

Pondoland Marine Protected Area Management Plan

Version 2

July 2012



ADVENTURE PROVINCE
Eastern Cape
PARKS & TOURISM AGENCY



Prepared by: B.Q. Mann and J. Venter

**Contributors: S. Steyn, P. Chadwick, P. Tyldesley, V.
Mapiya, L. Nodwala and A. Boyd**

for

**Department of Environmental Affairs: Branch Oceans & Coast Management,
Department of Agriculture, Forestry and Fisheries: Branch Fisheries and
Eastern Cape Parks & Tourism Agency**

Department of Environmental Affairs
Branch: Oceans and Coast Management
Email: Aboyd@environment.gov.za

Department of Agriculture, Forestry and Fisheries (DAFF)
Department of Environmental Affairs (DEA)
Eastern Cape Parks & Tourism Agency (ECPTA)
Oceanographic Research Institute (ORI)
Ukwazi Development Facilitators (UDF)
Wild Coast Project (WCP)
World Wildlife Fund for Nature – South Africa (WWF-SA)

Contents

CHAPTER 1: BACKGROUND INFORMATION	1
1.1 Description of the Area	1
1.1.1 Site Location	1
1.1.2 Geography and Habitats	1
1.1.3 Sandy Beaches	2
1.1.4 Rocky Shores	3
1.1.5 Estuaries	4
1.1.6 Sub-tidal Reefs	5
1.1.7 Submarine Canyons	5
1.1.8 Pelagic Environment	6
1.1.9 Key Marine Fauna found in the Pondoland MPA	7
1.1.10 Potential Climate Change Impacts	7
1.1.11 Human Settlements	7
1.1.12 History and Archaeological Sites	8
1.2 Boundaries and Zoning	9
1.2.1 Boundaries of the Pondoland Marine Protected Area	9
1.2.2 Zonation within the Pondoland Marine Protected Area:	9
1.2.3 Regulations	11
CHAPTER 2: OVERVIEW OF THE MANAGEMENT PLAN	14
2.1 Introduction	14
2.2 Purpose and Scope of the Management Plan	15
2.3 Development of the Management Plan	15
2.4 Management Framework	16
2.5 Structure of the Plan	16
2.6 The purpose and objectives of the Pondoland MPA	16
2.6.1 Purpose of the Pondoland Marine Protected Area	16
2.6.2 MPA Objectives in terms of the Marine Living Resources Act	17
2.6.3 MPA Objectives in terms of the proclamation	17
2.7 The strategic implementation framework for Pondoland MPA	20
CHAPTER 3: MANAGEMENT OF THE RESERVE, ITS USER GROUPS AND KEY SPECIES	27
3.1 Overview	27
3.2 Management of Key Species and Habitats within the Pondoland MPA	28
3.3 Demarcation of Zones and Signage in the Pondoland MPA	28
3.3.1 Offshore demarcation	28
3.3.2 Inshore beacons	28
3.3.3 Offshore beacons	29
3.3.4 Signage	29
3.4 Management of Fishing Activities	29
3.4.2 Commercial Fishing	29
3.4.3 Charter-boat Fishing	30
3.4.4 Recreational Fishing	30
3.4.5 Spearfishing	30
3.4.6 Recreational Angling and Spearfishing Competitions	30
3.4.7 Recreational Invertebrate Harvesting and Bait Collecting	31
3.4.8 Subsistence Fishing and Invertebrate Harvesting	31
3.4.9 Aquarium Collecting	31
3.4.10 Extractive Use in the Restricted Zone	31
3.5 Offshore Non-consumptive Use	31
3.5.2 Recreational SCUBA Diving	32
3.5.3 Commercial SCUBA Diving and SCUBA Diving Businesses	32
3.5.4 Boat-based Whale and Dolphin Watching	32

3.5.5	Sight-seeing Charters	33
3.6	Launch Site Management.....	33
3.6.2	Port Edward launch site	33
3.6.3	Gwegwe launch site	34
3.6.4	Msikaba launch site.....	34
3.6.5	Mbotyi launch site	34
3.6.6	Mzimvubu/Port St Johns launch site	34
3.7	Anchoring within the Pondoland MPA	34
3.8	Private Moorings	35
3.9	Overflying of the Pondoland MPA	35
3.10	Estuary and River Management.....	35
3.11	User and Vessel Safety Requirements.....	35
3.12	Tourist Programmes	36
3.12.1	Potential Tourist Programmes	36
3.12.2	Existing Tourist Programmes.....	37
3.13	Emergency Events such as Storms.....	39
3.14	Appropriate Boating and Fishing Organisations	39
CHAPTER 4:	MANAGEMENT OF INFRASTRUCTURE AND EQUIPMENT	40
4.1	Equipment Required for the Management of the Pondoland MPA.....	40
4.2	Machinery Safety and Marking Requirements in terms of SAMSA and the Occupational Health and Safety Act for sea-going vessels.....	40
4.3	Use of Equipment.....	40
4.3.1	Capacity Requirements.....	40
4.3.2	Equipment Register.....	41
4.3.3	Equipment Maintenance and Insurance.....	41
4.4	Maintenance of Infrastructure.....	42
CHAPTER 5:	COMPLIANCE	43
5.1	Background	43
5.2	Objectives.....	43
5.3	Compliance Methodologies	43
5.4	Community Involvement.....	43
5.5	Voluntary Compliance through Education	44
5.6	Enforcement Operations.....	44
5.6.1	Patrol Schedules	44
5.6.2	Other Enforcement Operations	44
5.6.3	Database of Offenses and Offenders.....	45
5.6.4	Compliance and Legal Proceedings	45
CHAPTER 6:	Organizational capacity.....	46
6.1	Staff.....	46
6.2	Skill Requirements	46
CHAPTER 7:	AWARENESS.....	48
7.1	Background	48
7.2	Objectives.....	48
7.3	Awareness Methodologies	48
7.4	Programme Activities.....	48
7.4.1	School Programmes.....	49
7.4.2	Fishers	49
7.4.3	General Visitors addressing all user groups.....	49
7.4.4	Specific User Groups “Codes of Conduct”	49
7.4.5	Community Awareness	49
7.4.6	Volunteers	49
7.5	Addressing Conflict between User Groups within the MPA.....	50
CHAPTER 8:	SCIENTIFIC RESEARCH AND MONITORING	51
8.1	Background and Overview	51
8.2	Subsidiary MPA research and monitoring plan	52

CHAPTER 9: PONDOLAND MPA ADVISORY FORUM.....	53
9.1 Background	53
9.2 Composition of the Advisory Forum	53
9.3 The Structure of the Advisory Forum.....	53
9.4 Roles of the Advisory Forum	54
9.5 Forum Meetings	54
9.6 Financing of the Advisory Forum.....	54
CHAPTER 10: FUNDING, AUDITING & CONCLUSION	55
10.1 Funding and Responsibility	55
10.2 Auditing of Management Activities and Effectiveness	55
10.2.1 Objectives:.....	55
10.2.2 Implementation:	55
10.3 Conclusion: Amendments and Updating of the Pondoland MPA Management Plan	56
REFERENCES	57
APPENDIX 1. Algae and invertebrate species recorded in the Pondoland MPA (from Celliers <i>et al.</i> 2007).....	59
APPENDIX 2. Fish species recorded from the northern Transkei and the Pondoland MPA (from Mann <i>et al.</i> 2006).....	61
APPENDIX 3. Contingency plan for emergency events (adapted from the plan developed by Peter Chadwick for the De Hoop MPA)	65
APPENDIX 4. Checklist of equipment required for management of the Pondoland Marine Protected Area	67
APPENDIX 5. Issues that need to be taken into consideration in the case of an incident.....	71
APPENDIX 6. Additional training requirements for MPA managers.....	73

CHAPTER 1: BACKGROUND INFORMATION

1.1 DESCRIPTION OF THE AREA

1.1.1 Site Location

The Pondoland MPA lies in the Eastern Cape Province between the Mzamba River (31° 06.613S; 30° 10.514E) south of Port Edward and the Wild Coast Casino and the Mzimvubu River (31° 37.523S; 29° 33.215E) at Port St Johns and extends out to sea to the 1000 m depth contour which is a distance of approximately 10-15 km (Figure 1.1).

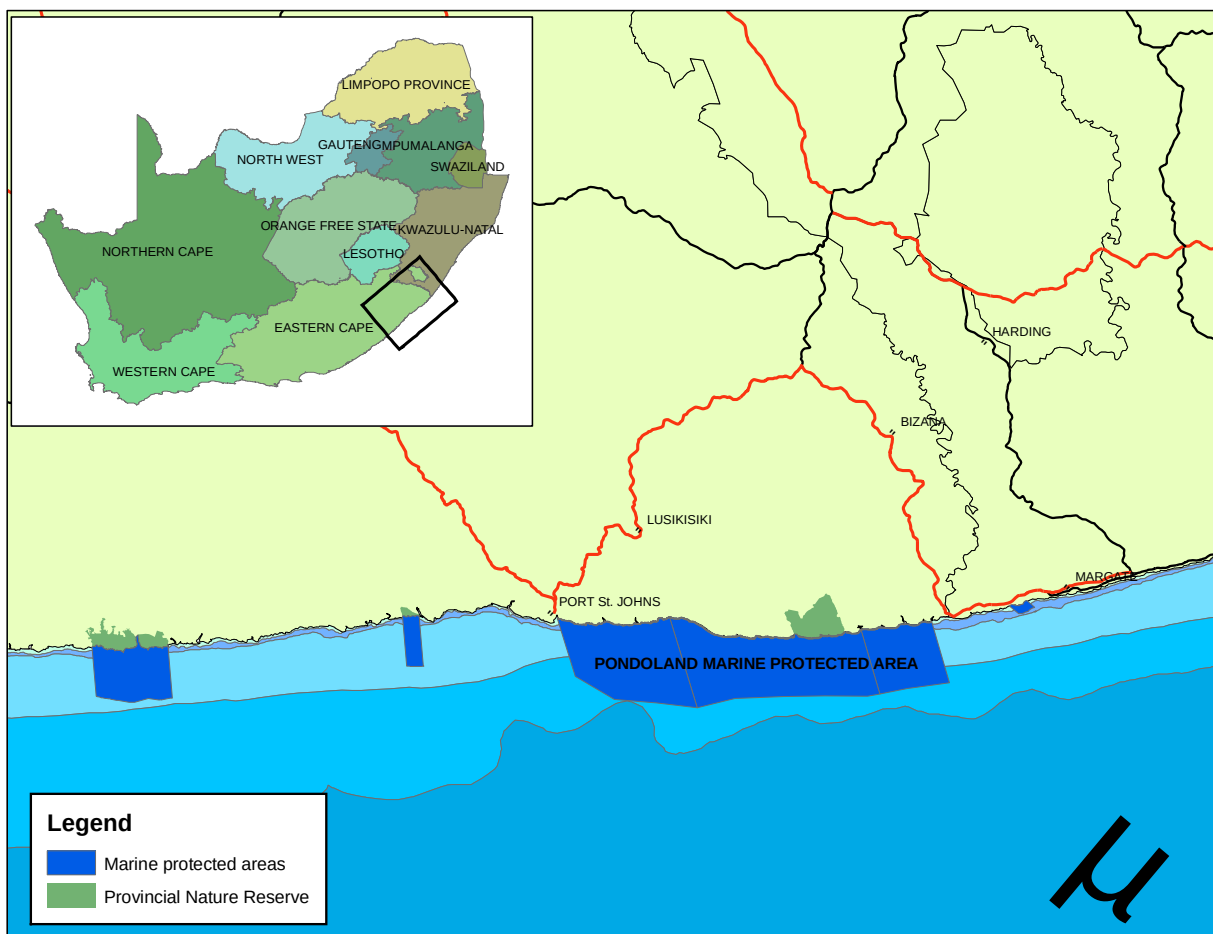


Figure 1.1: Location of the Pondoland MPA in the Eastern Cape, South Africa

1.1.2 Geography and Habitats

The northern parts of the Pondoland coast near Mzamba and Mnyameni are characterised by outcroppings of Cretaceous Mzamba sediments which are rich in marine fossils. The coastline in this region consists mainly of sandy beaches with a few rocky outcrops. Further south and inland, the coast is dominated by marine-cut benches of the quartzitic Msikaba Sandstone Formation. In parts such as the Xolobeni area between the Mzamba and Sikombe Rivers, these platforms are overlain by sand dunes of up to 80 m in height which form part of the Berea Red Sand Formation (de Villiers & Costello 2006). These sands contain high concentrations of ilmenite and rutile which have sparked off mining interests in the area. Rivers in the area are deeply incised through the resistant sandstone resulting in spectacular, forested gorges. South of the Lupatana River, the

coastline becomes increasingly steep until at Waterfall Bluff a vertical sandstone cliff extends about 100m above the sea with a number of waterfalls dropping directly into the sea. This forms part of the Egosa fault which runs in an ENE-WSW direction and was probably formed during the break-up of Gondwanaland. South of Waterfall Bluff and the Egosa Fault, the geology changes with outcroppings of the Mbotyi Conglomerate Formation. Younger Karoo sediments and outcroppings of dolerite characterise the geology of the area between Mbotyi and Port St Johns. Here the coastline is characterised by numerous rocky headlands interspersed by small sandy beaches.

Rainfall in the Pondoland region is relatively high averaging 1200 mm per annum with about 70% occurring in summer between October and March. Coastal vegetation north of Mbotyi is dominated by grassland and forested river gorges with high numbers of endemic plant species (i.e. known as the Pondoland centre of plant endemism). South of Mbotyi the coastal vegetation is dominated by large tracts of coastal forest. The larger estuaries within the Pondoland MPA including (from north to south) Mzamba, Mnyameni, Sikombe, Mtentu, Msikaba, Mkozi, Mbotyi, Mzintlava and Ntafufu estuaries are in a relatively healthy state (Harrison *et al.* 2000) with the Mtentu and Msikaba estuaries in particular ranking as some of the most pristine and spectacular estuaries in South Africa.

Offshore the powerful Agulhas Current dominates the oceanography of the region bringing warm, nutrient poor, tropical water southwards. The continental shelf in this region is relatively narrow and averages 10 km in width to the shelf break, being widest off Waterfall Bluff (14 km) and narrowest just north of Port St Johns (6 km). Five large submarine canyons incise the shelf viz. the Mtamvuna, Mtentu, Egosa, Mbotyi and Mzimvubu canyons. Of interest from a biodiversity perspective are the submerged, coast-parallel, palaeo-dune cordons forming reef complexes which extend along most of the KwaZulu-Natal and former Transkei coastline. Along the southern KwaZulu-Natal and Pondoland coast this relict ridge system varies markedly in width (1.2-3.6km) and relief (1-26m). Between Port Edward and the Mtentu River it has minimal relief (<5m), but increases to 10m southwards of Port Grosvenor where it also trends shoreward. One of the most noticeable (and well-known) offshore reef areas in the Pondoland region occurs just south of Msikaba which is most likely part of the palaeo-dune cordon.

The main habitats that can be found in the Pondoland MPA are;

1.1.3 Sandy Beaches

Sandy beach ecosystems include all three typical zones, namely the surf zone, the beach including the intertidal and backshore zones and the dunes, made up of small, recently formed foredunes and large, established secondary dunes. Both processes associated with sandy beaches are evident along the Pondoland coast, namely the occurrence of littoral transport of sand in the surf zone, as well as wind transport on the landward side, where the sand is trapped by the plants growing above the drift line, which results in the development of foredunes. The vegetation associated with sandy beaches includes a mixture of species such as sea pumpkin (*Arctotheca populifolia*), goat's foot (*Ipomoea brasiliensis*), Hottentot's fig (*Carpobrotus saueriae*) and seeplakkie *Scaevola thunbergii*, which is replaced on the more stable secondary dunes by species such as bush tick-berry (*Chrysanthemoides monilefera*), coastal red milkwoods (*Mimusops caffra*), wild bananas (*Strelitzia nicolai*), coastal silverleaf (*Brachylaena discolor*) and a range of grass species (e.g. *Sporobolus virginicus*).

Cycles of erosion and accretion are well defined with large rivers such as the Mzimvubu River supplying large amounts of alluvial sediment. Inshore, long-shore currents tend to move accumulated sediments in a northerly direction, particularly during storm events, whereas offshore sediments are transported in a southerly direction by the Agulhas Current. Typical sandy beach intertidal meiofauna include nematodes, copepods and ostracods; while macrofauna living in this zone include sand clams (*Donax madagascariensis*), plough snails (*Bulia natalensis*), mole crabs (*Emerita sp.*) and ghost crabs (*Ocypode sp.*). These animals feed on the abundant zooplankton and other organisms brought to the shore by wave action. The most common bird species found along sandy beaches in the Pondoland MPA include kelp gulls (*Larus dominicanus*), white-fronted plovers (*Charadrius marginatus*) and occasional roosts of swift terns (*Sterna bergii*). A variety of fish species are found in the surf zone off sandy beaches including lesser sandsharks (*Rhinobatus annulatus*), stingrays (*Dasyatis*

spp), dusky kob (*Argyrosomus japonicus*), Natal stumpnose (*Rhabdosargus sarba*), and Cape stumpnose (*R. holubi*), shad/elf (*Pomatomus saltatrix*) and many others.

Threats to sandy beaches in the Pondoland MPA:

- Any development in the littoral active zone, including breakwaters, groynes or buildings may result in erosion of the beach or sand inundation of buildings. Artificially stabilising the dunes or removing the foredunes for development will remove the reservoir that supplies sand to the beach.
- Pollution in the form of plastic, oil spills and untreated sewage remains a permanent threat which needs to be properly managed.
- Overexploitation of sandy beach organisms such as ghost crabs and mole crabs for bait provides a threat to the sustainable use of these organisms.
- Ineffective compliance in these areas (i.e. ensuring that users comply with size and bag limits) is a threat to the sustainable use of these organisms.

1.1.4 Rocky Shores

Five zones and their associated groups of plants and animals are present in the Pondoland MPA, namely (from high shore to low shore); the Littorina zone with animals such as littorinid snails (*Littorina* spp.); the Oyster belt characterised by a dense band of Natal rock oysters (*Saccostrea cucullata*); the Upper Balanoid zone with barnacles (e.g. *Tetraclita* spp.), winkles (e.g. *Oxystele* spp.) and limpets (e.g. *Patella* spp.); the Lower Balanoid zone supports brown mussels (*Perna perna*), coralline algae (e.g. *Amphiroa* spp.), zoanthids (e.g. *Palythoe* spp.) and sponges (e.g. *Hymeniacidon* spp.) and the Infratidal zone supports numerous species of algae, red bait (*Pyura stolonifera*), sea urchins (e.g. *Diadema* spp.), etc. Although Pondoland is located on the subtropical East Coast, it forms an important transition zone into the warm-temperate South Coast with a high proportion of endemic species, particularly algae. With the high wave energy and the large percentage of rocky shore habitat found along the Pondoland coast, the diversity and biomass of rocky shore intertidal organisms is particularly high. These habitats form an important food source to man and natural predators alike. Natural predators associated with rocky shore habitats in the Pondoland MPA include species such as octopus (*Octopus vulgaris*) and East Coast rock lobster (*Panulirus homarus*). Birds such as the African black oyster-catcher (*Haematopus moquini*) and white-breasted cormorants (*Phalacrocorax carbo*) are frequently seen. Subtidally, species such as blacktail (*Diplodus capensis*), strepie (*Sarpa salpa*), pinky/piggy (*Pomadasys olivaceum*), stonebream (*Neoscorpis lithophilus*), bronze bream (*Pachymetopon grande*), zebra (*Diplodus hottentotus*), banded galjoen (*Dichistius multifasciatus*) and a variety of rockcod species (*Epinephelus* spp.) form an important component of the ichthyofauna.

Man has been harvesting intertidal rocky shore organisms along the Pondoland coast such as mussels, limpets, oysters, octopus, rock lobster and inshore fish species for thousands of years. The presence of shell middens along the coast indicate that low-scale exploitation by San hunter-gatherers has been taking place for at least the last 150 000 years (de Villiers & Costello 2006). Still today the resident amaMpondo people and visitors to the area harvest shellfish as an important source of protein and as a luxury seafood, respectively.

Threats to the rocky shores:

Overexploitation of the inter-tidal invertebrate resources. Examples of denuded areas as a result of excessive harvesting of intertidal rocky shore invertebrates (e.g. brown mussels) are common along the Pondoland coast. The establishment of several areas along the coast within the Pondoland MPA which are zoned for no-take are an attempt to protect this habitat and ensure the seeding of adjacent exploited areas.

- Ineffective compliance of these no-take areas provides a threat to the sustainable use of invertebrate resources in adjacent exploited areas.
- Pollution in the form of untreated sewage is a threat as contaminants may be concentrated in the flesh of filter-feeding organisms posing a risk to consumers.

- Overfishing of rocky intertidal fish species. Many fish species found in close association with rocky shores and shallow subtidal reefs are resident, slow growing species which are vulnerable to over-exploitation.
- Competition from the invasive Mediterranean mussel (*Mytilus galloprovincialis*) which is gradually moving northwards from the southern Cape, poses a threat to indigenous brown mussel populations. This problem may be exacerbated by overexploitation of the indigenous mussel population (*Perna perna*).

1.1.5 Estuaries

There are 43 known estuaries in the Pondoland MPA with some of the larger, better known systems including (from north to south): Mzamba, Mpahlane, Mnyameni, Kwanyana, Sikhombe, Mtentu, Msikaba, Mkweni, Lupatana, Mkozi, Mbotyi, Mzintlava, Ntafufu, Nkodusweni and Mzimvubu. These estuaries range from small coastal streams to large permanently open tidal estuaries. Estuaries form an interface between the terrestrial drainage system and the sea and are thus susceptible to changes far inland. Estuaries can also be viewed as landward extensions of the marine environment and are thus also influenced by conditions at sea. They are productive ecosystems and provide a number of important ecosystem services within the coastal zone including the provision of nursery habitats for numerous species of marine fish and invertebrates. Although few have been sampled (8), the health of estuaries within the Pondoland MPA is generally regarded as good in terms of ichthyofauna, water quality and aesthetics (Harrison *et al.* 2000).

The protection of the health of estuaries within the Pondoland MPA is extremely important to maintaining the important ecological functions that they provide. Only two estuaries within the Pondoland MPA have been fully protected as no-take restricted estuary zones (i.e. the tidal portion of the Mtentu and Msikaba Rivers), while seven estuaries (i.e. the tidal portions of the Mnyameni, Sikhombe, Mkweni, Mbotyi, Mzintlava, Ntafufu and Nkodusweni Rivers) have been designated as controlled estuary zones.

The management of estuaries within the Pondoland MPA is discussed in more detail in Chapter 3 and should be aligned with the requirements of the Integrated Coastal Management Act (No. 24 of 2008). This section should also be read in conjunction with the Estuarine Management Plans currently being developed for the Msikaba and Mtentu estuaries when they have been completed.

Threats to estuaries in the Pondoland MPA:

- Reduced freshwater inflow into estuaries is probably the greatest threat to Pondoland's estuaries. The damming of rivers for irrigation, industry and potable water alters the seasonal river flow patterns and hydrodynamics of estuaries (e.g. frequency of scouring, mouth opening etc.). Similarly, extreme drought due to climate change will also result in severe estuarine degradation.
- Increased siltation and turbidity is also a threat to Pondoland's estuaries which are historically deep, clean water systems. Increased rates of sedimentation generally result from poor management in the river catchment areas including overgrazing, deforestation, poor burning practises, bad soil tillage practises, planting crops in riparian zones and other poor agricultural practises.
- The building of roads and especially bridges that alter the natural estuarine flow and circulation.
- Property development alongside estuaries with associated building of jetties and slipways can result in infilling and the slowing down of tidal action.
- Pollution is a further threat to estuaries, with specific emphasis on effluent from sewage systems and storm water runoff from agricultural lands (which have been treated with fertilizers, pesticides and herbicides). This leads to increased concentrations of organic compounds in the estuary which can result in excessive plant/algal growth (eutrophication) and/or poisoning.
- Overfishing of estuarine fish (e.g. spotted grunter *Pomadasys commersonii*, dusky kob *A. japonicus*, river bream *Acanthopagrus vagus*, river snapper *Lutjanus argentimaculatus*, etc.) and invertebrate resources (e.g. sand prawns *Callinassa kraussi*, mud prawns *Upogebia africana* swimming prawns *Penaeus spp.*, estuarine mud crabs *Scylla serrata* etc.) poses a real threat to the value of these systems as important nursery areas.

- Alien vegetation infestation by weed species such as *Lantana* and *Chromolaena* along the banks of estuaries can also become a threat.

1.1.6 Sub-tidal Reefs

The Pondoland MPA contains a substantial area of subtidal reef habitat. While much of this habitat remains unmapped, a large number of shallower reef areas (1-30m depth) were surveyed during the Pondoland marine biodiversity survey conducted during 2002-03 (Mann *et al.* 2006, Celliers *et al.* 2007). Results of the benthic survey showed a shift from algal-dominated reefs in the north to suspension-feeder-dominated reefs in the south probably due to increased turbidity (reduced sunlight penetration) and high nutrient levels from riverine input (especially from the Mzimvubu River), as well as localised upwelling in this area. A similar shift was found with increasing reef depth with algae dominating shallower reefs and suspension-feeding communities dominating deeper reefs (see Appendix 1 for a list of algae and invertebrate species). During an underwater visual census conducted during the same survey, a total of 139 fish species from 49 different families was identified and a relatively high proportion of endemic species (26.6%) was recorded (see Appendix 2). Endemic linefish species (mainly from the Family: Sparidae), many of which are heavily overexploited in other areas, were particularly abundant in this region. Important species in this regard included black musselcracker (*Cymatoceps nasutus*), scotsman (*Polysteganus praeorbitalis*), englishman (*Chrysoblephus anglicus*), slinger (*Chrysoblephus puniceus*), bronze bream (*P. grande*), etc. Further offshore on reefs deeper than 30 m, monitoring of linefish catches has revealed that species such as seventy-four (*Polysteganus undulosus*), red steenbras (*Petrus rupestris*), dageraad (*Chrysoblephus cristiceps*), yellowbelly rockcod (*Epinephelus marginatus*) and geelbek (*Atractoscion aequidens*) are also abundant in the Pondoland area. A number of the above-mentioned species are known to spawn in the Pondoland region (Garratt 1988) thus making protection of the area particularly important for the future conservation of these species.

Threats to the sub-tidal reefs:

- While there are unsubstantiated reports of illegal trawling and long lining taking place off the Pondoland coast, probably the greatest threat to sub-tidal reefs is over-exploitation of reef fish populations by recreational and commercial line-fishing. Many of these species are resident, slow-growing species with vulnerable life history characteristics such as sex change and forming spawning aggregations. Protection of these over-exploited linefish species was one of the primary motivating factors which led to the proclamation of the Pondoland MPA.
- Non-compliance with fishery regulations and illegal fishing in the offshore Restricted area is considered to be a serious threat to these vulnerable habitats and species.
- Anchoring on reefs and the damage caused to benthic flora and fauna by dragging anchors and anchor chains is a further threat to these habitats, particularly in light of the strong north-south current typically found off the Pondoland coast.

1.1.7 Submarine Canyons

Five large submarine canyons incise the continental shelf within the Pondoland MPA namely the Mtamvuna, Mtentu, Egosa, Mbotyi and Mzimvubu canyons. Little is known about the biodiversity within these habitats but surveys conducted in similar canyons in the iSimangaliso Wetland Park have shown that these habitats support a rich benthic fauna and flora that is diverse and distinct from that of shallower subtidal reefs (Sink *et al.* 2006). Studies in similar habitats elsewhere have discovered numerous new fish and invertebrate species, including the coelacanth (*Latimeria chalumnae*) off Sodwana.

Threats to the submarine canyons:

- Possible threats to these unique habitats include fishing, mining, oil and gas exploitation and dumping. In this regard many benthic deep water fauna are very slow growing and extremely sensitive to human impacts.

1.1.8 Pelagic Environment

This large “habitat” refers to the sea surface and water column within the Pondoland MPA. A large variety of pelagic flora and fauna are associated with this habitat ranging from the smallest phytoplankton to humpback whales (*Megaptera novaeangliae*). Numerous species of fish, sharks, sea birds and marine mammals undertake seasonal migrations through the Pondoland MPA. The most well known of these migrations is the annual “sardine run” when large shoals of pilchard (*Sardinops sagax*) undertake an annual winter migration from the Southern Cape to the warmer waters of central KwaZulu-Natal. The reasons for this migration are not well understood but the migration appears to consist of an offshoot of the main biomass of pilchard on the eastern Agulhas Banks which follows cooler northward moving water up the east coast of South Africa during winter (Beckley & van der Lingen 1999). Associated with the annual sardine run is a huge array of marine predators, many of which have evolved to capitalize on this abundant food resource. Predatory fish species such as elf/shad (*P. saltatrix*), garrrick/leervis (*Lichia amia*), Cape yellowtail (*Seriola lalandi*), geelbek (*A. aequidens*), dusky kob (*A. japonicus*), etc. are often found in close association with the sardine run and feed extensively on these fish in order to build up condition prior to spawning. Similarly, copper (*Carcharhinus brachyurus*) and dusky sharks (*Carcharhinus obscurus*) take advantage of this bountiful food supply as do South African fur seals (*Arctocephalus pusillus*), common (*Delphinus delphis*) and bottlenose dolphins (*Tursiops truncatus*) and a raining armada of Cape gannets (*Morus capensis*). Interesting oceanographic features off Waterfall Bluff appear to act as a “gateway” to northward moving shoals of pilchards and their associated predators. The migration often appears to be restricted in this region until eddies breaking off the main Agulhas Current move northwards and allow the northward migration to continue. This phenomenon allows for world class boat-based scuba diving and whale and dolphin watching, especially in the region between Msikaba and Port St Johns during June-July each year. This activity provides a huge opportunity for sustainable tourism and could provide much needed revenue for the MPA.

Other migrations that occur through the Pondoland MPA that are not directly associated with the sardine run include the seasonal migration of humpback whales to their calving areas in northern Mozambique (May-July) and their subsequent return migration back down to Antarctica (September-November). Bottlenosed dolphins are commonly seen in the Pondoland MPA throughout the year and small pods appear to remain in distinct home ranges of 30-40 km in length within 1 km of the shore (Ross *et al.* 1989) moving up and down the coast feeding on both pelagic and reef fish species. Turtles such as loggerheads (*Caretta caretta*) and leatherbacks (*Dermochelys coriacea*) pass through the Pondoland MPA either on their way to or from breeding grounds in Maputaland and southern Mozambique. Although also transitory, green turtles (*Chelonia mydas*) are frequently seen feeding on shallow reefs in the Pondoland MPA. Adult ragged-tooth sharks (*Carcharias taurus*) are known to migrate through the Pondoland MPA up into warmer KZN waters during winter to mate and pregnant females return to the Eastern Cape during the summer months to drop their pups (Dicken *et al.* 2006).

Threats to the pelagic environment

- The risk of oil pollution is probably the greatest threat to the pelagic marine environment. With the amount of shipping passing through the Pondoland MPA and the notoriously rough seas which can develop in this region, an action plan needs to be developed in case of a shipwreck and/or an oil spill. This should be done by following MARPOL guidelines.
- Plastic pollution also provides a threat to the pelagic environment particularly for seabirds and turtles which are known to ingest plastics.
- Overfishing of migratory fish species. This is of particular concern for migratory species which are known to aggregate during spawning (e.g. geelbek, dusky kob, seventy-four etc.),
- Ghost fishing. Pieces of gill net, broken-off stretches of longlines and lost fish traps continue to “ghost fish” for years after they have been lost. If found, such fishing gear should be removed from the marine environment.
- Uncontrolled tourism ventures associated with the sardine run.
- Oil and gas exploration within the MPA could also be considered as a threat to the pelagic environment.

1.1.9 Key Marine Fauna found in the Pondoland MPA

Key species requiring either monitoring and/or active management include (further discussed in Chapter 3):

- Marine mammals (whales, dolphins, seals)
- Seabirds and estuarine birds
- Turtles
- Sharks
- Offshore linefish species (particularly overexploited species such as seventy-four, red steenbras, black musselcracker, dageraad, scotsman, englishman, slinger, yellowbelly rockcod, catface rockcod *Epinephelus andersoni*, geelbek, dusky kob, etc.)
- Inshore linefish species (particularly vulnerable species such as bronze bream, white musselcracker *Sparodon durbanensis*, white steenbras *Lithognathus lithognathus*, dusky kob, etc.)
- Estuarine linefish species (particularly vulnerable species such as spotted grunter, dusky kob, river bream, river snapper, etc.)
- Sardines (*Sardinops sagax*) and species associated with the sardine run
- Intertidal invertebrates (especially brown mussels, limpets, oysters, red bait, octopus, east coast rock lobster, etc)
- Estuarine invertebrates (especially mud crabs, sand prawns, mud prawns, swimming prawns, etc.)

1.1.10 Potential Climate Change Impacts

The potential impacts of climate change on the Pondoland MPA are numerous but include: sea level rise and increased seawater penetration into estuaries; increase in sea temperature and associated changes in species composition; more frequent and severe storm events and associated coastal erosion, change in rainfall patterns, ocean acidification, etc. However, as much of the Pondoland coastline is undeveloped this will provide an element of resilience and allow for this coastline and its associated biodiversity to adapt to some of the impacts of climate change and sea level rise. For this reason it would be useful to monitor the effects of climate change in the MPA which can then be used as a benchmark to compare against more developed and disturbed stretches of coastline.

1.1.11 Human Settlements

There are nine villages/communities living within 5 km of the Pondoland MPA coast including Mzamba, Mtentu, Ndengani, Rhole, Cutweni, Mbotyi, Manteku, Noqekwane and Mkhambathi (Steyn 2009). These villages fall into the following municipal wards: Port St Johns Local Municipality - Ward 10, 11; Ngquza Hill Local Municipality - Ward 22, 23, 25; Mbizana Local Municipality - Ward 16, 24. Generally the areas between the Sikombe River and the Mbotyi River are sparsely populated whereas the areas between the Mzamba and Sikombe and the Mbotyi and Umzimvubu Rivers are more densely populated. The communities in the Pondoland area are very homogenous in composition consisting entirely of amaMpondo. There are a small number of white cottage owners that have property along the beach areas, but these are not permanent residents of the area. Cottage developments are found at Mnyameni, Sikombe, Msikaba, Kilroe, Port Grosvenor, Mkwini, Lupatana, Mbotyi, Manteku, Black Sands, Ntafufu and Agate Terrace.

The dominant language is isiXhosa although the people do speak a local variation called isiPondo. English proficiency is low and only a small number of people can communicate fluently in English. There are no official statistics available on the total number of households or population number but it is estimated to be approximately 8750 people (Table 1.1).

Table 1.1: Human population along the coast of the Pondoland MPA (Steyn 2009)

Community area	Approximate Number of Households	Population size
Noqekwane	100	500
Manteku	100	500
Mbotyi	200	1000
Cutweni	150	750
Rhole	50	250
Ndengani	50	250
Mkambathi	500	2500
Mtentu	100	500
Mzamba	500	2500
Total	1750	8750

These are generally poor communities with little income and are very reliant on the natural resources, including marine resources, for their daily subsistence. The area immediately adjacent to the coastline is generally unsuitable for agriculture (sandy soils which are leached and acidic) and the vegetation type is sub-optimal for grazing.

This area has experienced relatively little coastal development. Although much of the MPA is accessible from the landward side on foot, many of the roads are poorly maintained and are only accessible using a 4x4 vehicle. Other than major district roads leading off the R62 (i.e. road to Mkambati from Flagstaff via Holy Cross Hospital and the road to Msikaba from Lusikisiki which splits to Mbotyi via Magwa), the current road network is very poor consisting of tracks leading to villages or cottages. Tourist accommodation facilities are limited to the Wild Coast Casino (Southern Sun) north of Mzamba, Mkambati Nature Reserve, Mbotyi River Lodge and Port St Johns. The relatively new Drifters accommodation has overnight facilities available for hikers at Msikaba, Port Grosvenor, Lupatana, Manteku and Ntafufu.

Regarding boat access to the marine environment in close vicinity to the Pondoland MPA, there are currently registered launch sites at Glenmore, Port Edward, Msikaba (license expired), Mbotyi and Port St Johns. However, there have been recent proposals to open two other launch sites at Thompsons Bay (Wild Coast Casino) and Gwegwe. Furthermore, illegal boat launching is known to take place from Umtamvuna River mouth, Mnyameni, Lambazi Bay (Port Grosvenor), Mkwani, Ntafufu and other sites.

1.1.12 History and Archaeological Sites

Pondoland has a rich cultural history that has been well documented by de Villiers & Costello (2006). The land in close vicinity to the coast has been sparsely settled for at least the past 2000 years. The reason for this is primarily the poor grazing and poor soils making the area less attractive to resident agri-pastoralists. Based on archaeological discoveries including shell middens and rock art, low-scale exploitation by hunter-gatherers has occurred throughout the Pondoland region for at least the past 150 000 years. The Khoisan people were widespread in the area until they were virtually wiped out in the late 1800s. The Mfengu and Bhaca tribes moved into the Pondoland/Transkei area from KwaZulu-Natal during the early 19th Century as a result of being chased by King Shaka's impis. The cultural features that distinguish the isiXhosa-speaking amaMpondo people of the region have probably developed in situ as a result of the co-existence of Nguni, KhoiKhoi and Khoisan people for more than a millennium. There is still a well organised tribal structure in place headed by the King and Queen of Pondoland. Their communal area falls under the Thaweni Tribal Authority and comprises of six administrative areas, each of which is headed by a Headman, who falls under the authority of a Chief. Each administrative area is comprised of several villages. Although there is still a strong respect for traditional leadership in the area this is gradually being eroded as a result of westernisation.

The “Wild Coast” was originally named by the early European mariners because of its treacherous seas that wrecked many ships and claimed the lives of many sailors. Many of these ship wrecks were of Portuguese and English origin and amongst others included the Sao Bento (Msikaba, 1554); Nossa Senhora de Belem (Port St Johns, 1635); Grosvenor (Port Grosvenor, 1782). Some of the survivors of these early ship wrecks lived out the rest of lives integrated with the local amaMpondo. Many myths and legends surround the ship wrecks off the Pondoland coast such as the treasure including the fabled golden peacock supposed to have been on board the Grosvenor and the mysterious disappearance of the Waratah somewhere off the Transkei coast in 1909. More recent ship wrecks include the Weolmi 303 (Mkambati, 1964) and the BBC China (Lambasi Bay, 2004).

1.2 BOUNDARIES AND ZONING

All geographic co-ordinates are taken directly from the Proclaimed Regulations associated with the proclamation of Pondoland MPA (Government Notice 26430 of June 2004) and determined in accordance with the WGS 84 datum. See Figure 2 below for a visual representation.

1.2.1 Boundaries of the Pondoland Marine Protected Area

The MPA includes the water, the seabed and the airspace to 500 ft above sea level (Civil Aviation Authority regulations) in the area bounded by:

- a) The high water mark between the southern head of the Mzamba River, at position 31° 06'.6S; 030° 10'.5E, and the northern head of the Mzimvubu River, at position 31° 37'.4S; 029° 33'.2E, and including the banks of the tidal portions of the Mnyameni, Sikombe, Mtentu, Msikaba, Mkweni, Mbotyi, Mzintlava, Mntafufu and Nkodusweni Rivers;
- b) A line running 128° from the south head of the Mzamba River at position 31° 06'.6S; 030° 10'.5E, to the 1000 metre isobath at position 31° 11'.2S; 030° 17'.4E;
- c) A line running 128° from the north head of the Mzimvubu River at position 31° 37'.4S; 029° 33'.2E, to the 1000 metre isobath at position 31° 41'.7S; 029° 39'.8E; and

The 1000 metre isobath, joining the following positions:

- 1) 31° 11'.2S; 030° 17'.4E
- 2) 31° 15'.3S; 030° 13'.7E
- 3) 31° 19'.4S; 030° 10'.4E
- 4) 31° 22'.9S; 030° 06'.1E
- 5) 31° 26'.4S; 030° 02'.1E
- 6) 31° 30'.6S; 029° 57'.5E
- 7) 31° 34'.7S; 029° 54'.5E
- 8) 31° 37'.5S; 029° 50'.1E
- 9) 31° 40'.7S; 029° 45'.6E
- 10) 31° 41'.7S; 029° 39'.8E

1.2.2 Zonation within the Pondoland Marine Protected Area:

The MPA are divided into two offshore Controlled zones, one offshore Restricted Zone, five inshore Controlled zones, four inshore Restricted Zones, seven estuarine Controlled Zones and two estuarine Restricted Zones (Figure 1.2).

- Offshore Controlled Zone A. The first offshore Controlled Zone shall comprise that part of the Marine Protected Area which lies to the north-east of a line running 128° from the southern head of the Sikombe River at position 31° 13'.2S; 030° 04'.1E to the 1000 metre isobath at position 31° 18'.2S; 030° 11'.6E, but which excludes estuaries and the inter-tidal zone.
- The Offshore Restricted Zone shall comprise that part of the Marine Protected Area, which lies to the south-west of a line running 128° from the southern head of the Sikombe River at position 31° 13'.2S; 030° 04'.1E to the 1000 metre isobath at position 31° 18'.2S; 030° 11'.6E, and lies to the north-east of a line running 128° from the northern head of the Mbotyi River at position 31° 27'.9S; 029° 44'.1E to the 1000 metre isobath at position 31° 34'.7S; 029° 54'.5E, but which excludes estuaries and the inter-tidal zone.
- Offshore Controlled Zone B. The second offshore Controlled Zone shall comprise that part of the Marine Protected Area, which lies to the south-west of a line running 128° from the northern head of the Mbotyi River at position 31° 27'.9S; 029° 44'.1E to the 1000 metre isobath at position 31° 34'.7S; 029° 54'.5E, but which excludes estuaries and the inter-tidal zone.
- The inshore strip within the Marine Protected Area, which includes the inter-tidal zone and the immediate sub-tidal zone to a chartered depth of 10 metres, but which excludes estuaries, is divided into five inshore Controlled Zones and four Restricted Zones (Table 1.2).
- The tidal portions of the Mnyameni, Sikombe, Mkwani, Mbotyi, Mzintlava, Mntafufu and Nkodusweni Rivers are Estuarine Controlled Zones.
- The tidal portions of the Mtentu and Msikaba Rivers are Estuarine Restricted Zones.

Table 1.2 Summary of inshore Controlled and Restricted zones along the shore of the Pondoland MPA.

Zone type and name	From	To
Inshore Controlled Zone A	31° 06'.6S; 030° 10'.5E Mzamba River mouth	31° 10'.3S; 030° 07'.5E Mnyameni south
Inshore Restricted Zone A	31° 10'.3S; 030° 07'.5E Mnyameni south	31° 12'.5S; 030° 05'.2E Red Hill
Inshore Controlled Zone B	31° 12'.5S; 030° 05'.2E Red Hill	31° 14'.8S; 030° 02'.9E Mtentu River mouth
Inshore Restricted Zone B	31° 14'.8S; 030° 02'.9E Mtentu River mouth	31° 16'.8S; 030° 01'.2E Mgwegwe north
Inshore Controlled Zone C	31° 16'.8S; 030° 01'.2E Mgwegwe north	31° 17'.6S; 030° 00'.6E Mgwegwe south
Inshore Restricted Zone C	31° 17'.6S; 030° 00'.6E Mgwegwe south	31° 19'.1S; 029° 58'.5E Msikaba River mouth
Inshore Controlled Zone D	31° 19'.3S; 029° 58'.0E Msikaba River mouth	31° 25'.4S; 029° 51'.2E Lupatana River mouth
Inshore Restricted Zone D	31° 25'.4S; 029° 51'.2E Lupatana River mouth	31° 27'.0S; 029° 45'.5E Mkozi River mouth
Inshore Controlled Zone E	31° 27'.0S; 029° 45'.5E Mkozi River mouth	31° 37'.4S; 029° 33'.2E Mzimvubu River mouth

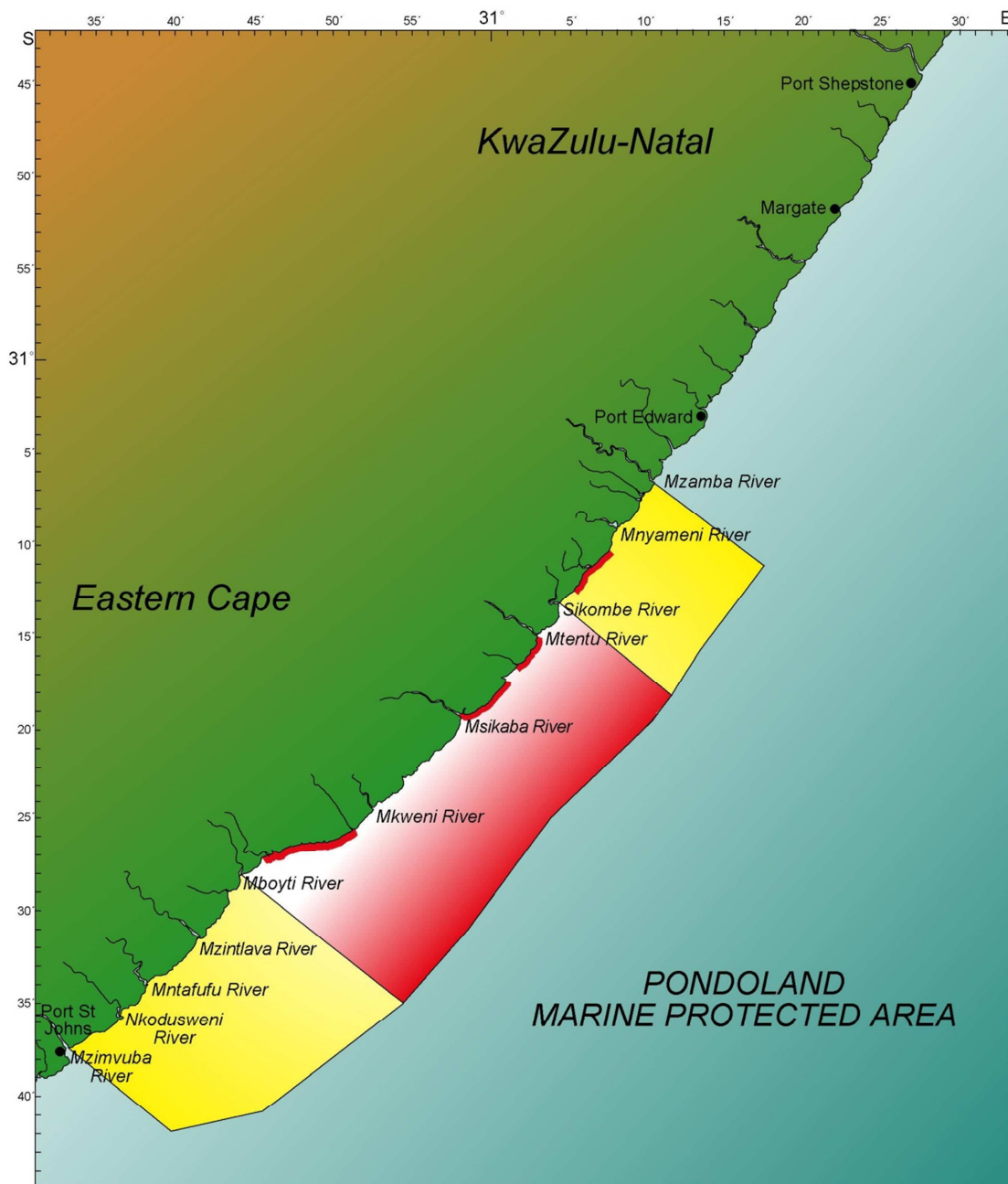


Figure 1.2 Map of the Pondoland Marine Protected Area showing the boundaries of the Controlled (yellow) and Restricted No-take (red) Zones. The red lines along the shore indicate the Restricted No-take Zones for shore-based harvesting and fishing.

1.2.3 Regulations

The regulations associated with the Pondoland MPA boundaries and zones are incorporated below as proclaimed in Government Notice 26430 of 4 June 2004:

Control of Activities in Restricted Zones

- a) No person may fish, or attempt to fish, within a Restricted Zone
- b) Fishing gear on board fishing vessels that enter a Restricted Zone for the purpose of passage must be stowed.

- c) No person may undertake or attempt to undertake spearfishing in a Restricted Zone

Control of Activities in Controlled Zones

- a) No person may fish or attempt to fish in a Controlled Zone, unless authorised to do so by the Minister in terms of the Act (i.e. must be in possession of a valid fishing permit).
- b) No commercial fishing of any type is allowed in the offshore Controlled Zones of the Pondoland MPA, except that traditional linefishing by valid rights holders will be permitted. (this should be in the regulations)!

SCUBA Diving Permit

- a) No person may SCUBA dive or attempt to SCUBA dive in the Marine Protected Area except on the authority of a SCUBA diving permit.
- b) SCUBA diving permits may be issued subject to conditions.

SCUBA Diving Business Permit

- a) No person shall operate or attempt to operate a SCUBA diving business in the Marine Protected Area except on the authority of a SCUBA diving business permit.
- b) Applications for a SCUBA diving business permit shall be made to the Minister on an application form and subject to criteria and an application fee determined by the Minister in terms of the Act.
- c) SCUBA diving business permits shall be valid for maximum period of sixty months and shall be capable of being renewed at a fee determined by the Minister in terms of the Act.
- d) SCUBA diving business permits may be issued subject to conditions (i.e. The Minister may determine the maximum number of SCUBA diving business permits that may be issued for use in the Marine Protected Area).

Scientific Research Permit

- a) No person may undertake any scientific research within the Marine Protected Area except on the authority of a scientific research permit.
- b) Applications for a scientific research permit shall be made to the Minister on an application form and subject to criteria and an application fee determined by the Minister in terms of the Act.
- c) Scientific research permits shall be valid for a maximum period of twelve months and shall be capable of being renewed by the Minister.
- d) Scientific research permits may be issued subject to conditions.

Use of Vessels

- a) All vessels that have deployed divers within the Marine Protected Area must display an alpha flag.
- b) No vessel may be attached to a demarcation buoy.
- c) No person may use or attempt to use any type of personal watercraft or hovercraft within the Marine Protected Area other than for the purpose of fishing or law enforcement. (I have included this as many anglers are now using jetskis for fishing)
- d) No person may moor or anchor any vessel within the Restricted Zones, except on the written authority of the Minister, or in case of emergency.
- e) Motorised vessels may only launch from registered launch sites within or adjacent to the Marine Protected Area.

Offences and Penalties

- a) Any person who contravenes a provision of these regulations shall be guilty of an offence and liable on conviction to a maximum fine of one million rand or to imprisonment for a period not exceeding two years.

CHAPTER 2: OVERVIEW OF THE MANAGEMENT PLAN

2.1 INTRODUCTION

The coastal waters and oceans are an integral part of South Africa's culture and national identity. South Africa's oceans are also an economic pillar as a result of the wide variety of goods, services, and opportunities they provide. The Government of South Africa has committed to oceans management in a manner that encompasses an ecosystem-based approach that is based upon the principles of sustainable development, integrated management and the precautionary approach. Marine Protected Areas (MPAs) covering the full range of IUCN categories are widely recognised by coastal nations as flexible and valuable tools for science-based integrated area management. The reason for this is that they embrace an ecosystem-based management approach and they can help to conserve critical habitat, foster the recovery of overexploited and endangered species, maintain marine communities, and promote sustainable use of natural resources.

The Government of South Africa recognises the value of this tool as part of its management approach, as is demonstrated within Section 43 of the Marine Living Resources Act (No. 18 of 1998): "The National Minister of Environmental Affairs may, by notice published in the Government Gazette, declare an area to be a Marine Protected Area (MPA)".

The Pondoland MPA is situated along the Eastern Cape coast between Port Edward and Port St Johns (i.e. Mzamba River to the Mzimvubu River). It stretches for 90 km along the coast and extends out to the 1000m depth contour (10-15 km offshore) and thus includes an area of approximately 1000 km² (100 000 hectares). The area includes a rich diversity of marine and estuarine habitats and associated species, many of which are endemic to the south-east coast of southern Africa. The Pondoland MPA was proclaimed on 4 June 2004 (Government Gazette No. 26430), to form part of a larger network of MPAs in Southern Africa. The proclamation of this MPA contributes towards meeting the requirements of the World Summit for Sustainable Development and the World Parks Congress (recommendation 22).

The development of a management plan is a statutory requirement under Government Notice No. 694 of 4 June 2004. The Plan serves an important function: it communicates to a variety of stakeholders (including the designated management agencies) the purpose and operational framework for the Pondoland MPA. It is a living, public document subject to periodic review. The first Management Plan for the Pondoland MPA was published on the 31 January 2006 (Lemm 2006). The regulation associated with its proclamation prescribes the necessary review of the existing management plan. This document serves as a fulfilment of this requirement as it has been six years since the proclamation of the Pondoland MPA.

The Eastern Cape Government is still relatively young, having originated from part of the old Cape Province, the Transkei and Ciskei in 1994. The Transkei government created three MPAs under the Transkei Environmental Decree (No. 9 of 1992), which were carried over to the Sea Fisheries Act (No. 12 of 1988) in 1994, and then transferred to the MLRA (No. 18 of 1998) in December 2000 (Government Gazette No. 6978). One of these MPAs, the Mkambati MPA which was adjacent to the Mkambati Nature Reserve, lies centrally within the Pondoland MPA. The total marine area of the Mkambati MPA was approximately 12 900 hectares and all offshore fishing from a vessel was prohibited. Furthermore, there was a four kilometre stretch of coast between the Mtentu River and the Mkambati River (known as Mosquito beach) that was designated as a wilderness area and closed to any form of use from the shore (i.e. no-take). However, apart from the prohibition of shore fishing in the wilderness area, there was very little enforcement of this MPA as there were no patrol vessels and available staff was not marine trained. With the promulgation of the Pondoland MPA in June 2004, Marine and Coastal Management (MCM) was designated as the government department responsible for the management of this MPA. In 2008 part of this responsibility was delegated to the Eastern Cape Parks Board (ECPB) i.e. for the area between and including the Mtentu and Lupatana Rivers, largely because of the available staff capacity and infrastructure at Mkambati Nature Reserve. In 2009/10 MCM, which was previously a Branch of the Department of Environmental Affairs and Tourism (DEA&T), was split under two separate ministries. Branch: Oceans and Coast Management (OCM) now falls under the Department of Environmental Affairs (DEA), while the fisheries

component of MCM now falls under the Branch: Fisheries of the Department of Agriculture, Forestry and Fisheries (DAFF). A further name change that has taken place is that the ECPB is now called Eastern Cape Parks and Tourism Agency (ECPTA).

The Pondoland MPA lies within the Natal Bioregion (Cape Vidal to Mbashee River) which, excluding the crown area of the Aliwal Shoal MPA, the small Hluleka MPA and the eastern half of the Dwesa-Cwebe MPA, has very little area formally designated as no-take zones necessary for effective biodiversity protection (note that the small Trafalgar MPA in southern KZN does not have any area designated for no-take). Therefore, even with the proclamation of the Pondoland MPA, only 8.8% of the coastline within the Natal Bioregion lies within no-take MPAs compared to the recommended target of 20% (Lombard *et al.* 2004). These targets are highlighted in South Africa's National Protected Area Expansion Strategy (DEAT & SANBI 2008). The Pondoland MPA is thus located in an important "gap" within the current network of MPAs along the South African coast and the no-take zones established in this MPA should be protected at all costs. The Pondoland region also represents a transition zone between sub-tropical waters to the north and warm-temperate waters to the south. Consequently the region is characterised by relatively high endemism and importantly it forms the core distribution of a number of commercially important endemic linefish species, many of which have been heavily overexploited elsewhere (Mann 2000). The region is also extremely interesting from an oceanographic perspective as it contains a number of submarine canyons bisecting the continental shelf and the area off Waterfall Bluff appears to act as a "gateway" for northward moving migratory fish such as pilchards (*Sardinops sagax*) during the winter months. The protection of marine biodiversity in this region is thus critical, particularly for the recovery of the overexploited linefish species.

Substantial use of marine resources occurs in the Pondoland MPA primarily through poorly managed subsistence harvesting of intertidal invertebrates, subsistence and recreational linefishing from the shore and recreational and commercial harvesting of linefish from vessels offshore. It is thus clear that the area needs to be carefully managed to ensure sustainable use and recovery of overexploited species. Furthermore, the Pondoland MPA provides a rich opportunity for the development of ecotourism projects and the associated benefits this can bring to the impoverished coastal communities living in this part of the Eastern Cape. Potentially these benefits far exceed those that can be accrued from simply opening up the area to harvesting of marine organisms.

2.2 PURPOSE AND SCOPE OF THE MANAGEMENT PLAN

The purpose of this document is to describe the Pondoland MPA, its goals and objectives, how these will be reached and how the success of the MPA will be measured. It has as its intention the protection and conservation of the values of the MPA, whilst simultaneously allowing for reasonable access and sustainable utilisation of the MPA by different user groups. It is a living, public document subject to periodic review, which describes how the management authorities and their partners intend to manage the Pondoland MPA in a sustainable manner.

2.3 DEVELOPMENT OF THE MANAGEMENT PLAN

The original management plan for the Pondoland MPA was developed by Stephanie Lemm, a consultant to MCM, in collaboration with MCM staff from Cape Town and East London offices (Lemm 2006). The Wild Coast Project and WWF-South Africa agreed to fund the review of the original Pondoland MPA Management Plan and the work was undertaken by a team including Jan Venter and Vuyani Mapiya (Eastern Cape Parks and Tourism Agency), Bruce Mann (Oceanographic Research Institute), Schalk Steyn (Ukwazi Development Facilitators), Peter Tyldesley (Wild Coast Project), Peter Chadwick (WWF-South Africa), Lungile Nodwala (Department of Agriculture, Forestry and Fisheries) and Alan Boyd (Department of Environmental Affairs – Oceans and Coast Management). Input from local communities was obtained on a draft of the management plan by means of a road show conducted by Steyn (2009) and follow-up thereafter. Staff from the Eastern Cape Department of Economic Development and Environmental Affairs (DEDEA) also had an opportunity to comment on the development of this management plan, as did personnel from the three local municipalities in the Pondoland region. This management plan is therefore the product of a joint effort between a number of staff and

consultants from various associations and institutes. This plan is based on a similar management plan developed for the Stilbaai MPA by du Toit *et al.* (2008). It draws on international experience of marine protected area management and the relevant guidelines published by the International Union for the Conservation of Nature (IUCN) and incorporate the national legal and institutional requirements.

It should also be noted that an attempt has been made to align this management plan with other conservation legislation and policy documents in the region such as the National Environmental Management: Integrated Coastal Management Act (No. 24 of 2008) and the Strategic Framework for the Conservation and the Sustainable Development of the Wild Coast. This management plan should be reviewed every five years.

2.4 MANAGEMENT FRAMEWORK

The management of marine living resources in South Africa is a national responsibility, and MPAs are declared under the Marine Living Resources Act (No. 18 of 1998). The delegated authority to manage MPAs is the Minister of the Department of Environmental Affairs (DEA), through his/her Branch: Oceans and Coast Management (OCM). A contractual agreement has been entered into between DEA and the Eastern Cape Parks and Tourism Agency (ECPTA) to manage part of the Pondoland MPA (i.e. the section between and including the Mtentu River to the Lupatana River) on DEA's behalf. The northern section (Mzamba River to Mtentu River) and the southern section (Lupatana River to Msimvubu River) remains the responsibility of DEA to manage in partnership with the Department of Agriculture, Forestry and Fisheries (DAFF). DEA, DAFF and ECPTA thus jointly manage the Pondoland MPA as one unit in a cooperative manner with all the relevant stakeholders (Figure 2.1). This is a very complex management structure which needs to be streamlined in order to improve management effectiveness.

2.5 STRUCTURE OF THE PLAN

This strategic management plan outlines the framework for the management of the Pondoland MPA to assist its stakeholders in achieving the site's conservation and user objectives. The plan is broken down into 10 distinct sections beginning with background information on the Pondoland MPA (Chapter 1). The ensuing sections provide an overview of the management plan and guidance on various aspects of management of the MPA and can be described as the "living" part of the document (Chapter 2). The term "living" illustrates the expectation that this part of the management plan will evolve and change over time to suit the needs of the MPA and its stakeholders. The management plan includes the specific objectives hierarchy set for the Pondoland MPA by DEA, DAFF and ECPTA in consultation with other stakeholders (Figure 2.1). The strategic implementation framework contains actions and responsibilities that need to be implemented in order to reach the objectives of the MPA (Chapter 3). Chapters 4-10 provide guidelines on implementation of management actions set out in the strategic implementation framework. Annual operational plans will be derived from the management plan by the three management authorities according to the actions that each management authority is responsible for. When the need arises subsidiary management plans could be developed when a management aspect of the MPA is too complex or large to include in the management plan. In a case like this the main objective of the management aspect will be incorporated into the plan and the subsidiary management plan will be referred to in the text.

2.6 THE PURPOSE AND OBJECTIVES OF THE PONDOLAND MPA

2.6.1 Purpose of the Pondoland Marine Protected Area

The purpose of the Pondoland Marine Protected Area according to the proclamation (Government Gazette No. 26430 of 2004) is:

To protect the marine environment and biodiversity within the Pondoland MPA; to allow for over-exploited species of fish a sanctuary in which to recover and breed; to promote and regulate eco-tourism activities and scientific research in a way that does not adversely affect the marine environment and biodiversity of the Pondoland Marine Protected Area and to prescribe penalties for contraventions

2.6.2 MPA Objectives in terms of the Marine Living Resources Act

The MLRA (No. 18 of 1998) specifies three objectives for the establishment of Marine Protected Areas namely:

- For the protection of fauna and flora, or a particular species of fauna or flora and the physical features on which they depend;
- To facilitate fishery management by protecting spawning stock, allowing stock recovery, enhancing stock abundance in adjacent areas, and providing pristine communities for research or;
- To diminish any conflict that may arise from competing uses in that area.

2.6.3 MPA Objectives in terms of the proclamation

The proclamation (Government Gazette No. 26430 of 2004) refers to those objectives for which the Pondoland MPA was created and which were subsequently supported through the development of site-specific regulations. The proclaimed regulation of the Pondoland MPA has as its objectives:

- To protect and conserve marine ecosystems and populations of marine species within the Pondoland MPA;
- To protect the reproductive capacity of commercially important species of fish, including shellfish, rock lobster and traditional linefish and to allow their populations to recover;
- To promote ecotourism with the Pondoland MPA

The specific objectives, which adopted the above MLRA purpose and objectives, are set out in an objectives hierarchy for Pondoland Marine Protected Area (Figure 2.2).

The development of related management actions further supports these objectives by identifying the activities which will be undertaken by DEA, DAFF and ECPTA respectively to reach the over-arching goals and ascertain the effectiveness of the MPA. These actions are summarized in the strategic implementation framework (Section 2.6) which outlines tasks, deliverables, timeframes, responsible management authorities and priorities. Annual operational plans from the different management authorities will be derived from this section by each management authority respectively.

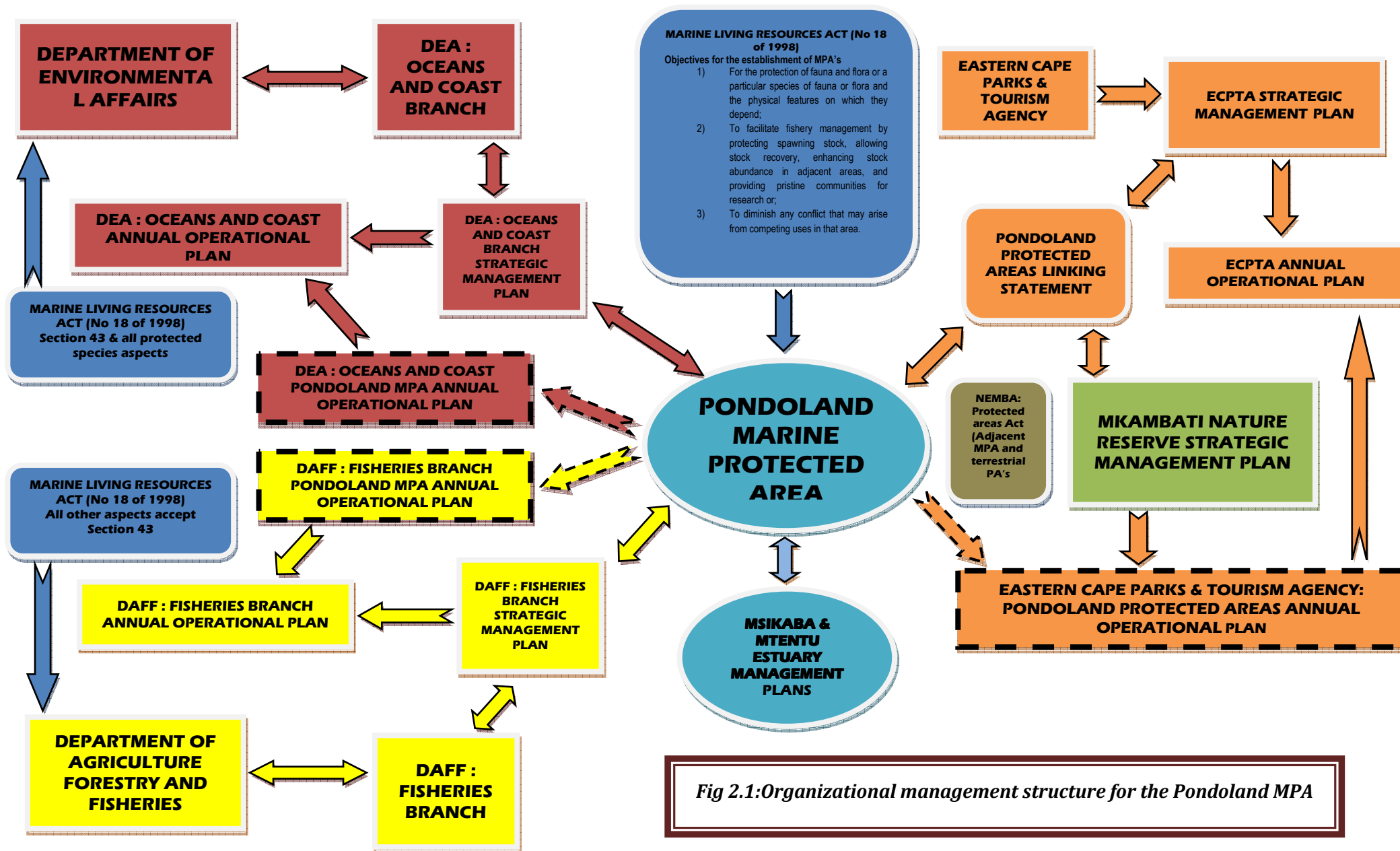


Fig 2.1:Organizational management structure for the Pondoland MPA

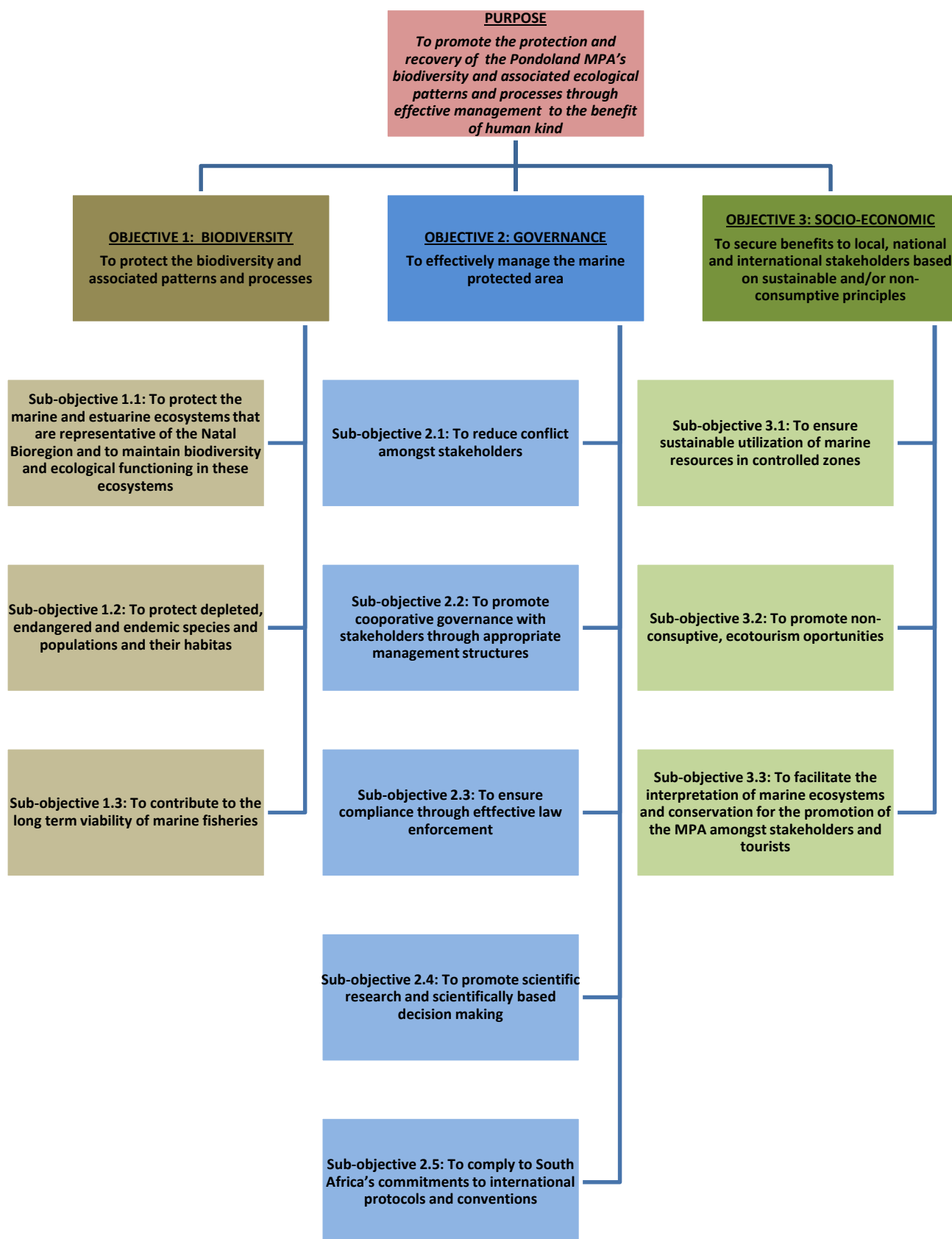


Figure 2.2: An objectives hierarchy for the Pondoland Marine Protected Area

2.7 THE STRATEGIC IMPLEMENTATION FRAMEWORK FOR PONDOLAND MPA

Protected Area Purpose: To promote the protection and recovery of the Pondoland MPA's biodiversity, and associated ecological patterns and processes, through effective management to the benefit of human kind

Tasks	Deliverables and outcomes for evaluation	Timeframe (year)					Responsible management authority	Priority
		1	2	3	4	5		
Objective 1 – Biodiversity: To protect the biodiversity and associated patterns and processes								
Sub-objective 1.1: To protect the marine and estuarine ecosystems that are representative of the Natal Bioregion and to maintain biodiversity and ecological functioning in these ecosystems								
1.1.1) MPA boundaries to be send to Naval Hydrographic Office for incorporation in updated SAN charts	Updated SAN charts						DAFF	M
1.1.2) Move Mtentu beacon south of the estuary to north of the estuary	Beacon in the correct position						ECPTA	H
1.1.3) Move Msikaba beacon from north of the estuary to south of the estuary	Beacon in the correct position						ECPTA	H
1.1.4) Replace washed away beacons at Red hill and Mkozi	Beacons replaced						DAFF	H
1.1.5) Maintenance of inshore and offshore beacons	Beacons in good condition , users have proper access to information						DEA; DAFF & ECPTA	M
1.1.6) Erect offshore restricted zone beacons	Erect beacons that can be clearly seen from the sea to demarcate the offshore restricted area boundaries (south of Sikombe River and north of Mbotyi River)						DAFF	H
1.1.7) Complete Msikaba and Mtentu estuary management plans stakeholder consultation process	2 x Approved EMP's						ECPTA	M
1.1.8) Implement Msikaba Estuary Management Plan (see subsidiary Msikaba EMP)	1 x EMP implemented						ECPTA	M
1.1.9) Implement Mtentu Estuary Management Plan (see subsidiary Msikaba EMP)	1 x EMP implemented						ECPTA	M
1.1.10) Prioritize estuaries in MPA and develop EMP for two top priority estuaries	2 x EMP's developed						DEA	M
1.1.11) Acquire field equipment for MPA staff (Table 4.1 and 4.2)	Equipment acquired						ECPTA, DEA and DAFF	M
1.1.12) Maintain all MPA equipment	Equipment properly maintained						ECPTA, DEA and DAFF	H

Tasks	Deliverables and outcomes for evaluation	Timeframe (year)					Responsible management authority	Priority
		1	2	3	4	5		
1.1.13) MPA Boat maintained and serviced annually	SAMSA Certificate renewed annually Boat serviced as prescribed by manufacturers Boat clean and well maintained (Paragraph 4.3.3)						ECPTA	H
1.1.14) Appoint MPA officer at Mkambati NR	1 x MPA officer is employed						ECPTA	H
1.1.15) Ensure staff receive appropriate training and maintain adequate training level	Marine & MPA legislation Skippers licence Peace officers training First Aid Marine biodiversity ID						ECPTA, DEA & DAFF	M
1.1.16) To maintain an effective permitting system controlling activities impacting on biodiversity	Process all permit applications						DEA & DAFF	H
1.1.17) Provide decision support for permit applications (Task 1.1.17 above)	Comment and review of applications when needed						ECPTA	M
Sub-objective 1.2: To protect depleted, endangered and endemic species and populations and their habitats								
1.2.1) To maintain an effective permitting system controlling activities impacting on important species	Process all permit applications						DEA & DAFF	H
1.2.2) Provide decision support for permit applications (Task 1.2.1 above)	Comment and review of applications when needed						ECPTA	M
1.2.3) Implement monitoring programs for important species	2 x monitoring projects implemented						DEA & ECPTA	M
Sub-objective 1.3: To contribute to the long term viability of marine fisheries								
1.3.1) Monitor inshore linefish and marine invertebrate catches in inshore controlled zones	2 x roving creel surveys per week (1 weekend and 1 weekday) per inshore control zone						ECPTA, DEA & DAFF	H
1.3.2) Aerial surveys to quantify human use of marine natural resources	2 x surveys annually (1 peak season and 1 normal season; spring low tide)						ECPTA & DEA	M
1.3.3) Monitor ski-boat catches	2 x Access point surveys weekly at Port Edward and Port St John's launch sites						DEA	H
1.3.4) Monitor boat launch activity	1 x Launch site register operation at each launch site						DEA & ECPTA	M
1.3.5) Implement and maintain monitoring programs for key fisheries	2 x monitoring projects implemented						DEA & ECPTA	M

Tasks	Deliverables and outcomes for evaluation	Timeframe (year)					Responsible management authority	Priority
		1	2	3	4	5		
Objective 2 – Governance: To effectively manage the marine protected area								
Sub-objective 2.1: To reduce conflict amongst stakeholders								
2.1.1) Use MPA advisory forum for conflict resolution	Raise and address issues effectively						DEA, DAFF & ECPTA	H
2.1.2) Seek opportunities for socio-economic upliftment	3 x socio economic projects launched						DEA, DAFF & ECPTA	M
2.1.3) Use existing structures like PA CMC's to resolve local issues	Issues tabled and resolved at CMC meetings						ECPTA	M
Sub-objective 2.2: To promote cooperative governance with stakeholders through appropriate management structures								
2.2.1) Hand over management of Mbotyi launch site to Mbotyi river lodge and ensure a launch site register is in place	1 x Management agreement 1 x Launch site register in place						DEA	M
2.2.2) To develop a system of honorary rangers to assist with compliance and monitoring	10 voluntary honorary rangers trained and appointed						ECPTA & DAFF	M
2.2.3) Set up MPA advisory forum	Advisory forum set up Annual meeting held						DEA, DAFF & ECPTA	H
2.2.4) Seek ways to improve management effectiveness	Improved score (between 51-75%) in all criteria for MPA effectiveness (National assessment)						DEA, DAFF & ECPTA	H
2.2.5) Improve management structure	Adapt inter-departmental structure and responsibilities to improve management effectiveness						DEA, DAFF & ECPTA	H
Sub-objective 2.3: To ensure compliance through effective law enforcement								
2.3.1) Boat patrols in the offshore restricted zone (as weather allows)	1 x Boat patrol per week (double during peak season)						ECPTA	H
2.3.2) Foot patrols in inshore restricted zones B and C (Table 2.1)	1 x Foot patrol per week (double during peak season)						ECPTA	H
2.3.3) Foot patrols in inshore controlled zone C (Table 2.1)	2 x Foot patrol per week (double during peak season)						ECPTA	H
2.3.4) Foot/quad patrols in inshore controlled zone D (Table 2.1)	1 x Foot/quad patrol per week (double during peak season)						ECPTA	H
2.3.5) Foot/vehicle patrols in inshore controlled zone A (Table 2.1)	1 x Foot.vehicle patrol per week (double during peak season)						DAFF	H
2.3.6) Foot/vehicle patrols in inshore restricted zone A (Table 2.1)	1 x Foot.vehicle patrol per week (double during peak season)						DAFF	H

Tasks	Deliverables and outcomes for evaluation	Timeframe (year)					Responsible management authority	Priority
		1	2	3	4	5		
2.3.7) Foot/vehicle patrols in inshore controlled zone B (Table 2.1)	1 x Foot.vehicle patrol per week (double during peak season)						DAFF	H
2.3.8) Foot/vehicle patrols in inshore restricted zone D (Table 2.1)	1 x Foot.vehicle patrol per week (double during peak season)						DAFF	H
2.3.9) Foot/vehicle patrols in inshore controlled zone E (Table 2.1)	1 x Foot.vehicle patrol per week (double during peak season)						DAFF	H
2.3.10) Law enforcement joint operations. Collaborative ECPTA, DAFF, DEA, SAPD & DEDEA (air, water and ground teams)	2 x Joint operations annually during peak seasons, spring low tides						ECPTA (coordinating), DEA, DAFF, SAPD, DEDEA	H
2.3.11) Acquire quad bikes for effective law enforcement in inshore controlled zone D	2 x quad bikes procured						ECPTA	M
2.3.12) Check compliance at Port Edward launch site	2 x per week						DAFF & KZN-Wildlife	H
2.3.13) Check compliance at Mzimvubu/Port St John's launch site	2 x per week						DAFF	H
2.3.14) Arrange offshore patrol of DAFF vessels focussing on catching illegal commercial fishing by trawlers	2x two week operations annually						DEA & DAFF	H
2.3.15) Ensure all tourist operators are complying to legislation (mainly around sardine run)	All tourist operators apply for appropriate permits						DEA	M
2.3.16) Ensure compliance staff have enough J534 books at their disposal	New J534's available at all times						ECPTA & DAFF	H
2.3.17) Develop a database on offenders, offences and their equipment (boats)	Database created and maintained						ECPTA & DAFF	M
2.3.18) Investigate legality of current sardine run boat based tourism operations	1 x Investigation completed Permitting completed						DEA	H
2.3.19) Set up a Joint Operational Control group for effective law enforcement planning (Paragraph 5.6.2)	Group established Bi-annual meetings held						DEA, DAFF & ECPTA	H
Sub-objective 2.4: To promote scientific research and scientifically based decision making								
2.4.1) Ensure all research projects in the MPA are registered and permitted	All research applications reviewed and processed All permit applications reviewed and processed Projects registered on database						ECPTA & DEA	M
2.4.2) Management agency scientist representation on national and international science forums to encourage research activity in MPA	Increase in research interest						ECPTA & DEA	M
2.4.3) Management agency scientific representation in MPA management and planning forums	Scientifically based decision making						ECPTA & DEA	M
2.4.4) Development of a State of knowledge report for the MPA	State of knowledge report						ECPTA & DEA	M
2.4.5) Increase baseline knowledge of MPA biodiversity	1 x Baseline sampling event annually						ECPTA & DEA	M

Tasks	Deliverables and outcomes for evaluation	Timeframe (year)					Responsible management authority	Priority
		1	2	3	4	5		
2.4.6) Development of a subsidiary research and monitoring plan for the MPA	1 x Monitoring plan developed						ECPTA & DEA	M
2.4.7) Determine ecosystem services derived from MPA	1 x Research program developed Funding sources approached Research program initiated						ECPTA	H
2.4.8) Develop research field station to enable and encourage research activity	Develop business plan Seek funding Field station developed						ECPTA	H
2.4.9) Partner with important research institutions	2 x MOU's with selected institutions						DEA & ECPTA	M
2.4.10) Improve monitoring output of coastal monitors	Improved and reliable data output of coastal monitors						DEA & DAFF	M
2.4.11) Encourage and implement long term climate change monitoring and research	2 x programs initiated						DEA & ECPTA	M
Sub-objective 2.5: To comply to South Africa's commitments to international protocols and conventions								
2.5.1) Contribute towards MPA biodiversity planning initiatives	Attend planning meetings and workshops						DEA & ECPTA	M

Tasks	Deliverables and outcomes for evaluation	Timeframe (year)					Responsible management authority	Priority
		1	2	3	4	5		
Objective 3 – Socio-economic: To secure benefits to local, national and international stakeholders based on sustainable and/or non-consumptive principles								
Sub-objective 3.1: To ensure sustainable utilization of marine resources in controlled zones								
3.1.1) Establish sustainable subsistence user groups to ensure effective communication and education opportunities	1 x group per community established						DEA, DAFF & ECPTA	M
3.1.2) Improve communication between MPA management and recreational users	Explore methods to improve communication						DEA, DAFF & ECPTA	M
3.1.3) Appoint, train and maintain coastal monitors	Sufficient coastal monitors in operation						DAFF	H
Sub-objective 3.2: To promote non-consumptive, ecotourism opportunities								
3.2.1) Investigate possibility of Miskaba community managing and deriving benefits from the Msikaba launch site. Implement recommendations	Report on outcomes of investigation Implementation plan						ECPTA	L
3.2.2) Issue 2 x boat based whale watching permit opportunities (Mngazi to Umtamvuna)	2 x Boat based whale watching permits issued						DEA	M
3.2.3) Investigate the viability of tourism opportunities	2 x types opportunities investigated, reports						ECPTA & DEA	M
3.2.4) Revive catch-and-release fly-fishing safaris at Mtentu	Community based tourism venture up and running again						ECPTA	H
Sub-objective 3.3: To facilitate the interpretation of marine ecosystems and conservation for the promotion of the MPA amongst stakeholders and tourists								
3.3.1) Distribute pamphlets on fishing regulations during patrols	1000 pamphlets distributed annually per management agency						ECPTA & DAFF	M
3.3.2) Verbal information distribution to users during routine patrols as well as ad hoc opportunities	500 users verbally informed annually about regulations per management agency						ECPTA & DAFF	H
3.3.3) Place appropriate signage at Mtentu, Mkambati, Gwe-gwe, Msikaba, Lupatana, Port Grosvenor	Signage up and clear, users have proper access to information						ECPTA	H
3.3.4) Place appropriate signage at Port Edward, Mbotyi, Manteku, Mntafufu, Agate terrace, Mzimvubu	Signage up and clear, users have proper access to information						DAFF	H
3.3.5) Implement school programs about MPA's	2 x Schools per agency annually						ECPTA & DEA	M

Tasks	Deliverables and outcomes for evaluation	Timeframe (year)					Responsible management authority	Priority
		1	2	3	4	5		
3.3.6) Offer on site Marine day events	1 x event per agency annually						ECPTA & DEA	M
3.3.7) Distribution of MPA information pamphlets at public offices of the management agencies	500 x pamphlets distributed annually per management agency						ECPTA & DEA	M
3.3.8) Show MPA educational DVD during school visits on site and away	10 x opportunities where DVD was used for educational work annually						ECPTA	M

CHAPTER 3: MANAGEMENT OF THE RESERVE, ITS USER GROUPS AND KEY SPECIES

3.1 OVERVIEW

The Pondoland MPA is a magnificent stretch of coastline with a wide diversity of natural habitats and species. The marine resources of the area provide an important livelihood and a source of food and recreation for both local people and visitors to the area. Such consumptive activities include marine and estuarine invertebrate harvesting (subsistence and recreational), shore fishing (subsistence and recreational), estuary fishing (subsistence and recreational, including catch and release), spearfishing (recreational) and skiboat fishing (recreational and commercial). In addition, the region also attracts many visitors interested in non-consumptive activities such as snorkelling, SCUBA diving, whale and dolphin watching, sea kayaking, hiking, mountain-biking, paragliding, microlight flying and other adventure and nature-based activities. Although this part of the Eastern Cape is still largely undeveloped with relatively sparse populations living near the coast and difficult road access, the area is becoming increasingly popular. Furthermore, the planned realignment of the N2 highway will greatly improve accessibility to the Pondoland coast. With the increasing popularity and accessibility of the area comes the need for improved management to ensure wise coastal development and sustainable utilization of marine resources. This management plan sets out to achieve these objectives for the Pondoland MPA.

Subsistence and recreational fishing occurs in many areas along the coast of the MPA. Many of the intertidal invertebrates and surf-zone fish species within and adjacent to the MPA have been heavily exploited and have been reduced to a small fraction of their original abundance. Offshore, reef fish are harvested by commercial and recreational skiboat fishers. A number of mature linefish species migrate to this area between July and November each year in order to spawn and during these aggregations, they are particularly vulnerable to overfishing as fishers target these aggregations. One of the primary functions of the MPA is to allow these stocks to recover. For this reason, fishing is prohibited in the no-take Restricted Zones. A second function of the MPA is to provide a safe and rewarding experience for recreational users who wish to see the ecosystem in a near-pristine state. At the same time it is necessary to ensure that local subsistence fishers living in close vicinity to the MPA are able to continue to harvest marine resources on a sustainable basis in order to supplement their livelihoods. For this reason it is necessary to separate some activities spatially through zoning.

Zoning is therefore the primary tool utilized to manage the Pondoland MPA and it sets the framework for the protection of critical habitats and the management of human use, particularly extractive activities such as fishing. Zones define in broad terms where you can and cannot go and what you can and cannot do, where certain activities are allowed either with or without a permit and some (like trawling and longlining) are not allowed in the MPA at all. Zoning sets the foundation for protecting the Pondoland MPA and managing human use. All other tools, including permits, complement the Zoning.

Regulations alone, however, are inadequate to balance the above requirements, stressing the need for involvement of all stakeholders in the governance of the MPA. Partnerships and working relationships with other organisations must be pursued as an action of this MPA management plan. The local rural communities for example are major stakeholders and the regulations and legislation pertaining to the MPA must be aligned to support the needs and well-being of these communities where possible.

3.2 MANAGEMENT OF KEY SPECIES AND HABITATS WITHIN THE PONDOLAND MPA

Table 3. Summary of key species and habitats requiring protection in the Pondoland MPA.

Species and habitat	Reason	Conservation action
Offshore linefish species and subtidal reefs	Overexploitation of many species, some endemic	No fishing in offshore Restricted Zone and enforcement of species-specific regulations in Controlled Zones
Inshore linefish species and inshore reefs	Overexploitation of many species, some endemic	No fishing in inshore Restricted Zones and enforcement of species-specific regulations in Controlled Zones
Estuarine linefish species and estuaries	Overexploitation of some species and estuarine degradation	No fishing in estuarine Restricted Zones and enforcement of species-specific regulations in estuarine Controlled Zones. Development of estuary management plans
Intertidal invertebrate species and rocky and sandy shores	Overexploitation of some species	No fishing in inshore Restricted Zones and enforcement of species-specific regulations in Controlled Zones
Estuarine invertebrate species and estuaries	Overexploitation of some species and estuarine degradation	No fishing in estuarine Restricted Zones and enforcement of species-specific regulations in estuarine Controlled Zones. Development of estuary management plans

3.3 DEMARCATION OF ZONES AND SIGNAGE IN THE PONDOLAND MPA

The Naval Hydrographic Office located in Simon's Town must be notified of the boundaries pertaining to the offshore Restricted Zone and the offshore Controlled Zones of the Pondoland MPA to ensure that this information is incorporated into the updated SAN charts and the electronic GIS navigation charts available for the area.

3.3.1 Offshore demarcation

Offshore marker buoys will be not be installed as this is neither feasible, bearing in mind the water depth (1000m) and the strength of the current offshore, nor cost effective and would be a hazard to shipping. Most vessels now have GPS navigation equipment and this is sufficient to determine the outer (seaward) boundaries of the MPA using the promulgated boundary coordinates.

3.3.2 Inshore beacons

The onshore boundaries of the inshore Restricted Zones (Mnyameni south to Red Hill, Mtentu north bank to Gwegwe north, Gwegwe south to Msikaba south bank, Lupatana south bank to Mkozi north bank) will be demarcated with beacons or signboards which are highly visible from the shore. Clear signage must accompany all these beacons in both English and isiXhosa describing the boundaries of the specific restricted area and explaining that no harvesting or fishing is allowed. Beacons need to be maintained at all times.

3.3.3 Offshore beacons

The onshore boundaries of the offshore Restricted Zone (i.e. south bank of Sikombe River and north bank of Mbotyi River) will consist of two large red and white striped beacons placed one behind the other in a line that coincides with the boundary line (i.e. 128°). These beacons should be erected at the highest point close to the true boundary and should be large enough (PVC pipe 12m high and 90cm diameter) to enable them to be clearly seen from at least three kilometres offshore. The erection of these boundary beacons needs to be carried out with urgency.

3.3.4 Signage

There is still very limited awareness of the existence of the Pondoland MPA and as such, considerable signage is required. Signage should be placed at strategic positions and at all formal access points. The MPA signs should include a detailed zoning map, a table indicating the permitted activities within each zone and a contact telephone number for reporting incidents. These signs must be clear and simple taking into account the varied literacy and languages spoken in the area (i.e. at least English and isiXhosa should be used). It is believed that at least thirteen signs are required to be placed at the following locations:

- Port Edward (at the boat launch site)
- Mtentu River (road access turn-off north of Mzamba)
- Mkambati (road access at new gate to reserve)
- Gwegwe (at proposed boat launch site)
- Msikaba (road access before first cottage)
- Msikaba (at boat launch site)
- Lupatana/Port Grosvenor (road access turn-off from district road)
- Mbotyi (road access across bridge entering Mbotyi)
- Mbotyi (at boat launch site)
- Manteku (road access at turn-off south of Lusikisiki)
- Mntafufu (road access at turn-off north of Port St Johns)
- Agate Terrace (road access at turn-off on north side of Mzimvubu bridge)
- Mzimvubu (at boat launch site - main public slipway in Port St Johns)

All signage must comply with DEA, DAFF and ECPTA policy guidelines as far as possible.

3.4 MANAGEMENT OF FISHING ACTIVITIES

Fishing is authorised by commercial, recreational, and subsistence permits issued under Section 13 of the Marine Living Resources Act (No. 18 of 1998). Commercial fishing is fishing for any species subject to the total allowable catch or effort and various species-specific regulations. Recreational fishing is any fishing done for leisure or sport and not for sale, barter, earnings or gain. Subsistence fishing is fishing for personal consumption or for the consumption of his/her dependents and includes local sale or barter of excess catch. Fishing is defined as searching for, catching, taking or harvesting fish or any other activity which can reasonably be expected to result in the locating, catching, taking or harvesting of fish. Where any of the conditions associated to the MLRA or MPA regulations are contravened, a fine must be issued by the Fisheries Control, or other Authorised, Officer. Where commercial fishers transgress MPA regulations, they can also put their fishing rights in jeopardy. All fishing activities discussed below are subject to the regulations promulgated in terms of the MLRA.

3.4.2 Commercial Fishing

- All industrial fishing (i.e. trawling and longlining) is prohibited throughout the Pondoland MPA (i.e. in both offshore Controlled and Restricted Zones). All fishing gear on such vessels that are in, or enter the Pondoland MPA for the purposes of passage, must be stowed.

- Commercial linefishing is prohibited within the offshore Restricted Zone and within all inshore Restricted and Controlled Zones and in estuaries. However, commercial linefishing is allowed in the two offshore Controlled Zones of the Pondoland MPA subject to the possession of a valid commercial permit. Future MPA regulations may limit the number of such commercial vessels permitted to fish in the offshore Controlled Zones of the Pondoland MPA. All fishing gear on such vessels that are in, or enter the offshore Restricted Zone for the purposes of passage, must be stowed.

3.4.3 Charter-boat Fishing

- Charter-boat linefishing is prohibited within all the Restricted Zones in the Pondoland MPA. However, charter-boat linefishing is allowed in the two offshore Controlled Zones of the Pondoland MPA subject to the requirement that all clients on board the charter vessel are in possession of recreational fishing permits (see below). Future MPA regulations may limit the number of such charter vessels permitted to fish in the offshore Controlled Zones of the Pondoland MPA. All fishing gear on such vessels that are in, or enter the offshore Restricted Zone for the purposes of passage, must be stowed.

3.4.4 Recreational Fishing

- All recreational fishing (boat-based and shore-based) is prohibited in the offshore, inshore and estuary Restricted Zones of the Pondoland MPA. This includes recreational fishing off any type of vessel in the offshore Restricted Zone, including paddle-craft and/or fishing-skis, even if the adjacent shoreline falls into an inshore Controlled Zone (i.e. the 10 m depth contour cannot be used as “permission” to fish off a vessel or spearfish off inshore Controlled Zones that fall into the offshore Restricted Zone).
- Recreational fishing is allowed in the offshore, inshore and estuary Controlled Zones, subject to the possession of a valid permit for the fishing activity taking place and fishers are required to present such permit to any fisheries compliance officer on request.
- All fishing gear on recreational fishing vessels that are in, or enter a Restricted Zone for the purposes of passage, must be stowed.
- Voluntary compliance with regulations will be encouraged through education and awareness programmes.

3.4.5 Spearfishing

- All spearfishing fishing is prohibited in the offshore and inshore Restricted Zones of the Pondoland MPA. This prohibition includes shore-based diving within the inshore Restricted Zones and any spearfishing (shore or boat based) in the offshore Restricted Zone, even if the adjacent shoreline falls into an inshore Controlled Zone (see above). No spearfishing is allowed in any estuary within the Pondoland MPA.
- Spearfishing is allowed in the offshore and inshore Controlled Zones, subject to the possession of a valid permit and spearfishers are required to present such permit to any fisheries compliance officer on request.
- A person undertaking spearfishing from a vessel in the offshore Controlled Zones of the Pondoland MPA must deploy an alpha flag.
- All spearfishing gear on vessels that are in, or enter a Restricted Zone for the purposes of passage, must be stowed.

3.4.6 Recreational Angling and Spearfishing Competitions

- Any angling or spearfishing competition held within the Pondoland MPA will be subject to the same regulations as described above.
- A request to hold any angling or spearfishing competition within the Pondoland MPA must be submitted in writing to the manager of the Pondoland MPA (or the responsible DEA, DAFF or ECPTA management authority with copies to the others) at least three months before the event is scheduled to take place. This request should supply information regarding the area in which the event will take place,

the date of the event, the clubs/organisations involved and the approximate number of participants. The decision on whether the event will be allowed to take place will depend on the relevant MPA management authorities, possibly in consultation with the Pondoland MPA Advisory Forum (see Section H). If the event is permitted to take place, a full record of all resulting catch and effort data must be submitted to the relevant MPA management authorities on the completion of the event.

3.4.7 Recreational Invertebrate Harvesting and Bait Collecting

- All recreational invertebrate harvesting is prohibited in the offshore, inshore and estuary Restricted Zones of the Pondoland MPA. This includes shore-based diving for crayfish/rock lobster within inshore Restricted Zones.
- Recreational invertebrate harvesting and bait collection is allowed in the inshore and estuary Controlled Zones, subject to the possession of a valid permit for the type of organism being collected and collectors are required to present such permit to any fisheries compliance officer on request.

3.4.8 Subsistence Fishing and Invertebrate Harvesting

- All subsistence linefishing and invertebrate harvesting is prohibited in the inshore and estuary Restricted Zones of the Pondoland MPA. While this prohibition may meet with resistance from some local communities, it is imperative that the reasons for establishment of these no-take inshore Restricted Zones are communicated to local subsistence fishers and that compliance is ultimately achieved through improved awareness and enforcement.
- Subsistence linefishing and invertebrate harvesting is allowed in the inshore and estuary Controlled Zones, subject to the possession of a valid subsistence fishing permit. Subsistence fishers are required to present such permit to any fisheries compliance officer on request. Similarly, subsistence fishers should be required to show their fishing permit when attempting to sell any fish or marine invertebrates.
- Small-scale commercial fishing operations such as the collection of crayfish/rock lobster for live storage and subsequent sale must not be allowed in the Pondoland MPA. Control of this activity will be difficult and it is only through improved awareness and understanding that greater compliance will be achieved. However, failure to adhere to these regulations will result in legal actions, as appropriate, being taken.

3.4.9 Aquarium Collecting

- No collection of any marine species for the purposes of aquarium use (private or commercial) may take place in the Restricted Zones of the Pondoland MPA
- Collection of any marine species for the purposes of aquarium usage may only take place in the Controlled Zones of the Pondoland MPA. Such collections may only take place under the authority of a valid permit issued under the MLRA. Where such collection is planned, a valid permit must be presented to the Fisheries Control or other Authorised Officer prior to entering the MPA and undertaking the activity. The permit should specify the species as well as the amounts permitted for extraction.

3.4.10 Extractive Use in the Restricted Zone

- The only exception for extractive use in the Restricted Zones would be under a section 81 Exemption for Scientific Research in terms of the MLRA. However, these applications will be subject to stringent assessment and only issued when appropriate.

3.5 OFFSHORE NON-CONSUMPTIVE USE

This section includes SCUBA diving, whale and dolphin watching and sight-seeing charters. Scuba diving is authorised by recreational SCUBA diving permits issued under Section 43 of the Marine Living Resources Act

(No. 18 of 1998) and in accordance with the Pondoland MPA Regulations. A SCUBA diving business that wishes to operate within the Pondoland MPA will require a scuba diving business permit.

It should be noted that SCUBA diving is a marginal activity in the Pondoland MPA due to the presence of strong currents and turbid conditions for much of the year. Nevertheless, it is a popular seasonal recreational activity and there is increasing demand to SCUBA dive in the Pondoland MPA, particularly during the period May-July each year in association with the annual sardine run.

3.5.2 Recreational SCUBA Diving

- SCUBA diving is allowed to take place in both the Controlled and Restricted Zones of the Pondoland MPA as this is considered to be a non-consumptive form of resource use.
- All recreational SCUBA divers require a SCUBA diving permit to dive in a proclaimed MPA. A SCUBA diving permit is valid for a period of 12 months.
- This permit is obtainable from the local Post Office (as are all recreational fishing permits required in terms of the MLRA).
- All SCUBA divers are subject to NAUI, PADI or other international SCUBA Diving Association's "Codes of Conduct", including safety requirements.
- All vessels with divers deployed within the Pondoland MPA must display an alpha flag.
- Restrictions on activities associated with SCUBA diving that may have an impact on the values of the MPA will be considered including the use of cages for the purpose of cage diving, the use of electro/acoustic discharging devices, the use of diver propulsion vehicles, chumming and fish feeding and the removal of historical artefacts from shipwrecks (artefacts from shipwrecks are defined as "archaeological" under the national Heritage Resources Act 1999 once they are 60 years old).
- If necessary, additional regulations will be created 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.
- All other relevant regulations regarding diving with species such as sharks and whales need to be adhered to.

3.5.3 Commercial SCUBA Diving and SCUBA Diving Businesses

- No person may without a permit operate or attempt to operate a SCUBA diving business in the Pondoland MPA.
- Applications for a SCUBA diving business permit must be made to the Minister on an application form and subject to criteria and an application fee determined by the Minister in terms of the MLRA.
- The maximum number of SCUBA diving business permits that are issued for use in the Pondoland MPA may be limited. This measure may be needed because of increasing SCUBA diving activities, their associated impacts and limitations on launching capacity at available launch sites.
- SCUBA diving business permits shall be valid for maximum period of five years and shall be capable of being renewed at a fee determined by the Minister in terms of the MLRA.
- Commercial SCUBA diving for the purposes of diving on wrecks is subject to a different set of legal requirements and could include any or all of the following: a permit issued in terms of the MLRA; the Amended Occupational Health and Safety Act, No. 85 of 1993 and associated Diving Regulations, 2001 (Regulation Gazette 7243, 11 Jan 2001); a permit or exemption issued under the National Heritage Resources Act, No 25 of 1999; the Department of Labour: Diver Code of Practice and Scientific and/or Archaeological Approved Code of Practice published by the Scientific Diving Supervisory Committee
- All vessels with divers deployed within the Pondoland MPA must display an alpha flag.
- All commercial diving that is to take place within the MPA must inform the Manager of the MPA of the intention to dive prior to the activity taking place.

3.5.4 Boat-based Whale and Dolphin Watching

- The Pondoland MPA offers an important destination for a potential boat-based whale/dolphin watching charter business to be established. This is in line with one of the key objectives of the Pondoland MPA (i.e. to develop non-consumptive ecotourism opportunities).
- Applications for a whale watching business permit must be made to the Minister on a prescribed application form and subject to criteria and an application fee determined by the Minister in terms of Section 58 of the MLRA.
- The maximum number of whale watching business permits that are issued for use in the Pondoland MPA may be limited. This measure is needed to ensure that carrying capacity is not exceeded, that the animals are not impacted and to ensure that the quality of the experience is maintained.
- Previous attempts to establish such a whale watching operation at Port St Johns have been fraught with bureaucracy and this process needs to be streamlined (John Costello, Port St Johns, pers. comm.).

3.5.5 Sight-seeing Charters

- The Pondoland coast offers some of the most spectacular scenery along the entire South African coast. As such there is the potential for the development of boat-based charter operators to take advantage of this attraction and take paying clients to view the coastline.
- Sight-seeing charters are in many respects similar to whale/dolphin watching charters and/or recreational fishing charters. As such they would fall under similar permit requirements as discussed for whale watching businesses.
- The opportunity also exists for the development of aerial sight-seeing charters along the Pondoland coast, especially during the sardine run. This aspect would fall strictly under the regulations of the Civil Aviation Authority.

3.6 LAUNCH SITE MANAGEMENT

Three sets of legislation are applicable to the management of Launch sites in the Pondoland MPA namely:

- National Environmental Management Act (No. 107 of 1998);
- The Control of Vehicles in the Coastal Zone (Gov. Notice No. 1399, 21 December 2001 as amended in Gov. Notice No. R1426, 7 December 2004) and
- The Integrated Coastal Management Act (No. 24 of 2008).

The Eastern Cape Department of Economic Development and Environmental Affairs (DEDEA) is responsible for management of boat launch sites in the Eastern Cape. Two registered public launch sites are located within the Pondoland MPA (i.e. Msikaba and Mbotyi). There are also two more proposed launch sites within the Pondoland MPA (i.e. Wild Coast Casino and Gwegwe). It should be noted that any proposed launch site should be subjected to a full Environmental Impact Assessment in terms of the above mentioned legislation. There are also two launch sites immediately adjacent to the Pondoland MPA where boats can launch and readily access the MPA (i.e. Port Edward and Port St Johns). It is recommended that any boat launch site that is registered either in, or adjacent to, the Pondoland MPA should be managed according to an Environmental Management Plan (EMP) (available on request from ORI). *Inter alia* this should include determining a strict carrying capacity for each launch site (i.e. number of boat launches allowed per day) and implementation of a mandatory daily launch register to enable careful monitoring of boat launches. There are also a number of illegal launch sites being used within the Pondoland MPA including Mnyameni, Lambazi Bay/Port Grosvenor, Mkwani, Mntafufu, etc. Illegal launching of motorized vessels at such sites should be strictly prohibited.

3.6.2 Port Edward launch site

Port Edward is currently a registered and relatively well managed launch site which forms part of the KwaZulu-Natal Boat Launch Site Monitoring System. The site has a launch capacity of 30 boat launches per day and an operational boat launch register system. Approximately 1600 launches are recorded at this site each year and

private recreational fishing, commercial fishing and charter fishing comprise the bulk of the activities undertaken. It is estimated that at least 50% of these launches enter the Controlled Zone (A) of the Pondoland MPA.

3.6.3 Gwegwe launch site

This is a proposed launch site that will be used by the ECPTA to launch their law enforcement vessel. It may also be used in future by SCUBA diving and/or whale watching/sight seeing charter operators. It is recommended that this site should undergo the EIA requirements in terms of the relevant legislation and that an EMP is developed for the management of this site. Application for registration of this site should be submitted by ECPTA to the Eastern Cape Department of Economic Development and Environmental Affairs (DEDEA).

3.6.4 Msikaba launch site

Msikaba was registered as a launch site in 2004 by the Eastern Cape provincial authorities and the Msikaba Cottage Owners Association were the designated launch site operators. However, with the declaration of the Pondoland MPA in June 2004 and the realization that no boat fishing was allowed in the offshore Restricted Zone of the Pondoland MPA, the Msikaba Cottage Owners Associations have not used or managed the launch site. The launch site licence has subsequently expired. It is recommended that the authority for management of this site is handed over to the local Msikaba community and that a boat launch register is brought into operation at this site. In return for managing this launch site, the Msikaba community could charge a reasonable daily launch fee (i.e. R100/launch is recommended). The 5-year license for this site has expired and an application for renewal should be submitted by ECPTA on behalf of the Msikaba community to DEDEA. Only vessels undertaking non-consumptive activities (e.g. SCUBA diving and/or whale watching and/or sight-seeing may launch at this site. No vessels with fishing gear on board may launch or beach at this site.

3.6.5 Mbotyi launch site

Mbotyi was registered as a launch site in 2004 by the Eastern Cape provincial authorities and the owners of Mbotyi River Lodge were the designated launch site operators. However, with a change in ownership of the Lodge, management of the launch site has not been maintained by the new owners. It is recommended that the authority for management of this site is formally handed over to the new owners of Mbotyi River Lodge and that a boat launch register is brought into operation at this site. The 5-year license for this site has expired and an application for renewal was recently approved by DEDEA. The current launch site licence holder is Mbotyi River Lodge. As this launch site is immediately adjacent to the offshore Restricted Area, only vessels undertaking non-consumptive activities (e.g. SCUBA diving and/or whale watching and/or sight-seeing) may launch at this site. No vessels with fishing gear on board may launch or beach at this site.

3.6.6 Mzimvubu/Port St Johns launch site

The launch site on the Mzimvubu River at Port St Johns was never de-registered as a "Port" and therefore falls under different regulations to open beach launch sites as described for the other sites above.

There are multiple slipways into the Mzimvubu River (at least 5), mostly on private land, so control of vessels going and returning from sea is difficult. Furthermore, most boat launches into the Mzimvubu River are for the purpose of fishing in the river/estuary itself and not necessarily for going out to sea.

It is recommended the suitable signage (see section 2.3) is erected at the main public slipway in town to inform boat skippers of the regulations pertaining to the Pondoland MPA. However, monitoring of launches by means of a register will be difficult due to the multiple slipways.

Regular monitoring of vessels using this launch site will be an important management aspect of this site.

3.7 ANCHORING WITHIN THE PONDOLAND MPA

No anchoring may take place within the offshore Restricted Zone of the Pondoland MPA, unless under the authority of a permit or in the case of emergency. In case of the latter, the MPA manager or relevant

management authority should be informed as soon as possible as to the reasons for the emergency. At present, all users are allowed to anchor within the offshore Controlled Zones of the Pondoland MPA.

3.8 PRIVATE MOORINGS

No mooring of vessels may take place within the offshore Restricted Zone of the Pondoland MPA, unless under the authority of a permit. Furthermore, it is recommended that a similar prohibition should be placed on private moorings in the offshore Controlled Zones. Any mooring of vessels in estuary Controlled or Restricted Zones must be under the permission of a permit. DEA is generally not supportive of allowing private moorings within the boundaries of the MPA.

3.9 OVERFLYING OF THE PONDOLAND MPA

Overflying of the Pondoland MPA for both recreational and commercial purposes falls under the jurisdiction of the Civil Aviation Authority (CAA). There are likely to be increasing requests to undertake scenic flights over the Pondoland MPA to view the sardine run, whales, etc. All flights undertaken in this area should adhere strictly to CAA regulations.

3.10 ESTUARY AND RIVER MANAGEMENT

There are 43 estuaries in the Pondoland MPA of which two are protected as Restricted Zones (Mtentu and Msikaba) and seven of the larger systems are designated as Controlled Zones (Mnyameni, Sikhombe, Mkweni, Mbotyi, Mzintlava, Ntafufu and Nkodusweni). However, in essence all estuaries within the Pondoland MPA, with exception to the two restricted estuaries, should in fact be managed as estuary Controlled Zones.

The Mtentu and Msikaba estuaries will be managed according to the subsidiary management plans developed for this purpose (See section 2.7).

Management of estuaries designated as Controlled Zones and other estuaries in the Pondoland MPA will include enforcement of recreational and subsistence activities (e.g. linefishing and invertebrate harvesting). Better control of estuary launch sites and slipways may be necessary, particularly during holiday periods. Zonation of certain estuaries may be required to avoid/reduce potential user conflict. No breaching or manipulation of estuary mouths should be allowed. Where possible minimum freshwater requirements for maintaining the functionality of Pondoland's estuaries should be determined and enforced through the South African National Water Act (No. 36 of 1998).

All estuaries in the Pondoland MPA will be managed in line with the Integrated Coastal Management Act (No. 24 of 2008). Future estuarine management plans will also be developed for all the estuaries within the Pondoland MPA.

3.11 USER AND VESSEL SAFETY REQUIREMENTS

The category of vessels applicable to the Pondoland MPA and discussed herein include category B to E as well as the category of "restricted" vessels that operate in the confines of a port or lagoon/estuary and which has been designated "R" (category A is not valid within the scope of this Management Plan).

- Category B refers to vessels that may operate more than 15 but not more than 40 nautical miles from shore (this category will only really be applicable to larger vessels launched outside the Pondoland MPA).
- Category C refers to vessels that may operate more than 5 but not more than 15 nautical miles from shore (C, D, E and R operate within the Pondoland MPA boundaries).
- Category D refers to vessels that may operate more than 1 but not more than 5 nautical miles from shore.
- Category E refers to vessels operating not more than 1 nautical mile from shore.

- Most of the requirements are clearly discussed through documentation compiled by the South African Maritime Safety Authority (SAMSA) as follows:
 - o Merchant Shipping (National Small Vessel Safety) Regulations, 2007, as amended.
 - o Marine Notice No. 22 of 2008.
 - o Small vessel safety pamphlets
 - o Safety requirements for Category B, C, D, E and R vessels for preparation of safety surveys.
- Any queries relating to user and vessel safety should be sent to the SAMSA e-mail address: info@samsa.org.za
- SAMSA requirements must be managed within the context of the Pondoland MPA and the Fishery Control Officers (FCO's) will need to regularly monitor vessels to ensure that vessels operating within the boundaries of the Pondoland MPA meet these requirements. This activity should be built into the weekly patrols emanating from the compliance workplan.
- List of minimum safety equipment required for small boats includes:
 - o Suitable buoyancy (referred to in relevant legislation)
 - o Sufficient fuel for the intended voyage (+25% extra)
 - o A life jacket for each person
 - o Distress flares (stored in a waterproof container)
 - o For signaling: a mirror, a waterproof torch, spare batteries and a sound device (e.g. horn)
 - o Compass
 - o Bailing device
 - o Paddles or oars
 - o Grabline
 - o Anchors and ropes
 - o Knife
 - o Survival blanket for each person
 - o Identification sheet of highly visible material – for identification from the air
 - o First aid kit (including bandages, plaster, antiseptic ointment, seasickness pills, sunburn lotion)
 - o Fresh water
 - o Tool kit suitable for the boat
 - o Air-bellows for inflatable boats
 - o Radio (in larger boats)
- DEA, DAFF and ECPTA staff managing the Pondoland MPA should be trained in at least first aid (Level 1) and be competent with applying artificial resuscitation (CPR) for victims of drowning. Radio operators will require the necessary radio operator's ticket.

3.12 TOURIST PROGRAMMES

3.12.1 Potential Tourist Programmes

There is potential for many types of tourist programmes in the Pondoland MPA but such programmes need to be well managed to ensure a safe, rewarding experience and to avoid user conflict between different activities. Potential tourist activities may include:

- Boat-based marine animal watching (marine mammals, seabirds, sharks, sardines, etc.) and scenic tours
- Boat-based and shore-based fishing charters

- Horse riding*
- Mountain biking*
- Hiking* etc.
- Scenic flights over the MPA
- Activities associated with the sardine run

* These activities can take place below the high tide mark along the beach and are thus included in the MPA management plan.

At present the whole MPA is open to all types of tourist programmes and some (excluding boat-based whale/dolphin watching and SCUBA diving) may occur without a permit. The management of tourist programmes will include both determining as well as mitigating the potential impacts on the values of the MPA and to avoid user conflict.

Where tourist programmes are visibly impacting the integrity of the Pondoland MPA, the carrying capacity of the MPA for such tourist programmes must be determined and, if necessary, capping or limiting tourist/tour operator numbers, as well as times, days and locations of activities where appropriate. If necessary, additional zones may be created for resource protection or to separate user groups. This strategy is essential to ensure that the natural resources are protected; user conflicts are reduced, and safety for all user groups is ensured. If or when required, the carrying capacity will be determined through appropriate research.

3.12.2 Existing Tourist Programmes

There are currently a number of existing tourist programmes that are already in operation within the Pondoland MPA that may require further management input. These include:

Boat-based sardine diving

This seasonal activity takes place between May and August each year when numbers of SCUBA diving operators/charters take divers out to sea to dive with shoals of sardines and their associated predators. These operators tend to move their vessels to different launch sites depending on where the most sardine activity is occurring. These operators and their clientele must be permitted (as per the regulations described in Chapter 2 (3.3 & 3.4)) and they must comply with the launch limits set for each launch site. This will help to improve safety at the respective launch sites and ensure a better quality experience for the divers themselves. To improve compliance with permitting, diving operators should be able to sell diving permits directly to their customers (currently permits are only available for purchase through the Post Office which is inconvenient for international tourists who fly into the area). As diving vessels often inadvertently come into close association with whales and dolphins during their diving operations (regulations stipulate keeping a distance of 300m), a code of conduct needs to be established (preferably by the Diving Industry themselves) with regard to responsible behaviour in such situations. Use of spotter aircraft, including microlights that search for the whereabouts of sardines should obey CAA regulations for flying over the sea and maintain relevant height restrictions. This also applies to scenic flights conducted in the MPA. No landing on the beach at Mbotyi or Port St Johns should be permitted in this regard (landing strips are available within reasonable distance to both these venues).

Boat-based whale/dolphin/seabird watching and scenic tours

There was one licensed operator launching from Port St Johns but he has not renewed his license due to bureaucratic restrictions (John Costello, pers. comm.). It is believed that the potential exists for at least three such permits/vessels to be granted for operation in the Pondoland MPA based at Port Edward, Mkambati/Msikaba and Port St Johns. Although whale watching is seasonal and partly coincides with the arrival of the sardines in May/June, there is also the return migration of the whales during September-November. The year-round presence of bottlenose dolphins and the scenic beauty of the Pondoland coastline as a whole can be appreciated during the remainder of the year. As with all boat-based activities in the Pondoland MPA, the area

experiences frequent rough weather and safety must be a primary concern. A potential user-conflict would arise during sardine season when there is an influx of sardine diving operators into the region. The code of conduct described above should address responsible behaviour by diving vessels that are not permitted to come into close contact with whales and dolphins.

Boat-based fishing charters

There are currently at least six vessels regularly taking fishing charters from Port Edward and one from Port St Johns (it should be noted that some of these are licensed commercial rights holders that by law may not take charters). Branch: Fisheries (DAFF) urgently needs to address the long standing issue of licensing charter fishing operators in South Africa. Once this is achieved, the number of fishing charter operators/vessels allowed to operate in the offshore Controlled Zones of the Pondoland MPA should be limited to a maximum of 10 vessels with no more than five vessels operating in either of the two offshore Controlled Zones (i.e. 5 vessels operating from Port Edward and 5 from Port St Johns). The reason for this restriction would be to reduce the overall impact of linefishing on fish populations within the offshore Controlled Zones of the Pondoland MPA and to ensure the economic viability of the charter operators themselves. To improve compliance with permitting, registered charter operators should be able to sell recreational fishing permits directly to their customers (currently permits are only available for purchase through the Post Office).

Mtentu flyfishing safaris

This operation was run for seven years (1999-2005) at Mtentu by Ben and Pam Pretorius and their company called Ufudu Flyfishing Experiences. It was a fairly exclusive up-market operation that allowed clients top quality catch and release flyfishing on the Mtentu River and along the adjacent coastline to the north of Mtentu mouth between October and December each year. Although designated as a restricted, no-take estuary, the catch and release operation was well managed under a permit from DEAT and mortalities inflicted on the target species (i.e. giant kingfish and other gamefish species) were believed to be relatively low (Ben Pretorius, pers. comm.). Furthermore, fishing only occurred up to the second waterfall beyond which no fishing was allowed. The operation brought both employment opportunities and direct funding (through a trust) into the local community and importantly helped to convince local community members not to fish in the estuary. Unfortunately this operation has ceased to function due to problems experienced with the community trust and the disbursement of funds.

Despite the potential of the above and similar ventures, catch and release fishing should not be encouraged in restricted no-take zones. There is a substantial amount of scientific evidence which shows that even catch and release fishing can have a significant negative effect on fish populations either through associated mortality or change in fish behaviour etc. As a viable alternative, the unique seasonal migration of giant kingfish into the Mtentu estuary offers great potential as a seasonal, non-consumptive “kingfish watching” tourist opportunity.

Horse riding

There has been a joint venture through the Amadiba Trust offering horse riding trails between the Wild Coast Casino and Mtentu. The current status of this operation is uncertain but this activity has great potential to be expanded along much of the coastline between Mzamba and Port St Johns.

Hiking and mountain biking

There is currently a well managed hiking and mountain biking trail that has been established by Drifters Adventure Tours between Msikaba and Port St Johns, with overnight accommodation at Msikaba, Port Grosvenor, Lupatana, Mbotyi (in association with Mbotyi River Lodge), Manteku, Mntafufu and Port St Johns (in association with Outspan Inn). There was also a hiking/mountain bike trail run by the Amadiba Trust between Wild Coast Casino and Mtentu with overnight accommodation at Mtentu but the current status of this operation is uncertain. Clearly these non-consumptive tourism initiatives have great potential if they are well managed and offer good opportunities for community involvement.

3.13 EMERGENCY EVENTS SUCH AS STORMS

The Wild Coast is notorious for the regular occurrence of violent storms at sea which can result in strong winds and big swells. Through history these storms have resulted in a number of ship wrecks along the Pondoland coast (see Section A2.6). It is important that the MPA Management Authority has an emergency plan in place on how to react in case of a vessel in distress or a ship wreck within the Pondoland MPA. Relevant contact details of the National Sea Rescue Institute (NSRI), South African Air Force and Navy, South African Police Services and other organizations that should be contacted in case of an emergency should be kept close at hand. A specific contingency plan should be developed to deal with marine related emergencies. A plan should be developed on how best to deal with an oil spill and/or a vessel that is wrecked along the coastline according to best practise guidelines (see MARPOL). A specific contingency plan has been developed for the Pondoland MPA and is included in Appendix 3.

3.14 APPROPRIATE BOATING AND FISHING ORGANISATIONS

Further/updated information might be required in the future to ensure effective management of the Pondoland MPA. Interaction with such associations and organisations may be required to ensure improved awareness and/or compliance of certain members into the future. Partnerships with these organisations/associations is encouraged

The Association names and contact details are available for such interaction below. This section would require updating of contact details as and when changes occur:

- South African Deep Sea Angling Association (SADSAA): Marius Vermaak (Chairman) Tel: 0828976458, Email: mjvermaak@worldonline.co.za
- Natal Deep Sea Angling Association (NDSAA): Russell Hand (Chairman) Tel: 0834504350 Email: rhand@justice.gov.za
- Marlin Skiboat Club (Port Edward): Morne Lindeque (Chairman) Tel: 0849546479, Email: mornelindeque@yahoo.com
- South African Shore Angling Association (SASAA): David Goldberg (Chairman) Tel: 0825703771 Email: nokwanda1122@mweb.co.za
- KwaZulu-Natal Coastal Anglers Union (KZNCAU): David Nisbet (Secretary), Tel: 083 2918428 Email: secretary@kzncau.co.za
- Lusikisiki Angling Club: Pat Goss Tel: 0825655642 Email: patgoss@gossco.co.za

CHAPTER 4: MANAGEMENT OF INFRASTRUCTURE AND EQUIPMENT

4.1 EQUIPMENT REQUIRED FOR THE MANAGEMENT OF THE PONDOLAND MPA

It is crucial that the MPA staff have appropriate, well maintained equipment available in order to carry out their tasks as required. Available equipment and needs are summarized in tables 4.1 and 4.2.

Table 4.1 Equipment currently available and that still required for effective MPA management by ECPTA (December 2010).

Available	Required
1 x vehicle (4x4)	1 x tow vehicle with winch
1 x 7.5 m inflatable vessel	2 x handheld radios (VHF)
2 x 90hp Yamaha outboards	Repeater station?
1 x boat trailer	1 x 200cc motorbike
Required boat safety gear	1 x waterproof digital camera
1 x 2-way radio (VHF)	6 x field binoculars
1 x Echo-sounder & GPS	4 x digital cameras
1 x hand-held GPS	2 x hand-held GPS
1 x laptop computer	1 x desktop computer
1 x digital camera	3 x First aid kits
	4 x fish measuring boards
	4 x plastic vernier callipers
	2 x field books

Table 4.2. Equipment currently available and that still required for effective MPA management by DAFF, Branch: Fisheries (December 2010).

Available	Required
3 x vehicles (4x4)	2 x hand-held GPS
9 x cell phones	1 x tow vehicle with winch
2 x laptop computers	1 x 7.5 m inflatable vessel
2 x desktop computers	2 x 90hp outboard motors
2 x long range cameras	1 x boat trailer
5 x digital cameras	Boat safety gear
Measuring boards (n?)	Boat echo-sounder & GPS
Callipers (n?)	1 x 2-way radio (VHF)
6 x binoculars	
6 x handcuffs	

See additional checklist included as Appendix 4

4.2 MACHINERY SAFETY AND MARKING REQUIREMENTS IN TERMS OF SAMSA AND THE OCCUPATIONAL HEALTH AND SAFETY ACT FOR SEA-GOING VESSELS

Fire extinguishers must be serviced annually by an approved fire appliance servicing Agent. All equipment belonging to the vessel must be permanently marked with the vessel's name or approved marking. The trailer bearing the vessel must be marked in a conspicuous position with the vessel's name or approved marking and with the management authority name and telephone number visible.

4.3 USE OF EQUIPMENT

4.3.1 Capacity Requirements

- All staff (DAFF & ECPTA) associated to the marine component must obtain the correct training and experience to utilise the necessary equipment.
- An appropriate skippers licence (under the new regulations) must be obtained by identified marine staff. The skipper's ticket is insufficient on its own and for safety purposes new skippers must be accompanied by experienced skippers until they are fully competent.
- Boat crew should undertake regular practices for launching and other activities to ensure competence and reliability
- All staff must undertake a first aid training course (Level 1) including CPR and must be proficient with the use of the first aid kit
- All boat crew must be able to swim and should complete safety at sea training
- Radio operators must have the appropriate radio operators ticket

4.3.2 Equipment Register

- A register must be available for each piece of equipment so that when required for use, the staff member utilising the equipment can sign the equipment out as well as on its return
- The register should include a table with the item in question on, a column for the name of the staff member utilising the equipment, date and time it was taken for use, date and time it was returned and a column for comments where the staff member must state the condition of the piece of equipment on its return. This should preferably be done in the presence of another staff member such as the supervisor to ensure that the comments are correct.
- In the case of motorised transport (the vehicle/motorbike or boat), the register must include kilometres travelled, estimated fuel used and odometer reading (in the case of the vehicle/motorbike). The supervisor should check the motorised transport register frequently to determine service requirements of the equipment as per the manufacturer's servicing requirements. (e.g. new diesel vehicle requires a service between every 10 000-20 000kms). In the case of outboard motors it is advisable to add hour meters to easily determine service intervals.
- Fine (J534) books should be ordered in advance so that there is always stock available.

4.3.3 Equipment Maintenance and Insurance

- All equipment must be maintained in accordance with its manufacturers servicing requirements
- Tyres of motorised and trailer transport should be checked for legal standards at each service/ or annually (at minimum for new tyres and at least quarterly for older tyres)
- A budget item must be made available for costs associated to maintenance of equipment (amount determined by costs of servicing etc.)
- All equipment should be insured and a budget item provided therefore.
- Outboard Engine maintenance before it is used (noting that this is more specific than what normally takes place practically) if it has been standing for some time:
 - o Put in a fresh water tank. Do not use the flushing device as the engine will not reach running temperature and the thermostat will not open.
 - o Remove the air filters; run the engine until it warms up. Check the water is flowing strongly. Remove the fuel line without switching off
 - o Spray 'storage seal' into the carburettors until the engine runs out of the fuel in the carburettors and stops. Ensure each one received a good quantity. Switch off the ignition
 - o Make sure the carburettors have no fuel left. Undo the drain screws to allow drainage.
 - o Replace air filters and fuel line etc. and tighten

- o Spray the engine with a mixture of paraffin and light machine oil. Assemble the spray cover. Wash the outer surface of the engine with fresh water
- o Grease all linkages with marine grease, including the steering linkages
- o Remove the propeller, check and clean and grease the splines.
- After use of the vessel and engine:
 - o Rinse the vessel, trailer and engine with freshwater. Take care to not pollute the surrounding environment
 - o Let freshwater circulate inside the engine until the engine is well flushed.

4.4 MAINTENANCE OF INFRASTRUCTURE

Signage should be checked on each patrol for wear and tear, as well as for graffiti or other damage. All damaged, outdated or old should be replaced when required. Launching site signage should be checked on each patrol and/or after heavy storms or heavy use (high season) for damages and wear.

CHAPTER 5: COMPLIANCE

5.1 BACKGROUND

The Pondoland MPA consists of approximately 90 km of coastline between Mzamba and Port St Johns. The area is sparsely populated with an estimated 8750 local amaMphondo people living within five kilometres of the shore. These people are generally poor and rely heavily on local marine resources for subsistence use. In addition to this there are a number of predominantly white-owned cottage developments at Mnyameni, Sikombe, Msikaba, Port Grosvenor, Mkwani, Lupatana, Mbotyi, Manteku, Black Sands, Mntafufu and Agate Terrace which are primarily used during holiday periods by the owners and their friends and families. These people generally utilize the marine resources in the area for recreational purposes. From an offshore perspective there are recreational, charter and commercial ski boats that launch both within and adjacent to the Pondoland MPA to fish in the two offshore Controlled Zones. Law enforcement and compliance within the Pondoland MPA is therefore a challenge both because of the physical size and poor accessibility of the area, as well as the complexity of use occurring within the MPA.

5.2 OBJECTIVES

The compliance objective for the Pondoland Marine Protected Area is to achieve resource protection through compliance with the declaration as a MPA and the related Regulations, and other applicable laws. The Compliance Plan is intended to contribute to resource protection, facilitate fishery management, and reduce user conflict arising from competing uses in the MPA. It is intended to complement other elements of the Management Plan and lead to an increased level of success. High-profile, visible enforcement will require proper funding, supervision, staffing, and equipment.

5.3 COMPLIANCE METHODOLOGIES

Compliance can be achieved through a range of methods and is best achieved through the use of many tools and methods, including:

- Through community involvement and education,
- Traditional enforcement operations, including patrols, apprehension of offenders, confiscation of equipment and convictions for offences.
- Joint operations with other law enforcement agencies such as SANDF, SAPS etc.
- Signage used to advise the community of the MPA and what activity may or may not occur in the area.
- Communication by Field Rangers when a member of the public is encountered during a patrol to advise him/her of the regulations pertaining to the MPA before an offence is committed.
- Distribution of materials such as DAFF brochures on recreational fishing information.
- Planned poaching syndicates and commercial enterprises knowingly commit offences for financial gain. When these culprits are apprehended (if at all possible and with good evidence), admission of guilt fines should not be accepted and rather a charge laid with the possibility of Section 28 action appearance in court.

5.4 COMMUNITY INVOLVEMENT

Community involvement in management of the Pondoland MPA is seen as an essential prerequisite. Building on already established subsistence fishing committees along the coast, management needs to formalize these structures and ensure regular meetings and liaison. Representatives from these communities then need to be included in the Pondoland MPA Advisory Forum (see Chapter 9).

- DEA, DAFF and ECPTA need to encourage user groups and all members of the public to report offences of MPA regulations through an incident reporting system.
- DAFF and ECPTA need to encourage and develop a system of honorary rangers to assist with compliance and monitoring functions.

5.5 VOLUNTARY COMPLIANCE THROUGH EDUCATION

The Awareness Plan (Chapter 7) includes elements designed to help the public understand the conservation significance of marine protected areas and why it is important to comply with the MPA regulations. This promotes voluntary compliance by the public through education and awareness programmes. This must therefore be read in conjunction with Chapter 7.

5.6 ENFORCEMENT OPERATIONS

A compliance plan needs to be developed between DAFF and ECPTA to address enforcement in the Pondoland MPA and there need to be mechanisms developed to ensure good cooperation between the two agencies. This is critical to achieve effective management of the MPA. See Appendix 5 for an example of issues to be considered.

5.6.1 Patrol Schedules

- Weekly staff meetings must be conducted to determine enforcement/compliance priorities for that week.
- Compliance requires offshore vessel patrols, boat inspections at launch sites and shore patrols.
- Conduct patrols daily with night patrols taking place as needed.
- Patrols conducted on foot along the coast must include at least three trained and adequately equipped field rangers (observation patrols can be limited to two persons).
- Vehicle patrols can be conducted to areas accessible by road.
- Regular vessel patrols must be conducted. The ECPTA vessel based at Mkambati should attempt to regularly patrol the offshore Restricted Zone between Sikombe and Mbotyi, particularly during good weather. The DAFF vessels, “Victoria Mxenge”, “Ruth First” and “Lilian Ngoyli” conduct roving patrols along the coastline and these can be accessed for compliance in certain situations.
- Weekends, public and school holidays are heavy utilisation periods and extra patrols should be implemented.
- Spring low tides are important periods for subsistence harvesting on rocky shores and should be built into patrol schedules.
- All aspects of the MLRA and Pondoland MPA regulations are to be enforced during patrols – including apprehending fishers or harvesters in un-authorised areas.
- A short report should be completed after patrols which must include information such as:
 - o Number of persons encountered and interacted with, where and in what manner
 - o Names and number of persons encountered contravening the law and actions taken
 - o Distance, duration and route travelled
 - o Any changes or impacts relative to environmental degradation noted and at what location (preferably GPS reading to be taken at site of degradation)
 - o Whether any materials/brochures were distributed, if so which ones, how many, and to what type of visitor (i.e. tourist, fisher, etc.)
- Note that the above report should be completed in addition to the standard shore patrol or boat inspection forms completed as part of long-term monitoring (see Chapter 8).

5.6.2 Other Enforcement Operations

MPA management staff needs to form part of the local “Joint Operational Control” meetings with other compliance agencies. On occasion, it may be necessary to carry out “high impact operations” to ensure high law enforcement visibility and presence. Additional staff from the DAFF Marine Protection vessels, SAPS Border Unit, Ezemvelo KZN Wildlife and/or other organisations can be used during such operations.

5.6.3 Database of Offenses and Offenders

- In order to maintain efficient compliance it will be necessary to develop and maintain a photographic database of the commercial and charter fishing boats operating from Port Edward and Port St Johns so as to try and assist with identification of vessels fishing illegally within the offshore Restricted Zone of the MPA.
- A database of all illegal activities and suspicious vessels/vehicles/persons must be kept up to date at all times and reviewed on a quarterly basis.
- An electronic database must be maintained by DAFF and ECPTA to ensure easy access to compliance information (e.g. repeat offenders) and for easy forwarding to necessary partners.
- For successful enforcement to take place it is imperative to liaise and work with other Law Enforcement Agencies & the judicial system. Local magistrates and prosecutors should also be informed about the MPA.
- Regular training exercises and meetings should be held with all parties.

5.6.4 Compliance and Legal Proceedings

- In serious cases and in accordance with the law, confiscation of equipment and marine organisms takes place and even arrests are made. Where appropriate and with approval from the South African Police Services, confiscated organisms should be returned to the intertidal zone after being photographed or registered and counted.
- All admission of guilt fines and court appearance cases must be registered at the nearest police station to which the offence took place.
- Police contact at district level must be maintained through the DAFF offices at Mzamba and Port St Johns and the ECPTA office at Mkambati. Such contact should also be maintained through the Pondoland MPA Advisory Forum meetings (see Chapter 9).
- Legal proceedings as per the MLRA must be adhered to, in order to ensure positive convictions and fines
- Photographs and GPS positioning must be taken at the site of the offence, of the offender and of the exploited resource
- Accurate reports/dockets must be compiled with all evidence well marked, recorded and stored (as appropriate)
- Dockets must be submitted to the court with evidence and certified copies of the dockets must be kept on station (prevents corruption and loss of evidence)
- Court proceedings follow
- If positive conviction – ensure that the fine relates to the MLRA and that such income returns to the Marine Living Resources Fund as per the Act.

CHAPTER 6: ORGANIZATIONAL CAPACITY

6.1 STAFF

Based on the complexities of managing the Pondoland MPA it is clear that an MPA manager will be needed to provide an overall coordinating role between the two management agencies and other stakeholders. Tables 6.1 & 6.2 list the current and required staff to effectively manage the Pondoland MPA. Through their respective internal channels, these staff would need to report to the MPA Manager. However the current inter-departmental management structure in the MPA does not make provision for an overall manager function. This will need to be rectified through a process in improving the management effectiveness of the MPA.

Table 6.1 Current and required staff (and level of training) needed to conduct effective management of the Pondoland MPA by ECPTA.

Current	Required
None	1 MPA Nature Conservator*
	6 MPA Field rangers**

* Requires Nature Conservation Diploma, five years active experience, Peace Officer, Level 1 Compass MPA training accreditation, qualified boat skipper with experience.

** Require a minimum of Peace Officer and MPA Field Guide Training.

Table 6.2 Current and required staff (and level of training) needed to conduct effective management of the Pondoland MPA by DAFF (Branch: Fisheries Compliance).

Current	Required
6 Fisheries Inspectors* (only 3 with Peace Officer training)	1 Fisheries Inspector at PSJ** All need to be trained as Peace Officers

* All DAFF staff at Mzamba and PSJ need to be trained as Peace Officers

**An additional Fisheries Inspector is needed at PSJ who must be a qualified boat skipper with sea-going experience.

6.2 SKILL REQUIREMENTS

- The appointed MPA Manager should have at least a B-tech Degree in Nature Conservation or Oceanography and additional qualifications in MPA management. For example this person should have attended the WWF MPA Management Training Course and appropriate WIO-Compass professional accreditation and should have a minimum of five years experience in MPA management
- The staff required to patrol/manage the MPA and conduct monitoring programmes are Field Rangers who have passed a recognised Field Ranger course (THETA-approved National Certificate in Natural Resource Guardianship). Additionally they should have completed either the accredited Marine Guides Training Course offered by FGASA which focuses them on the marine environment or the introductory course in MPA management offered through WWF-SA. Field Rangers would also require environmental education and capacity building skills as they would run environmental education programmes in quiet periods. MPA Field Rangers should have at least a Grade 12 pass with a Code 08 vehicle licence and/or a Code 02 motorbike licence. Field rangers must also have undertaken the necessary compliance training and should be registered as Peace Officers.
- It is highly advised that all Staff must be qualified in further specialist courses such as Personnel Management Courses (pending budget allocations and prioritisation through management), but also including:
 - Marine & MPA Legislation
 - Skippers license and boat maintenance
 - Peace Officers Certification
 - Fisheries Inspectorate Training
 - First Aid

- Visitor control and compliance
- Marine Education.
- Investigating Crime Scenes and Docket Handling
- Court Procedures.
- Commercial Diving Ticket
- Staff must attend various workshops and short courses as required for the station.
- Staff, permanent and voluntary, must be suitably trained to execute their functions in terms of awareness raising and education. They would require a complete knowledge of the Pondoland MPA environment and management issues. Records should be kept of all courses attended
- Personnel should be given opportunities to practice new skills attained
- Personnel should be monitored in terms of improved efficiency post the course.
- A budget line must be made available for capacity building in order to achieve the above.
- A six-month part-time MPA Management course for staff with some-experience is offered periodically, co-ordinated by the WWF-SA and funded mainly by DEA/DAFF.

In addition to the above, various other skills are required for staff including: radio operators license, basic GPS operation, basic computer literacy and basic photography. Environmental Management Inspector (EMI) training is also strongly recommended for responsible MPA management staff. See Appendix 6 for a list of additional training requirements.

CHAPTER 7: AWARENESS

7.1 BACKGROUND

DEA, DAFF and ECPTA recognise that their proficiency as managers of South Africa's marine resources depends on their ability to inspire public support and participation through awareness. The focus of this awareness plan is to promote an understanding of the importance of healthy ocean ecosystems; the importance of MPAs and the role that the community may play in their care. This plan also recognizes the need to align the marine conservation awareness programme with other similar programmes where appropriate.

MPA management is emerging as a national priority due to undesirable impacts on the marine ecosystem. An important management tool to protect marine resources will be to implement an awareness programme that improves understanding of the Pondoland MPA within its surrounding communities and amongst visitors.

7.2 OBJECTIVES

- Protection of marine biodiversity of Pondoland MPA and the surrounding areas through achieving public awareness of the Pondoland MPA and the values, services and products offered.
- Provide information on the benefits/importance of the Pondoland MPA to all user groups and visitors through a range of communication strategies.

7.3 AWARENESS METHODOLOGIES

- Appropriate signage at key predetermined sites that are highly visible and relevant to the user group in question
- Compiling and distribution of information and compliance pamphlets
- Implementation of school programmes in the immediate vicinity of the MPA
- Documentaries on television, discussions broadcast on radio, articles in the newspaper and local magazines, presentations at events when requested
- Interacting positively with local skiboat clubs and shore angling clubs when they visit the MPA
- Participating and driving local and national events such as Marine Week activities, beach clean ups, etc. with particular emphasis on the local community
- Interpret and disseminate Pondoland MPA research outputs for use by the non-research community.
- Compiling appropriate "Codes of Conduct" for the different user groups as required
- Undertake awareness/education workshops with relevant local community structures, traditional leaders, church groups, etc.

7.4 PROGRAMME ACTIVITIES

Field rangers will be utilised for formal awareness programmes with local children and adults throughout the year. On-going environmental awareness is conducted in conjunction with patrols. It is critical that the environmental knowledge of field rangers is good and is kept at a high level through adequate training. In this regard field rangers should ideally attend the WWF/FGASA Level 1 Marine Training Course.

In order to enhance MPA management through partnerships at the local, provincial, national and international levels, an MPA interpretative centre could be considered at an appropriate location determined through the MPA Management Forum (e.g. the old restaurant at Mkambati has some potential in this regard).

7.4.1 School Programmes

- Design programmes that meet the needs of both the educators and the MPA authority. These can be carried out on the coast or at schools or both.
- Establish contact with regional school authorities to introduce awareness programmes and gain approval
- Undertake visits to schools to meet with teachers to arrange for education initiatives
- Implement and evaluate the programmes

7.4.2 Fishers

For both ski-boat and shore fishers, waterproof packages of information brochures and pamphlets with bag limits/size limits etc. to be compiled and distributed to the fishermen by Field Rangers while on patrol (communicate with EKZNW regarding their “FishCare” programme).

7.4.3 General Visitors addressing all user groups

- Interpretative boards for tourists, e.g. MTN Whale boards, DEA Marine boards etc. pamphlets, booklets, flyers.
- Promote marine conservation through local, national and international media (Internet, newspapers, magazines, TV, etc.)
- Interpret and disseminate Pondoland MPA research for the information of and use by the non-research community through posters and pamphlets.
- Promote alternative non-consumptive activities within the Pondoland MPA with different user groups through opportunities as they arise.

7.4.4 Specific User Groups “Codes of Conduct”

- Guidelines and codes of conduct should be developed in consultation with the specific user groups (e.g. Divers Code of Conduct, Fishers Code of Conduct), and environmental briefing standards that allow for use in a manner that protects the environment.
- Periodic evaluations to monitor their effectiveness should be undertaken to recommend changes when necessary.

7.4.5 Community Awareness

- Conduct a public information campaign on the Pondoland MPA rules and regulations whilst simultaneously promoting the understanding of the benefits of the MPA to the local community.
- A specific awareness campaign needs to be aimed at subsistence fishers in this regard.
- Meet with schools, local community leaders and other interested and affected parties to coordinate and plan awareness programmes.
- Disseminate information and encourage individual and community participation and representation in and through the Pondoland MPA Advisory Forum.
- Provide existing and future educational materials in a manner consistent with community educational backgrounds (e.g. additional “bridging” material).

7.4.6 Volunteers

- Prioritise working with local communities to encourage and support volunteer opportunities.

- Encourage community-based volunteer research and monitoring programmes such as COASTCARE and DAFF's Subsistence Fisheries Monitoring Programme.
- Develop recognition and benefits for volunteers (letter of reference, community recognition through media, hats, t-shirts, etc).

7.5 ADDRESSING CONFLICT BETWEEN USER GROUPS WITHIN THE MPA.

Appropriate signage, information on zoning and resource information to reduce user conflicts and ensure protection of the marine environment must be developed (e.g. demarcate areas for certain activities) needs to be in place. The MPA needs to facilitate communication between user groups to address user issues through meetings or invitations to attend the Pondoland MPA Advisory Forum (see Chapter 9).

CHAPTER 8: SCIENTIFIC RESEARCH AND MONITORING

8.1 BACKGROUND AND OVERVIEW

Monitoring the environment and human activities in and around MPAs should be pursued for two reasons. The first is to provide reliable data for the assessment of the effectiveness of the MPA. Monitoring activities undertaken for this purpose will be designed around the specific objectives of the MPA. Typically, indicators are selected to represent key processes or resources. Successful indicators are easily measured.

The second reason is to provide baseline information against which other, potentially impacted, areas can be assessed, and which can be used to measure long-term changes in the environment. In South Africa, where there are a number of MPAs spread along the coast, the duplication of such monitoring activities can serve as an excellent network of monitoring sites to detect shifts that may be associated with climate change and range-changes of critical species.

These two types of monitoring can be referred to as MPA monitoring and Environmental monitoring, respectively. In practice there will be substantial overlap. As is the case in the Pondoland MPA, environmental monitoring is one of the objectives of the MPA. The MPA must be considered in relation to the broader marine and coastal environment. It is not an end in itself, but rather one of several management strategies used to ensure the sustainability of the coast and coastal activities.

MPA monitoring should be part of the process of adaptive management (Pomeroy et al. 2003). The results of monitoring need to be evaluated against pre-determined criteria or thresholds of potential concern (TPC's). TPC's are designed to represent boundaries of acceptable variation. When indicators attain or cross threshold values, a set of actions aimed at addressing impacts, or mitigating unavoidable changes, should be triggered. Importantly, the thresholds and the actions need to be established as a priority, along with the monitoring programme.

Whereas this structure should pertain also to environmental monitoring, the purpose of such monitoring transcends the MPA. The selection of appropriate thresholds and actions are beyond the scope of this plan and will be addressed in the subsidiary MPA monitoring plan that still needs to be developed which will replace chapter 8 of this plan. Environmental monitoring in MPAs should adopt indicators that are used at these higher levels. This management plan lists such indicators.

There are some general principles of monitoring in MPAs that should be considered. Experience in South Africa suggests that monitoring in MPAs is seldom maintained for long enough to be useful, and generally do not out-live the tenure of the official, or researcher, who instigated the programme. This is a common failing. One of the purposes of listing monitoring programmes in this plan is to ensure their continuity and consistency with respect to methods. It should also be noted that some monitoring programmes are by their nature unsustainable. This relates mostly, but not only, to costs. It is clear now for example, that marine science was well funded in the 1980's and 1990's, and that research undertaken at that time was not sustained in the early 2000's. The situation might rectify itself but the danger exists that over-investment in monitoring might mean that some programmes cannot be sustained when funding declines again. The termination of monitoring programmes is wasteful. The purpose of this section should be to develop sustainable and useful monitoring. Other factors that influence sustainability are: changing ethics (not all methods used now may be acceptable in future), changing technology (new technology may force changes in methods), shifting priorities (what is deemed an important indicator now, may be deemed irrelevant in future), and changes in legislation (for example, changes in diving regulations make it difficult to repeat work done two decades ago).

Another crucial challenge for monitoring programmes is the capture and storage of data. Many monitoring programmes in the past were effectively wasted because of a failure to ensure that the data were recorded (or published) in a form that it was available for evaluation and comparison by later researchers.

8.2 SUBSIDIARY MPA RESEARCH AND MONITORING PLAN

A subsidiary research and monitoring plan will be developed during the first year of implementation of the management plan. An interdisciplinary approach will be followed which will focus on the strengths and capacity of the various departments, agencies and research institutions involved.

CHAPTER 9: PONDOLAND MPA ADVISORY FORUM

9.1 BACKGROUND

Similar to that described in the Integrated Coastal Management Act (No. 24 of 2008), an Advisory Forum should be convened to ensure community involvement in managing the MPA. The Forum will aim to involve all stakeholders associated with the Pondoland MPA. This will formalize co-management of the MPA, the importance of which is recognized by the responsible management organizations including DEA, DAFF and ECPTA.

9.2 COMPOSITION OF THE ADVISORY FORUM

The Forum must be formalised as soon as possible. A formal letter of invitation and advertisements placed in local newspapers calling for nominations to participate will be forwarded to appropriate groups. Each group will nominate in writing a representative and also an alternative representative, who will represent their constituency only when the nominee is unavailable, and forward this name to DEA/DAFF/ECPTA. Representatives will include:

- Department of Environmental Affairs (DEA);
- Department of Agriculture, Forestry and Fisheries (DAFF),
- Eastern Cape Parks and Tourism Agency (ECPB);
- Eastern Cape Department of Economic Affairs, Environment and Tourism (DEAET);
- Subsistence fishers;
- Recreational fishers;
- Fishing charter operators;
- Commercial fishers;
- Recreational SCUBA diving operators;
- Whale watching and scenic tour operators;
- Local community representatives from the following communities (Noqekwane, Manteku, Mbotyi, Cutweni, Rhole, Ndengani; Mkambathi, Mtentu, Mzamba)
- Cottage Owners Association
- Municipality of Port St Johns, Quakeni, Mbizana;
- Commerce;
- Hospitality industry;
- Tourism industry;
- South African Police Service (SAPS) Marine Unit;
- NGOs (e.g. WESSA, ORI etc.)

9.3 THE STRUCTURE OF THE ADVISORY FORUM

Chairman's role: The Chair will be a DEA, DAFF or ECPTA staff member. The Chair schedules and sets agendas for the Advisory Forum meetings and presides over all meetings of the Advisory Forum, and ensures that meetings are run according to accepted meeting practices, signs all correspondence and documents authorised by the Forum, and generally represents the Forum's interests and concerns to the public.

Vice-Chair: The Vice-Chair will be a DEA, DAFF or ECPTA staff member (preferably from a different organization to the Chair), who will serve as Chair in the absence of the Chair and assist as necessary in performing executive duties of the Forum.

Secretary: Prepares and convenes meetings, circulates notices and takes minutes. The secretariat (secretary plus resources) will be supplied by DEA, DAFF or ECPTA.

Public Relations Officer: Facilitates liaison between the Forum and the public. Responsible for submissions to local news media after ratification by the Chair.

9.4 ROLES OF THE ADVISORY FORUM

- Provide input and recommendations to DEA, DAFF and ECPTA on Pondoland MPA management plans and proposals.
- Help identify and resolve issues and conflicts, including emerging issues.
- Serve as a liaison between the management agencies and the community, disseminate information about the Pondoland MPA to the various stakeholders and bring the concerns of stakeholders and the public to DEA, DAFF and ECPTA staff.
- Assist in identifying potential partners and stakeholders with which the Pondoland MPA should be working.
- Assist in identifying and securing priority partnerships, with special reference to previously disadvantaged communities.
- Provide technical and background information on issues facing the Pondoland MPA.
- Provide an opportunity for DEA, DAFF and ECPTA to report on management issues and new policies e.g. boat-based whale watching, registration of charter boats, etc.

9.5 FORUM MEETINGS

It is suggested that the Advisory Forum should meet at least once every six months. The Chair will develop meeting agendas and, with the assistance of the Secretary, make the agenda as well as the minutes of the previous meeting available to Forum members in advance. Minutes will be taken by the Forum secretary, checked by the Chairman, and circulated to members within two months of each meeting. Copies of such minutes should be made available to the public upon request.

9.6 FINANCING OF THE ADVISORY FORUM

The cost of the secretary, the hiring of venues, postage and miscellaneous items required for meetings will be covered by DEA, DAFF and ECPTA, in terms of their respective contracts.

CHAPTER 10: FUNDING, AUDITING & CONCLUSION

10.1 FUNDING AND RESPONSIBILITY

The management activities described herein are the responsibilities of the DEA and DAFF in collaboration with ECPTA. Where activities are addressed that fall under the mandate of the various municipalities in the Pondoland region or some other authority, it is advised that such activities are facilitated and addressed through the Pondoland MPA Advisory Forum.

The responsible Management Agencies (i.e. DEA, DAFF and ECPTA), through the MPA Manager, must ensure that the activities prescribed in the **Management of the MPA** (see Chapters 1-9) are carried out and that competent individuals and/or organisations are contracted to undertake the tasks where appropriate or that the staff component is adequately increased and capacitated. The annual management plan and environmental audit (described in the next section) will determine if the management activities are being carried out adequately, and if adjustments to the overall plan need to be made.

A budget to fund the implementation of the Pondoland MPA Management Plan must be compiled and approved before the start of each financial year by the responsible management authorities (DEA, DAFF and ECPTA). An MPA manager should be appointed and he/she should report to DEA, DAFF and ECPTA, through quarterly reports.

In addition, the MPA Manager should, where possible, strive to raise additional funding. However, care should be taken not to “double dip” where the same item is requested/funded from different sources.

10.2 AUDITING OF MANAGEMENT ACTIVITIES AND EFFECTIVENESS

10.2.1 Objectives:

Auditing of the Management Plan should not be confused with monitoring of the MPA as described in Chapter 8. The purpose of implementing an audit is to ascertain the relevance and effectiveness of the activities recommended within the framework of this Management Plan.

Determining management effectiveness through auditing is to ensure that the environment is being maintained in a satisfactory condition. This is done by:

- ensuring that the accepted management plan is adhered to
- ensuring that utilization of resources, such as marine resources, is within acceptable and determined limits and that user conflicts are resolved
- determining if the condition of the environment is deteriorating or improving under current management regimes by measuring certain parameters and monitoring the changes over time

10.2.2 Implementation:

A programme for annual environmental auditing must be designed and agreed upon by DEA, DAFF, ECPTA and the Advisory Forum. There are a number of current MPA audit tools designed to manage the effectiveness of the MPA and these can be used to determine the health of the MPA and management strategies, however the effectiveness and/or relevance of this document to meeting the principles and objectives of the Pondoland MPA need to be audited and amended as required. It is recommended that audit sheets be drawn up to accurately evaluate the effectiveness of activities within this document. It is recommended that an independent organisation/agency/individual carry out the audit. Initially, a simple system such as the audit used for developing the State of MPAs Report (Tunley 2009) could be used. The audit must be undertaken in intervals as agreed upon between the delegated authority and the contracted management agency, but a recommended

interval is annually for the first three years and thereafter every five years. Amendments to improve the document should be made and incorporated where necessary.

Some guideline/example parameters to consider in the audit include:

- **Coastal and estuarine vegetation**
 - i) changes in species diversity, composition and abundance
 - ii) degree and rates of change in invasion of alien plant species
 - iii) unnecessary destruction of vegetation
 - iv) rate of success of rehabilitation of areas previously disturbed

- **Marine and estuarine resources**
 - i) Changes in composition of catches
 - ii) Changes in size and abundance of key species
 - iii) Trends in CPUE

- **General**
 - i) Staff capacity and training/improvements
 - ii) Condition of vehicles, boats, equipment and signage
 - iii) User group awareness of the Pondoland MPA and conduct relative to signage
 - iv) Number of fines issued and are these reducing over time?
 - v) Number of successful convictions and rate versus failed convictions
 - vi) Rate and reduction of conflicts between users

10.3 CONCLUSION: AMENDMENTS AND UPDATING OF THE PONDOLAND MPA MANAGEMENT PLAN

The Pondoland MPA Management Plan must be seen as a dynamic working document and should be revised every five years. It is however, important that changes to the Management Plan and the reasons for the changes, be documented as to reflect the history and development of this plan.

REFERENCES

- BECKLEY, L.E. & VAN DER LINGEN, C.D. 1999. Biology, fishery and management of sardines (*Sardinops sagax*) in Southern African waters. *Marine and Freshwater Research* 50(8): 955-978.
- CELLIERS, L., MANN, B.Q., MACDONALD, A. & SCHLEYER, M.H. 2007. Benthic survey of the rocky reefs off Pondoland, South Africa. *African Journal of Marine Science* 29(1): 65-77.
- DEA&T & SANBI 2008. National Protected Area Expansion Strategy for South Africa. Priorities for Expanding the Protected Area Network for Ecological Sustainability and Climate Change Resilience. Draft produced for Mintech, September 2008, 55pp.
- DE VILLIERS, D. & COSTELLO, J. 2006. Mkambati and the Wild Coast, South Africa and Pondoland's Unique Heritage. Resolution Colour (Pty) Ltd, Cape Town and Tien Wah Press, Singapore, 216pp.
- DICKEN, M.L., SMALE, M.J. & BOOTH, A.J. 2006. Spatial and seasonal distribution patterns of the ragged-tooth shark *Carcharias taurus* along the coast of South Africa. *African Journal of Marine Science*, 28(3&4): 603-616.
- DU TOIT, J., ATTWOOD, C., DU PLESSIS, J. & BOYD, A. 2008. Stilbaai Marine Protected Area Management Plan. Department of Environmental Affairs and Tourism: Branch Marine and Coastal Management, Cape Town: 78pp.
- FIELDING, P. 2011. Habitat mapping and Rocky Shore Invertebrate Survey Dwesa-Cwebe Marine Protected Area, Eastern Cape Province. Internal Report, Eastern Cape Parks and Tourism Agency, East London: 41pp.
- GARRATT, P.A. 1988. Notes on seasonal abundance and spawning of some important offshore linefish in Natal and Transkei waters, southern Africa. *South African Journal of Marine Science* 7: 1-8.
- HARRISON, T.D., COOPER, J.A.G., RAMM, A.E.L. 2000. State of South African Estuaries: Geomorphology, Ichthyofauna, Water Quality and Aesthetics. Department of Environmental Affairs and Tourism, Pretoria: 127pp.
- LEMM, S. 2006. Pondoland Marine Protected Area Management Plan. Produced for Marine and Coastal Management, 31 January 2006, 63pp.
- LOMBARD, A.T., STRAUSS, T., HARRIS, J., SINK, K., ATTWOOD, C., & HUTCHINGS, L. 2004. South African National Spatial Biodiversity Assessment. Technical Report Vol. 4 Marine Component. Pretoria. South African National Biodiversity Institute, 96pp + appendices.
- MANN, B.Q. (ed.) 2000 – Southern African Marine Linefish Status Reports. *Oceanographic Research Institute Special Publication* 7: 262pp.
- MANN, B.Q., CELLIERS, L., FENNESSY, S.T., BAILEY, S. & WOOD, A.D. 2006. Towards the declaration of a large marine protected area: A subtidal ichthyofaunal survey of the Pondoland coast in the Eastern Cape, South Africa. *African Journal of Marine Science* 28(3&4): 535-551
- ROSS, G.J.B., COCKROFT, V.G., MELTON, D.A. & BUTTERWORTH, D.S. 1989. Population estimates for bottlenose dolphins *Tursiops truncatus* in Natal and Transkei waters. *South African Journal of Marine Science* 8(1): 119-129.
- SINK, K.J., BOSHOFF, W., SAMAAI, T., TIMM, P.G. & KERWATH, S.E. 2006. Observations of the habitats and biodiversity of the submarine canyons at Sodwana Bay. *South African Journal of Science* 102(9/10): 466-474.
- STEYN, S. 2009. Pondoland Marine Protected Area Management Plan Review – Stakeholder Engagement Report. Ukwazi Development Facilitators, Beacon Bay, 66pp.

TUNLEY, K. 2009. State of management of South Africa's Marine Protected Areas. WWF South Africa Report Series – 2009/Marine/001.

APPENDIX 1. ALGAE AND INVERTEBRATE SPECIES RECORDED IN THE PONDOLAND MPA (FROM CELLIER ET AL. 2007)

Algae

Group	Species
Chlorophyta (Green algae)	<i>Caulerpa filiformis</i>
	<i>Valonia macrophysa</i>
	<i>Codium papenfussii</i>
	<i>Codium tenue</i>
	<i>Codium lucasii</i>
	<i>Halimeda cuneata</i>
Phaeophyta (Brown algae)	<i>Dictyopteris ligulata</i>
	<i>Dictyota suhrii</i>
	<i>Lobophora variegata</i>
	<i>Zonaria tournefortii</i>
	<i>Styopodium multipartitum</i>
	<i>Zonaria harveyana</i>
	<i>Carpomitra longicarpa</i> (to be re-described as a new genus by Miller & Yee, Australia).
Rhodophyta (Red algae)	<i>Cheilosporum sagittatum</i>
	<i>Osmundaria serrata</i> (ex <i>Vidalia serrata</i>)
	<i>Halymeniaceae</i> indef (undescribed genus and species being studied by De Clerck)
	<i>Portieria homemanni</i> (ex <i>Chondrococcus homemanni</i>)
	<i>Peysonnelia capensis</i>
	<i>Peysonnelia replicate</i>
	<i>Inkyuleea beckeri</i>
	<i>Sarcodia dentate</i>
	<i>Amphiroa bowerbankii</i>
	<i>Amphiroa ephedraea</i>
	<i>Liagora ceranoides</i>
	<i>Galaxaura diessingiana</i>
	<i>Kallymeniaceae</i> indef. (large red blade)
	<i>Plocamium corallorhiza</i>
	<i>Arthrocardia flabellate</i>
	<i>Arthrocardia corymbosa/filicula</i> (?)
	<i>Erythrymenia obovata</i>
	<i>Plocamium corallorhiza</i>
	<i>Plocamium suhrii</i>
	<i>Callophycus densus</i>
	<i>Callophycus harveyanus</i> (may be a new record for SA)
	<i>Phacelocarpus oligocanthus</i>
	<i>Ptilophora pinnatifida</i>
	<i>Halymenia dilatata</i>
	<i>Spyridia cf plumose</i>
	<i>Sebdenia flabellate</i>
	<i>Glaphyrymenia pustulosa</i>
	<i>Metamastophora flabellate</i>
	<i>Haloplegma duperreyi</i>
	<i>Gymnogongrus cf tetrasporiferus</i>
	<i>Hypnea rosea</i>
	<i>Cryptonemia natalensis</i>
	<i>Cryptonemia cf luxurians</i>

Sponges

Phylum	Species
Porifera (Sponges)	<i>Isodictya frondosa</i>
	<i>Isodictya elastica</i>
	<i>Isodictya conulosa</i>
	<i>Mycale (Mycale) phylophyla</i>
	<i>Mycale (Mycale) trichelae</i>
	<i>Clathrina coriacea</i>
	<i>Clathrina (Clathrina) n.sp1</i>
	<i>Myrmekiodermia n.sp1</i>
	<i>Suberites n.sp1</i>
	<i>Psammocinia sp1</i>
	<i>Spirastrella spinispirulifera</i>
	<i>Cliona cf. celata</i>
	<i>Cliona celata</i>
	<i>Aaptos cf. aaptos</i>
	<i>Aaptos aaptos</i>
	<i>Myxilla cf. simplex</i>
	<i>Hippospongia sp1</i>
	<i>Rhabdormia n.sp1</i>
	<i>Hyrrios sp1</i>
	<i>Hyrrios sp2</i>
	<i>Anchoriniidae sp</i>
	<i>Spirastrella spinispirulifera</i>
	<i>Tethya aurantium</i>
	<i>Clathrina reticulatum</i>
	<i>Stelletta purpurea</i>
	<i>Leucosolenia arachnoides</i>
	<i>Hymeniacidon sublitoralis</i>
	<i>Ircinia arbuscula</i>
	<i>Ircinia cf. arbuscula</i>
	<i>Ircinia sp1</i>
	<i>Psammocinia sp1</i>
	<i>Hemiasterella minor</i>
	<i>Forcepia (Forcepia) n.sp1</i>
	<i>Forcepia (Forcepia) n.sp2</i>
	<i>Dysidea cinerea</i>
	<i>Strepsichordaia n.sp1</i>
	<i>Cyocalyptra cf. allenii</i>
	<i>Stelletta trisclera</i>
	<i>Axinella sanguinea</i>
	<i>Axinella sp1</i>
	<i>Axinella sp2</i>
	<i>Fasciospongia sp1</i>
	<i>Plakina n.sp1</i>
	<i>Esperiopsis n.sp.</i>
	<i>Ectyomyxilla kerguelensis</i>

Other invertebrates

Phylum/Class/Order	Species
Annelida	
Polychaete	Unknown sp.
Phylum Echinodermata	
Class Crinoidea	<i>Tropiometra carinata</i>
Phylum Cnidaria	
Class Hydrozoa	
Order Hydroida	<i>Aglaophenia sp.</i>
	<i>Thecocarpus formosus</i>
Class Anthozoa	
Order Gorgonacea	<i>Acabaria sp.</i>
	<i>Homophyton sp.</i>
	<i>Homophyton verrucosum</i>
Order Scleractinia	<i>Stylophora pistillata</i>
	<i>Coscinarea sp.</i>
	<i>Anomastrea irregularis</i> (intertidal)
Order Alcyonacea	<i>Alcyonium sp.</i>
	<i>Carijoa arborea</i>
	<i>Heteroxenia sp.</i>
	<i>Leptophyton sp.</i>
	<i>Leptophyton benayahui</i>
	<i>Paraminabe sp.</i>
	<i>Dendronephthya sp.</i>
	<i>Dendronephthya</i>
Chordata	
Ascidiacea	<i>Clavellina sp.</i>
	<i>Didemnum sp.</i>
	<i>Eudistoma coeruleum</i>
	<i>Eudistoma sp.</i>
	<i>Lissoclinum sp.</i>
	<i>Polyclitor africanus</i>
	<i>Polycarpa insulsa</i>
	<i>Sigillina sp</i>
	<i>Pyura stolonifera</i>
	<i>Pseudodistoma africanum</i>

APPENDIX 2. FISH SPECIES RECORDED FROM THE NORTHERN TRANSKEI AND THE PONDOLAND MPA (FROM MANN ET AL. 2006)

Note: SB=Recreational and commercial ski-boats, SA=Shore angling, CO=Shore angling competitions, RP=Rock pool fish, UVC=Underwater Visual Census

Family	Scientific name	Common name	SB	SA	CO	RP	UVC
CHONDRICTHYES							
Orectolobidae	<i>Stegostoma fasciatum</i>	Zebra shark			Y		
Carcharhinidae	<i>Carcharhinus brachyurus</i>	Copper shark			Y		Y
	<i>Carcharhinus brevipinna</i>	Spinner shark			Y		
	<i>Carcharhinus leucas</i>	Zambezi shark			Y		Y
	<i>Carcharhinus limbatus</i>	Blackfin shark			Y		
	<i>Carcharhinus obscurus</i>	Dusky shark			Y		
	<i>Carcharhinus plumbeus</i>	Sandbar shark			Y		
	<i>Carcharhinus sealei</i>	Blackspot shark			Y		
	<i>Rhizoprionodon acutus</i>	Milk shark			Y		
Triakidae	Mustelus mustelus	Smooth houndshark			Y		Y
	<i>Scylliogaleus queketti</i> *	Flapnose houndshark			Y		
	<i>Triakis megalopterus</i> *	Spotted gullyshark		Y	Y		
Scyliorhinidae	<i>Halaehururus lineatus</i>	Banded catshark			Y		
	<i>Haploblepharus fuscus</i> *	Brown shyshark			Y		
	Poroderma pantherinum *	Leopard catshark			Y		Y
Sphyrnidae	<i>Sphyrna lewini</i>	Scalloped hammerhead shark			Y		Y
Odontaspidae	<i>Carcharias taurus</i>	Spotted raggedtooth shark			Y		Y
Torpedinidae	<i>Torpedo fuscomaculata</i>	Blackspotted electric ray					Y
	<i>Torpedo sinuspersici</i>	Marbled electric ray			Y		
Rhinobatidae	<i>Rhinobatos annulatus</i> *	Lesser lesser guitarfish		Y	Y		Y
	<i>Rhinobatos leucospilus</i> *	Greyspot guitarfish			Y		Y
	<i>Rhynchobatus djiddensis</i>	Giant guitarfish			Y		Y
Myliobatidae	<i>Aetobatus narinari</i>	Spotted eagle ray			Y		
	<i>Myliobatus aquila</i>	Eagle ray			Y		
	<i>Pteromyia leus bovinus</i>	Duckbill ray		Y	Y		
Mobulidae	<i>Manta birostris</i>	Manta					Y
Dasyatidae	<i>Dasyatis brevicaudata</i>	Short-tail stingray					Y
	<i>Dasyatis chrysonota chrysonota</i>	Blue stingray		Y	Y		
	<i>Gymnura natalensis</i> *	Diamond ray			Y		
	<i>Himantura gerrardi</i>	Brown stingray			Y		
	<i>Himantura uarnak</i>	Honeycomb stingray			Y		
	<i>Taeniura melanospilos</i>	Round ribbontailray					Y
OSTEICHTHYES							
Elopidae	<i>Elops machnata</i>	Springer		Y	Y		
Congridae	<i>Conger cinereus cinereus</i>	Blackedged conger				Y	
Muraenidae	<i>Gymnothorax undulatus</i>	Leopard moray		Y		Y	Y
Clupeidae	<i>Eutremes teres</i>	East coast roundherring	Y				Y
	<i>Sardinops sagax</i>	Pilchard					Y
Albulidae	<i>Albula vulpes</i>	Bonefish			Y		
Ariidae	<i>Galeichthys sp.*</i>	Sea barbel	Y	Y	Y		Y
Plotosidae	<i>Plotosus nkunga</i> *	Eeltail barbel		Y	Y		
Synodontidae	<i>Synodus variegates</i>	Variegated lizardfish				Y	
Berycidae	<i>Centoberyx spinosus</i> *	Short alfonso					Y
Holocentridae	<i>Sargocentron punctatissimum</i>	Speckled squirrelfish				Y	
Scorpaenidae	<i>Pterois miles</i>	Devil firefish					Y
	<i>Scorpaena scrofa</i>	Bigscale scorpionfish	Y			Y	
Platycephalidae	<i>Platycephalus indicus</i>	Bartail flathead		Y	Y		
Kuhliidae	<i>Kuhlia mugil</i>	Barred flagtail		Y		Y	
Polyprionidae	<i>Polyprion americanus</i>	Wreckfish	Y				
Serranidae	<i>Acanthistius sebastoides</i>	Koester					Y
	<i>Pseudanthias squamipinnis</i>	Sea goldie					Y
	<i>Cephalopholis sonnerati</i>	Tomato rockcod			Y		
	<i>Epinephelus albomarginatus</i> *	White-edged rockcod	Y				
	<i>Epinephelus andersoni</i> *	Catface rockcod	Y	Y	Y		Y
	Epinephelus chabaudi	Moustache rockcod	Y				
	Epinephelus chlorostigma	Brownspotted rockcod	Y				
	Epinephelus flavocaeruleus	Yellowtail rockcod	Y				
	Epinephelus marginatus	Yellowbelly rockcod	Y	Y	Y	Y	Y
	Epinephelus poecilonotus	Dot-dash rockcod	Y				
	Epinephelus rivulatus	Halfmoon rockcod	Y		Y		Y
	<i>Serranus cabrilla</i>	Comber					Y
Grammistidae	<i>Grammistes sexlineatus</i>	Sixstripe soapfish				Y	

Pseudochromidae	<i>Pseudochromis dutoiti</i>	Dutoiti					Y
	<i>Pseudochromis natalensis</i>	Natal dottyback					Y
Priacanthidae	<i>Priacanthus cruentatus</i>	Glass bigeye	Y				
	<i>Priacanthus hamrur</i>	Crescent-tail bigeye					Y
Apogonidae	<i>Apogon kallopterus</i>	Spinyhead cardinal					Y
	<i>Apogon quadrifasciatus</i>	Twostripe cardinal					Y
	<i>Apogon taeniophorus</i>	Ninestripe cardinal					Y
	<i>Archamia mozambiquensis</i>	Mozambique cardinal					Y
	<i>Cheilodipterus lineatus</i>	Tiger cardinal					Y
Pomatomidae	<i>Pomatomus saltatrix</i>	Elf	Y	Y	Y		Y
Haemulidae	<i>Plectorhinchus chubbi</i>	Dusky rubberlip	Y				Y
	<i>Plectorhinchus flavomaculatus</i>	Lemonfish		Y	Y		Y
	<i>Plectorhinchus playfairi</i>	White-barred rubberlip	Y				
	<i>Pomadasys commersonnii</i>	Spotted grunter		Y	Y		
	<i>Pomadasys kaakan</i>	Javelin grunter		Y	Y		
	<i>Pomadasys olivaceum</i>	Piggy		Y			Y
	<i>Pomadasys striatum</i>	Striped grunter					Y
Dinopercidae	<i>Dinoperca petersi</i>	Cavebass	Y	Y	Y		Y
Lutjanidae	<i>Aprion virescens</i>	Green jobfish					Y
	<i>Etelis coruscans</i>	Ruby snapper	Y				
	<i>Lutjanus argentimaculatus</i>	River snapper			Y		
	<i>Lutjanus rivulatus</i>	Speckled snapper			Y		
Caesionidae	<i>Casio teres</i>	Beautiful fusilier					Y
Sparidae	<i>Acanthopagrus berda</i>	Riverbream		Y	Y		
	<i>Boopsoides inornata*</i>	Fransmadam	Y				Y
	<i>Cheimerius nufar</i>	Santer	Y				Y
	<i>Chrysoblephus anglicus*</i>	Englishman	Y				Y
	<i>Chrysoblephus cristiceps*</i>	Dageraad	Y				
	<i>Chrysoblephus gibbiceps*</i>	Red stumpnose	Y				
	<i>Chrysoblephus laticeps*</i>	Roman					Y
	<i>Chrysoblephus puniceus*</i>	Slinger	Y				Y
	<i>Chrysoblephus lophus*</i>	False englishman	Y				
	<i>Cymatoceps nasutus*</i>	Poenskop	Y	Y	Y		Y
	<i>Diplodus cervinus hottentotus*</i>	Zebra	Y	Y	Y		Y
	<i>Diplodus sargus capensis*</i>	Blacktail		Y	Y	Y	Y
	<i>Lithognathus lithognathus*</i>	White steenbras		Y	Y		
	<i>Lithognathus mormyrus</i>	Sand steenbras					Y
	<i>Pachymetopon aneum*</i>	Blue hottentot					Y
	<i>Pachymetopon grande*</i>	Bronze bream	Y	Y	Y		Y
	<i>Pagellus bellottii natalensis</i>	Red tjor-tjor					Y
	<i>Petrus rupestris*</i>	Red steenbras	Y				
	<i>Polyamblyodon germanum*</i>	German	Y				Y
	<i>Polysteganus coeruleopunctatus</i>	Blueskin	Y				
	<i>Polysteganus praeorbitalis*</i>	Scotsman	Y	Y	Y		Y
	<i>Polysteganus undulosus*</i>	Seventy-four	Y				
	<i>Porcostoma dentata*</i>	Dane	Y				Y
	<i>Rhabdosargus globiceps*</i>	White stumpnose			Y		
	<i>Rhabdosargus holubi*</i>	Cape stumpnose	Y	Y	Y		Y
	<i>Rhabdosargus sarba</i>	Natal stumpnose		Y	Y		Y
	<i>Rhabdosargus thorpei*</i>	Bigeye stumpnose					Y
	<i>Sarpa salpa</i>	Strepie		Y			Y
	<i>Sparodon durbanensis*</i>	White musselcracker		Y	Y		Y
	<i>Spondyllosoma emarginatum*</i>	Steentjie	Y				Y
Lethrinidae	<i>Lethrinus nebulosus</i>	Blue emperor	Y				Y
	<i>Lethrinus olivaceus</i>	Longnose emperor	Y				
	<i>Monotaxis grandoculis</i>	Bigeye barenose					Y
Coracinidae	<i>Dichistius capensis*</i>	Galjoen		Y	Y		
	<i>Dichistius multifasciatus*</i>	Banded galjoen		Y	Y		Y
Kyphosidae	<i>Kyphosus bigibbus</i>	Grey chub			Y		
Scorpididae	<i>Neoscorpis lithophilus*</i>	Stonebream		Y	Y	Y	Y
Monodactylidae	<i>Monodactylus falciformis</i>	Cape moony			Y		Y
Mullidae	<i>Mulloidops flavolineatus</i>	Yellowstripe goatfish					Y
	<i>Parupeneus cinnabarinus</i>	Redspot goat fish					Y
	<i>Parupeneus indicus</i>	Indian goatfish					Y
	<i>Parupeneus macronema</i>	Band-dot goatfish					Y
	<i>Parupeneus rubescens</i>	Black-saddle goatfish	Y				Y
Malacanthidae	<i>Branchiostegus dolius</i>	Ribbed tilefish	Y				
Sciaenidae	<i>Argyrosomus japonicus</i>	Dusky kob	Y	Y	Y		Y
	<i>Argyrosomus thorpei*</i>	Squartetail kob	Y		Y		
	<i>Atractoscion aequidens</i>	Geelbek	Y		Y		
	<i>Otolithes ruber</i>	Snapper kob			Y		

	<i>Umbrina robinsoni</i>	Baardman	Y		Y		Y
Pomacanthidae	<i>Apolemichthys kingi</i> *	Tiger angelfish					Y
	<i>Centropyge acanthops</i>	Jumping bean					Y
	<i>Centropyge multispinis</i>	Dusky cerub					Y
	<i>Pomacanthus rhomboides</i>	Old woman					Y
Chaetodontidae	<i>Chaetodon auriga</i>	Threadfin butterflyfish				Y	
	<i>Chaetodon blackburnii</i>	Brownburnie					Y
	<i>Chaetodon dolosus</i>	Blackedged butterflyfish					Y
	<i>Chaetodon kleinii</i>	Whitespotted butterflyfish					Y
	<i>Chaetodon lunula</i>	Halfmoon butterflyfish				Y	Y
	<i>Chaetodon marleyi</i> *	Doublesash butterflyfish					Y
	<i>Chaetodon vagabundus</i>	Vagabond butterflyfish					Y
Oplegnathidae	<i>Oplegnathus conwayi</i> *	Cape knifejaw	Y		Y		Y
	<i>Oplegnathus robinsoni</i> *	Natal knifejaw					Y
Carangidae	<i>Alepes djedaba</i>	Shrimp scad					Y
	<i>Carangoides ferdau</i>	Blue kingfish			Y		
	<i>Carangoides gymnostethus</i>	Bludger			Y		
	<i>Caranx ignobilis</i>	Giant kingfish			Y		
	<i>Caranx sexfasciatus</i>	Bigeye kingfish			Y		Y
	<i>Gnathanodon speciosus</i>	Golden kingfish					Y
	<i>Lichia amia</i>	Leervis		Y	Y		
	<i>Pseudocaranx dentex</i>	White kingfish		Y			Y
	<i>Somberoides commersonnianus</i>	Talang queenfish			Y		
	<i>Seriola lalandi</i>	Cape yellowtail	Y		Y		Y
	<i>Seriola rivoliana</i>	Longfin yellowtail					Y
	<i>Seriolina nigrofasciata</i>	Blackbanded kingfish					Y
	<i>Trachinotus africanus</i>	Southern pompano			Y		
	<i>Trachinotus botla</i>	Largespotted pompano			Y		
Coryphaenidae	Coryphaena hippurus	Dorado	Y				
Rachycentridae	Rachycentron canadum	Prodigal son			Y		
Cirrhitidae	<i>Cirrhitichthys oxycephalus</i>	Spotted hawkfish				Y	
	<i>Cirrhitus pinnulatus</i>	Marbled hawkfish					Y
	<i>Cyprinocirrhites polyactis</i>	Swallowtail hawkfish					Y
Cheilodactylidae	Cheiloactylus pixi *	Barred fingerfin					Y
	Chirodactylus brachydactylus *	Twotone fingerfin		Y			Y
	Chirodactylus jessicalenorum *	Natal fingerfin	Y				Y
Pempheridae	<i>Pempheris adusta</i>	Dusky sweeper					Y
Pomacentridae	<i>Abudefduf notatus</i>	Dusky damsel				Y	
	Abudefduf sordidus	Spot damsel		Y		Y	Y
	<i>Abudefduf sparoides</i>	False-eye damsel				Y	
	<i>Abudefduf vaigiensis</i>	Sergeant major				Y	
	<i>Chromis dasygenys</i>	Bluespotted chromis					Y
	<i>Chromis dimidiata</i>	Chocolate dip					Y
	<i>Chromis nigrura</i>	Blacktail chromis					Y
	<i>Plectroglyphidodon leucozonus</i>	Sash damsel				Y	
Labridae	<i>Anampses meleagrides</i>	Yellowtail tamarin					Y
	<i>Anchichoerops natalensis</i> *	Natal wrasse					Y
	Bodianus bilunulatus	Saddle-back hogfish	Y				Y
	<i>Bodianus perditio</i>	Goldsaddle hogfish					Y
	<i>Cheilinus bimaculatus</i>	Two-spot wrasse					Y
	<i>Cheilio inermis</i>	Cigar wrasse					Y
	<i>Coris caudimacula</i>	Spottail coris					Y
	<i>Coris gaimard africana</i>	African coris					Y
	<i>Gomphosus caeruleus</i>	Birdfish					Y
	<i>Halichoeres cosmetus</i>	Adorned wrasse					Y
	<i>Halichoeres lapillus</i>	Jewelled wrasse					Y
	<i>Labroides dimidiatus</i>	Bluestreak cleaner wrasse					Y
	<i>Pseudojuloides cerasinus</i>	Smalltail wrasse					Y
	<i>Stethojulis interrupta</i>	Cutribbon wrasse				Y	Y
	<i>Thalassoma amblycephalum</i>	Twotone wrasse				Y	Y
	Thalassoma herbraicum	Goldbar wrasse		Y			Y
	<i>Thalassoma lunare</i>	Crescent-tail wrasse					Y
	<i>Thalassoma purpureum</i>	Surge wrasse		Y		Y	Y
	<i>Thalassoma quinquevittatum</i>	Fivestripe wrasse				Y	
	<i>Thalassoma trilobatum</i>	Ladder wrasse				Y	Y
Scaridae	<i>Scarus ghobban</i>	Bluebarred parrotfish				Y	
Mugilidae	Liza tricuspidens *	Striped mullet		Y			Y
Sphyrnidae	Sphyrna sp.	Barracuda	Y				
Mugiloididae	<i>Parapercis punctulata</i>	Spotted sandmelt					Y
Blenniidae	<i>Antennablennius australis</i>	Moustached rockskipper				Y	
	<i>Antennablennius bifilum</i>	Horned rockskipper				Y	

	<i>Cirripectes castaneus</i>	Muzzled rockskipper				Y	
	<i>Istiblennius dussumieri</i>	Streaky rockskipper				Y	
	<i>Istiblennius edentulus</i>	Rippled rockskipper				Y	
	<i>Plagiotremus rhinorhynchus</i>	Twostripe blenny					Y
	<i>Plagiotremus tapeinosoma</i>	Piano blenny					Y
Tripterygiidae	<i>Helcogramma obtusirostre</i>	Hotlips triplefin				Y	
Clinidae	<i>Blennioclinus stella</i> *	Silverbubble klipfish				Y	
	<i>Clinus superciliosus</i> *	Super klipfish					Y
	<i>Pavoclinus graminis</i> *	Grass klipfish				Y	Y
Gobiidae	<i>Bathygobius cocosensis</i>	Coco frillgoby				Y	
	<i>Bathygobius laddi</i>	Brownboy goby				Y	
	<i>Caffrogobius caffer</i> *	Banded goby				Y	
	<i>Heteroleotris zonata</i>	Goggles				Y	
	<i>Priolepis cincta</i>	Convict goby				Y	
Acanthuridae	<i>Acanthurus blochii</i>	Tailring surgeon					Y
	<i>Acanthurus dussumieri</i>	Pencilled surgeon					Y
	<i>Acanthurus nigrofasciatus</i>	Brown surgeon				Y	Y
	<i>Acanthurus triostegus</i>	Convict surgeon				Y	
	<i>Ctenochaetus striatus</i>	Striped bristletooth				Y	
	Zebrafish	Spotted tang					Y
Scombridae	Euthynnus affinis	Eastern little tuna	Y				Y
	Scomber japonicus	Mackerel	Y				
	Scomberomorus commerson	King mackerel	Y		Y		
	<i>Scomberomorus plurilineatus</i>	Queen mackerel			Y		
	Thunnus albacares	Yellowfin tuna	Y				
Istiophoridae	<i>Istiophorus platypterus</i>	Sailfish					Y
Balistidae	<i>Sufflamen fraenatus</i>	Bridle triggerfish					Y
Monacanthidae	<i>Cantherhines dumerilii</i>	White-spotted filefish					Y
Tetraodontidae	Amblyrhynchotes honckenii	Evileye toby		Y			
	<i>Arothron hispidus</i>	Whitespotted blaasop					Y
	<i>Arothron immaculatus</i>	Blackedged blaasop					Y
	<i>Canthigaster amboinensis</i>	Spotted toby				Y	
TOTAL: 69	235		54	41	78	41	139

APPENDIX 3. CONTINGENCY PLAN FOR EMERGENCY EVENTS (ADAPTED FROM THE PLAN DEVELOPED BY PETER CHADWICK FOR THE DE HOOP MPA)

This document serves to cover the various contingency plans likely to occur from incidents occurring within the Pondoland Marine Protected Area. This document must be updated on a regular basis.

The Pondoland Marine Protected Area covers nearly 90 kms of coastline and extends for approximately 10 km out to sea. The coastline is in most cases, extremely rugged and isolated with very strong currents and heavy wave action. Adverse weather conditions often occur with strong winds. **This makes this an extremely dangerous coastline to work on.** For this reason it is imperative to ensure that staff are properly trained in the execution of the various contingency plans and that regular simulated exercises with the relevant assisting institutions are carried out.

Communications in many parts of the MPA and adjoining terrestrial areas is often difficult and for this reason both radios and cell phones must be carried. In all incidents, proper recording of the details of the incident is necessary and a full debriefing must take place at the end of each incident. This debriefing is not to focus on individuals, but must rather identify areas where improvements can take place and to determine where the incident could be prevented from happening in the future.

In the case of the fire, oil spill & disease outbreak contingency plans, these must be read in full with the complete plans already developed and available on station. It must be noted that the plans mentioned herein are précis versions of the most important sections within the complete documents.

During each incident an incident commander shall be identified and in most cases this shall be the appointed MPA Manager.

INCIDENT COMMAND FUNCTIONS:

The incident commander of any incident must adhere to the following basic principles:

- Assume, confirm and position the command structure
- Carry out a full situation evaluation
- Initiate, maintain and control all communications
- Deploy the appropriate resources
- Identify and develop an integrated action plan (IAP)
- Develop the incident organisation
- Review and revise the IAP
- Transfer, continue or terminate command when needed.
- Ensure that adequate safety measures are in place
- Ensure experienced and knowledgeable people are placed at strategic sites.
- Ensure Escape Routes and Safety Zones are in place
- Authorise the release of information
- The incident commander must motivate all involved personnel
- Excellent communications are essential and specific instructions and feedback must be given.

DEBRIEFING SESSION:

At the end of each incident a debriefing with all involved parties must take place using the following agenda:

- Cause of incident, location and time.
- Reporting procedure – to whom by whom
- Immediate reaction – by who in what time
- Deployment of initial and follow up response teams
- Logistics
- Communication – personnel, media & public

Equipment & rations
Weather conditions and accuracy of forecasts
Cooperation and support
Shortcomings and resolutions
Injuries and losses
Recommendations
Records from debriefing sessions should be included in the formal detailed report.

APPENDIX 4. CHECKLIST OF EQUIPMENT REQUIRED FOR MANAGEMENT OF THE PONDOLAND MARINE PROTECTED AREA

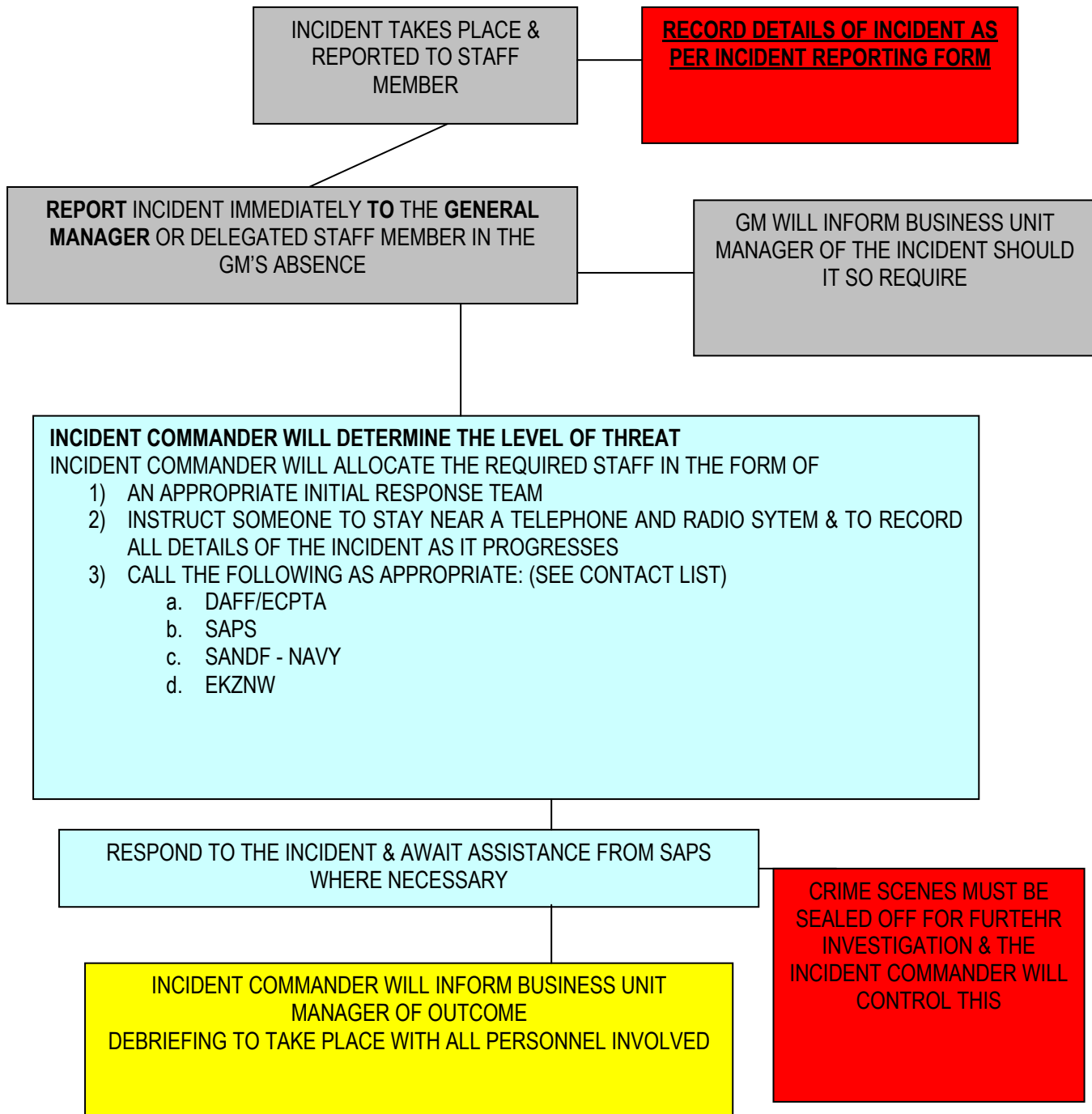
EQUIPMENT	REQUIRED	NOTES
COMPLIANCE EQUIPMENT		
Hand-held radios	Minimum of one per team	With protective sleeves
VHF (Marine)Base Station & Aerial	1	At office base
VHF Mobile (hand-held)	Minimum of one per team	With protective sleeves
Binoculars	2 per team	Nikon 10x40
Night Sights	1 per team	
Cell phone	One per team	Vodacom in rural areas & MTM in urban areas
Handcuffs	5 sets per team	Must be lockable so that suspects cannot self tighten and claim assault
Cable Ties	One pack per team	Large as possible
J534 Fine Books	One per team	
Copy of MLRA ACT & Regulations	One per team	
Pepper Spray	One per person	With belt pouch
First aid kits (Trauma kits)	One per vehicle	
First aid kits (Patrol kits)	One per team	
Mag Light Torches	One per person	3x D Cell Batteries
Sufficient Spare Batteries	Keep sufficient packs at office	All sizes, for GPS, Torches etc
Spotlight (1 000 000 candle power)	One per team	Battery operated and mobile
25l day packs	One per person	
Sleeping Bags	One per person	
Water Bottles	One per person	2l's
60L back packs	One per person	
All weather gear	Set per person	Comprising of Beanie, Sun Hat, Boots, Overalls, Polar fleece, Gloves, Rain suit (all weather jacket & trousers) Polarised sun glasses, reef shoes
GPS - handheld	One per team	E-Trex Series
Compliance Control Fisheries Cards	One per person	
Evidence bags	Pack per person	Various sizes/Sealable
Pocket Book & Pen	One per person	
Spotting Scope	One per team	Min of 60x Magnification
Tripod	One per spotting scope	Monfroto with quick release head
Digital camera with zoom capabilities	One per team	Canon G9 camera
Camera Bag	One per camera	Watertight
Digital camera memory cards	Two per camera	Min card size 1GIG for high resolution images
Camera Batteries	Spare set per camera	As per camera requirements
VEHICLES & EQUIPMENT		
Motorcycles	2 per MPA	125 - 250hp all terrain
4x4 Vehicle	1 per MPA	
Vehicle licence and number plate	One per vehicle and motorbike	Renewable annually
Winch	1 per vehicle 4X4	Suitable to pull boat onto trailer
Wide set of tyres		For beach driving & extra traction
Tow bar and tow hitch		Front and back of 4X4
Canopy		
Base radio	Minimum of one per team	As per reserve requirements
VHF (Marine)Base Station	1	For boat communications

BOAT & EQUIPMENT		
6 - 8 metre Semi-rigid boat	Minimum of one per MPA	For small inshore MPA's
12-15 metre boat	One per MPA	For large MPA's. These boats could be catamarangs or single hulled boats but should be comfortable to ride big, rough SE seas and large swells. Should be able to handle long runs (40km) and often into the wind, therefore a high bow would be good
6 - 8 metre boat trailer		fully galvanised
15 metre boat trailer		fully galvanised
90 - 115 hp HONDA engines		As per MOU with HONDA
Boat liscence and number plate	One per boat	Renewable annually
25L petrol tanks	Minimum of 2 per boat	Plastic with breather valves
Stow away hatches	Minimum of two per boat	Built in
Long range built in tanks	2 x 100l tanks	Built in
Garmin Integrated Radar System	One per boat	GPSMAP 4000
Floating Compass (boat)		
VHF (Marine)Boat	One per boat	
Suitable anchor and anchor chain & rope	Minimum one per boat	Consider various types for different substrates
Suitable rough weather drogue (water anchor).	One per boat	
Large mounted (but detachable) battery operated spotlight	One per boat	1000 000 candle power
Set of hard copy charts	One per boat	
Bilge pump	One per boat	
Capsize rope	One per watertight capsize bottle	
Watertight Capsize Bottle	Minimum one per boat	Containing the following: Red 2x Handheld flares; 2 parachute flares; 1x Orange 4minute smoke marker; One projectile set-mini flares; 2x Space blankets; 1x 2mx2m orange ID sheet; 1x waterproof torch; 1 x sound signal device. As per SAMSA Regs
Stainless steel knives	One set per boat	
First aid kits (Trauma kits)	One per boat	
Oxygen cylinder	One per boat	When operating with divers
Dive cylinder rack	One per boat for six sets	When operating with divers
Dive ladder		Galvinised
Video camera with waterproof housing	One per boat	
Digital still camera with waterproof housing	One per boat	
Shackles & D Clamps	4 spare per boat	For tying down boat to trailer
Q20	One can per boat	
Collection jars	10 per boat	For keeping biological samples & various sizes
Life Jackets	Min of six per boat	As per SAMSA requirements
Spare ropes	Minium of two 30m per boat	
Fire Extinguishers	Two per boat	As per SAMSA requirements
Fresh Water in 15l container	Minimum of 15l per boat	For drinking
Radar Reflector	One per boat	
Laminated copies of boat registration papers & skippers certificates	Set per boat	

Basic tool set	Set per boat	To enable basic at sea repairs
Bungs	Set per boat & spare set	
Sea Spec Polarised sunglasses	One per staff member	Crucial to prevent eye injury from glare of beaches and sea
Sunscreen	Bottle per boat	
Sea-sick tablets	Pack per boat	
SCUBA & SNORKEL DIVING EQUIPMENT		
Mask	One per diver	PPE
Snorkel	One per diver	PPE
Fins	One per diver	PPE
Wet suit	One per diver	Thickness depends on water temperature
Dive Computer	One per diver	
Weight Belt & weights	One per diver	Use bullet weights
Gloves	One per diver	PPE
Booties	One per diver	PPE
Dive Knife	One per diver	PPE
Dive Torch	One per diver	PPE
Slates & Pencils	One per diver	
Keep Bag	One per diver	
Plastic Vernier Calipers	One per diver	
Collecting Jars	Ten per diver	
Dive Cylinders	One per diver	12l
First Stage Set per cylinder	One per diver	
Second Stage set per cylinder	One per diver	
Dive gauges	One per diver	Minimum of pressure and depth gauge
Dive compass	One per diver	
Buoyancy Control Vest	One per diver	
Dive reel & Bouy	One per dive team	
Alpa Flag	One per boat	When operating from a boat
Wet bags for wetsuits, etc	One per diver	
Oxygen cylinder	One per dive team	
Compressor	One per MPA	Portable dive compressor
REFERENCE BOOKS		
Smiths Sea Fishes	Minimum of one per MPA	Edited by M.M.Smith & P Heemstra
The Living Shores	Minimum of one per MPA	Margo & George Branch
Oceans of Life of Southern Africa	Minimum of one per MPA	Andrew Payne et al.
Currents of Contrast	Minimum of one per MPA	T.Peschak
Coastal Fishes of Southern Africa	Minimum of one per MPA	Heemstra & Heemstra
Fresh water Fishes of Southern Africa	Minimum of one per MPA	Paul Skelton
SASOL Birds of Southern Africa	Minimum of one per MPA	Sinclair, Hockey & Tarboton
Whales & Dolphins of the Southern African Subregion	Minimum of one per MPA	Peter B. Best
Reef Fishes & Corals	Minimum of one per MPA	Dennis King
More Reef Fishes & Nudibranchs	Minimum of one per MPA	Dennis King
South Africas Great White Shark	Minimum of one per MPA	T.Peschak
Safe Diving	Minimum of one per MPA	Alan Kayle
The Underwater Photography Handbook	Minimum of one per MPA	
Complete Diving Manual	Minimum of one per MPA	Jack Jackson
Two Oceans	Minimum of one per MPA	G.Branch, C.Griffiths, M.Branch
The coastal guide of Southern Africa	Minimum of one per MPA	
How is your MPA doing guidebook	Minimum of one per MPA	

GENERAL EQUIPMENT		
Spear gun		
Chest freezer	200l	For preserving specimens/evidence
Laptop	Minimum of one per MPA	For storage of all MPA related data
Measuring tapes	One per team	Non-stretchable
Shot lines		Fishing line with lead weights
Magnifying glasses		
Plastic set squares		1m x1m for intertidal and underwater plots. Build from plastic water piping
Cleoscope		For CLEO beach monitoring
Pelican Watertight Cases	One per camera	To protect camera and other sensitive equipment
Ziplock bags	Numerous	Various sizes/Sealable
Alcohol preserver	Min 5L's	For preserving specimens
Relevant MPA signage	At each reserve entrance point	As per MCM standards

APPENDIX 5. ISSUES THAT NEED TO BE TAKEN INTO CONSIDERATION IN THE CASE OF AN INCIDENT



*** ONCE THE INCIDENT HAS BEEN REPORTED TO THE GENERAL MANAGER OR DELEGATED STAFF MEMBER HE/SHE WILL TAKE CONTROL AS INCIDENT COMMANDER. FROM THIS POINT THERE SHALL BE STRICT RADIO & TELEPHONIC PROCEEDURES TO ENSURE THAT ALL COMMUNICATION LINES STAY OPEN. COMMUNICATION MUST ONLY BE WITH THE INCIDENT COMMANDER AND NOT BETWEEN OTHER PARTIES**

LAW ENFORCEMENT INCIDENT REPORT:

REPORTING PERSONS	
DATE:	
TYPE OF INCIDENT:	
LOCALITY WITH GPS COORDINATES	
TIME OF INCIDENT:	
MOON PHASE	
WEATHER:	
VEHICLE DESCRIPTION & REGISTRATION	
NUMBER OF PERSONS INVOLVED	
NAMES & ID OF PERSONS INVOLVED	
WEAPONS INVOLVED	
SHOTS FIRED BY SUSPECTS	
SHOTS FIRED BY CONSERVATION STAFF AND BY WHOM	
ITEMS CONFISCATED OR RECOVERED	
ARRESTS MADE	
CHARGES LAID AGAINST SUSPECTS	
SAPS OFFICER REPORTED TO	
SAPS STATION REPORTED TO	
SAPS CAS NO:	
SAPS 13 NO:	
SAPS IB NO:	
SAPS INVESTIGATING OFFICER	
PROSECUTOR	
MAGISTRATE	
COURT	
COURT DATES	
OUTCOME OF CASE	

APPENDIX 6. ADDITIONAL TRAINING REQUIREMENTS FOR MPA MANAGERS

TRAINING COURSE	MODULES	NOTES
Small Vessel Seamanship - 40 Nautical Mile	1) General Legal requirements 2) Nautical Terms, Construction, Equipment & General Seamanship 3) Motors 4) Safety & Emergencies 5) Rule of the Road & Distress Signals 6) Marine Environment, Weather, Currents & pollution 7) Radio & the penguin Procedure 8) First Aid 9) Navigation & Chart Work 10) 25 hour practical	Add surf launch capabilities & Dive Skipper ratings
Commercial Diver Training - Class IV 30m	1) Breath Hold Diving 2) Scuba Diving 3) Diving Physics 4) Diving Physiology 5) Underwater Hazards 6) Diving Related Conditions 7) Decompression 8) Accidents & Rescue 9) First Aid 10) Resuscitation 11) Decompression Chambers 12) Therapeutic Decompression 13) Compressors 14) Pillar Valves & Demand Valves 15) Compasses, Lifting Bags & gauges 16) Seabed Searches 17) Underwater work 18) Seamanship 19) Management, Planning, Safety & Documentation 20) Law Pertaining to Diving 21) Large Practical Diving Component	Ensure annual dive medical takes place
Commercial Diver Training - Nitrox Class IV 30m		Ensure annual dive medical takes place
Commercial Diver Training - Nitrox Class IV 30m Supervisor		Ensure annual dive medical takes place
Commercial Diver Training - Class IV 30m Supervisor		Ensure annual dive medical takes place
Safety at Sea		
Swimming		
Radio Operators Ticket		
Compliance & Control		
Peace Officer Training		
Fisheries Control Officer Training		
First Aid Level 1		3 day course
First Aid Level 3		5 day course
Computer Literacy - MS Suite	MS Word, MS Xcel, MS Power Point	
ARC - View GIS Training	ARC - View 3	
GPS Training	Using a GPS to record Waypoints & Tracks. Downloading GPS information to the computer	
Bridging Course in MPA Management	1) Understanding Marine Protected Areas 2) Marine Ecology 3) Engaging with Stakeholders	
Certificate In Marine Protected Area Management	1) Understanding Marine Protected Areas 2) Management Planning for MPA's 3) Marine Ecology 4) Marine Natural Resource Management 5) Engaging with Stakeholders 6) Human Resources 7) Assessing Management Effectiveness 8) Financial Planning & Management	