common principles for management, in no order of importance, are shown in the *Box*.

PRINCIPLES GUIDING BLUE BAY MARINE PARK MANAGEMENT

PARTNERSHIPS at many levels and among a variety of stakeholders

STAKEHOLDER PARTICIPATION AND POWER-SHARING through collaborative or co-management principles

DECENTRALISATION is implementation and enforcement at regional or local levels, which have adapted national-level formulated legislative frameworks (e.g., policies, laws, regulations) to local circumstances and authority.

ADAPTIVE MANAGEMENT: is a systematic process for continually improving management policies and practices by learning from the outcomes of implementation programs.

SUSTAINABLE DEVELOPMENT is "a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with the future as well as present needs" (WCED 1987).

PRECAUTIONARY PRINCIPLE is used in situations where there is a potentially serious or irreversible threat to the environment in which there is a need to act immediately to reduce potential hazards and forestall disasters before there is evidence of harm.

ADVOCACY AND AWARENESS build the constituency for change and mobilize public opinion around issues of common concern.

GENDER considerations examine the constraints and opportunities for both men and women. To include gender in planning and implementation means to assess: (i.) how the problems and natural resource uses of men and women may be different, (ii.) what the different roles and opportunities are for each during implementation and (iii.) how the contributions of men and women may provide different results.

TRANSPARENCY is a level of clarity about government rules, regulations and decision-making processes with a tolerance for public debate, scrutiny and questioning of policy choices.

SOCIAL JUSTICE is the pursuit of a society that offers fair and equal opportunity to access freedoms and choices as well as encouraging development of all the capacities of all its individual members.

Partnerships may be formed at many levels and among a variety of stakeholders. Once the purpose of a partnership has ended, the partnership itself ends until new arrangements are developed that are based on mutual need. Berkes *et al*. (2001) have noted that "partnerships are pursued, strengthened and redefined at different times in the management process, depending on:

- the existing policy and legal environment,
- the political support of government for community-based initiatives and
- the capacities of community organisations to become partners".

Stakeholder Participation and Power-Sharing: Collaborative or co-management is defined by The World Parks Congress (WPC, Durban 2004), as a management system for protected areas (as per IUCN categories I-VI) "*where management authority, responsibility and accountability are shared among two or more stakeholders, including government bodies and agencies at various levels, local communities, non-governmental organisations and private operators, or even among different state governments as in the case of trans-boundary protected areas*." Governance through co-management is discussed further in Part Two, *Section 8.3*.

Adaptive Management has been defined in various ways since its development in the early 1970's. However, the British Columbia Forest Service uses an appropriate and commonly accepted working definition: "*Adaptive management is a systematic process for continually improving management policies and practices by learning from the outcomes of operational programs. Its most effective form – "active" adaptive management – employs management programs that are designed to experimentally compare selected policies or practices, by evaluating alternative hypotheses about the system being managed*". The adaptive management process is typically seen as a six-step cycle of differentiating characteristics, and

emphasises that successful adaptive management of a resource or an area requires that managers be flexible while completing all six steps (*Figure 1*).

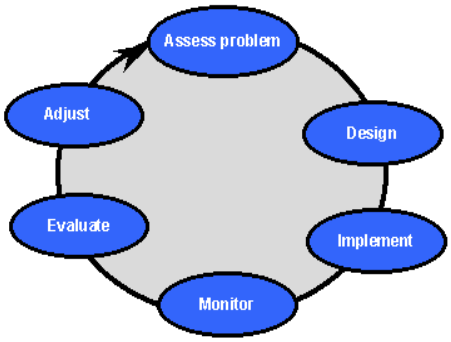

Figure 1: The adaptive management cycle

(*Source*: British Columbia Forest Service, Vancouver, Canada)

1. First, acknowledging the inherent *uncertainty* about what policy or practice is "best" for a particular management issue
2. Thoughtfully selecting those policies or practices to be applied, i.e. the *assessment and design* stages of the cycle
3. Carefully *implementing* a plan of action, i.e. a strategy, designed to reveal the critical knowledge currently lacking
4. *Monitoring* key response indicators
5. *Evaluating* the management outcomes in consideration of the original objectives
6. Incorporating the results and *adjusting* future decisions in light of these results.
7. Then, the adaptive management process cycles again *in response to changing circumstances*.

Circumstances and situations continually change and require appropriate response. This *Operations Manual* is intended to be flexible and adaptive. It will be subject to monitoring and periodic review and revised accordingly. Over the years more data will be acquired, issues and problems will vary, stakeholders will change and new experiences will be encountered. Thus, the Management Plan allows for change and modification and will adapt to these changes within its five-year timeframe.

Sustainable Development, as defined by the Brundtland Commission (1987) and consistently used thereafter, this is "*development that meets the needs of the present without compromising the ability of future generations to meet their own needs*". The World Commission on Environment and Development (1987) has stated that "... *sustainable development is . . . a process of change in which the exploitation of resources, the direction of investments, the orientation of technological development, and institutional change are made consistent with the future as well as present needs*." By definition, sustainable development is a development process that takes the impact on the environment into account and tries to minimise adverse environmental impacts or damage.

At another level, sustainable development for the *Balaclava Management Unit* (BMU) will require ensuring sustainability of its human, material and financial resources so that effective management will continue over the next five years and beyond.

The ***Precautionary Principle*** is used in situations where there is a potentially serious or irreversible threat to the environment in which there is a need to act immediately to reduce potential hazards and forestall disasters before there is evidence of harm. The precautionary principle provides that the absence of full scientific certainty shall not be used as a reason for postponing decisions when facing threats from serious or irreversible harm to the environment. In developing options and making decisions and policy measures, the costs and benefits of action or inaction must be taken into account.

Advocacy is essential to policy reform and changing opinions. It has been defined as "the action of delivering an argument to gain commitment from political and social leaders and to prepare a society for a particular issue. Advocacy involves the selection and organisation of information to create a convincing argument, and its delivery through various interpersonal and media channels. Advocacy includes organising and building alliances across various stakeholders" . . . "Increasingly advocacy is people-based and people-driven" (de Jong 2004). Advocacy intends to build the constituency for change and to mobilise public opinion around issues of common concern and in support of BMP regulations and initiatives. Several advocacy strategies can be used to influence the decisions of policy makers, such as discussing problems directly with them, delivering messages through the media or supporting the ability of local NGOs to advocate.

Gender means considering the constraints and opportunities for both men and women. To include gender in planning and implementation means to assess (i.) how the problems and natural resource uses of men and women may be different, (ii.) what the different roles and opportunities are for each during implementation and (iii.) how the contributions of men and women may provide different results.

Transparency refers to the quality, quantity and availability of information to the general public, the level of clarity about rules, regulations and decision-making processes as well as a tolerance for public debate, public scrutiny and public questioning of policy choices. Transparency encourages investment and can help inhibit corruption. To support transparency, laws, policies and decision-making procedures should be simple, straightforward, and easy to apply.

5. GOVERNANCE THROUGH CO-MANAGEMENT PROGRAMME

Sections 7.1 and *8.3* (*Part Two*) include definitions and a general discussion of MPA governance and co-management.

5.1. LEGISLATION AND STATUS

Objective 1: To maintain the requirements of the Ramsar Convention to ensure BBMP remains a wetland of international importance

Actions

1.1. Regularly review and maintain Ramsar requirements for BBMP

1.2. Regularly review appropriate legal status and requirements for changes to national Fisheries Act regulations

Since 2008, BBMP has been a Ramsar site, a wetland of international importance. Currently, the only other Ramsar site in Mauritius is the *Rivulet Terre Rouge Estuary Bird Sanctuary*. A

description of the Ramsar Convention and the criteria for site selection may be found in *Appendix C* and in more detail at the Ramsar website: **http://www.ramsar.org/**.

BBMP was first proclaimed in 1997 as a National Park under *Section 11* of the *Wildlife and National Parks Act 1993*. It was later declared a Marine Protected Area (MPA) and subsequently as a Marine Park in June 2000 under *Section 7* of the *Fisheries and Marine Resources (FMR) Act 1998*. The FMR Act (1998) was repealed and replaced with the current *Fisheries and Marine Resources Act* (Act No. 27 of 2007), which was enacted "to amend and consolidate the law relating to the management, conservation, protection of fisheries and marine resources and protection of the marine ecosystems". The Act includes protection, conservation and management of MPAs with further specific details provided for BBMP and the Balaclava Marine Park. Details of the FMR Act of 2007 are found in *Appendix F.*

5.2. INSTITUTIONAL ARRANGEMENTS

Objective 2: To establish a collaborative or co-management framework with clear roles, rights and responsibilities for all institutions comprising the framework

Actions

2.1. Strengthen the BBMP Management Unit
2.2. Ensure that the management framework is clear, well-publicised and flexible
2.3. Establish MOUs with NGOs and the private sector for implementation of specific activities
2.4. Strengthen the BBMP Steering Committee to make it more effective and with well defined objectives, roles, rights and responsibilities
2.5. Clarify the role and responsibility of the NCG as an effective partner in BBMP management

Good governance through co-management aims to enable effective, supportive and sustainable institutional arrangements and ensure management linkages between BBMP ecosystem health and human well-being. Changes to institutional and governance frameworks may sometimes be required to create the enabling conditions for effective co-management. In other cases existing institutions could meet these needs but face significant barriers.

A recent UNEP report on governance of MPAs has identified key factors that are important for developing good governance. Three factors are of particular relevance to BBMP; namely:

- *political will and capacity* for enforcing laws that provide for effective MPA management
- strong sense of *stewardship* of the MPA among *communities and users*
- provision of *sustainable economic development* opportunities within or adjacent to MPAs

Blue Bay Marine Park will be overseen by the ***BBMP Board* (*Steering Committee*).** During implementation of this plan, the existing Steering Committee shall become the *Blue Bay Marine Park Board*. The Board will be the central co-management institution established under the MPA regulations and will oversee BBMP management. It is through the Board that co-management partners make their key inputs. *Figure 2* presents a proposed arrangement and composition of the BBMP Board.

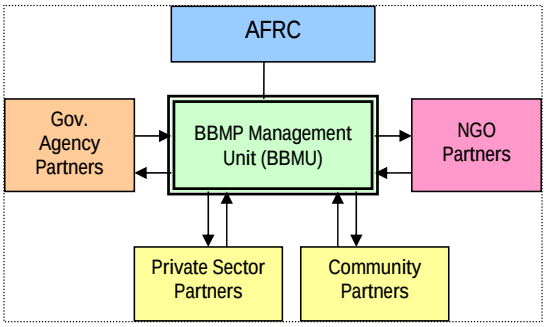

Figure 2: BBMP board and co-management structure (2012 – 2016)

The functions of the *BBMP Board* are to:

- advise the Blue Bay Management Unit (BBMU) on any matter pertaining to the proper operation of BBMP including those relating to any impacts within its watershed
- recommend and changes to improve the BBMU administrative structure
- recognise and facilitate participation of any BBMP stakeholder group that may improve effective BBMP management
- review and endorse the BBMP Management Plan and subsequent modifications and monitor its implementation
- review requests and endorse procurement of equipment, services, materials or additional staff necessary to enhance BBMP management
- review and endorse the BBMP annual work plan and budget as well as quarterly and annual reports.

In addition to the BBMP Management Unit (BBMU) and the Albion Fisheries Research Centre (AFRC), the BBMP Board will be comprised of representatives from each of the following:

- National Coast Guard, Blue Bay
- Beach Authority
- Police Department
- Ministry of Tourism and Leisure / Tourism Authority
- National Parks Conservation Service (NPCS)
- Eco-Sud
- Mauritius Marine Conservation Society
- Naiade, Île des Deux Cocos
- Shandrai Hotel and Blue Lagoon Beach Hotel
- Speed Boat and Glass Bottom Boat Operators

The ***BBMP Management Unit*** **(BBMU)** is responsible for the day-to-day management of BBMP. The BBMU is headed by an *Officer-In-Charge*, who reports to the Division Scientific Officer of the Albion Fisheries Research Centre (AFRC) of the Ministry of Fisheries & Rodrigues (MoFR). The BBMU shall act as the Secretariat to the BBMP Board and the Officer-in Charge as its secretary. The BBMU is staffed by officers referred to as the BBMP Fisheries Protection Officers (FPOs), who are employed by the MoFR. The BBMU is proposed to consist of three management units, i.e. (i.) *Operations; (ii.) Community Relations, Information, Education & Communication and (iii.) Administration & Human Resources*. Each unit is led by an Officer or

Coordinator as Management Unit Head, all of which, together with the Officer-in-Charge, form the *BBMU Management Team*.

Figure 2 emphasizes the importance of ***Government Agencies*** as BBMP co-management partners. Partners from government agencies include, but are not limited to, the National Coast Guard (NCG), Beach Authority, Ministry of Tourism and Leisure / Tourism Authority, National Parks Conservation Service (NPCS), Forestry Service, Agriculture Service, Social Affairs, Environment and Education departments for a variety of community safety, awareness and development initiatives including provision of supportive extension services in the BBMP "support zone" watershed. Specific partner activities can be informal or through MOUs for which budgeting will be required.

Special mention is made of the Mauritian National Coast Guard (NCG) and its potential role for further cooperation with BBMP management during implementation. The NCG is one of only two paramilitary units in Mauritius, the other being the Special Mobile Force (SMF). As a specialized unit of the Mauritius Police Force, the NCG unit consists of police officers on lengthy post rotations.

Establishment of the NCG was enacted by a Parliament bill in 1988 with three broad duties being:

- Enforcement of any law relating the security of the State of Mauritius
- Enforcement of any law relating the protection of the maritime zones
- Detection, prevention, suppression of any illegal activities within the maritime zone.

The NCG has 19 posts on Mauritius and 3 posts on each of the main outer islands at Agalega, St. Brandon and Rodrigues. The NCG has ships, patrol boats and a helicopter squadron for search-and-rescue missions, rescue diving and surveillance of territorial waters. Under the United Nations Convention on the Laws of the Sea (UNCLOS) each coastal nation has a portion of the sea designated as its Exclusive Economic Zone (EEZ), which extends to 200 nautical miles (nm) or 380 Km from the coast. Mauritius has exclusive rights and obligations within its EEZ for environment protection, fish stocks, pollution, law enforcement, fire-fighting and mineral resources exploration (e.g., oil, gas, metals).

The NCG operates a residential training Marine Training Establishment (MTE) at Le Chaland, Blue Bay, Mauritius. The MTE runs short orientation courses to train specialists for technical duties on board ships, refresher courses for updating and consolidating knowledge of personnel and training recruits to become both policemen and seamen. The United States has provided training to NCG officers in such fields as seamanship and maritime law enforcement. The MTE also includes a Police Diving School with a training programme that includes a standardisation course, search and recovery course, first aid and diving injuries course, and an underwater investigation technician course.

Figure 2 also emphasizes the importance of ***NGOs*** as BBMU partners (through specific MOUs) for coordination and specific implementation activities with both BBMU and the community. Thus, their responsibilities and involvement with management plan implementation are beyond only sitting in an advisory capacity on the BBMP Board. Specific partner activities can be informal or through MOUs for which budgeting will be required. Important NGOs of relevance

to Blue Bay are Eco-Sud and its Lagon Bleu Programme[2] (*Appendix K*) as well as the Mauritius Marine Conservation Society (MMCS)[3], both of which have been involved with environmental work within BBMP, adjacent waters and the watershed. Additional NGOs that have potential as partners include:

- Reef Conservation Mauritius: www.reef-mauritius.com
- Mauritian Wildlife Foundation: www.mauritian-wildlife.org
- Mauritius Oeanography Institute (MOI): www.moi.gov.mu

Partnerships can also be established for specific activities with the ***Private Sector*** (e.g., hotels, tour operators, dive centers). Specific partner activities can be informal or through MOUs for which budgeting will be required. Water sports operators were involved in the development of the regulations and zoning, and several have been members of the Steering Committee. Private sector businesses of particular relevance at Blue Bay include:

- Shandrai Hotel and Blue Lagoon Beach Hotel
- Naiade, Île des Deux Cocos
- Speed Boat and Glass Bottom Boat Operators

5.3. PUBLIC PARTICIPATION

Objective 3: To ensure public participation by establishing clear public rights and responsibilities in support of the BBMP co-management framework

Actions

3.1. Work with the local community to establish clear limits, rights and responsibilities

3.2. Publicise rights and responsibilities for community co-management partnerships

Experience has shown that co-management is most effective when substantive rights and benefits are devolved at the early stage to community level. If only the responsibilities for management are given without the supporting rights and benefits, then incentives for an effective community role will be insufficient, and failure of co-management is likely. When developing an effective co-management system there is therefore the need to balance a *lack of capacity* with the achievement of substantive *devolution* of rights, responsibilities and authority (UNDP 2011).

One BBMP objective is to ensure public participation by establishing a co-management framework. This implies management arrangements among a variety of community stakeholders to include all aspects of boundary and zone maintenance, enforcement of regulations, protection and monitoring of biological diversity. This requires power sharing between the BBMU and delegated local community members.

5.4. PUBLIC-PRIVATE PARTNERSHIPS

Objective 4: To promote the private sector (e.g., local hotels) in BBMP management activities

[2] Eco-Sud and Lagon Bleu: http://www.ecosud.mu/lagonbleu/index-eng.htm
[3] MMCS: www.mmcs-ngo.org

Actions

4.1. Establish public-private partnership MOU's and agreements (e.g., for rehabilitation, ecotourism, environmental education, training, income generation, park maintenance)

4.2. Establish partnerships between local hotels and the BBMP Management Unit

It is important to translate the economic value of biodiversity and environmental services into appropriate and viable / sustainable financial incentives, especially for coastal communities and businesses that will be taking on additional responsibility for biodiversity conservation.

Public-private partnerships for biodiversity conservation, public awareness and environmental education, among others, can be established to more effectively manage BBMP. Partnerships should be established for specific activities through MOUs with the private-sector (e.g., hotels, tour operators, dive centers). Private sector businesses of particular relevance at Blue Bay include:

- Shandrani Hotel and Blue Lagoon Beach Hotel
- Naiade, Île des Deux Cocos
- Speed Boat and Glass Bottom Boat Operators

Partnerships between private land users and owners in the watershed, for example, and the BBMP Board will need to be developed to ensure cooperation over conservation and development measures. However, caution is stressed with regard to proposals for public-private partnerships in general as experience has shown difficulties. Clear understanding of roles, rights and obligations on the part of the Board and the private-sector company or individual must be made prior to any formal partnership.

5.5. ADMINISTRATION AND STAFFING

Objective 5: To ensure effective administration and adequate staffing levels for BBMP management

Actions

5.1. Recruit additional staff for effective MPA management

5.2. Establish clear job descriptions with limits and responsibilities for all staff

The BBMP Management Unit (BBMU) is responsible for the day-to-day management of BBMP. The BBMU is headed by an *Officer-In-Charge*, who reports to the Marine Conservation Division Scientific Officer of the Albion Fisheries Research Centre (AFRC) of the Ministry of Fisheries & Rodrigues (MoFR). The BBMU shall act as the Secretariat to the BBMP Board and the Officer-in Charge as its secretary. Patrolling personnel will also be responsible for the much larger Grand Port- Mahébourg Fishing Reserve to the north and south of BBMP.

The proposed BBMU staff and arrangements at full operation are shown in *Figure 3*. The BBMU is proposed to consist of four management units, i.e. (i.) *Operations; (ii.) Community Relations, Information, Education & Communication; (iii.) Scientific & Technical and (iv.) Administration*. Each unit is led by an Officer or Coordinator as Management Unit Head, all of which, together with the Officer-in-Charge, form the *BBMU Management Team*.

The BBMU is staffed by officers referred to as the BBMP Fisheries Protection Officers (FPOs), who are employed by the MoFR. All BBMP Fisheries Protection Officers have powers of arrest. They are also authorised to collect fees "where relevant to the Regulations" and to issue receipts. BBMU staff (37) at full operation (*Figure 3*) will consist of:

- Officer-in-Charge (permanently assigned to Blue Bay) x 1
- Scientific Officer (based at Albion Fisheries Research Centre) x 1
- Principal Fisheries Protection Officer (PFPO) x 1
- Senior Fisheries Protection Officers (SFPO) x 4 (1 per shift of 4/day)
- Fisheries Protection Officers (FPO) x 24 (6 per shift of 4/day), including 2 at La Cambuse)
- IEC Programme & Visitors Centre Coordinator (to be recruited in January 2013) x 1
- Financial Officer / Accountant x 1
- Clerical Officer / Secretary x 1
- General Workers x 2
- Driver x 1

The Regulations do not specify the types of positions for BBMU other than Officer-in-Charge and "Officers". BBMU staff ToR have been prepared, however some important positions are missing; namely, Financial Officer (Accountant), IEC Programme & Visitors Centre Coordinator and Clerical Officer (Secretary). While the Financial Officer is expected to be seconded from the Ministry of Finance, the IEC Programme & Visitors Centre Coordinator will need to be recruited, and the draft ToR for this position is found in *Appendix E.* The Clerical Officer or Secretary will also need to be recruited. Additional positions are General Worker and Driver. Because BBMP posts are continuously manned by Fisheries Protection Officers, it is unlikely there will be a need for Watchmen or Security Guards.

5.6. STAFF CAPACITY BUILDING AND TRAINING

Objective 6: To build the capacity of all BBMP staff through regular training and site visits to other MPAs

Actions

6.1. Ensure FPO capacity building through training and site visits to other national and international MPAs

6.2. Provide regular training on BBMP regulations to both FPOs and partner community groups

6.3. Ensure all staff capacity building through regular training and refresher courses

Fisheries Protection Officers have undergone training in Marine Protected Area operations, patrolling and surveillance techniques, basic outboard motor maintenance, monitoring methods and other skills. As this is an on-going capacity building process, more will be required.

On-going training and refresher courses will include, but not be limited to:

- MPA general operations, patrolling and surveillance techniques
- boat handling, maintenance and operation, outboard motor maintenance
- dive equipment handling and maintenance
- boundary and mooring buoy maintenance
- marine biodiversity, ecology and conservation, including species identification
- an understanding of the purpose and uses of biodiversity monitoring
- law enforcement, including legal rights and obligations, national and regional laws and regulations, in particular, the *Fisheries and Marine Resources Act of 2007* (Act No. 27)
- public relations and conflict resolution
- diving and swimming
- public safety (first aid, rescue techniques)
- other topics determined as necessary by the Officer-in-Charge and Scientific Officer

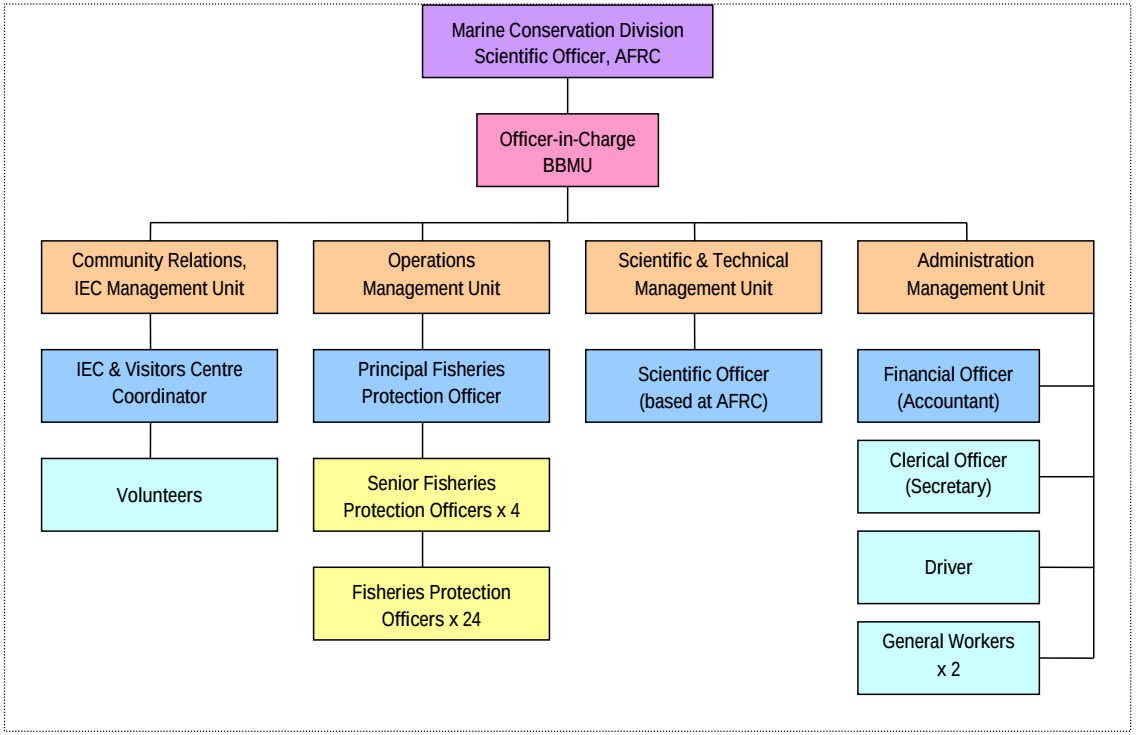

Figure 3: BBMP management unit (BBMU) with 37 staff at full operation

Developing and strengthening work planning, data management and archiving, computer skills, GIS use and applications, boat and diving equipment handling and maintenance, among others, will be required for most Officers.

Training manuals of relevance to BBMU have been prepared for SEMPA on a variety of management-oriented topics, including:

- Advanced ArcGIS training course (Klaus 2010)
- Participatory Resource Monitoring Programme:
  Introduction to the PRMP and Training Course (Klaus & Hardman 2011a)
- Participatory Resource Monitoring Programme Part 1:
  Basic Marine Ecology (Klaus & Hardman 2011b)
- Participatory Resource Monitoring Programme Part 2:
  Ecological Monitoring Programme v1. Training Manual (Klaus & Hardman 2011c)
- Participatory Resource Monitoring Programme Part 3:
  Fin-fish and Octopus Fisheries Monitoring Programme:
  Training Manual v1 (Klaus & Hardman 2011d)
- Water Quality Monitoring Programme (Draft v1) (Klaus 2011b)

Other training programmes could be prepared for Intertidal and mangrove monitoring, amongst others.

5.7. COMMUNITY CAPACITY BUILDING AND TRAINING

Objective 7: To strengthen BBMP community groups as effective management partners to ensure efficient protection and management

Actions

7.1. Develop and implement an empowerment, capacity building and training programme for specific community groups to ensure that they eventually have equal power-sharing in co-management decision-making

7.2. Ensure adequate and regular on-site community partner training for co-management

7.3. Provide training for boat operators and fishermen as BBMP eco-guides with incentives

"Community" includes many stakeholders (e.g., dive and water sports operators, tour and hotel operators, fishers, guest-house and home restaurant operators [*chambres d'hôte, tables d'hôte*], watershed communities).

The BBMU will engage the local community (e.g., fishers, hotel and tour operators) as partners in co-management, and this will necessitate effective and appropriate capacity building techniques. Special targets for the capacity building programme are the co-management related institutions and groups. Training can include as many topics as needed, including marine biodiversity conservation and monitoring, the co-management concept and the purpose and values of BBMP.

5.8. INFRASTRUCTURE AND EQUIPMENT

Objective 8: To ensure adequate infrastructure and equipment required to effectively manage BBMP

Actions

8.1. Maintain the BBMP Headquarters and Visitors Centre

8.2. Construct one FPO surveillance and public awareness post at La Cambuse

8.3. Construct 2 watchtowers, one at the BBMP HQ and one at the La Cambuse post

8.4. Design and maintain the BBMP Visitors Centre (*Coastal & Marine Sustainability Centre*)

8.5. Purchase all required equipment, including, but not limited to, FPO surveillance boats, quad-bike, van, 2 motorcycles, diving equipment & air compressor

8.6. Ensure routine maintenance for effective management

Infrastructure requirements include:

- Construction of the BBMU Headquarters (BBMP Centre) to includes offices. a low watchtower or observation deck, the Visitors Centre (CMSC) and a wet laboratory
- A Visitors Interpretation Centre (to be called the *Coastal and Marine Sustainability Centre*, CMSC) with interactive interpretive exhibits and a self-sufficient, sustainable and nonpolluting (off-the-grid) energy system (e.g., photovoltaic, wind) and composting toilets
- A boat house at the BBMP Centre
- One guard and visitor information post with watchtower at La Cambuse
- Quality signs posted and maintained at strategic points along the coast and at La Cambuse (regulations, zones)

In addition to regular maintenance of the current equipment, including boats and outboards, and renewal of materials, equipment requirements over the next 5 years include:

- BBMU office equipment (desks, chairs, tables, file cabinets)
- BBMU office equipment (4 printers, photocopying machine, PowerPoint projector, etc)
- 3 new computers
- Laboratory equipment (including microscope, lab supplies, etc.)
- Visitors Centre (CMSC) office equipment (desks, chairs, tables, file cabinets)
- CMSC exhibits construction and materials
- Development of new promotional and educational materials
- La Cambuse Post equipment (desks, chairs, tables, file cabinets)

- 1 large fibreglass patrol boat (specifications with BBMP staff, see **photo** for example)
- 2 new boat engine (25 Hp)
- 1 quad bike for coast patrols
- Fist aid and lifesaving equipment
- Other items as in 2012-2016 operations budget (*Appendix H*)

5.9. REGULATIONS

Objective 9: To implement and publicise clear and appropriate regulations for managing BBMP

Actions

9.1. Enforce national Fisheries Act regulations at BBMP

9.2. Regularly review appropriate requirements for changes to regulations

9.3. Review and revise the current regulations to encourage and accommodate community participation in BBMP law enforcement, surveillance and other co-management activities

9.4. Establish institutional arrangements for coordinated regulations enforcement (e.g., NCG)

The *Fisheries and Marine Resources Act No. 27 of 2007* [4] consolidates the law relating to management, conservation, protection of fisheries and marine resources and protection of the marine ecosystems (*Appendix F*). The Act provides rules for management and conservation of fisheries resources and fish farming (Amendment[5]) and makes provision for protection of marine areas and habitats, establishment of a Marine Protected Area Fund, enforcement and administration of provisions of the Act. As for rules regarding fishing, the Act requires fishermen and boats to be registered, prescribes closed seasons, prohibits various activities regarding fishing including unauthorized landing and prohibits fishing for marine mammals or marine turtles.

The Act further, among other things, provides rules for fish import and export and the import, sale and manufacture of gear; provides for the licensing of gear and foreign and Mauritian fishing vessels; defines obligations of licensed fishing vessels regarding marking, transhipment and reporting; provides for measures of enforcement including pursuit beyond maritime zones; defines offences and prescribes penalties; and specifies regulation-making powers of the Minister.

In addition to providing a legal basis for the co-management principle, specific provisions for the BBMP include:

- Delimitation and zones
- Permissible activities
- Non-permissible activities within a Conservation Zone
- Non-permissible activities
- Application for user licenses and user fees
- MPA Board
- MPA Management Unit
- MPA Fund

5.10. SURVEILLANCE, ENFORCEMENT & CONFLICT RESOLUTION

Objective 10: To ensure adequate and coordinated performance with strong supervision for surveillance, law enforcement and conflict resolution

Actions

10.1. Establish a system and protocol for FPOs to conduct effective patrols, surveillance, enforcement, communication, conflict resolution and reporting

10.2. Provide regular training on the BBMP regulations and existing fisheries regulations to both FPOs and the community

10.3. Establish good cooperation among FPOs, NCG, Beach Authority, local residents and government agencies through a co-management system that supports effective regulations compliance

10.4. Establish a system and protocol for effective FPO patrols, communication and reporting

10.5. Recruit community members, registered fishers and amateur/unregistered to support FPOs and complement the existing surveillance framework

[4] http://www.gov.mu/portal/goc/fisheries/file/fisheriesAct2007.pdf

[5] http://www.gov.mu/portal/goc/fisheries/file/fishriesmarineact.pdf

Co-management principles dictate that responsibility for enforcement will be done not only by FPOs and trained community groups but also by several other sources (e.g., NCG, FPS, judiciary), and this will require coordination.

Patrolling efforts will be based out of the BBMU Headquarters at Blue Bay and one post and watchtower proposed for La Cambuse. Surveillance will be through a combination of foot, motorcycle and boat patrols. FPOs will alternate patrolling in designated areas on a total of four day and night shifts. Distribution of patrolling efforts must cover a range of coast and lagoon and will be assisted by NCG boats and watchtowers. The PFPO will be responsible for coordinating patrols and deciding how best to use surveillance resources. It must be stressed that strict, proper control and coordination of FPOs is essential. Four SFPOs will be available for each of the four shifts with six FPOs per shift.

Good methods for reporting surveillance and enforcement activities will be essential, and a simple standardised format will need to be developing by the PFPO in consultation with the SFPOs and Officer-in-Charge. What is important is that data are collected in a consistent and standardised format.

Enforcement may take the form of mediation, arbitration or other forms of conflict resolution and to reduce the conditions that could result in conflicts. Arrests would be a last resort for repeat offenders. This must be part of all training and refresher courses.

5.11. MONITORING MANAGEMENT EFFECTIVENESS

Objective 11: To establish a monitoring and evaluation programme to ensure effective implementation of the BBMP management plan

Actions

11.1. Establish an integrated long-term monitoring and evaluation programme for MPA management effectiveness (METT) to measure impacts from implementing activities and progress towards achieving objectives

11.2. Ensure monthly FPO work plans with clear milestones and targets are coordinated by the PFRO or Officer-in Charge/Park Manager

An integrated long-term monitoring and evaluation (M&E) program is needed for management effectiveness to measure impacts from implementing activities and progress towards achieving the objectives. Monitoring management plan implementation includes establishing performance and impact indicators along with their corresponding means of verification. However, the essential point to understand is that there needs to be a feedback loop built into management effectiveness monitoring where the monitoring results feed back into management. Thus, management effectiveness monitoring will not merely be monitoring for the sake of it but monitoring for adaptive management. Monitoring management effectiveness parameters will include, but not be limited to:

- Management plan activities implementation progress and constraints
- Public IEC program progress, publications and constraints
- Tourist and local visitor use
- Surveillance, enforcement and conflict resolution
- Staff performance and training needs
- Biodiversity health and distribution
- Watershed degradation and rehabilitation

- Socio-economic issues (e.g., associated community development programs, land and sea resource use changes)
- Water quality and waste removal (run-off from plantations, settled areas and streams)
- Climatic conditions and change (e.g., cyclones, rainfall, air and water temperature, wind speeds)

Evaluation will be based on several mechanisms, including, but not limited to:

- Conducting quarterly and annual progress evaluations
- Preparing daily, quarterly and annual implementation monitoring of progress and reporting
- Preparing and submitting work plans and Management Unit Heads progress reports
- Preparing thematic and technical reports as the need arises to address particular threats and mitigating measures as well as significant progress or achievements

The *Management Effectiveness Tracking Tool* (METT) is a good example of a methodology that could be used for BMP management effectiveness monitoring as it has been used for many other protected areas. A feedback loop built into management effectiveness monitoring where the monitoring results feed back into adaptive management is well utilised by METT. METT has been developed to help track and monitor progress in achievement of the World Bank/WWF Alliance's worldwide protected area management effectiveness target. It has been built around the application of the World Commission on Protected Areas (WCPA) Framework (WWF International & The World Bank 2007, Hockings *et al.* 2006) [6].

METT is based on the idea that good PA management follows a process of six distinct stages related to the three key elements of the PA management cycle. The key elements are:

- *Design*: What is the **context** in which the MCPA exists, and what is its vision?
  How appropriate is the **planning**?
- *Management systems and processes*: What **inputs** are needed?
  What are the management **processes**?
- *Delivery of objectives*: What are the **outputs** (products or services)?
  What are the **outcomes** or impacts?

The basis for BBMP management monitoring and evaluation activities, including performance and impact indicators, their means of verification and individual responsibilities, are found in the Strategic Framework (*Appendix I*).

Developing and strengthening work planning, data management and archiving, computer skills, GIS use and applications, boat and diving equipment handling and maintenance, among others, will be required for most FPOs.

Work plans are extremely important for coordination and achieving targets. All staff must use a consistent format so that they can complete their long-term tasks and coordinate their activities with other staff. A short training will be required for this and can be led by the Officer-in-Charge.

[6] www.iucn.org/themes/wcpa/pubs/guidelines.htm#effect2

5.12. MANAGEMENT PLAN REVIEW

Objective 12: To establish a clear and regular management plan review process and adapt activities to changing circumstances

Action

12.1. Prepare quarterly, annual and *ad hoc* adaptive management evaluations of implementation progress as part of the M&E programme and establish the mechanism to quickly respond to changing circumstances

Any management plan should be seen as part of a dynamic and continuing planning process. The plan should be kept under review and adjusted to take into account results from monitoring, changing priorities and emerging issues.

In line with the adaptive management principle and as a flexible document, this management plan must respond to any changing circumstances over the next five years. Annual reviews of management plan implementation at the minimum are recommended. Finally, a revised and up-dated management plan or amendment should be prepared in late 2016 to govern the subsequent five year period.

6. BIODIVERSITY CONSERVATION PROGRAMME

6.1. BOUNDARY AND AREA

Objective 13: To maintain and publicize the demarcated boundary of BBMP

Actions

13.1. Replace old buoys with eco-friendly and weather-resistant buoys

13.2. Ensure regular maintenance of buoys

13.3. Review traffic lanes and required modifications

BBMP is approximately 353 ha of coral reef, open sea, mangroves, sand beaches and shoreline to the high-water mark and stretches from Pointe Corps de Garde in the north to Pointe Vacoas in the south (*Appendix D-2*). BBMP is bordered north and south by the much larger *Grand Port-Mahébourg Fishing Reserve* (1,828 ha).

Figure 4 shows the BBMP boundaries while *Appendices D-3* (Map) and *F* (Regulations) show the boundary and zones in more detail and as gazetted. The seaward boundary extends beyond the

Figure 4: Blue Bay MP boundaries (MoFR)

fringing reef out 1 km. BBMP also includes an access channel, Le Chaland Passe. Activities under this objective include maintaining the existing demarcation buoys and revising the gazetted traffic lane so that it reflects what is actually used.

6.2. MANAGEMENT ZONES

Objective 14: To maintain a system of management zones ranging from conservation to multiple-use (e.g., tourism and recreation, fishing, restoration)

Actions

14.1. Enforce regulations for Multiple-use and Conservation zones

14.2. Post signs at strategic points explaining location and zone regulations

14.3. Review adequacy of management zones boundaries after the first 3 years using the results of the monitoring programme and research, and make recommendations for amendments to the zones as needed

Appendix D-3 shows the BBMP zones in detail and as gazetted. There are no proposed changes to conservation and multiple-use zones.

Appendix D-4 shows how the Shandrani Hotel has publicized the zones at their boat house with a BBMP map that also shows navigation lanes and zones specific to the hotel water sports.

The three main BBMP zone categories are defined in the Regulations (*Appendix F*), which also specify the activities that are permitted and forbidden in each zone:

- ***Strict Conservation Zones A and B:*** set aside due to their particular sensitivity and species diversity
- ***Conservation Zone*****:** a zone meant for conservation purposes and where no extractive use is allowed except for research purposes. No person shall, within a CZ, fish by any means except for research purposes and subject to the authorization of the Commissioner and may not anchor any boat, vessel or craft.
- ***Multiple-Use Zone*****:** a zone where boating and fishing are permitted by any legal methods authorised under the Regulations

In addition, there are **Traffic Lanes** that are intended to separate boats from non-compatible conservation priorities. Fishing and most recreational activities are not allowed in these lanes, the locations of which will be revised by the BBMU in 2012. One **Ski Lane** is located within the bay on the western side of Shandrani Hotel. No other activities are permitted while water skiing is in progress.

6.3. SUPPORT AREA

Objective 15: To facilitate and promote the development of acceptable guidelines for the types and extent of development activities in the watershed and develop partnerships

Actions

15.1. Promote and facilitate partnerships with hotels, community groups, sugar plantations, NCG, Beach Authority, Coastal Zone Management Unit, Mauritius Ports Authority and others as necessary for Support Area management

15.2. Promote and facilitate establishment of a *Blue Bay Watershed Board* comprised of representatives from government agencies, NGOs and community groups with activities within the watershed that will: (i.) coordinate to provide special management status to

the area, (ii.) facilitate development of legal guidelines for development within the area and (iii.) review Ministry of Housing & Lands coastal zone management guidelines for appropriateness for BBMP

Sayer (1991) has provided a generally accepted working definition of a "buffer" or ***Support Area*** as a "zone peripheral to a national park or equivalent reserve, where restrictions are placed upon resource use or special development measures are undertaken to enhance the conservation value of the area."

BBMP must not be seen as an isolated area. Ecologically, economically and culturally, BBMP is linked to its watershed. For that reason, the planning and management of BBMP must be incorporated within regional planning to include the watershed and supported by adopted local government policies that recognise this fundamental environmental and ecological linkage.

This area, however, does not fall within the legally gazetted BBMP boundaries and thus is not part of BBMP. It therefore does not fall within the jurisdiction of the BBMU. However, the BBMP watershed is intended to be managed through partnerships and the establishment of a *Blue Bay Watershed Board*. BBMU's role is to serve as catalyst or facilitator of such partnerships and Board establishment. It must also work with local government agencies (e.g., Agriculture, Forestry) to develop legal guidelines for development within the zone and ultimately to achieve special supportive management status that is compatible with biodiversity conservation within BBMP.

When managing BBMP over the next five years it is important to take a broader landscape or watershed approach as what happens in the watershed can greatly affect the marine ecosystem. A Watershed Management Assessment Specialist will be required to determine how BBMP and its watershed will be managed together; the ToR for this consultant is found in *Appendix G*.

6.4. LINKAGES TO OTHER CONSERVATION AREAS

Objective 16: To maximise the positive impact of BBMP protection by linking its management to that of an adjacent conservation areas (Fishing Reserve) to form an integrated protected system

Action

16.1. Expand BBMP management activities (e.g., surveillance, monitoring, awareness) to southern and northern sectors of the Grand Port- Mahébourg Fishing Reserve

BBMP is bordered north and south by the much larger *Grand Port- Mahébourg Fishing Reserve* (1,828 ha) show in *Appendix D-5*. It is expected that the BBMP FPOs will also patrol the adjacent Fishing Reserve once staff number are up to an adequate level and improved boats, including a large fiberglass patrol boat, are purchased.

Often management planning should not be restricted to the defined site boundary, but rather should also take into account the wider context of planning and management, notably in the basin or coastal zone within which the site is located. It is important to ensure that the site planning takes into account the external natural and human-induced factors and their influence on the site, and also to ensure that the management objectives for a site are taken into account in the wider planning processes.

6.5. TOURISM AND RECREATIONAL USE

Objective 17: To ensure the carrying capacity of tourism and recreational use neither exceeds acceptable limits nor harms the environment

Actions

17.1. Implement with hotels carrying capacity guidelines
17.2. Promote with Tourism an integrated strategy that links marine conservation with tourism development and conducts periodic assessments of impacts and visitor carrying capacity
17.3. Promote with Tourism rules and guidelines for tourism use and safety in designated areas
17.4. Promote with Tourism guidelines that limit the number of hotels and rooms
17.5. Promote with the government eco-friendly and sustainable forms of water use, waste removal and energy efficiency
17.6. Promote and enhance existing inspection procedures of hotel wastewater treatment plants and discharge by relevant authorities.
17.7. Promote BBMP rules and regulations within hotels
17.8. Control boating and enforce use of mooring buoys rather than anchoring in sensitive coral reefs
17.9. Review locations of mooring buoys and identify suitable locations for and implement a system of mooring buoys to minimize damage to sensitive lagoon habitats
17.10. Add mooring buoys in the lagoon north of BBMP along Cape D'Esny

Cooperation and in some cases MOUs for the specific activities should be promoted to reduce environmental damage. In addition to two major hotels, Shandrani and Blue Lagoon, there are several operators of speed and glass-bottom boats, dive centers, kite surfing and traditional boat sailing.

Uncontrolled coastal construction and development activities will pose a serious threat to coastal and marine ecosystem health due to increases in waste (water and solid) disposal, physical habitat disturbance and loss, sedimentation and turbidity and other issues. At least one application for new hotel construction along the relatively undisturbed La Cambuse coast is pending approval. If approved, this development could have serious consequences for coastal and marine ecosystem health.

A domestic, commercial, tourism and recreational carrying capacity study is required. This study would provide recommendations for achieving this objective and implementing several priority actions. *Appendix G* provides the draft TOR for a *Commercial Use Carrying Capacity Assessment Specialist* to conduct this study.

6.6. ENVIRONMENTAL IMPACT ASSESSMENT

Objective 18: To contribute to the appraisal of proposed developments within and adjacent to BBMP by monitoring each EIA process

Actions

18.1. Monitor the legal requirements and review the mechanism for conducting a transparent EIA and post-construction monitoring protocols for all developments that potentially impact BBMP and its watershed

18.2. Ensure BBMP Steering Committee and national Ramsar Committee have involvement in EIA reviews

18.3. Develop habitat specific guidelines for preservation and sustainable use of habitats of conservation importance (e.g., coral, seagrass, mangrove) to be used as the basis for an EIA as appropriate

Environmental impact assessments for development projects (e.g., infrastructure, aquaculture) should be an essential legal requirement with defined responsibilities for review and compliance. Within the adjacent *Support Area*, any proposed construction must have an EIA completed as part of the planning process, and the EIA must be approved by the BBMP Board to ensure any development will not negatively impact conservation values of BBMP.

Run-off from sugarcane plantations, in particular, contains herbicides pesticides and fertilizers is the main source of pollution entering the bay. Seepage from domestic sewage absorption pits (septic tanks and cess pools) and other facilities is also likely to have an impact on water quality.

All EIAs and developments that could potentially affect BBMP and its watershed must be subject to critical review and approval by the BBMP Board. If any investor receives approval for construction, then an independent, detailed and transparent EIA must be made to reflect the special status and importance of BBMP and its watershed. However, there is limited internal capacity for critical reviews, and the EIA process is likely to not be very transparent particularly if there is a large amount of potential inward investment behind the development proposer.

Several countries have a system whereby a proportion of the development or construction budget must be allocated towards environmental mitigation or "green" causes selected by the government or an appropriate management authority. Furthermore, it is very important that a regional tourism structure plan include assessments of the cumulative impact of tourism development.

One issue is that EIAs for hotels in Mauritius were only required if the proposed hotel had more than a certain number of rooms. Therefore, standard practice was for developers to propose hotels with one room less than the required number that triggered the need for an EIA. It is not certain that this law has changed in this regard, i.e. smaller hotels often do not require EIAs.

6.7. SUSTAINABLE FISHERIES MANAGEMENT

Objective 19: To ensure that fishing within BBMP is done under established guidelines and below the capacity of the ecosystem to sustain it

Actions

19.1. Establish and maintain ecosystem and catch monitoring

19.2. Improve surveillance and law enforcement of local fisheries

19.3. Implement a ban on pole fishing within the lagoon

19.4. Implement a programme to address illegal fishers

Fishing within the Blue Bay lagoon is primarily with pole and line from the shore and is concentrated along the south western mangroves. Fishing catch in numbers and of certain species has declined. The BBMU intends to ban all pole and line fishing within the bay in 2012.

Outside the bay and within the 1 km wide marine multiple-use zone, fishing is more diverse and much less controlled. Fish traps are often used in some areas. A legal fisherman within BBMP is, by the Regulations (*Appendix F*), classified into two categories: Professional Registered Fisherman or Recreational Fisherman; all others who fish are doing so illegally.

Currently, there is no such thing as "sustainable fishing" in BBMP. Surveillance and law enforcement by FPOs must address the major illegal fishing problem, both in terms of individuals and the fishing methods used. To do so will require the cooperation of the coastal community with fisheries resource monitoring support.

6.8. ECOSYSTEM MANAGEMENT

6.8.1. MARINE

Objective 20: To support the recovery and rehabilitation of marine biodiversity and resources through adaptive ecosystem management

Actions

20.1. Develop an action plan for removal of invasive and alien species
20.2. Organize regular beach-cleans to remove rubbish
20.3. Organize regular underwater clean-up operations in partnership with local divers to remove rubbish (e.g., discarded fish-traps and other missing gear) that may cause further damage
20.4. Address the growth of algae at the source of the problem and on coral in the lagoon
20.5. Restock the lagoon with herbivorous fish (e.g., parrotfish species)
20.6. Develop with the government guidelines to manage and avoid accidental or intentional damage to natural habitats within BBMP due to the development of in-water infrastructure that would not be subject to an EIA (e.g., jetties, mooring buoys)
20.7. Establish a volunteer programme to assist with marine management

This objective underscores the foundational principle of collaborative marine management upon which BBMP is based and upon which the restoration of fish populations in the lagoon depends. Collaborative marine management is in essence joint action between the BBMP and local marine resource users, collaborating to restore productivity marine resources food security for some people. Collaborative management invests in community members as active players in lagoon restoration.

The continued quantification of biological richness and monitoring the marine habitats are priorities for management over the next five years. Marine management will focus on restoration and rehabilitation with an emphasis on the above primary actions and monitoring

(*Section 6.9*). This objective underscores the foundational principle of collaborative marine management upon which BBMP is based and upon which the restoration of fish populations in the lagoon depends. Collaborative marine management is in essence joint action between the BBMP and local marine resource users, collaborating to restore productivity marine resources food security for some people. Collaborative management invests in community members as active players in lagoon restoration.

A Volunteer Programme can be established to assist with marine management. Volunteers can be local, national, regional and international. Several sources of international volunteers and interns can be found (e.g., universities, GVI, Earth Watch).

6.8.2. ÎLE DES DEUX COCOS

Objective 21: To integrate the management of Île des Deux Cocos with BBMP collaborative management to enhance ecosystem conservation and recreational activities

Actions

21.1. Coordinate Naiade management of Île des Deux Cocos with BBMP

21.2. Develop an action plan with Naiade for vegetation and beach management

Protection and ecosystem restoration are priority goals for this islet, which is not technically part of BBMP. The goal of habitat restoration on the islet is to rehabilitate the inner-littoral native plant community and to achieve self-sustaining native plant populations. This would entail both increasing the populations of dwindling species that are present and reintroducing species known to have once occurred on the islet.

The Mauritian Wildlife Foundation (MWF), in cooperation with the Forestry Service, is the most competent and experienced organization in Mauritius to carry out implementation of an island management plan and to provide invasive vegetation species removal and restoration including enrichment planting with native indigenous trees and other plants (e.g., Île aux Aigrettes).

In cooperation with Naide, which manages the islet, a Volunteer Programme can be established to assist with management. Volunteers can be local, national, regional and international. Several sources of international volunteers and interns can be found (e.g., universities, GVI, Earth Watch).

6.8.3. COASTAL WATERSHED

Objective 22: To promote and contribute to coordinated management measures taken by the government that ensures all land-use protects the watershed of BBMP and promote reforestation and appropriate agricultural practices

Actions

22.1. Coordinate management of BBMP with other agencies and plantations that have activities within the watershed (establishment of a *Blue Bay Watershed Management Board*)

22.2. Address the issue of run-off containing fertilizer and pesticides

22.3. Promote and facilitate a programme with Forestry and private landowners to reforest and rehabilitate at critical points around the lagoon where run-off from sugar plantations is common and reduce sedimentation flow into the lagoon

22.4. Promote indigenous tree nurseries with Forestry and private land owners that ensures adequate protection and maintenance of transplanted seedlings for tree planting around the coast and at the Blue Bay and La Cambuse public beaches

22.5. Establish a Volunteer Programme to assist with watershed management

Watershed management is the process of organizing the use of resources within a watershed to provide desired goods and services without harming soil, water and biodiversity resources. The relationships among land, soil, water and biodiversity conservation as well as the linkages between upstream and downstream areas are recognized in watershed concepts (*Part Two, Section 4.3*). Watershed systems are not only sources of economic value but also suppliers of environmental services that guarantee healthy ecosystem functions. Any disruption to watershed systems in general can easily create not only economic problems for local residents but also environmental and health problems. Solving these problems is urgently required to stop further bigger environmental and economic problems.

BBMP must not be seen as an isolated marine area. Ecologically, economically and culturally, BBMP is linked to its coastal watershed. For that reason, the planning and management of BBMP must be incorporated within regional planning to include the watershed and supported by adopted local government policies that recognise this fundamental environmental and ecological linkage. When managing BBMP over the next five years it is important to take a broader landscape or watershed approach as what happens in the watershed can greatly affect the marine ecosystem.

This area, however, does not fall within the legally gazetted BBMP boundaries and thus is not part of BBMP. It therefore does not fall within the jurisdiction of the BBMU. However, the BBMP watershed is intended to be managed through partnerships and the establishment of a *Blue Bay Watershed Board*. BBMU's role is to serve as catalyst or facilitator of such partnerships and Board establishment. It must also work with local government agencies (e.g., Agriculture, Forestry) to develop legal guidelines for development within the zone and ultimately to achieve special supportive management status that is compatible with biodiversity conservation within BBMP.

When managing BBMP over the next five years it is important to take a broader landscape or watershed approach as what happens in the watershed can greatly affect the marine ecosystem. A Watershed Management Assessment Specialist will be required to determine how BBMP and its watershed will be managed together; the ToR for this consultant is found in *Appendix G*.

A Volunteer Programme can be established to assist with coastal watershed management activities. Volunteers can be local, national, regional and international. Several sources of international volunteers and interns can be found (e.g., universities, GVI, Earth Watch).

6.8.4. ADAPTING MANAGEMENT TO CLIMATE CHANGE

Objective 23: To support activities that assist in adaptation to climate change by modifying as appropriate the conservation zones and other management actions to increase resilience in response to research and monitoring

Actions

23.1. Establish a long-term monitoring programme on the ecological and sociological impacts of climate change for adaptive management

23.2. Establish linkages and partnerships with national and international scientific institutions to enhance the local climate change programme

Mauritius will need to address two aspects of climate change; namely, mitigation of greenhouse gases from global sources and adaptation to the variability caused by already occurring perturbations to climatic systems, water temperature and currents. Both research and monitoring are required to assess current and pending climate change that will affect both social conditions and ecosystems. There needs to be a feedback loop built into climate change monitoring where the monitoring feeds back into adaptive management.

To help people who live in high-risk coastal areas adapt to the effects of climate change, assistance is required to help them identify and support diverse and acceptable alternative livelihood options. Supporting the development of strategic skill sets, encouraging experimentation by offering financial incentives and encourage learning by facilitating networks are other ways to help bring about change. Necessary initiatives to mitigate impacts and prepare local adaptation strategies include reduced dependency on fisheries, promotion of alternative livelihoods, investments in disaster preparedness response systems and strengthening human rights and social justice, especially for women who have potentially a big role in changing current practices in BBMP.

6.9. BIODIVERSITY RESEARCH

Objective 24: To promote and facilitate conservation and management oriented biodiversity research in support of BBMP management

Actions

24.1. Develop rules, regulations and protocol for marine research within BBMP

24.2. Develop a *Biodiversity Research Action Plan* that identifies priority research areas in support of BBMP management (to be reviewed on an annual basis and in response to key issues identified during the monitoring programme)

24.3. Promote implementation of priority research projects within BBMP through building a network with suitable academic institutions and attendance at workshops, conferences and other suitable forums

Opportunities for research at BBMP are significant and urgently required, especially management-oriented biodiversity conservation research of marine and coastal flora and fauna. A BBMP *Biodiversity Research Action Plan* that identifies priority research areas in support of management should be prepared to provide the details required.

A research policy and procedures guide for researchers should be developed (e.g., application for research in the area, contractual arrangements between authority and researcher, legal requirements, dissemination of research findings back to management).

6.10. MONITORING ECOSYSTEM HEALTH

Objective 25: To establish a technical and scientific monitoring and evaluation programme to ensure effective health and identify measures for recovery of the marine ecosystem

Actions

25.1. Prepare and implement a *Biodiversity Monitoring Action Plan*

25.2. Maintain the ecological coral reef monitoring sites and increase monitoring to every three months

25.3. Implement a monthly water quality monitoring programme especially at critical points along the coast of BBMP

25.4. Implement a full biodiversity assessment and ecological monitoring survey with suitably qualified experts after 4.5 years and review monitoring methods and survey design

25.5. Develop a rapid response plan for natural and man-made threats (e.g., coral bleaching events, cyclones, crown-of-thorns starfish outbreaks)

25.6. Establish a monitoring programme for seagrass beds on a bi-monthly basis to detect seasonal changes

Several permanent reef ecosystem monitoring transects (each 460 m) have been established at BBMP by AFRC and are monitored annually for coral cover and visual census of fauna and flora. Water quality monitoring is also done on a regular basis. However, it would be better if the biodiversity monitoring transects are monitored every 3-4 months.

All these actions are and will be done under the supervision of the BBMP Scientific Officer, who will be based at AFRC. Currently the Scientific Officer can do some of the monitoring within the bay. However, subtidal monitoring of the forereef and channel will need a team of at least 4 suitably qualified people who are both capable of doing the science part of the surveys and are trained divers. It is recommended that the BBMU develop an MOU with the Mauritius Marine Conservation Society (MMCS) and/or Eco-Sud / Lagon Bleu (*Appendix K*) to conduct more intensive studies.

It is recommended that monitoring for ecosystem health within BBMP could be expanded to what is currently being done at SEMPA in Rodrigues:

- *Ecological Monitoring Programme* - subtidal monitoring with training and data collection
- *Water quality monitoring*: water temperature (time series), turbidity, temperature (point measure), dissolved oxygen, oxygen-reduction potential, conductivity, PH, salinity, total dissolved solids, resisivity, specific conductance, alkalinity, ammonia, nitrate, nitrite, phosphate-LR, phosphate-HR, organophosphates. Rangers and Community Resource Observers (CROs) can be trained to collect water samples for analysis
- *Participatory Resource Monitoring Programme* (PRMP) for octopus and fin-fishery landing statios with CROs and Rangers to collect data for analysis
- *Participatory Resource Monitoring Programme* (PRMP) for *mangroves*: tree density, trunk thickness, canopy height, water salinity, faunal diversity, burrow counts, sediment granulomentry

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- *Participatory Resource Monitoring Programme* (PRMP) *Intertidal / beach habitats* (e.g., Sand watch: adapting to climate change and educating for sustainable development)
  Possible activities could include:
  - Observing the beach and making maps
  - Measuring erosion and accretion over time
  - Determining the effects of human structures on erosion and accretion
  - Measuring beach profiles
  - Measuring beach changes resulting from sea level rise
  - Measuring beach sand: size, shape and sorting
  - Observing different activities on the beach
  - Measuring beach debris

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There needs to be a feedback loop built into ecosystem monitoring where the results of the monitoring feed back into adaptive management for BMP. Establishing this mechanism will require coordination among the various FPOs within the BMU. For example, the analysis of data and reporting of results would be the responsibility of the Science Officer. The outputs would then need to be transferred into materials that could be used by the IEC Officer and BMP Officer-in-Charge.

6.11. COMMUNITY-BASED RESOURCE MONITORING

Objective 26: To support and build the capacity of the BBMP community for a community-based resource monitoring programme

Action

26.1. Initiate and implement a capacity building and training programme for interested local people to enable them to safely conduct the Participatory Resource Monitoring Programme under the supervision of the AFRC Scientific Officers

The BBMU should consider greater involvement of the community in monitoring, in this case monitoring local resource changes that may be resulting from improved BBMP management. SEMPA on Rodrigues has developed a *Participatory Resource Monitoring Programme* (PRMP) that could be adapted for BBMP with training for community members (*Section 6.10*). There needs to be a feedback loop built into monitoring where the monitoring feeds back into adaptive management. It is recommended that BBMU establish an MOU with a university and/or local NGO (e.g., Reef Conservation, Eco-Sud – *Appendix K*) to initiate socio-economic monitoring.

Actions will be under the supervision of the Scientific Officer. At present the best option is participatory monitoring. While the Scientific Officer can do some of the monitoring independently, the subtidal monitoring, for example, will require a team of at least four suitably qualified people.

7. SUSTAINABLE LIVELIHOODS PROGRAMME

7.1. LOCAL COMMUNITY DEVELOPMENT

Objective 27: To contribute to the appraisal and implementation of measures taken by local community development NGO's and government agencies for extension services and training in communities adjacent to BBMP

Actions

27.1. Establish partnerships with local community development NGO's and government agencies for extension services and training and in support of BBMP and government policies

27.2. Promote more equitable and just opportunities for local people to benefit from BBMP

27.3. Establish a Volunteer Programme to assist with local community development

There is a strong linkage between ecosystem health and human health, prosperity, well-being and community development. An assumption of BBMP's *raison d'être* is to support local livelihoods (e.g., tourism industry, fishers), and in return this will support BBMP ecosystem protection and management objectives.

It is recommended that Community-based Natural Resource Management (CBNRM) be promoted within and adjacent to the BBMP. CBNRM may be defined as management by local communities of a natural resource in which they have a vested community development and livelihoods improvement interest but with support from relevant authorities, institutions or organisations with expertise and authority for national natural resources management.

It is recommended that BBMU establish an MOU with a local NGO (e.g., Reef Conservation, Eco-Sud – *Appendix K*) to initiate a local community development programme.

A Volunteer Programme can be established to assist with the community development and sustainable alternative livelihoods programme management. Volunteers can be local, national, regional and international. Several sources of international volunteers and interns can be found (e.g., universities, GVI, Earth Watch).

7.2. BUILDING SUSTAINABLE LIVELIHOODS

Objective 28: To contribute to the appraisal and implementation of sustainable livelihood initiatives for BBMP communities and in support of the MID framework

Actions

28.1. Promote a program with government and NGO partners for improving entrepreneur skills, managing SMEs (e.g., production, marketing), market research for local products and alternative energy installation (solar, wind) as well as exchanges and cross-visits with other communities for alternative income generation

28.2. Establish a volunteer programme to assist with the livelihoods programme

The overriding sustainable livelihood strategy for BBMP is to recover the fish populations of the lagoon such that the lagoon operates at an optimal level of productivity. Other sustainable alternative livelihood options for local community development can be identified in a plan that

is recommended to be developed by a local NGO (e.g., Reef Conservation, Eco-Sud – *Appendix K*) to initiate socio-economic monitoring.

7.3. GENDER CONSIDERATIONS

Objective 29: To ensure constraints are minimised and opportunities maximised for both men and women to participate in and benefit from management interventions

Action

29.1 Establish a monitoring programme to ensure that both men and women are represented in co-management decision-making, empowerment and equitable benefits derived from BBMP

Because of both economic and equity issues, gender's inclusion in BBMP management activity planning will result in better-targeted and more effective programs. Specific gender-related tasks with regard to policy analysis and formulation may include: (i.) strengthening women's groups ability to lobby and inform local government on environmental and NRM issues and (ii.) providing or supporting leadership training specifically for women within the framework of good environmental governance of BBMP.

However, a continuing problem for improving environmental practices through improved governance at the local level is the invisibility of women as users of natural resources and the lack of enabling policies that effectively translate into gender equality. Empowerment of women must begin with equal access to education, information and extension services. Sensitivity to gender issues needs to be translated into effective implementation.

To integrate gender considerations into BBMP management plan implementation, it will be necessary to address women's invisibility on three fronts; namely, (i.) participatory processes, (ii.) women's groups and (iii.) women's political participation.

7.4. COMMUNITY-BASED SOCIO-ECONOMIC MONITORING

Objective 30: To establish a monitoring and evaluation programme with public participation through community-based social monitoring

Action

30.1. Develop a capacity building and training programme for community partners to effectively implement community-based socio-economic monitoring to evaluate benefits from BBMP to the community

The BBMU should consider greater involvement of the community in monitoring, in this case monitoring local socio-economic changes that may be resulting from improved BBMP management. There needs to be a feedback loop built into social monitoring where the monitoring feeds back into adaptive management. Most Significant Change (MSC) methodologies were used with Community Resource Organizers (CROs) for social monitoring at SEMPA in Rodrigues, and these are described in the SEMPA Management Plan and other UNDP documents. It is recommended that BBMU establish an MOU with a university and/or local NGO (e.g., Reef Conservation, Eco-Sud – *Appendix K*) to initiate socio-economic monitoring.

8. ENVIRONMENTAL AWARENESS PROGRAMME

8.1. INFORMATION, EDUCATION AND COMMUNICATION

Objective 31: To maximise the potentials of BBMP for public environmental awareness by strengthening its information, education and communication programme

Actions

31.1. Design and implement an *IEC Strategy* on the importance of BBMP, and develop publications, pamphlets, posters and audio-visual materials directed toward target groups

31.2. Develop a research-based communication programme (e.g., public perceptions and attitudes) focusing on instilling a sense of awareness and pride among local and national citizens

31.3. Establish regular contacts with TV stations, radio stations and newspapers

31.4. Establish and regularly update the BBMP website with additional external links for more information (e.g., local hotels, NGOs)

31.5. Publicise the BBMP regulations using a variety of media to ensure that residents and visitors are aware of the regulations

31.6. Conduct regular public events in and around BMP, such as Open Days, Clean-Ups and Ocean Day, Earth Day, Environment Day other awareness-raising activities

31.7. Establish an outreach programme to schools and other institutions

31.8. Promote conservation in the local school curriculum and establish links with regional environmental education networks and other MPAs in the region (e.g., Mauritius, Seychelles, Comoros, Réunion, Madagascar, Maldives)

31.9. Establish a programme of *Marine Conservation Clubs* in primary and secondary schools to promote marine and coastal conservation as well as sustainability

31.10. Establish a Volunteer Programme to assist with the IEC Programme

An environmental awareness programme, to be known as the Information, Education and Communications (IEC) Programme, will aim to create an influential local environmental constituency that promotes the idea that sound biodiversity conservation and MPA management can also make sound economic sense. Target groups will come to understand the economic and health benefits of protecting their local coastal and marine environment and will ultimately wield this knowledge to inform and influence decisions and policy.

Creating environmental awareness among the general public and most especially among the BBMP communities remains complementary to implementing and enforcing the regulations. Education and awareness are moreover essential since the setting of the MPA involves a collaborative approach between the community and the authority. It is thus important that the whole community is convinced that BBMP will help to alleviate the pressures on the marine resources and that having a healthier lagoon will help to improve fishing in the surrounding areas while supporting the local economy of ecotourism hotels and visitor services.

The ultimate goal is to change how the marine resources are exploited and protected. It is recognised however that education solely directed toward local resource users will not achieve the desired behaviour modifications unless they are combined with law enforcement as well as awareness and education targeting the general population and government decision-makers. In

addition to a successful public awareness and education program local resource users must be offered practical alternatives to current exploitative practices.

Awareness and education form part of the key factors for successful implementation of BBMP management objectives. Even though most fishers and others in the community are aware that the fish catch keeps on decreasing and the corals are being destroyed due to destructive and illegal over-fishing practices, there is still a lack of understanding about the need to protect the marine resources through an MPA.

The IEC programme needs to extend beyond the borders of the MPA. While much attention must be paid to local residents as resource users, many other target groups need attention. In particular, great attention needs to be directed toward government policy and decision-makers to help generate the political will to fully support the vision, goal, purpose and objectives of BBMP.

An *Information, Education and Communications Strategy and Action Plan* needs to be prepared to guide these important supportive activities over the next five-years. For the IEC Strategy and Action Plan to succeed it is beneficial to link environmental issues with economics and livelihoods development. The economic costs of neglecting watersheds and cropland may be easily recognised. Specific target groups need to be identified and specific programmes need to be designed. Politicians and government decision-makers also need to be targeted. This needs to be supported by general awareness of government laws and regulations concerning environmental protection. It is also important to ensure good coordination among the various agencies involved in environmental public awareness and education.

In Mauritius there are environmental committees and clubs that have been set up comprised of representatives from public and private sectors, NGOs, research institutions and others. These committees and NGOs (e.g., *Eco-Sud - Appendix K*) have a technical advisory role on sustainable use of biological diversity and indirectly in the pursuit of poverty alleviation.

A Volunteer Programme should be established to assist with the IEC programme. Volunteers can be local, national, regional and international. Several sources of international volunteers and interns can be found (e.g., universities, GVI, Earth Watch, government programmes).

8.2. VISITORS CENTRE

Objective 32: To establish, operate and maintain the visitors centre as a *Coastal and Marine Sustainability Centre* (CMSC)

Actions

32.1. Establish the visitors centre at BBMP headquarters

32.2. Contract the services of a professional visitors centre information display design specialist

32.3. Establish contacts with international sustainability centres for technical support

32.4. Operationalise and staff the visitors centre

32.5. Install and maintain exhibits and alternative energy generators (solar, wind)

Constructing a BBMP interpretation center (the *Coastal and Marine Sustainability Centre* – CMSC) for visitors to Blue Bay can be combined with planned the Blue Bay Park Patrol and Visitors Centre, Coastal Road. It will have interactive interpretive exhibits and a self-sufficient, sustainable and nonpolluting (off-the-grid) energy system (e.g., solar photovoltaic, wind) as well

as rest rooms with composting toilets. This is an opportunity for the MoFR to support a significant programme in line with implementing the *Maurice Île Durable* (MID), a sustainable integrated development guideline for Mauritius[7].

As a clearing house for information on sustainable practices, the CMSC will demonstrate linkages between local ecosystem health and human well-being. It is strongly recommended that the design of the CMSC provides an example or model of green building practices that use recycled or sustainably-sourced building materials combined with a self-sufficient and sustainable, non-polluting energy system derived from passive solar photovoltaic and vertical wind electric generators. The CMSC will also have a gift shop in support of BBMP revenue generation. Thus, the CMSC would not only serve to inform the public about Blue Bay but also serve as a model to promote sustainable, eco-friendly building practices and affordable alternative energy sources throughout the island.

Deleted: solar

The CMSC exhibits should be designed to be as simple and interactive as possible. It is not recommended to develop expensive and high-maintenance exhibits. Exhibits should not only explain the ecology and history of Blue Bay but also inform the public of the importance of sustainable use of resources with the motto of the Three R's (*Reuse, Recycle* and *Regreen*). In addition, there are three primary themes for management implementation that should correspond to "the three E's of sustainability"; namely:

- *Ecology*: effectiveness of biodiversity conservation efforts
- *Equity*: socially just biodiversity conservation
- *Economy*: sustainable community development.

The importance of managing the marine area and its watershed for both ecosystem health and public safety will be a main focus. An excellent guide to designing appropriate exhibits may be found in an IUCN publication, *Environmental Education about the Rain Forest* (Berkmüller 1992).

An essential recommendation is that the BBMU/MoFR contract a professional interpretation exhibits designer and that these exhibits be made as interactive as possible. *Appendix G* provides the draft TOR for a professional *Visitors Centre Information Display Design Specialist.*

After the Visitors Centre is constructed and during display design an additional BBMU staff member will need to be recruited. *Appendix E* provides the job description for an *IEC Programme and Visitors Centre Coordinator* to manage the day-to-day operation of the Centre. During both the design and operation of the CMSC, contacts with international Sustainability Centers must be established for technical support and to engage in international networks that are attempting to change the way the world's population uses its resources. One good example is the Sustainability Centre at Hampshire, UK (http://www.sustainability-centre.org/), which "aims to educate, enable and inspire people from all walks of life to make positive changes to the way they live and work". The Sustainablity Centre further describes this vision:

- We aim to manage our land, our charity and our businesses as working examples of sustainability.
- We practice and promote sustainability as a process of making decisions which balance economic, social and environmental factors for positive benefit.
- We nurture people and ideas.

[7] http://www.gov.mu/portal/goc/mpu/file/ile.pdf

- We aim to provide positive messages and practical solutions for dynamic, creative change (in an increasingly uncertain world).

Another example useful for the Blue Bay CMSC is the California Center for Sustainable Energy (CCSE, http://energycenter.org/), which is a non-profit organization "dedicated to creating change for a clean energy future". As an information resource centre, CCSE provides free workshops, incentive programs and technical assistance. CCSE provides information and assistance with:

- Climate change
- Renewable energy
- Energy efficiency
- Green building practices
- Transportation / alternative fuels.

9. SUSTAINABLE FINANCING PROGRAMME

9.1. FINANCIAL PLANNING, INCOME GENERATION AND FUNDS MANAGEMENT

Objective 33: To ensure financial planning, income generation and BBMP funds management for effective implementation

Actions

33.1. Develop a self-financing programme for five-year implementation drawing from several sources (e.g., hotel and private sector contributions, guided tours, mooring, gift shop revenues) in addition to annual government allocations

33.2. Build funds management and income generation capability (e.g., donor search and grant proposal writing) through regular finance staff training and up-grading

The key to ensuring effective implementation of BBMP hinges upon political will and adequate annual budget allocations for implementation. An analysis of financial sustainability for an effective management system and establishing sustainable financial options are essential to effective long-term management of the BBMP. The Financial & Accounting Officer, or equivalent position at BBMU, will have the main responsibility for not only managing funds but seeking additional revenue as well.

Revenues can be categorized into either those generated from direct users and those from nonusers. Revenues from users include royalties, sales, user fees, taxation and licensing. Revenues from nonusers include donations, bequests and business sponsorship. *Table 1* shows several revenue earning sources or mechanisms. Not all revenue generation methods are equally sustainable or appropriate in every situation (*Table 1*).

The *Fisheries and Marine Resources Act No. 27* (2007) provides rules for the management and conservation of fisheries resources and fish farming and makes provision for the protection of marine areas and habitats, the establishment of a *Marine Protected Area Fund* (MPAF), enforcement and administration of provisions of the Act. With regard to the MPAF:

(1) "There is established for the purposes of this Act a *Marine Protected Area Fund*.
(2) The Permanent Secretary shall be responsible for the management of the Fund.
(3) The Fund shall consist of -

(a) such sums of money as may be appropriated by the National Assembly for any of the purposes of this Act;
(b) any grant or donation made to the Fund;
(c) the proceeds of sale of any produce;
(d) any money that is payable under this Act including all fees, rent and other charges arising from the authorised use of the marine parks and reserves;
(e) any fee payable in respect of the use of marine resources other than fishing.

(4) The assets of the fund shall be applied towards the payment of expenses which may be incurred in the management of a Marine Protected Area".

Table 1: Financial revenue earning mechanisms for marine protected areas

Source or Mechanism	Definition or Example
Government appropriations	Funds appropriated in national or state budgets for protected area management
Taxes, Levies, surcharges	Fees and levies imposed on certain activities, sales or purchases (e.g., tourism/bed/airport tax, fishing license, diver operator license, etc.)
User fees	Charge for non-consumptive use or visitation (usually 'per person' or 'per vehicle'); may be daily, seasonal or annual, may be charged to tour firms bringing escorted groups
Leases and concessions for products and services	Legally binding agreements between the entity with authority over the protected area and private organizations or entrepreneurs who market goods and services related to the protected area and return some share of the profits, or a flat fee
Sale of goods and services	Gift and souvenir shops, sale of items such as maps and guides, fee for service tours, anchorage, mooring, equipment rental, camp or picnic space rental, exhibit entry, etc.
Case-related marketing	Sale of mostly intangible items (membership, voluntary add-ons to hotel and restaurant bills, etc.) - primary value is purchaser's knowledge of helping conservation
Biodiversity prospecting	Contracts in which a pharmaceutical company or other entrepreneur secures right to genetic resources (biological materials collected and processed for analysis) in return for cash payments and/or royalties on any medicines or products developed
Philanthropic foundations	Grant-giving organizations
Corporations	Sponsorship or other types of voluntary payments by companies
Individual donations	Gifts by individuals through a variety of mechanisms – direct gifts, memberships, wills, bequests, etc.
Trust funds	Capitalized through different donor agencies or funding sources and managed and controlled by an independent Board of Directors
	Source: Cesar & van Beukering (2004) [8]

Funds that can go into the MPAF to support BBMP management can come from various sources, for example:

- entrance fees charged to visitors for access
- user fees charged to visitors undertaking specified activities or for use of specific facilities (e.g., fishing, hiking, diving, boating)
- concessions or lease contracts between BBMU and businesses operating within the BBMP (e.g., hotel operations, boat operators, dive operators)

[8] Cesar, H. & P. van Beukering (2004). *Sustainable Financing of Marine Managed Areas: Experiences from around the World*, Cesar Environmental Economics Consulting, Arnhem, Netherlands. [Table adapted from Morris (2002) and from Nature Conservancy & UNEP (2001)]

- investment and sponsoring of specific facilities by the tourism industry (e.g., boat ramps, reintroduction or enrichment programmes)
- offering opportunities to visitors to support the MPA through voluntary donations
- in-kind donations (e.g., staff contributing to specific park management issues)
- purchasing food and services (e.g., guides, drivers, accommodation) from local communities

Fees collection will be made according to established MoFR procedures. However, an appropriate and fair mechanism and procedures for how fees will be collected and amounts to be charges will need to be established by the Officer-in-Charge and the Financial Officer in consultation with MoFR and affected user groups (e.g., boat and dive operators).

To achieve all objectives of the plan, the difference between BBMP core and optimal 5-year budgets (*Section 9.2*) will have to be made up from other sources of funding, including but not limited to the following:

Other Funding Sources (5-year implementation)

- *Corporate Social Responsibility* (CSR) allocations from Mauritian companies and foundations for NGO sub-projects support
- Grant support from companies, corporations and individuals
- Grants from philanthropic foundations and donations
- GEF and Ramsar Small Grant Programmes
- Income from user fees, publications and gift shop sales at the Visitors Centre
- Possible establishment of a Conservation Trust Fund at MPA or country level
- Other sources

The Regulations (*Appendix F*) stipulate that grants can be received and deposited into the MPAF. Thus project grant proposal writing will be an important initiative that can be done by all senior staff, but particularly by the Financial Officer and the BBMU Officer-in-Charge. For grants from philanthropic foundations, for example, a useful source of opportunities is The Foundation Center. Based in New York and Washington, D.C., the Center allows on-line access to a variety of fund-raising resources (http://foundationcenter.org/). It maintains an enormous on-line database of nearly 100,000 foundations, corporate donors and grant-making public charities in the U.S. and elsewhere and provides 2.1 million examples of their recent grants. The *Foundation Directory Online* subscription service is the most popular means for searching these databases. The Center also operates research, education and training programs designed to advance knowledge of philanthropy at every level.

This and other fund-raising information sources form an important resource that must not be overlooked. Grant proposal writing will be an important initiative with contributions from all senior staff but particularly by the Financial and Accounting Officer, or equivalent, and the BBMU Officer-in-Charge. If BBMU Officers are passive without taking initiatives to seek outside funding, then the BBMU will always be dependent on annual political priorities and government "funding or no funding" decisions or abilities.

Objective 34: To determine the feasibility and mechanism for establishing a *Conservation Trust Fund* in support of BBMP sustainable financing

Actions

34.1. Contract the services of a consultant to conduct a study of *Conservation Trust Funds* set up for protected areas throughout the world to determine the most appropriate CTF for BBMP to receive external multilateral, bilateral and philanthropic foundation funding support

34.2. Establish the legal framework for the Conservation Trust Fund, its Board and CTF management responsibilities

34.3. Explore the possibility of an airport departure "conservation tax" with revenues going into the BMP Fund or the CTF for management of all Mauritius MPAs or PAs

34.4. At the end of the five-year period have in place an efficient self-financing CTF mechanism, with minimal government funding inputs, for future sustainable financial management support

A ***Conservation Trust Fund*** **(CTF)** is a legal and independent institution with the objective of raising, administering and disbursing grant funds for conservation purposes and is often established as a foundation or nonprofit corporation. The main purpose of establishing most large CTFs is to provide stable, long-term funding for a country's protected area system or for a specific PA. A CTF would provide small grants to NGOs and CBOs for projects aimed at sustainable natural resource management, biodiversity conservation and PA management support. A CTF is not intended to replace government funding but rather complement these sources of support.

Appendix G provides the draft ToR for a *Conservation Trust Fund Establishment Specialist* to conduct a recommended CTF feasibility study. The feasibility study should be conducted with a view towards establishing a CTF. The main task is to determine the feasibility and mechanisms for establishing the most appropriate and effective CTF that will support BBMP either on a country-wide or MPA-specific support basis. The study should determine the most appropriate CTF for BBMP to receive external multilateral, bilateral and philanthropic foundation funding support in addition to government allocations and user fees revenue. The CTFE Specialist would be responsible for drafting legal documents to establish the CTF and then revising or finalizing those legal documents based on stakeholder consultations.

It will be important to consider the existing *Marine Protected Area Fund* (MPAF) and how that should either be replaced by or incorporated into a CTF. Also, an analysis of potential recurrent revenue sources for the CTF should cover possibilities such as *Payments for Environmental Services* (PES). There are several possibilities for generating revenue in this way. For example, this could include imposing an airport departure "conservation tax", a small "conservation surcharge" on water or electricity bills, an earmarked tax of a few cents on plastic bottles or a small per night conservation tax or surcharge on local hotel rooms. Such revenue could be earmarked for the CTF. However, all these possibilities will depend on political will. Therefore the feasibility study should also include research and discussions about which particular sectors in Mauritius might be politically easiest to tax and have the least impact on low income residents, for example.

CTF administration may be through several types of accounts: (i.) *trust funds* where the principle is maintained and only the interest is available for grant-making; (ii.) *sinking funds* where initial seed capital is spent over time and not replenished or (iii.) *revolving funds* where income generated from user fees, concessions, gate fees or fines enter the account until spent. The type of fund account established is usually dependent upon donor requirements.

A CTF is governed by a Board of Directors, which typically has a non-government majority with government representatives limited to 40% or less. This is typically a donor requirement. When a CTF provides the majority of total operating costs to manage a protected area or PA system it may sometimes play a lead role in planning and priority setting for that PA or system either at the request of the government or by default, i.e. in the absence of any other institution. Staffing levels and administrative overheads are typically kept to a minimum, and a recently established CTF might only have a director and a secretary with other staff (e.g., administrative and project officers) brought on as the CTF's administration and implementation mandate grows.

9.2. BUDGET

The budgetary goal is to ensure provision and efficient disbursement of adequate annual funds from the government via MoFR. The intention is to be able to implement the management plan through a supporting five-year budget with clear and efficient disbursement procedures.

Funding for MPA management in Mauritius has been included within the Programme Budget Estimates for 2010-2013. Budget estimates are developed for BBMP to cover the rolling period of the *Programme-Based Budgeting* (PBB) System. Financial management and budget preparation for BBMP is currently the responsibility of MoFR staff. The main financial consideration is to ensure that BBMP will have an ongoing budget provision in the PBB system for its core operation.

In 2008/09 GoM adopted a fully-fledged *Medium Term Expenditure Framework* (MTEF). MTEF Step 3 of the PBB, *Preparing Budget Proposals Based on Strategic Plans (April-June),* is particularly important for financial management and budgeting (See: *Part Two, Section 7.8*).

External bilateral or multilateral donor funding is also expected to be necessary for implementation and to develop these mechanisms. It is likely that revenue generated from user fees and MoFR annual budgets will be insufficient to optimally implement the management plan. It has been noted that there is no lack of funding sources, but there are inadequate mechanisms in place to access these sources.

Appendix H provides a budget in support of management plan objectives and priority actions. It identifies the annual budgets at both core and optimal levels. The BBMU **core** budget level has been estimated to meet essential operation and other costs to maintain current activities. The **optimal** funding for the full operation of BBMP over the next five years includes those additional items that are required for full implementation of the management plan.

Blue Bay Marine Park Five–Year Budget Summary

- **Core:** MUR INSERT (USD INSERT)
- **Optimal:** MUR INSERT (USD INSERT)

The main objective is to ensure that BBMP will have an ongoing budget provision in the PBB system for at least its core operation. For the optimal budget other funding sources may be required. The difference between Core and Optimal 5-year budgets is MUR INSERT (USD INSERT). To achieve all objectives of the plan, this difference will have to be made up from other sources of funding listed in the previous section.

10. STRATEGIC FRAMEWORK

The Strategic Framework for the five-year management plan lists all 34 objectives with actions (*Appendix I*). This includes a ranking of objective priorities. Assumptions are identified at the objective level and indicators at the action level. Individual or institutional responsibilities for implementing each action under each objective are also identified.

11. IMPLEMENTATION SCHEDULE

The Implementation Schedule (*Appendix J*) for the management plan provides a timetable to achieve each objective through implementing prioritized and phased actions over the next five-years.

PART TWO: BACKGROUND AND CURRENT CONDITIONS

1. INTRODUCTION

In Part Two, analysis of current conditions and the participatory process during planning have assisted to identify management strengths, weaknesses, opportunities, threats and recommended actions that form the basis of the Part One *Operations Manual*. Part Two provides an overview and analysis of physical, biodiversity, socioeconomic, management and institutional conditions within *Blue Bay Marine Park* (BBMP).

Analysis of current conditions, i.e. strengths, weaknesses, opportunities and threats (SWOT) as well as identification of specific actions were made through a participatory process described in *Appendix A.* From the analysis, those areas considered likely to have the most immediate impact on governance, marine biodiversity conservation and management, coastal watershed management, institutional capacity building, sustainable livelihoods, environmental awareness and sustainable financing have been identified. Many opportunities became actions for sustainable management within BBMP and to a lesser degree its adjacent watershed.

2. ENVIRONMENTAL CONDITIONS

2.1. LOCATION

Located on the southeast coast of Mauritius in the Grand Port district (*Figure 5*) and approximately 23 miles (37 km) southeast of Port Louis, *Blue Bay Marine Park* (BBMP) is comprised of 353 ha of coral reef, open sea, mangroves, sand beaches and shoreline to the high-water mark. BBMP stretches from Pointe Corps de Garde in the north to Pointe Vacoas in the south (*Appendix D-1*).

Settlements are located in the towns of Le Chaland in the south and Pointe d'Esny in the north. The nearest large town is Mahébourg with a population of about 20,000 and under the administration of the Grand Port Savanne District Council.

BBMP is bordered north and south by the 1,828-ha *Grand Port- Mahébourg Fishing Reserve* (*Appendix D-5*) from which it was legislatively extracted in 1997 when BBMP was first proclaimed as a National Park under the *Wildlife and National Parks Act, 1993*.

Figure 5: Location of Blue Bay Marine Park

2.2. MARINE GEOMORPHOLOGY

Montaggioni (1974, 1976) and Pichon (1971) have described the geological history of the reefs around Maritius, which tend to be based on volcanic basalt, which usually outcrops a few meters deep on reef slopes (UNEP/IUCN 1988). Michel (1974) provides a summary of publications on general marine aspects of the area.

Salm (1976) described three major types of reef that are represented: (i.) a peripheral fringing reef, (ii.) lagoon coral patches behind this and (iii.) a sheltered fringing reef. The outermost reef has a shallow reef flat with few, small coral colonies. The seaward edge has a rudimentary spur and groove structure, which is evidently not principally an algal construction and which supports scattered corals (UNEP/IUCN 1988).

The western part of the bay has a coral bank and a fringing reef with an irregular front which merges with the coral banks, and the reef flat has appreciable coral cover. North of this, or deeper into the bay, are several isolated patches of coral growing in deeper water. The eastern border has reefs with a greater diversity of corals, Coral patches have expanded and fused to provide the numerous, large coral banks found in the Bay (UNEP/IUCN 1988).

Further off shore is a peripheral fringing reef. Approach to it is difficult because of the south-easterly swell. The fringing reef extends from Pointe Corps de Garde, ca. 200 m from the coast south to the rocky shore of Pointe Vacoas. However, a passage, between Île des Deux Cocos and the southern mainland at Shandrani Hotel, cuts the reef. The overall length of the reef is approximately 3 km. The reef flat is narrow (ca. 10 m) and typically composed of dead coral and rubble. Beyond the reef edge, the bottom slopes steeply to at least 7m and then gradually to 26m. The fore reef is characterized by several descending grooves and has several tunnels, canyons and caves. The bottom substrate consists of basaltic rocks and boulders (van't Hof 1996).

The bay is well protected from heavy southerly swells. The depth ranges from 1m to 12m inside the bay. The depth of the lagoon varies between 0.5m to 16m. A more or less circular deep depression is located in the north western part of the bay. At about 50m off the public beach, the bottom drops abruptly to a depth of 16m. A large patch reef with an average depth of 7m is located in the centre of the bay (van't Hof 1996). *Figure 6* shows the variations of Blue Bay marine depth contours.

The shoreline is principally basalt boulders cemented basally by beachrock. The peripheral fringing reefs are exposed to a considerable southeast swell; accumulated water flows with dangerous velocity through the pass between Le Chaland and Île des Deux Cocos (Procter and Salm 1974).

There is a large sandy beach on the Blue Bay side and a smaller beach in front of the Blue Lagoon Hotel; both are used for recreation. The shoreline of Île des Deux Cocos is rocky interspersed with sand beach. There is a very large and popular beach at La Cambuse, which extends south to Pointe Vacoas.

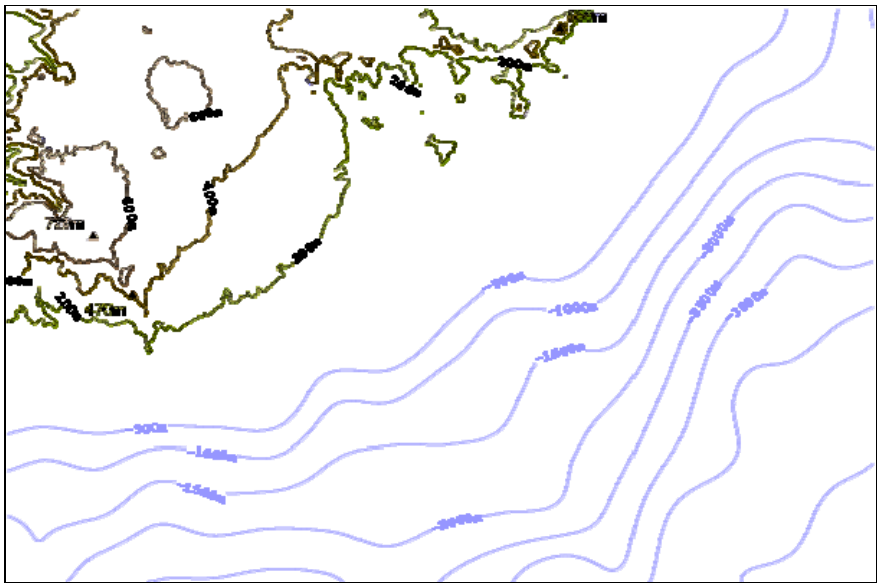

Figure 6: Blue Bay marine depth contours (*Surf-Forecast.com*)

2.3. HYDROLOGY AND CLIMATE

Mauritius is subject to the southeast trade winds, and as a consequence its coast is predominantly affected by swell from the southeast (Couper 1983). Tides are diurnal with a tidal difference of about 1 meter. Surface water temperature varies seasonally as well as by depth and location and ranges between 23.1 in August and 27.7°C in March. Water salinity is about 38 ppm except within the bay at Bras du Mer du Chaland where there is inflow of fresh groundwater (van't Hof 1996).

Oceanic water floods over the reef flat and into the bay creating a current that flows near the shore and exiting via the Le Chaland passage. The sea is typically calm within the bay while at La Cambuse it is typically rough due to its constant exposure to the southeast trade winds and the narrow fringing lagoon (van't Hof 1996).

The climate is subtropical with a mean maximum temperature at Plaissance ranging from 23.9^0 C in August to 29.4^0 C in January and February, with highest temperatures reaching a maximum of 35.9^0 C in January. The mean minimum temperature ranges from 17.5^0 C in August to 22.8^0 C in February, with the lowest minimum temperatures reaching 11.0^0 C in October. Rainfall ranges from 61 mm in September to 251 mm in January (van't Hof 1996).

Winds predominate from the southeast and are strongest during the winter months. Wind speed ranges from 3.5 8.0 m/sec (6.5 – 15.5 knots) during 65 to 70% of the time in July and August. In July, winds reach a speed of 8.5 – 13.5 m/sec (16.5 – 26.3 knots). In early March to April, wind speeds are lowest and reach 3.5 – 8.0 m/sec about only 48% of the time (van't Hof 1996).

The cyclone season begins in November and ends in May. Cyclonic depressions occur almost annually. Severe sea states induced by some cyclones have damaged the reefs, including one in

1960 which affected the sheltered fringing reefs at l'Harmonie, between Grande Rivière Noire and Petite Rivière Noire on the west coast (Salm 1976). Reefs on the east and south are also subject to cyclones (Robertson, 1974).

Climate change is a major concern to Mauritius as an island state. While it is recognized that the drivers of climate change are largely beyond its borders, Mauritius will need to address two aspects of climate change; namely, mitigation of greenhouse gases from global sources and adaptation to the variability caused by already occurring alterations to climatic systems, seawater temperature and currents. Both research and monitoring are required to assess current and pending climate change that will affect both social conditions and ecosystems.

Coral bleaching was observed in late February 1998, which coincided with abnormally high temperatures and heavy rainfall. Bleaching was studied within Balaclava and Blue Bay Marine Parks and the resulting data indicated that 39% and 31% of the live corals had been affected in the two parks, respectively. Mauritius suffered further sporadic bleaching in 2003 and 2004. Surveys at four sites recorded bleaching levels between 16 and 85% (CBD 2006).

2.4. BIODIVERSITY

Detailed descriptions of reef-associated fauna are given in UNEP (1984). A total 159 species of scleractinian corals have so far been recorded in Mauritius. At least 36 genera of hermatypic corals have been recorded from Mauritius (Pichon 1971). Sheltered fringing reefs are characterized by a dense cover of large fragile colonies of tabular *Acropora* and foliaceous *Montipora*. The third type is patch reefs, found within the lagoon, which are rich in live corals and have a high cover of *Acropora* and *Pavona* (UNEP/IUCN 1988). Five species of penaeid shrimps (*Penaeus monodon, P. latisulcatus, P. canaliculatus, P. indicus* and *Metapenaeus monoceros*) as well as two species found in deeper water have been identified. Mauritius is famous for its rich molluscan fauna, which includes a number of endemic species such as the Imperial Harp Shell (*Harpa costata*) and the Cowry (*Cypraea mauritiana*) (Henon 1976, Michel 1985). Other invertebrates include octopus, mussels, barnacles, clams and oysters (e.g., the endemic *Crassostrea cuculata*).

At least 340 species of fish in Mauritius have been described (Condé and Jauffret 1978, Monod 1976, Eco-Sud 2010b). Several species are endemic and considered to be rare, and 42 within the lagoon area are of economic importance. Atchia (1984) provided a popular account of Mauritian fishes. Mauritius has a rich marine algal flora, and algae were described by Mshigeni (1985).

The first important inventory of Blue Bay was made in 1976 (Salm 1976). Procter and Salm (1974) considered Blue Bay important for conservation due to its diversity of habitats and species. It is also because of its unique ecosystem of reefs and of the biological habitat linked to it that on 10th September 2008, BBMP was officially classified as a Ramsar site (wetland of international importance) for Mauritius (*Appendix C*). However, this rich biodiversity is under tremendous pressures from watershed pollution in particular (CBD 2008).

BBMP harbors a marine ecosystem that is rich in fauna and flora especially in terms of its coral assemblage. Coral species diversity is high. Approximately 67 coral species, representing 28 genera and 15 families have been recorded (van't Hof 1996). However, Eco-Sud (2010a) has indicated that the health and diversity of corals is higher outside BBMP than within. The patch

reef is the only location where convoluted brain coral (*Montipora aequituberculata*) has been recorded (van't Hof 1996, CBD 2008). Dense growth of table corals, cactus corals, staghorn corals and fire corals alternate and co-exist. Procter and Salm (1974) recorded a total of 91 fish species from 41 genera and 31 families (van't Hof 1996).

The reefs at Blue Bay were described by Salm (1976). The western part of the bay has a coral bank and a fringing reef, dominated by staghorn (*Acropora*), with an irregular front which merges with the coral banks; the reef flat has appreciable coral cover. North of this, or deeper into the bay, are several isolated patches of coral growing in deeper water. The eastern border has reefs with a greater diversity of corals, in particular, enormous hillocks of *Pavona spp*. with *Mycedium tenuicostatum*, which is unusual in Mauritius. On the sandy substrate, *Goniopora* and *Porites* provide hard substrate for several other species, notably *Acropora* and *Pavona*. Large tabular *Acropora* corals are also conspicuous, and when dead or overturned, provide substrate for other colonizers. These patches have expanded and fused to provide the numerous, large coral banks found in the Bay. Further off shore lies a peripheral fringing reef, and approach to it is difficult because of the south-easterly swell (UNEP/IUCN 1988).

Upside-down demersal jellyfish are abundant in the centre of the southwest arm of the Bras de Mer. Sea urchins (*Echinometra matheii*) are very common on the back reef northeast of Île des Deux Cocos. This reflects an imbalance resulting from the depletion of the main urchin predators, Lethrinid fish (van't Hof 1996).

Over 160 genera of marine algae have so far been identified from the coastal waters (CBD 2006). At BBMP, 31 species of algae have been recorded, representing 26 genera and 3 families. There is a predominance of green algae (*Halimeda* sp.) in the bay and covering an area of about 300 m^2. Several species of macro algae (e.g., *Sargassum* sp., *Turbinaria* sp.) are present. There is also a marked presence of *Ulva* sp., *Gracillaria* sp. and *Avrainvillea* sp. covering corals in the two arms of Bras de Mer (van't Hof 1996). This is due to sugarcane plantations runoff, which had a high nutrient load, and the reduction of herbivorous fish due to over-fishing. Artisanal fishermen have traditionally harvested green algae (*Ulva* sp., *Chaetomorpha* sp. and *Chlorodesmis* sp.) to bait their basket traps (van't Hof 1996).

Sea grass distribution is very patchy in the bay, and four species have been recorded, representing 3 genera and 2 families. *Halodule uninervis* and *Halophila ovalis* are the dominant sea grass species. Two sea grass patches of ca. 25 m^2 are found in the bay, one 25 m south of the Blue Bay public beach jetty and the other approximately 300 m north of the jetty. Another patch of sea grass (ca. 50 m^2) and comprised mainly of *Syringodium* sp. is located within the fringing lagoon at La Cambuse (van't Hof 1996).

Turtles used to nest on the beaches (Procter and Salm 1974) but no longer nest on Mauritius. Green Turtles (*Chelonia mydas*) have been sighted in the park. BBMP FPOs have come across turtles during their routine monitoring activities. *Eco-Sud* has a programme to gather and analyse data on the turtle's presence ecology and behaviour (*Appendix K*). The Hawksbill *Eretmochelys imbricata* was once common but is now rare and the Leatherback *Dermochelys coriacea* is seldom seen in Mauritius.

Feare (1984) lists thirteen species of seabirds known to breed in the Mascarene Islands, including the White-tailed Tropicbird *Phaeton lepturus lepturus* and Red-tailed Tropicbird *P. rubicauda rubicauda.*

Sea cows (*Dugong dugon*), once common in the lagoons of Mauritius are now locally extinct.

Seventeen whales and dolphins (Order Cetacea) have been recorded in Mauritian waters, mostly during their migration to and Antarctica for calving; some are resident in Mauritian waters. Cetaceans that may be resident, occasional or at least possible due to the position of Mauritius in the Indian Ocean include:

Family Delphinidae

- Common Dolphin *Delphinus delphis*
- Spinner Dolphin *Stenella longirostris*
- Bottle-nosed Dolphin *Tursiops truncates*
- Pantropical Spotted Dolphin *Stenella attenuate*
- Rough-toothed Dolphin *Steno bredanensis*
- Indo-Pacific Humpback Dolphin *Sousa chinensis*
- Striped Dolphin *Stenella coeruleoalba*
- Risso's Dolphin *Grampus griseus*
- False Killer Whale *Pseudorca crassidens*
- Killer Whale *Orcinus orca*
- Melon-headed Whale *Peponocephala electra*
- Short-finned Pilot Whale *Globicephala macrorhynchus*

Family Phocoenidae

- Finless Porpoise *Neophocaena phocaenoides*

Family Physeteridae

- Sperm Whale *Physeter macrocephalus*
- Pygmy Sperm Whale *Kogia breviceps*
- Dwarf Sperm Whale *Kogia simu*s

Family Ziphiidae

- Longman's Beaked Whale *Mesoplodon pacificus* (recorded from Seychelles)
- Blainville's Beaked Whale *Mesoplodon densirostris*
- Cuvier's Beaked Whale *Ziphius cavirostris*

Family Balaenopteridae

- Humpback Whale *Megaptera novaeangliae*
- Minke Whale *Balaenoptera acutorostrata*
- Bryde's Whale *Balaenoptera edeni*
- Sei Whale *Balaenoptera borealis*
- Fin Whale *Balaenoptera physalus*
- Blue whale *Balaenoptera musculus*

Family Balaenidae

- Black Right Whale *Balaena glacialis*

Two species of mangrove, *Rhizopora mucronata* and *Bruguiera gymnorhiza*, grow around Mauritius (UNEP, 1984). At BBMP, the Bras de Mer du Chaland has a fringe of mangroves especially along the southern border. Mangroves are scattered along the intertidal region from the southwest arm of Le Chaland and bound by the Shandrani Hotel in the south to the northernmost tip of the arm in the north.

2.5. PRESSURES AND THREATS

Locations of pressures and threats that have the potential to impact marine habitats are mostly generated by activities in the watershed. Thus, the priority for marine management is an indirect one. Without addressing the root watershed problems, there is no point in marine habitat interventions (e.g., enrichment, restocking, rehabilitation, restoration) as these will most likely fail.

Among the threats facing marine biodiversity are:

- non-recycled discharge (e.g., plastic waste, used lubricants)
- pollution (domestic, industrial and beach users)
- mechanical or chemical destruction of the habitat of corals, fish and other marine species
- decrease in fish stock due to improper and illegal fishing practices

Lagoon fishing currently exceeds sustainable levels of exploitation (MoE & NDU 2005 in CBD 2006) with the size of fish and the total catch decreasing despite increased effort. On the reef flat there is extensive damage from walking on corals, boat anchors, poles and fish traps (Robertson 1974, Salm 1976, CBD 2006). Corals and shells are protected and their removal is prohibited without a permit. However, local species are still found in local markets as souvenirs. Turtle hunting is prohibited by law.

It is likely that pollution, coupled with over-fishing and unwise coastal development, is the major cause of biodiversity loss for marine systems. Agricultural runoff chemicals and discharge from textile industries are two key sources of pollution and are issues of concern, causing degradation of water quality leading to eutrophication and algal blooms (CBD 2006). At some locations, high nutrient levels from heavy use of inorganic fertilisers have resulted in the growth of the nuisance algae (*Ulva* sp.) that can cover and kill inshore corals and be washed ashore causing odour and aesthetic problems.

The freshwater runoff from the watershed and its town areas is capable of adding an overabundance of nutrients, organic matter, pesticides, trace element metals and industrial pollutants. There are signs of degradation (e.g., areas of dead coral, coral covered in algae) most likely due to this influence and areas of freshwater upwelling enriched with nutrients.

To preserve the richest areas, particularly those lying close to the coast, it is necessary to limit inputs of pollutants and physical degradation to the marine environment from hotels, agricultural and urban areas (CBD 2006, Nicet *et al.* 2009).

Coral Bleaching

Abnormally high temperatures and heavy rainfall in 1998 caused coral bleaching in Mauritius, affecting 39% of corals in Balaclava Marine Park and 31% in Blue Bay Marine Park (Goorah *et al.* 1998 in CBD 2006). Recent studies indicated a recovery of coral colonies with about 90% total live coral cover (MoF 2005 in CBD 2006).

Coral bleaching has been observed in Mauritian lagoonal patch reefs, reef flats and reef slopes. Surveys conducted out at four sites; namely, Ile aux Benitiers, Belle Mare, Poudre d'Or and Albion. The percentages of completely bleached corals at these sites were 56%, 11%, 22% and 2% while that of partially bleached corals were 8%, 27%, 17% and 16%, respectively. By June

2003, 95% of the bleached corals had recovered, 2% were recovering and 3% had died (MoF, 2005 in CBD 2006).

Invasive Alien Species

Invasive Alien Species (IAS) threaten indigenous biodiversity in all marine areas. Ballast water from ships is a potential source of invasive marine species, but otherwise little is known about the IAS situation in marine systems. Many introduced species have been recorded in freshwater systems, including the western mosquito fish (*Gambusia affinis*) renowned for its damaging effect on freshwater fauna, the Nile perch (*Tilapia* sp), and the golden apple snail (*Pomacea bridgesi*). The water hyacinth (*Eichornia crassipes*), and many other waterweeds are also present, and river banks tend to be highly invaded by alien species (Page and d'Argent 1997 in CBD 2006).

In the early 1970s there was an explosive increase in populations of sea urchins (*Diadema* sp., *Tripneustes gratilla* and *Echinometra malhaei*) on parts of the east coast which resulted in destruction of seagrass beds and reef areas, and the silting up of once productive lagoons (UNEP/IUCN 1988). Over-fishing of urchin predators such as *Lethrinids* (e.g., emperor breams) and octopus have been suggested as a causal factor (Procter and Salm 1974).

The potentially devastating Crown-of-thorns Starfish *Acanthaster planci* was present in the early 1970s, but there are no definite reports of any major damage as a result of its presence (Procter and Salm 1974, Robertson, 1974) although Fagoonee (1985a and b) suggested that it has caused problems, having increased 13-fold in nine years.

3. SOCIAL CONDITIONS

3.1. POPULATION

Blue Bay settlements are located in the towns of Le Chaland in the south and Pointe d'Esny in the north and under the administration of the Grand Port Savanne District Council. The nearest large town is Mahébourg with a population of approximately 20,000. Pointe d'Esny is about 23 mi (or 37 km) southeast of Port Louis, the seat of the Mauritian government.

The main language that unites the population is Mauritian Creole, while French, English and Hindi are spoken or understood by most people. The main religions are Hindu and Roman Catholicism with minorities of other religions. Most inhabitants are of Indian, African and French descent or of combinations of these immigrant groups. Uninhabited when Mauritius was first discovered, it has no indigenous population.

3.2. LIVELIHOODS

There is a strong linkage between ecosystem health, on the one hand, and community development, human health, prosperity and well-being on the other. Necessary initiatives to mitigate impacts and prepare local adaptation strategies include reduced dependency on marine resources, promotion of alternative livelihoods, investments in disaster preparedness response systems and strengthening human rights and social justice, especially for women who have potentially a big role in changing current practices at Blue Bay.

Only a tiny portion of the community makes its living from artisanal fishing and extraction of marine resources. Most of the community is engaged in tourism, other commercial activities and government service.

Specific partner activities can be informal or through MOUs for which budgeting will be required. Perhaps the most important NGO of relevance to Blue Bay is *Eco-Sud (Appendix K)*, which has been involved with environmental education, livelihoods and socio-economic analysis within BBMP and its watershed.

One example (from Balaclava Marine Park) of building local sustainable livelihoods that should continue to be supported is the *Marine Eco Guide Training Programme*, which was conducted by Reef Conservation in 2010. According to the project description, "*Marine Eco Guide training is key to mainstreaming marine conservation through the tourism and service industry*". The training programme aimed to provide training and qualifications for those wishing to develop a career in the marine tourism and services sector as an independent operator or employed within the formal marine tourism and service sector (e.g., dive centres, boathouses, charter boat operators). This training is intended to provide alternative livelihoods for local residents within the Blue Bay area, with a particular focus on fishers or ex-fishers. The training also aimed to provide standardised qualifications for those entering the profession. Reef Conservation formed a partnership with the Tourism Authority, and Reef Conservation participated in the Tourism Authority's Skipper Training courses. This eco guide training course, which is comprised of 3 levels, builds on skills and knowledge gained from previous units or levels and is intended to provide added value to the current Skipper Training.

3.3. GENDER

Gender means examining the constraints and opportunities for both men and women. To include gender in planning and implementation means to assess (i.) how the problems and natural resource uses of men and women may be different, (ii.) what the different roles and opportunities are for each during implementation and (iii.) how the contributions of men and women may provide different results.

Because of both economic and equity issues, gender's inclusion in BBMP management activity planning will result in better-targeted and more effective programs. Specific gender-related tasks with regard to policy analysis and formulation may include: (i.) strengthening women's groups ability to lobby and inform local government on environmental and NRM issues and (ii.) providing or supporting leadership training specifically for women within the framework of good environmental governance of BBMP.

"Gender equality is more than a goal in itself. It is a precondition for meeting the challenge of reducing poverty, promoting sustainable development and building good governance."
- Kofi Annan

However, a continuing problem for improving environmental practices through improved governance at the local level is the invisibility of women as users of natural resources and the lack of enabling policies that effectively translate into gender equality. Empowerment of women must begin with equal access to education, information and extension services. Sensitivity to gender issues needs to be translated into effective implementation.

To integrate gender considerations into BBMP management plan implementation, it will be necessary to address women's invisibility on three fronts; namely, (i.) participatory processes, (ii.) women's groups and (iii.) women's political participation.

4. COASTAL AND MARINE USE AND VALUES

4.1. TOURISM AND RECREATION

Figure 7: Location of dive sites at Blue Bay Marine Park and Grand Port-Mahèbourg Fishing Reserve (*Coral Diving Center*)

Tourism and water sports recreation form the major local industry. In addition to the two major hotels, Shandrani and Blue Lagoon, there are several operators of speed and glass-bottom boats, dive centers (*Figure 7*), kite surfing and traditional boat sailing.

Uncontrolled coastal construction and development activities will pose a serious threat to coastal and marine ecosystem health due to increases in waste (water and solid) disposal, physical habitat disturbance and loss, sedimentation and turbidity and other issues. At least one application for new hotel construction along the relatively undisturbed La Cambuse coast is pending approval. If approved, this development could have serious consequences for coastal and marine ecosystem health.

Good cooperation with the hotels and water sports operations at Blue Bay must be promoted to reduce environmental damage either directly or indirectly. Cooperation could be in the areas of security and surveillance, environmental awareness, marine and coastal resource-use controls and financial support, among others.

4.2. ARTISANAL FISHERIES

A legal fisherman within BMP is, by the Regulations (*Appendix F*), classified into two categories: Professional Registered Fisherman or Recreational Fisherman; all others who fish are doing so illegally. The range of artisanal fishing gear commonly used includes basket traps, nets, lines and harpoons, worked from small wooden boats, fewer than half of which are motorized. Fishing within the bay is primarily with pole and line from the shore and is concentrated along the southwestern mangroves. The BBMU intends to ban all pole and line fishing within the bay in 2012. Outside the lagoon and bay and within the *Multiple-use Zone*, extending one km out to sea from the reef edge, fishing is more diverse and much less controlled.

Overfishing has become a problem throughout much of Mauritius. Fishing catch in numbers and of certain species has declined. Currently, due to the degraded state of the Blue Bay marine ecosystem there is no such thing as "sustainable fishing" within the bay.

It is difficult to estimate the intensity of fishing activity. There was a 50% decline in fish catch from reef areas throughout Mauritius over 30 years despite a six-fold increase in fishing effort; and the lagoon fisheries have been particularly affected (Fagoonee 1985, Procter and Salm 1974, Robertson, 1974). Catch figures declined from 2500 mt in 1976 to 1375 mt in 1984 (UNEP/IUCN 1988). Use of dynamite and small-mesh seine nets in the lagoon surrounding Mauritius, coupled with inefficient patrolling during that period, have contributed to the deterioration of the reefs (UNEP/IUCN 1988).

The Mauritian fish fauna is of considerable interest to aquarium fish collectors and large numbers of reef fish are exported, mainly collected by professional divers. Dried seahorses (Syngnathidae) and pufferfish (Canthigastrinae) are sold as souvenirs (UNEP/IUCN 1988). The potential for commercial harvest of marine algae is described in Mshigeni (1985).

Surveillance and law enforcement by FPOs must address the major illegal fishing problem, both in terms of individuals and the fishing methods used. To do so will require the cooperation of the coastal community with fisheries resource monitoring support.

4.3. WATERSHED

Watershed management is the process of organizing the use of resources within a watershed to provide desired goods and services without harming soil, water and biodiversity resources. The relationships among land, soil, water and biodiversity conservation as well as the linkages between upstream and downstream areas are recognized in watershed concepts. Watershed systems are not only sources of economic value but also suppliers of environmental services that guarantee healthy ecosystem functions. Any disruption to watershed systems in general can easily create not only economic problems for local residents but also environmental and health problems. Solving these problems is urgently required to stop further bigger environmental and economic problems.

The watershed of BBMP, a *Support Area*, needs to be managed together with BBMP but does not fall within its legally gazetted boundaries. It therefore does not fall within the jurisdiction of the BBMU. It is intended to be managed through partnerships. The role of the BBMU is to serve as a catalyst, facilitator or promoter of such partnerships. It must also work with the MoFR and other government agencies (e.g., Agriculture, Forestry, Lands & Housing, Environment) to develop legal guidelines for development within the zone and ultimately to achieve special management status that is compatible with biodiversity conservation within BBMP.

The watershed of BBMP may be termed the Marine Park's "buffer" or *Support Area*. Sayer (1991) has provided a generally accepted working definition of a "buffer" or Support Area as a "zone peripheral to a national park or equivalent reserve, where restrictions are placed upon resource use or special development measures are undertaken to enhance the conservation value of the area."

Land use changes as well as sugarcane plantation runoff pollutants (pesticides and fertilizers) perhaps the main drivers of environmental change within the Blue Bay watershed that ultimately affect the health of the MPA's biodiversity. These drivers are also capable of altering

the livelihoods of local people and the local tourism industry by increasing their economic and environmental vulnerabilities. It is therefore imperative that management takes an integrated governance approach to include a wide variety of public and private stakeholders as well as integrating watershed and MPA management.

BBMP must not be seen as an isolated area. Ecologically, economically and culturally, BBMP is linked to its watershed. For that reason, the planning and management of BBMP must be incorporated within regional planning to include the watershed and supported by adopted local government policies that recognise this fundamental environmental and ecological linkage. This watershed, however, does not fall within the legally gazetted BBMP boundaries and thus is not part of BBMP. It therefore does not fall within the jurisdiction of the MoFR.

The important impacts facing BBMP as a result of issues in the watershed must be addressed through a watershed approach to management. Taking steps towards a watershed approach, with a particular focus on cooperation with the plantations and the international airport is one of the highest management priorities for BBMU over the next five years. However, many of these issues are not unlike most other parts of the world. The most serious of these are:

- Loss of biodiversity
- Solid and liquid waste management
- Over-exploitation of living resources and destructive harvesting practices
- Introduction of alien species
- Destruction of habitat and coastal degradation due to poor land practices that lead to pollution and siltation
- High population growth and a shift from subsistence to market economies

It is necessary to limit the amount of pollutants and physical degradation to the marine environment from hotels, agriculture and urban areas. The freshwater runoff from the watershed is capable of adding an overabundance of nutrients, organic matter, pesticides, trace element metals and industrial pollutants. There are signs of degradation most likely due to this influence (e.g., areas of dead coral, coral being covered in algae) and areas of freshwater upwelling enriched with nutrients. Another area of possible concern is wastewater and sewage seepage from hotels as well as concrete and stone walls that block normal water flow.

If holistic, comprehensive, and integrated approaches are applied in management, it is possible to solve the problems within the watershed and the MPA simultaneously. Therefore, a model watershed that can demonstrate integrated management and be replicated elsewhere in Mauritius is needed. This calls for new and innovative approaches that engage relevant stakeholders in a holistic way into MPA and watershed management. The management plan aims to strengthen and improve watershed functions of land use and local livelihoods as well as ecosystem resilience and integrated institutional capacities by investing in a sustainable MPA and watershed management strategy.

4.4. ÎLE DES DEUX COCOS

Also known as Île Aux Deux Cocos, the island is named after two abandoned coconut plantations established by the French but abandoned after crops were damaged during a storm in the 18th century. It is now a private island resort operated by Naiade Resorts Mauritius. The

"Follies" Villa, built over 100 years ago by the British Governor of Mauritius, Sir Hesketh Bell, has been completely restored to its near original Moroccan-style state.

The shoreline of Île des Deux Cocos is rocky interspersed with sand beach (*Figure 8*). Monitoring of the back reef east of Île des Deux Cocos, as recommended by van't Hof (1996), should continue by BBMP staff. Protection and ecosystem restoration are priority goals for this islet, which is not technically part of BBMP. It would be good to restore the inner-littoral plant community and achieve self-sustaining native plant populations. This would entail both increasing the populations of dwindling species that are present and reintroducing species known to have once occurred on the islet. The Mauritian Wildlife Foundation (MWF), in cooperation with the Forestry Service, is the most competent and experienced organization in Mauritius to carry out implementation of an island management plan and to provide invasive vegetation species removal and restoration including enrichment planting with native indigenous trees and other plants (e.g., Île aux Aigrettes).

Figure 8: Île des Deux Cocos and Le Chaland channel at BBMP (*A. H. Mitchell*)

Île aux Aigrettes, within the adjacent Grand Port- Mahébourg Fishing Reserve, for example, has been almost completely restored by the Mauritian Wildlife Foundation (MWF) over the last ten years and now only requires periodic weeding out of invasive alien species. The island has the best-preserved native vegetation cover of all the corralline islands and contains the last remaining patch of ebony-rich forest. The island is also a refuge for many rare plants, such as *Gastonia mauritiana* (bois de boeuf), *Diospyros egrettarum* (bois d'ébène) and *Sideroxylon boutonianum* (bois fer). Populations of pink pigeons and Mauritius fody have been established on Île aux Aigrettes.

5. STAKEHOLDER AND INSTITUTIONAL ANALYSIS

Stakeholder involvement is essential for achieving long-term sustainable goals of integrated conservation and development. Often the government itself does not have the resources or manpower to carry out the required management activities. Co-management (*Part Two, Section 8.3*) is an important concept to consider under stakeholder management because appropriate design can allow stakeholders to reap benefits from successful and sustainable management practices. Procedures that allow equitable transfer of benefits through shared rights and responsibilities form an important management tool. The key issue is always that of coordination as well as identifying stakeholders that have the greatest impact on resources or management.

A BBMP stakeholder may be defined as any organisation, governmental entity or individual resident with an interest in, or may be impacted by, a given approach to environmental

regulation, proposed project, pollution prevention, energy conservation and other activities within and adjacent to BBMP. Relevant BBMP stakeholders include:

- Government agencies
- NGO's
- Residents: Community-based Organisations (CBO's) and local communitites
- Private sector, primarily tourism

Successful management planning and implementation should be participatory in its approach. The involvement of key stakeholders in this process is essential to ensure successful implementation and builds a feeling of stakeholder ownership or "buy-in" required for long-term sustainability of BBMP resources. Stakeholders would then be more motivated to become actively involved in management implementation.

5.1. GOVERNMENT

Partners from government agencies include, but are not limited to, the National Coast Guard (NCG), Beach Authority, Ministry of Tourism and Leisure / Tourism Authority, National Parks Conservation Service (NPCS), Forestry Service, Agriculture Service, Social Affairs, Environment Department and Education Department for a variety of community safety, awareness and development initiatives including provision of supportive extension services in the BBMP "support zone" watershed. Specific partner activities can be informal or through MOUs for which budgeting will be required.

Special mention is made of the Mauritian National Coast Guard (NCG) and its potential role for further cooperation with BBMP management during implementation. The only drawback is that the NCG post is at Troux aux Biches, with is too far for rapid response. It is recommended that a NCG post be established at Blue Bay.

The NCG is one of only two paramilitary units in Mauritius, the other being the Special Mobile Force (SMF). As a specialized unit of the Mauritius Police Force, the NCG unit consists of police officers on lengthy post rotations. Establishment of the NCG was enacted by a Parliament bill in 1988 with three broad duties being:

- Enforcement of any law relating the security of the State of Mauritius
- Enforcement of any law relating the protection of the maritime zones
- Detection, prevention, suppression of any illegal activities within the maritime zone.

The NCG has 19 posts on Mauritius and 3 posts on each of the main outer islands at Agalega, St. Brandon and Rodrigues. The NCG has ships, patrol boats and a helicopter squadron for search-and-rescue missions, rescue diving and surveillance of territorial waters. Under the United Nations Convention on the Laws of the Sea (UNCLOS) each coastal nation has a portion of the sea designated as its Exclusive Economic Zone (EEZ), which extends to 200 nautical miles (nm) or 380 Km from the coast. Mauritius has exclusive rights and obligations within its EEZ for environment protection, fish stocks, pollution, law enforcement, fire-fighting and mineral resources exploration (e.g., oil, gas, metals).

5.2. NGOS

The importance of Non-governmental Organisations (NGOs) as BBMU partners (through specific MOUs) for coordination and specific implementation activities with both BBMU and the community must be emphasized. Thus, their responsibilities and involvement with

management plan implementation are beyond only sitting in an advisory capacity on the BBMP Board.

Major local and national NGOs that have and could form partnerships with BBMU for specific activities include:

- Eco-Sud and its Lagon Bleu programme (*Appendix K*): www.ecosud.mu/lagonbleu/index-eng.htm
- Mauritius Marine Conservation Society: www.mmcs-ngo.org
- Reef Conservation Mauritius: www.reef-mauritius.com
- Mauritius Oeanography Institute (MOI): www.moi.gov.mu
- Mauritian Wildlife Foundation: www.mauritian-wildlife.org

Specific partner activities can be informal or through MOUs for which budgeting will be required. Perhaps the most important NGO of relevance to Blue Bay is *Eco-Sud* and its *Lagon Bleu* programme, which has been involved with environmental education, livelihoods and socio-economic analysis within BBMP and its watershed.

5.3. LOCAL COMMUNITY RESIDENTS

"Community" includes many stakeholders (e.g., dive and other water sports operators, tour and hotel operators, fishers, guest-house and home restaurant operators [*chambres d'hôte, tables d'hôte*], watershed residents).

Experience has shown that co-management is most effective when substantive rights and benefits are devolved at the early stage to community level. If only the responsibilities for management are given without the supporting rights and benefits, then incentives for an effective community role will be insufficient, and failure of co-management is likely. When developing an effective co-management system there is therefore the need to balance a lack of capacity with the achievement of substantive devolution of rights, responsibilities and authority (UNDP 2011).

There is at least one active residents' association at Blue Bay.

Including considerations of local cultural and spiritual values and perceptions *vis-à-vis* the coastal and marine environment of BBMP can be an important activity to establish, support and maintain BBMP conservation and livelihood management policies. The International Union for the Conservation of Nature and Natural Resources (IUCN) through its World Commission on Protected Areas (WCPA) has several Specialist Groups including the Cultural and Spiritual Values of Protected Areas (CSVPA) Specialist Group.[9]

CSVPA "*aims to understand the cultural and spiritual values that local communities hold for areas within national parks, nature and marine reserves and for nature in general*". Linkages among biodiversity, ecosystem services, human well-being and livelihoods have produced guidelines called "*Principles and Guidelines for the Management of Sacred Natural Sites*" (Wild and McLeod, 2008)[10].

[9] IUCN/WCPA/CSVPA: http://www.fsd.nl/csvpa

[10] For these guidelines and other CSVPA publications, see: http://www.iucn.org/about/union/commissions/wcpa/wcpa_puball/wcpa_bpg/?2164/Sacred-Natural-Sites-Guidelines-for-Protected-Area-Managers

The purpose of the guidelines is to help park managers understand the importance of cultural and religious areas that different faiths have established and to encourage them to work sympathetically with religious leaders to management their parks. The CSVPA Specialist Group maintains that it is important to:

- Recognise sacred natural sites already located in protected areas
- Integrate sacred natural sites located in protected areas into planning processes and management programmes
- Promote stakeholder consent, participation, inclusion and collaboration
- Encourage improved knowledge and understanding of sacred natural sites
- Protect sacred natural sites while providing appropriate management access and use
- Respect the rights of sacred natural site custodians within an appropriate framework of national policy

5.4. PUBLIC-PRIVATE COLLABORATION

Partnerships can also be established for specific activities with the private sector (e.g., Shandrani and Blue Lagoon hotels, water sports boat house operators, tour operators). Specific partner activities can be informal or through MOUs for which budgeting will be required. Water sports operators were involved in the development of the regulations and zoning, and several have been members of the Steering Committee.

It is important to translate the economic value of biodiversity and environmental services into appropriate and viable / sustainable financial incentives, especially for coastal communities and businesses that will be taking on additional responsibility for biodiversity conservation.

Currently there are no formal partnerships between MoFR and the private sector at Blue Bay. Public-private partnerships for biodiversity conservation, public awareness and environmental education, among others, can be established to more effectively manage BBMP. Partnerships should be established for specific activities through MOUs with the private-sector (e.g., hotels and boat house operators in particular).

6. LEGAL AND POLICY ANALYSIS

The area now known as Blue Bay Marine Park (BBMP) was first recommended as a marine reserve by Robertson (1974) and Proctor and Salm (1974). The recommendations in Robertson (1974) were not implemented as the authorities had anticipated considerable opposition from fishermen (UNEP, 1984). The National Environment Action Plan (1990) indicated the importance of establishing a marine park at Blue Bay due, in part, to its close proximity to tourist hotels. The National Physical Development Plan (NPDP 1995) clarified Policy NE. 12 that would establish marine parks at both locations. Findings made by the scientists at AFRC fully supported these recommendations to establish the marine parks at Blue Bay and Balaclava.

Finally, BBMP was first proclaimed as a National Park in 1997 under the *Wildlife and National Parks Act, 1993*. It was then declared a Marine Protected Area (MPA) and subsequently a Marine Park in June 2000 under the *Fisheries and Marine Resources Act, 1998*. This Act was repealed and replaced with the current *Fisheries and Marine Resources Act* (Act No. 27 of 2007), which was enacted "*to amend and consolidate the law relating to the management, conservation, protection of fisheries and marine resources and protection of the marine*

ecosystems". The Act includes protection, conservation and management of MPAs with further specific details provided for the Blue Bay Marine Park. Details on regulations within the FMR Act of 2007 are found in *Appendix F.*

There are about ten primary legislations pertaining to coastal resources management and marine biodiversity, and there are about twelve stakeholders that are directly involved with coastal zone management in Mauritius. The number of actors as well as fragmentation and lack of congruity in the legislation represents a challenge in the area of marine biodiversity conservation.

Among the most relevant legislation for BBMP are the:

- Fisheries and Marine Resources Act of 2007 (Act No. 27)
- Maritime Zones Act 2005
- Tourism Act 2002
- Beach Authority Act 2002

The *Fisheries and Marine Resources Act No. 27 of 2007*[11] consolidates the law relating to management, conservation, protection of fisheries and marine resources and protection of the marine ecosystems. The Act provides rules for management and conservation of fisheries resources and fish farming (Amendment[12]) and makes provision for protection of marine areas and habitats, establishment of a Marine Protected Area Fund, enforcement and administration of provisions of the Act. As for rules regarding fishing, the Act requires fishermen and boats to be registered, prescribes closed seasons, prohibits various activities regarding fishing including unauthorized landing and prohibits fishing for marine mammals or marine turtles.

The Act further, among other things, provides rules for fish import and export and the import, sale and manufacture of gear; provides for the licensing of gear and foreign and Mauritian fishing vessels; defines obligations of licensed fishing vessels regarding marking, transhipment and reporting; provides for measures of enforcement including pursuit beyond maritime zones; defines offences and prescribes penalties; and specifies regulation-making powers of the Minister.

Details on regulations within the FMR Act of 2007 are found in *Appendix F.* In addition to providing a legal basis for the co-management principle, specific provisions for the BBMP include:

- Delimitation and zones
- Permissible activities
- Non-permissible activities within a Conservation Zone
- Non-permissible activities
- Application for user licenses and user fees
- MPA Board
- MPA Management Unit
- MPA Fund

Government Policy for the Fisheries Sector: This is based on sustainable resource use and protection of the marine environment. It is aimed at safeguarding employment and economic benefits. Additionally, it ensures food security and an increase in fish production. The mission of

[11] http://www.gov.mu/portal/goc/fisheries/file/fisheriesAct2007.pdf

[12] http://www.gov.mu/portal/goc/fisheries/file/fishriesmarineact.pdf

the Ministry of Fisheries and Rodrigues (MFR) is to be the driving force for the sustainable development and management of fisheries resources, conservation and protection of living aquatic resources and the marine environment in the waters of and of interest to Mauritius for continued socio-economic benefits to stakeholders (Soondro 2010).

Other legal and policy points:

- MFR is managed under the *Fisheries and Marine Resources Act of 1998.*
- The 10-Year Fishery Development Plan
- The National Plan of Action to Prevent, deter and eliminate illegal, unreported and unregulated fishing (2010)
- A series of regulations have been developed by the Ministry of Fisheries and Rodrigues :
  - Export of Fish and Fish Products (Amendment) Regulations 2010
  - Extension of Net Fishing Season Regulations 2010
  - Export of Fish and Fish Products Regulations 2009
  - Extension of Net Fishing Season Regulations 2009
  - Fishing of Sea Cucumbers Regulations 2009
  - The Fishing of Sea Cucumbers Regulations 2008
  - Prohibition of Removal of Coral and Sea-shell Regulations 2006
  - The Undersized Fish Regulations 2006
  - Vessel Monitoring System Regulations 2005
  - The Toxic Fishes Regulations 2004
  - The Marine Protected Areas Regulations 2001

Go vernment Policy for the Environment Sector: The country's *Second National Environment Action Plan* and also its second *Environmental Investment Programme* under the *National Environmental Strategies* (approved by the Government in 2000) provides for programmes with defined targets for terrestrial and marine biodiversity. Other key frameworks, such as the *National Development Strategy* (GoM 2003), include designation of a network of Environmentally Sensitive Areas to reinforce a "general presumption" against development in these areas using the precautionary principle. The network includes coastal features, wetlands, mountain areas and other areas of high biodiversity, both for privately owned and state lands. Other plans, such as the *Tourism Development Plan*, provide for setting up and managing biodiversity rich areas as MPAs over a defined time horizon.

Additional environmental legislation includes:

- Environment Protection Act (EPA) 2002
- National Environment Policy (NEP)
- A serial of Regulations has been developed by the Environment Unit
  - Dumping and Waste
  - Carriers Regulations 2005
  - Camping in Public Places Regulations
  - Plastic Carry Bags Regulations
  - Use of Public Places Regulations
  - Fisheries Regulations (to control exploitation of Sea Cucumber)
  - Noise Regulations
  - Road Side Advertising Regulations

- Law enforcement and regulations remain a pre-requisite in various sub-sectors. It's important that these laws and regulations be enforced and adopted to eliminate the risk of regulatory inefficiency.

Government Policy for the Land Use and Land Resources Sector: The State is responsible for the management of lands. However, there is:

- Inadequate detailed information regarding land resources. This makes it difficult for the authorities to develop appropriate environmental strategies.
- Absence of an appropriate housing policy of declared zones, delays in approving housing leases and building permits and lack of enforcement.

Government Policy for the Tourism Sector: The GoM maintains that the tourism industry is expected to be the "principal engine of growth" over the next five years and will also remain one of the most important pillars of the economy for many years to come.

With regard to tourism sector regulations and planning:

- Tourism regulations 2007 about licensing of tourist enterprises under Section 129 of the *Tourism Authority Act 2006*.
- Tourism Development Plan 2002 for Mauritius. The goal is to enable existing and new tourism to contribute to the economic development of the island to the maximum consistent with the environmental and social carrying capacity of the island. The Tourism Development Plan 2002 does not seem to be *the* document guiding development of the sector even though many of its recommendations have been implemented.
- There is currently no long-term, sustainable tourism strategy to guide the actions of policymakers and stakeholders in the long-run.

7. MANAGEMENT ANALYSIS

Strengths, Weaknesses, Opportunities and Threats (SWOT) for issues pertaining to BBMP were identified by the BBMP Sub-Working Group at 7 meetings held in July and August 2011. The SWOT analysis results were prepared as a matrix (*Appendix A*) that developed during the planning period. Issues that were analyzed with SWOT included:

1. Governance, including: Implementation arrangements, roles and responsibilities and collaborative or co-management
2. Recreation and Tourism
3. Financing and Funds Management
4. Management Zones
5. Awareness

7.1. GOVERNANCE

Governance may be defined as the involvement of a wide range of institutions and actors in the production of policy outcomes involving coordination through networks and partnerships. It may also be defined as the mechanism for steering human behaviour through combinations of people, state and market incentives to achieve strategic objectives (Jones *et al*. 2010). What is important is that the governance of BBMP is effective in achieving its management objectives and how governance might be improved in order to be more effective.

Maintaining the integrity of ecosystems and protecting species biodiversity is challenging because of the great range of biological, physical and socio-economic pressures involved. Resolving these complex problems is complicated because of the many institutions (or in some instances, the lack of) and interests that are interconnected and must be considered during the problem-solving process.

Good governance through co-management aims to enable effective, supportive and sustainable institutional arrangements and ensure management linkages between BBMP ecosystem health and human well-being. Changes to institutional and governance frameworks may sometimes be required to create the enabling conditions for effective co-management. In other cases existing institutions could meet these needs but face significant barriers.

A recent UNEP report on governance of MPAs has identified key factors that are important for developing good governance. Three factors are of particular relevance to BBMP; namely:

- *political will and capacity* for enforcing laws that provide for effective MPA management
- strong sense of *stewardship* of the MPA among *communities and users*
- provision of *sustainable economic development* opportunities within or adjacent to MPAs

Five main approaches to MPA governance were identified by Jones *et al*. (2011):

- **Approach I:** MPAs managed primarily by the government under a clear legal framework (*government-led*) ***This is the governance approach currently being applied at BBMP.*** (Until January 2012, BBMP was overseen by a UNDP/GEF/MoFR/RRA Project Steering Committee.)
- **Approach II:** MPAs managed by the government with significant decentralisation and/or influences from private organisations (*decentralised governance*).
- **Approach III:** MPAs managed primarily by local communities under collective management arrangements (*community-led*)
- **Approach IV:** MPAs managed primarily by the private sector and/or NGOs granted with property/management rights (*private-led*)
- **Approach V:** No clearly recognisable effective governance framework in place

Jones *et al*. (2011) have further identified several important key factors for developing good MPA governance:

- Provision of sustainable economic development opportunities in or adjacent to MPAs
- Fair sharing of economic benefits and costs from MPAs
- Public communication, education and awareness-raising on the importance/ vulnerability of marine ecosystems and the benefits of MPAs
- Use of all available information and knowledge to guide/inform MPA decision-making
- Political will and capacity for passing and enforcing laws and regulations that provide for effective MPA management
- Provision of opportunities for different user and public groups to participate in MPA decision-making processes
- Leadership from individuals and organisations within governments, NGOs, the private sector, academic institutions, and/or local communities
- Strong sense of stewardship of the MPA among communities and users

From *Guidelines for Protected Area Management Categories* of the IUCN World Commission on Protected Areas, BBMP would be considered a protected area governed as *Category II: National Park*, i.e. "a protected area managed mainly for ecosystem protection and recreation" (*Appendix B*). The definition of a Category II PA is a "natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible." *Appendix B* provides a detailed description and examples of a "National Park".

7.2. BOUNDARY AND ZONING

From Pointe Corps de Garde in the north to Pointe Vacoas in the south, BBMP (*Figure 9*) is comprised of 353 ha of coral reef, open sea, mangroves, sand beaches and shoreline to the high-water mark. BBMP is bordered north and south by the much larger *Grand Port-Mahébourg Fishing Reserve* (1,828 ha) from which it was legislatively extracted in 1997 when BBMP was first proclaimed as a National Park under the *Wildlife and National Parks Act, 1993*.

Figure 9: BBMP zoning information sign at Blue Bay beach

Appendix D-3 shows the BBMP boundary and management zones as gazetted. The seaward boundary extends beyond the fringing reef to 1 km.

The three main BBMP zone categories are defined in the Regulations (*Appendix F*), which also specify the activities that are permitted and forbidden in each zone. There are no changes recommended for these three zones.

- ***Conservation Zone*:** a zone meant for conservation purposes and where no extractive use is allowed except for research purposes. No person shall, within a CZ, fish by any means except for research purposes and subject to the authorization of the Commissioner and may not anchor any boat, vessel or craft.
- ***Strict Conservation Zones A and B:*** set aside due to their particular sensitivity and species diversity
- ***Multiple-Use Zone*:** a zone where boating and fishing are permitted by any legal methods authorised under the Regulations

In addition, there are **Traffic Lanes** that are intended to separate boats from non-compatible conservation priorities. Fishing and most recreational activities are not allowed in these lanes, the locations of which will be revised by the BBMU in 2012. One **Ski Lane** is located within the

bay on the western side of Shandrani Hotel. No other activities are permitted while water skiing is in progress.

The **Conservation Zone** is designated for conservation of important ecosystems and resources and where a limited number of recreational activities are permitted. Regulations include:

- "No person shall enter into, or remain in, any conservation zone unless he holds a permit.
- Subject to regulations 26 and 29, no person shall, in any conservation zone, practice any type of fishing.
- No person in charge of any boat or vessel shall, in any conservation zone, cause the boat or vessel to move at a speed which causes a wash or a wake; or which exceeds 3 knots".

The **Multiple-use Zone** is a zone where a specified range of recreational activities is permitted, the fishing techniques to be used are limited and where marine transportation is permitted. "No person shall, in any multiple use zone, practice any type of fishing except by line and basket trap unless he holds a permit".

Traffic Lanes are intended to separate boats from non-compatible conservation priorities. Fishing and most recreational activities are not allowed in these lanes, the locations of which will be revised by the BBMU in 2012.

7.3. LINKAGES TO GRAND PORT-MAHÉBOURG FISHING RESERVE

When managing BBMP over the next five years it is important to take a broader landscape approach as what happens in the watershed can greatly affect the marine ecosystem. Blue Bay Marine Park will need to be managed together with the ecologically important *Grand Port-Mahébourg Fishing Reserve* (1,828 ha) from which it was extracted to form the Marine Park.

Six Fishing Reserves were proclaimed in June 2000 with the primary intention of protecting and conserving marine habitats that are nursery grounds for juvenile fish. *Appendix D-5* shows the location of these fishing reserves around the island of Mauritius, including the Grand Port-Mahébourg Fishing Reserve. Faure (1977) described a barrier reef at Mahébourg, most of which lies outside the Reserve, which is 400-600 m wide and 9 km long, 3-5 km off shore, and shelters a lagoon 15-30 m deep. Faure (1977) describes the barrier reef,

The following description of this fishing reserve has been extracted from UNEP/IUCN (1988).

Legal Status: Grand Port- Mahébourg Fishing Reserve was established as a Fishing Reserve on 2 February 1983 by Government Notice No. 18. The Fisheries Act of 1980 prohibits the use of seine nets, large nets or canard nets within Reserves. Île aux Aigrettes was established as a Reserve on 30 November 1965; Île Marianne was established as a Reserve on 4 December 1972 under the Ancient Monument Act of 1944.

Location: South-east coast around the port of Mahébourg; 20°23'S, 57''42'E: that part of the sea coast bounded by the high water mark and a straight line drawn from a stone bearing the letters "R.L." behind the Roman Catholic church at Old Grand Port to the extreme eastern point of He aux Aigrettes to the reefs and along the sinuosities of the reefs to the Hot at le Broudou. Île Marianne lies 7.4 km to the east of Vieux Grand Port (20°22'S, 57''47'E); Île aux Aigrettes lies about 1 km east of Pointe d'Esny (20°25'S, 57''43'E).

Area, Depth, Altitude: From sea-level to the bed of the lagoon; 2200 ha; Île aux Aigrettes is 25 ha, max. alt. 4-5 m; Île Marianne is 2 ha, max. alt. 1-2 m.

Physical Features: This is a lagoon environment with coral patches and reefs, sandy areas, a rocky bottom and an intertidal zone with sandy beaches and rocky shores. In some areas the intertidal zone is occupied by cliffed shores and eroded eolianite deposits. The area includes Îlot Chat, Îlot Rat and Mouchoir Rouge and is bordered by Île aux Aigrettes and the islet at Le Bouchois, as well as the estuaries of Rivière La Chaux and Rivière des Creoles and a small portion of the barrier reef Île aux Aigrettes and Île Marianne are composed of coralline dune rock with eroded coastlines (UNEP, 1984).

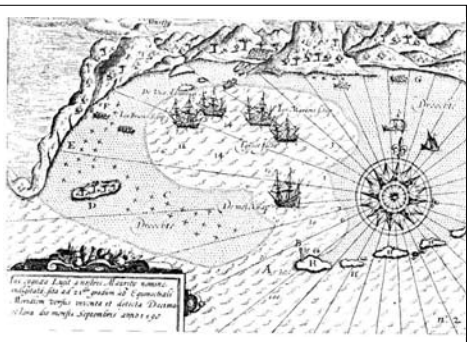

Figure 10: Mauritius, 1598: Van Warwijk's fleet in Grand Port harbour. The islet to the left (D) is Île aux Aigrettes. Blue Bay is in upper left.

Noteworthy Fauna and Flora: There are patches of mangroves and ferns in some areas and dense stands of mangroves in others; mangroves, normally harboring significant areas of mud flats, are found in the upper limits of the intertidal zone. The sparse vegetation on Île des Aigrettes is described in Johnson (1894) and UNEP (1984). The island is a nesting site for large numbers of migratory seabirds. The mollusk fauna around Île Marianne is particularly diverse. Mollusks in this area are described by Henon (1976).

Economic Value and Social Benefits: Fishing occurs in the area; all commercially exploited species are fairly well represented. Shell collecting is intensive around Île Marianne. The Mahébourg fish farm, of about 83 ha, has laboratory and aquaria facilities (UNEP, 1984).

Disturbance or Deficiencies: During heavy rains and cyclones the lagoon becomes silted. Illegal fishing takes place. Lime kilns at Mahébourg make use of large quantities of live coral. Île aux Aigrettes is threatened by introduced rats and the removal of its vegetation. Île Mariaime has been a popular shell collecting site but it is not known what impact this has had on mollusk populations (UNEP, 1984).

Management: Three fisheries assistants are posted in an adjacent fisheries post. Enforcement in the fishing reserve is carried out as part of the general duties of the Fisheries Protection Officers. Île aux Aigrettes and Île Marianne are administered by the Forestry Department (UNEP, 1984).

7.4. ADMINISTRATION AND STAFFING

BBMP is administered by the Marine Science and Conservation Division at Albion Fisheries Research Centre (AFRC) in Petite Rivière. The AFRC is the technical arm of MoFR and carries out applied research, development and management activities. AFRC has about 85 officers in the scientific and technical grade supported by the administrative staff and manual workers[13].

The organizational structure and staffing for MPAs are outlined in the 22 July 1994 memorandum of the Ministry's Permanent Secretary. Changes to staffing composition were presented in another 1994 memorandum from the Minister to Cabinet. Subsequent minor changes have been made, and the responsibilities and qualifications for all positions have been identified. The total number of positions that were recommended for BBMP by van't Hof (1996) at full operation was 44.

BBMU staff in August 2011 are shown in *Figure 11* and consist of 11 on site and 4 based at AFRC:

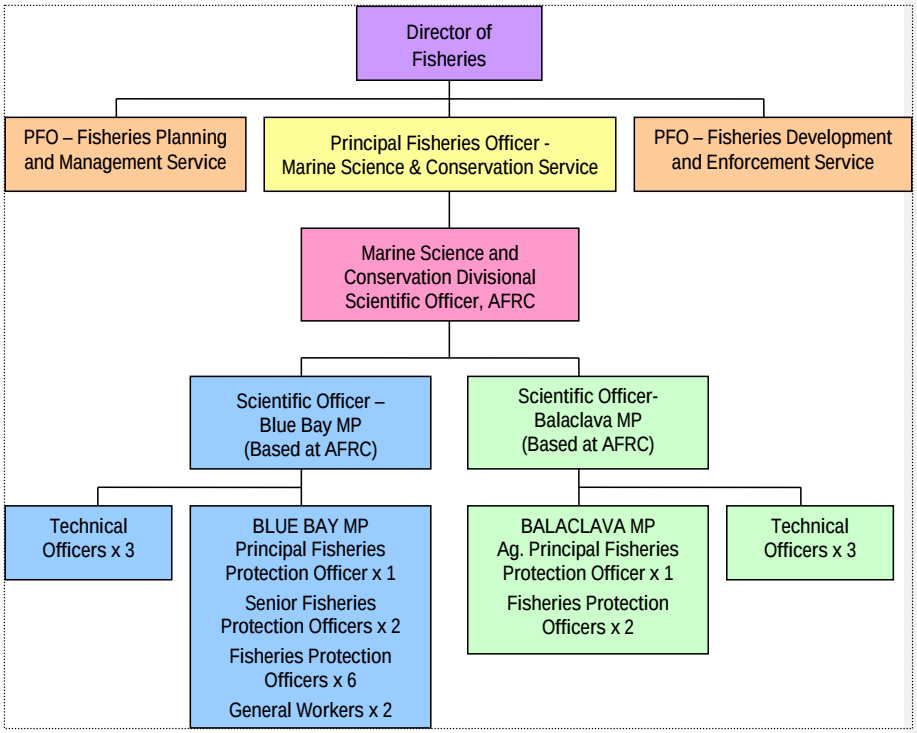

Figure 11: MoFR and BBMP organisational structure (2011)

- *Scientific Officer* is effectively the BBMU Officer-in-Charge but based at Albion Fisheries Research with additional responsibilities and reports to the Divisional Scientific Officer for Marine Science and Conservation at AFRC

[13] http://www.gov.mu/portal/site/fisheries/menuitem.1b4d752328b132be7f7a98ada0208a0c/

- *Technical Officers* (3), based at AFRC, assist with research and monitoring but also have additional responsibilities throughout Mauritius
- *Principal Fisheries Protection Officer* (PFPO) is permanently assigned to and based at BBMP and responsible for the day-to-day running of the MPA and coordinating the patrolling and other schedules of the SFPOs and FPOs
- *Senior Fisheries Protection Officers* (SFPO) x 2 are permanently assigned to and based at BBMP and have seniority but who also have the responsibilities of an FPO
- *Fisheries Protection Officers* (FPO) x 6 are permanently assigned to and based at BBMP and, with the SFPOs, are responsible for patrolling, maintenance, public awareness and other activities
- *General Workers* (2) maintain the BBMP headquarters

All PFPO, SFPO and FPOs have powers of arrest. They are also authorised to collect fees "where relevant to the Regulations" and to issue receipts.

7.5. CAPACITY BUILDING AND TRAINING

Fisheries Protection Officers have undergone training by the Fisheries Research and Training Unit (FRTU) at Pointe de Sable in Marine Protected Area operations, patrolling and surveillance techniques, basic outboard motor maintenance, monitoring methods and other skills. As this is an on-going capacity building process, more will be required.

Mauritius MPA field staff have identified several capacity building and training needs that would improve the efficiency of their jobs; including:

- lifesaving and first aid
- cross visits to other MPAs in the region (e.g., Seychelles, Maldives)
- biodiversity identification (e.g., fish, corals)
- seamanship (collaboration with Sea Training School at Port Louis)
- marine science
- monitoring
- report and proposal writing.

The National Coast Guard (NCG) operates a residential training Marine Training Establishment (MTE) at Le Chaland, Blue Bay, Mauritius. The MTE runs short orientation courses to train specialists for technical duties on board ships, refresher courses for updating and consolidating knowledge of personnel and training recruits to become both policemen and seamen. The United States has provided training to NCG officers in such fields as seamanship and maritime law enforcement. The MTE also includes a Police Diving School with a training programme that includes a standardization course, search and recovery course, first aid and diving injuries course, and an underwater investigation technician course.

7.6. RESEARCH AND MONITORING

Opportunities for management-oriented ecological research within BBMP are significant, especially management-oriented biodiversity research of marine and coastal flora and fauna. A proposed *Biodiversity Research Action Plan* will support and guide adaptive management. One category of marine research will include long-term systematic surveys and studies of

populations and habitats of specific taxa (e.g., population estimates, detailed distribution data, population dynamics).

Monitoring of the marine environment has been conducted since 1991 to characterize the coral reef ecosystem of BBMP. Several permanent reef ecosystem monitoring transects have been established at BBMP by AFRC and are monitored annually. However, it would be better if these transects could be monitored every 3-4 months.The further quantification of biological richness of the site is now considered a priority in support of management measures.

Monitoring activities cover many aspects of MPA management, including marine resources and water quality as well as collection of visitor statistics and impacts. A long-term programme for monitoring the marine environment has been conducted since 1991 to characterize the coral reef ecosystem of BMP. Several permanent reef ecosystem monitoring transects have been established at BMP by AFRC and are monitored annually. Data is collected on coral, benthos and fish populations. Physical, chemical and bacteriological properties of water are also monitored. However, it would be better if these transects could be monitored every 3-4 months. The further quantification of biological richness of the site is now considered a priority to complete in support of management measures. Monitoring of the back reef east of Île des Deux Cocos, as recommended by van't Hof (1996), should continue.

According to UNEP/IUCN (1988), an IOC funded project from 2003 to 2005 collected regional data on coral reefs. The programme included training of more than 25 people from government and NGOs in monitoring techniques, data processing and logistical support, including equipment and dive training) The data is used in the Global Coral Reef Monitoring Network.

All research and monitoring actions are made under the supervision of the Scientific Officer (SO), who is based at AFRC. Currently, the SO can do some of the monitoring within the bay. However, subtidal monitoring of the forereef and channel will need a team of at least 4 suitably qualified people who are both capable of doing the science part of the surveys and are trained divers.

7.7. ENVIRONMENTAL AWARENESS

There is still inadequate environmental awareness and understanding about the needs and methods to protect marine resources through implementing an MPA. An environmental awareness programme needs to extend beyond the borders of the MPA and its coastal communities. While much attention must be paid to local residents as resource users, many other target groups need attention. In particular, more focus needs to be directed toward government policy and decision-makers to help generate the political will to fully support the vision, goal, purpose and objectives of BBMP.

Creating environmental awareness among the general public and most especially among the BBMP communities remains complementary to implementing and enforcing the regulations. Education and awareness are essential since MPA management intends to take a collaborative approach between the community and the authority. It is thus important that the whole community is convinced that BBMP will help to alleviate the pressures on the marine resources and that having a healthier lagoon will help to improve fishing in the surrounding areas while supporting the local economy of ecotourism hotels and visitor services.

In Mauritius there are environmental committees and clubs that have been set up comprised of representatives from public and private sectors, NGOs, research institutions and others. These committees and NGOs (e.g., Eco-Sud – *Appendix K*) have a technical advisory role on sustainable use of biological diversity and indirectly in the pursuit of poverty alleviation.

An *Information, Education and Communications Strategy and Action Plan* needs to be prepared to guide these important supportive activities over the next five-years. It is expected that the "*Educational and Awareness Campaign for the Blue Bay and Balaclava Marine Parks"*, funded by UNDP in late 2011 and implemented by a local NGO consortium, will have developed this Strategy for BBMP.

For any environmental public awareness and education strategy to succeed it is important to link environmental issues with economics and livelihoods development. The economic costs of neglecting watersheds and cropland may be easily recognised. Specific target groups need to be identified. This needs to be supported by general awareness of government laws and regulations concerning environmental protection. It is also important to ensure good coordination among the various agencies involved in environmental public awareness and education. Politicians and government decision-makers also need to be targeted.

7.8. FINANCIAL MANAGEMENT

An analysis of financial sustainability for an effective management system and establishing sustainable financial options are essential to effective long-term BBMP management.

The *Fisheries and Marine Resources Act No. 27* (2007) provides rules for the management and conservation of fisheries resources and fish farming and makes provision for protection of marine areas and habitats, establishment of a *Marine Protected Area Fund* (MPAF) as well as enforcement and administration of provisions of the Act. Funds that can go into the MPAF to support BBMP management can come from various sources. With regard to the MPAF:

(5) "There is established for the purposes of this Act a *Marine Protected Area Fund*.
(6) The Permanent Secretary shall be responsible for the management of the Fund.
(7) The Fund shall consist of -
    (a) such sums of money as may be appropriated by the National Assembly for any of the purposes of this Act;
    (b) any grant or donation made to the Fund;
    (c) the proceeds of sale of any produce;
    (d) any money that is payable under this Act including all fees, rent and other charges arising from the authorised use of the marine parks and reserves;
    (e) any fee payable in respect of the use of marine resources other than fishing.
(8) The assets of the fund shall be applied towards the payment of expenses which may be incurred in the management of a Marine Protected Area".

Funding for MPA management in Mauritius has been included within the Programme Budget Estimates for 2010-2013. Budget estimates are developed for BBMP to cover the rolling period of the *Programme-Based Budgeting* (PBB) System. Financial management and budget preparation for BBMP is currently the responsibility of MoFR staff. The main financial consideration is to ensure that BBMP will have an ongoing budget provision in the PBB system for its core operation.

In 2008/09 the government of Mauritius adopted a fully-fledged *Medium Term Expenditure Framework* (MTEF). "MTEF is a transparent planning and budget formulation process. It defines a top-down medium term resource envelope for fiscal discipline, requires bottom-up cost estimates to carry out policies, and reconciles them with spending policies consistent with strategic priorities. It considers budgets as a policy commitment as much as a spending commitment. It is based on the recognition that resources are limited and unlikely to increase in the medium term. The MTEF does not result in a higher level of resources; instead it is a tool for determining the available resources and allocating these resources in line with the government's priorities" (MoFEE 2010). The 6 steps of the MTEF are shown in *Table 2*.

Table 2: Proposed BBMP annual budgeting cycle and MTEF steps

Month	MTEF Step	Programme Based Budget Steps for BBMP
Jan – March	1	BBMU prepares preliminary budget, in consultation with other stakeholders, which is considered by the BBMP Management Board
March	2	Reconcile budget with 3-yr Preliminary Ceilings from Min. of Finance (MoFEE)
May	3	BBMP Board reviews and approves BBMP Programme Based Budget, which is submitted via MoFR to MoFEE
August	4	Estimate committee and final ceilings
August – Sept	5	BBMU prepares 3-year PBB Estimates and submits to MoFEE
Jan	6	After approval, disbursement of budget allocation

MTEF Step 3 of the PBB, *Preparing Budget Proposals Based on Strategic Plans (April-June),* is particularly important for financial management and budgeting. This step involves a ministerial/departmental review process through which outcomes, priority objectives and activities must be agreed and then costed and includes:

1. a review/development of the structure of programmes and sub-programmes with respective outcomes and priority objectives;
2. a detailed budget proposal on how they would spend the allocations given to them by the preliminary ceilings (programmes /sub-programmes); and
3. a separate proposal in respect to new spending initiatives they wish to propose which would require funding in excess of the ceiling. These should be accompanied by multi-year estimates of the costs of these new initiatives. Costing and prioritizing activities to provide services (output delivery) should:
   i) estimate the current costs of programme/sub-programme activities (both recurrent and capital) and
   ii) prioritize activities so that total costs remain within the resource ceiling and identify which activities should continue to be carried out, those that have to be scaled back, those that have to be postponed until next year, and those that need to be stopped.

8. MANAGEMENT STRATEGIES

8.1. RAMSAR CONVENTION

Since 2008, BBMP has been a Ramsar site, a wetland of international importance. Currently, the only other Ramsar site in Mauritius is the *Rivulet Terre Rouge Estuary Bird Sanctuary*. A description of the Ramsar Convention and the criteria for site selection may be found in *Appendix C* and in more detail at the Ramsar website [14].

Blue Bay Marine Park (BBMP) is a designated Ramsar site, a wetland of international importance. From *Guidelines for Protected Area Management Categories* of the IUCN World Commission on Protected Areas, BBMP would be considered a protected area governed as *Category II: National Park*, i.e. "a protected area managed mainly for ecosystem protection and recreation". The definition of a Category II PA is a "natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible."

8.2. INTEGRATED COASTAL RESOURCES MANAGEMENT

The *Coastal Zone* may be defined as lands and waters adjacent to the coast that exert an influence on the uses of the sea and its ecology, or whose uses and ecology are affected by the sea. The coastal zone usually includes the coastal ocean as well as the portion of the land adjacent to the coast that influences coastal waters. By addressing marine and watershed issues, this management plan could be called an *Integrated Coastal Resources Management Plan.*

The coastal and marine environmental issues facing Blue Bay are not unlike most other parts of the world. The most serious of these issues are:

- Loss of biodiversity
- Solid and liquid waste management
- Over-exploitation of living resources and destructive harvesting practices
- Introduction of alien species
- Destruction of habitat and coastal degradation due to poor land practices that lead to pollution and siltation
- High population growth and a focus on market economies

Maintaining the integrity of ecosystems and protecting the biodiversity in these ecosystems is challenging because of the great range of biological, physical and socio-economic pressures involved. Solving these complex problems is complicated because of the many institutions (or in some instances, the lack of) and interests that are interconnected and must be considered during the problem-solving process.

Responsibility for managing the many relevant activities of a coastal watershed is frequently divided among government departments and local institutions. The result is that one institution's actions may have significant adverse impacts on the resources of another. Thus, in

[14] http://www.ramsar.org/

addition to the problem of remote causes and effects, there may be little opportunity or incentive for inter-agency cooperation that could avoid or minimise the externalities. Government management responses have also been hampered by an overall lack of appropriate legislation for coastal management and insufficient capacity to implement existing management strategies.

Integrated Coastal Resources Management (ICRM) is a participatory process of planning, implementing and monitoring the sustainable use of coastal and marine resources through integration of collective action and sound decision-making. It has been a key tool for several decades in many counties as a means to manage their coastal and marine environments. ICRM's approaches seek to control and mitigate coastal habitat degradation and over-fishing. It is more commonly known as Integrated Coastal Zone Management (ICZM).

The term integrated coastal zone management (ICZM) has developed into a broad concept that takes a holistic approach. Integration of management and decision-making processes is what separates integrated coastal zone management from other sectoral strategies for natural resource management. *Integration of management and decision-making processes is what separates integrated coastal management from other sectoral strategies for natural resource management*. The multitude of natural and human processes occurring in the same location requires solutions that have a diverse combination of activities. In Mauritius, an ICZM Committee has been established and deals with all ICZM issues pertaining to the island. Linkages between the ICZM Committee and BBMU will need to be cultivated.

Key requirements for creating an enabling environment for ICRM/ICZM in Blue Bay include:

- Simple and clear regulations that are relevant to communities and are adopted in local ordinances
- Enabling a framework to facilitate the adoption and enforcement of local rules
- Awareness programs aimed at local and national leaders as well as coastal and marine resource users
- Assistance on technical aspects of resource management
- Inter-sectoral collaboration to address land-based threats to coastal and marine habitats

8.3. COLLABORATIVE MANAGEMENT

Collaborative or co-management is defined by The World Parks Congress (WPC), Durban 2004, as a management system for protected areas (as per IUCN Categories I-VI) "*where management authority, responsibility and accountability are shared among two or more stakeholders, including government bodies and agencies at various levels, indigenous and local communities, non-governmental organisations and private operators, or even among different state governments as in the case of trans-boundary protected areas*."

While the definition implies increased local stakeholder involvement in management, it must be stressed that involvement here is not intended to be a process of token participation in which community leaders, for example, have been coerced into agreeing to developments but rather a true process of participatory and transparent power-sharing through collaborative decision-making and implementation with explicit rights and responsibilities.

WPC's "*Recommendation No. 25 on Co-management of Protected Areas*" noted that

> "current efforts to involve indigenous peoples, mobile peoples and local communities in protected area management are often limited to consulting them, asking their help in implementing predetermined activities or assigning to them some 'benefits' (often unrelated to the costs incurred), without effective discussion and negotiation of options. This may be due to various causes, but *lack of supportive policies and capacities are at the root of many failures*. Actions are needed to facilitate: *Understanding the potential of, and obstacles to, co-management approaches*".

A policy and legal review of co-management of protected areas in Mauritius and Rodrigues took an in-depth look at co-management (PMU 2011). The review, which was made under the GoM/ GEF / UNDP Project "*Partnerships for Marine Protected Areas in Mauritius and Rodrigues*", concentrated on the opportunities and constraints to co-management of biodiversity resources. Pointing to the legal ambiguity surrounding co-management in Mauritius, the author noted that "day-to-day management of wildlife and protected areas is generally undertaken by authorised public officers of the State. There is some delegation of management powers over third parties to other than authorised public officers under certain Acts including powers of arrest. However, it is not provided for in all Acts and needs confirming even for the Acts where it is specified" . . . "If such powers can be confirmed then there is opportunity for building partnerships involving private and civil society management of third party use of State owned assets whether or not they are leased".

Effective co-management balances "top-down" with "bottom-up" management approaches. The proposed BBMP co-management framework (*Figure 12*) recognises that the co-management starting point in Blue Bay is low or far to the left in the figure, i.e. "consultative management" at best. In both government and communities, current management practices are predominantly top-down with little or no experience of effective collaborative management.

The current BBMP governance arrangement may be viewed as an early stage of "consultative" management, one of the three main co-management categories. In this case, the *Fisheries Protection Service* (FPS) is required to consult with civil society partners to the co-management arrangement within a formal framework but has the ultimate power to veto decisions. Thus, to "consult" implies that the advice given from partners does not have to be taken. This would be expected to become a stumbling block for any effective BBMP co-management mechanism that is true to the definition.

The governance approach currently being applied at BBMP is government-led, i.e. managed primarily by the government (MoFR / AFRC) under a clear legal framework. In both government and communities, current management practices are predominantly top-down with little or no experience of effective collaborative management. The proposed BBMP management framework recognises that the co-management starting point at Blue Bay may be viewed as an early stage of "consultative" management, one of the three main co-management categories.

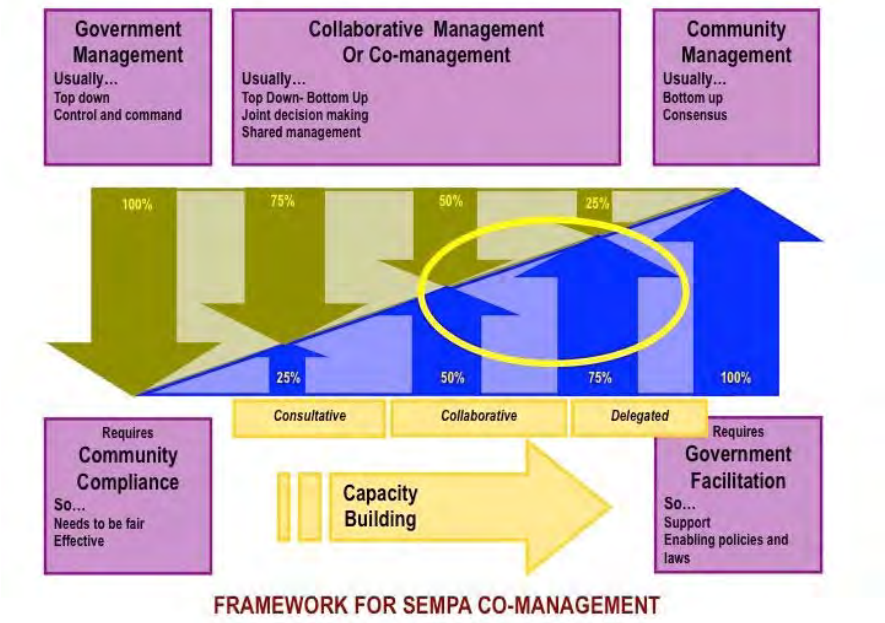

Figure 12: Framework for BBMP co-management (example from SEMPA, Rodrigues)
The oval represents the target of collaborative co-management with the long-term expectation of delegated co-management (UNDP 2011, adapted from Berkes *et al.* 2001).

Experience has shown that co-management is most effective when substantive rights and benefits are devolved at the early stage to community level. If only the responsibilities for management are given without the supporting rights and benefits, then incentives for an effective community role will be insufficient, and failure of co-management is likely. When developing an effective co-management system there is therefore the need to balance a *lack of capacity* with the achievement of substantive *devolution* of rights, responsibilities and authority.

BBMP co-management partners can come from government agencies (e.g., Forestry, Fisheries, Agriculture, Social Affairs, Education), NGOs (e.g., Eco-*Sud*, its *Lagon Bleu* programme [*Appendix K*] and the Mauritius Marine Conservation Society or MMCS), the private sector (e.g., hotels, water sports operators) and mobilised community groups for a variety of environmental awareness and extension services development initiatives.

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