

# PONTA DO OURO PARTIAL MARINE RESERVE



## Management Plan

First Edition





Ponta do Ouro-Kosi Bay Component of the Lubombo Transfrontier Conservation Area

# Ponta do Ouro Partial Marine Reserve

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First Edition

Compiled for:

**The Republic of Mozambique, Ministry of Tourism**

National Directorate of Conservation Areas



Facilitated by:

**Peace Parks Foundation**



*Copies of this Report can be obtained from:*

**Ministry of Tourism, National Directorate of Conservation Areas (DNAC)**

Av. 10 de Novembro, n° 40, Praceta n° 1196, MAPUTO, Telephone: +258 21 303650, Fax: +258 21 306212

**Manager: Ponta do Ouro Partial Marine Reserve**

Cell: +258-82-727-6434

E-mail: [rmppo2009@gmail.com](mailto:rmppo2009@gmail.com)

**Photo Credits:**

Main: Matthew Prophet

Vignettes: Melissa de Kock, Paul Bewsher and Werner Myburgh

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<i>Alessandro Fusari</i>	Minister of Tourism National Directorate of Conservation Areas (MITUR – DNAC)
<i>Craig Beech</i>	Peace Parks Foundation (PPF)
<i>Custodia Banze</i>	Maputo Special Reserve (MSR)
<i>Gilberto Vicente</i>	PPF – MSR
<i>João Roberto</i>	Provincial Directorate of Agriculture
<i>Katrien Van Mechelen</i>	PPF
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<i>Rogério Danúbio</i>	Provincial Directorate of Environmental Coordination (DPCA), Maputo
<i>Rosita Gomes</i>	Provincial Directorate of Fisheries, Maputo
<i>Tiago Nhazilo</i>	PPF

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## ABBREVIATIONS/ACRONYMS

ANAI	Association of the Friends of Inhaca Island
CAP	Community Action Plan
CCA	Community Conservation Area
CITES	<i>Convention on International Trade in Endangered Species</i>
CMBMP	Coastal and Marine Biodiversity Project
CPPPs	Community Public Private Partnership
DNAC	National Directorate of Conservation Areas
DPCA	Provincial Directorate Environmental Coordination
GoM	Government of Mozambique
HWM	High Water Mark
IIP	Institute for Fisheries Research
INAMAR	National Maritime Institute
IUCN	International Union for the Conservation of Nature
KPA	Key Performance Area
LTFCA	Lubombo Transfrontier Conservation Area
MICOA	Ministry of Coordination and Environmental Affairs
MITUR	Ministry of Tourism
MOU	Memorandum of Understanding
MPA	Marine Protected Area
MSR	Maputo Special Reserve
NGO	Non-governmental Organisation
ORI	Oceanographic Research Institute
PAMT	Protected Area Management Team
PPF	Peace Parks Foundation
PPMR	Ponta do Ouro Partial Marine Reserve
SADC	Southern African Development Community
SPC	Strategic Plan for Commercial
TFCA	Transfrontier Conservation Area
UEM	Eduardo Mondlane University

## CHAPTER 1. INTRODUCTION

### 1.1 PROCLAMATION AND BOUNDARIES

The Ponta do Ouro Partial Marine Reserve (PPMR) was proclaimed on 14 July 2009 with key navigational points as set out in the Decree attached as Appendix 1.

The Council of Ministers gazetted the proclamation of PPMR in terms of the Fisheries Law of 26 September 1990, Decree 3/90 (Articles 35 and 69), read together with the Marine General Fishing Law of 10 December 2003, Decree 43/2003 (Article 114) and supported by the Environmental Law of 1 October 1997, Decree 20/97 (Article 11).

The Fisheries Law 3/90 read together with the Marine General Fishing Law foresees the establishment of conservation, preservation and management measures for fishery resources bearing in mind the species and fishing areas as well as the need for the protection of marine mammals and other rare or endangered species.

The Environmental Law 20/97 establishes the general grounds for the regime of biodiversity protection, inhibiting the practice of all activities that are not environmental friendly against conservation, reproduction, quality and quantity of biological resources, especially those classified as threatened, giving authority to the Government to enhance and ensure that measures are taken for the maintenance and regeneration of animal species, recovery of habitats through the control of activities or use of substances prone to harm vegetation and animal species as well as those declared as being rare or under extinction, establishing therefore environmental protection areas.

The PPMR, with a total surface area of 678km<sup>2</sup>, intends to conserve and protect coastal and marine species and their habitats including the primary dunes on the beach stretching from Ponta do Ouro to Inhaca Island, covering the prominent points of Malongane, Madejanine, Mamoli, Techobanine, Dobela, Milibangalala, Membene, Chemucane, Mucumbo, Gomeni, Abril. The PPMR extends on a straight line 100m to the interior with a seaward extent of 3 nautical miles, inclusive of portions of the Maputo Bay to the mouth of the Maputo River (refer Map 1).

### 1.2 DEVELOPMENT OF THE PPMR MANAGEMENT PLAN

The PPMR and the adjoining Maputo Special Reserve (MSR) have been planned collectively through a participative process, yet detailed plans have been prepared for each (refer Figure 1). A description of the stakeholder process including a comments register and documentation is contained in a separate report – *MSR and PPMR Management Plans Consultation and Review Report, May 2010*.

The PPMR and MSR constitute an integrated protected area aimed at conserving and protecting the natural and cultural resources inherent to the region, as well as contribute to the attainment of national conservation targets within Mozambique.

The Management Plan for the PPMR prescribes the management of the Marine Protected Area (MPA) and draws on international and local experience of MPA management, as well as relevant guidelines published by the International Union for the Conservation of Nature (IUCN) and incorporates legal and institutional requirements.

The Plan will be regularly reviewed and appropriately amended to allow for heightened performance in achieving in particular its biodiversity objectives, since the area's biodiversity remains under continual threat as marine fish stocks and resources continue to decline in this area, and will form the foundation for Annual Business Plans and project specific roll-out plans.

For further context of the PPMR within the broader conservation environment, both within Mozambique and the Ponta do Ouro-Kosi Bay component of the Lubombo Transfrontier Conservation Area (LTFCA), the reader are referred to the MSR Management Plan.

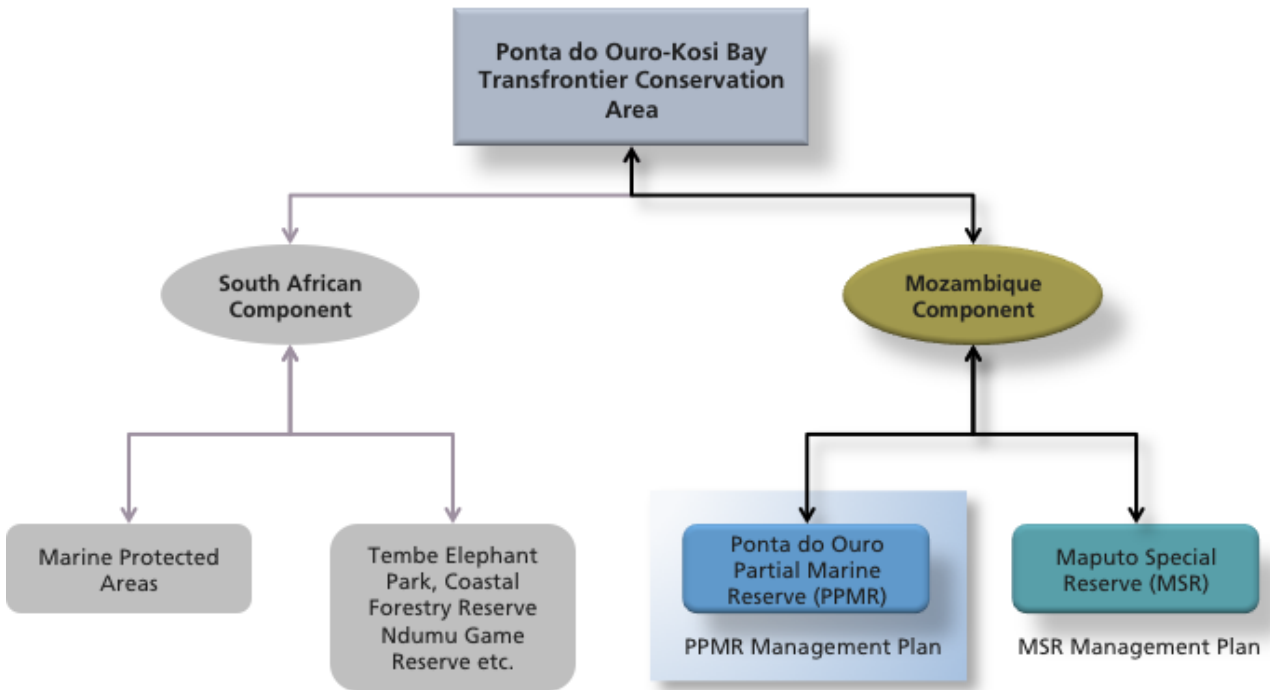


Figure 1: PPMR Context

### 1.3 STRUCTURE AND PURPOSE OF THE PLAN

The plan aims to address three basic components: (1) The Place, (2) The People and (3) The Plan.

**The Place** describes the geography, habitats, fauna and flora, currents, wind and weather, and human settlements and history of the area.

**The People** describes the various role players and their needs and expectations.

**The Plan** sets out the management framework, including the strategic guidelines and strategic business framework for the management of the PPMR. Additionally, it describes the concept development plan as well as institutional arrangements for the PPMR.

The intent of this plan is to, in conjunction with other management mechanisms, protect and conserve the values of the PPMR while allowing for reasonable opportunities to access and use the PPMR by its local coastal communities. The population along the coastline and adjacent to the MSR and PPMR is on the increase thus escalating the demand on marine resources within the MPA.

This management plan serves to inform a variety of stakeholders (including the management agencies) of the purpose and operational framework of the PPMR and will be the basis of the cooperative management agreement between the Ministries of Tourism (MITUR), Fisheries and Transport<sup>1</sup>.

<sup>1</sup> The Ministry of Transport and the National Maritime Institute (INAMAR) have formal mandates that include the licensing and safety surveillance of ski boats within the PPMR. In addition to this, the Ministry of Fisheries has delegated the duties and responsibilities of fisheries compliance to INAMAR to date. As per the proclamation decree, the mandate to manage the PPMR is under MITUR.





## CHAPTER 2. THE PLACE

The various features of the PPMR are discussed in the following section including:

- Geography and Habitat
- Marine Flora and Fauna
- Currents, Wind and Weather
- Human Settlement and Use
- Governance.

The special biological features of the PPMR have been described and researched in the series of collaborative reports compiled by the Oceanographic Research Institute (ORI) with the Eduardo Mondlane University (UEM) and Institute of Fisheries Research, namely unpubl. reports no 129. and 130.

Through the synthesis of this information, consultation with responsible Transmap researchers and Ezemvelo KZN Wildlife and Geographic Information Systems (GIS) experts, a map was derived during the proclamation process of the PPMR depicting the location of these features (refer Map 2).

The various features (e.g. coral reefs, mangroves) depicted on the map are discussed individually. Mapping these layers ensures that the zones and management areas and units are placed in the correct locations (refer section 4.6).

### 2.1 GEOGRAPHY AND HABITAT

#### 2.1.1 Beaches and Rocky Shoreline

The PPMR extends from the coastal town Ponta do Ouro in the south, past Cabo de Santa Maria, a distance of about 86km, to the mouth of the Maputo River. It also includes Inhaca Island, which is separated from the mainland Machangulo Peninsula by the narrow Ponta Torres strait, and its eastern shore adds a further 12.5km of open ocean coastline. The mainland eastern coastline is linear, consisting primarily of extensive sandy beaches interspersed with minor rocky points, and with well-vegetated sand dunes. The rocky shores comprise about 13% of the length of the coastline on the mainland, and consist of wave cut sandstone platforms with large tidal pools and gullies. Most of the rocky shores are submerged at high tide.

The coastline between Ponta Chemucane and Ponta Mucombo is believed to contain the best example of intertidal rocky shoreline. The areas within the multiple use area are being systematically harvested, in what appears to be an unsustainable manner. Observations over three spring tides have shown mussel harvesting on the exposed platforms at Ponta do Ouro. No bag limits exist, and the rate of harvesting certainly exceeds the reproductive potential of these invertebrates (pers. obs. 2007, pers. com. Gullen, 2007). It is suggested that this method of harvesting may have severe negative impacts on the biodiversity of the intertidal rocks (Fennessey and Van der Elst, 2004). This accentuates the need for an intertidal sanctuary zone, as other platforms outside of the restricted area are exploited in the same manner.

#### 2.1.2 Sub-tidal Reefs

Sub tidal rocky reefs extend seawards from the rocky headlands and many of these are encrusted with corals and associated organisms. The main mapped offshore rock and coral reefs include:

- Patch reefs between Ponta do Ouro and Ponta Mamoli
- Ponta Techobanine
- Ponta Milibangalala

- Baixo de Sao João
- Baixo de Santa Maria
- Ponta Torres
- Barreira Vermelha
- Baixo Danae.

A short description of each reef is provided below.

**Techobanine:** Its special structure makes it susceptible to damage. It contains up to 84% coral coverage and is considered to be both unique and the best example in southern Mozambique.

**Milibangalala:** The reefs contain little coral cover, but the high profile rock ridges create aggregation areas for certain pelagic fish species (Schleyer. 2007. pers. com.).

**Baixo de Sao João:** Contains what is termed as intermediate coral cover and warrants protection.

**Baixo de Santa Maria:** No specifics for this reef were found during the collection of the various spatial information.

**Ponta Torres:** Coral cover inside the bay close to Santa Maria at  $S26^{\circ} 04' 07.2''$   $E32^{\circ} 57' 02''$ .

**Barreira Vermelha:** Coral patch off Barreira Vermelha near  $S26^{\circ} 01' 25.2''$   $E32^{\circ} 53' 50.8''$ .

**Baixo Danae:** This reef rises from 40m to 3m below the surface. It is an important concentration point for pelagic game fish species, where catches should be strictly managed according to the National Fisheries Regulations. This reef receives high levels of ski-boat pressure especially during fishing competitions.

### 2.1.3 Mangrove Forests and Intertidal Sand Flats

Inhaca's eastern shores comprise of similar habitat to that of the Machangulo Peninsula while mangroves with intertidal sand/mud flats fringe its western shores.

The area within Maputo Bay, are markedly different, being sheltered from the open ocean unlike the exposed stretch between Ponta do Ouro and Cabo de Inhaca. The shores shelve gradually, are composed of fine sediments, and are lined by mangrove forests and associated flora. These physical oceanographic conditions result in fewer opportunities for coastal eco-tourism and development. Large-scale seine netting and artisanal fishing does occur within this area, owing its less exposed and more protected nature.

Mangrove layers obtained from ORI (Transmap database) were used to depict this widely dispersed habitat type occurring in the Multiple Use Area.

Mangrove sanctuaries are recommended, especially adjacent to the shores of the estuary and along the northern side of Inhaca Island where it is suspected they would protect the shoreline during cyclones, by absorbing the energy exerted by heavy seas.

### 2.1.4 Sea Grass Beds

These are found on the northern and southern inter-tidal sand flats, including a small patch on the western side of Inhaca Island. The sea-grass beds described provide an important refuge for dugongs (*Dugong dugong*) and their protection is therefore very important for the conservation of among other this species.

### 2.1.5 Estuaries

Ponta Dobela is a temporary open system that originates from Lake Piti. The lake breaches periodically connecting it to the sea.

The Bembi River estuary in the bight of the Machungulo Peninsula is strongly affected by the state of the tide. It is lined with Mangroves along its banks and has important nursery functions for many marine fish species that are dependent on it during the later stages of their life cycle.

## 2.2 MARINE FLORA AND FAUNA

### 2.2.1 Beaches

The coastal dunes are generally well vegetated, with the primary colonisers including *Ipomoea brasiliensis* (goat's foot), *Scaevola plumiera* and *Arcotheca populifolia*. The coastal bean bush, *Sophora inhambanensis* is also common on the dunes.

Ghost crabs (mostly *Ocypode ryderi*), mole crabs (*Emerita austroafricana*) and whelks (*Bullia natalensis*) dominate the macro fauna, which inhabit the sandy shores (Robertson *et al.* 1995). Beach traffic, has a detrimental effect on sizes and densities of ghost crab populations. Utilisation of this resource predominantly as a bait source for fishing from the beaches has resulted in lower densities in the south of the PPMR between Ponta do Ouro and Ponta Techobanine, with highest densities between here and Ponta Chemucane. Once again, their numbers decrease because of harvesting from Ponta Mucumbu to Cabo Santa Maria (Prophet pers. obs. 2007, 2008).

Mole crabs (mainly *Emerita austroafricana*) are also significantly more abundant and larger adjacent to the MSR. Despite a survey by Robertson *et al.* (1995), that produced little evidence of harvesting of sandy beach organisms by coastal communities, this is no longer the case. A population increase and resultant demand for protein has led to local people harvesting these and other organism along the coastline. Harvesting of shellfish over springtides at the more populated points is a regular occurrence and has resulted in many species being virtually completely removed above the low tide mark.

Two species of turtle nest along the beaches from October to January between Ponta do Ouro and Inhaca Island, namely the loggerhead turtle *Caretta caretta* and the leatherback turtle *Dermochelys coriacea*. Hatching occurs from December to April each year. The main nesting area is between Ponta Malongane and Ponta Chemucane. Robbing of turtle nests and killing of turtles occurs, mainly by individuals within the local communities. The most vulnerable areas seem to be between Ponta do Ouro and the South African border (Prophet, pers. obs. 2008) - Ponta Techobanine and the areas north of Ponta Chemucane also experienced turtle poaching by local communities.

A concerted turtle monitoring effort occurs over the border in South Africa within the Maputaland MPA where Ezemvelo KZN Wildlife's monitoring programme records about 590 nestings each year (Hughes, 2002). Based on mark and recapture data, the turtles do migrate across the border, suggesting that the entire region from St. Lucia to Inhaca represents a turtle-nesting zone. Turtles are CITES listed species and are a priority in terms of protection and monitoring are concerned.

Indian bottle-nose dolphin and humpbacked dolphins occur in Maputo Bay and the coastal waters, and humpback whales *Megaptera novaeanglia* offshore.

De Boer (2000) has described harvesting of organisms in the Mangrove/mudflat habitat of Inhaca, and the techniques and harvested organisms are the same on the western shores of the Machungulo Peninsula. Harvesting on the northern shores of the MSR is limited owing to lack of settlements, since there is not much high ground, i.e. it is not inundated or semi-swamp. There is also difficulty in accessing the shore through the dense Mangrove forest.



In 1995, numbers of subsistence fishers on Inhaca were estimated at about 320, and about 40 on the Machangulo Peninsula (IDPPE, unpublished data). This figure has; however, undoubtedly increased in the past 14 years (refer *MSR and PPMR Community Action Plan - CAP*).

Fishing boats from the Machangulo Peninsula, based at Santa Maria, Inhaca and Maputo, operate in the area (Hatton 1995). Harvesting of fish occurs by means of spearing, hook and line, traps, deep and shallow gill nets and beach seines. Semi-industrial trawlers from Maputo also operate where water depths permit, targeting penaeid prawns. The main fish species caught in the eastern part of Maputo Bay are purse-mouths, mullets and sea breams (*Sparidae*), and the Inhaca fishery appears to be over-exploited (de Boer 2000).

Collection of marine invertebrates by women and children is by hand, and is determined by tidal state. Their catch is mainly comprised of swimming crabs (*Portunidae*) and bivalve and gastropod molluscs (Fennessy and van der Elst 2004).

### 2.2.2 Rocky Shores

In the Kosi Bay area, which lies immediately to the south of Ponta do Ouro, large quantities of brown mussels, red bait *Pyura stolonifera*, oysters *Striostrea margaritacea* and limpets *Patella pica*, as well as a variety of other organisms, are harvested by coastal communities (Kyle *et al.* 1997). Along the Transkei coast in South Africa, areas that are completely cleared of mussels may not be re-colonised even after eight years (Dye 1992). Artisanal and subsistence harvesters frequently scrape mussels from the rocks, leaving large areas of bare rock. Clearing of areas of mussels has been shown to cause a small-scale, virtually irreversible change from a mussel community to a seaweed or limpet dominated community (Dye 1992). Thus this method of harvesting may have a severe impact on the sustainability of the harvest, as well as on biodiversity of the intertidal rocks (Fennessy and van der Elst 2004).

Intertidal mussels, limpets, redbait and oysters are generally low in abundance along this coastline (Robertson *et al.* 1996). Mussels are relatively more abundant at Ponta Milibangalala and Ponta Chemucane than at Ponta do Ouro and Ponta Malongane.

Limpets are most abundant at Ponta do Ouro, Ponta Malongane and Ponta Dobela. There is little redbait in the intertidal zone, although this animal is abundant sub-tidally (Fennessy and van der Elst 2004).

Populations of these useful low-density resources have been diminished drastically over the years and the need for a concerted effort to educate local subsistence users within the PPMR cannot be overemphasized. The unfortunate reality to date has been that these communities have been allowed to denude the resource, almost completely.

No regulations have applied to subsistence users in past years. Of key importance is the understanding of the commitment required by the Government of Mozambique in terms of applying the regulations of the declared PPMR.

About 13% of the coastline between Ponta do Ouro and Ponta Abril is rocky shore (Robertson *et al.* 1996). Algal moss/turf, beds of *Sargassum* spp., mussel beds, coralline turf and barnacle flats grow on these rocks. Small numbers of coastal oysters *Saccostrea margaritacea* occur sub-tidally. Sun oysters (*S. cucullata*) are rare because of the scarcity of rock above the mid-high tide level (Fennessy and van der Elst 2004).

Seaweeds occur in three main zones in the intertidal area (Bandeira 1995). The upper zone is dominated by *Padina boryana*, *Colpomenia sinuosa* and some filamentous algae. The middle zone includes common species such as *Anadyomene wrightii*, *Gelligiela acerora*, *Haliptylon subulata*, *Hormpophysa triquetra*, *Hypnea* spp. *Sargassum* spp and *Valonia macrophysa*. Rocky pools, which are common in this zone, contain the sea grass *Thalassodendron ciliatum*. The third zone is dominated by *Sargassum* and

*Gracilaria* spp which occur mostly in the sublittoral area (Bandeira 1995). The rocky shores on the east and south-east coast of Inhaca have similar communities (Kalk 1995).

Robertson (1996) suggested that sand scouring was the most important physical factor affecting the distribution and abundance of intertidal organisms on the coast of southern Mozambique; however, removal by subsistence gatherers has increased dramatically over the past years and is far greater force now.

On Inhaca, de Boer (2000) found that mussels were no longer being harvested, probably because of over-exploitation and a lack of suitable habitat.

### 2.2.3 Sub-tidal Reefs

While the total reef area in Mozambique has been estimated at around 1 900km<sup>2</sup> (Spalding *et al.* 2001), the reef area in southern Mozambique is only around 5km<sup>2</sup> (ORI, unpublished data). The reefs in the southern area can be broadly categorised into three types (Pereira 2003): (1) massive, "barren" rocky reefs, with minimal coral cover; (2) flat, shallow ledges, dominated by soft corals, and with abundant fish life, particularly small species; and (3) flat deep ledges also dominated by soft corals but with extensive areas of hard coral and fewer fish.

Corals are generally found in tropical to sub-tropical waters from the intertidal zone to a maximum depth of about 45m, depending on water clarity (Dubinsky 1990). The symbiotic algae on which many corals are partly dependent for food require light for photosynthesis, and turbidity therefore limits the depth distribution of corals to a maximum of 30m.

The southern Mozambique reefs are amongst the highest latitude coral reefs in the world, and, as marginal reefs, they exhibit characteristics that make them unique. Although turbidity is generally low because of reduced riverine input, the reefs are exposed to strong wave action and currents, which are powerful determinants of invertebrate community composition. The reefs can be classified as patch reefs, with corals growing as a thin veneer on sandstone substrata formed from fossilization of Pleistocene coastal sand dunes (Ramsay 1994, 1996), i.e. they have not been formed by reef-building corals. Most reefs run 1 to 2km offshore, parallel to the coastline. They are not exposed at low tide, and are low in profile, i.e. without major drop-offs and reef crests. They vary in width between 10 and 600m. The longest being the Techobanine complex starting in about 5m of water extending northwards for about 18km between Ponta Techobanine and Ponta Dobela.

Robertson *et al.* (1996) examined reefs between Ponta Abril and Ponta do Ouro in the survey. From Milibangalala northwards, reefs had very little coral cover, while the Techobanine reefs had the highest – up to 84% soft and hard coral cover combined. The reefs off Malongane were next highest in terms of coral cover, while reefs off Ponta do Ouro and the Sao João shoal reefs were intermediate. Soft corals provide the dominant benthic cover on the reefs between Milibangalala and Ponta Do Ouro, particularly those that were shallower and exposed to swell-generated turbulence with associated higher sedimentation (Schleyer 1999, Pereira 2003). However, on the Techobanine reefs, hard corals predominated. Hard coral cover was also higher on deeper reefs (>20m). Alcyonacean corals of the genera *Sinularia* and *Lobophytum* dominate the soft coral community, and the hard coral community mainly comprised Scleractinia of the genera *Acropora* (branching and foliose forms) and *Montipora*.

The Techobanine reef complex is considered the best in southern Mozambique and of unique biological value. It is a deeper reef and has a coral community that is diverse, including extensive patches of branching and tabular *Acropora* species or, alternatively, patches of foliaceous *Montipora* species, interspersed with mixed hard and soft coral communities. The reef is rendered susceptible to damage by virtue of the sensitivity of the afore-mentioned Scleractinia. It clearly does not fit comfortably in the reef categorisation of Pereira (2003) and warrants special protection in view of its susceptibility to

damage, its extent and its unique value in southern Mozambique, being the best representative of high latitude coral reef communities in the country. It is for this reason that approximately two thirds of the Techobanine reef now falls within the Techobanine Sanctuary, thereby ensuring its protection.

Apart from forming substrata for corals, the shallower inshore reefs also provide a habitat for several edible invertebrates, e.g. rock lobsters (*Panulirus* spp.), mussels, oysters, red bait and limpets. These sub-tidal populations help support intertidal populations harvested by coastal subsistence communities (Kyle 1992).

Five palinurid rock lobster species *Panulirus homarus*, *P. longipes*, *P. penicillatus*, *P. ornatus* and *P. versicolor* occur within the area, albeit at low densities with *P. homarus* being the most common.

Although not abundant (apart from red bait), these sub-tidal populations may greatly reduce the impact of harvesting, as they represent a protected reproductive stock that can supply larvae to areas where exploitation occurs, thereby reducing the risk of over-fishing. These sub-tidal organisms are not harvested, with the possible exception of rock lobsters, some of which may be collected by tourist divers.

The fish fauna of the sub-tidal reefs is very diverse, with 376 species identified to date (Pereira *et al.* 2004). They mostly comprise widely distributed Indo-Pacific species, with some southeast African endemics. Nocturnal and cryptic species have not been well described. Species composition varies from reef to reef, depending on the nature of the reef (structure, substratum, depth). Small species such as wrasses, goldies, damsels and angelfishes were more abundant on shallower reefs, while larger, predatory, piscivorous fish such as rock cods, snappers and kingfishes were both more abundant and diverse on the deeper ones. On Techobanine, small fish diversity was similar to the shallower reefs, but abundance was generally lower, apart from the butterfly fishes *Chaetodon* sp. which were more abundant because of their close association with hard corals.

There are similarities in the ichthyofauna between southern Mozambique and the Maputaland coastline of South Africa. In many cases, there are transboundary movements between stocks on either side of the national border. In an ongoing comprehensive fish tagging study conducted by the ORI the following species have to date been recorded a migrating across the border:

- Spotted ragged-tooth shark - *Carcharodon carcharias*
- Sailfish - *Istiophorus platypterus*
- giant kingfish - *Caranx ignobilis*
- king mackerel - *Scomberomorus commerson*
- brassy kingfish - *Caranx papuensis*
- large-spot pompano - *Trachinotus russeli*.

#### 2.2.4 Mangrove Forests and Intertidal Sand Flats

The western shores of the Machangulo Peninsula and the northern boundary of the MSR abut onto Maputo Bay. There are extensive areas of Mangrove forest, and five species have been recorded:

- *Avicennia marina*
- *Rhizophora mucronata*
- *Bruguiera gymnorrhiza*
- *Ceriops tagal*
- *Lumnitzera racemosa*.

The same species, apart from *L. racemosa*, also occur on Inhaca Island in the southern and northern bays. *A. marina* is the dominant species, with a succession change in zoning depending on tidal inundation. De Boer (2000) notes that the Mangrove areas on the Machangulo Peninsula, the northern boundary of the MSR, and on Inhaca have increased by about 10% since 1958.

The Mangroves and associated mudflats and sea-grasses are a nursery area and habitat for a myriad of fish and invertebrate species, including the commercially valuable penaeid prawns (de Freitas 1984). Kalk (1995) and de Boer (2000) provided a comprehensive description of these fauna in the Inhaca area. Other fauna here include polychaete worms, acorn worms, echinoderms such as sea urchins, starfish and sea cucumbers, bivalve and gastropod molluscs, shrimps and prawns, and crabs.

The fish population in the bay is dominated numerically by the gobies, although purse mouths, mullets and rabbit fish are also common. The most common birds are whimbrels, sand pipers, gulls and terns (Fennessy and van der Elst 2004).

### 2.2.5 Sea Grass Beds

Nine (9) species of sea grasses occur around Inhaca, making up 75% of the total number of seagrass species occurring in Mozambique and 16% of the 58 world wide seagrass species. Seven (7) seagrass community types were identified within the MPA: *Thalassia hemprichii*, *Zostera capensis*, *Cymodocea serrulata*, *Thalassodendron ciliatum*, *Cymodocea rotundata*, *Cymodocea serrulata* and *Halophila ovalis*. Overall, seagrasses covered around 50% of the entire intertidal area around Inhaca.

In addition to species like sea urchins, sea stars, etc., the seagrass areas are very important for the presence of dugongs, *Dugong dugong*. The endangered dugong (*Dugong dugong*) was reported to occur in the shallow waters of Maputo Bay. Guissamulo (1993) estimated the herd to comprise less than 15 individuals. Two adults and a juvenile were sited near Hell's gate (Cabo Santa Maria) during 2007 (Strydom pers. com.), a single adult in the same location in May 2008 (Prophet, pers. obs. 2008). Despite these sightings no other records of herd, sightings have been recorded.

Examples of other key animals in this habitat include worms – *Balanoglossus studiosorum*, *B. Hydrocephalus*; sea cucumber - *Holothuria scabra*, *H. Atra*, *H. Leucospilota*; snails – *Cypraea annulus*, *C. helvola*, *Conus lividus*; bivalves – *Eumarcia pauperula*, *Trachycardium flavum*, *Anadara antique*; Crustacea – *Portunus pelagicus*, *Alpheus crassimanus*, *Penaeus semiculatus*, *Hippolyte sp.*; and anemone – *Heteractis magnifica*.

### 2.2.6 Estuaries

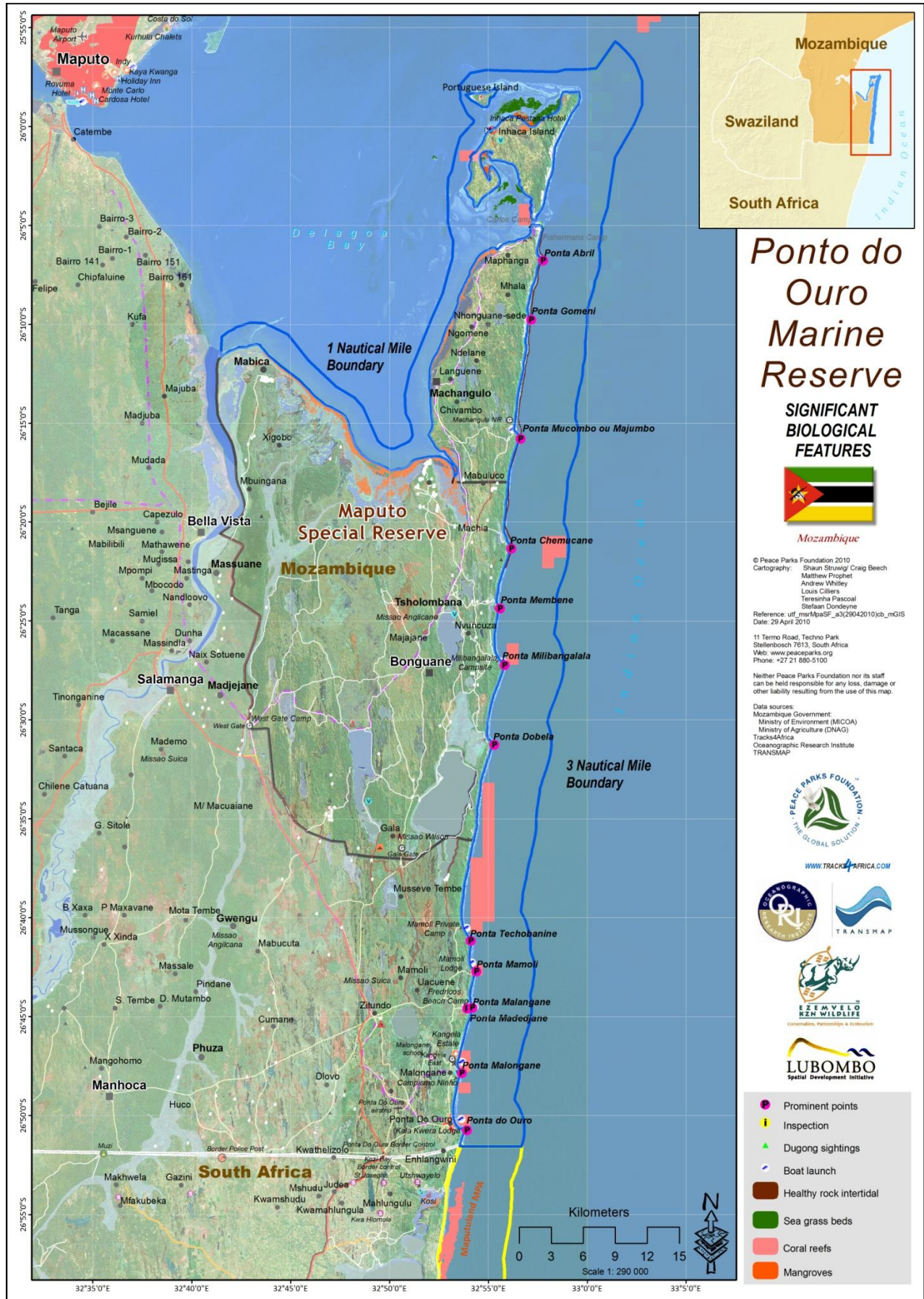
Estuary systems are important in terms of the nursery function that they fulfil. More than 50% of marine fish species depend on estuaries within their lives in some way or another.

Some species are estuary dependent too. Protection of estuaries is essential for fish conservation as many species that spend their initial two years here, are also vulnerable to overfishing at this stage. Exploitation of stock during the sub-adult phases within estuaries effects recruitment into the adult population in the sea later on.

When temporary systems like the Dobela Estuary breach, fish larvae, which use the changes in salinity as olfactory cues, are guided into the system, where they grow into adults, safe from predators and with an abundance of food (Whitfield, 2000). Once mature, these fish are then able to return to the sea to spawn. This is the general pattern with most estuaries sharing Dobela's characteristics.

River snapper *Lutjanus argentimaculatus* have also been recorded in this system.





Map 2: Significant Biological Features

## 2.3 CURRENTS, WIND, AND WEATHER

The continental shelf extends about 6NMs offshore with the easterly seaward boundary extending to 3NMs (Technical proposal, draft 5, September 2008).

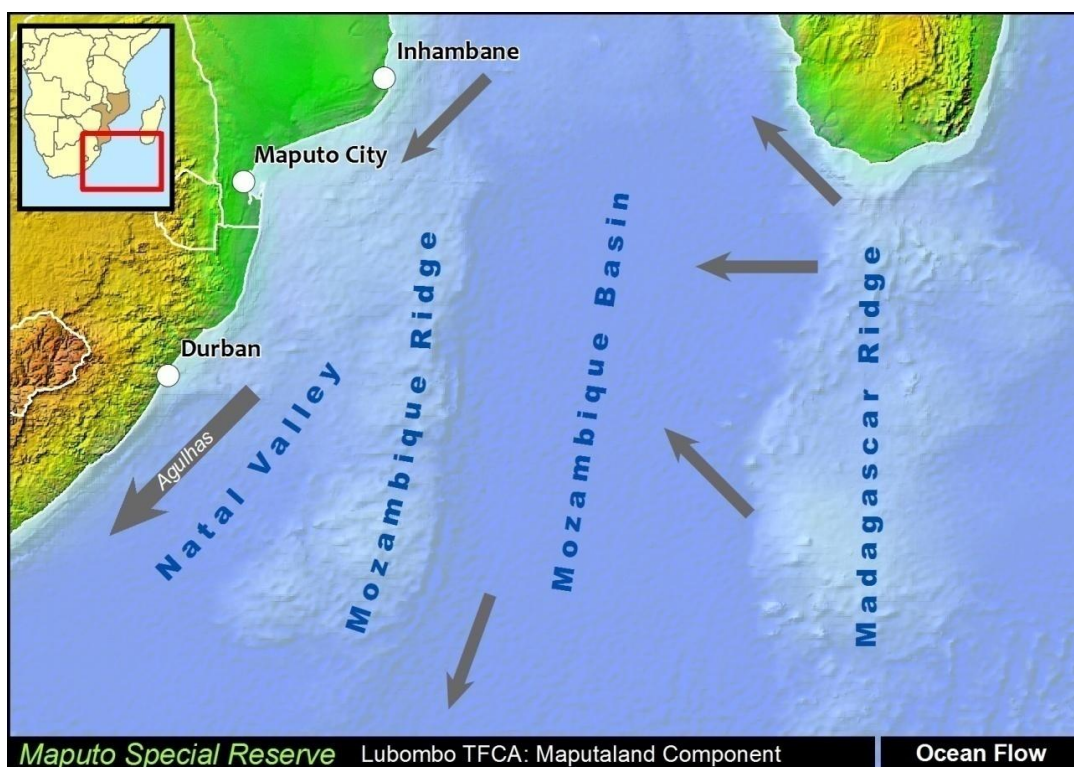
The area is strongly influenced by the warm Agulhas Current, which flows in a southerly direction, reaching mean peak velocities of  $1,4\text{ms}^{-1}$ . Inshore counter-currents flowing to the north are also common but tend to flow at less than  $0,25\text{ms}^{-1}$ . The prevailing long-shore winds blow with the current or against it, generating large waves in the latter case; southerly swells are predominant, attaining a height in excess of 5m (refer Map 3).

The tidal cycle is semidiurnal (two high tides and low tides per day) and the tidal range lies between 1.8m and 2.4m (Kalk 1995).

Within the Maputo Bay there are two distinct water masses in the bay: (i) oceanic, in the eastern side and (ii) estuarine, in the western side. The residual circulation is clockwise so it helps maintaining the two water masses distinct by preventing the intrusion of the freshwater from the western side to the eastern. The estuarine water hardly propagates to the eastern side. The bay can be considered as a dual ecosystem: estuarine (in the west) and marine (in the east). This makes the Maputo Bay a biodiversity rich area.

The coastal water is oligotrophic (poor in nutrients) since terrestrial input is minimal as no major rivers enter the sea in the area. The western shores of Inhaca Island and the Machangulo Peninsula are washed by water derived from Maputo Bay, which carries a high load of terrigenous material from the several rivers that drain into the bay.

Rainfall is in the region of 900mm per year, falling on about 110 days per year but mostly in January and February. The annual mean sea surface temperature for the area is  $24^{\circ}\text{C}$ , ranging from  $22,5^{\circ}\text{C}$  in winter to  $26,4^{\circ}\text{C}$  in summer. Higher temperatures are recorded in the southern and western bays of Inhaca because of the sheltered nature of the waters there.



Map 3: Ocean Flows



## 2.4 HUMAN SETTLEMENT AND USE

Demographically, Maputo Province is comprised in its majority by the Tsonga ethnic group. Within this, the Changanas, Bitongas, Chopes, Matsuas, and Rongas are found. The Rongas are native to the southern portion of the Province and predominantly distributed within the Districts of Manhiça, Marracuene and Matutuine.

In 1996, about 49 000 people inhabited the Matutuine District, which has an area of about 5 400km<sup>2</sup>, and hence a low average population density of 9 people per km<sup>2</sup>. The 2007 population census places the population at approximately 37 000. There are more than 5 000 people in the Machangulo Peninsula, and there were about 7 000 people on Inhaca in 1998. The residents of the district are mainly small-scale farmers and subsistence fishers, who use a wide range of natural resources. Many of the men on the mainland immigrated to South Africa to look for work during the civil war, but many returned with the cessation of hostilities.

The livelihood of families is still heavily dependent on women, who mainly practice slash and burn agriculture, and who also collect natural resources such as firewood, fruit, inter-tidal organisms, building materials and water. Men practice hunting and fishing.

Harvesting of fish from the shore occurs by local subsistence fishermen and sport fishermen using hook and line. The former sector tends to catch smaller rock-associated fish such as stone bream *Neoscorpis lithophilus*, grey grunter *Pomadasys furcatum* and blacktail *Diplodus sargus capensis*, while the latter targets wave Garrick *Trachinotus botla*, stumpnoses *Rhabdosargus spp.* and kingfish *Caranx spp.* Some spearing of fish by tourists occurs, mainly targeting king mackerel and barracudas. There is substantial participation in fishing by sport fishermen on ski boats – this sector mainly targets pelagic species such as tunas, king mackerel *Scomberomorus commerson* and kingfish, although demersal, reef-associated species are also caught (van der Elst *et al.* 1996).

Further information on the community living in and around the MSR and PPMR and their resource use and livelihood strategies the reader is referred to the *MSR and PPMR CAP*.

Land ownership is complex and the boundaries often difficult to determine, being a mixture of Traditional Chiefs, MSR, and Ministry of Transport Concessions.

The coast is largely undeveloped. The town of Ponta do Ouro has a few shops, a petrol station, hotel, a resort comprising chalets and campsites, and a small resident population with various diving operators. The towns of Zitundo, Salamanga and Bela Vista lie inland on the road from Ponta do Ouro to Maputo.

In addition to houses for local people, tourist resorts have developed at Ponta do Ouro and Ponta Malongane. Ponta do Ouro accommodates people in a hotel, self-catering chalets and houses, guest-houses, scuba diving camps and in campsites. The resort at Ponta Malongane (Parque de Malongane) has chalets and camping facilities. Adjoining Malongane is the residential Kangela Estate comprising several privately-owned houses, and a full-board residential resort has been developed at Mamoli.

The MSR has stopped camping at Ponta Dobela and Ponta Chemucane and has a rudimentary campsite at Milibangala.

The Panorama tourist resort which now extends from Mucombu to Ponta Abril is nearing its completed stages. This development was being planned in 2004 when the Machangulo Peninsula's eastern beaches were remote. New roads have been made and at least 30 large timber frame homes have been constructed, many of which occur with 100m of the HWM (Prophet pers. obs. 2008). Impact on breeding turtles will occur, caused by lighting.



MSR begins at Matonde, 21km north of Ponta Malongane, and extends northwards for 34 km and inland for about 30km, covering an area of approximately 80 000ha. The Reserve is unfenced and about 1 000 people inhabited the area in 1996 (Robertson *et al.* 1996). Immediately to the south of the South Africa/Mozambican border lies the iSimangaliso Wetland Park, a world heritage site containing the Maputaland and St Lucia Marine Reserves.

## 2.5 GOVERNANCE

The structures of Government as well as the TFCA institutional arrangements for the PPMR are the same as for the MSR and information relating to this is contained in the *MSR Management Plan*. The specific legislation, however, that pertains to the PPMR at international and national level is set out below.

### 2.5.1 Legal Framework

#### 2.5.1.1 International

The relevant international legislation and protocols relevant to the PPMR are:

- Convention on Wetlands of International Importance – RAMSAR Convention
- Convention on International Trade in Endangered Species of Wildlife Fauna and Flora – CITES
- Convention on the Conservation of Migratory Species of Wildlife Animals - Bonn Convention
- United Nations Convention on the Law of the Sea – UNCLOS - The Law of the Sea Convention defines the rights and responsibilities of nations in their use of the world's oceans, establishing guidelines for businesses, the environment, and the management of marine natural resources
- Convention on the Control of Transboundary Movements of Hazardous Waste and their Disposal – Basel Convention
- UN Convention on the Law of the Sea which gives coastal states jurisdiction over their inland waters, territorial seas (out to 12 nm from the coast) and Exclusive Economic Zone (EEZ) (200 nm or 370 km from the coast) provided they do not infringe the right of innocent passage by foreign ships
- Convention on Biological Diversity, which requires that signatory states or 'Parties' establish protected areas – *this convention is an international treaty to sustain the diversity of life on Earth*
- Cartagena Protocol on Biosafety is a supplementary agreement to the Convention on Biological Diversity. The Protocol seeks to protect biological diversity from the potential risks posed by living modified organisms resulting from modern biotechnology
- The Nairobi Convention for the Protection, Management and Development of the Marine and Coastal Environment of the Eastern African Region, which requires that signatory states in the Western Indian Ocean establish MPAs.

#### 2.5.1.2 National

The relevant national legislation and protocols relevant to the PPMR are:

- Constitution 1990
- Environmental Act 1997, Decree 20/97
- Fisheries Law 1990, Decree 3/90
- Marine General Fishing Law 2003, Decree 43/2003
- Memorandum of Understanding (MOU) between Ministry of Fisheries, National Maritime Institute (INAMAR), and Ministry of Coordination and Environmental Affairs (MICOA)
- Regulation to Prevent Pollution and Coastal and Marine Environment Protection, Decree 45/2006
- Amateur Dive Regulation, Decree 44/2006
- Forest and Wildlife Law, Decree 10/99
- Sport and Recreational Fishing Regulation, Decree 51/99
- Fisheries Minister Dispatch, 23 April 2002, banning the catch of both coral and ornamental fish within Mozambique waters and acquisition, transport, manipulation, processing and commercialisation of coral and ornamental fish.

## CHAPTER 3. THE PEOPLE

Various stakeholders and role players representing the different communities of interest have an important role to play in ensuring the success of the PPMR. These include:

- Resource Managers
- Business and other Users
- Land Users and other Beneficiaries
- Government (refer Figure 2).

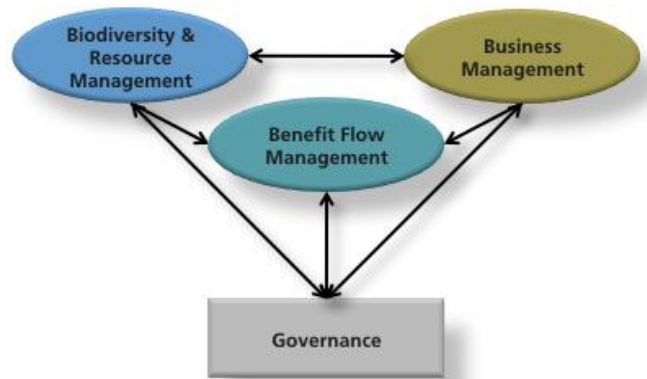


Figure 2: Communities of Interest

### 3.1 STAKEHOLDER GROUPS

#### 3.1.1 Resource Managers

Within the current Protected Area Management Structure the PPMR Manager reports to the MSR Manager who in turn reports to MITUR.

The needs and expectations of the resource managers include the attainment of national goals and objectives, as well as compliance with the various international conventions that Mozambique is signatory to.

#### 3.1.2 Beneficiaries

Through improved management and operations benefits will accrue to both traditional communities as well as development areas and their people (refer Map 4).

The traditional communities affected by the PPMR include :

- Maphanga
- Nhonguane
- Ndelane
- Machangulo
- Chivambo.

Development areas affected by and impacting on the PPMR include:

- Santa Maria
- Ponta Mamoli
- Ponta Malangane
- Ponta do Ouro.

The needs and expectations of this sector include access to resources, access to alternative livelihoods where conservation initiatives restrict use, and equitable opportunities to benefit from resource utilisation in the region.



Map 4: Affected Communities

### 3.1.3 Business Community

Ranging from large multi-national corporations to small local businesses, the area surrounding the PPMR attracts a diverse range of investors and operators. These include small artisanal fishermen to large tourism and residential operators, servicing an international market, as well as a broad suite of farmers aiming to eke a living through agriculture and livestock.

The needs and expectations of this sector include clarity regarding investment opportunities, concessions and service agreements enabling the unlocking of the ecotourism potential of the area. The creation of an environment conducive for investment is of paramount importance, as are clear operational guidelines and standards.

### 3.1.4 Government

The stakeholders at the National level are:

- MITUR
- Ministry of Fisheries and INAMAR
- MICOA
- Ministry of Finance
- Ministry of Public Works and Buildings
- Ministry of Planning and Development
- Ministry of Defense
- Navy
- UEM.

The stakeholders at the Provincial level area:

- Agency for the Development of the Elephant Coast
- Provincial Directorate of Industry, Commerce and Tourism
- Provincial Directorate of Agriculture
- Provincial Directorate of Fisheries
- Provincial Directorate of Planning and Finance
- Provincial Directorate for Environmental Coordination
- Provincial Directorate of Transport and Communication
- Provincial Directorate of Public Works and Buildings
- Independent Battalion of Boane
- Provincial Directorate of Education and Culture.

The Stakeholders at the District level are:

- District Services of Economic Activities
- District Services for Planning and Infrastructures
- District Services for Education, Culture, Youth and Technology.

The Government sector expects to attain national goals and objectives through its interactions with resource managers, private sector and local communities.

## CHAPTER 4. THE PLAN

### 4.1 MANAGEMENT FRAMEWORK

The framework for management and implementation of the PPMR Management Plan is based on a process-based management system approach consisting of a set of strategic guidelines and a strategic business framework (refer Figure 3).

The **strategic guidelines** for the PPMR consist of a Vision, Mission and Broad Objectives in response to the broader objectives of the GoM as well as local threats and challenges.

The PPMR Broad Objectives forms the Key Performance Areas (KPA) of the strategic business framework and include Resource Management, Business Management, Benefit Flow Management and Governance.

The **strategic business framework** consist of specific objectives for each of the KPAs for which a rationale, strategies, action projects, indicators and responsibilities are provided and guides progress from a current state to a future desired state, noting the responsibilities have been apportioned according to the proposed institutional arrangements for the MSR and PPMR.

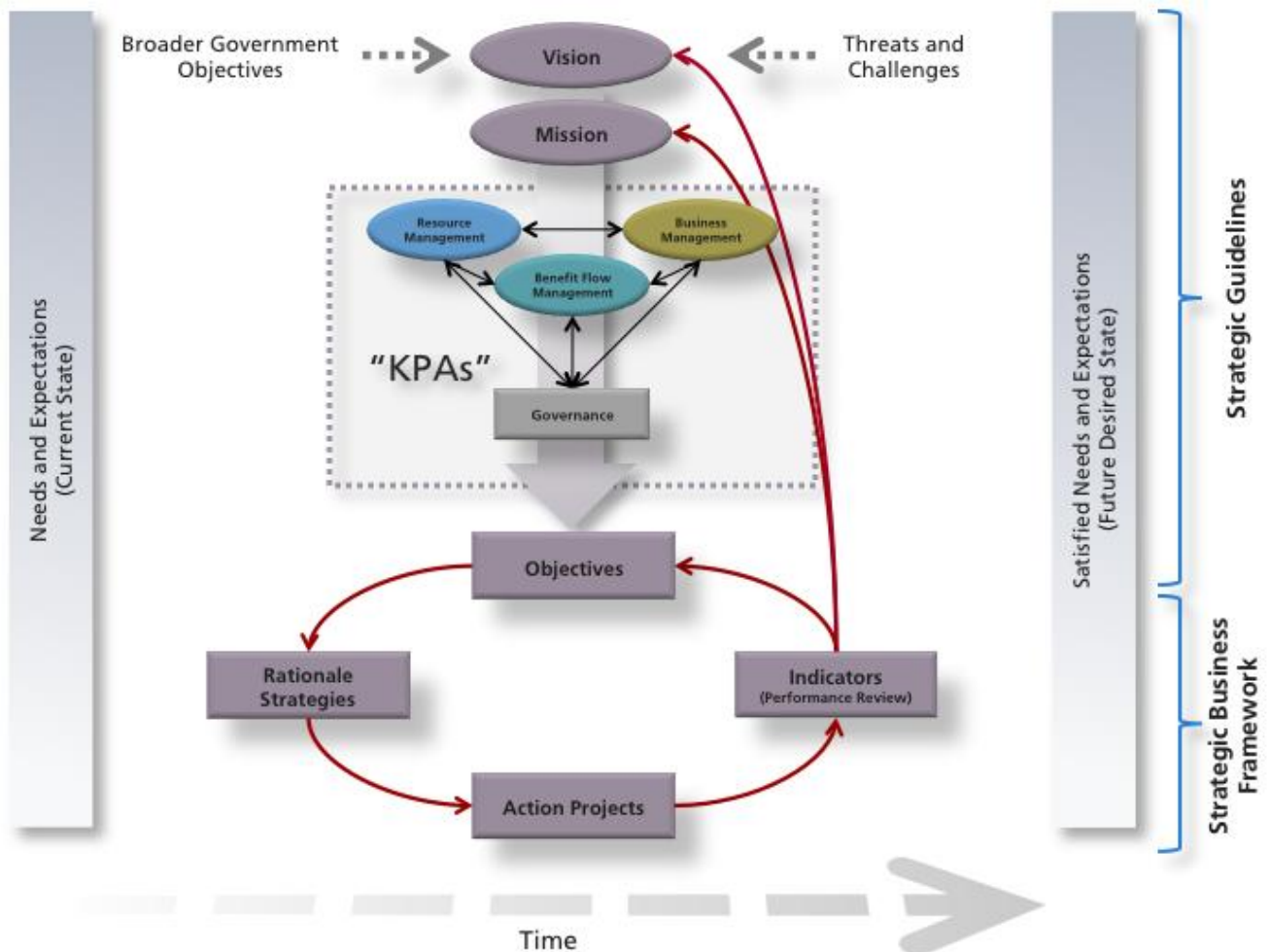


Figure 3: Management Framework



## 4.2 THREATS AND CHALLENGES

The PPMR is a popular area amongst foreign tourist and developers. There has also been an influx of Mozambican people into this area since the civil war ended with Tonga (Zulu speaking) communities scattered along the coastline.

This scenario has resulted in a wide range of user activities occurring within the area, many of which threaten the areas conservation status. If left unchecked these activities would result in the further degradation of the PPMR. It is for this reason why stringent management actions must take place to protect and maintain the PPMR, so that natural heritage is maintained and eco-tourism responsibly developed.

The following critical areas requiring management interventions for PPMR to meet its objectives are addressed:

- Fishing
- Scuba diving
- Use of vessels/Launch site management
- Dolphin and whale watching
- Shark diving
- Coastal development
- Community pressures.

### 4.2.1 Fishing

Uncontrolled over-fishing reduces the stocks of fish species, which are one of the key attractions of the PPMR. However, fish are not an inexhaustible resource - many of the coastline's important fish species have been exploited to the point where less than 50% of their original stock in all probability remains.

Fish distribution is determined by habitat preferences, water temperature, currents and food availability. Fish are able to move freely in and outside of proclaimed marine reserves, thus complicating their protection. Exploitation of fish species outside marine reserves undoubtedly reduces populations as it impacts recruitment back into reserves.

### 4.2.2 Scuba Diving

At present scuba diving takes place mainly within the Scuba diving management area. However, with increasing numbers of Scuba diving businesses additional Scuba management areas might be required or closed, thereby allowing for resource protection or to separate user groups to ensure that the natural resources are protected, user-conflicts are reduced, and to ensure safety for all user groups.

### 4.2.3 Use of Vessels/Launch Site Management

The management of boats and their activities within the PPMR is important in terms of all spheres of maintaining the PPMR's integrity. The range of impacts derived from boating varies from exploitation of resident fish stocks, the number of divers in the water, noise levels, to human safety etc. It is therefore important that boating pressure or threats be reduced to a minimum.

Jet-skis or personal watercraft is highly mobile, fast craft that can be operated easily, even by inexperienced seaman. They are easy to launch, transport, and provide access to the sea by anybody who can afford them. It is for this reason that jet skis, also known as personal watercraft, has become a problem within the confines of the PPMR.

In South Africa, stringent laws exist relating to the use of these craft, which are banned from all marine reserves. Jet-skis have a place, in terms of rescue craft, as they are quick and easy to launch and are very sea worthy; however, their mobility and speed combined with the skills of the normally inexperienced operators conflicts directly with the values of the PPMR. Jet-skis are used purely for high speed racing by their operators in the area, who play in the surf zone with them where they are a constant threat to swimmers, snorkelers and surfers who are enjoying themselves and the environment. Furthermore, they frequent the bays in which scuba diving operators launch. It has been seen that this user group shows no respect for other marine reserve users and race about oblivious to the consequences of their actions which are:

- Production of high noise levels
- Danger to swimmers, snorkelers, surfers and kite-surfers
- A constant disturbance to dolphins and whale sharks
- Output of fumes and oils into the sea around the bathing areas, especially during high season
- Disregard for the laws and rules of the sea.

These user groups do not interfere with jet-ski users, so it would be a matter of removing one user group for the benefit of all the others.

#### 4.2.4 Dolphin and Whale Watching

Dolphin watching between Ponta do Ouro and Ponta Malongane has become a popular tourist activity in the area with four dolphin watching businesses operating in the area. Dolphin Encounters is the long-standing charter based at Ponta do Ouro that takes tourists on a rubber duck to view the Indian bottlenose dolphins that frequent the area.

Dolphin Encounters monitor the Ponta do Ouro dolphin population and contribute significantly in terms of the beach control and awareness of tourists in the area. However due to this business' success other operators have chosen to open dolphin watching operations with the local dolphin population becoming subjected to higher levels of disturbance than should be allowed.

With a new business having started full-time dolphin tourism in 2008 and two others operating partially, the activity needs to be controlled.

#### 4.2.5 Shark Diving

Diving with sharks is a very popular Scuba diving enthusiasts. It is a wonderful experience to spend time under the water with these top predators. Contrary to popular belief, not all sharks are dangerous to humans and diving with them is considered the ultimate experience by most Scuba divers. The larger species such as Zambezi (bull) and tiger sharks are potentially dangerous to operate due to their large size and opportunistic nature and should always be treated with respect. However, there are very few cases of Scuba divers being attacked by even these species, since a man adorning a buoyancy compensator, wetsuit and aluminium diving cylinder does represent a shark's natural food.

When diving with sharks on Scuba, there is very little threat from these animals. A group of Scuba divers under the water is more threatening to the shark than most people understand.

With shark numbers, dwindling throughout the world due to over-exploitation by long-liners it is important that diving activities be conducted correctly, planned, and executed in a way that does not cause any harm to the sharks themselves or the way in which they behave.



#### 4.2.6 Coastal Development

Coastal developments within the area have increased dramatically within the past 10 years. Many of the developments have been built within the Primary dunes, which is illegal. Now that the PPMR extends 100m inland from the low-water mark, it is important to make sure that coastal developments don't infringe on this.

Coastal development brings with it pressures that can negatively influence the state of marine reserves. With development comes more people, who places added pressure on marine resources. Turtles are impacted on by the bright lights of many of the houses between Ponta do Ouro and Malongane. The bright lighting has been shown to disrupt turtles who are trying to lay eggs along the coastline and affect their ability to locate favourable nesting sites or prevent them from exiting them.

Numerous concerns has been raised regarding a possible port development at Ponta Techobanine – the MSR and PPMR Management has; however, not yet received formal announcements or notices regarding this or an Environmental Impact Assessment process.

For such a development and any other the Protected Areas Management Team (PAMT) will provide inputs and guidance to the relevant authorities to ensure that the MSR and PPMR Management Plans and management objectives of these protected areas are considered in decisions.

#### 4.2.7 Community Pressures

Local communities living along the coastline have a poor comprehension of marine conservation efforts and in certain cases threaten the very resources that the PPMR aims to protect. Most of these threats stem from shoreline based activity. Such as poaching of turtles for meat, digging up of their eggs; the use of gill and seine nets to catch fish or the stripping of invertebrates such as mussels from the intertidal zone.

Poaching of turtles by local coastal communities is a serious problem in Mozambique and in most areas turtle populations faces the serious threat of extermination. There are eight major breeding sites in Mozambique of which the PPMR coastline is recognised as one of the most important sites. Communities within the PPMR are aware that turtles may not be hunted; however, some communities still kill turtles for meat. A regular presence by turtle monitors at night during the breeding season (December to March) has been an effective deterrent to poachers. This is because the monitoring coincides with the same period at night during which the turtles emerge from the sea to lay their eggs. Protective measures and action taken against apprehended poachers are necessary to reinforce to these communities that turtle poaching is illegal and negatively impacts tourism in the area. Turtles are protected animals in Mozambique under the Forests and Wildlife Regulations, 6<sup>th</sup> of June 2002, 12/2002.

Since December 2007, members of the Muvukuza community at Milibangalala and Ponta do Ouro have been trained as turtle monitors by the Marine Programme and Centro Terra Viva. Monitors are then employed for the period of the breeding season. The initiative aims to raise awareness and improve understanding within the communities in an effort to further protect turtles. This approach is required annually to help develop the communities thinking in terms of correct practice.

Seine netting is practiced by local communities at Ponta do Ouro and along the Machangulo Peninsula and gillnetting within Maputo Bay. Observations have shown very poor yields by these netters in Ponta do Ouro. Most of the resident fish that would live within the area where most of the netting takes place have been depleted. The group which use nets here on a weekly basis, very seldom catch more than a couple of kilograms of fish due to years of uncontrolled fishing. The practice is not sustainable as there are no regulations in terms of net mesh sizes or size limits.

Collection of invertebrates within the tidal zone by local communities has left the rocky platforms denuded of mussels, limpets, red bait and other potential food items.

No regulations exist controlling the impact caused by subsistence collectors in the inter-tidal zone

Of key importance is that Government recognises that marine resources are the very thing that supports ecotourism in the area, thereby providing potential employment for Mozambicans. With the further degradation of the marine environment, the PPMR will lose its attraction to tourists, who will over time choose to visit in other countries for a better experience. The long-term benefits to local communities are therefore dependant on long-term marine ecotourism. Short-term benefits such as providing exemptions to communities to use nets or denude habitats conflicts directly with the values of a marine reserve.

## 4.3 STRATEGIC GUIDELINES

### 4.3.1 Vision

It is envisaged that the PPMR will become a fully functional and operational marine protected area, contributing to the conservation of biodiversity within the region.

### 4.3.2 Mission

The mission for the PPMR is the protection, conservation and sustainable utilisation of habitats and marine life through responsible cooperative management, and that Mozambique's natural heritage is not compromised and lost through irresponsible actions, thereby allowing for the sustainability of well managed ecotourism activities that do not conflict with the objectives of the PPMR or the MSR.

### 4.3.3 Key Performance Areas and Objectives

The following broad objectives linked to Key Performance Areas (KPA) form the basis for implementation of management interventions:

**Resource Management:** protection, conservation, management and control of marine ecosystems and marine species.

**Business Management:** promoting sustainable ecotourism opportunities that could augment the conservation contributions of GoM.

**Benefit Flow Management:** ensuring benefits to the region and its people and that the value of conservation of the PPMR is understood by all stakeholders.

**Governance:** ensuring through appropriate institutional and financial management arrangements and legal framework the effective and efficient conservation of the PPMR.

The specific objectives for each of the KPAs of the PPMR include:

#### Resource Management:

- Protection and conservation of marine habitats that are representative of the sub-tropical coastal zone, thereby maintaining biodiversity and ecological functioning, including among other coral reefs, sea grass beds, beaches, mangroves, rock platforms and intertidal sand flats
- Protection and conservation of over-exploited, endangered and endemic marine species and their populations, for example breeding turtles, bottom fish and dugongs
- Managing external research and monitoring projects and programmes.

**Business Management:**

- Creating an environment conducive to investment
- Promoting and facilitating the involvement of Mozambicans in ecotourism opportunities
- Improving and developing diverse and sustainable ecotourism opportunities.

**Benefit Flow Management:**

- Ensuring equitable benefits to affected communities
- Improving the understanding of marine ecosystems and their importance amongst all stakeholders of the PPMR, specifically local communities and resource users for the purpose of conservation and ecotourism.

**Governance:**

- Establishing appropriate institutional arrangements and relationships with stakeholders
- Regulating access and use to marine resources
- Establishing sustainable financing mechanisms
- Ensuring that the PPMR staff is skilled and trained to undertake their responsibilities
- Developing and maintaining MSR infrastructure and equipment
- Ensuring appropriate information management.

## 4.4 STRATEGIC BUSINESS FRAMEWORK

The strategic business framework lies the foundation for PPMR strategic and annual business plans in which the action projects for the various KPA objectives as set out below will be detailed in terms of actions or measures, time frames, financial and human resource requirements, performance indicators, enabling conditions etc. It should be noted that the responsibilities regarding the various action projects have been allocated as per the proposed institutional arrangements to administer the MSR and PPMR.

For details regarding the strategic business framework for the MSR, the reader is referred to the *MSR Management Plan*.

### 4.4.1 Resource Management

The key action projects required for implementation of the Resource Management objectives for the PPMR are set out in Tables 1-3 below.

Table 1: Protecting and Conserving Marine Habitats

<b>Objective:</b>	<i>Protecting and Conserving Marine Habitats</i>		
<b>Rationale</b>	The foundation of specie specific protection is the protection and conservation of habitats on which these species depend.		
<b>Strategy:</b>	The strategy regarding the protection and conservation of marine habitats entails the identification and assessment of the critical habitats and ecosystems, the planning and implementation of restoration and remediation interventions, and undertaking research and monitoring relating to these habitats.		
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>	
RM1. Identify and assess the status of critical habitats and ecosystems	Report - Critical Habitats and Ecosystems	Marine Biologist	
RM2. Plan and implement restoration and remediation interventions	Restoration and Remediation Plans and Programmes	Marine Biologist	
RM3. Undertake and manage research and monitoring relating to: <ul style="list-style-type: none"> <li>• Coral reefs (refer Appendix 2)</li> <li>• Beach profiles (refer Appendix 2)</li> <li>• Sea temperature</li> <li>• Human activities and impacts: <ul style="list-style-type: none"> <li>~ Developments</li> <li>~ Pollution</li> <li>~ Tourism activities.</li> </ul> </li> </ul>	Research and Monitoring Programmes	Marine Biologist	

Table 2: Protecting and Conserving Marine Species

<b>Objective:</b>	<i>Protecting and Conserving Marine Species</i>	
<b>Rationale</b>	Maputaland is blessed with a wide diversity of marine species, some endemic and rare, yet some of these species are being over-exploited, and have as a result of this become endangered. It is critical that the rare and endemic species are protected and that their conservation is ensured.	
<b>Strategy:</b>	The strategy regarding key specie conservation entails the identification and assessment of the endemic, rare and endangered species within the PPMR and ascertain the impact of utilisation of these species, as well as the impact of exotic species on the endemic species.	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
RM4. Identify and assess the status of over-exploited, endangered, endemic and exotic species	Report – Marine Species	Marine Biologist
RM5. Plan and implement restoration and remediation interventions	Restoration and Remediation Plans and Programmes	Marine Biologist
RM6. Undertake and manage research and monitoring relating to: <ul style="list-style-type: none"> <li>• Fish (refer Appendix 2)</li> <li>• Marine mammals (refer Appendix 2)</li> <li>• Marine turtles (refer Appendix 2)</li> <li>• Intertidal species</li> <li>• Alien species.</li> </ul>	Research and Monitoring Programmes	Marine Biologist

Table 3: Managing External Research and Monitoring Projects and Programmes

<b>Objective:</b>	<i>Managing external research and monitoring projects and programmes</i>	
<b>Rationale</b>	Being a high biodiversity area close to numerous Universities in the region, both in Mozambique and South Africa, several research institutes and programmes target the PPMR for research programmes. Despite being an excellent source of data and information related to the PPMR, it is imperative that this research is coordinated and that the information is disseminated and utilised within the management of the area.	
<b>Strategy:</b>	The strategy regarding the coordination of external research and monitoring projects and programmes entails the development of a research and monitoring policy as well as approval criteria and protocols. Additionally the establishment of a PPMR Research Evaluation Committee to oversee all research and monitoring projects and programmes will ensure that there is no duplication of efforts and that the projects assist the PPMR in attaining its objectives.	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
RM7. Develop a research and monitoring policy and approval criteria and protocol (e.g. special permits etc.)	Research and Monitoring Policy and Protocol	Marine Biologist
RM8. Establish a PPMR Research Evaluation Committee to oversee external projects and programmes	PPMR Research Evaluation Committee	Marine Biologist

#### 4.4.2 Business Management

The key action projects required for implementation of the Business Management objectives for the PPMR are set out in Tables 4-6 below.

Table 4: Creating a Conducive Environment for Investment

<b>Objective:</b>	<i>Creating a conducive environment for investment</i>	
<b>Rationale:</b>	Conservation should be able to generate sufficient income to sustain the operational aspects pertaining to the protection and conservation of habitats and species. Only by creating an environment within which it is conducive for investment aimed at sustainably unlocking the ecotourism potential of the protected resources will it be possible to ensure sufficient financial support for the conservation initiative.	
<b>Strategy:</b>	The strategy regarding the establishment of an environment conducive for investment in conservation initiatives entails providing clarity regarding the overall management of the MSR, both terrestrial and marine, specifically the ecotourism opportunities, as concessions, service agreements and the reserve's own developments.  Additionally, by providing clear guidelines to investors, especially foreign, on how concessions, service agreements and the use of the reserve's own developments can occur will enable investors the opportunity to actively participate in the unlocking of the ecotourism potential according to a specified development path.	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
BM1. Provide clarity regarding the overall management of the Maputaland Protected Area	Management Structure and Arrangements	Reserve Manager
BM2. Prepare a clear master plan for the development of the PPMR	PPMR Master Plan	Marine Manager
BM3. Provide clear guidelines to investors regarding the development opportunities	Guidelines for investment and development opportunities	Marine Manager
BM4. Provide an investor's portfolio for all the developments requiring external assistance	Investor's portfolio	Marine Manager

Table 5: Promoting and Facilitating the Involvement of Mozambicans in Ecotourism Opportunities

<b>Objective:</b>	<i>Promoting and facilitating the involvement of Mozambicans in ecotourism opportunities</i>	
<b>Rationale:</b>	Despite Mozambique being blessed with wonderful resources, both natural and cultural, very little benefit accrues to local investors or operators. Often the largest benefit goes to foreign investors who have access to finances and credit, nullifying any local benefits. By redressing the imbalances of the past in an innovative and creative manner, it would be possible for local Mozambicans to acquire equity and shareholding as a result of local ecotourism opportunities being availed.	
<b>Strategy:</b>	The strategy regarding the promotion of, and facilitation of direct involvement by local Mozambicans in ecotourism ventures would entail providing clarity to potential investors regarding the investment policies of the country, as well as the need to involve Mozambicans in the development proposals, either as CLEs or as equity partners.	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
BM5. Obtain clarity regarding the investment policies of the Government of Mozambique, specifically the role of local communities or partners	GoM Investment Policies and Protocol	Reserve Manager
BM6. Prepare a guideline document regarding the investment opportunities requiring the involvement of local communities through CLEs	Investment guideline document	Community Liaison Officer
BM7. Monitor the impact and efficacy of investment arrangements between private investors and CLEs	Monitoring programme and reports	Community Liaison Officer



Table 6: Improving and Developing Diverse and Sustainable Ecotourism Opportunities

<b>Objective:</b>	<i>Improve and develop diverse and sustainable ecotourism opportunities</i>	
<b>Rationale:</b>	The PPMR has numerous ecotourism opportunities ranging from simply boating to focused activities such as scuba diving, kayak fishing, sport fishing, to whale and dolphin watching. By encouraging the development of these various sectors within the marine tourism industry in a controlled and organised manner the sustainability thereof can be ensured. Allowing uncontrolled development would result in a cycle of boom and bust with various operators targeting similar market sectors rather than specific niches.	
<b>Strategy:</b>	The strategy regarding improvement and diversification within the marine tourism sector would entail remaining abreast of industry norms and standards to ensure that the product range recognises new and appropriate activities, as well as requisite facilities, and where necessary update the product range either through the concessionaires or service providers. Focusing on the unique features that the MSR, inclusive of the PPMR offer to operators would firstly ensure that the resources on which the current products are based remain protected, and secondly any new activity or development must illustrate the degree to which the activity will enhance the resource rather than negatively impact on it. A precautionary approach would be advised, yet recognising flexibility in approaches to ecotourism development based on industry best practice.	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
BM8. Compile a list of industry norms and standards and link this to the current product range	List of industry norms and standards linked to product range	Reserve Manager
BM9. Encourage operators to propose new activities and developments yet measure these against the thresholds of change for the resources each activity requires	New products and opportunities	Marine Manager
BM10. Determine the levels of acceptable change for each unique resource that is utilised within the PPMR and use this as the benchmark against which to measure new proposals	Inventory of acceptable levels of change linked to unique resources	Marine Manager
BM11. Monitor the impact of ecotourism activities against these levels and continuously interact with operators on ways to reduce impacts and improve resource quality	Monitoring programme and reports	Marine Manager

### 4.4.3 Benefit Flow Management

The key action projects required for implementation of the Benefit Flow Management objectives for the PPMR are set out in Tables 7-8 below.

Table 7: Ensuring Equitable Benefits to Affected Communities

<b>Objective:</b>	<i>Ensuring equitable benefits to affected communities</i>	
<b>Rationale</b>	<p>With reference to the CAP that has been prepared for the MSR, strong emphasis has been placed on the need to provide equitable benefits to the communities that are affected by the conservation of the region's biodiversity, natural and cultural resources.</p> <p>Without real and tangible benefits flowing to the affected communities, the objectives of the MSR, both from a terrestrial and marine component will be difficult to attain, as would the enforcement of the policies regarding resource utilisation.</p>	
<b>Strategy:</b>	<p>The strategy regarding the provision of equitable benefits to the communities affected by the PPMR would entail the identification of affected communities, the resources that they currently utilise and the extent to which the implementation of the PPMR restrictions will impact on the livelihoods of these communities.</p> <p>Once this has been determined and the legal rights of the communities ascertained options can be investigated and incorporated into the methodology aimed at providing benefits by unlocking alternative livelihoods in association with these communities.</p> <p>Once the options have been implemented it is imperative that the impact of the new livelihood on the community be monitored.</p>	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
BFM1. Identify all affected communities, ascertain the type and level of resource use, and the impact that the restrictions as a result of the PPMR will have on these communities	Detailed resource use inventories Impacts assessment reports	Community Liaison Officer
BFM2. Determine the legal rights of these communities to the resource use and investigate alternative livelihood options	Register of legal rights of communities Alternative livelihoods options	Community Liaison Officer
BFM3. Discuss these options with the communities and prepare CLEs where appropriate and applicable	Community meeting reports CLEs	Community Liaison Officer
BFM4. Assist communities with unlocking the economic potential of these alternative livelihoods through support programmes and linkages	Support programmes and reports	Community Liaison Officer
BFM5. Monitor the impact of the alternative livelihoods on affected communities	Monitoring programme and reports	Marine Manager

Table 8: Communication, Capacity Building and Awareness Creation

Objective:	<i>Communication, Capacity Building and Awareness Creation</i>	
<b>Rationale</b>	<p>The importance of the awareness plan is to promote and understanding of the importance of healthy marine eco-systems, the importance of the PPMR and the role that public and community play in terms of their care.</p> <p>The PPMR was proclaimed because of this coastlines rapid deterioration through over-consumption and the need to better protect the marine, which sustains eco-tourism within the area.</p> <p>Local communities within this area are ignorant to the importance of protection and emphasis must be placed on raising their levels of understanding relating to conservation management activities within the area. Attempts must be made to improve their understanding of conservation management through regular interaction with the key communities along this coastline, including the business owners and visitors to the area that utilise the PPMR through direct interaction and with the use of developed resources such as signage and brochures.</p>	
<b>Strategy:</b>	<p>The strategy regarding communication, capacity building and the creation of awareness entails the undertaking of a needs assessment in all the stakeholder groups, and the development and implementation of a programme aimed at attaining this objective, as well as the monitor of the programme's impact.</p> <p>This should be undertaken via existing institutional arrangements and structures</p> <ul style="list-style-type: none"> <li>• Government stakeholders</li> <li>• MSR and PPMR staff</li> <li>• Operators</li> <li>• Communities</li> <li>• Visitors (tourists).</li> </ul>	
Action Projects	Indicators	Responsibility
BFM6. Undertake a needs assessments in all stakeholder groups	Needs assessment report	Reserve Manager
BFM7. Develop and implement a communication, capacity building and awareness creation programme	Communication, capacity building and awareness programme	Marine Manager
BFM8. Monitor the impact and efficacy of the programme and adapt where necessary	Monitoring programme and reports	Public Relations Officer

#### 4.4.4 Governance

The key action projects required for implementation of the Governance objectives for the PPMR are set out in Tables 9-14 below.

Table 9: Institutional Arrangements

<b>Objective:</b>	<i>Establishing appropriate internal and external institutional arrangements and foster relationships with stakeholders (refer to section 4.5)</i>	
<b>Rationale:</b>	Without appropriate institutional arrangements, both within the Government of Mozambique and between the Government and external stakeholders, it will not be possible to develop and foster effective and efficient relationship with these stakeholders.	
<b>Strategy:</b>	The strategy regarding institutional arrangements will entail establishing intergovernmental and external structures to assist with the various activities that need to be undertaken to attain the objectives of the PPMR. These include arrangements between PPMR management and the : <ul style="list-style-type: none"> <li>• Various Ministries and Departments</li> <li>• Private sector operators, concessionaires and service providers</li> <li>• Researchers</li> <li>• Community Fora.</li> </ul>	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
GOV1. Establish an inter-ministerial and inter-departmental committee regarding the various management interventions taking place within the PPMR (e.g. MICOA and DPCA regarding coastal developments and impacts)	Inter-ministerial and inter-departmental committees	Reserve Manager
GOV2. Establish a working relationship with the private sector operators, concessionaires and service providers	Institutional arrangements for operational level relationships (operators and service providers)	Marine Manager
GOV3. Set up a research committee with all the research institutions and researchers	Research Committee	Marine Manager
GOV4. Formalise the relationship with the community fora that have been established for the MSR	Institutional arrangements for operational level relationships (communities)	Marine Manager

Table 10: Regulating Access and Use

<b>Objective:</b>	<i>Regulating access and use</i>	
<b>Rationale:</b>	<p>Regulating the access to and utilisation of the resources within the PPMR will be an essential component regarding the successful unlocking of the ecotourism potential of the region. Clarity must be provided to operators and investors regarding the number and type of concessions, the concession process, period and approved activities.</p> <p>Market related strategies should be utilised to determine the value of the concessions, and existing operators should be provided preference within the bidding process, aimed at regularising the operations.</p>	
<b>Strategy:</b>	<p>The strategy regarding the regulation of access and use will entail the demarcation and delineation of management zones and areas, the creation of local rules, legal instruments and other measures, publication of regulations, regularisation of existing operations through licences and compliance monitoring and enforcement.</p> <p>This strategy will enable the following to be addressed:</p> <ul style="list-style-type: none"> <li>• Concessions</li> <li>• Opportunities within PPMR</li> <li>• Value of concessions</li> <li>• Concession process</li> <li>• Concession periods</li> <li>• Current operations and the regularisation thereof</li> <li>• Legal review of current permissions and authorisations</li> <li>• Proposals for revisions and new approaches.</li> </ul>	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
GOV5. Demarcation and delineation of management zones and areas (refer to section 4.6)	Zoning Map	Marine Manager
GOV6. Prepare and maintain local rules and standard operating procedures (initial local rules are attached as Appendix 3)	Local Rules	Marine Manager
GOV7. Prepare lighting standards for coastal developments and liaise with MICOA and DPCA regarding implementation	Lighting standards	Marine Manager and Biologist
GOV8. Review, align and amend legal instruments and measures (e.g. permitting systems)	Legal instruments	Marine Manager
GOV9. Develop and publish regulations	Regulations	Marine Manager
GOV10. Establish and implement a framework for self-regulation	Self-regulation protocol	Marine Manager
GOV11. Develop and implement a regularisation protocol for existing operations	Regularisation protocol for existing operators	Marine Manager
GOV12. Develop and implement a permitting and concession licensing protocol (for new use)	Permitting and concession licensing protocol and information management system Performance report	Marine Manager
GOV13. Prepare a Compliance Monitoring and Enforcement (CM&E) Strategy and Plan and implement accordingly	CM&E Strategy and Plan Performance reports	Marine Manager



Table 11: Financial Sustainability

<b>Objective:</b>	<i>Establishing sustainable financing mechanisms</i>		
<b>Rationale:</b>	The financial sustainability of the PPMR underlies the sustainability of the resource, and thus to reduce the financial burden of PPMR activities on GoM resources it is critical that a financial sustainability mechanisms be developed for the PPMR aimed at generating sufficient revenue to support specific conservation initiatives outside the national budget.		
<b>Strategy:</b>	<p>The strategy regarding financial sustainability for the PPMR will entail the development of income generating and revenue retention policies in cooperation with the relevant GoM Ministries and Departments, as well as the development and implementation of a financial sustainability strategy linked to the MSR.</p> <p>The "user-pays" principle will be applied, with the aim of covering part of the operational management costs of the PPMR, specifically referring to:</p> <ul style="list-style-type: none"> <li>• Income streams (e.g. concession licenses, fishing permits, dive taxes, other)</li> <li>• How to deal with income from fines via CM&amp;E</li> <li>• Retention of income/revenue.</li> </ul>		
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>	
GOV14. Develop an income retention policy in cooperation with the relevant GoM Ministries and Departments {this needs to be linked to the MSR as a whole}	Income retention policy	Reserve Manager	
GOV15. Develop a financial sustainability strategy	Financial sustainability strategy	Reserve Manager	
GOV16. Solicit support for the PPMR Management Plan and its implementation	Support and fund raising plan and reports	Reserve Manager	
GOV17. Develop and implement a financial sustainability implementation plan	Financial sustainability implementation plan	Reserve Manager	

Table 12: Training of PPMR Staff

<b>Objective:</b>	<i>Ensuring that PPMR staff is skilled and trained to undertake their responsibilities</i>		
<b>Rationale:</b>	Without well trained and competent staff it will be difficult to attain the objectives of the PPMR.		
<b>Strategy:</b>	The strategy regarding the training of staff will entail undertaking a staff training needs assessment, the development and implementation of a staff training programme, and the monitoring of staff competencies against industry norms and standards.		
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>	
GOV18. Undertake a training needs assessment	Training needs assessment report	Human Resources Officer	
GOV19. Develop and implement a staff training programme	Training programme	Human Resources Officer	
GOV20. Monitor staff competencies and ensure regular refresher and further development training	Monitoring programme and reports	Marine Manager	

Table 13: PPMR Infrastructure and Equipment

<b>Objective:</b>	<i>Develop and maintain PPMR infrastructure and equipment</i>	
<b>Rationale:</b>	<p>Infrastructure development and the maintenance thereof are essential for the support of the people employed to conduct marine conservation work.</p> <p>Infrastructure requirements range from staff accommodation, office and storage units, while equipment includes, <i>inter alia</i>, vehicles, boats, and communication system.</p> <p>Without these basic requirements, it is very difficult for organised marine management activities as provision of basic working conditions are critical to all.</p> <p>Staff accommodation need not be sophisticated, but rather practical in terms of where it is to be built, taking into consideration the logistics in terms of the building of structures in remote locations.</p> <p>The same applies to equipment required. The basics include reliable properly equipped 4x4 vehicles in which beach patrols can be safely conducted and boats launched.</p> <p>Patrol boats are also an essential requirement, so that the waters of the PPMR can be patrolled and illegal fishing and recreational activities stopped.</p> <p>Proper registers should be kept of all the PPMR's infrastructure as well as its capital assets. This is the responsibility of the relevant managers along with the maintenance of the listed equipment.</p>	
<b>Strategy:</b>	The strategy regarding infrastructure and equipment will entail the preparation of inventories pertaining to existing equipment and facilities, undertaking a needs assessment for additional infrastructure and equipment, as well as the preparation of an acquisition plan including a fund raising strategy.	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
GOV21. Prepare an inventory and register of existing assets and equipment	Inventory of existing assets and equipment	Office Administrator
GOV22. Undertake a needs assessments for further assets and equipment	Assets and equipment needs assessment report	Office Administrator
GOV23. Prepare an acquisition plan	Acquisition plan	Office Administrator
GOV24. Prepare a fund raising strategy.	Fund raising strategy	Office Administrator

Table 14: Ensuring appropriate Information Management

<b>Objective:</b>	<i>Ensuring appropriate information management</i>	
<b>Rationale:</b>	Information and data associated with the various PPMR management interventions (e.g. monitoring and research, authorisations and permissions, finances, CME etc.) should be easily available and will be generated through the various projects. This information needs to be managed so that it can be shared and ensure effective management and implementation.	
<b>Strategy:</b>	The strategy regarding information management will entail the definition of an information management system, the establishment of the system, and the management of the information through dissemination strategies and plans. This can include Document Management Systems, GIS, and other systems.	
<b>Action Projects</b>	<b>Indicators</b>	<b>Responsibility</b>
GOV25. Definition of information management system requirements	Inventory of Information Management Requirements	Marine Manager
GOV26. Setting up of systems	Systems setup	Marine Manager
GOV27. Management and dissemination of information and data	Information management reports	Marine Manager
GOV28. Plan and implement an inventory programme for biological and socio-economic studies, developing baseline information on the various biological features and resource utilisation	Inventory programme	Reserve and Marine Managers

#### 4.4.6 Summary of Action Projects

Table 15: Summary of Resource Management Actions

<b>Objective:</b>	<i>Protecting and Conserving Marine Habitats</i>
RM1.	Identify and assess the status of critical habitats and ecosystems
RM2.	Plan and implement restoration and remediation interventions
RM3.	Undertake and manage research and monitoring relating to: <ul style="list-style-type: none"> <li>• Coral reefs (refer Appendix 2)</li> <li>• Beach profiles (refer Appendix 2)</li> <li>• Sea temperature</li> <li>• Human activities and impacts:               <ul style="list-style-type: none"> <li>~ Developments</li> <li>~ Pollution</li> <li>~ Tourism activities.</li> </ul> </li> </ul>
<b>Objective:</b>	<i>Protecting and Conserving Marine Species</i>
RM4.	Identify and assess the status of over-exploited, endangered, endemic and exotic species
RM5.	Plan and implement restoration and remediation interventions
RM6.	Undertake and manage research and monitoring relating to: <ul style="list-style-type: none"> <li>• Fish (refer Appendix 2)</li> <li>• Marine mammals (refer Appendix 2)</li> <li>• Marine turtles (refer Appendix 2)</li> <li>• Intertidal species</li> <li>• Alien species.</li> </ul>
<b>Objective:</b>	<i>Managing external research and monitoring projects and programmes</i>
RM7.	Develop a research and monitoring policy and approval criteria and protocol (e.g. special permits etc.)
RM8.	Establish a PPMR Research Evaluation Committee to oversee external projects and programmes

Table 16: Summary of Business Management Action Projects

<b>Objective:</b>	<i>Creating a conducive environment for investment</i>
BM1.	Provide clarity regarding the overall management of the Maputaland Protected Area
BM2.	Prepare a clear master plan for the development of the PPMR
BM3.	Provide clear guidelines to investors regarding the development opportunities
BM4.	Provide an investor's portfolio for all the developments requiring external assistance
<b>Objective:</b>	<i>Promoting and facilitating the involvement of Mozambicans in ecotourism opportunities</i>
BM5.	Obtain clarity regarding the investment policies of the Government of Mozambique, specifically the role of local communities or partners
BM6.	Prepare a guideline document regarding the investment opportunities requiring the involvement of local communities through CLEs
BM7.	Monitor the impact and efficacy of investment arrangements between private investors and CLEs
<b>Objective:</b>	<i>Improve and develop diverse and sustainable ecotourism opportunities</i>
BM8.	Compile a list of industry norms and standards and link this to the current product range
BM9.	Encourage operators to propose new activities and developments yet measure these against the thresholds of change for the resources each activity requires
BM10.	Determine the levels of acceptable change for each unique resource that is utilised within the PPMR and use this as the benchmark against which to measure new proposals
BM11.	Monitor the impact of ecotourism activities against these levels and continuously interact with operators on ways to reduce impacts and improve resource quality

Table 17: Summary of Benefit Flow Management Action Projects

<b>Objective:</b>	<i>Ensuring equitable benefits to affected communities</i>
BFM1.	Identify all affected communities, ascertain the type and level of resource use, and the impact that the restrictions as a result of the PPMR will have on these communities
BFM2.	Determine the legal rights of these communities to the resource use and investigate alternative livelihood options
BFM3.	Discuss these options with the communities and prepare CLEs where appropriate and applicable
BFM4.	Assist communities with unlocking the economic potential of these alternative livelihoods through support programmes and linkages
BFM5.	Monitor the impact of the alternative livelihoods on affected communities
<b>Objective:</b>	<i>Communication, Capacity Building and Awareness Creation</i>
BFM6.	Undertake a needs assessments in all stakeholder groups
BFM7.	Develop and implement a communication, capacity building and awareness creation programme
BFM8.	Monitor the impact and efficacy of the programme and adapt where necessary



Table 18: Summary of Governance Action Projects

<b>Objective:</b>	<i>Establishing appropriate internal and external institutional arrangements and foster relationships with stakeholders (refer to section 4.5)</i>
GOV1.	Establish an inter-ministerial and inter-departmental committee regarding the various management interventions taking place within the PPMR
GOV2.	Establish a working relationship with the private sector operators, concessionaires and service providers
GOV3.	Set up a research committee with all the research institutions and researchers
GOV4.	Formalise the relationship with the community fora that have been established for the MSR
<b>Objective:</b>	<i>Regulating access and use</i>
GOV5.	Demarcation and delineation of management zones and areas (refer to section 4.6)
GOV6.	Prepare and maintain local rules and standard operating procedures (initial local rules are attached as Appendix 3)
GOV7.	Prepare lighting standards for coastal developments and liaise with MICOA and DPCA regarding implementation
GOV8.	Review, align and amend legal instruments and measures (e.g. permitting systems)
GOV9.	Develop and publish regulations
GOV10.	Establish and implement a framework for self-regulation
GOV11.	Develop and implement a regularisation protocol for existing operations
GOV12.	Develop and implement a permitting and concession licensing protocol (for new use)
GOV13.	Prepare a Compliance Monitoring and Enforcement (CM&E) Strategy and Plan and implement accordingly
<b>Objective:</b>	<i>Establishing sustainable financing mechanisms</i>
GOV14.	Develop an income retention policy in cooperation with the relevant GoM Ministries and Departments {this needs to be linked to the MSR as a whole}
GOV15.	Develop a financial sustainability strategy
GOV16.	Solicit support for the PPMR Management Plan and its implementation
GOV17.	Develop and implement a financial sustainability implementation plan
<b>Objective:</b>	<i>Ensuring that PPMR staff is skilled and trained to undertake their responsibilities</i>
GOV18.	Undertake a training needs assessment
GOV19.	Develop and implement a staff training programme
GOV20.	Monitor staff competencies and ensure regular refresher and further development training
<b>Objective:</b>	<i>Develop and maintain PPMR infrastructure and equipment</i>
GOV21.	Prepare an inventory and register of existing assets and equipment
GOV22.	Undertake a needs assessments for further assets and equipment
GOV23.	Prepare an acquisition plan
GOV24.	Prepare a fund raising strategy.
<b>Objective:</b>	<i>Ensuring appropriate information management</i>
GOV25.	Definition of information management system requirements
GOV26.	Setting up of systems
GOV27.	Management and dissemination of information and data
GOV28.	Plan and implement an inventory programme for biological and socio-economic studies, developing baseline information on the various biological features and resource utilisation

## 4.5 INSTITUTIONAL ARRANGEMENTS

To ensure proper management of the PPMR, both internal and external institutional arrangements and relationships must be established.

With the proclamation of the PPMR MITUR was appointed as the responsible authority and is in the process clarifying and establishing operational relationships with relevant Government partners as well as internal management arrangements.

### 4.5.1 External Arrangements

External arrangements at **strategic level** include intra-governmental cooperation in terms of the Memorandum of Understanding (MOU) pertaining to operational mandates relating to the PPMR and project management and coordination via the PPMR Steering Committee (refer Figure 4):

#### Intra-governmental Cooperation-

Inter-ministerial cooperation and relations are based on a MOU between the following parties which pertains to operational mandates relating to the PPMR:

- Ministry of Fisheries
- MICOA
- INAMAR
- Navy.

#### Steering Committee-

Project management and coordination among:

- Min. of Fisheries
- MICOA
- Min. of Transport
- MITUR (DNAC, TFCA Unit)
- PAMT, specifically the MPA Conservation Manager
- PPF.

At **operational level** arrangements are formalised through committees and fora with local stakeholders, specifically tourism operators and community structures.

### 4.5.2 Internal Arrangements

The proposed internal institutional arrangements for the PPMR are interlinked with that of the MSR (refer Figure 5). For a detailed description, the reader is referred to Appendix 3 of the *MSR Management Plan*.

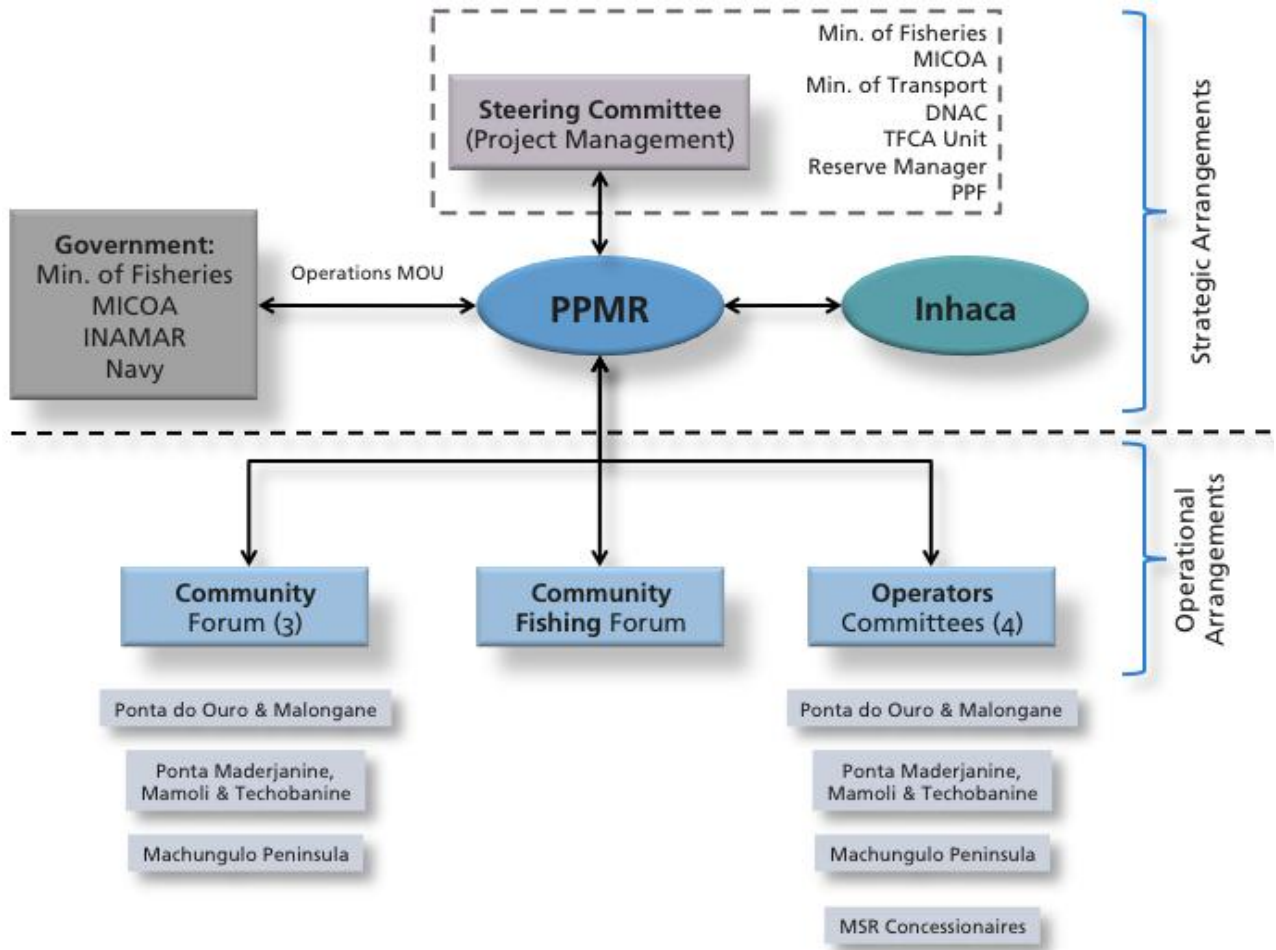


Figure 4: Cooperative Governance Arrangements

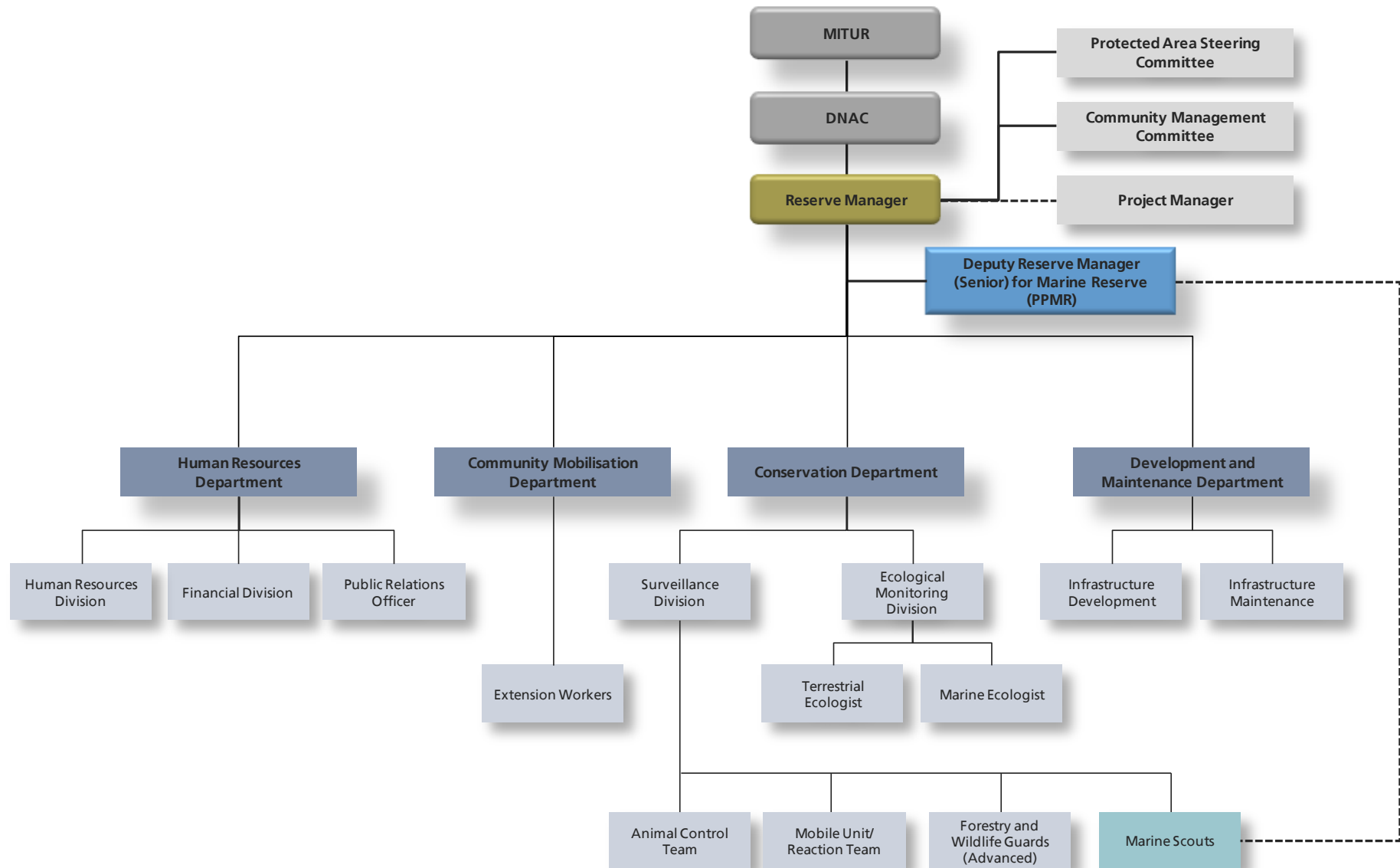


Figure 5: Internal Institutional Arrangements

## 4.6 CONCEPT DEVELOPMENT PLAN

### 4.6.1 Zonation

To assist in the spatial control of activities within the PPMR, zoning will be used as a management tool, defining permitted activities as well as prohibitions within specified geographical areas. Using zoning as a management tool is an approach that enables the MSR Management to attain its objectives, while ensuring that potential conflict between activities can be minimised.

Within the PPMR a mix of activities take place, ranging from walking on the beach to sport fishing and cetacean watching. Zoning will enable these activities to take place without compromising the objectives of the MPA. Both spatial and temporal measures will be used to ensure compatibility of activities.

Legal provisions regarding restrictions pertaining to specific activities are found within sectoral regulatory frameworks, and these sectoral arrangements enable the objectives of the PPMR to be met. Each zone can support several compatible activities although some of the zones may be identified for exclusive use by one sector.

The PPMR covers the entire area from Ponta do Ouro to the mouth of the Rio Maputo and within this MPA several zones have been designated. The regulations of the PPMR MPA act as an umbrella under which the zonation strives to attain the conservation objectives, rather than relying on the provisions within each use sector, thereby streamlining management initiatives and increasing efficiency.

The following **zones** pertain to the PPMR as set out in Table 19 and have been aligned with the zonation categories of the iSimangaliso Wetland Park in South Africa (refer Map 5) - within all of these zones a beach management area occurs which stretches from the low water mark to 100m inland:

- Sanctuary zones
- Restricted use zones
- Multiple use zones.

Six (6) **management units** have been identified according to the cover of these zones (refer Map 6):

- Unit 1: Ponta do Ouro to Ponta Techobanine
- Unit 2: North of Ponta Techobanine to Ponta Dobela
- Unit 3: North of Ponta Dobela to Ponta Chemucane
- Unit 4: North of Ponta Chemucane to Ponta Abril
- Unit 5: Inhaca Island
- Unit 6: West of the Machangulo Peninsula to the mouth of the Maputo River (Maputo Bay).



Table 19: Zone Descriptions

Zone	Characteristics	Purpose	Permissible Activities and Uses	Non-permissible Activities and Uses
<p><b>Sanctuary</b></p>	<p>Some evidence of human settlement and infrastructure development.</p> <p>Non-consumptive use of marine resources and activities that cause no disturbance to wildlife.</p> <p>No access in dune cordon alongside it. The adjacent land and seascape bear negligible visual evidence of human influence having occurred in the recent past.</p> <p>Ecological processes can be maintained with minimum management intervention.</p>	<p>Protection of species, communities, habitat type or ecosystem.</p> <p>Maintaining a scientific benchmark area of biodiversity and ecosystem processes</p> <p>Providing visitors with high quality nature and education experiences in a marine environment.</p>	<p><b>General:</b></p> <ul style="list-style-type: none"> <li>• Very low intensity and frequency</li> <li>• Small group sizes</li> <li>• Special events</li> <li>• Very strict regulation and control over entry</li> </ul> <p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Walking on beaches</li> <li>• Swimming, snorkeling, surfing</li> <li>• Guided special interest and sporting trails and events (non-motorised)</li> <li>• Launching of non-motorised vessels at non-fixed sites</li> <li>• Limited traditional subsistence resource harvesting using the minimum tool principle under strict regulation and control within defined areas</li> <li>• Highly regulated scientific research and monitoring that cannot be performed elsewhere in Reserve</li> <li>• Essential management activities and interventions, including law enforcement operations</li> <li>• Special access permits required</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Guided special interest and sporting tours and events (non-motorised)</li> <li>• Highly regulated scientific research and monitoring that cannot be performed elsewhere in Reserve</li> <li>• Essential management activities and interventions, including law enforcement operations</li> </ul>	<p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Development nodes</li> <li>• All forms of extractive use</li> <li>• Fossicking</li> <li>• Walking on intertidal rocks</li> <li>• Beach driving except for essential management activities and scientific research and monitoring under special permit</li> <li>• Launching of motorised boats except management and scientific research and monitoring vessels at non-fixed sites</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Scuba diving except for highly regulated research and monitoring</li> <li>• Kite and wind-surfing</li> <li>• Parasailing from boat or use of jetskis</li> <li>• All forms of extractive use</li> <li>• Use of motorised vessels except for essential management and research and monitoring and vessels at sea within 3NM mile limit offshore that have the right of passage, but may not be in possession of any fish or parts thereof and may not stop for any reason, other than a declared emergency</li> </ul>

Zone	Characteristics	Purpose	Permissible Activities and Uses	Non-permissible Activities and Uses
<p><b>Restricted Use</b></p>	<p>A marine area that may have some but limited adjacent existing human settlement, development infrastructure, consumptive activities, management interventions, and some visual evidence of occurrence in recent past.</p> <p>The human induced modifications do, however, not pose significant threats and it is possible to mitigate impacts and restore the area to a largely unmodified state.</p> <p>Indefinite proactive and reactive management interventions may be required.</p>	<p>Conservation of biodiversity and ecological processes</p> <p>Where applicable, restoration and maintenance of natural landscapes and ecological processes</p> <p>Provide visitors with a high quality nature-based outdoor experience of a marine environment.</p>	<ul style="list-style-type: none"> <li>• Special access permits required</li> </ul> <p><b>General:</b></p> <ul style="list-style-type: none"> <li>• Regulated and controlled use of low and moderately intensity</li> <li>• Entry and access restricted to and controlled at entrance gates or other demarcated points of entry</li> </ul> <p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Low intensity and impact development from base of dune to low water mark, conforming to adjacent terrestrial zone restrictions</li> <li>• Walking on beaches and rocks and fossicking (non-extractive)</li> <li>• Horse riding</li> <li>• Cycling</li> <li>• Swimming, snorkeling, surfing, surf-skiing, kite and wind surfing and kayaking</li> <li>• Recreational spear fishing (pelagic species only)</li> <li>• Concession, research and monitoring and management beach driving only</li> <li>• Boat launching a recognised boat-launching sites (concession, research and monitoring and management only)</li> <li>• Special interest and sporting trails, tours and events</li> <li>• Restricted subsistence invertebrate harvesting at designated areas</li> <li>• Scientific research and monitoring</li> <li>• Law enforcement patrols and reaction</li> <li>• Management intervention to restore/maintain ecological processes and the landscape</li> </ul>	<p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Beach driving except under recreational and education permits for concession operators, and authorised management and research and monitoring vehicles</li> <li>• Harvesting of intertidal organisms other than subsistence invertebrates or under special permit</li> <li>• Collection of marine aquarium fish, invertebrates and plant except for education and scientific purposes and under special permit</li> <li>• Collection of organic and inorganic material except for education or scientific purposes under special permit</li> <li>• Commercial fishing</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Fishing, or being in the possession of bottom fish</li> <li>• Vertical jigging from or the possession of vertical jigs on vessels</li> <li>• Chumming or feeding of fish including sharks</li> <li>• Jet skis except for fishing or under special permit</li> <li>• Parasailing from boat</li> <li>• Collection of marine aquarium fish, invertebrates and plant except for education and scientific purposes and under special permit</li> <li>• Use of fish aggregating devices, anchored or drifting</li> <li>• Commercial fishing</li> <li>• Anchoring except in cases of</li> </ul>

Zone	Characteristics	Purpose	Permissible Activities and Uses	Non-permissible Activities and Uses
			<p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Scuba diving</li> <li>• Snorkeling</li> <li>• Kayaking, surf-skiing, kite and wind surfing</li> <li>• Use of motorised vessels</li> <li>• Recreational fishing (pelagic only)</li> <li>• Recreational spear fishing (pelagic game fish only)</li> <li>• Special interest and sporting trails, tours and events</li> <li>• Research and monitoring with scientific permit</li> <li>• Law enforcement patrols and reaction</li> <li>• Management interventions to restore/maintain ecological processes</li> </ul>	<p>emergency</p>
<p><b>Multiple Use</b></p>	<p>A marine area where the seascape, ecosystems, habitats and ecological processes may have been noticeably transformed by past and present developments and human activities within the area or in the terrestrial area immediately adjacent.</p> <p>With significant interventions over time it could be restored to a natural setting that appears largely unmodified, where the ecological processes function naturally and it can be upgraded to a Restricted Use Zone. Indefinite proactive and reactive management interventions may be required.</p>	<p>Where applicable, the restoration and maintenance of natural landscapes and ecological processes.</p> <p>Provide an affordable, comfortable, informative, safe, enjoyable and sustainable outdoor recreational experience in a relatively unspoilt marine environment.</p>	<p><b>General:</b></p> <p>Regulated and controlled use of moderately intensity and relatively high frequency, with entry and access restricted to and controlled at entrance gates or other demarcated points of entry.</p> <p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Low intensity and impact development from base of dune to low water mark, conforming to adjacent terrestrial zone restrictions</li> <li>• Walking on beaches and rocks and fossicking (non-extractive)</li> <li>• Horse riding</li> <li>• Cycling</li> <li>• Swimming, snorkeling, surfing, surf-skiing, kite and wind surfing and kayaking</li> <li>• Recreational spear fishing (pelagic species only)</li> </ul>	<p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• No development from low water mark to outer limit of marine reserve</li> <li>• Vehicles on the beach except for boat launching purposes at recognised launching sites and concession beach driving and authorised management and research and monitoring vehicles</li> <li>• Jet skis</li> <li>• Harvesting of intertidal organisms other than subsistence invertebrates or under special permit</li> <li>• Collection of marine aquarium fish, invertebrates and plant except for education and scientific purposes and under special permit</li> <li>• Collection of organic and inorganic material except for</li> </ul>

Zone	Characteristics	Purpose	Permissible Activities and Uses	Non-permissible Activities and Uses
			<ul style="list-style-type: none"> <li>• Concession, research and monitoring and management beach driving only</li> <li>• Boat launching at recognised boat-launching sites (concession, research and monitoring and management only)</li> <li>• Special interest and sporting trails, tours and events</li> <li>• Restricted subsistence invertebrate harvesting at designated areas</li> <li>• Scientific research and monitoring</li> <li>• Law enforcement patrols and reaction</li> <li>• Management intervention to restore/maintain ecological processes and the landscape</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Scuba diving</li> <li>• Snorkeling</li> <li>• Kayaking, surf-skiing, kite and wind surfing</li> <li>• Use of motorised vessels</li> <li>• Recreational fishing (pelagic only)</li> <li>• Recreational spear fishing (pelagic game fish only)</li> <li>• Special interest and sporting trails, tours and events</li> <li>• Research and monitoring with scientific permit</li> <li>• Law enforcement patrols and reaction</li> <li>• Management interventions to restore/maintain ecological processes</li> </ul>	<p>education or scientific purposes under special permit</p> <ul style="list-style-type: none"> <li>• Commercial fishing</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Fishing, or being in the possession of bottom fish</li> <li>• Vertical jigging from or the possession of vertical jigs on vessels</li> <li>• Chumming or feeding of fish including sharks</li> <li>• Jet skis except for fishing or under special permit</li> <li>• Parasailing from boat</li> <li>• Collection of marine aquarium fish, invertebrates and plant except for education and scientific purposes and under special permit</li> <li>• Use of fish aggregating devices, anchored or drifting</li> <li>• Commercial fishing</li> <li>• Anchoring except in cases of emergency – anchoring is allowed only in the bay at designated areas (e.g. Cabo de Santa Maria)</li> </ul>

#### 4.6.1.1 Sanctuary Zones

Three (3) sanctuary areas are included within this zone, namely:

##### Techobanine Sanctuary Area

Techobanine's unique and high biodiversity value warrant its safeguarding in the form of a no-take sanctuary area. It has been suggested that a coral reef sanctuary area should be one to two times the size of the larval dispersal distance of the target species (Macia 2001). Schleyer (pers. com. 2007) accentuated the need for inclusion of the wider southern part of the reef, which is important in terms of larval production. He suggested that the influence of the current be from the southern side towards the north that allows for larval movement towards the narrower less vigorous end. It is for these reasons that the complex should be protected throughout a larger area as possible.

The sanctuary begins at the high-water mark at  $S26^{\circ} 38' 55'' E32^{\circ} 53' 41.9''$ , follows a compass heading of  $90^{\circ}E$  to  $26^{\circ} 38' 55'' E32^{\circ} 55' 55.65''$ . At this point following a northern direction to  $S26^{\circ} 33' 13.85'' E32^{\circ} 56' 45.88''$  where it heads  $90^{\circ}W$  until it strikes the HWM at  $S26^{\circ} 33' 13.3'' E3^{\circ} 54' 36.6''$ .

This area is seen as the most important part of the PPMR without which the marine reserve would be achieving considerably less.

##### Rio Bembi Estuary Sanctuary

The Rio Bembi estuary in the bight of the Machungulo Peninsula warrant a no-take sanctuary zone. Starting at the northern shore at  $S26^{\circ} 16' 37.3'' E32^{\circ} 52' 22.4''$  and at  $S26^{\circ} 16' 37.3'' E32^{\circ} 52' 16.9''$ , progressing upstream to  $S26^{\circ} 20' 11.9'' E32^{\circ} 53' 53''$ .

##### Barreira Vermelha Coral Gardens

This area is of ecological significance and requires better protection in the form of a coral sanctuary managed according to the management plan. The Association of the Friends of Inhaca Island (Associação dos Naturais e Amigos da Ilha de Inhaca - ANAI) in conjunction with UEM and the Biology Station of Inhaca are concerned regarding the area's status. INAMAR must heighten its activities to ensure that coral damaging activities are disallowed.

#### 4.6.1.2 Restricted Use Zones

The Restricted Use Zone starts just to the south of Ponta Dobela at  $S26^{\circ} 33' 12.4'' E32^{\circ} 55' 05.9''$  heads  $90^{\circ}E$  until reaching point  $S26^{\circ} 33' 13.85'' E32^{\circ} 56' 45.88''$  on the 50m depth line. From here the line is projected for 9NM (16.8km) northwards to a point almost directly opposite Ponta Mucombo ou Majumbo where it heads  $270^{\circ}W$  until it meeting the seaward boundary of the beach zone already described (800m from the High Water Mark (HWM)).

The inclusion of this area allows the retention of limited use of the coastal resources. With interest from investors being expressed, it ensures low-level use of the area while still providing access to marine resources in a controlled manner. This management area contains rules that pertain to this and the beach zone that ensure a relatively high level of protection. The two proposed sanctuary zones however signify the highest level of this.

Strict access control is essential by MSR/PPMR staff at the Main Gate, Gala and Machangulo Gates to ensure the proper management of the area. Vehicles entering this area must pass through these inspection points and be informed accordingly of user restrictions and limits. Low impact, high value tourism (International Finance Corporation – Proposed Investment Procurement Strategy, 2007) is



favoured in this area that would complement the higher conservation status of this area. Future concessionaires will be required to comply with the regulations to ensure that it has looked after.

The restricted area includes the following prominent points/headlands:

- Matonde
- Ponta Dobela
- Ponta Milibangalala
- Ponta Membene
- Ponta Chemucane.

The official launch sites within the restricted zone are found at Ponta Milibangalala and Ponta Chemucane, and Ponta Dobela (these are the only suitable launch sites within the along the MSR coastline). Most of the boats launching at these sites are from the MSR tourism development situated at this points.

All boats launching at these sites must comply with the safety and sea-worthiness laws that are administered by INAMAR. Boats visiting this launch and all others are required to attain their launch licences from the INAMAR Port Captain in Ponta do Ouro. Vessels that cannot produce sea worthy certificates signed by a Country Marine Authority, e.g. South African Maritime Authorities (SAMSA) of which the skipper has a valid skipper's ticket (South African or Mozambican, Zimbabwean, etc.) will not be permitted to launch at any of the designated launch areas.

Vehicles and trailers may be permitted to park on the beach after launching at Ponta Milibangalala, Chemucane and Dobela due to the fact that the time delay between launching, parking the trailer and the driver returning to the ski-boat now afloat within the surf is not practical and a safety hazard. These launch sites are managed by the Marine Reserve management component.

#### **4.6.1.3 Multiple Use Zones**

Two main controlled use areas exist within the PPMR, the first being the area between Ponta do Ouro and the southern boundary of the Techobanine Sanctuary, and the second stretching from Ponta Mucombo to the mouth of the Rio Maputo, including Inhaca and Portuguese islands, yet excluding the sanctuary and restricted areas surrounding these islands.

Three main swimming/surfing areas exist within the southern section. These are namely Ponta do Ouro, Ponta Malongane and Ponta Mamoli. Motorised boat activity is forbidden within these areas, unless for launching purposes and then only at the designated launch sites. Each area should be flagged and recognisable. These areas constitute an area that includes a 500m arc on the north western side of the aforementioned points. Positions are not necessary for describing these points, as they are prominent landmarks.

Water sports like surfing and kite-surfing are viewed as environmentally friendly activities. Ponta do Ouro is drawing large numbers of surfers from all over the world with the majority being South Africans. It has become a well-known point break and should be valued accordingly. These bays also provide an opportunity for snorkelers to dive in safe shallow waters, where they can experience the underwater pleasures of these points.

Jet skis are banned in all areas of the PPMR, unless they are used for fishing purposes, in this case they must be shown to have been converted and adapted for this purpose, in which case they must be fitted with fishing rod holders, GPS (global positioning system), fishing rods etc. This activity is heavily restricted within the South Africa's coastal zone and forbidden on most beaches and certainly within marine reserves. The same applies within this area, as it will reduce conflict between user groups and reduce disturbance to marine mammals, which draw volumes of tourists to the area. Within the

neighbouring Maputaland and St Lucia MPAs in Kwa-Zulu Natal, South Africa a maximum of three jet-skis – converted for fishing, are allowed to launch per day at Sodwana Bay.

In a study undertaken in 2001 it was found that 72% of the tourists visiting this management area were scuba divers, by far the largest user group, and the biggest income source for the local community. Scuba diving pressure has however taken its toll with quality of diving experience being diminished on the patch reefs within this area, hence the reason for its zoning, aided through management such as limiting the number of operators and placing a limit on the number of divers per site per year.

One commercial operator conducts whale and dolphin watching tours. They operate within the same zone as the scuba operators, resulting in no conflict between themselves and the scuba operators. Further similar operations would however not be encouraged and it is felt that another operator may result in excess disturbance to whales and dolphins.

Access points for ski-boats which are currently used, include:

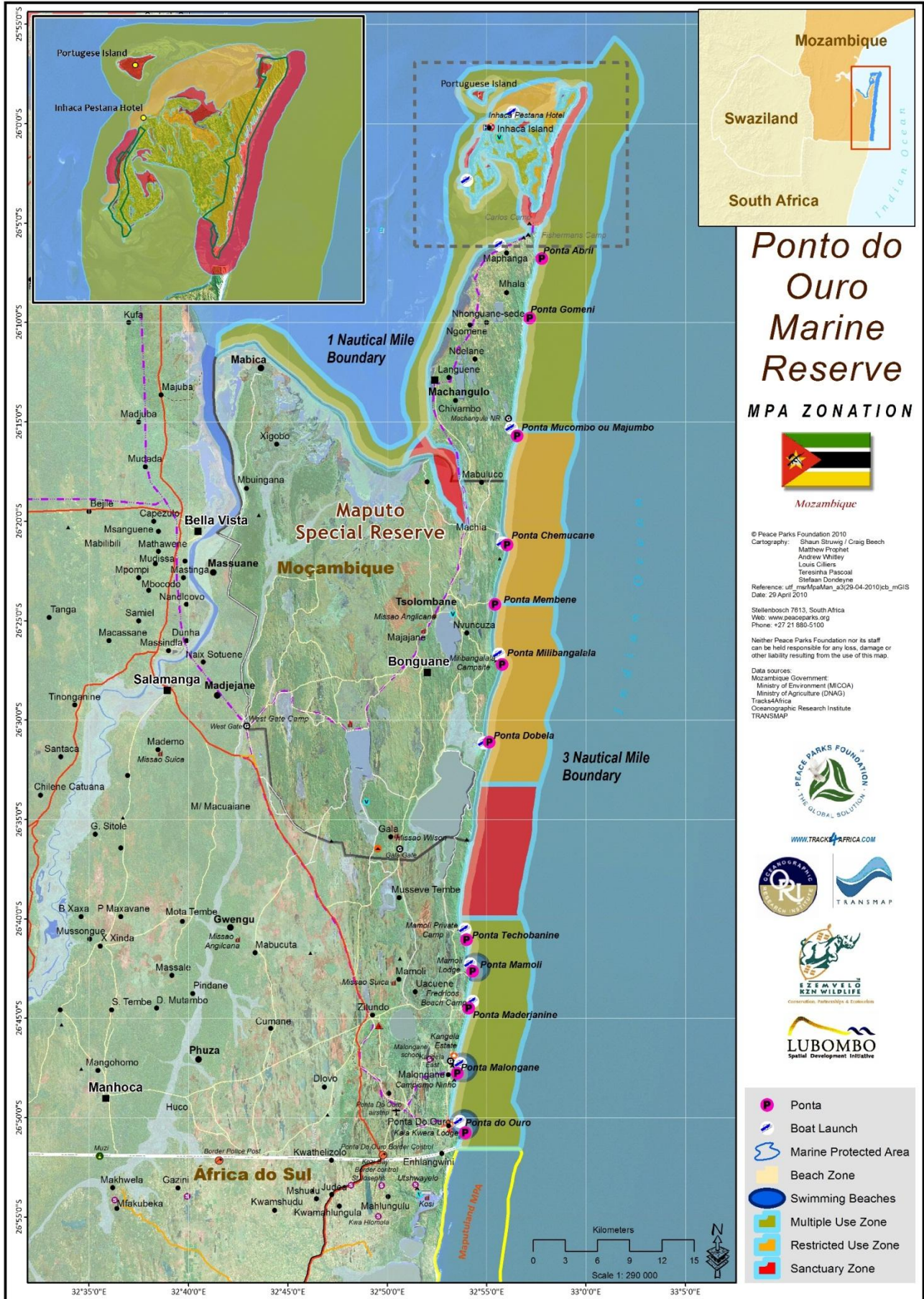
- Ponta do Ouro
- Ponta Malongane
- Ponta Mamoli
- Ponta Techobanine
- Ponta Dobela
- Ponta Milibangala
- Ponta Chemucane
- Ponta Gomeni/Mucombu
- Cabo Santa Maria.

This information has been gathered on site through regular patrols and are the only points at which access can be gained with a boat on a trailer, due to a lack of access it is not possible to launch elsewhere. 4x4's may access the beach at these points in order to launch boats only.

Skippers once underway are to proceed out of the beach zone and to open water so that users within the swimming, snorkelling, surfing zone are not threatened.

These zones are important access and monitoring points where inspections will take place by management agent staff.

A ski-boat launch site exists at Cabo Santa Maria where at least six private developments exist. Regular inspection at these sites is necessary to ensure compliance of the national legislation and proposed regulations set aside in this document relevant to this area.



Map 5: PPMR Zonation





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## SUPPORTING DOCUMENTS

Management Plan and Development Strategy for the Inhaca Archipelago (2010-2014), January 2010

Maputo Special Reserve and Ponta do Ouro Partial Marine Reserve Community Action Plan, May 2010

Maputo Special Reserve Management Plan, May 2010

Maputo Special Reserve and Ponta do Ouro Partial Marine Reserve Management Plans, Consultation and Review Report, May 2010

Mozambique Tourism Anchor Investment Program, Maputo Special Reserve Investment Procurement Documentation including:

MSR Investment Procurement Strategy

Request for Proposals for Ponta Milibangalala, Ponta Dobela and Ponta Chemucane

Partnership Agreements

Concession Contracts



## APPENDICES

### APPENDIX 1. PROCLAMATION DECREE

#### Decree nr. 42/2009 of 21 August 2009

The law 20/97 of October 1<sup>st</sup>, establishes the general grounds for Biodiversity protection regime and, and on the other hand, the article 35 of the Law 3/90, of September 26<sup>th</sup>, adjoined with article 112 of the General Regulations of Marine Fisheries, approved by the Decree 43/2003, of December 10<sup>th</sup>, foresees the provision of conservation measures, preservation and for the management of fishery resources bearing in mind the species and area of fishing, as well as the need for protection of marine mammals and other rare species or under extinction list.

In this terms and under the disposition of article nr. 1 of article 114 of The Marine Fishing Regulations approved by the Decree nr 43/2003 of December 10<sup>th</sup>, The Council of Ministers declares:

Article 1-1. The gazetting of The Partial Marine Reserve of Ponta do Ouro intended to preserve and protect coastal and marine species and their habitats with a total surface 678 sq. km.

2. The Partial Marine Reserve of Ponta do Ouro has the following borders:

**North:** From point **t01**, on the coordinates **S26 ° 11' 38.4" and E 32° 41' 27.6"** to the point **m01** on the coordinates **S26° 10' 37.2" and E 32° 41' 27.6"**; passing through point **m02** with coordinates **S26° 16' 19.2" and E 32° 50' 06"** and more to the north is delimited by point **m06** with coordinates **S25° 57'07.2" and E32° 54' 54"**; and its uppermost point is given under **m14** with coordinates **S 25° 55' 40.8" and E33° 01' 26.4"**.

**West:** From the northern most point of Inhaca Island where you find the point **t14** with coordinates **S25° 58' 15".6 and E3 ° 59' 34".8**, until Ponta do Ouro on point **t11**, with coordinates **S26° 51' 36" and E32° 53' 31".2**, following its contours, including the primary dunes on the continental area covering the prominent points of Malongane, Madejanine, Mamoli, Techobanine, Dobela, Milibangalala, Membene, Chemucane, Mucombo, Gomeni, Abril and, on a straight line 100 m to the interior of Machangulo Peninsula.

**East:** The Indian Ocean in a width 3 nautical miles from Ponta de Ouro at point **m11** up to point **m14**, shown in the Northern Limit.

**South:** From point **t11** with coordinates **S26 51 36 and E32 53 31.2** and the point **m11** with coordinates **S26 51 32.4 and E32 56 45.6** at Ponta de Ouro.

Article 2. Within the limits of the Reserve and without prejudice to the other foreseen restrictions and prohibitions of applicable legislation, the activities listed below are forbidden:

- a). Semi-industrial and industrial fishing
- b). Collection or fishing with any fishing art of fishing in the coral reefs
- c). Fishing with dynamite or any other methods or harmful substances
- d). Fishing of any fish species protected by law
- e). Driving of any motorized vehicle along the beach line
- f). Construction of any type of infrastructures except precarious camps of artisanal fisherman.

Article 3. The violation of the restrictions foreseen in previous articles of this Decree, it is a violation punishable according to the due and specific laws, being aggravated by the fact that the same will have been committed within the boundaries of the Reserve, without uplifting other applicable norms.

Article 4-1. The management of The Marine Reserve and the respective Management Plan rely to The Ministry of Tourism taking into consideration The Zoning Plan, with multiple and restricted use zones within a time schedule not beyond 90 days after this Decree is in action.

Is the responsibility of The Minister for Coordination of Environmental Affairs after hearing the Ministers of Tourism and of Fisheries, to approve The Management Plan for The Partial Marine Reserve.

Approved by The Council of Ministers, on July 14<sup>th</sup>, 2009.

Be Published.

**The Prime Minister, Luísa Dias Diogo.**

## APPENDIX 2. RESEARCH PROJECTS

Table 20: Reef Monitoring and Scuba Diving

<b>Project:</b>	Can diving tourism fulfill the principles of ecotourism and assist local communities? Lessons from Mozambique PhD
<b>Objective:</b>	Raise knowledge about how diving tourism can deliver both environmental and social benefits in developing nations, particularly Mozambique, Africa. This research investigates diving tourism through an analysis of four elements of sustainability: socio-economic, managerial, environmental and cultural aspects.
<b>Explanation/ Justification:</b>	Outcomes from this research will provide a better understanding about diving tourism sustainability in coastal communities and lay the foundation for robust management strategies of sustainable diving tourism in Mozambique and other developing countries.
<b>Implementation:</b>	<u>Contact person:</u> Yara Tibirica <a href="mailto:ecoyara@hotmail.com">ecoyara@hotmail.com</a> , <a href="mailto:yara@responsibledive.org">yara@responsibledive.org</a> PhD project, James Cook University, Queensland, Australia, 07 4781 6369 Through a series of structured, unstructured interviews and workshops with commercial dive operations within the PPMR and other study sites.
<b>Status:</b>	Project design completed
<b>Results:</b>	Pending

Table 21: Assessing the Condition of the Maputaland Coral Reefs

<b>Project:</b>	Bio indicators are animals that can be used as early warning signals for stress in an environment
<b>Objective:</b>	To ascertain a carrying capacity for scuba diving on Maputaland coral reefs so that mitigating measures against reef deterioration are supported scientifically.
<b>Explanation/ Justification:</b>	Effective and justified control of the expanding scuba diving industry in Ponta do Ouro and other parts of the PPMR is essential in terms of insuring long-term sustainability of quality dive sites.
<b>Implementation:</b>	<u>Contact person:</u> Camilla Floros, <a href="mailto:cfloros@ori.org.za">cfloros@ori.org.za</a> , Coral reef monitoring Initial dive surveys conducted by ORI, aimed to use selected bio-indicators to assess fish community condition on South Africa's coral reefs. These bio-indicators consisted of 27 fish species that were chosen based on a number of criteria such as their trophic level, sensitivity to diving/fishing etc. Underwater visual point count method was used to capture fish data. Each point count had a 10 m diameter. A 10 m rope was laid on the reef substratum and any of the selected fish species entering the point count area were counted and their size was visually estimated. An attempt was made to conduct equal number of fish counts at each reef and to conduct the counts on similar reef type i.e. on South Africa's coral reefs, Coral zonation types due to earlier work by ORI are already understood and the same coral community was therefore stuck to. The project should be continued as a standard monitoring project by the management authority or in partnership with a favourable commercial operator.
<b>Status:</b>	Indicators completed based on assessment of some reefs
<b>Results:</b>	The reef called Shallow Malongane was surveyed, to compare it to similar South African reefs. It is not situated within an MPA, and was therefore compared to the well surveyed 2-mile reef in Sodwana Bay's MPA. It was found that the fish community on Shallow Malongane had a lower number of species, average abundance and average biomass compared to the protected reefs within Sodwana Bay. It had far fewer predators and, in particular, a total absence of key predators such as the potato bass. The general picture from the ORI analyses is that the fish community on Shallow Malongane has/is being disturbed and the most likely cause is fishing. At Sodwana Bay and 2-Mile Reef in particular, high diving intensity is having a negative impact on the fish communities. The diving intensity is about 50 000 dives per year at 2-Mile Reef. Dive numbers on Shallow Malongane from Marcos Pereira's MSc thesis, showed approximately 3 000 dives/year. Even if this number has doubled in the last few years, it still suggests that fishing is the most influential activity affecting the fish communities. Carrying capacities, 3 000-5 000 dives/site/year may not be overly high but should be subjected to a separate assessment. This could be done as a desktop study based on the ORI records of the reefs. At this stage, it is recommended by ORI researchers that scuba diving pressure be kept within this range, and that all forms of fishing on the reefs be banned (ORI, unpublished data).

Table 22: Beach Profiles

<b>Project:</b>	Beach profile survey between Santa Maria and Ponta do Ouro
<b>Objective:</b>	To establish the requirements of nesting turtles in terms of beach suitability.
<b>Explanation/ Justification:</b>	Identification of suitable nesting beaches will guide management in terms of protection and zoning.
<b>Implementation:</b>	Contact person: Marcus Pereira (AICM, <a href="mailto:marcuspereira@gmx.net">marcuspereira@gmx.net</a> Eduardo Videira, <a href="mailto:pipocasgq@yahoo.com">pipocasgq@yahoo.com</a> The entire coastline was driven in a 4x4 vehicle. Every 100m a beach profile was recorded along with sand, moisture and vegetation samples. The work was conducted by the AICM in conjunction with the MSR- marine manager.
<b>Status:</b>	Initial surveys undertaken – needs to be expanded to entire PPMR coastline
<b>Results:</b>	Pending

Table 23: Fish

<b>Project:</b>	To monitor the Recreational Shore and boat angling within the PPMR.
<b>Objective:</b>	To monitor the species, size of fish species caught by recreational anglers along the shoreline and on ski boats.
<b>Explanation/ Justification:</b>	Fishing from the shore and ski boats is conducted within the PPMR. The Institute of Fisheries Research, Maputo (IIP) in conjunction with the MSR-marine component collects this data and manages the data-capturing system. This is a useful tool to guide legislation on fish catch regulations.
<b>Implementation:</b>	<ul style="list-style-type: none"> <li>• Marine rangers go out to anglers during their patrols to capture data</li> <li>• Catch cards are made available at strategic points</li> <li>• Catch cards are collected and sent off to IIP.</li> </ul>
<b>Status:</b>	Ongoing
<b>Results:</b>	Pending

Table 24: Marine Mammals

<b>Project:</b>	The Ponta do Ouro bottlenose dolphin population has been monitored for approximately 10 years by commercial operator Dolphin Encounters.
<b>Objective:</b>	To compile a data base of population size, movements and reproductively of the Ponta do Ouro/ Ponta Malongane dolphins, including other species such as whale sharks and humpback-whales.
<b>Explanation/ Justification:</b>	Each species has its own unique ecological and physiological needs and, as a result, different responses to environmental changes will be exhibited by each species. Consequently, species-specific studies are needed to help us understand the ecology, behaviour, evolution, and physiology of as many species as possible, particularly those that could be viewed as keystones in various communities. Studies are also needed on a local scale to help us understand interactions of species within communities, and on a regional scale to allow investigation of entire ecosystems. Species lists are critically important in directing effective and focused flora management (Goukamma MPA management plan, compiled by S. Lemm, 2006).
<b>Implementation:</b>	<ul style="list-style-type: none"> <li>• Contact Angie Gullan of Dolphin Encounters for any data regarding marine mammals conducted within the PPMR</li> <li>• Ensure signed MOUs</li> <li>• Trained dolphin encounters staff collect the data</li> <li>• All new data must be sent to MSR-marine component on a quarterly basis.</li> </ul>
<b>Status:</b>	Ongoing
<b>Results:</b>	250 dolphins

Table 25: Marine Turtles

<b>Project:</b>	Co-ordinated monitoring effort of breeding turtles by Marine Manager (PPF/MSR) with Mozambique Turtle Working Group, WWF – Mozambique and Ezemvelo KZN Wildlife - South Africa. Reliant on partners in the private sector as well as NGO's to cover the 85kms of coastline between Ponta de Ouro and Santa Maria. It includes the 14-year long project being run Pierre Lombard for which reports are available, including those of other monitoring programmes
<b>Objective:</b>	To provide quantitative information on the nesting, tagging and mortality of marine turtles within the PPMR thereby ensuring their protection. To ensure to continued relationship with AICM, Pierre Lombardt (Malongane) and Centro Terra Viva as partners in the project.
<b>Explanation/ Justification:</b>	Several anthropological and natural factors have contributed to the decline of marine turtle populations in Mozambique. These include incidental captures by the prawn and line fishing industries, along with hunting for turtle meat and egg consumption by humans. Turtles are also killed for their shells, which are used for ornamental purposes. Nests are destroyed by coastal erosion and habitat loss. Enhances working relations with the private sector and local community and will result in better turtle protection through regulation by the local community.
<b>Implementation:</b>	Training was provided by Moz. NGO Centro Terra Viva (Maputo). Seven Communities seasonally employed during the breeding season with Monaco funding. Ponta de Ouro community supervised by Angie Gullan of Dolphin Encounters. Four Milibangalala. Community supervised by Marine Manager and Eduardo Mondlane student to ensure reliable data is delivered. Involves the close co-operation of KZN Ezemvelo Wildlife (Kosi Bay – Cons. Manager, Mr Finias Muchacha and Resource Ecologist, DR Scotty Kyle) who have provided tags and assured assistance with compliance and assistance. There are four teams each with a leader from the border to Santa Maria each with an area that is monitored. Data is collected on standardised data forms, which were compiled by Christine Louro who at the time was secretary of the Moz. Turtle Working Group, now with Centro Terra Viva. Completed forms are collected from various partners and checked on a monthly basis by Marine Manager. During the 2007-2008 breeding season the research institute AICM compiled a comprehensive report of breeding success of turtles along the Mozambican coastline. PPMR data dating back to 1994 was included into the report, which gave a good picture of turtle breeding distribution within the reserve, recorded mortalities and species composition.
<b>Status:</b>	Ongoing
<b>Results:</b>	Still to be compiled

### APPENDIX 3. LOCAL RULES

Regulations pertaining to the PPMR will be compiled and will include codes of conduct for staff, operators, visitors and local communities. Below are suggestions regarding local rules for visitors.

#### ACTIVITIES WITHIN THE PPMR ZONES

The permissible and non-permissible activities and uses within the PPMR zones are set out in the Table below:

Table: Permissible and Non-permissible Activities and Uses

Zone	Permissible Activities and Uses	Non-permissible Activities and Uses
Sanctuary	<p><b>General:</b></p> <ul style="list-style-type: none"> <li>• Very low intensity and frequency</li> <li>• Small group sizes</li> <li>• Special events</li> <li>• Very strict regulation and control over entry</li> </ul> <p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Walking on beaches</li> <li>• Swimming, snorkeling, surfing</li> <li>• Guided special interest and sporting trails and events (non-motorised)</li> <li>• Launching of non-motorised vessels at non-fixed sites</li> <li>• Limited traditional subsistence resource harvesting using the minimum tool principle under strict regulation and control within defined areas</li> <li>• Highly regulated scientific research and monitoring that cannot be performed elsewhere in Reserve</li> <li>• Essential management activities and interventions, including law enforcement operations</li> <li>• Special access permits required</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Guided special interest and sporting tours and events (non-motorised)</li> <li>• Highly regulated scientific research and monitoring that cannot be performed elsewhere in Reserve</li> <li>• Essential management activities and interventions, including law enforcement operations</li> <li>• Special access permits required</li> </ul>	<p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Development nodes</li> <li>• All forms of extractive use</li> <li>• Fossicking</li> <li>• Walking on intertidal rocks</li> <li>• Beach driving except for essential management activities and scientific research and monitoring under special permit</li> <li>• Launching of motorised boats except management and scientific research and monitoring vessels at non-fixed sites</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Scuba diving except for highly regulated research and monitoring</li> <li>• Kite and wind-surfing</li> <li>• Parasailing from boat or use of jet skis</li> <li>• All forms of extractive use</li> <li>• Use of motorised vessels except for essential management and research and monitoring and vessels at sea within 3NM mile limit offshore that have the right of passage, but may not be in possession of any fish or parts thereof and may not stop for any reason, other than a declared emergency</li> </ul>
Restricted Use	<p><b>General:</b></p> <ul style="list-style-type: none"> <li>• Regulated and controlled use of low and moderately intensity</li> <li>• Entry and access restricted to and controlled at entrance gates or other demarcated points of entry</li> </ul> <p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Low intensity and impact development from base of dune to low water mark, conforming to adjacent terrestrial zone restrictions</li> <li>• Walking on beaches and rocks and fossicking (non-extractive)</li> <li>• Horse riding</li> <li>• Cycling</li> </ul>	<p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Beach driving except under recreational and education permits for concession operators, and authorised management and research and monitoring vehicles</li> <li>• Harvesting of intertidal organisms other than subsistence invertebrates or under special permit</li> <li>• Collection of marine aquarium fish, invertebrates and plant except for education and scientific purposes and under special permit</li> <li>• Collection of organic and inorganic material except for education or scientific purposes under special permit</li> <li>• Commercial fishing</li> </ul>



Zone	Permissible Activities and Uses	Non-permissible Activities and Uses
	<ul style="list-style-type: none"> <li>• Swimming, snorkeling, surfing, surf-skiing, kite and wind surfing and kayaking</li> <li>• Recreational spear fishing (pelagic species only)</li> <li>• Concession, research and monitoring and management beach driving only</li> <li>• Boat launching a recognised boat-launching sites (concession, research and monitoring and management only)</li> <li>• Special interest and sporting trails, tours and events</li> <li>• Restricted subsistence invertebrate harvesting at designated areas</li> <li>• Scientific research and monitoring</li> <li>• Law enforcement patrols and reaction</li> <li>• Management intervention to restore/maintain ecological processes and the landscape</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Scuba diving</li> <li>• Snorkeling</li> <li>• Kayaking, surf-skiing, kite and wind surfing</li> <li>• Use of motorised vessels</li> <li>• Recreational fishing (pelagic only)</li> <li>• Recreational spear fishing (pelagic game fish only)</li> <li>• Special interest and sporting trails, tours and events</li> <li>• Research and monitoring with scientific permit</li> <li>• Law enforcement patrols and reaction</li> <li>• Management interventions to restore/maintain ecological processes</li> </ul>	<p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Fishing, or being in the possession of bottom fish</li> <li>• Vertical jigging from or the possession of vertical jigs on vessels</li> <li>• Chumming or feeding of fish including sharks</li> <li>• Jet skis except for fishing or under special permit</li> <li>• Parasailing from boat</li> <li>• Collection of marine aquarium fish, invertebrates and plant except for education and scientific purposes and under special permit</li> <li>• Use of fish aggregating devices, anchored or drifting</li> <li>• Commercial fishing</li> <li>• Anchoring except in cases of emergency</li> </ul>
<p><b>Multiple Use</b></p>	<p><b>General:</b> Regulated and controlled use of moderately intensity and relatively high frequency, with entry and access restricted to and controlled at entrance gates or other demarcated points of entry.</p> <p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• Low intensity and impact development from base of dune to low water mark, conforming to adjacent terrestrial zone restrictions</li> <li>• Walking on beaches and rocks and fossicking (non-extractive)</li> <li>• Horse riding</li> <li>• Cycling</li> <li>• Swimming, snorkeling, surfing, surf-skiing, kite and wind surfing and kayaking</li> <li>• Recreational spear fishing (pelagic species only)</li> <li>• Concession, research and monitoring and management beach driving only</li> <li>• Boat launching at recognised boat-launching sites (concession, research and monitoring and management only)</li> <li>• Special interest and sporting trails, tours and events</li> <li>• Restricted subsistence invertebrate harvesting at designated areas</li> <li>• Scientific research and monitoring</li> <li>• Law enforcement patrols and reaction</li> <li>• Management intervention to</li> </ul>	<p><b>Inshore:</b></p> <ul style="list-style-type: none"> <li>• No development from low water mark to outer limit of marine reserve</li> <li>• Vehicles on the beach except for boat launching purposes at recognised launching sites and concession beach driving and authorised management and research and monitoring vehicles</li> <li>• Jet skis</li> <li>• Harvesting of intertidal organisms other than subsistence invertebrates or under special permit</li> <li>• Collection of marine aquarium fish, invertebrates and plant except for education and scientific purposes and under special permit</li> <li>• Collection of organic and inorganic material except for education or scientific purposes under special permit</li> <li>• Commercial fishing</li> </ul> <p><b>Offshore:</b></p> <ul style="list-style-type: none"> <li>• Fishing, or being in the possession of bottom fish</li> <li>• Vertical jigging from or the possession of vertical jigs on vessels</li> <li>• Chumming or feeding of fish including sharks</li> <li>• Jet skis except for fishing or under special permit</li> <li>• Parasailing from boat</li> <li>• Collection of marine aquarium fish,</li> </ul>

Zone	Permissible Activities and Uses	Non-permissible Activities and Uses
	restore/maintain ecological processes and the landscape <b>Offshore:</b> <ul style="list-style-type: none"> <li>• Scuba diving</li> <li>• Snorkeling</li> <li>• Kayaking, surf-skiing, kite and wind surfing</li> <li>• Use of motorised vessels</li> <li>• Recreational fishing (pelagic only)</li> <li>• Recreational spear fishing (pelagic game fish only)</li> <li>• Special interest and sporting trails, tours and events</li> <li>• Research and monitoring with scientific permit</li> <li>• Law enforcement patrols and reaction</li> <li>• Management interventions to restore/maintain ecological processes</li> </ul>	invertebrates and plant except for education and scientific purposes and under special permit <ul style="list-style-type: none"> <li>• Use of fish aggregating devices, anchored or drifting</li> <li>• Commercial fishing</li> <li>• Anchoring except in cases of emergency – anchoring is allowed only in the bay at designated areas (e.g. Cabo de Santa Maria)</li> </ul>

## RULES FOR MANAGEMENT AREAS

### Milibangalala, Dobela and Chemucane Management Areas

- Marine resource users within communities must be registered. Those registered are not required to be in possession of angling licenses
- These users must comply with limits determined by the management authority with regards to the collection of bait and food organisms within the intertidal zone.

### Launch Areas

- Launch sites must be clearly demarcated with beach flags
- Each launch site requires a signboard display, showing the launch area and the swimming and surfing areas
- No swimming is permitted in the launch area. Removal, moving, possessing, damaging or interfering with a demarcation buoy or sign in the PPMR
- No launching or use of jet-skis also called personal watercraft, other than those that have been converted and used for fishing with the PPMR
- No anchoring may take place except in cases of emergency - anchoring is allowed only in the bay at certain designated areas (e.g. Cabo de Santa Maria)
- All vessels that deploy divers must display an Alpha flag.

### Swimming and Surfing Areas

- Sites must be clearly demarcated with beach flags
- Signboards must be displayed, showing the swimming and surfing areas
- No launching is permitted within the swimming and surfing areas.

### Scuba Areas

- No person may SCUBA dive or attempt to SCUBA dive in the PPMR except on the authority of a Recreational SCUBA diving permit
- No person may operate or attempt to operate a SCUBA diving business within the PPMR except on the authority of a SCUBA diving business permit
- The following limits are set for SCUBA businesses:
  - ~ Ponta do Ouro: Six (8)
  - ~ Ponta Malongane: Two (2)
  - ~ Ponta Mamoli: One (1)
  - ~ Ponta Techobanine: Two (2)

- ~ Ponta Dobela: One (1)
- ~ Ponta Milibangalala: One (1)
- ~ Ponta Chemucane: One (1)
- ~ Ponta Mucombu: One (1)
- ~ Ponta Abril: One (1)
- ~ Ponta Santa Maria: One (1)
- ~ Inhaca Island: Two (2)
- The following must be included as standard conditions on SCUBA Diving Business Operators permits:
  - ~ The permit holder must submit to management authority the previous month's data on the "Monthly Data Return Sheet" by the 7<sup>th</sup> day of the subsequent month
- The following must be included as standard conditions on all SCUBA Diving Permits (Recreational and SCUBA Diving Business Operators):
  - ~ The permit holder must operate in accordance with the local rules of the PPMR
  - ~ The permit holder must not conduct fish feeding, chumming or dump any material, or discharge any attractants in the PPMR
  - ~ The permit holder must not use cages for the purposes of cage diving in the PPMR
  - ~ The permit holder must not use or possess any electro/acoustic-discharging devices in the PPMR
  - ~ The permit holder must not use or possess a Diver Propulsion Vehicle in the PPMR
  - ~ The permit holder must not remove or attempt to remove any historical artifact
  - ~ The permit holder must ensure that there is no fishing gear or spear guns on dive vessels.

### Dolphin, Whale Shark and Whale Watching Areas

- No person will chase, herd, catch, kill, harass, feed or disturb marine mammals at any time
- Unless authorised, vessels are not to approach marine mammals within 300m
- The following limits are set for this activity for the relevant areas - the number behind each place name indicates the max number of registered operators:
  - ~ Ponta do Ouro: Two (2)
  - ~ Ponta Malongane: One (1)
  - ~ Machangulo: One (1)
  - ~ Inhaca Island: One (1)
  - ~ Ponta Techobanine: One (1).

## RULES FOR ACTIVITIES

### DIVING

#### General

- Divers must adhere to training standards and guidelines developed by recognised national certifying organisations and under no circumstances are they to dive beyond their qualification
- Trainee's first dives must be conducted over sand until buoyancy control has been mastered
- All Recreational dive groups and SCUBA diving business groups must tow a visible surface buoy
- Do not touch the reef areas - this causes breakages and infection of damaged areas due to the transmission of toxins and disease from one coral to another
- Divers are discouraged from wearing gloves - this prevents holding onto the reef. Holding onto the reef in a current or surge is particularly damaging and gloves can be a major vector of toxins and diseases between species
- Reef damage by diver's fins is frequently caused by either kicking the reef or kicking up sand that can cover the reef. If you have not dived in a while, your skills may need sharpening. Before heading to the reefs, spend some bottom time familiarising yourself with buoyancy and other techniques again
- Underwater photographers should exercise extreme caution when taking close-ups - no hanging on to marine life and no placement of equipment on the substrate
- Be careful with buoy lines when going into caves next to large corals
- Do not harass fish, especially territorial ones that expend a lot of energy trying to fend you off

- Do not collect souvenirs (dead or alive). Everybody must have the opportunity to see an untouched environment
- Report environmental disturbances or destruction of your dive sites to the PPMR Manager
- Never surround an animal/s. There should always be an area for the animal/s to move away from you
- Never touch marine animals. Do not hold onto turtles/seals as they can drown easily
- Standard permit conditions for Recreational SCUBA Divers and SCUBA Dive Business Operators will state, "The permit holder must not conduct fish feeding, chumming or dump any material, or discharge attractants in the PPMR"
- Do not interfere with scientific equipment or markers.

### **Diving Vessels**

- Skippers should familiarise themselves with the local conditions and rules before launching, and ensure compliance
- A top man must be present at all times on the dive vessel and must be a registered skipper
- Vessels must fly an Alpha flag if there are divers in the water
- Each dive vessel must remain within 50m of its surface marker
- A person in control of a vessel must not bring a boat closer than 30m to a dive vessel displaying an alpha flag
- No anchoring may take place on the ocean side within the PPMR except in cases of emergency – anchoring is allowed only in the bay at certain designated areas (e.g. Cabo de Santa Maria).

### **Diving with Sharks**

- Divers should not enter recesses, caves, gullies, caverns, sandy patches or overhangs where sharks are likely to be resting
- No skills exercises (specifically stationary Open Water Skills and Navigation skills) are to be performed in aggregation sites
- A maximum of five groups should be in an aggregation site at a time
- Avoid descending on top of the sharks
- Relax and remain out of the shark's own space or COMFORT ZONE (do not approach closer than 3m to a shark)
- Sharks have right of way
- Avoid approaching a shark head on (at an angle less than 45 degrees) as the shark feels threatened
- In a current, pass over the top of, or around, a group of resting sharks
- Do not block the sharks' exits or wedge the sharks against the reef
- Do not TOUCH, CHASE or HOLDN-ON to sharks
- Do not shine bright lights in the shark's eyes. Be aware that a strobe light from cameras can startle a shark. Strobe lights for photography should not be used at a distance of less than 5m from the shark. Divers should be considerate to both sharks and fellow divers and not chase off sharks as strobes do seem to affect the shark
- The sharks are often inquisitive. Should a shark approach, keep still, maintain buoyancy and breathe slowly, as a sudden exhalation will disturb a naturally inquisitive shark.

### **Marine Mammal Watching**

- No person will chase, herd, catch, kill, harass, feed or disturb marine mammals at any time. Keep a slow, steady speed without changing course. If your vessel is approached by marine mammals to bow ride, refrain from altering course to approach them. Always approach from the side, never from directly behind or from front. Minimize noise disturbance by maintaining a slow, steady speed. Do not approach dolphins/whales with small power craft i.e. jet skis
- Marine mammals have right of way
- Unless authorised, vessels are not to approach marine mammals within 300m
- Refrain from interference if signs of disturbance are apparent (change of directional swimming, fast 'escape' swimming or extended dive times, erratic directional surfacing)
- Avoid mother and calf units. Do not enter into the water with newborns/calves

- Only enter into the water with qualified and authorised personnel
- Keep noise levels to a minimum. No shouting or loud whistling
- A 20-minute viewing time is to be followed. If marine mammals move off within this time, they must be left alone
- Dolphins may not be pursued for capture or attempted to be caught.

## FISHING

- No 'vertical jigging' from or the possession of 'vertical jigs' on vessels is allowed within the PPMR in order to:
  - ~ Prevent the capture and death of large numbers of deepwater reef fish as a result of a high ration of bottom fish by-catch
  - ~ Prevent the capture of coelacanth and other rare/endangered species by recreational anglers
  - ~ Protect deepwater reef fish communities from disturbances and new exploitation
- No fishing line may be discarded
- Fish that are not required for food purposes should be returned to the water. Release these fish carefully
- Promote catch and release. The use of barbless hook and circle hooks will ensure that fish can be released without too much damage to reduce fish mortalities
- IIP line fish catch cards should be completed for all trips, even if no fish were caught (see Figure below)
- Bottom fishing is not allowed within the area. Anglers should therefore not be in possession of bottom fishing tackle on their boats while fishing within the PPMR.

## OTHER

- No person may operate or attempt to operate a tourist programme in the PPMR except on the authority of a tourist programme permit issued by the management committee
- No person may use aircraft or attempt to use aircraft in the PPMR except on the authority of a permit to use aircraft within the PPMR
- No person may camp or attempt to camp in the PPMR, other than at designated campsites
- No person may attempt to light a fire in the PPMR.


 <b>Registo de Capturas da Pesca Recreativa</b> <b>Recreational Fishing Catch Card</b>						
Local Locality		Coordenadas Coordinates	Barco Boat		Praia Shore	
Data Date		Número de Pescadores N. of Anglers in Party	Residência Place of Residence			
Hora Time	De From		Até To		Clube ou Associação Club or Association	
Espécies/ Nome científico Species / Scientific name		Espécies/ Nome vulgar Species/ Common name	Peso (kg) Weight (Kg)		Comprimento/ Length FL (mm) TL (mm)	
Comentários Comments  Nota: Por favor preencha a ficha mesmo se não pescou nada Note: Please complete card even if no fish caught						

Figure: Fishing Catch Card

## OFFENCES AND REMEDIES

Any person not complying with any of these rules commits an offence and is liable for a fine as set out in the Table below.

Table: Offences and Remedies

Activity	Law/Decree	Article	Fine
Fishing without license	51/99	32	50,000.00 to 100,000.00Mt
Scuba diving without a licence	44/2006	24	5,000.00 to 100,000.00Mt
Driving on the beach	45/2006	54	20,000.00Mt
Parking on the beach	45/2006	54	2,000.00Mt
Collection/gathering of invertebrates	45/2006	60	10,000.00Mt
Launching without permits	45/2006	57	10,000.00Mt
Big domestic animals (e.g. horses)	45/2006	58	10,000.00Mt
Small domestic animals (e.g. dogs)	45/2006	58	1,000.00Mt