STILBAAI MARINE PROTECTED AREA MANAGEMENT PLAN

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WWF

CapeNature

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For:
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Photograph on cover
Aerial photograph of Stilbaai Estuary Mouth taken by Steve Lamberth

SECTION A: BACKGROUND INFORMATION

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 through 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; upon the principles of sustainable development, integrated management and the precautionary approach. Marine Protected Areas ("MPA") covering the full range of IUCN categories are widely recognised by coastal nations as flexible and valuable tools for science based, integrated area management supporting ecosystem-based management, because they can help conserve critical habitat, foster the recovery of overexploited and endangered species, maintain marine communities, and promote sustainable use.

The Government of South Africa recognises the value of this tool as part of its management approach, which is demonstrated within Section 43 of the Marine Living Resources Act, Act 18 of 1998: Marine Protected Areas which allows the National Minister of Environmental Affairs and Tourism the authority to declare an area to be a Marine Protected Area.

The Stilbaai Marine Protected Area was proclaimed on 17 October 2008 in Government Notice No. 31517 with regulations in Government Notice No. 31516, to form part of a larger network of MPAs in Southern Africa and intends to contribute to meeting the World Summit for Sustainable Development and World Parks Congress (recommendation 22) requirements. The regulation associated with its proclamation prescribes the completing, and implementation of, a management plan for the Marine Protected Area within six months of the date of commencement of these regulations. This document serves as a fulfilment of this requirement.

Stilbaai is an excellent representation of the geography as found on the South Coast and it is this that qualifies Stilbaai MPA as an area worthy of marine protection – it is typical of the semi-protected (half moon) bays of the south Cape. The particular coastal formation at Stilbaai – a westward rocky promontory, wave exposed on the western side and sheltered on the eastern side, with a long sweeping sandy beach extending eastwards, an estuary opening on the western side of the beach, and underscored by a bed of low- profile sandstone reef stretching from the inter-tidal to 30 m depth - is repeated several times. This description could fit Walker Bay, Kleinbaai, Struisbaai, St Sebastians Bay, Vleesbaai (but lacking an estuary), Mossel Bay, Buffels Bay, Plettenberg Bay and Krombaai.

The Stilbaai MPA possesses all the ecological features typical of the warm-temperate south coast: abundant inter-tidal life, a productive estuary, diverse offshore fisheries, and an abundance of cetaceans. It represents many of the problems too: a town centred on an estuary, an estuary starved of freshwater, displaced rural people, failed fisheries, transformation of traditional ways of life, and displacement by wealthy absentee landowners.

One special feature of Stilbaai is that it has the country's best preserved examples of stone-age fish traps. These have deliberately been included in the MPA as a cultural and historical asset. Another feature is that the estuary is one of the relatively few permanently open estuaries. These estuaries harbour a greater diversity of species than the more common semi-open or blind estuaries.

Are there key species of particular interest or ecological value at Stilbaai? Again, the marine community is spectacular but predictable. A diverse estuarine community, including the young stages of commercially important coastal fish species is one of the features worthy of protection. A number of reef fish, mostly of the sea-bream family, are represented in Stilbaai. Some of these, species such as roman, are dominant reef predators, which have been shown to exert a top-down influence on reef community structure. Many of these species are threatened by excessive fishing pressure.

The Stilbaai MPA includes other iconic species: southern right whales, ragged-tooth shark sharks, African black oyster catchers, pansy shells – all of which have gained notoriety for their physical appearance. Two species in Stilbaai which arguably upstage all of these – but definitely not for their physical appearance – are the African mottled eel and the longfin eel. These can be viewed at Palinggat, a small freshwater pond in Stilbaai – an unlikely refuge for a long distance ocean migrant. These animals complete a most remarkable journey. Having been spawned off Mozambique or Madagascar, the glass eels enter estuaries off South Africa where they mature in quiet freshwater streams, a process reputed to take up to twenty years. The mature eels, well over a meter in length, return to sea, via the estuary to swim up-current over 2000 km to complete their life-cycle. The presence of these animals in the centre of a built-up area, bears testimony to a stubborn, catadromous life-style, but also to the maintenance of a functional estuary. In a sense, the eels, whose sister species are so heavily decimated in other parts of the globe, advertise the importance of integrating conservation of the land, rivers and deep-sea. Their persistence is an encouragement to conservation.

The value of the Stilbaai MPA extends beyond biodiversity conservation. The role of MPAs in sustaining over-harvested fish populations is well-documented, and this MPA, with its estuarine-nursery area is well situated to fulfil this function. A variety of species are expected to respond positively to protection. Tourism is another objective. The estuary and coast offers a wide variety of recreational activities, many of which will benefit through the enhanced management of the area. Among these will be an exhibit of the fish vywers – the ancient fish traps.

The MPA will aim to stop coastal degradation and to conserve a typical part of the south coast. If successful it should not only regenerate marine life in adjacent areas, but may also serve as a model of management that can be applied elsewhere.

1.1 Purpose and Scope of the Management Plan

The purpose of this document is to describe the Stilbaai 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 to protect and conserve the values of the MPA whilst simultaneously allowing for reasonable access and utilisation of the MPA by the different user groups. It is a living, public document subject to periodic review, which describes how the management authority and its partners intend to manage the Stilbaai MPA in a sustainable manner.

1.2 Development of the Management Plan

Coastal & Marine Eco-Tourism Corporation, in collaboration with Dr. Colin Attwood were commissioned by the World Wildlife Fund to compile the Stilbaai MPA Management Plan. This management plan is therefore the product of a joint effort with CapeNature, in collaboration with MCM, who provided the funding. The plan is based on similar management plans developed for De Hoop MPA, Goukamma MPA

and Table Mountain MPA. It draws on international experience of marine protected area management and the relevant guideline published by the International Union for the Conservation of Nature and incorporates the national legal and institutional requirements.

It should also be noted that this management plan is aligned with other conservation planning documents such as the Catchment to coast management plan for the Goukou River system. An annual review of the management plan must be undertaken for the first three years. Thereafter the management plan should be reviewed every five years.

1.3 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 1988) (MLRA) (see Appendix 1). The delegated authority to manage MPAs is the Minister of Environmental Affairs and Tourism, through his/her Department of Environmental Affairs and Tourism: Marine and Coastal Management Branch ("DEAT:MCM"). A contractual agreement has been entered into between this Department, DEAT:MCM, and the Provincial Cape Nature Conservation Board ("CapeNature") to manage the MPA on their behalf. The contractual agreement sets in place key deliverables to monitor and ensure the sound management of the MPA, and has a quarterly revised budget associated to it. The agreement recognises that CapeNature, as the primary management agency on behalf of the Department of Environmental Affairs and Tourism: Marine and Coastal Management Branch, manages both the MPA and Geelkrans Nature Reserve essentially as one unit in a cooperative manner with all the relevant stakeholders.

1.4 Structure of the Plan

This management plan outlines the framework for the management of the Stilbaai MPA to assist its stakeholders in achieving the site's conservation and user-principle objectives. The plan is broken down into distinct sections with an introduction followed by a section on the background of the MPA. Ensuing sections provide guidance on site management and can be described as the "living"part of the document. 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. This part includes the specific objectives set for the Stilbaai MPA by DEAT:MCM and CapeNature in collaboration with the Geelkrans Nature Reserve Liaison Committee. It also provides guidance on governance, as well as management actions such as monitoring, compliance, education and awareness raising, all of which will be critical to the success of the MPA.

1.5 Goals and Objectives of the Stilbaai MPA

Marine Living Resources Act main objectives:

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

Regulatory Objectives refer to those for which the MPA was created and subsequently supported through the development of site specific regulations. The proclaimed regulation of the Stilbaai MPA has as its objectives to:

1. **Protect and conserve** the coastal environment and the marine living resources that are found in and around Stilbaai;
2. **Protect the reproductive capacity** of exploited species of fish, including shellfish, to allow their populations to recover and to contribute to the replenishment of adjacent areas;
3. **Protect the nursery function** of the Goukou Estuary and the recruitment of estuarine-dependent fish into marine fisheries;
4. **Control other activities** in the Marine Protected Area to reduce the risks of habitat degradation and to preserve vywers, which have archaeological and cultural value;
5. **To provide undisturbed sites** for field-education, monitoring of resources and research into exploited species and their ecosystems

The management agency, CapeNature, have developed a set of over-arching goals based on the three main objectives of the MLRA associated to management of the Marine Protected Areas, which relate to the Stilbaai MPA and include:

Biophysical Goals

1. To protect the marine and estuarine ecosystems that are representative of the south coast zone and to maintain biodiversity and ecological functioning in these ecosystems;
2. To protect depleted, endangered and endemic species and populations and to protect habitats which are important for the survival and revival of these species and populations;
3. To contribute towards the long-term viability of marine fisheries

Socioeconomic Goals

1. To promote non-consumptive, ecotourism opportunities;
2. To provide opportunities for marine ecological research and monitoring of environmental effects of human activities on marine ecosystems;
3. To facilitate the interpretation of marine ecosystems for the promotion of conservation among scholars and tourists;

Governance Goals

1. To reduce conflicts between competing users in the MPA and surrounding areas;
2. To ensure that appropriate and effective legal structures are developed for protecting the biodiversity of the MPA and the activities that benefit from it;
3. To fulfil South Africa's international commitment to marine protection in terms of international protocols and conventions;

The development of related management actions further supports these objectives by identifying the activities which will be undertaken by CapeNature to reach the over-arching goals and ascertain the effectiveness of the MPA. These management actions are discussed in Section B onwards.

2 Description of the Area

2.1 Site Location

Stilbaai MPA with the inclusion of the Goukou estuary (34°23' S; 21°25' E) lies west of the coastal town of Mossel Bay on the Southern coastline of the Western Cape Province of South Africa and approximately 40 km south of Riversdale. The coastal town of Stilbaai is situated directly adjacent to it, which falls within the Hessequa Municipal area. See Figure 1 below.

Figure 1: Location of the Stilbaai MPA

2.2 Geography and Habitat

The Stilbaai area is influenced by the Southern Langeberg Mountains, which is defined as the Langeberg Range between Kogmanskloof and the Gourits River. The Langeberg is one of several east-west trending mountain ranges in the Western Cape and consists of sediments of the Table Mountain Sandstone group, and occasionally the Malmesbury group. These mountains drain numerous streams, which form many of the Western Cape's primary river systems, with the Goukou River and its estuary included in this list.

The Langeberg climate falls within the transition zone between year-round and winter-rainfall areas. In summer, the Langeberg traps onshore moisture-laden south-easterly winds, and orographic rains fall. During winter, prevailing northwest and southwest winds bring rain associated with subantartic cold fronts. Although microclimates significantly affect local rainfall, in general, the lower slopes of the Langeberg receive *c.* 600 mm p.a., with rain falling mostly in spring and autumn. Temperatures are rather moderate and range between 5°C in winter and 30°C in summer. During easterly winds, seawater temperatures decrease, whereas with westerly winds, the coastal temperatures increase as warmer water is forced towards the coast.

The Goukou River, which feeds the Goukou estuary (estimated at 155ha in size) included in the Stilbaai MPA, is approximately 67 km long with a catchment area of 1 550 sq. km. The upstream land-use therefore directly affects the quality and functioning of the estuary. In accordance with the March 2001 survey completed by the Department of Water Affairs and Forestry agriculture accounts for about 35% of the land-cover of the Goukou catchment and comprises a mixture of temporary commercial dryland agriculture, commercial forestry, temporary commercial irrigated agriculture, and improved grassland. About 2% of the catchment is degraded shrubland while approximately 63% is natural. Natural land-cover consists of shrubland, grassland and grassland with some waterbodies and wetlands. Urban development accounts for about 1% of the land-cover and comprises mainly residential and industrial development associated with the coastal settlement of Still Bay and the town of Riversdale inland (Refer to Figure 2).

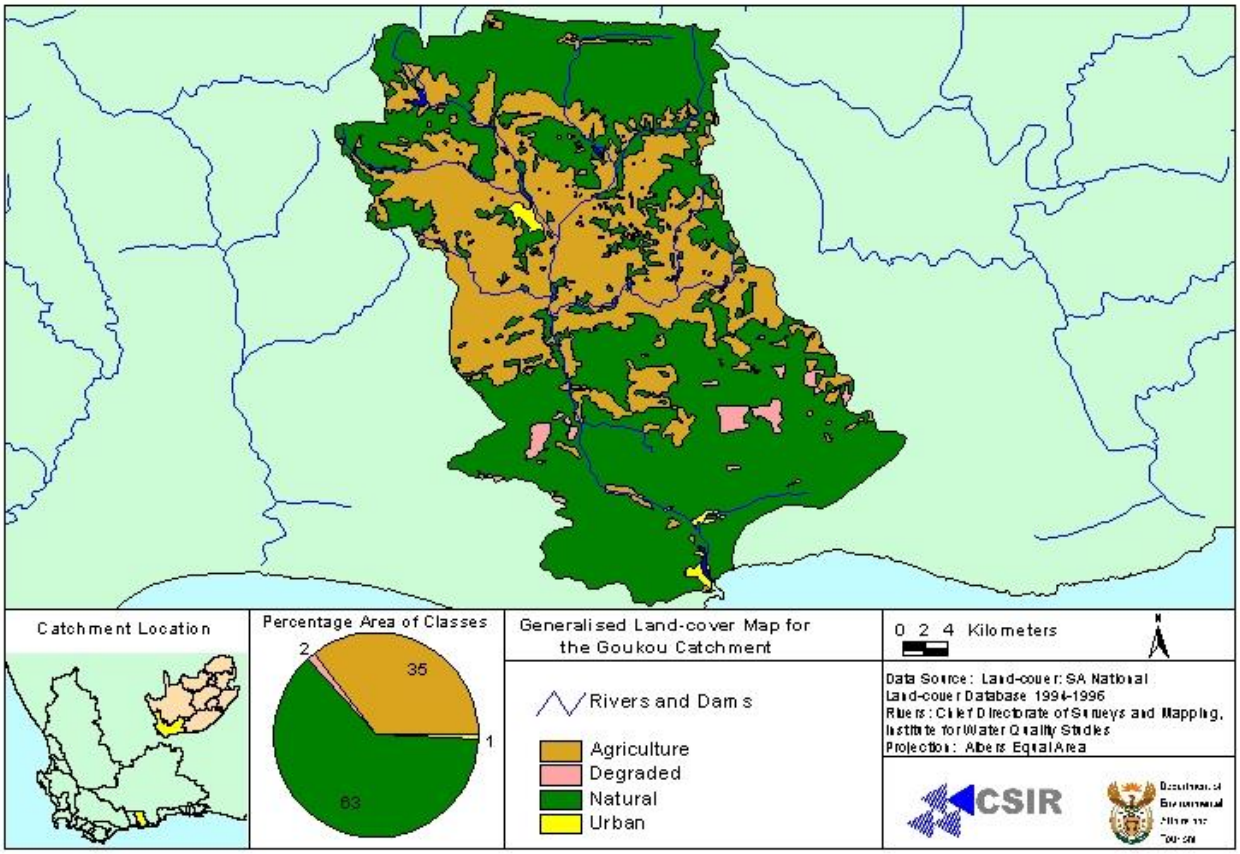


Figure 2: Generalised Lan-cover Map for the Goukou Catchment (supplied from the Department of Forestry and Water, 2001)

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

a) Sandy beaches

Stilbaai 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 backdunes. Both processes associated to sandy beaches is evident at Stilbaai, namely the occurrence of littoral transport of sand in the surf zone as well as transport on the landward side, where the sand is then trapped by the plants growing near the driftline and which have resulted in the development of the foredunes. Cycles of erosion and accretion are not well defined as the sandy beach is well protected by rocky promontories. Typical meiofauna (small benthic invertebrates that live in both marine and fresh water environments and loosely defines a group of organisms by their size, larger than

microfauna but smaller than macrofauna, rather than a taxonomic grouping) include nematodes, copepods and ostracods; zooplankton include small shrimps and prawns; the intertidal zone life includes sand mussels, mole and ghost crabs, plough snails, sandhoppers and the presence of Kelp gulls, African Black Oystercatchers, White-fronted Plovers and Sanderlings; and a variety of fish are found in the surf zone including baardman, mullet, steenbras, elf and sandsharks.

The vegetation associated to the sandy beach includes a mixture of sea pumpkin, pipe grass and blombos, which is replaced on the more stable dunes by milkwoods, and sea guarri.

Threats to the sandy beach at Stilbaai:

- 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 with vegetation or removing the foredunes for development will remove the reservoir that supplies sand to the beach.
- Although the Stilbaai beach is kept clean, pollution in the form of plastic and oil spills remains a permanent threat if not attended to regularly. (There is now increased exclusion of vessels close offshore of the southern Cape by the "Southern South African Special Area under Marpol Annex 1").

b) Rocky Shores

All four zones and associated group of plants and animals are present in the Stilbaai MPA, namely the Littorina zone with animals such as Littorinid snails; the Upper Balanoid zone with winkles and limpets; lower Balanoid zones support brown mussels, coralline seaweeds and green zoanthids at mid-tide level and the infratidal zone supports anemones, sea urchins and starfish at low tide level. Stilbaai is located in the South Coast, an intermediate, temperate zone, which contains a high proportion of species that are unique to South Africa.

The presence of Visvywers within the rocky shores of the Stilbaai MPA makes management of this habitat type unique, in that some of them date back to prehistoric times, yet are still in use today. They consist of a curved stone wall built to enclose a small bay. When the tide rises it tops the wall and fish enter the bay to feed in the shallows. As the tide drops the water seeps away between the rocks leaving the fish trapped in a confined area where they can be speared or netted. All fish traps over 50 years old are protected by law, including those found at Stilbaai.

Threats to the rocky shores:

- Overexploitation of the inter-tidal resources. The Stilbaai MPA seeks to protect this habitat and the spawning stocks and seeds adjacent to it.
- Illegal gill netting in the Visvywers poses a threat to the health of this ecosystem.

c) Estuary

The Goukou Estuary is one of the few permanently open estuaries on our coastline, but where the freshwater supply is progressively being curtailed. It is a dynamic system that is constantly being altered

by tides, wave action and rainfall. During high rainfall, the estuary is transformed into a strong-flowing muddy river and at other times, sandbanks are formed at the river mouth. The estuary experiences normal processes associated to the estuarine environment, including rapid daily fluctuations in temperature, salt content and oxygen concentrations. Within this environment, eelgrass, *Zostera* (see Figure 3), beds occur in the lower reaches of the estuary, till way beyond the Stilbaai bridge separating Stilbaai East from Stilbaai West.

Figure 3: *Zostera* beds typically found in the Goukou Estuary

Where the salinities of the estuary resemble those of seawater, *Zostera* is present, whereas the aquatic grass, *Potamogeton*, is only present where the salinity changes to low concentrations of salt further upstream of the estuary.

The food chain within this habitat relies heavily on the death and decay of various types of plants. Detritus, together with organic matter introduced from the river and the sea, form the main source of food for the prolific estuarine animals within the Goukou Estuary. As many as 100 species of fish are wholly or partially dependent on South African estuaries, while up to 400 species frequent estuaries at some time of their lives. Common estuarine fish species found in the Goukou include kob, white steenbras and stumpnose that eat mud prawns, sand prawns and mulluscs. Elf, leervis and sharks are also present whilst the most abundant fish is the mullet, the detritus feeder. The Goukou estuary is an important nursery ground for many of these fish species.

Weed eating species such as the red-knobbed coot, herons and cormorants all use the Goukou estuary as a feeding ground. Waders are also present during the summer when they migrate here from their breeding grounds in the Arctic.

The protection of this estuary is significant in that its permanently open state harbours a greater diversity of species than the more common semi-open or blind estuaries. Management of this system is therefore a major priority of this management plan, to ensure that it remains a healthy functioning ecosystem.

The management of the estuary is discussed in more detail in Section B and should be read in conjunction with the Goukou Estuary Management Plan when it has been completed.

Threats to the Goukou Estuary system:

- Siltation is the one of the largest threats to the system, where rates are greatly increased by a number of human activities
- There are a number of human activites that have already taken place on the Goukou estuary that directly impact on its functioning as a healthy ecosystem. These include the damming of the river for irrigation and drinking water purposes which reduces the input of freshwater and alters the river flow patterns; agricultural practices such as planting vineyards and olives too near to the river bank causing erosion and increased silt deposition in the Goukou; the bridge that connects Stilbaai East from Stilbaai West can interfere with tidal action and upset the natural estuarine flow and circulation; property development alongside the estuary with associated building of jetties that often results in the estuary waters being filled with rubble or soil and the slowing down of tidal action.
- A major cause of estuarine degradation is the manipulation of riverine flow. Fish which have been dangerously depleted as a result of alterations to riverine flow include estuarine pipefish, freshwater mullet and eels.
- Pollution is a further threat to the estuary, with specific emphasis on effluent from sewage systems or stormwater runoff which leads to increased concentrations of organic compounds in the estuary. This leads to excessive plant/algal growth and the evidence thereof must trigger immediate management actions.

d) Sub-tidal reefs

Stilbaai has a number of sub-tidal reefs that are home to a number of species, including galjoen, bronze bream and red roman. This habitat type still presents fishermen with a wide range of species and local anglers maintain that this is one of the best areas in the southern Cape where large white steenbras still occur. The inclusion of these sub-tidal reefs is an important component of the Stilbaai MPA and management thereof is discussed in Section B.

Threats to the sub-tidal reefs:

- Overexploitation by fishermen

Stilbaai MPA supports a rich mixture of temperate species with a high occurrence of endemism (see Appendix 4: Table 3 for a working fish species list of the MPA).

2.3 Key Marine fauna found in the Stilbaai MPA

Key species requiring either monitoring and/or active management include (discussed in Section B):

- African Black Oystercatcher
- Southern Right Whale
- Reef fish (Galjoen, Red Roman etc.)
- Catadromous fish species in general (White Steenbras, Kob)
- Sand and Mud prawn
- Pansy Shell
- Anguilla spp. (eels)

Pseudobarbus burchelli (Burchell's redfin) is still found in the Goukou River. It is considered Critically Endangered (Ref. 57073) and is known to inhabit pools and deeper flowing stretches of larger tributary streams and mainstreams. It feeds on detritus and small organisms, usually taken from the bottom. The species is known to breed in summer, where the fry and juveniles form large shoals, whilst adults occur in small groups. Due to the development of towns, agriculture and industry, the habitat of the species has been destroyed. Populations have also been eliminated by introduced predatory fishes.

The following new range extensions of juvenile tropical fishes at the Goukou River, Stilbaai, have been documented by photographs taken by Japie Kamminga:

- Threadfin butterflyfish, *Chaetodon auriga* (previously known to Mossel Bay);
- Coachman, *Heniochus acuminatus* (previously known to Tsitsikamma);
- Spot sergeant, *Abudefduf sordidus* (previously known to Tsitsikamma);
- Sergeant major, *Abudefduf vaigiensis* (previously known to Port Alfred)
- Spot-tail coris, *Coris caudimacula* (previously known to Tsitsikamma).

The estuary is home to a range of avifauna including terns, cormorants, darters, egrets, herons, ibis, spoonbills and hamerkops.

2.4 Potential Climate Change Impacts

In accordance with the "Status Quo, Vulnerability and Adaptation Assessment of the Physical and Socio-economic Effects of Climate Change in the Western Cape" produced by the Provincial Government of the Western Cape, Department of Environmental Affairs and Development Planning in June 2005 (page 58), the potential impacts associated to the Goukou Estuary are documented as an increase in the seawater penetration due to a reduction in runoff and an increase in sea level rise; a change in species composition due to changes in sea temperatures and a significant loss of estuarine productivity. The fact that part of the MPA is adjacent to the Geelkrans Reserve will allow for this coastline to adapt naturally to climate change and sea level use.

2.5 Human Settlements

The main human settlement in the vicinity of the Stilbaai MPA is the town of Stilbaai, which borders on the largest part of the Stilbaai MPA. Other settlements that are found in the vicinity and whose inhabitants could be viewed as direct stakeholders are Melkhoutfontein and the nearby coastal village of Jongensfontein.

2.6 History and Archaeological sites

As discussed briefly under 2.2b) “Rocky Shores”, there are numerous “fish traps” or visvywers along the coast of the Silbaai MPA.

The vywers, of which the best examples remain in Skulpiesbaai, are a remnant of a once common method of fishing employed by indigenous peoples of South Africa. Vywers are stone-walled traps built at the correct height on the shore to trap fish during a falling tide. Although the indigenous peoples who practised this method were exterminated or interbred with colonists in the 1800’s, the tradition of catching fish was passed on to the settlers. Two sets of vywers are still used today – those at Skulpiesbaai and Arniston – but remnants of vywers are widespread along the Cape South coast. Those wishing to read a more detailed account of the vywers are referred to Avery (1976) and Kemp et al. (in press).

Although the vywers have correctly been declared as a monument, they differ from other monuments in that they need to be rebuilt continuously. The action of the sea destroys the structure of the wall and quickly renders the trap ineffective. Great skill is required in packing the stone – a skill now possessed by very few. Some have remarked that the traps are not a physical monument, but rather a cultural monument. The know-how required in building and working the vywers needs to be preserved and passed on, to ensure that the vywers will not disappear entirely.

The difficulty arises in that this fishing activity is not recognised as a legitimate form of fishing in terms of South Africa’s Marine Living Resources Act, and those who work the vywers (and preserve the culture) are acting illegally. Fishing activity in South Africa is legally authorised in terms of permits, but no permits are issued for fishing the vywers. The difficulty in attempting to legalise this activity is two-fold. Firstly, some of the species being caught in vywers are heavily depleted by fishing, and may now not be sold. Should these fish caught in vywers enter the market, there would be difficulty in differentiating between line-caught and vywer-caught fish, thereby opening a loophole for trade in certain contraband species. Secondly, the

Figure 4: Photo of Visvywers taken by Lucy Kemp

vywers no longer adhere to the pre-colonial practice of spearing fish, but rather use gill-nets to snare fish before the vywer empties on a morning spring low tide. The gill-nets are highly destructive fishing gear when used conventionally, and their use is banned in South African marine waters south east of Langebaan Lagoon.

Fishing of the vywers today is restricted to pre-dawn periods. All fishing practices are subject to changes as gear-technology, fish abundance and laws change. Fishing the vywers has likely responded too. The original use of spears suggests that the fishing was a daylight activity. Not only would it be easier to see fish after dawn, but the spring low is approximately 3 hours after dawn, and it is easier to spear fish in shallow water than deep water. As settlement grew in the 1800s, clashes between groups and increasing numbers of people would have resulted in competition for fish – the most likely response of which is that fishermen would visit the vywers earlier to secure trapped fish before their competitors. This is still the case at Arniston (Kemp et al press). The advent of nets made pre-dawn fishing a possibility. In the later period, because of the illicit nature of the activity, pre-dawn fishing was the only option.

There is another subtle change that concerns the nature of the fish prey. Long-lived resident and territorial fish dominated the immediate sub-tidal areas prior to post-colonial settlement. This is still the situation today in Marine Protected Areas such as De Hoop and Tsitsikamma. Intensive fishing has reduced the density of these fishes enormously, particularly in shallow, accessible waters. In pre-colonial times, these fish would have been the dominant catch of vywer fishermen.

Today vywer catches are dominated by haarders, a small shoaling species. Generally too small to spear, and nomadic in life-style, haarders were not the target of the early fishermen. The modern fisherman takes all he can, given the large market for fresh seafood. In pre-colonial times one expects that the fisher took only what they required. The low numbers and nomadic lifestyle of the KhoeKhoe also suggests that harvesting at any one site was infrequent.

Management options for these sites are discussed in more detail under Section B.

3 Boundaries and zoning

All geographic co-ordinates are taken directly from the Proclaimed Regulations associated to the Stilbaai MPA and determined in accordance with the *WGS 84* datum. See Map 1 and 2 below for a visual representation.

Boundaries of the Marine Protected Area:

. The Stilbaai Marine Protected Area is the area between **Noordkapperspunt** and **Rietvleivywers**, and includes the **estuary of the Goukou River to a point 15 km upstream**. The seaward boundaries are defined by two straight lines joining the following three points:
(A) 34° 23'.964 S; 021° 24'.800 E (Noordkapperspunt);
(B) 34° 23'.964 S; 021° 30'.976 E (A position 4.2 km offshore of Rietvleivywers);
(C) 34° 21'.676 S; 021° 30'.976 E (Rietvleivywers).

The landward boundary is defined by the high water mark as it runs from Noordkapperspunt (34° 23'.964 S; 021° 24'.800 E), along Skulpiesbaai, around Morris Point, through the harbour, along the western shore of the estuary to 34° 17'.830 S; 021 18'.620 E, approximately 15 km upstream, and then back along the eastern shore of the estuary to the mouth and from there to Rietvleivywers (34° 21'.676 S; 021° 30'.976 E).

Restricted Areas within the Marine Protected Area:

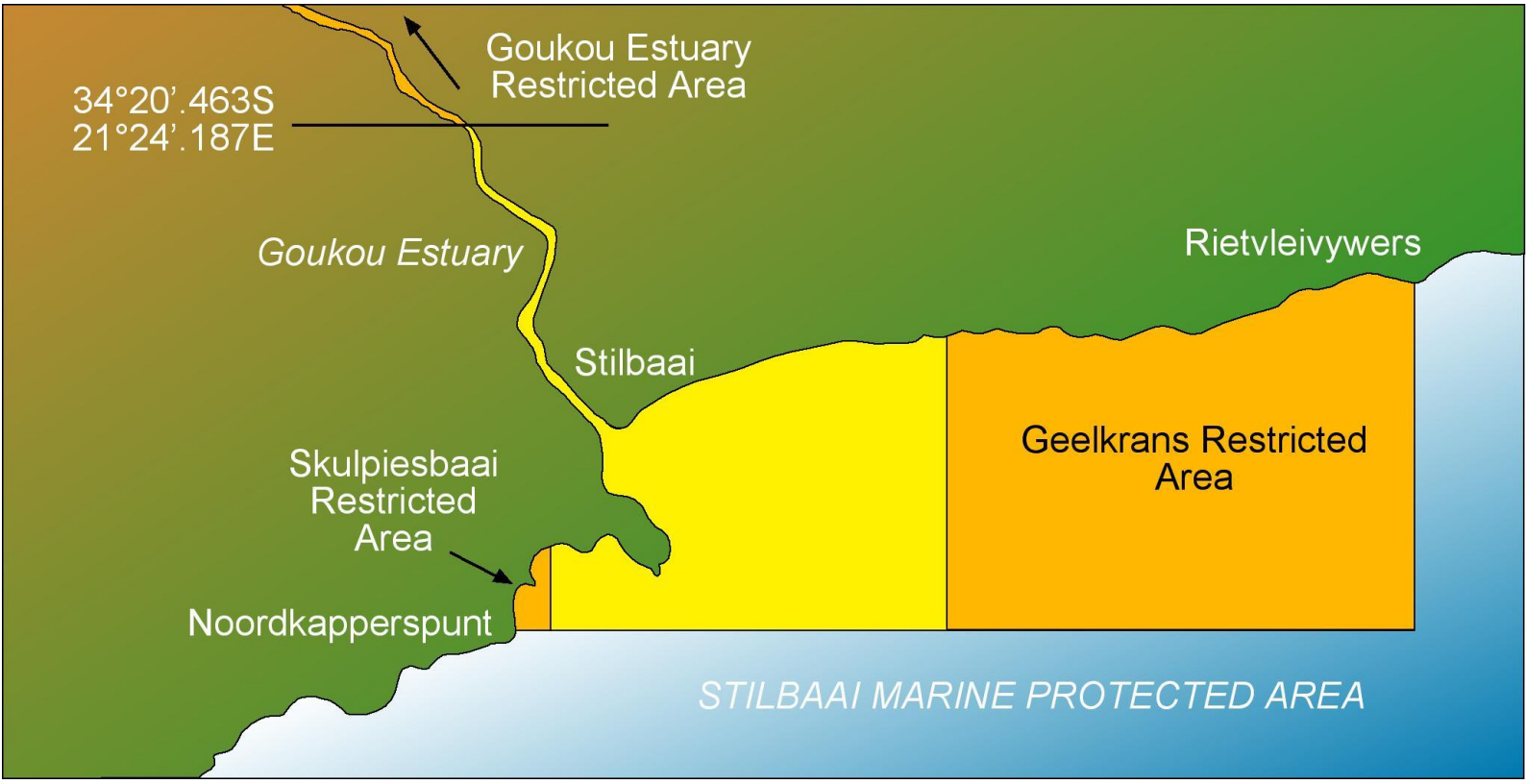
There are three Restricted Zones and one Controlled Zone within the Stilbaai Marine Protected Area:

(1) The **Geelkrans Restricted Zone** is the eastern part of the Stilbaai Marine Protected Area, adjacent to the Geelkrans Nature Reserve and Rietvleivywers, east of the longitude 021° 27'.737 S.

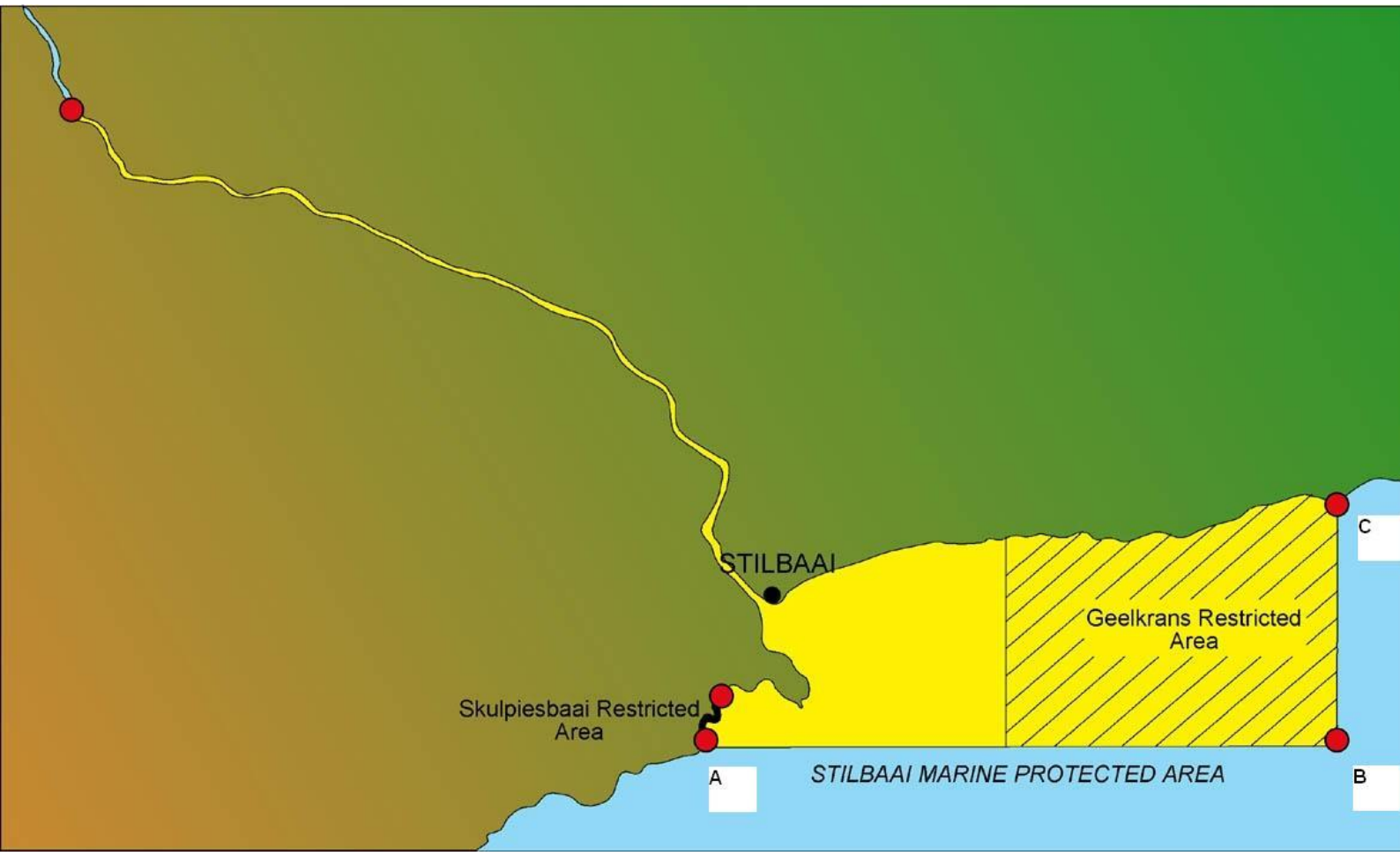
(2) The **Skulpiesbaai Restricted Zone** is the area bounded by a line running from Noordkapperspunt at position 34° 23'.964 S; 021° 24'.800 E to position 34° 23'.964 S; 021° 24'.970 E and from there to position 34° 23'.541 S; 021° 24'.970 E and from there along the high water mark to the point of beginning at Noordkapperspunt.

(3) The **Goukou Estuarine Restricted Zone** is that part of the estuary that lies between position 34° 20'.459 S; 021 24'.198 E (approximately 2.3 km upstream of the R323 road bridge) and position 34° 17'.830 S; 021 18'.620 E (approximately 15 km upstream from the mouth).

(4) The remainder of the Marine Protected Area is a **Controlled Zone**.



Map 1 of Stilbaai showing the terrestrial reserves relative to the Controlled and Restricted Zones of the MPA including the Goukou Estuary



Map 2 showing the entire Stilbaai MPA and its zones

4. Regulations

The regulations associated with the Stilbaai MPA boundaries and zones are incorporated below as proclaimed:

"*Control of activities in restricted zones*

1. Control of activities listed under this regulation is in addition to measures that apply to the MPA in general or as a whole

(1) No person shall fish, or attempt to fish, in any of the three Restricted Zones within the Marine Protected Area.

(2) No person shall enter the Geelkrans Restricted Zone in a vessel that has fishing equipment on board.

(3) Subject to sub-regulation 3, fishing gear on vessels that are in, or enter a restricted area for the purposes of passage, must be stowed

Control of fishing activities in controlled zones

2. Any person fishing or attempting to fish in a controlled zone of the MPA shall be in possession of a valid permit for the fishing activity in question and bait collection in the estuary shall also be subject to regulation 6.

Bait collection within the Estuary

3. No person shall collect bait or any invertebrate species in the Goukou estuary except in that part of the estuary downstream of position.34° 20'.459 S; 021 24'.198 E and then only along the eastern bank.

SCUBA Diving

4. (1) No person may SCUBA dive or attempt to SCUBA dive in the Marine Protected Area except on the authority of a SCUBA diving permit.

(2) The Minister may determine the maximum number of SCUBA diving permits that may be issued for use in the Marine Protected Area.

(3) SCUBA diving permits shall be valid for a maximum period of twelve months and shall be capable of being renewed at a fee determined by the Minister in terms of the Act.

(4) SCUBA diving permits may be issued subject to conditions.

(5) 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.

(6) 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. The Minister may determine the maximum number of SCUBA diving business permits that may be issued for use in the Marine Protected Area.

(7) SCUBA diving business permits shall be valid for maximum period of twelve months and shall be capable of being renewed at a fee determined by the Minister in terms of the Act.

(8) SCUBA diving business permits may be issued subject to conditions

Spearfishing

5. (1) A person shall spearfish, or attempt to spearfish, or be in possession of a speargun in the Marine Protected Area.

Scientific research permit

6. (1) *No person may undertake any scientific research within the Marine Protected Area except on the authority of a scientific research permit.*

(2) *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.*

(3) *Scientific research permits shall be valid for a maximum period of twelve months and shall be capable of being renewed by the Minister.*

(4) *Scientific research permits may be issued subject to conditions.*

Use of vessels

7. (1) *Motorised vessels may only launch from registered launch sites.*

(2) *All vessels that have deployed divers within the Marine Protected Area must display an alpha flag.*

(3) *No vessel may be attached to a demarcation buoy.*

(4) *No person may use or attempt to use any type of personal watercraft or hovercraft within the Marine Protected Area.*

(5) *Recreational usage zones in the Estuary (including no-wake zones for power boats) will be determined as part of an Estuary Management Plan (EMP), as currently described in the Coastal Management Bill and/or as Municipal By Laws. The EMP and/or By Laws may impose additional restrictions to the regulations above but the Estuary Management Plan may not allow activities that are prohibited by the current notice.*

Offences and penalties

8. *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.*

Management Plan

9. *The Department shall, after consulting with the Manager, complete and implement a management plan for the Marine Protected Area within six months of the date of commencement of these regulations.*

Commencement

10. These regulations shall commence immediately upon promulgation.

SECTION B: MANAGEMENT OF THE RESERVE, ITS USER GROUPS AND KEY SPECIES WITHIN THE MPA

1. Strategic Plan

The CapeNature Strategic Plan is attached as Appendix 2 and should be read in conjunction with the management plan. It sets out key actions and roles and responsibilities of both CapeNature as well as for DEAT: MCM. The Key Performance Areas in this plan are considered the critical areas where management interventions are required to ensure that the Stilbaai MPA meets its objectives. To this end DEAT-MCM has entered into an agreement with CapeNature to manage 5 (five) MPAs including Stilbaai. This agreement provides core funding for activities including compliance, monitoring and awareness. It requires quarterly and annual reporting.

2. Key Performance Areas

2.1 Overview

The Stilbaai MPA is entwined with the town of Stilbaai, which has been expanding at a rapid rate for the last 20 years. A steady increase in both type and volume of user groups has meant that an ever-increasing pressure is being placed upon the environmental resources of the area. This is especially true in the case of living marine resources. The management thereof however must simultaneously be balanced with supporting the surrounding settlements in increasing their prosperity and economic growth in a manner such that environmental integrity and ecological thresholds are maintained as the main economic asset is tourism.

Zoning therefore 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 do, where certain activities are allowed without a Permit and where activities are allowed with a Permit. Zoning sets the foundation for protecting the Stilbaai MPA and managing 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 Hessequa Municipality for example is a major stakeholder and the regulations and legislation pertaining to areas affecting the MPA must be aligned to support the goals of the Municipality and its inhabitants as well as the MPA.

The primary issues being addressed through this management plan include stemming the decline of reef fish populations and various species of shellfish; the decline in estuarine health and habitat destruction within the estuary; reducing the impacts on rocky reef habitat; reducing pollution; maintaining water quality and to ensure sound management of the visvywers at Noorkapperspunt.

2.2 Management of Key species within the Stilbaai MPA

Areas of special interest	Reason	Conservation action
Estuary (especially *Zostera* beds)	Nursery and feeding ground for many fish species, and feeding ground for waders	Exclude exploitation along most of the estuary. Eliminate invertebrate harvesting along one bank of the remaining areas
Subtidal reefs	Habitat for threatened reef fish	Prevent fishing off Geelkranz
Fish Vywers	Historical and cultural feature	Prevent fishing in this area. Facilitate a maintenance programme
African Black Oyster catcher	Threatened	No MPA specific regulation. Already well protected
Southern right whale	Iconic spp	No MPA specific regulation. Already well protected
Reef fish	Heavily depleted	Restricted area exclude fishing
White steenbras	Heavily depleted (Threatened according to IUCN listing)	Restricted area exclude fishing
Sand prawn and mud prawn	Oxygenation of estuarine sediments	Minimum flow requirements in estuary
Pansy shell	Rare, iconic species	None
Anguilla spp. (eels)	Threatened by collection of glass eels, habitat destruction and flow reduction.	Protection of estuary

2.3 Demarcation of Zones and Signage of the Stilbaai MPA

- The Naval Hydrographic Office located in Simon's Town must be notified of the boundaries and zones pertaining to the Stilbaai MPA to include the required information in the updated SAN Charts
- Where necessary and feasible, offshore marker bouys will be installed (optional depending on budget) to demarcate the outer (seaward) boundaries of the MPA and different zones. Installation and maintenance of the bouys will be the responsibility of CapeNature. South African Maritime Safety Authority ("SAMSA") approval is required.
- The boundaries of the controlled and restricted zones (including the boundary of the restricted zone on the Goukou Estuary) will be demarcated with beacons (appropriately differentiating the different zones) with sector lights attached to them. This will require approval from the Department of Environmental Affairs and Development Planning through the National Environmental Management Act (Act 108 f 1998). These will be placed on the shore boundaries so that they are clearly visible from the land and (within reason) from the sea.
- Within the Goukou Estuary and River there are specific zones that will be/are designated for certain non-motorised as well as motorised activities to reduce potential user-conflict. The demarcation of these is discussed in more detail under Section B.2.9 Estuary and River Management. The reason for this are that in terms of the Stilbaai MPA proclamation, the Goukou Estuary is considered only to be a restricted zone between approximately 2.3 km upstream of the R323 road bridge and approximately 15 km upstream from the mouth.

- As far as possible an additional beacon should be placed on the shore immediately above the high water mark at each boundary in such a manner that when both beacons are directly behind the other, this line so formed will coincide with the boundary in question.
- As far as possible, all landward entries to the MPA as well as Public Launching Sites will be signposted in English and Afrikaans and indicate clearly the name of the area/zone, its coastal and offshore extent, activities permitted/not permitted in the area, a zonation map as well as a contact telephone number for reporting of incidents.
- All signage will comply with both DEAT and CapeNature policy guidelines as far as possible.

2.4 Management of Fishing Activities including the Visvywers

- 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 allowable commercial catch or total applied effort. Recreational fishing is any fishing done for leisure or sport and not for sale, barter, earnings or gain. 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.

a) Commercial

- All commercial fishing is prohibited within either the Restricted or the Controlled zones of the Stilbaai MPA and throughout the Estuary.
- All fishing gear on vessels that are in, or enter the controlled or restricted area for the purposes of passage, must be stowed

b) Recreational Fishing

- All recreational fishing is prohibited in the Restricted Zone of the MPA
- No person may enter the Geelkrans Restricted Zone in a vessel that has fishing equipment on board
- All fishing gear on vessels that are in, or enter the controlled or restricted area for the purposes of passage, must be stowed
- Recreational fishing is allowed in the controlled zone, subject to a valid permit for the fishing activity taking place and fishers are required to present such permit to any fisheries compliance officer on request
- Bait or any invertebrate species collection may only take place in the Goukou Estuary downstream of position 34° 20'.459 S; 021 24'.198 E and then only along the eastern bank.
- Additional zoning may be implemented to mange different user groups in order to avoid conflict and to protect environmental integrity.
- Some of the popular sites for fishing which will be protected in future by the MPA – and therefore necessary locations for monitoring for the health of the ecosystem, include from the rocks at Preekstoel to the East (for kob and elf in summer, galjoen in winter and white steenbras all year

round) and Morris Point (a deep-water point that produces big kob, white steenbras and gully fish, with further spots west including Noordkapperspunt.
- Voluntary compliance with regulations will be encouraged through education and awareness programmes

c) Spearfishing

- Spearfishing is allowed in the Controlled Zone of the Marine Protected Area.
- A person undertaking spearfishing or attempting to spearfish from a vessel, in Stilbaai Marine Protected Area must deploy an alpha flag.
- All spearfishing gear on vessels that are in, or enter a restricted area for the purposes of passage, must be stowed

d) Invertebrate and Bait Collection

- Bait or any invertebrate species collection may only take place in the Goukou Estuary downstream of position 34° 20'.459 S; 021 24'.198 E and then only along the eastern bank.
- No other location or site within the MPA is open for invertebrate species and/or bait collection.
- Restrictions on the use of certain implements are there to protect the ecosystem from unnecessary destruction during the harvesting process. These are dealt with in detail in the MLRA regulations.
- Typical bait available in the Goukou Estuary that would be collected includes, bloodworms, tape worms, pencil baits, sand prawns, mud prawns, and redbait etc.

e) Aquarium Collection

- Collection of any marine species for the purposes of aquarium usage may only take place under the authority of a valid permit issued under the MLRA. Where such collection is taking place, a valid permit must be presented to the Fisheries Control, or other Authorised Officer at his/her request. The permit should specify the species as well as the amounts permitted for extraction.

f) Fishing Charter Programmes

- Fishing charter programmes, although also tourist programmes, will require a Fishing Permit under Section 13 rather than a Marine Protected Area Permit under Section 43 but clearly in issuing such a permit the requirements of the MPA would be considered.
- Fishing charter operations will be monitored via the MPA management or the harbour control authority.

g) Angling Competitions

- Fishing competitions are not allowed in the Restricted Zone
- The management of fishing competitions will be considered in the light of tourism and a possible income generation.
- It is recommended therefore that prior approval to host a fishing competition within the Stilbaai Controlled Zone be obtained from the MPA management authority and this is likely to become mandatory in terms of the new policy on fishing competitions.

- Voluntary compliance with regulations will be encouraged through education and awareness programmes.
- It is recommended that when an angling competition is applied for, that this be discussed at the Stilbaai MPA Liaison Committee as well as MCM in Cape Town so that conditions can be determined within which the angling competition can take place.
- The presence of monitors throughout the angling competition will be necessary to continually check adherence to the conditions of the approval as well as all other marine legislation compliance. Where conditions are not complied with, the organizer of the angling competition should be approached and the matter discussed as an immediate action in addition to the FCO issuing a fine to the person who contravened the legislation. If no appropriate action is taken by the organizer, due consideration for banning the organizer into the future must be discussed and agreed upon at the following Stilbaai MPA Liaison Committee Meeting.

h) 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. However, these applications will be subject to stringent assessment and only issued when appropriate.

i) Management of the Visvywers

This presents a unique situation, and one that remains unresolved. This section therefore is addressed slightly differently to the others above and takes the form of a discussion of options to pursue, in order to ensure the maintenance thereof:

Enforcing a ban on vywer fishing poses a problem: who will maintain the vywers? Clearly vywer maintenance is hard physical labour, not to be pursued without reward. Even allowing vywer fishing to continue, there are now very few who seem capable or willing to continue the practice, as catches are neither numerous or valuable.

Figure 5: Photo provided by Steve Lamberth. Visvywers in their unused state will not be maintained and eventually break

The option of legalising the fishery, and awarding a right in Stilbaai to the only remaining artisan, seems to be a reasonable option, especially if he can be encouraged to pass the skill on to others. Two issues that will need to addressed are the use of gillnets (the concern here is the use of nets elsewhere, e.g. in the estuary), and the capture and sale of fish that are regulated with small bag limits and a no-sale condition.

Another option is to employ somebody to maintain the walls, but without extracting fish. This could be expensive, and defeats the purpose of maintaining a tradition of vywer fishing although "fish viewing" in the vywers could be regulated in future.

Ideally one would like to exhibit not only the walls of the vywers, but also the fishing practise itself. This may prove to be a draw-card for tourists, provided that the fishing could be done infrequently and in the daytime (early morning). Daytime fishing would not be a possibility unless there is a strong presence of resident or territorial fish in and around the vywers.

"On the other hand", to recover the abundance of these species, all fishing needs to be stopped. To this end, the area has been declared as a restricted zone, excluding fishing.

In the interim however, the walls need to be maintained, and for this reason alone it necessary to reach an agreement with the existing fisherman on how to pursue the MPA objective for this. One possibility is to allow pre-dawn fishing to continue for haarders only, giving the other species chance to recover. Should this option prove successful, day time fishing exhibits could be considered, as a "living museum".

The matter needs to be resolved between the fisherman, MCM, SARHA and the Hessequa Archeological Society. Presently, no fishing is permitted in Skulpiebaai.

2.5 Scuba Diving

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 Stilbaai MPA Regulations. A scuba diving business that wishes to operate within the Stilbaai MPA will require a scuba diving business permit.

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

a) Recreational Scuba Diving

- All recreational scuba divers require a scuba diving permit. A scuba diving permit is valid for a period of 12 months.
- This permit is obtainable from either the local post office (as is all recreational permits required in terms of the MLRA) or any scuba diving operator operating within the Stilbaai MPA who has a scuba diving business permit
- The carrying capacity of SCUBA diving within the Stilbaai MPA will be determined by the Minister of Environmental Affairs and Tourism and, if necessary, diver numbers will be limited. This measure may be needed because of increasing SCUBA diving activities and their associated impacts.

- All scuba divers are subject to Naui and Padi "Codes of Conduct" including safety requirements.
- All vessels with divers deployed within the Stilbaai MPA must display an alpha flag
- Restrictions on activities associated with 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 zones 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.
- Also see Appendix 2 Actions 5.1.2, 5.1.4(a), 5.1.7(a), 5.2.2(c) 5.3.2 (a) and 5.3.2 (b).

b) Commercial Scuba Diving and Scuba Diving Tour Businesses

- No person may operate without a permit or attempt to operate a SCUBA diving business in Stilbaai Marine Protected Area.
- 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 Minister may determine the maximum number of SCUBA diving business permits that may be issued for use in the Marine Protected Area.
- SCUBA diving business permits shall be valid for a maximum period of twelve months and shall be capable of being renewed at a fee determined by the Minister in terms of the MLRA
- These requirements aim to control the pressure on the Stilbaai MPA and increase diver safety.
- The involvement of previously disadvantaged communities in the SCUBA diving sector will be encouraged. This measure is necessary because of a national commitment to transformation.
- Commercial scuba diving for the purposes of diving on wrecks and/or working on the harbour 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 Stilbaai MPA must display an alpha flag.

c) Boat-based Whale Watching

- Stilbaai has been identified as a site for a future boat-based whale watching operator in terms of National Policy. The MPA Manager will be in involved in the process and ensuring compliance.

2.6 Launch Site Management

Three sets of legislation are applicable to the management of Launch sites (slipways) and Jetties:

- Section 7 of the National Environmental regulations (National Environmental Management Act),

- 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 Seashore Act (Act no. 21 of 1935). In the Western Cape, CapeNature is responsible for the compliance to the Seashore Act. Management of structures associated to this act should continue as before.

Four (4) public launch sites are located within the Stilbaai MPA and require active management in the form of launch site registers and regular monitoring. Due to Stilbaai being predominantly a holiday town, the area is very busy in the season so there might be a need to increase staff management over this time. Three of the river launching sites are controlled by the Stilbaai Municipality, for which the contact person is the Town Clerk, P.O. Box 2, Stilbaai 6674 or Tel: 028-754 1577, Fax: 028-754 1140. Permits are needed to launch onto the Goukou River and these are obtained from the Municipality. Towards the mouth there is a set of bouys beyond which power craft are not allowed to travel at faster than idle speed. Jet skis are not allowed on the Estuary. All sites are open to the public. All activities and management strategies herein described must be read in conjunction with the Estuary Management Plan.

a) Stilbaai-East

- Accessible from the Stilbaai Road (R323)
- Located close to the bridge over the Goukou River
- Controlled by the municipality, from which a permit can be obtained.
- Fishing, kayaking/canoeing, water skiing, rowing, dinghy sailing/catamarans and power boating/rubber ducks are allowed from this launch site.
- Although application has been made to the Department of Environmental Affairs and Development Planning for a licence, this site has as yet not been issued a licence. This must be pursued in order to ensure meeting legal requirements in terms of the Control of Vehicles in the Coastal Zone (Government Notice No. 1399 of 21 December 2001 as amended in Government Notice No. R.1426 of 7 December 2004)
- In terms of the regulations associated to the Stilbaai MPA, motorised vessels may only launch at registered launch sites posing an immediate problem for such launching at this site until it is registered and licensed appropriately
- Launch site registers should be kept and recorded monthly with associated catch records.

b) Stilbaai-West, Versveld

- Access is from Versveld Road, directly opposite the Stilbaai-East launch site
- This is the main municipal site in Stilbaai and is/must be manned during the holiday seasons
- Visitors can purchase their permits at the entrance
- Only rubber ducks and power boats are allowed to launch from this site
- This is a heavily utilised site in season
- Ablutions and slipway require regular maintenance, and maintenance of all municipal sites should be discussed and agreed upon at the Stilbaai MPA Liaison Committee to ensure that this occurs as regularly as required.
- Although application has been made to the Department of Environmental Affairs and Development Planning for a licence, this site has as yet not been issued a licence. This must be pursued in order to ensure meeting legal requirements in terms of the Control of Vehicles in the Coastal Zone

(Government Notice No. 1399 of 21 December 2001 as amended in Government Notice No. R.1426 of 7 December 2004)

- In terms of the regulations associated to the Stilbaai MPA, motorised vessels may only launch at registered launch sites posing an immediate problem for such launching at this site until it is registered and licensed appropriately
- Launch site registers should be kept and recorded monthly with associated catch records.

c) Stilbaai-West, Lapskuit

- Located close to the mouth of the Goukou River just inside the entrance bar
- No power boats are allowed to use this site
- Only dinghy sailing, board sailing and kayaking/canoeing is allowed from this municipal site
- Access is from Sterretjie Road into Waterkant Street
- No permit is required
- Ablutions and slipway require regular maintenance, and maintenance of all municipal sites should be discussed and agreed upon at the Stilbaai MPA Liaison Committee to ensure that this occurs as regularly as required.
- No motorised vessels may launch from this site. This site does not need to be a registered launch site

d) Stilbaai Harbour

- This site is located outside the Goukou River mouth on the West bank.
- Access is through Stilbaai-West at the end of Hoofweg
- The Stilbaai harbour is the only launch site to the nearshore marine environs.
- This is a commercial harbour, managed by the Department of Environmental Affairs and Tourism: MCM on behalf of the Department of Public Works; and does therefore not legally require registration as a launch site.
- The contact person is the Harbour Master, P.O. Box 245, Stilbaai, 6785 and Tel: 028-754 1026
- The Stilbaai Deep Sea Angling Club also use this launch site (25 Denning street, Stilbaai, 6785)
- Co operative governance should be applied by the relevant authorities to ensure the safe guarding of the MPA's values. Also refer to Appendix 2: Action 5.3.3 (a) and 5.3.3 (b).
- Boat surveying for the Seaworthy Certificate can be done by the club safety officer
- All amenities are managed and maintained by the DEAT:MCM
- Numerous ski-boats and motorised vessels launch from the site
- An entrance fee is charged as well as a launching fee
- No jetskis or personal watercrafts are allowed to launch from the harbour
- This site is open to the public
- Launch site registers should be kept and recorded monthly with associated catch records
- Monitoring of this launch site will be an important management aspect of this site.

e) Jetties

- There are numerous private jetties located on the Goukou Estuary, and not all of these have legal status

- Approval is required from CapeNature in order to construct or float a jetty in the Goukou Estuary and River
- A register of all existing and applied for jetties is available at the CapeNature offices, with specific information as to the legal status of each
- Illegal jetties on the Goukou Estuary and River pose a potentially serious threat to the health and functioning of the Stilbaai MPA. It is imperative that a system be activated to ensure addressing this issue. Assistance from MCM and all other government departments is imperative and urgent.

2.7 Anchoring within the Stilbaai MPA

- At present, all users may anchor within the MPA.
- This activity should be monitored to ascertain potential impacts thereof and, if impacts are noticed, appropriate management actions must be considered for implementation. The Goukou Estuary Management Plan might address this and should therefore be referred to.

2.8 Private Moorings

- At present, under the MLRA, users may install a private mooring via an application process, because of Secion 43, after 17 October 2008, the Minister of DEAT would have to give permission for any new private mooring.
- CapeNature is generally not supportive of allowing private moorings within the Stilbaai MPA.
- Refer to Appendix 2: Action 6.4.5 and 5.3.2(a)

2.9 Estuary and River Management

Management of estuaries requires two important components. These are a reference framework, to assess the health of estuaries, and predictive tools to provide insight into the likely responses of estuaries to changes made by natural or human activities.

Reference frameworks include assessment of plant communities, waterbirds and fishes and should include criteria such as species diversity, abundance, extent and conservation status. An estuarine health index (EHI) has been proposed to integrate physical, chemical, biological and aesthetic criteria for measuring estuarine health. Results relative to an EHI needed to be treated with caution as the biological indicators used were fish, which are highly mobile and absent in smaller drier estuaries. The reference framework associated to the Goukou Estuary Management Plan therefore needs to be determined by an expert panel with a wide variety of tools to obtain an overall opinion.

Predictive tools, or mathematical models, have been developed and tested to try and predict the effects of activities such as the effect of damming a river or reducing the water flow. An appropriate indicator species to use in the case of the Goukou Estuary looks at the mud prawn, *Upogebia Africana,* which is an important prey item of birds and fish, and is used for bait. The mud prawn also has an obligate marine phase in the life cycle, when the larvae migrate from estuaries into the sea and return again as post larvae. The maintenance of this life cycle requirement can be used as a clear objective in the management of an

estuary – it is achieved by ensuring sufficient river flow to keep it open. The Goukou Estuary Management Plan must address both the use of a reference framework and predictive tools.

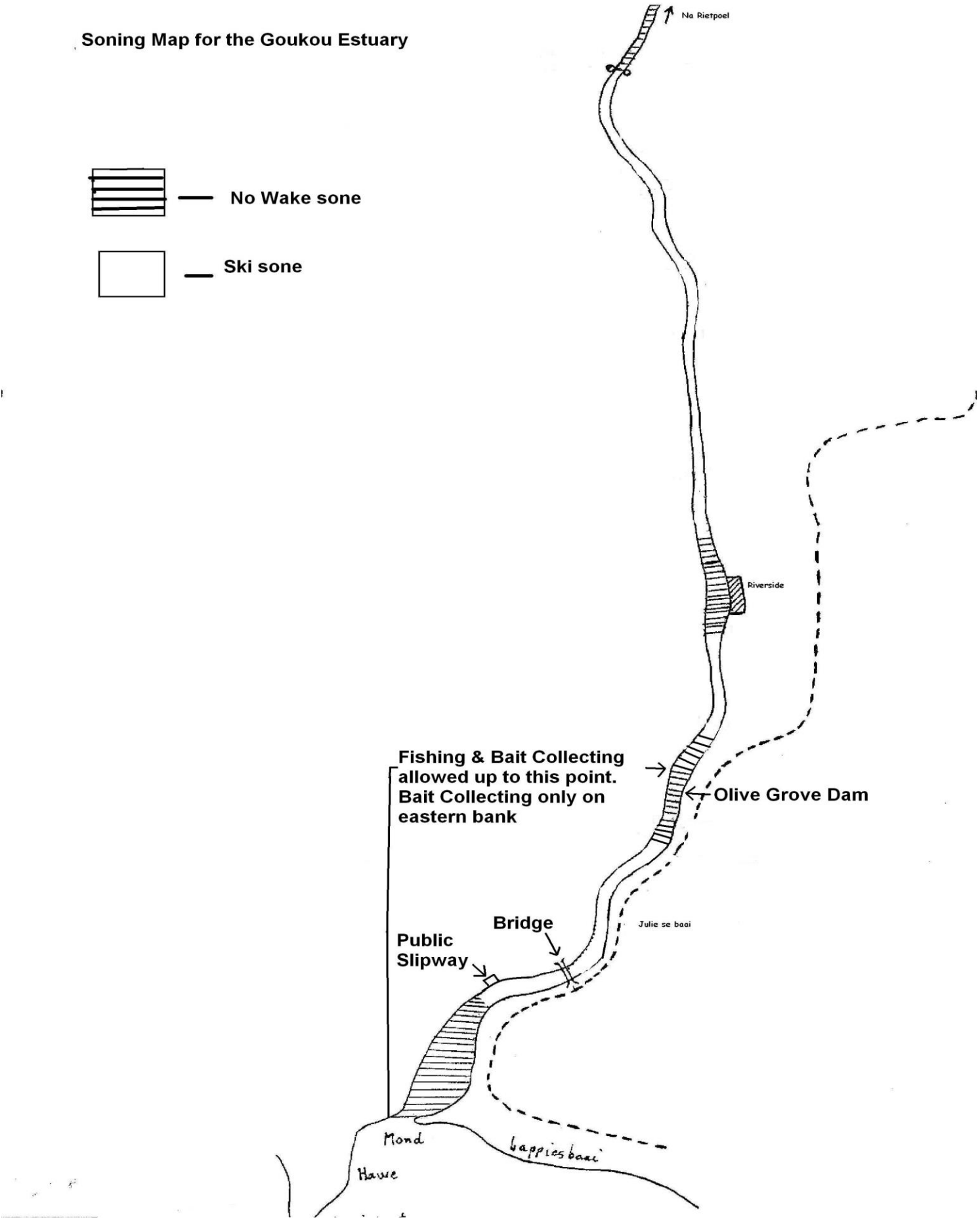
The Hessequa Municipality is currently responsible for the management of all recreational motorised activities on the Goukou Estuary. Co-operative governance should be applied by amending the applicable municipal by-laws to incorporate the values of the MPA and to synchronise user-usage zones. Management of the Goukou Estuary should also be a standing item on the Stilbaai MPA Liaison Committee as such usage zones were in fact contemplated for inclusion in the MPA regulations. This section must be read in conjunction with the Goukou Estuary Management Plan as well as Appendix 2: Action 5.3.2(b), 5.3.3 (a) and 5.3.3 (b).

a) Zonation within the Estuary

The Goukou Estuary and River is a heavily utilised environmental resource that requires adequate management, both for the users to reduce conflict, as well as for ensuring the environmental integrity and functioning of the system. Activities that currently need to be catered for by management include fishing, canoeing/kayaking, sailing, water-skiing, rowing, swimming and power-boating. Excessive speed can cause wakes that endanger recreational boaters, including kayakers and rowers, and can lead to damage, erosion and decay of the Goukou Estuary and River banks. The best management intervention currently available to reduce such impacts is the use of demarcated zones. A zonation system was put in place by the Hessequa municipality and the latest available map is dated 2006 (see Map 3 below). This is however now outdated and incorrect (as can be seen by the incorrect reference to the fishing and bait collection area on the map). This will be revised in detail in the context of the Goukou Estuary Management Plan.

- As per the above, there will be consideration of zones designated for certain motorised as well as non-motorised activities (e.g. kayaking, kite surfing and surfing) to reduce potential user-conflict and the impacts on the values of the MPA.
- Refer also to Appendix 2: Action 5.3.2(b).
- Each zone must be clearly marked by beacons on either side of the Estuary and River and must include signage that clearly informs visitors of the activity requirement (ie. A no wake-zone, or no water-skiing zone etc.) See Figure 6 as an example provided below for a visual representation.

Figure 6: Example of clear signage that should demarcate the different zones



Map 3 depicting the outdated different user-zones of the Goukou River

b) Management actions

- Launch sites and activities associated to each launch site must be regularly monitored and launch registers kept as discussed under launch site management (Section B.2.6)
- User and vessel safety must be regularly monitored and is discussed in more detail under Section B.2.10. The most appropriate location to monitor such activities is from the launch sites and should take place simultaneously with catch and launch monitoring.
- The Goukou Estuary and River banks must be monitored monthly to determine impacts and damages associated to the use thereof. Where impacts and erosion is noted, appropriate management interventions must be implemented. This will depend on whether the erosion is from a land-based activity on private land, or impacts from boating and/or recreational activities. It is recommended that the appropriate intervention be discussed and approved at the Stilbaai MPA Liaison Committee.
- Any illegal activity in terms of the MLRA; the Stilbaai MPA proclamation and regulations as well as any other legislation associated to the management of the Estuary and River must be addressed as per the legal requirements (see Section D)
- Appropriate action must be taken when an illegal activity is reported by a member of the public. It is recommended that any action taken by the Fisheries Control Officer ("FCO") be reported back to the member of public that informed the FCO so as to improve communication with the public and to improve awareness and compliance within the area.
- The use of Geographic Information Systems should be used to map the vegetation types and habitats of the estuary at regular intervals, so that changes and impacts can be easily identified and addressed (preferably at six monthly intervals or after winter/high season)
- The use of fixed point photography is also very useful to determine change over time. This should be used as a monitoring tool where predetermined fixed points are agreed upon and photographs taken at these same points on a six monthly basis and recorded.
- Monitoring of the Goukou Estuary is discussed in more detail in Section F and should be read in conjunction herewith.

2.10 User and Vessel Safety Requirements

- The category of vessels applicable to the Stilbaai 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 operating more than 15 but not more than 40 nautical miles from shore (this category will only be applicable from the Stilbaai Harbour and will be managed by DEAT:MCM. Catch records and launch site registers will however be recorded and monitored for the Stilbaai MPA purposes.
- Category C refers to vessels operating more than 5 but not more than 15 nautical miles from shore
- Category D refers to vessels operating more than 1 but not more than 5 nautical miles from shore (D, E and R operate within the Stilbaai MPA boundaries)
- 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") and the following documentation is attached as appendices under Appendix 4: SAMSA Requirements:
    - Merchant Shipping (National Small Vessel Safety) Regulations, 2007, as amended.
    - Marine Notice No. 22 of 2008.
    - small vessel safety pamphlets
    - 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 Stilbaai MPA and the FCO's will need to regularly monitor vessels to ensure that vessels operating within the boundaries of the Stilbaai MPA meet these requirements. This activity should be built into the weekly patrols emanating from the compliance workplan
- List of safety equipment required for small boats includes:
    - Suitable buoyancy (referred to in Appendix 4)
    - Sufficient fuel for the intended voyage (+25% extra)
    - A life jacket for each person
    - Distress flares (stored in a waterproof container)
    - For signaling: a mirror, a waterproof torch, spare batteries, a spare bult and a sound device
    - Compass
    - Bailing device
    - Paddles or oars
    - Grabline
    - Anchors and ropes
    - Knife
    - Survival blanket for each person
    - Identification sheet of highly visible material – for identification from the air
    - First aid kit (including bandages, plaster, antiseptic ointment, seasickness pills, sunburn lotion)
    - Fresh water
    - Tool kit suitable for the boat
    - Air-bellows for inflatable boats
    - Radio (in larger boats)
- CapeNature staff managing the Stilbaai MPA should be trained and comfortable with applying artificial resuscitation (CPR) for victims of drowning.

2.11 Tourist Programmes (additional to those mentioned above)

a) Existing Tourist Programmes

At present the MPA is open to all types of tourist programmes and tourist programmes (with the exception of scuba diving and extractive use) may occur without a permit. The following tourist programmes are known to occur in the MPA:

- Fishing charters (3 operators)
- Recreational rock and surf fishing instructions (1operator)
- Recreational boat hire non and motorised (3 operators)
- Ski instruction (2 operators)
- Surf instructors and hiring of surf boards (1 operator)
- Various land based tourist activities that involve the MPA, including watching marine mammals and birds that frequent the MPA
- A part of the Geelkrans Hiking Route follows the shore inside the restricted zone.

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. Management actions include:

- Monitoring the different user groups to determine when and where there is a conflict arising
- Determine the reason for the conflict
- Act upon the conflict as an immediate intervention where appropriate, or, submit the conflict for discussion at the following Stilbaai MPA Liaison Committee for resolution
- Identify points elevated above high use areas as well as environmentally sensitive areas for the use of fixed point photography. Photograph intervals should be determined (recommended interval to be not more than six monthly) within high season as well as post high season. Keep records of such photographs and where changes such as erosion or other problem becomes apparent, this must be presented and discussed at the Stilbaai MPA Liaison Committee for action.

Other activities

- In accordance with Municipal by-laws, no dogs are permitted within the coastal zone. Appropriate signage informing the public of this must be available at landward entry points to the coastal zone. The active management of this will be considered due to the potential impact on birds within the MPA. Refer to Appendix 2 Actions 5.3.2 (a) and 5.3.2 (b).
- The lighting of fires in the MPA may only take place at designated places where the appropriate facilities occur.

b) Potential Tourism Programmes

There is potential for different types of tourist programmes. Opportunities to support and/or encourage such tourist programmes for the socio-economic benefit of the community as well as to increase the financial sustainability of the Stilbaai MPA should be considered. Potential programmes include:

- Operators who have their own vessel(s)
- Craftless operators (i.e. operate from the beach, or charter a vessel)
- Scenic tours
- Marine animal watching
- Motorised watersports
- Non - motorised watersports
- Hire operations

Where tourist programmes are visibly impacting the integrity of the Stilbaai 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 will 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. Refer also to Appendix 2 Action 5.3.2 (b).

c) Public Events

There are a few public events that take place on an annual basis, including angling competitions and certain beach sports such as "touch-rugby". Angling competitions are discussed under 2.4 (g).

- It is recommended that where public events take place within the Stilbaai MPA that could possibly impact or cause environmental degradation that such event be discussed at the Stilbaai MPA Liaison Committee to determine conditions for the event in question.
- Monitoring of the proposed site for the event should include the taking of a photograph of the site from an elevated point prior to the event, during setting up of the event (where appropriate) or during the event itself (to determine visitor numbers and distribution within the site under discussion) and post the event (to determine changes in the environment).
- Where negative impacts are determined appropriate action must be either immediately taken, or discussed at the following Stilbaai MPA Liaison Committee meeting and the solution implemented where appropriate. An example might include stabilising the estuary/river banks where erosion may have taken place.
- Due consideration for allowing the activity the following year must be made at the Stilbaai MPA Liaison Committee Meetings.

2.12 Emergency Events such as Flooding

- When floods occur, there is often associated flotsam, which poses a danger to users within the Stilbaai MPA.
- The Management Authority, and/or where possible with the assistance of volunteers, must traverse the Stilbaai MPA as soon after the flooding has occurred to identify any dangerous flotsam or environmental degradation.
- Where dangerous flotsam is identified, this should be removed where possible, or a warning informing Stilbaai MPA users of the type and location of the danger be communicated (via broadcasting, through a message distributed by the Stilbaai Angling Club, posters at key launching sites or newspaper articles, as some examples)
- A budget line for the costs associated to such are built into the communication budget for the Stilbaai MPA.

2.13 Appropriate Boating and Sailing Organisations and Clubs

- Further/updated information might be required in the future to ensure effective management of the Stilbaai 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 headquarters details are available for such interaction below. This section would require updating of contact details as and when changes occur:
    - South African Sailing: P.O. Box 519, Paarden Eiland, 7420. Tel: 021-5110929 Fax: 021-511 0965. E-mail: mail@sailing.org.za
    - South African Deep Sea Angling Association ("SADSAA"): P.O. box 73486, Lynnwood Ridge, 0040. Tel: 082 578 4851 Fax: 012-809 0978. E-mail: buyskes@iafrica.com
    - South African Jetsport Boating Association: Tel: 011-425 3499
    - South African Inflatable Boat Association: Tel: 012-914 7737. E-mail: hanliflack@worldonline.co.za
    - South African Power Boat Association: Tel: 011-425 3499. E-mail: powerboat@mweb.co.za
    - South African Water Ski Federation: P.O. Box 7896, Centurion, 0046. Tel: 011-634 0430. Fax: 011-634 0500
    - Stilbaai Deep Sea Angling Club: 25 Denning Street, Stilbaai, 5785

SECTION C: MANAGEMENT OF INFRASTRUCTURE AND EQUIPMENT

1. Equipment required for the management of the Stilbaai MPA

Item	Unit	Priority	Partnership/funder
50hp outboards	2	10/10	WWF/Honda/MCM/Other
Appropriate trailer	1	10/10	WWF/Honda/MCM/Other
Sonar/GPS Combo	1	10/10	MCM
Salinity probe	1	6/10	MCM/Hes Mun
Motorbike 200cc or Quad bike (better for beach)	1	10/10	MCM/WWF/Other
Diving gear / hard set	1	5/10	MCM
Lap top computer	1	5/10	CapeNature/MCM
Digital camera with underwater casing	1	7/10	CapeNature/MCM
Binoculars	1	5/10	CapeNature/MCM
First aid kit	2	9/10	CapeNature/MCM
Mask & Snorkels	20	4/10	CapeNature/MCM
Compass boat	1	10/10	WWF/Honda/MCM
5hp outboard	1	10/10	WWF/Honda/MCM/Other
Fire Extinguisher	2	10/10	CapeNature/Other
Radio's	3	10/10	CapeNature/Other
Measuring instruments for fish and other	2	10/10	CapeNature/MCM/Other
Fine Books	5	10/10	CapeNature/MCM

2. Machinery safety and marking requirements in terms of SAMSA

- 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.

3. Use of Equipment

a) Capacity Requirements

- All staff associated to the marine component must obtain the correct training and experience to utilise the necessary equipment.
- A skippers licence (under the new regulations) must be obtained by each marine staff member
- Boat crew should undertake regular practices for launching and other activities to ensure reliability
- All staff must undertake training in a first aid course including CPR and must be proficient with the use of the first aid kit

b) 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)
- Fine books should be ordered in advance so that there is always stock available.

c) 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:
    - 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.
    - Remove the air filters; run the engine until it warms up. Check the water is flowing strongly. Remove the fuel line without switching off
    - 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
    - Make sure the carburettors have no fuel left. Undo the drain screws to allow drainage.
    - Replace air filters and fuel line etc. and tighten
    - 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
    - Grease all linkages with marine grease, including the steering linkages
    - Remove the propeller, check and clean and grease the splines.
- After use of the vessel and engine:
    - Rinse the vessel, trailer and engine with freshwater. Take care to not pollute the surrounding environment
    - Let freshwater circulate inside the engine until the engine is well flushed.

4. Maintenance of Infrastructure

- Signage should be checked on each patrol for wear and tear, as well as for graffiti or other damage.
- A budget line must be created to restore, replace or upgrade signage as and when required
- Launching sites: these should be checked on each patrol and/or after heavy storms or heavy use (high season) for damages and maintenance discussed at the Stilbaai MPA Liaison Committee meeting for action by the appropriate authority.

SECTION D: COMPLIANCE

1. Background

The Stilbaai MPA is intertwined with the town of Stilbaai and is situated in close proximity to Melkhoutfontein and Jongensfontein. All these towns together with Riversdale, Albertinia and Heidelberg are within utilisation distance of the MPA. The area is intensively utilised for recreational rock and surf fishing, boat fishing and bait collecting. The area is also a very popular holiday area and experiences increased fishing pressure during long weekends, school holidays and public holidays. Regular patrols (concentrated during holiday seasons) along the Stilbaai coastline have taken place since 2001. Other compliance issues such as pollution and habitat destruction can be viewed in Appendix 4: Table 1, which is a summary of the major compliance and enforcement issues and how the individual issues can be addressed. This table must be read in conjunction with Section D.

2. Objectives

The compliance objective for the Stilbaai 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.

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.
- 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 as he/she is combing the rocks to advise him/her of the regulations pertaining to the MPA before an offence is committed.
- Distribution of materials such as the DEAT brochure “Recreational Fishing Information Brochure December 2008” (and later editions).
- 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 and appearance in court.
- Refer to Appendix 2 Action 5.3.1 (a).

4. Community Involvement

- CapeNature to encourage user groups and all members of the public to report offences of MPA regulations through an incident reporting system.
- CapeNature to encourage honorary ranger involvement. At the moment there are 5 honorary conservators in the area of the MPA and any offences and strandings are reported to the CapeNature Stilbaai Office
- Refer to Appendix 2 Action 5.3.3(a).

5. Voluntary Compliance Through Education

- The Awareness Plan (Section F) 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 Section F

6. Enforcement Operations

a) Patrol Schedules

- Weekly staff meetings must be conducted to determine enforcement/compliance priorities for that week.
- Compliance requires vessel patrols, diver patrols, inspections at the launch site and shore patrols.
- Conduct patrols daily with night patrols taking place as needed.
- Patrols conducted on foot must include along the beaches;
- Vehicle patrols must be conducted on town and management roads to cover larger areas quickly (motorcycle/quad bike and 4x4 bakkie).
- Regular vessel patrols must be conducted. The MCM vessels, “Victoria Mxenge”, “Ruth First” and “Lilian Ngoyi” 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.
- All aspects of the MLRA and Stilbaai MPA regulations are to be enforced during patrols
- A short report should be completed after patrols (also valid for the quarterly reporting) which must include information such as:
    - Number of persons encountered and interacted with, and in what manner
    - Number of persons contravening the law and actions taken
    - Distance, duration and route travelled
    - Any changes or impacts relative to environmental degradation noted and at what location (preferably GPS reading to be taken at site of degradation)
    - Whether any materials/brochures were distributed, if so which ones, how many, and to what type of visitor (i.e. tourist, fisher, etc.)

b) Other Enforcement Operations:

- On occasion, it may be necessary to carry out "high impact operations" to ensure high law enforcement visibility and presence.
- Additional staff from the Breede River Conservancy, local Police and De Hoop MPA should be utilised during such operations.

c) Database of Offenses and Offenders:

- In order to maintain efficient compliance it will be a necessity to develop and maintain a photographic database of the Goukou River and commercial fishing boats so as to try and assist with identification of vessels fishing illegally within 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 CapeNature 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. Prosecutors should also be informed about the MPA.
- Regular training exercises and meetings should be held with all parties.

d) Compliance and Legal Proceedings

- In serious cases, confiscation of equipment and marine organisms takes place and even arrest. In most instances, confiscated organisms should be returned to the intertidal zone after being photographed or registered and counted at the relevant South African Police Services station.
- All admission of guilt fines and court appearance cases must be registered at the Stilbaai Police station.
- Police contact at district level must be maintained through the CapeNature Conservation Services Office at Riviersdale and through the Stilbaai MPA Liaison Committee monthly meetings
- 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, and of the site, offender and 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
- 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.

SECTION E: CAPACITY

1. Staff

- Currently there is only one conservator and one field ranger employed to manage the MPA. **This document should therefore be read with the severe shortage of staff in mind**.
- The MoA with DEAT could provide for another ranger and also the shortage in staff could be partially relieved if a MOU with the Hessequa Municipality is signed for the part time work of the Goukou River Control Officer.
- Ideally, a total of six (6) Field Rangers are required to do foot patrols along the beach, vehicle patrols along the management roads along the coast and to operate a patrol boat at sea.
- This complement will allow for staff to take leave, sick leave and attend courses.

2. Skill Requirements

- An MPA Manager with at least a B-tech Degree in Nature Conservation or Oceanography and additional qualifications in MPA management would be required to manage the MPA and staff.
- 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). 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.
- 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 Stilbaai MPA environment and management issues. There is a two-week certificate course “Introductory Field Ranger Course” through the Nature College near Riversdale, which is accredited through THETA. However, this course is terrestrial oriented but still has significant value for any protected area manager.
- 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 MCM-DEAT.

3. Equipment Requirements

- This is discussed in detail under Section C.

SECTION F: AWARENESS

1. Background

CapeNature and Marine and Coastal Management 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 (see Appendix 2: Actions 5.2.1, 5.2.2 and 5.2.3). This plan also recognizes the need to align the marine conservation awareness programme with the corporate Youth Development Programme of CapeNature where appropriate.

Marine protected area 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 Stilbaai MPA within its surrounding communities and amongst visitors.

2. Objectives

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

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,
- Broadcasting over radio programmes, articles in the newspaper and local magazines, presenting at events when requested
- Interacting positively with the Stilbaai fishing clubs (see Section B.2.13),
- Participating and driving local and national events such as Marine Week activities, beach clean ups, diving events to promote the area, fish watch activities etc.
- Interpret and disseminate Stilbaai MPA research outputs for use by the non-research community.
- Compiling appropriate "Codes of Conduct" for the different user groups as required

4. Programme Activities

Field Rangers will be utilised for formal awareness programmes with local children and adults throughout the year, with the exception of the December-January school holidays. On-going environmental awareness is conducted in conjunction with patrols. The Hessequa Municipality have an established Eco Schools

project with funding for transport available. Before the proclamation of the MPA there was already a working relationship between CapeNature and the Hessequa Municipality in regards to this programme. In 2007, 350 scholars received marine education and this relationship should be carried on after proclamation of the MPA. The DEAT contract also provides funding for this.

In order to enhance MPA management through partnerships at the local, provincial, national and international levels, an MPA interpretative centre should be proposed for funding and construction at an appropriate location determined through the MPA Liaison Committee and through due legal processes.

a) School Programmes: (Examples of appropriate programmes to be considered for implementation.) These can be carried out on the coast or at schools.

- Poster competitions; "touch pools or tanks"; beach clean-ups and competitions; poster designing; informative video footage
- Children 10 years and older: above plus snorkelling in tidal pools (include safety module)
- Adopt-a-beach programme can be implemented

b) Scuba Divers and Snorkelling:

- Marine awareness SCUBA diving certificates can be introduced
- Under-water clean-ups and fishing line removal.
- Informative video presentations
- Pamphlets with a specific focus of what can be seen underwater within the Stilbaai MPA could be used to promote awareness.
- Snorkelling education would consist of environmentally friendly ways of snorkelling using underwater trails and information cards.
- An underwater trail in the Skulpiesbaai visvywers could be constructed with underwater markers and a plastic information card with interpretation of the habitat printed on it.

c) Fishers:

- For both ski boat and rock & surf 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.

d) General Visitors addressing all user groups:

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

e) 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.

f) Stilbaai, Melkhoutfontein and other Community awareness

- Provide information on the Stilbaai MPA for inclusion in awareness at the community level, and provide support to educators to implement these materials.
- Conduct a public information campaign on the Stilbaai MPA rules and regulations whilst simultaneously promoting the understanding of the benefits of the MPA to the local community.
- Meet with other education stakeholders and interested and affected parties to coordinate and plan education programmes and messages.
- Disseminate information and encourage individual and community participation and representation in and through the Geelkrans Nature Reserve and Stilbaai MPA Liaison Committee.
- Provide existing and future educational materials in a manner consistent with community educational backgrounds (Additional "bridging" material).

g) Volunteers

- Develop/enhance the volunteer training programme for the Stilbaai MPA.
- Prioritise working with previously disadvantaged communities to encourage and support volunteer opportunities.
- Develop formal and informal education-based volunteer programmes.
- Introduce community-based volunteer research and monitoring programmes such as Fish in Reserves and ORI's catch-cards.
- Develop recognition and benefits for volunteers (letter of reference, community recognition through media, hats, t-shirts, etc).

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 in partnership with the different user groups (e.g. demarcate areas for certain activities).
- Facilitate communication between user groups to address user issues through meetings or invitations to attend the Stilbaai MPA Liaison Committee

SECTION G: SCIENTIFIC RESEARCH AND MONITORING

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 Stilbaai 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). Monitoring in isolation is somewhat pointless. It needs to be included in negative feedback process. The results of monitoring need to be evaluated against pre-determined criteria or thresholds. Thresholds 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. In general the results of environmental monitoring are fed into national structures (e.g. working groups convened by SANBI or MCM), and the selection of appropriate thresholds and actions are beyond the scope 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 heavily funded in the 1980's and 1990's, and that research undertaken in that field was not sustained in the early 2000's. The situation might be rectifying itself now (2008), and 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. The advances in information technology is partly the reason for this failure, as the media of recording has changed several times in the last three decades and likely continue to change. Fortunately the South African Environmental Observation Network (SAEON) has been established to address exactly this problem, and it is likely that this agency will be the repository or co-repository for much of the data generated by monitoring in the MPA.

In the sections that follow, the various MPA monitoring projects are described under six sub-headings, the purpose of which are described below

Indicator: The variable that has been chosen for monitoring is described and explained. Its usefulness as an indicator needs to be understood by MPA staff, but it also needs to be endorsed by those agencies that intend to use the indicator in revising management strategies. How this indicator is to be used will be described where appropriate.

Method: The method used to measure the indicator is described and referenced. Statistical rigour, and continuity with other similar projects, past projects and internationally accepted procedures are the key considerations, but cost is often the most important determinant.

Frequency: The frequency of monitoring is usually a trade-off between manpower costs and statistical power. Infrequent measurements of ecological and social indicators generally provide data sets in which signals are swamped by noise. This description also includes considerations related to randomness and stratification of sampling, details which could easily limit the power of the data sets.

Responsibility:. Who is the primary lead agent? The primary distinction may relate to whether the monitoring is required for the evaluation of the MPA or for broader objectives, whether the MPA staff are trained or equipped to undertake the work, and whether there may be a conflict of duties (e.g. enforcement and monitoring of fishers). Responsibility also carries implications for funding sources, access to data and ownership of data.

Possible actions: This sections lists the possible actions that could be taken when thresholds are attained are transgressed by indicators. These lists should be refined once agreement can be reached among managers, within co-management structures and representatives of affected parties, as appropriate.

Threshold values: Where appropriate and possible threshold values are listed. In most cases, these values will be determined in advance by consensus. In most cases this still needs to be done.

Data storage: Who will store the data? Where will it be stored? Who will have rights of access to data? In what form will it be stored?

There are a number of existing monitoring programmes taking place, and these are tabled in Appendix 4: Table 2 and should be read in conjunction with this section.

2. Objectives

- To provide information for management decisions and strategies.
- To maintain current understanding of the state of the values of the MPA, and to identify threats at an early stage.
- To facilitate scientific research and understanding of the physical, biological and socio-economic systems of the Stilbaai MPA.

3. Scientific Research

- Researchers wishing to conduct scientific research in the Stilbaai MPA are issued Exemptions under Section 81 of the MLRA which are issued by DEAT: MCM.
- CapeNature also requires a Register of Research Projects.
- All applications to undertake scientific research are assessed according to a set of criteria.
- CapeNature maintains a database on research programs.
- Research applications/permits should also be discussed and addressed within the forum of the Stilbaai MPA Liaison Committee for specific conditions that should be added to the permit through DEAT:MCM
- Researchers credibility should be discussed within the forum and under the guidance of DEAT:MCM

The following must be considered when research applications are assessed:

- The permittee must submit a report after each field visit.
- The permittee must submit annual reports and final reports to CapeNature and MCM at the completion of their scientific research programs.
- The permittee must ensure that all equipment deployed in the MPA is marked with the permit holder's name and their permit number.
- The permittee must ensure that all equipment is removed at the end of the study and prior to the expiry of the Scientific Research Permit.
- The permittee must inform the General Manager of their arrival date one month in advance and if feasible must advise the General Manager on their arrival to conduct activities.
- The permittee must not use rotenone, poisons, or chemicals to catch fish in the MPA.
- The permittee must ensure that where footage/photographs are collected, CapeNature has free access to these footage/photographs.
- The permittee must ensure that any footage/photographs collected may only be used for financial gain with written permission from MCM/CapeNature.

- Research proposals must be presented to the Stilbaai MPA Liaison Committee on completion with reports made available for the Stilbaai MPA database

4. Physical environment

a) Sea Temperature

- **Indicator**. Sea temperature. Temperature of coastal waters is one of the variables most likely to respond to climate change, either through direct heat transfer or from changes in frequency and intensity of upwelling. Temperature in turn sets the physiological limits of many species. Limits are usually set, not by average temperature, but by minima or maxima, which implies that continuous recording (by implication remote, unmanned) will be preferred to manual discrete measurement.
- **Method**. A continuous underwater temperature recorder (UTR) will be installed on the outer wall of the harbour.
- **Frequency**. Recovery and downloading should be planned for every six months. A second UTR may need to be held in reserve for replacement, which will reduce the effort required for changing instruments.
- **Calibration.** The calibration of the instrument will be checked every six months, at the end of a series and start of a new one.
- **Responsibility**. MPA manager will need to coordinate instrument retrieval, change and download. If necessary, divers may need to be contracted from outside the agency to assist.
- **Threshold values.** The indicator will be summarised as an average with maxima and minima. Trends in temperature over the long run will be useful. Data will be analysed by oceanographers.
- **Possible actions.** MPA staff will unlikely be able to address the causes of changes in temperature, but it will certainly be useful when examining changes in biotic communities.
- **Data storage.** SAEON coastal node, Grahamstown and MCM-EUC. Data will be stored in electronic format. Temperature will be indexed hourly. Data will be available upon request to SAEON.

b) Weather

- **Indicators**: Ait temperature, wind speed and direction, rainfall. The basic weather patterns influence local coastal conditions, such as sea temperature and estuary mouth conditions. Measurements need to be continuous, and consistent with elsewhere. Rainfall figures from the catchment need to be collated from the South African Weather Service. Rainfall needs to be reconciled with estuary flow and height. Elsewhere in South Africa, and worldwide, estuary discharges have been shown to be important drivers of coastal community changes.
- **Method**. An automatic, dial-up weather station will be installed in the Geelkrantz reserve. (Exact location still to be determined).
- **Frequency.** Continuous recording. Monthly data downloading.
- **Responsibility.** MPA manager / MCM.
- **Threshold values.** The indicators will be summarised as an average with maxima and minima. Trends in temperature over the long run and the duration of upwelling-inducing winds will be useful statistics. Data will be analysed by oceanographers (MCM). Threshold rainfall values need to be determined to signal drought and flood events.

- **Possible actions.** MPA staff will not be able to address the causes of changes in weather. The information will need to be disseminated to researchers and coastal managers, at Municipal, provincial and national levels.
- **Data storage.** SAEON coastal node, Grahamstown co-stored. Data will be stored in electronic format. Temperature will be indexed hourly. Data will be available upon request to SAEON and MCM.

c) Estuary

- **Indicator.** Salinity. Water salinity is one of the important variables characterising estuarine communities. Changes in salinity may indicate water abstraction, mouth siltation, or changes in river flow. Salinity determines the community penetration up the length of an estuary
- **Method.** Salinity depth profiles will be taken at set points along the estuary. (Note S. Lamberth will indicate where these measurements have been taken in the past)
- **Frequency.** Measurements will be taken once every spring low tide, i.e. 24 measurements per annum.
- **Responsibility.** MPA manager, assisted by MCM and or CSIR.
- **Threshold values.** Not yet determined.
- **Possible actions.** Reduction of water abstraction, clearing of alien vegetation along river banks and in the catchment, changes in dam releases, dredging of mouth**.**
- **Data storage.** MCM and CSIR maintain record of salinity. It would important for the manager to keep records in Stilbaai and also send the records to SAEON.

d) Habitat

- **Indicator.** Estuary bank position and vegetation. Estuaries are dynamic systems, being affected primarily by flow rates. Changes in estuarine banks could threaten development, and may be caused by development. A specific concern is the illegal development of slipways and jetties by private property owners.
- **Method.** Aerial photography, digital mapping
- **Frequency.** Bi-annual
- **Responsibility.** MPA manager
- **Threshold values.** Use existing structure as a baseline. Check for additional structures, bank movements
- **Possible actions.** Use gabions where estuary bank movements threatened to undermine critical structures. Move structures where feasible. In the case of slipways and jetties. Prosecute offenders, rehabilitate damaged area.
- **Data storage.** MPA manager together with SAEON to collate digital (GIS) images.

e) Vywers

- **Indicator.** Structure of vywers. Vywers need to be maintained, against the destructive force of wave action.
- **Method.** Aerial photography, digital mapping.
- **Frequency.** Annual

- **Responsibility.** MPA manager or Archeological Society
- **Threshold values.** Use existing structure as a baseline. Check for additional structures, bank movements
- **Possible actions**. Maintain a select number of vywer walls.
- **Data storage.** MPA manage to collate digital (GIS) images.

5. Biophysical Environment

a) Estuarine fish community

- **Indicator**. Fish community structure and individual species abundance. The estuary play a critical role in harbouring many different function groups of fishes, including estuarine dependent species, which recruit into offshore areas. Many of these species are listed as collapsed, and may be threatened.
- **Method**. Seine-netting of fish of pre-selected stations, in the controlled and restricted areas. Fish are counted and measured
- **Frequency**. Quarterly.
- **Responsibility**. MPA manager or MCM. MCM has led this monitoring up to now, but sampling has been sporadic of late (2008).
- **Threshold values**. These can be determined from examination of past records, to determine natural fluctuations. Heavy declines or complete absence of once-common species should be considered as a threshold, which may trigger management action related to fishing, river management, or pollution control.
- **Possible actions**. Where causes of declines are unknown, additional research may be needed. Actions could include further restriction of fishing (by way of bag limitation, seasonal closure, area closure, permit reduction), control of pollutants or eutrophication, or increase in river flow.
- **Data storage.** MCM and SAEON.

b) Estuarine fish catches

- **Indicator.** Catch per unit effort (CPUE) and size per species. The catch per unit effort is an indication of fish abundance. The size structure in an estuary should indicate relative cohort strengths.
- **Method.** Roving creel census. A boat will be used to inspect all anglers along the estuary (boat and bank). Hours fished and catches (number and size) will be recorded. The survey should be done twice a week.
- **Frequency.** Surveys should be stratified by week-day-week-end.
- **Responsibility.** MPA manager may need to dedicate a research officer, not associated with compliance, on to the task of creel surveys. The job could be outsourced, perhaps using university or technicon students.
- **Threshold**. CPUE data are likely to be highly variable, and the usefulness of a threshold value is questionable. Nevertheless threshold values can be set. Trends in CPUE may be more useful. The detection of a significant decline of any magnitude should trigger action.

- **Possible actions.** Where causes of declines are unknown, additional research may be needed. Actions could include further restriction of fishing (by way of bag limitation, seasonal closure, area closure, permit reduction), control of pollutants or eutrophication, or increase in river flow.
- **Data storage.** National Marine Linefish System (MCM)

c) Inter-tidal communities

- **Indicator**s. Species community structure, keystone species abundance and alien species abundance. Changes in interitidal communities may reflect climate change, exploitation, a catastrophic pollution event or the effects of an alien invader. Multi-variate analysis can be used to determine a the present community structure, which can serve as a standard. Specific target species include giant periwinkle, oyster, red-bait, siffie. Indicators of community change include space-occupies such as barnacles, mussels and limpets. Abundances of these should be monitored
- **Method**. A 0.5 m^2 quadrant should be used to quantify species abundance at alternate 0.5 m spacing along a randomly selected transect on the rocky shore (Morris Point), from the low shore to the high shore. Sessile species (mussels, algae) can be evaluated as percentage cover. Mobile species (e.g. limpets) will need to be counted. All organisms larger than 5 mm will need to be included in counts. The percentage of sand on the shore should be included as % cover.
- **Frequency**. Every full-moon, spring-low tide.
- **Responsibility**. MPA manager
- **Threshold**. Species abundance thresholds can be obtained from prior records, and published findings. Mostly the community data will serve as benchmarks, Benchmarks could be useful in identifying the effects of catastrophic pollution, e.g. Oil-spills.
- **Possible actions.** Identify causes of significant impacts. If harvesting is the cause, investigate further possible restriction, or evaluate effectiveness of compliance.
- **Data storage.** MPA manager should store this information. Copies may be lodged with SAEON.

d) Surf-zone fish catches

- **Indicators.** Catch per unit effort and size structure of selected species. The catch per unit effort is an indication of fish abundance. The size structure is an indication of mortality rate. Targeted species that should be monitored include musselcracker, galjoen, dusky kob, elf, white steenbras, belman, blacktail, bronze bream, spotted gulley shark.
- **Method**. Roving creel census. Observer should walk along the shore and interview anglers. Recorded data will include hours fished and fish caught (number and size by species).
- **Frequency.** Surveys should be stratified by week-day-week-end.
- **Responsibility**. MPA manager may need to dedicate a research officer, not associated with compliance, on to the task of creel surveys. The job could be outsourced, perhaps using university or technicon students.
- **Threshold values.** These values should be set at approximately 10% of values determined by research surveys in restricted zones (this MPA, De Hoop, Tsitsikamma). Values below 10% indicate depressed populations. This survey should identify a possible recovery as a result of the imposition of the restricted area(s). Signals may be observed in CPUE size structure and or effort. Severe declines in size structure may indicate sharp increases in mortality.
- **Possible actions.** Further restrictions on fishing effort (by way of bag limitation, seasonal closure, area closure, permit reduction)

- **Data storage.** National Marine Linefish System.

e) Surf-zone fish community

- **Indicator** Catch per unit effort and size structure of selected species. The catch per unit effort is an indication of fish abundance. The size structure is an indication of mortality rate. Targeted species that should be monitored include musselcracker, galjoen, dusky kob, elf, white steenbras, belman, blacktail, bronze bream, spotted gulley shark.
- **Method**. Fishery-independent survey. Anglers will be used to catch and release fish from the shore, using standardised methods (Attwood 2003). Volunteer anglers can be sourced through the Stilbaai angling club. All fish will be measured and recorded. Fishing will take place under the leadership of a MPA official, and under permit from MCM. Fishing will take place inside and outside the Geelkranz restricted areas.
- **Frequency.** Surveys should be done on one day of each month.
- **Responsibility**. MPA manager. The job could involve university or technicon students.
- **Threshold values.** The restricted area will enjoy the maximum possible protection from harvesting, and the results of a survey here will serve as a benchmark for other areas. Threshold values will need to be determined at a national level (Linefish working group), as problems with resident species in restricted areas can only point to general recruitment failures. Data analyses should be facilitated through the Linefish Working Group.
- **Possible actions.** Further restrictions on fishing effort (by way of bag limitation, seasonal closure, area closure, permit reduction)
- **Data storage.** National Marine Linefish System and SAEON

f) Subtidal reef fish

- **Indicator.** Reef fish density per species. The density of reef fish of a number of species (threatened, keystone and top predator) will provide an indication of the health of the temperate reef in the Geelkranz Restricted area. Geelkranz reefs are the typical low-profile sandstone reefs, which have been well studied off Goukamma and De Hoop. Surveys can also be made of the reefs off Morris Point, although the community here is likely to be different as a result of the bottom structure, and exploitation. Key species will include roman, red stumpnose, dageraad, blue hottentot, santer, black steenbras , rock-cod and red steenbras.
- **Methods**. Baited Underwater Video Census. An underwater camera will be deployed from a vessel on the reef. The camera runs for 20 minutes. Footage is analysed to find the frames with the maximum of each species. These maxima are recorded as a relative count of each species. The camera is deployed several times, randomly over the reef. This technique is relatively novel in South Africa, but will be tested at Stilbaai and Tsitsikamma. It carries the advantage of having no diver influence, causeing zero mortality and requiring less manpower, when compared to angling and underwater visual census (SCUBA).
- **Frequency.** Unknown**.** The programme should begin with a minimum five deployments per season.
- **Responsibility**. MPA manager. SAEON

- **Threshold values**. Unknown, due to the exploratory nature of the method. Threshold values will probably be cast in terms of relative trends.
- **Possible actions.** Further restrictions on fishing effort (by way of bag limitation, seasonal closure, permit reduction). The restricted area already enjoys the maximum degree of protection.
- **Data storage**. SAEON

g) Cetaceans

- **Indicators**. Number of individual sightings, and mother-calf pairs (southern right whale). The expansion of baleen whale populations is monitored by aerial sightings along the coast.
- **Methods**. Aerial counts.
- **Frequency**. Unknown.
- **Responsibility.** South African Museum, University of Pretoria.
- **Threshold values.** Rates of change will be used for management action, which will most likely involve regulation of boating activity and boat-based whale watching. No cetacean is limited to the Stilbaai MPAs.
- **Possible action.** Regulation of boating activity and boat-based whale watching.
- **Data storage.** South African Museum, University of Pretoria.

6. The process of review

The process of review needs to be made clear, with threshold values established in advance, if possible. In this draft document thresholds are not always available, as these need to be discussed and accepted by managers and other parties. Generally, people's acceptance of thresholds is determined more by the intended actions than by the ecological considerations. Who reviews the data and who determined what actions should follow are described here.

It is advised that MPA managers establish working groups, or use existing working groups, to review the results of monitoring projects. The composition of such groups and frequency of meetings need to be established for each monitoring project.

The following Guidebooks offer managers a process and methodology to evaluate the effectiveness of their MPA for the purposes of adaptive management:

a) *Pomeroy, Robert S., Parks, John E. and Watson, Lani M. (2004) How is your MPA doing? A Guidebook of Natural and Social Indicators for Evaluating MPA Management Effectiveness, IUCN, Gland, Switzerland & Cambridge, U.K.*

b) *Wells, Sue and Mangubhai, Sangeeta. (2004) Assessing Management Effectiveness of Marine Protected Areas: A Workbook for the Western Indian Ocean. IUCN Eastern African Regional Programme, Nairobi, Kenya*

- A component of b) above is attached as Appendix 6.

Proposed MCM-DEAT funding model

- 20% education ad awareness – future pro-active
- 20% research and monitoring – future pro-active
- 10% planning and staff development – future pro-active
- 50% operations, including compliance – present responsive

SECTION H: GEELKRANS NATURE RESERVE AND STILBAAI MPA LIAISON COMMITEE

1. Background

Currently the Hessequa Environmental Advisory Committee serves as a Working/ Liaison Committee for Geelkrans Nature Reserve (herein after referred to as a Liaison Committee). With the formation of a new Liaison Committee for the MPA the new committee will also serve as a Liaison Committee for Geelkrans Nature Reserve. There is no statutory requirement to convene a Liaison Committee; however, to ensure community involvement in managing the MPA, it is recommended that a Liaison Committee be established. The Committee will aim to involve all stakeholders associated with the Stilbaai MPA. This forms part of the Strategic Plan as attached as Appendix 2 Actions 5.2.1, 5.2.2, 5.2.3, 5.2.4 and 5.2.5.

CapeNature recognises the importance of co-management of our marine resources. The Committee will be representative of the current stakeholders. Refer to Appendix 2 Actions 5.1.7, 5.2.1 and 5.2.5 to support the process.

2. Composition of the Committee

The Committee 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 CapeNature. Representatives will include:

- CapeNature (MPA manager, management representative);
- Marine and Coastal Management (MCM);
- Recreational diving community;
- Recreational fishers;
- Commercial fishers
- Fishing charter operators;
- Commerce;
- Tourism industry;
- Rate Payers Association of Stilbaai;
- SAMSA;
- SAPS Stilbaai;
- Hessequa Municipality; and
- NGOs.
- Stilbaai Municipality

3. The Structure of the Liaison Committee

Chair's role: The Chair will be a CapeNature staff member. The Chair schedules and sets agendas for the Committee meetings and presides over all meetings of the Committee, and ensures that

meetings are run according to accepted meeting practices, signs all correspondence and documents authorised by the Committee, and generally represents the Committee's interests and concerns to the public.

Vice-Chair: The Vice-Chair will be a CapeNature staff member, which will serve as Chair in the absence of the Chair and assist as necessary in performing executive duties of the Committee.

Secretary: Prepares and convenes meetings, circulates notices and takes minutes. CapeNature will supply the secretariat plus resources.

4. Roles of the Liaison Committee

- Provide input to CapeNature on Stilbaai MPA plans and proposals.
- Help identify and resolve issues and conflicts, including emerging issues.
- Serve as a liaison between the Committee and the community, disseminates information about Stilbaai MPA to the various stakeholders and brings the concerns of stakeholders and the public to the CapeNature staff.
- Assist in identifying potential partners and stakeholders with which the Stilbaai 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 Stilbaai MPA.
- Provide an opportunity for MCM to report on management issues and new policies e.g. Boat-based Whale Watching.

5. Committee meetings

- It is anticipated that the Liaison Committee may meet every sixth month.
- The Chair will develop meeting agendas, with the assistance of the Secretary and make the agenda as well as the minutes of the previous meeting available to Committee members in advance.
- Meeting notes will be taken by a CapeNature staff member, and be available to the public upon request.

6. Financing of the Liaison Committee

The cost of the secretary, the hiring of venues, paper postage, and miscellaneous items required for meetings will be covered by CapeNature, in terms of the MCM-DEAT contract.

SECTION I: FUNDING, AUDITING & CONCLUSION

1. Funding and Responsibility

The management activities described herein are the responsibilities of the DEAT: MCM in collaboration with, and through, the contracted Management Agency, which is in this case, CapeNature. Where activities are addressed that fall under the mandate of the Hessequa Municipality or other authority, it is advised that such activities are facilitated and addressed through the Stilbaai MPA Liaison Committee.

The Management Agency, through the MPA Manager, must ensure that the activities prescribed in the **Management of the MPA Section** (Section B-H) 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 Plan need to be made.

The delegated authority, contracted management agency, and where possible or appropriate other relevant parties, should allocate funding for the activities as necessary.

A budget to fund the implementation of the Stilbaai MPA Management Plan must be compiled and approved before the start of each financial year in collaboration with the delegated authority and the contracted management agency by relevant personnel, which is in this case the MPA Manager and his staff. The MPA manager should report to the delegated authority as per the contractual agreement, through a quarterly report.

In addition, the MPA Manager and CapeNature are supported to raise additional funding, but should keep MCM informed in order to avoid allergies of "double dipping" where the same item is requested/funded from different sources.

2. AUDITING OF MANAGEMENT ACTIVITIES AND EFFECTIVENESS

a) Objectives:

Auditing of the Management Plan should not be confused with monitoring of the MPA in accordance with Section G. 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 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 conflicts resolutions are facilitated
- 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

b) Implementation:

- A programme for annual environmental auditing must be designed/agreed upon with DEAT:MCM and the Liaison Committee led by CapeNature
- The current M & E project within the CAPE Programme should be supported and may produce most of the required outputs.
- 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 Stilbaai 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 – CAPE. Initially, a simple system such as the METT is supported.
- 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 3 years and thereafter every 5 years
- Amendments to improve the document should be made and incorporated where necessary.
- Some guideline/example parameters to consider in the audit include:

  - **Marine and terrestrial 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 resources**
    - i) Size and abundance of key species
    - ii) Fecundity of large predatory fish as an indicator of healthy functioning ecosystem etc.
    - iii) Good catch records relative to launches of fishing vessels

  - **Estuary water quality**
    - i) Change in flow rate
    - ii) changes in chemical composition
    - iii) pollution and pollutants

  - **Goukou Riverbank**
    - i) erosion by wind and water and user-groups
    - ii) rate of success in stabilisation of exposed soils

  - **General**
    - i) Condition of vehicles, equipment and signage
    - ii) User group awareness of the Stilbaai MPA and conduct relative to signage

iii) Number of fines issued and are these reducing over time?
iv) Number of successful convictions and rate versus failed convictions
v) Rate and reduction of conflicts between users

3. CONCLUSION: AMENDMENTS AND UPDATING OF THE STILBAAI MP

The Stilbaai MPA Management Plan must be seen as a dynamic working document and should be revised every 5 years. It is however, important that changes to the Management Plan and reasons therefore, be documented as to reflect the history and development of this plan.

SECTION J: REFERENCES

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