



## C.A.P.E. Estuaries Programme



### Objective 2: Estuary Management Plan for the Breede River Estuary



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**Acronyms**

DEADP	Department of Environmental Affairs and Development Planning
DWAF	Department of Water Affairs and Forestry
CMA	Catchment Management Agency
CPZ	Coastal Protection Zone
EstMP	Estuary Management Plan
EMF	Estuary Management Forum
EZP	Estuary Zonation Plan
GIS	Geographical Information System
ICMB	Integrated Coastal Management Bill
IDP	Integrated Development Plan
LBRC	Lower Breed River Conservancy
LUPO	Land-use Planning Ordinance
MLRA	Marine Living Resources Act
MCM	Marine and Coastal Management
NEMA	National Environmental Management Act
SDF	Structural Development Framework



## **Estuary Management Plan (EstMP) – Breede River Estuary**

Design process of the Estuary Management Plan included the finalization of a Situation Assessment Report (SAP), public consultation process and an evaluation of the SAP.

After finalization of objective 1 (Situation Assessment Report), the following stage (Objective 2) was to produce an Estuary Management Plan (EstMP) for the Breede River Estuary. The Estuary Management Plan (EstMP) culminated from various stakeholder and authority engagements, and the Situation Assessment Report.

The proposed EstMP must be seen as a living document that must be adapted as new information becomes available and or management priorities change.

### **1. Stakeholder workshops**

After Bohlweki SSI Environmental was awarded the contract to draft the Estuary Management Plan (EstMP) for the Breede, the process was started by having a meeting with the relevant authorities. CapeNature, Marine and Coastal Management (MCM), Department of Water Affairs and Forestry (DWAF), South African National Parks (SANParks), Swellendam Municipality, Hessequa Municipality and the Lower Breede Conservancy (LBRC) were invited to the meeting in Swellendam. During this meeting the process to be followed was communicated and authority buy-in was sought.

Subsequent to this authorities meeting two stakeholder workshops were held during the compilation of the Situation Assessment as part of the first objective "Situation Assessment".

A second less formal meeting was held between CapeNature, Hessequa Municipality, Swellendam Municipality and MCM to get agreement on a coordinated approach towards the management of both banks of the Breede River Estuary. Both local authorities agreed to align their bylaws, approach to developments etc, and to ensure that both IDP/SDF processes are informed by the Breede River Estuary Management Plan.

It is proposed that a champion be nominated to take this important aspect to fruition (e.g. appoint a task team or consultants to drive this process to conclude in the next quarter).

## 2. Vision & Strategic Objectives

### 2.1. Vision:

*The Breede River Estuary is the pristine pride of South African Estuaries. It is beautiful, rich in plants and animals; attracts visitors, sustains our livelihoods and uplifts our spirits. Its bountiful rewards are the fruits of our love and dedication to its wellbeing now and for future generations. We are the keepers and protectors of our children's rightful inheritance to this beautiful estuary and joyfully accept this privileged responsibility.*

### 2.2. Mission:

We are the keepers and protectors of our children's rightful inheritance to this beautiful estuary and joyfully accept this privileged responsibility.

**2.3. Motto:** Teamwork makes Estuaries Work.

### 2.4. Core Values:

- Unique Tidal Estuary with diverse ecosystems (Flora, Fauna, Avifauna and Aquatic Life).
- Unique Sense of Place and Beauty.
- Cultural Heritage and History.

### 2.5. Strategic Objective

To restore and maintain the natural resources and biodiversity of our Estuary in harmonious coexistence with suitable and responsibly managed social and economic progress.

**Key objectives in achieving the above:** The following key objectives have been identified as the corner stone to the achievement of our strategic objective and ultimate vision.

- a. Ensure proper management of the estuaries water through meaningful input to the Breede River Catchment Management Agency (CMA).
- b. Ensure protection of aquatic life to optimum sustainable levels in line with improved water resources, whilst also eliminating alien invasive species.
- c. Eliminate existing activities that are damaging to the environment and against policy – Illegal developments and actions (e.g. Houses, landing strip, jetties, slipways, clearing of indigenous riparian vegetation, illegal fishing etc.).

- d. Eradicate, and assist private landowners to eradicate all invasive alien vegetation within the geographically defined estuary boundaries and rehabilitate indigenous flora.
- e. Protect indigenous fauna and flora associated with the estuary waters and its defined surrounds. Encourage private landowners and visitors to take hands with the authorities in this objective. Devise strategies to instill a respect for and create an interest in the local fauna and flora.
- f. Clearly define the geographic boundaries of the Breede River Estuary (Land, Sea and Air).
- g. Establish a competent Estuary Management Forum (EMF) and an estuary management protocol. The EMF should have the required authority and resources to undertake and enforce its allocated responsibilities and which will be held accountable for its performance. Compliance staff should have delegated powers from the various departments and local authorities through an MOU.
- h. Allow social and economic development within the defined estuary space, only to the extent that it co-exists in terms of prioritized estuary imperatives. Encourage environmentally friendly development and stimulate sound building design and techniques (energy efficient and water wise).
- i. Develop and implement local bylaws that will enable the management authority to give effect to the EstMP objectives and manage its allocated responsibility.
- j. Develop an efficient law enforcement/compliance monitoring capability to ensure that both proactive and consequent steps are taken in support of the management authority's duties and objectives.
- k. Develop and implement an ongoing intensive public awareness campaign.
- l. Establish a voluntary participating river forum of public stakeholders that are sincerely committed to the Vision and Mission.
- m. Establish a priority list of problems and an interim process to identify, monitor, deal with and prevent undesirable and unsuitable developments and activities, whilst the Breede River Management Plan and enabling structures are being put in place.

### **3. Management Strategies**

Based on the Vision and Strategic Objectives the following management strategies should be implemented.

Existing institutional management strategies should be incorporated where appropriate. Management strategies may have to be refined through collaboration with stakeholders if required at the time.

- a. Ensure the establishment of the EMF with the required law enforcement capability that will enable both proactive and consequent steps to be taken in support the management authorities duties and objectives.
- b. Negotiate permanent representation from the EMF on the Breede River CMA to communicate the freshwater requirements of the Breede River Estuary.
- c. Identify and propose regulations to authorities to ensure elimination of activities that are damaging to the environment.
- d. Ensure planning, prioritization and eradication of all invasive alien vegetation within the geographically defined estuary boundaries (Coastal Protection Zone - CPZ) including rehabilitation of indigenous flora.
- e. Ensure the creation of regulations and actions to protect indigenous fauna and flora associated with the estuary waters and its defined surrounds.
- f. Define and map the geographic boundaries of the Breede River Estuary (Land, Sea and Air) in terms of the Integrated Coastal Management Bill (See CPZ on Figure 1).
- g. To ensure social and economic development within the defined estuary area or Coastal Protection Zone (CPZ), only to the extent that it co-exists in terms of prioritized estuary imperatives.
- h. Ensure that the relevant bylaws are created that will enable the management authority to give effect to the EstMP objectives and manage its allocated responsibility. Train staff and management committee members in the proper and effective application of the promulgated regulations and bylaws.
- i. Ensure the development and implementation of an ongoing intensive public awareness campaign and environmental education programme.
- j. Ensure that an interim process is created (by the LBRC, CapeNature, DEADP and local authorities) to identify, monitor, deal with undesirable and unsuitable developments and activities, whilst the Breede River Management Plan and enabling structures are being implemented. It is suggested that an experienced consultant be employed to guide the authorities through the first year.
- k. Ensure that all new developments are planned to include energy efficient and water wise methods as well as waste management practices.

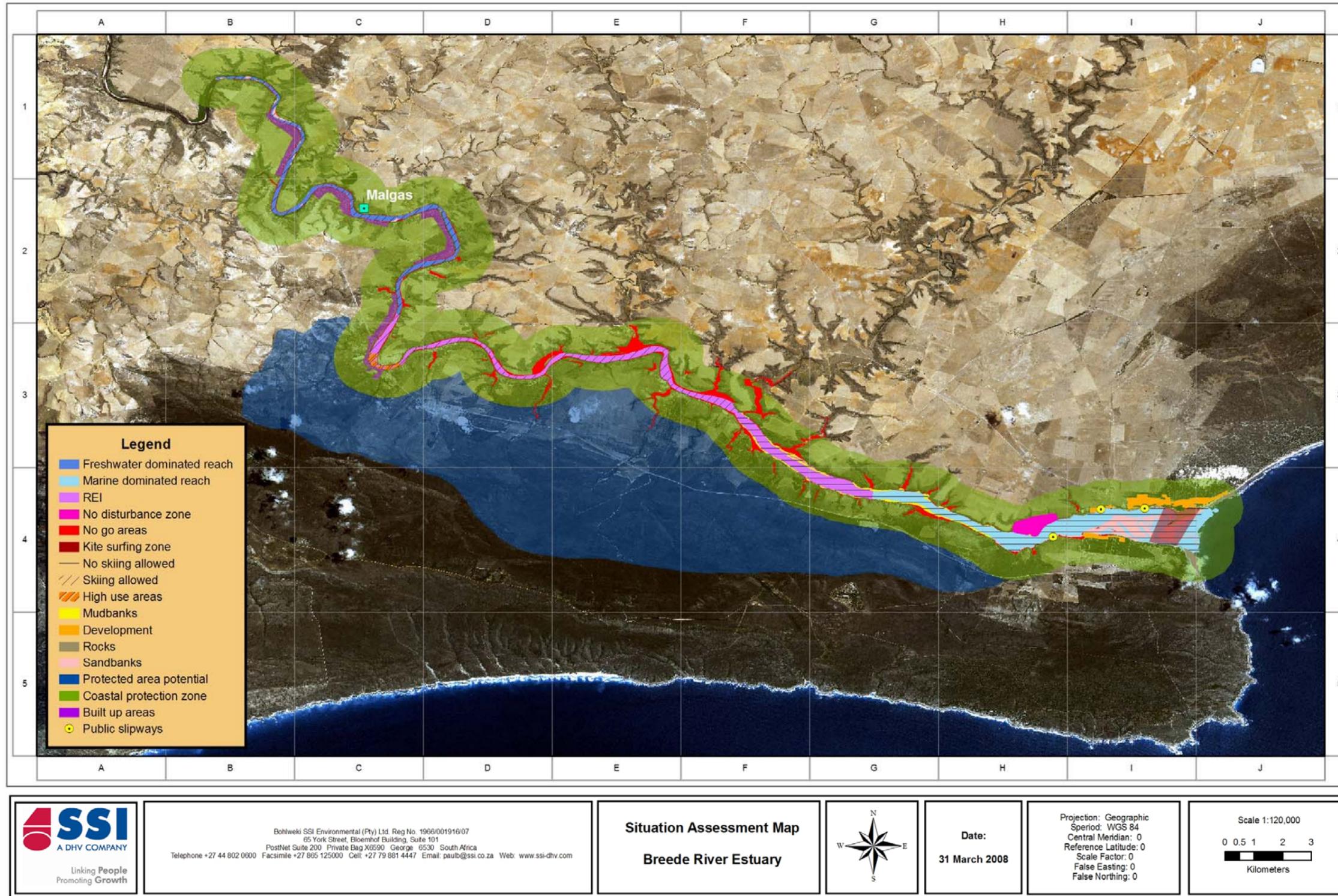


Figure 1. Final Map showing proposed management zones for the Breede River Estuary

## 4. Estuarine Zonation Plan & Operational Objectives

### 4.1. Estuarine Zonation Plan

Estuaries can be zoned for different activities. These activities include recreational, development, subsistence fishing activities and non-consumptive activities (e.g. water ski). An Estuary Zonation Plan (EZP) for the Breede River Estuary was established through a public participation process where the requirements and rights of all individuals were taken into consideration.

Several entry points to the estuary were identified. They are situated at the following localities:

- Malgas point, serving the community of Malgas
- Two on the Witsand side serving the Witsand community
- One on the Infanta side serving the local Infanta community.

Controlled access at the points listed above facilitate the monitoring of fishing activities in the estuary and give an indication of estuary usage.

The following management zones were identified for the EZP and are spatially indicated on Figure 1 (GIS map):

#### a. Coastal Protection Zone (CPZ)

*This is an area extending 1km away and inland of the high water mark of the sea including estuarine waters.*

#### b. No-go areas

*These areas have been highlighted as sensitive habitats that are vulnerable to excessive human movement and activities.*

#### c. No disturbance zones (includes Sensitive eelgrass habitat)

*These areas have also been pointed out as being sensitive and should not be disturbed in any way by recreational or other activities.*

#### d. Development area

*The development area is already developed with some scope for further development in terms of the IDP and SDF process that must be informed by the EstMP.*

**e. No-skiing zone**

*This demarcated area is not suitable for water-ski activities for various reasons. Large areas of the No-Skiing zone are fringed by "No-go" areas that must be adhered to.*

**f. Skiing zone**

*This area was demarcated for water-skiing activities. This does not mean that indiscriminate beaching of boats on the sides is allowed. As can be seen from GIS map 1, there are "No-go" areas associated with this zone that must be adhered to.*

**g. High use area**

*The high use area has historically been used intensely due to the high concentration of people in this area. However, this area is also fringed with No-go areas that must be enforced.*

**h. Kite surfing zone**

*This is the only area suitable for use by kite surfers. This area will be monitored and it may in future be necessary to regulate kite surfing in specific seasons in this area (pending the outcome of proposed research).*

**i. Rocks**

*The rocky areas are limited to only a small section of the Breede Estuary and are deemed as an important habitat type. Access to the rocky area should be restricted.*

**j. Sand banks**

*Sand bank habitat is well represented in the lower Breede Estuary. However, over-utilization of this habitat may be detrimental to the functioning of the estuary. Access should be restricted to permanently demarcated areas while sections should be left to act as re-stocking areas for the sand prawn, pencil bait and other invertebrates.*

**k. Mud banks**

*Mud banks are limited and not readily accessible. Due to the sensitive nature of mud banks access should be restricted to those located on the southern shoreline along the Infanta shoreline.*

**l. REI**

*The Riverine-Estuarine-Interface area is where incoming marine water wedge in under freshwater. The REI moves up and down with the tidal exchange and also moves up and down in the estuary*

*according to seasonal freshwater input variations. This is a sensitive ecotone that needs protection.*

**m. Freshwater dominated reach**

*The freshwater dominated reach extends from the inland side of the REI to the upper freshwater reaches with no tidal influence. Representative sections of this reach must be protected. "No-go" areas located in this river reach are important from a conservation point of view.*

**n. Marine dominated reach**

*The marine dominated reach extends from the REI to the sea. The ebb and flow habitats of this reach will be dominated by salt marsh, sand and mud bank habitat. "No-go" areas located in this river reach are also important from a conservation point of view.*

**4.2. Operational objectives**

The operational objectives are quantitative, measurable standards, target values, limits or thresholds of potential concerns relevant to the different zones and activities for the EZP.

**a. Coastal Protection Zone (CPZ)**

The full extent of the CPZ must be declared a sensitive zone in terms of the Integrated Coastal Management Bill ICMB. This area extending 1 km away and inland from the high water mark of the sea must be treated as a special rules area. All activities within the CPZ must adhere to the set criteria.

**b. No-go areas**

No access to the "No-go" areas should be allowed from any water craft, and no beaching of boats must be allowed. Permission to access these areas may be granted for emergencies and management only.

**c. No disturbance zones (including Sensitive eelgrass habitat)**

These highly sensitive areas should not be disturbed in any way. No activity that can leave any footprint or effect must be allowed. No beaching of boats must be allowed; no access of people must be allowed for any reason; no bait collection must be allowed; no anchoring of boats must be allowed as this will damage the sensitive bottom habitat. The only permissible activity is "no-impact" angling.

**d. Development area**

Developments in this must be allowed within the demarcated areas for development as determined by the SDF. The SDF must recognize the sensitive nature of the CPZ, and be informed by the EstMP. Only developments for which the required municipal infrastructure and services are available should be permitted. No development should be permitted before there is proof of sufficient freshwater and proof of capacity to dispose safely of wet and dry waste. It is also important that special building regulations be passed by both local authorities for any structures to be build outside the development zones and or the SDF.

**e. No-skiing zone**

No skiing must be allowed in this zone and the “No-go” areas fringing this zone must be strictly enforced.

**f. Skiing zone**

Water ski activities are permissible in this area but fringing “No-go” areas must be enforced. All general water safety rules and measures must be strictly adhered to in this area.

**g. High use area**

In this area water recreation activities may be undertaken but only in a safe and environmentally acceptable manner. “No-go” areas should be enforced at all times. All general water safety rules and measures must be strictly adhered to in this area.

**h. Kite surfing zone**

Kite surfing activities are allowed in this area provided that the necessary safety rules are enforced. General water safety rules and measures must be enforced at all times. Special care should be taken by kite surfers to avoid immediate threats to birds in this sensitive birding habitat. (See closed season for kite surfing – pending research outcomes).

**i. Rocks**

Rock habitat must be protected and access should be restricted.

**j. Sand banks**

Sand banks are dynamic habitats that are vulnerable to incorrect harvesting of bait organisms. Bait collection should be controlled and permitted in demarcated areas only. Permits for bait collections must have special rules attached for these areas.

### **k. Mud banks**

Similar to sand banks, mud banks are dynamic habitats that are vulnerable to incorrect harvesting of bait organisms. These mud banks are also not easily accessible and may even pose a hazard to the inexperienced. Bait collection should be controlled and permitted in demarcated areas only. Permits for bait collections must have special rules attached for these areas.

### **l. REI**

The different designated zones above located within the REI must be adhered to. Sensitive habitats located in the REI must be viewed as ecotone areas that are important for ecosystem processes.

### **m. Freshwater dominated reach**

Designated zones (as described above) located in the freshwater dominated reaches are sensitive, hence the need to strictly enforce the activities permitted in each zone in this section of the Breede River Estuary.

### **n. Marine dominated reach**

Habitat types in marine dominated reaches are sensitive and under severe pressure. Bait collection and recreational fishing must be properly controlled and enforced together with all the other designated zones.

### **Suggested general considerations within designated zones**

- Careful consideration must be given to construction site selection and site, as well as building design (including setback distance from the estuary, tides and flood levels, dune integrity, water and wastewater management systems, drainage, etc.).
- Align developments with agreed zonation for the estuary as stipulated in the local EstMP and IDP.
- Apply standards for resort ambience that are acceptable to local stakeholders (i.e. density, building height, landscaping, etc.).
- Manage construction activities and contractors, with penalties for damaging environmental features outside the development zone.
- Plan and carefully locate supporting infrastructure (transportation and road networks, waste collection and disposal, staff housing, etc.).
- Avoid direct discharge from the development, and associated drains, roadways, and parking areas into estuaries.
- Design wastewater system to allow the separation of grey water from sewage; and adequate treatment and disposal of sewage

effluent to prevent ground or surface water contamination. Consider the development of reed bed systems, which are low maintenance, require no energy or chemicals, and which provide additional wetland habitat for local fauna.

- Do not remove dune vegetation, sea grasses, reeds or other flora that protects the integrity of the Breede River Estuary (Taljaard 2007).

## **5. Management Action Plan**

The following management actions were identified to achieve the “operational objectives” set in terms of the EZP. Table 1 lists the proposed management actions for each designated zone.

Table 1. Management Action Plan (MAP)

Zone	Management action required	Applicable legislation	Section of the applicable legislation	Actions	Is this being addressed at present?	If so, by whom?	If not, who is mandated?	What are the resource requirements from the EMA
<b>Coastal Protection Zone (CPZ)</b>	<b>Setback line for development in development zone set at 5 meter contour</b>	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Section 25	Apply for legal status (have gazetted) of the setback line under the Integrated Coastal Management Act	No	No-one at present	Minister	EMF Manager
		Municipal Systems Act (Act 32 of 2000)	Section 26(e)	Ensure that setback lines are integrated into IDPs and SDFs	Yes	No-one at present	Both district and local municipalities	EMF Manager
		National Environmental Management Act	GN 386 activity 1m	Ensure that no development within 32m from the bank or 1:10 year flood line is undertaken without prior environmental authorisation	yes	DEAT&/DEADP		Law enforcement officers
		National Environmental Management Act	GN 386 activities 2,3,4,5,or 6	activities within 100m of the high water mark of the sea or estuary will require prior environmental authorisation	Yes	DEAT&/DEADP		Law enforcement officers
	<b>“No-go” areas for development and vegetation transformation</b>	Municipal Systems Act (Act 32 of 2000)	Section 26(e)	Ensure that development needs and restrictions are integrated into IDPs and SDFs	No	No-one at present	DEADP	EMF Manager
		Conservation of Agricultural Resources Act	Section 26(e)	Ensure that sustainable and legal agricultural activities are protected	No	No-one at present	Dept Agriculture	Law enforcement officers
		National Environmental Management Act	GN 386 and 387	will require prior authorisation before undertaking the activity	Yes	DEADP		Law enforcement officers
		National Forests Act		Ensure that no protected trees or listed vegetation types are removed with the required permits having been obtained from DWAF	yes	DWAF		Law enforcement officers
	<b>Altitude restriction for aircraft operations</b>	Ramsar listing		adequate monitoring and law enforcement	No	No-one at present	CAA	Law enforcement officers
	<b>Control of harvesting of living resources</b>	Marine Living Resources Act	section 51 (law enforcement)	Ensure that any harvesting is controlled via allocated fishing rights or recreational permits	Yes	EMA		Law enforcement officers
		Seashore (NEMA:ICMA) Act	to be repealed by NEMA:ICMA once the act is duly promulgated by the Minister	Ensure that any harvesting is controlled via allocated fishing rights or recreational permits	No	EMA		Law enforcement officers
	<b>Ensure required freshwater input into Breede Estuary</b>	National Water Act		determine the ecological reserve for the river and the estuary	No	DWAF	DWAF	Law enforcement officers

	National Water Act		protection of the wetlands and vleis within the catchment area		DWAF	DWAF	Law enforcement officers
<b>Get authorization for any groundwater use in CPZ</b>	National Water Act			No	DWAF	DWAF/CMA	Law enforcement officers
<b>Waste disposal facilities</b>	National Water Act			Yes	DWAF	Swellendam & Hessequa	Law enforcement officers
	National Environmental Management Act	GN 386	Listed activity requiring basic assessment to be undertaken	yes	DEADP		Law enforcement officers
	Municipal bylaws			Yes	Swellendam & Hessequa		Law enforcement officers
	LUPO		requires appropriate rezoning or consent use	Yes	Swellendam & Hessequa		Law enforcement officers
	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Chapter 8 section 69	Ensure that disposal of water containing waste into the estuarine environment is controlled and a coastal waters discharge permit issued	Yes	DWAF	DEAT/DWAF	Law enforcement officers
<b>Special building regulations</b>	Municipal bylaws		building plan approval process	Yes	Swellendam & Hessequa		Law enforcement officers
	title deed restriction		approval from De Mond (pty) Ltd prior to any buildings for trade or commercial use in the CapeNatue De Mond Reserve	Yes	land owner		Law enforcement officers
<b>Rehabilitation of previously damaged areas</b>	Conservation of Agricultural Resources Act		restoration of degraded agricultural lands	No	No-one at present	Dept Agriculture	Law enforcement officers
	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Section 17 (coastal protected areas) and section 49 (integrated coastal management)	Municipalities are required to regulate, manage, protect, conserve and rehabilitate the coastal environment. Damaged areas should be identified and rehabilitation requirements prioritised and actioned	no	No-one at present	Local Municipalities	Law enforcement officers
<b>Rehabilitation of riparian vegetation</b>	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Section 17 (coastal protected areas) and section 49 (integrated coastal management)	Municipalities are required to regulate, manage, protect, conserve and rehabilitate the coastal environment. Damaged areas should be identified and rehabilitation requirements prioritised and actioned	no	No-one at present	Local Municipalities	EMF Manager
<b>Removal of invasive alien vegetation particularly in riparian zones and within aquatic ecosystems</b>	Conservation of Agricultural Resources Act	categories of listed alien species	declared alien invasive plants need to be systematically removed and follow-up control implemented	No	No-one at present	Dept Agriculture	Law enforcement officers
	National Environmental Management Act						

	<b>Development of new agricultural lands (however small) within the CPZ must in all cases be subjected to a Basic Assessment in terms of the NEMA regulations</b>	CARA & NEMA	listed activity	application subject to the relevant EIA regulations and process in terms of NEMA	yes	DEADP		Law enforcement officers
	<b>Jetties and slipways needs authorization in terms of NEMA</b>	National Environmental Management Act	listed activity	application subject to the relevant EIA regulations and process in terms of NEMA	yes	CapeNature		Law enforcement officers
	<b>General law enforcement in terms of MLRA</b>	Marine Living Resources Act	section 51 (law enforcement)	Ensure that any harvesting is controlled via allocated fishing rights or recreational permits	Yes	EMA		Law enforcement officers
<b>No-go and no disturbance zones</b>	<b>Ensure enforcement of "No-go" areas</b>	Municipal Bylaws and Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	monitoring and enforcement of zoning in terms of the EMP	no	No-one at present	EMF	law enforcement officers
	<b>Rehabilitation of previously damaged areas</b>	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Section 17 (coastal protected areas) and section 49 (integrated coastal management)	Municipalities are required to regulate, manage, protect, conserve and rehabilitate the coastal environment. Damaged areas should be identified and rehabilitation requirements prioritised and actioned	no	No-one at present	Local Municipalities, EMA, land owners	EMF manager
	<b>Rehabilitation of riparian vegetation</b>	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Section 17 (coastal protected areas) and section 49 (integrated coastal management)	Municipalities are required to regulate, manage, protect, conserve and rehabilitate the coastal environment. Damaged areas should be identified and rehabilitation requirements prioritised and actioned	no	No-one at present	Local Municipalities, EMA, land owners	EMF manager
	<b>Removal of invasive alien vegetation</b>	Conservation of Agricultural Resources Act	categories of listed alien species	declared alien invasive plants need to be systematically removed and follow-up control implemented	No	No-one at present	Dept Agriculture	Law enforcement officers
	<b>No anchoring of boats allowed</b>	Municipal Bylaws and Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	Yes	EMA	EMF	Law enforcement officers
	<b>No beaching of boats allowed</b>	Municipal Bylaws and Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	Yes	EMA	EMF	Law enforcement officers
	<b>No fishing in Zostera beds</b>	Marine Living Resources Act	section 51 (law enforcement)	Ensure that any harvesting is controlled via allocated fishing rights or recreational permits	Yes	EMA	EMF	Law enforcement officers

	<b>No building of any structures allowed in these area below 5 meter contour</b>	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Chapter 4 clause 34	monitoring and enforcement of zoning/objectives in terms of the EMP	no	No-one at present	EMF	Law enforcement officers
<b>Development zone</b>	<b>Ensure that all new developments are located within the designated zones according to the SDF</b>	Municipal Systems Act (Act 32 of 2000)		Implementation of SDF requirements including monitoring	yes	Swellendam & Hessequa		Law enforcement officers
	<b>No developments below the 5 meter contour</b>	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	no	No-one at present	EMF	Law enforcement officers
	<b>Building plans needs to be approved by local authority</b>	Municipal Bylaws		Implementation of town planning scheme requirements including monitoring	yes	Swellendam & Hessequa		Law enforcement officers
	<b>SDF must not be in conflict with EstMP and or requirements of the CPZ</b>	Integrated Coastal Management Act (No 24 of 2008) - not yet proclaimed to be in effect	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	no	No-one at present	EMF	Law enforcement officers
	<b>All developments not complying with the SDF must go through a stringent environmental authorization process in terms of NEMA. Additional special planning requirements within the CPZ for developments must be adhered to at all times</b>	National Environmental Management Act	if listed activity	application subject to the relevant EIA regulations and process in terms of NEMA	yes	DEADP		Law enforcement officers
	<b>Proposed new jetties and slipways must complying with NEMA regulations, special planning regulations in the CPZ</b>	National Environmental Management Act	listed activity	application subject to the relevant EIA regulations and process in terms of NEMA	yes	DEADP		Law enforcement officers
	<b>Any developments in rural areas outside the SDF must comply with the special planning and building regulations applicable in the CPZ</b>	Municipal Bylaws & NEMA	possible listed activity	application subject to the relevant EIA regulations and process in terms of NEMA	yes	Swellendam & Hessequa & DEADP		Law enforcement officers
	<b>Any desalination plants must be authorized through the NWA and NEMA</b>	National Environmental Management Act and National Water Act	listed activity	application subject to the relevant EIA regulations and process in terms of NEMA	yes	DEADP		Law enforcement officers
<b>High use area</b>	<b>Ensure that all general water safety rules and measures are enforced</b>	Municipal Bylaws and Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	yes	EMA		Law enforcement officers

<b>Sand banks</b>	<b>Ensure enforcement of the No-disturbance” and “No-go” zones</b>	Municipal Bylaws						
	<b>Monitor and enforce no bait collection policy</b>	Marine Living Resources Act	section 51 (law enforcement)	Enforcement of activities in terms of EMP zoning	yes	EMA		Law enforcement officers
	<b>No building of any structures in these area below the 5 meter contour</b>	Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	no	No-one at present	EMF	Law enforcement officers
	<b>No anchoring of boats allowed</b>	Municipal Bylaws				no	No-one at present	EMF
Municipal Bylaws and Integrated Coastal Management Act (No 24 of 2008)		Chapter 4 clause 34		Enforcement of activities in terms of EMP zoning	no	No-one at present	EMF	Law enforcement officers
<b>Mud banks</b>	<b>Ensure enforcement of the No-disturbance” and “No-go” zones</b>	Municipal Bylaws	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	no	No-one at present	EMF	Law enforcement officers
	<b>Monitor and enforce no bait collection policy</b>	Marine Living Resources Act	section 51 (law enforcement)	Enforcement of activities in terms of EMP zoning	Yes	EMA	EMF	Law enforcement officers
	<b>No building of any structures in these area below the 5 meter contour</b>	Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning				Law enforcement officers
	<b>No anchoring of boats allowed</b>	Municipal Bylaws and Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	no	No-one at present	EMF	Law enforcement officers
	<b>No beaching of boats allowed</b>	Municipal Bylaws and Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	no	No-one at present	EMF	Law enforcement officers
<b>Land-use and planning provisions of surrounding areas</b>	<b>All developments within the CPZ must be subjected to the NEMA regulations unless is falls within the SDF</b>	National Environmental Management Act	listed activities	application subject to the relevant EIA regulations and process in terms of NEMA	yes	DEADP		Law enforcement officers
	<b>All listed activities in terms of NEMA apply within the CPZ and shall be enforced rigorously</b>	National Environmental Management Act	listed activities	monitoring, compliance and enforcement by DEADP	yes	DEADP		Law enforcement officers
	<b>Water use (Groundwater and surface water) within the CPZ must be licensed by DWAF irrespective of whether it is within the general authorizations of DWAF. The only exclusion will be water for household purposes</b>	National Water Act						Law enforcement officers

	<b>All buildings to be erected must have approved building plans from the local authority</b>	Municipal Bylaws						Law enforcement officers
	<b>No developments will be allowed below the 5 meter contour of the CPZ</b>	Municipal Bylaws and Integrated Coastal Management Act (No 24 of 2008)	Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	no	No-one at present	EMF	Law enforcement officers
	<b>No effluents may be discharged into any aquatic ecosystems or the estuary without a permit from DWAF (Including brine from desalination plants)</b>	National Water Act and ICMA	Chapter 8 section 69	Ensure that disposal of water containing waste into the estuarine environment is controlled and a coastal waters discharge permit issued	no	No-one at present	DEAT/DWAF	Law enforcement officers
	<b>Desalination plants, however small, must be subjected to at least a Basic Assessment in terms of the NEMA regulations</b>	NEMA & NWA	listed activity	application subject to the relevant EIA regulations and process in terms of NEMA	yes	DEADP		Law enforcement officers
<b>Bait collection</b>	<b>Bait collection must be controlled through demarcation of areas where it is permissible, and through law enforcement</b>	Marine Resources Act	Living section 51 (law enforcement)	Enforcement of activities in terms of EMP zoning	Yes	EMA		Law enforcement officers
	<b>“Bait for sale” as an alternative to bait collection must be investigated</b>	Marine Resources Act	Living section 51 (law enforcement)					
	<b>No bait organisms from other systems must be used in the Breede River Estuary to ensure that no foreign parasites, viruses etc are introduced in this system</b>	Marine Resources Act	Living section 51 (law enforcement)	Enforcement of activities in terms of EMP zoning	Yes	EMA		Law enforcement officers
<b>Recreational fishing</b>	<b>Recreational fishing must comply with regulations in terms of the MLRA</b>	Marine Resources Act	Living section 51 (law enforcement)	Ensure that any harvesting is controlled via allocated fishing rights or recreational permits	Yes	EMA		Law enforcement officers
	<b>No night time fishing for Kob</b>	Marine Resources Act	Living section 51 (law enforcement)	Enforcement of activities in terms of EMP zoning	Yes	EMA		Law enforcement officers
	<b>Fishing of Kob is allowed only on a “catch and release” basis inside the estuary or according to management restrictions as prescribed by MCM from time to time</b>	Marine Resources Act	Living section 51 (law enforcement)	Enforcement of activities in terms of EMP zoning	Yes	EMA		Law enforcement officers
<b>Commercial fishing</b>	<b>Commercial fishing must comply with regulations in terms of the MLRA and according to quotas where applicable</b>	Marine Resources Act	Living section 51 (law enforcement)	Enforcement of activities in terms of EMP zoning	Yes	EMA		Law enforcement officers

	<b>Kob catches re allowed only on a “catch and release” basis inside the estuary</b>	Marine Resources Act	Living section 51 (law enforcement)	Enforcement of activities in terms of EMP zoning	Yes	EMA		Law enforcement officers
<b>General recreation</b>	<b>No motorised vessels permitted on the Estuary (except riparian land owners and EMA patrol vessels)</b>	Integrated Management Act	Coastal CPZ / SMA	Enforcement of activities in terms of EMP zoning	Yes	EMA	EMF	Law enforcement officers
	<b>Water users must make themselves aware of environmental hazards before entering the water area. The EMA will not be liable to damage claims from any water users</b>	Municipal Bylaws and Integrated Management Act (No 24 of 2008)	Coastal Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	yes	EMA	EMF	Law enforcement officers
	<b>No beaching of canoes outside designated area</b>	Municipal Bylaws and Integrated Management Act (No 24 of 2008)	Coastal Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	yes	EMA	EMF	Law enforcement officers
	<b>Hikers to be restricted to the designated pathways</b>	Municipal Bylaws and Integrated Management Act (No 24 of 2008)	Coastal Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	yes	EMA	EMF	Law enforcement officers
	<b>Safety of swimmers must be considered by both swimmers and other water users</b>	Municipal Bylaws and Integrated Management Act (No 24 of 2008)	Coastal Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	yes	EMA	EMF	Law enforcement officers
	<b>No alcohol policy</b>	Municipal Bylaws and Integrated Management Act (No 24 of 2008)	Coastal Chapter 4 clause 34	Enforcement of activities in terms of EMP zoning	no	EMA	EMF	Law enforcement officers

## 6. Implementation

Due to the number of authorities involved in the management of various aspects of the Breede River and the estuary, it is proposed that a management structure comprising of an Estuary Management Forum (EMF) be established. The EMF should ultimately become the Estuary Management Authority. The functions of the EMF are set out below:

**Table 2. Functions of the EMF**

<b>EMF</b>
<p>Execute various management decisions and legislation</p> <ul style="list-style-type: none"> <li>• Give of effect to recommendations of the Estuary Management Plan (EMP)</li> <li>• Propose and ensure/facilitate the promulgation of rules and regulatory framework</li> <li>• Solicit funding for management projects</li> <li>• Budget for management activities</li> <li>• EMC will ultimately become the EMA, this will entail expanding the current LBRC staff and responsibilities</li> <li>• Development of a Memorandum of Understanding (MOU) between the various authorities in terms of regulatory functions and funding</li> <li>• Facilitate planning and execution of the IDP/SDF process with local authorities</li> <li>• Develop a communication strategy regarding the rules and regulations and relevant environmental information to stakeholders, authorities and public</li> <li>• Develop an Environmental Education Strategy for the Breede River Estuary</li> <li>• Keep record of all meetings and decisions and correspondence</li> <li>• Produce an annual report to go to all stakeholders</li> </ul>

The composition of the EMF must be negotiated with stakeholders at the first stakeholder engagement after completion of the EstMP. Frequency of EMF meetings must be decided after it is established.

A set of rules and protocols governing the actions of the EMF members must be negotiated as soon as the Forum is established. Clear guidelines to this effect may avoid misunderstanding and conflict.

It is proposed that the EMF should meet at least four times per year initially with less frequent meetings when properly established. It is also proposed that the EMF must elect a management sub-committee

consisting of not more than four members to attend to urgent *ad hoc* management matters.

### **6.1. Dedicated estuary management office**

When the EMF is functional a dedicated office with staff should be established. This may easily be achieved in the Breede River Estuary by expanding the current LBRC staff and responsibilities. The staff composition for this proposed management structure should consist of the following minimum staff and expertise:

- Office manager for the EMF office
- Secretary/receptionist
- Law enforcement officers - 4 minimum (Compliance officers)
- Land-use planning and building inspector – 1 minimum
- Extension/information officer (Stewardship) – 1 minimum

### **6.2. Estuarine experts**

Estuarine experts for fish, birds, vegetation, aquatic ecosystems etc. should be employed in an Estuary Management Unit to collectively service all estuaries in the C.A.P.E. domain. This may be contractual positions or permanent depending on funding. It may be necessary to employ a town and regional planner to assist with planning issues around developments in sensitive zones. This team could become permanently involved in priority research programmes as identified by the C.A.P.E. Estuaries Programme.

It is proposed that the estuarine experts should determine and describe the “threshold of acceptable change” for each relevant parameter to be monitored.

### **6.3. Interim management arrangements**

The development and implementation of the Breede River Estuary Management Plan will not happen overnight. In the meantime, undesirable and unsuitable developments and activities will continue and even increase in anticipation of future controls. (The current official structures and enforcement capabilities are severely lacking in ability to deal with both formal applications and illegal developments). The potential degradation that can take place in the interim period may take years to rectify or in many cases may not be reversible at all. It is suggested that an interim process be put in place incorporating the following: ***(Hessequa Municipality has already***

***taken the lead and is in the process of establishing “Co-Operative Eden Compliance Forum”***

- The formation of a committee which, during the implementation period, will monitor any formal applications or unauthorized activities that occur within the Breeder River Estuary.
- This committee shall meet monthly with relevant authorities and stakeholders to review developments and co- ordinate actions.
- An important function of the committee will be to assess current National, Provincial, and Local legislation, in context of its effectiveness to support the identified objectives of the BRMP. It shall where necessary motivate changes at all levels of legislation, but particularly in respect of Local Bylaws.
- The first actions of this committee should be to compile a detailed list of developments, activities and impacts that need priority attention. Action plans need to be developed and urgently implemented, including appropriate interventions.
- The composition of the committee could be made up of the following parties. Municipal Environmental Managers (Swellendam and Hessequa), Chairman Lower Breede River Conservancy, Town Planners (Swellendam and Hessequa), CapeNature
- Participating Authorities/Parties should include: DEA&P, Cape Nature, DWAF, Department of Agriculture, CSIR, Marine and Coastal Management, Rate Payers Association (Swellendam and Hessequa)
- It may be expedient to hire a suitable qualified contract worker/consultant to guide the committee through the initial year (There are a large number of legal and environmental issues at stake that has to be considered).

#### **6.4. Funding mechanism for EMF office**

Funding the full time positions will be a challenge but is going to be of fundamental importance if the EstMP is to be implemented properly.

The ideal is that all the relevant authorities investigate ways of co-funding the implementation of the EstMP through dedicated office with staff. The existing funding should be supplemented initially but funding should be split on a percentage basis into the future. This may release money from certain sectors for specific projects.

A proposed total budget to get a solid team of dedicated staff going with running expenses would be the following:

**Table 3. Budget for implementation of EstMP (Approximate costing only)**

<b>Budget Item</b>	<b>Monthly cost</b>	<b>Subtotal</b>	<b>Total</b>
<b>Salaries (TCost)</b>			
Manager x1	R20000	R20 000	R240 000
Secretary x1	R10000	R10 000	R120 000
Law enforcement x3	R15000	R45 000	R540 000
Building inspector x1	R15000	R15 000	R180 000
Extention/information officer	R15000	R15000	R180 000
			<b>R1 260 000</b>
<b>Capital expenditure</b>			
Boats			
4x4 vehicle			
Communication equipment			
<b>Operational expenditure</b>			
Petrol and Travel		R80000	
Vehicle/boat maintenance		R30000	
Insurance		R22000	
Disbursements		R10000	
Stationary/printing		R25000	
Office rental		R25000	
Telephones		R30000	
Radio licenses		R20000	
Training		R20000	R262000
			<b>R1 522 000</b>

## 7. Monitoring and evaluation

To enable sustainable management of estuaries, it is imperative to collection and analyze appropriate and reliable quantitative data. The requirements for monitoring are estuary specific. The following is the proposed monitoring and evaluation plan. The key elements of the monitoring and evaluation plan are:

- Monitoring objectives
- The selection of monitoring parameters (indicators)
- The required staff and/or qualified personnel
- The required budget
- Refinement of spatial and temporal scales
- Appropriate sampling and analytical techniques
- Evaluation and Reporting
- Integration of results into MAP
- Dissemination of information to Interested and Affected Parties

The following aspects were identified as a minimum in terms of the monitoring plan:

- a. Monitoring of biota as an indication of ecosystem health:
  - Microalgae
  - Zooplankton
  - Macrophytes
  - Macrobentos
  - Ichthyofauna
  - Birds
- b. Monitoring exploitation of living resources
  - Fish
  - Bait
- c. Monitoring water quality in the:
  - Freshwater dominated reach
  - Marine dominated reach
  - REI reach
- d. Bacteriological monitoring at pre-selected sites of potential concern
- e. Monitoring sedimentation in pre-selected problem areas
- f. Monitor groundwater
  - quality
  - water level
- g. Monitor chemical pollution on an *ad hoc* basis
- h. Monitor estuarine usage in different zones – carrying capacity
  - Angling
  - Bait collection
  - Water skiing

- Kite surfing
- Boating
- Swimming

Because evaluation of the EMP will become the responsibility of the EMF, the evaluation process must consist of a number of technical working groups or a single working group consisting of people from the different fields. Fields of expertise required for this purpose must consist of the following:

- Conservation,
- Social (and cultural) issues,
- Land-use and infrastructure development,
- Water quality and quantity (water supply/demand and waste)
- Exploitation of living resources
- Stewardship

Table 4 contains the proposed monitoring plan for the Breede River Estuary.

Table 4. Proposed Breede River Estuary Management Plan

Required monitoring	Monitoring objectives	Monitoring parameters (indicators)	Required staff	Required budget	Spatial and temporal scales	Sampling/analytical techniques	Evaluation and Reporting To:	
							Management EMA	EMF
<b>Biota:</b> <ul style="list-style-type: none"> <li>• Microalgae</li> <li>• Zooplankton</li> <li>• Macrophytes</li> <li>• Macrobentos</li> <li>• Ichthyofauna</li> <li>• Birds</li> <li>• Inter- and sub-tidal vegetation</li> </ul>	To assess population trends of the different organism types associated with the Breede River Estuary to inform management actions	Population dynamics <ul style="list-style-type: none"> <li>• Growing</li> <li>• Shrinking</li> <li>• Population structure – age and sex ratios</li> </ul>	4	Must be determined	Designated sites (existing and new ones to be identified)	Microalgae Zooplankton Macrophytes Macrobentos Ichthyofauna Birds - QWAC (Methodology must be determined by appropriate scientific team – “Threshold of acceptable change”)	Quarterly	Annually
<b>Exploitation of living resources</b> <ul style="list-style-type: none"> <li>• Fish</li> <li>• Bait</li> </ul>	To assess extent of living resources exploitation to inform management actions	Relate exploitation of fish and bait to population dynamics <ul style="list-style-type: none"> <li>• Amount of permits issued</li> <li>• Amount of non-compliance documented</li> </ul>	2	Must be determined	Through out estuary for fish Lower part of estuary for bait (sand- and mud banks)	Permits issued Non-compliance data	Quarterly	Annually
<b>Water quality:</b> <ul style="list-style-type: none"> <li>• Freshwater reach</li> <li>• Marine reach</li> <li>• REI reach</li> </ul>	To assess intactness of water quality in each of the river reaches To assess effectiveness of management actions	Physical and chemical parameters: <ul style="list-style-type: none"> <li>• Nitrate</li> <li>• Ammonium</li> <li>• Phosphate</li> <li>• pH</li> <li>• EC/Salinity</li> <li>• Oxygen concentration</li> <li>• Temperature</li> </ul>	4	Must be determined	Sampling sites in each respective reach	Collect water quality samples according to laboratory specifications and sending it for analysis pH, EC, salinity, Temp and Oxygen measured <i>in situ</i>	Quarterly	Annually
<b>Bacteriological monitoring</b>	To pick up bacteriological pollution as an early warning system of pollution to inform recreational use	Bacteriological concentrations: <ul style="list-style-type: none"> <li>• Total coliform bacteria</li> <li>• Faecal coliform bacteria</li> <li>• Must be less than 100 per 100ml for full contact recreation</li> </ul>	2	Must be determined	Sampling at problem sites where full-contact recreation is exercised	Collect water quality samples according to laboratory specifications and sending it for analysis	Quarterly	Annually
<b>Sedimentation</b>	To assess sedimentation at problem sites and monitor efficiency of management actions	Increasing or stable sedimentation/sandbanks: <ul style="list-style-type: none"> <li>• Fixed photo points</li> <li>• Landsat imagery</li> <li>• Bathymetry</li> </ul>	4	Must be determined	At pre-selected sites	Secchi measurements as at water quality sites – filter and weigh Fixed photo monitoring (annually) Landsat interpretation Bathymetric measurements	Quarterly	Annually
<b>Groundwater:</b>	To assess groundwater	Groundwater quality:	2	Must be	Groundwater	Collect water quality	Quarterly	Annually

<ul style="list-style-type: none"> <li>quality</li> <li>water level</li> </ul>	<p>quality and water levels To inform management interventions and effectiveness</p>	<ul style="list-style-type: none"> <li>EC</li> <li>pH</li> <li>Hydrogeochemistry</li> <li>Aquifer "type" characteristics</li> </ul> <p>Groundwater level data:</p> <ul style="list-style-type: none"> <li>Rising</li> <li>Declining</li> <li>Rainfall relation</li> </ul>		determined	usage within CPZ and within 10 km there off	samples according to laboratory specifications and sending it for analysis pH and EC can be measured <i>in situ</i>		
<b>Chemical pollution</b>	<p>To assess level of chemical pollution at problem sites To intervene with management where appropriate</p>	<p>Chemical compound and concentration:</p> <ul style="list-style-type: none"> <li>Presence or absence</li> <li>Concentration</li> <li>Possible source</li> </ul>	2	Must be determined	At pre-selected sites only ( <i>ad hoc</i> )	Collect water quality samples according to laboratory specifications and sending it for analysis	Quarterly	Annually
<b>Estuarine usage:</b>	<p>To assess level of estuarine use by different user groups To relate estuary use to all of the above To inform management interventions where appropriate</p> <ul style="list-style-type: none"> <li>Angling</li> <li>Bait collection</li> <li>Water skiing</li> <li>Kite surfing</li> <li>Boating</li> <li>Swimming</li> </ul>	<p>Number of boats registered Numbers of permits issued Number of non-compliance documented Number of organized events and participants Number of reported incidents</p>	4	Must be determined	Through-out estuary: Access points (public slipways, boat permits etc.)	Permits issued Non-compliance data for each respective activity <i>Ad hoc</i> counts	Quarterly	Annually

## 8. Research

Research is an integral part of any management approach. With management actions and monitoring, existing and new questions will arise that needs to be addressed through proper research. The following is a preliminary list of the basic research required for effective monitoring of the Breede River Estuary. Research is listed in priority order.

- Determine the impact of fishing activities on fish stocks, particular focus of Kob (Dusky kob)
- Determine the sediment dynamics within the Breede River Estuary, both marine and catchment sediments
- Determine the reason for the perceived erosion in the catchment by assessing land-use through landsat to indicate sediment yields
- Determine the freshwater requirement for the Breede River Estuary
- Determine the quality of the water entering the Breede
- Determine ground water surface water interface with Breede River Estuary. Map aquifer types and potential yields of groundwater discharge or recharge to and from the estuary
- Determine the importance of sub-surface water input for the health of the river
- Determine the impacts of existing farming activities on the water quality and sediment yields in the estuary
- Determine the impact of boats on the river and river banks
- Determine the impacts of aquatic recreation activities on the estuary (carrying capacity must be determined)

Research funding mechanisms must be investigated as part of the implementation phase of the EstMP. It is proposed that a team of experts be identified to form a research unit/consortium to undertake the baseline and other priority research in all estuaries within the C.A.P.E. domain.

Relevant scientific and management information must be made accessible to the general public. Use information brochures, posters and web site to distribute information. Some workshops can be arranged to introduce the community to the use of scientific information in applied management.

## 9. References:

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