



**Western Cape  
Government**

Environmental Affairs and  
Development Planning

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# **Breede River Estuarine Management Plan**

Final January 2018

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## DOCUMENT DESCRIPTION

**Document title and version:**

Breede River Estuarine Management Plan

**Project Name:**

Western Cape Estuary Management Framework and Implementation Strategy

**Client:**

Western Cape Government, Department of Environmental Affairs & Development Planning

**Royal HaskoningDHV reference number:**

MD1819

**Authority reference:**

EADP 1/2015

**Compiled by:**

SSI Environmental (1<sup>st</sup> Edition, revised 2011), Royal HaskoningDHV (2<sup>nd</sup> Edition, 2016/17)

**Acknowledgements:**

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**Date:**

January 2018



## DOCUMENT USE

The National Estuarine Management Protocol (NEMP), promulgated in May 2013 under the National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008), sets out the minimum requirements for individual estuarine management plans.

In 2014, a review was conducted by the National Department of Environmental Affairs: Oceans and Coasts (DEA, 2014) on the existing management plans to ensure, *inter alia*, the alignment of these plans with NEMP.

This revision of the Breede River Estuarine Management Plan (EMP), including the Situation Assessment and the Management Plan itself, is in response to the comments received during the review process, to ensure compliance with the minimum requirements for estuarine management plans as per NEMP. This entailed:

- Adjust terminology as per NEMP (see below);
- Include summary of Situation Assessment;
- Include map of geographical boundaries based on EFZ;
- Confirm whether the zonation map was officially approved or represents "intended" use zonation - zonation undergoing refinement using carrying capacity study;
- Extend monitoring plan to explicitly include a performance monitoring plan to gauge progress towards achieving EMP objectives (i.e. using performance indicators);
- Update information on institutional structures and arrangements to reflect requirements of ICMA and NEMP;
- Restructuring of existing information into a more streamline and coherent document;
- Adding additional information where required to fill recommended information gaps;
- LiDAR data used in conjunction with SANBI data to map the 5 m contour (Estuary Functional Zone);
- Operational objectives were interrogated and incorporated into Management Action Plans;
- Key Result Areas were converted into the Management Actions Plans using specific sectors not per zones. The Sectors used are
  - Institutional and Management Structure;
  - Water quantity and quality;
  - Conservation of Biodiversity;
  - Sustainable Development; and
  - Public education and awareness, and knowledge enhancement.
- An additional table is provided containing all objectives, with appropriate performance indicators; and

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- Institutional Arrangements require refinement based on DEA&DP responsibility, and desired involvement of the proposed Breede River Estuary Advisory Forum.

This review is also in response to comments made during the 2017 DEA&DP formal advertising and adoption process which is detailed as follows:

- As per the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) and the National Estuarine Management Protocol (NEMP), the Breede River draft EMP was published in the *Provincial Notice 288/2016, Provincial Gazette Extraordinary 7653* (dated 20 July 2016) for a commenting period of 30 days. Advertisements of the commenting period were also published in mainstream media and the local newspapers and hard copies of the document were placed at the relevant offices of the Swellendam Municipality, Hessequa Municipality, Overberg and Eden District Municipalities. The closing date for comments was 20 August 2016;
- In response to requests raised during the initial commenting period the DEA&DP agreed to extend the public participation timeframe to an additional 60 days (now totalling 93 days) and to enable additional engagement with stakeholders.
- A public meeting was convened on 26 September 2016 in Witsand where DEA&DP sought to address concerns and answer questions pertinent to the draft EMP.
- DEA&DP convened a Zonation meeting with stakeholders on the 19<sup>th</sup> of October 2016 to solicit input and to discuss conflicting uses relating to the estuary.
- The closing date for the extension period was gazetted as 22 October 2016 and signified the end of the public participation and commenting period.

It does not represent, or replace, the full five-year review process required to re-evaluate the applicability of the plan and to provide new information. This process is therefore still required. Nonetheless, this EMP must be considered a living document that should be regularly updated and amended as deemed necessary.

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## EXECUTIVE SUMMARY

### *Introduction*

Estuaries are recognised as particularly sensitive and dynamic ecosystems, and therefore require above-average care in the planning and control of activities related to their use and management. For this reason, the National Environmental Management: Integrated Coastal Management Act (No. 24 of 2008, via the prescriptions of the National Estuarine Management Protocol (NEMP), require Estuary Management Plans to be prepared for estuaries in order to create informed platforms for efficient and coordinated estuarine management.

The Breede River estuary was one of the first estuaries in the country for which an Estuarine Management Plan was compiled as part of a pilot study under the auspices of the C.A.P.E. Estuaries Management Programme with funding from the World Bank. The process of compiling an Estuarine Management Plan for the Breede River estuary commenced in 2008 when a Situation Assessment Report was commissioned as a platform for the development of the EMP (DEA, 2015). The Draft Situation Assessment and Estuarine Management Plan were updated in 2011, and again as per this current project.

This current revision of the Draft Breede River Estuarine Management Plan (EMP), including the Situation Assessment and the Management Plan itself, is in response to a review conducted by the National Department of Environmental Affairs: Oceans and Coasts in 2014, to ensure compliance with the minimum requirements for estuary management plans as per NEMP.

### *Situation Assessment*

The Breede River is 322 km long from its source near Ceres to where it enters the Indian Ocean in Sebastian Bay, draining a catchment of approximately 12 600 km<sup>2</sup>. The Breede River estuary comprises approximately the lower 52 km of the river, i.e. from the mouth at Witsand to the extent of the tidal influence 10 km upstream of Malgas, and possesses a total surface area of 455 ha. Although the estuary falls within the winter/bimodal rainfall transition zone, most of the catchment falls within the winter rainfall area. Flows are strongly seasonal with peak flows and floods during the winter months, but the estuary nevertheless enters the sea through a permanently open mouth.

The Breede River estuary is located on the border between the Swellendam Local Municipality (LM), Overberg District, the second largest local municipality in the Overberg District Municipality (DM), and Hessequa Local Municipality in the Eden DM. In terms of population distribution, the numbers within the municipal ward areas around the Breede River estuary are mostly low (< 500 individuals), with isolated areas of larger settlement on the northern bank near Witsand and Port Beaufort at the coast

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(up to 500 individuals) and on the southern bank in the mid-estuary (up to 1000 individuals). Overall, service provision is of a relatively high standard. Close to 10 % of the households in the Malgas region are without access to hygienic toilets, while between 12.3 % and 14.3 % of the households in the Swellendam sub-region and Infanta, respectively, do not have access to piped water. Considerably more households are without electricity. The majority of households (76 %) around the estuary obtain an annual income ranging between R 19 601 and R 307 600. Approximately 4 % of the remaining households receive no annual income.

Most of the land abutting the Breede River is privately owned and devoted to agriculture. Approximately 36 % of the Breede catchment within the Swellendam Municipal area is natural vegetation, and 63 % cultivated croplands, urban development, mining and forestry, contribute less than 0.3 % to the catchment area. No comprehensive heritage inventories have yet been compiled for the study area and its direct environs. However, existing built environment surveys of some rural farmsteads exist as well as two known Provincial Heritage Sites (former "National Monuments").

Due to the Breede River estuary's geographic location and size, it possesses a relatively high level of biodiversity within a region of relatively high endemism. The micro-algal community, which comprises of phytoplankton and microphytobenthos, of the estuary is present in a lower biomass than other studied estuaries. This is primarily due to the lower nutrient availability and retention time of the Breede system. A total of 59 species of fish have been recorded in the Breede River estuary with the community dominated by marine estuarine-dependent and estuarine species. Furthermore, 65% of the species recorded by Harrison (2002) were South African endemics with these species accounting for 94 % of the total number of individuals recorded. From the total of 59 species recorded, 23 (30 %) are dependent on estuaries to complete their lifecycle. Consequently, the estuary provides an important nursery and refuge area for the coastal fishes.

Exploitation of living resources in the estuary is governed by the Marine Living Resources Act (1998) and its Amendments and associated regulations (DAFF, 2016). Main objectives of the Marine Living Resources Act (Act No. 18 of 1998, as amended) (MLRA) include sustainable use of resources, promotion of ecosystem and biodiversity protection, use of marine resources for socio-economic development and poverty alleviation as well as transformation of the fishing sector.

The present ecological condition of the Breede River estuary is classified as "good" and is associated with a Present Status Category of "B", i.e. largely natural, with few modifications. The Intermediate Determination of the Resource Directed Measures for the Breede River estuary found that the largest factor that contributed to the change in the state of the Breede River estuary from the Reference Condition to its Present State was the large reduction in river inflow. Given that large volumes of water could not be re-allocated to the estuary; estuarine specialists have decided to keep the Recommended Ecological Category of the Breede River estuary as Category B. Other

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potential threats to the integrity of the Breede River estuary are utilisation of marine living resources (e.g. through recreational fishing and bait collection), recreational activities (e.g. boating, skiing. etc.), water pollution, developments, agricultural activities, and invasive alien plants.

Overall, the Breede River estuary ranks among the top 20 estuaries in the Cape in terms of its subsistence value which was estimated at R120 000 per annum (Turpie & Clark 2007). The Breede River estuary also holds substantial tourism value for the local communities positioned along its banks by means of visitors to the estuary and is estimated to be R 25 million per annum. In addition, the overall property value contributed by the Breede River estuary is estimated at R 884.1 million, the second most valuable estuary in the Cape, which translates to approximately R 26.7 million per annum in terms of the direct value to the real estate sector of the national economy.

### ***Vision and Objectives***

A Vision for the future desired state of the Breede River estuary, and the management objectives designed to attain this Vision, were developed during engagements with the relevant role players and stakeholders from both the government and private sectors. These included:

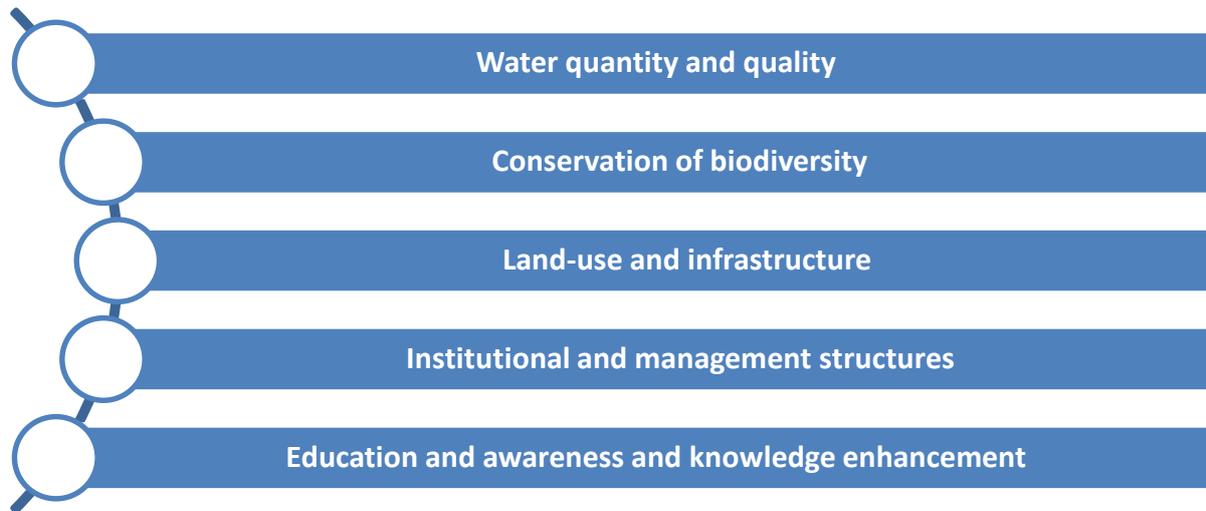
- Various Directorates at the Department of Environmental Affairs and Development Planning (DEA&DP),
- National Department of Environmental Affairs (DEA): Oceans and Coasts,
- Department of Water and Sanitation (DWS), Breede - Gouritz Catchment Management Agency (BGCMA),
- the Department of Agriculture, Forestry and Fisheries (DAFF),
- Eden and Overberg district municipalities,
- Swellendam and Hessequa local municipalities,
- CapeNature,
- South African National Parks (SANParks),
- the Lower Breede River Conservancy Trust (LBRCT),
- the Witsand and Malagas Resident Associations,
- Infanta Ratepayers Association,
- Witsand Tourism,
- South African Police Services,
- the National Sea Rescue Institute; and
- the Breede Angling Club.

The Vision for the Breede River estuary was developed and agreed upon at a meeting of relevant stakeholders held at Witsand in 2008:

**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**

This Vision essentially captures the need to conserve the **functioning** and **biodiversity** of the Breede River estuary, which ultimately supply the ecosystem goods and services referred to in the Vision.

The corresponding key objectives have been identified as the corner stones to the achievement of the Vision are:



### ***Spatial Zonation***

The management objectives have been translated into an estuary zonation plan. The estuary zonation plan (and applicable management objectives) is consequently the blueprint against which all development, and any other activities which impact on the estuary, should be tested for compliance.

The current zonation is a further simplification of the zonation proposed in the first draft of the EMP, which was mainly derived from a habitat perspective, as well as a broad stakeholder meeting held in Witsand on 19 October 2016. Zonation and the interaction between various estuarine uses were discussed at the stakeholder meeting and broad consensus reached on the spatial boundaries for various activities, especially recreational uses.

Consequently, only three broad zones are identified:

- Conservation/protection zones

Conservation zones aim to give protection to ecologically sensitive habitats found throughout the length of the estuary. Ideally these should be afforded formal protected status, but for the purposes of the current estuary management plan it is

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envisaged that restriction will be placed on potentially detrimental activities such as, anchoring, beaching of boats, access by boat, grazing and trampling.

- Development buffer zones

Development buffer zones are prescribed by regulatory schemes that define development set-backs (e.g. from watercourses and wetlands, or as coastal management lines in terms of the ICMA) or forms of 'overlay zonation' that impose development controls via the Land Use Planning Schemes.

- Recreation-based zones.

Various zones specific to different recreational activities are to be defined, based on relevant considerations of environmental and social compatibility, carrying capacities and the potential for conflict between users of the estuary.

### ***Institutional Arrangements***

To oversee the overall implementation of the original EMP, in terms of facilitating co-management and efficient governance, a then Estuary Management Forum was established in February 2009. This body, now known as the Breede River Estuary Advisory Forum (BREAf), should be made up of representatives of national, provincial and local government as well as civil society.

To assist with implementation of aspects of enforcement and compliance management in respect of the use of living resources, the Department of Agriculture, Forestry and Fisheries (DAFF) appointed the Lower Breede River Conservation Trust (LBRCT) as the implementing agent (since 1986). The Breede River estuary was therefore managed collaboratively between CapeNature, Swellendam and Hessequa local municipalities, the former Department of Environmental Affairs Tourism: Marine and Coastal Management (MCM) now Oceans and Coasts, and Department of Water and Sanitation (DWS), and the LBRCT. CapeNature does regular monitoring on the Breede regarding jetties and slipways, bird counts etc. Swellendam Local Municipality and Hessequa Local Municipality collectively are involved through the BREAf and LBRCT. The LBRCT has dedicated staff appointed to do law enforcement under the Marine Living Resources Act and by-laws passed by Swellendam Local Municipality.

Different organs of state manages / jurisdiction over different mandates and legislation. The EMP attempts to bring the different organs of state together to facilitate coordination and integration of the respective mandates. Effective coordination between responsible entities and government agents is crucial for the successful collaborative management of estuaries and implementation of this EMP. It requires clear identification of mandates and responsibilities, and a sharing of resources in a notoriously resource-scarce domain of environmental management.

The National Estuarine Management Protocol identifies the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) as the Responsible Management Authority responsible for the development of the Breede

River EMP as well as being responsible for the co-ordination of its implementation. The continued role of the LBRCT will consequently need to be re-evaluated and clearly defined taking into account their past successes and potential future contributions.

### **Management Priorities**

Five project plans have been compiled for the efficient and effective management of the Breede River estuary. Each plan corresponds to a key objective and contains applicable management actions, supporting regulations, level of priority, responsible institution(s), and required resources if such information is available. These are arranged in general order of priority, but nevertheless recognize that the neglect of any leg will compromise overall success:

- Co-management and effective governance;
- Sustaining water quality & quantity;
- Conservation of biodiversity;
- Sustainable development; and
- Public education awareness.

It should be noted that there is some interconnectedness between the plans and some management actions, as they all ultimately contribute to the conservation of ecosystem function and patterns of biodiversity, which in turn leads to the conservation of a sustained supply of ecosystem goods and services delivered by the estuary.

The table below provides a summary of the management outputs and performance indicators per management objectives per priority area.

MANAGEMENT OUTPUTS	PERFORMANCE INDICATOR
<b>1. Institutional and Management Structures</b>	
1.1 Maintain a fully functional estuary advisory forum (the BREAF) that will facilitate co-management and effective governance	Constituted BREAF On-going record of meetings held
1.2 Secure appropriate funding and legal support for implementation of the Breede River EMP	Guaranteed annual allocation of funds Specific by-laws developed
<b>2. Water Quantity &amp; Quality</b>	
2.1 Ensure that the Reserves for Water Quantity and Water Quality are maintained through on-going interaction between the BREAF and BGCMA	Sustained estuarine health and function Sustained river flow Good water quality
2.2 Reduce bank de-stabilization and erosion, and habitat degradation	Number of degraded areas rehabilitated and secured
2.3 Minimise water pollution	Number and volume of sources of pollution reduced
2.4 Control the spread and densification of both aquatic & terrestrial invasive alien plant species	Increased number of tons removed/ hectares cleared

<b>3. Conservation of Biodiversity</b>	
3.1 Ensure the conservation of an optimal representation of vital estuarine habitats and associated species	Conservation areas secured through by-laws and the Implementation of the Protected Area Expansion Strategy.
3.2 Ensure sustainable resource use through effective compliance management under the Marine Living Resources Act	Reduction in infringement incidences
3.3 Regulate recreational use in and around the estuary, including water-based and aviation activities, through effective compliance management	Reduction in infringement incidences
<b>4. Land-use and Infrastructure</b>	
4.1 Implement an estuary zonation plan that directs infrastructural development and other land use practices (e.g. agriculture) within the various development setback lines/buffer zones	Reduction/cessation of inappropriate development in and around the estuary
4.2 All jetties and slipways authorised and licensed	Reduction in illegal development and operations of jetties & slipways
4.3 Ensure that all proposed developments within the development buffer zones adhere to the EIA process	Each development lawfully constructed
4.4. Ensure the incorporation of the EMP into the Integrated Development Plans and Spatial Development Frameworks	EMP is adopted into IDPs and SDF
<b>5. Public Education and Awareness and Knowledge Enhancement</b>	
5.1 Promote high levels of public awareness and appreciation of the ecosystem services provided by the Breede River estuary, threats posed to its integrity, and compliance management	Increase in number of newsletters; Sufficient number of public notice boards; Increase in number of conservancy members and voluntary monitors; Increase public participation in coastal/estuary/river clean ups and other initiatives e.g.. Breede Watch Increase in number of visiting school groups
5.2 Enhance our scientific knowledge, through research and monitoring	Increase in number of research projects and monitoring programmes

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## ABBREVIATIONS & ACRONYMS

amsl	Above mean sea level
BGCMA	Breede-Gouritz Catchment Management Agency
BREAF	Breede River Estuary Advisory Forum
BRSA	Breede River Stakeholder Association
C.A.P.E.	Cape Action for People and the Environment
CAA	Civil Aviation Act (Act No. 13 of 2009)
CARA	Conservation of Agricultural Resources Act (Act No. 43 of 1983)
CFR	Cape Floristic Region
CMP	Coastal Management Programme
CPZ	Coastal Protection Zone
CSIR	Council for Scientific and Industrial Research
DAFF	National Department of Agriculture, Forestry and Fisheries
DEA	National Department of Environmental Affairs
DEA&DP	Western Cape Government's Department of Environmental Affairs & Development Planning
DM	District Municipality
DWS	National Department of Water and Sanitation
EAF	Estuary Advisory Forum
EFZ	Estuarine Functional Zone
EIA	Environmental Impact Assessment
EMP	Estuarine Management Plan(s)
ERC	Ecological Reserve Category
EZP	Estuary Zonation Plan
ha	hectares
HWM	High-water mark
I&AP	Interested and Affected Party
ICMA	National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008) as amended)
IDP	Integrated Development Plan
IGRFA	Intergovernmental Relations Framework Act (no. 13 of 2005)
IUCN	International Union for Conservation of Nature
LBRCT	Lower Breede River Conservancy Trust
LM	Local Municipality
LUPA	Provincial Western Cape Land Use Planning Act (Act 3 of 2014)
MCM	Marine and Coastal Management
MEC	Member of the Executive Council
MLRA	Marine Living Resources Act (Act No. 18 of 1998) as amended
MSA	Municipal Systems Act (Act No. 32 of 2000)
NEM:BA	National Environmental Management: Biodiversity Act (Act No. 10 of 2004)
NEM: WA	National Environmental Management: Waste Act (Act No. 59 of 2008)
NEMA	National Environmental Management Act (Act No. 107 of 1998)
NEMP	National Estuarine Management Protocol
NWA	National Water Act (Act No. 36 of 1998) as amended
PAES	Protected Area Expansion Strategy
RDM	Resource Directed Measures
REC	Recommended Ecological Category
REI	River-Estuary Interface
RMA	Responsible Management Authority
SANParks	South African National Parks
SDF	Spatial Development Framework

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SPLUMA National Spatial Planning and Land Use Management Act (Act 16 of 2013)  
TPC Threshold of Potential Concern

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## SUMMARY OF LEGAL FRAMEWORK

Chapter 4 of the National Environmental Management: Integrated Coastal Management Act (No. 24 of 2008, as amended by Act 36 of 2014) (ICMA), aims to facilitate the efficient and coordinated management of all estuaries, in accordance with:

- a) NEMP (Section 33) approved by the Ministers responsible for the environment and water affairs; and
- b) Estuarine Management Plans (EMPs) for individual estuaries (Section 34).

NEMP, promulgated in 2013, provides a national policy for estuarine management and guides the development of individual EMPs. It must be ensured that the EMPs are aligned with NEMP and the National Coastal Management Programme (CMP) (DEA, 2014). NEMP lays out the following:

- a) The strategic vision and objectives for achieving effective integrated management of estuaries in South Africa;
- b) The standards for the management of estuaries;
- c) The procedures regarding how estuaries must be managed and how the management responsibilities are to be exercised by different organs of state and other parties;
- d) The minimum requirements for EMPs;
- e) Who must prepare EMPs and the process to be followed in doing so<sup>1</sup>; and
- f) The process for reviewing EMPs to ensure that they comply with the requirements of the ICMA.

The responsible body contemplated in Section 33(3)(e) who develops an EMP must:

- a) follow a public participation process in accordance with Part 5 of Chapter 6 of the ICMA;
- b) ensure that the EMP and the process by which it is developed are consistent with:
  - (i) NEMP; and
  - (ii) the National CMP and with the applicable provincial CMP and CMP referred to in Parts 1, 2 and 3 of Chapter 6 of the ICMA;
- c) If applicable, ensure that relevant legislation is enacted to implement the EMP; and
- d) Submit an annual report to the Minister on the implementation of the EMP, the legislation and any other matter.

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<sup>1</sup> The National Estuarine Management Protocol identifies the Western Cape Department of Environmental Affairs and Development Planning as the Responsible Management Authority for developing and co-ordinating implementation of the Breede Estuarine Management Plan

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One of the pillars of successful integrated coastal (including estuarine) management is the establishment of effective institutional arrangements to underpin both cooperative government and cooperative governance. Cooperative governance is a system that allows government and civil society to communicate and contribute to shared responsibility in respect of coastal management objectives and must be well-organized and widely representative of all coastal stakeholders. The ICMA details the institutional arrangements that will contribute to cooperative coastal management in South Africa. These arrangements are made at national, provincial and municipal government levels, and the embodiment of cooperative coastal governance is vested in what will be known as coastal committees. The ICMA provides for the permissive, i.e. if so required, establishment of municipal coastal committees, but at a national and provincial level however, the Minister and MECs of coastal provinces are directed to establish national and provincial coastal committees, respectively. Provincial coastal committees must be established within one year of the commencement of the ICMA.

The National Coastal Committee (the MINTEC Working Group 8) is established by the Minister in terms of, and its powers are determined by, the ICMA. It is supported administratively by the National Department of Environmental Affairs. The Premier of each coastal province must identify a lead agency (organ of state) that is responsible for the coordination, monitoring and implementation of the provincial coastal management programme, monitoring the state of the environment in the coastal zone, and identifying relevant trends and priority issues. The lead agency for coastal management is directly responsible to the MEC. Each metropolitan, district or local municipality which has jurisdiction over the coastal zone may establish a municipal coastal committee. The establishment of Municipal Coastal Committees is discretionary.

The lowest tier of institutional arrangements for estuarine management comprises the Responsible Management Authority (RMA) and the Estuary Advisory Forums. The role of the Estuary Advisory Forum is to act as the hub which links all stakeholders, including both organs of state and civil society, so as to facilitate cooperative management and effective governance in terms of the EMPs, as well as facilitate and monitor implementation of an EMP. The role of RMA is for developing and co-ordinating implementation of EMPs.

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# 1 INTRODUCTION

The process of compiling an Estuarine Management Plan (EMP) for the Breede River estuary commenced in 2008 when a Situation Assessment Report was commissioned as a platform for the development of the EMP (DEA, 2015). The Draft Situation Assessment and EMP were updated in 2011, and again as per this current project.

A Vision for the future desired state of the Breede River estuary, and the management objectives designed to attain this Vision, were developed during engagements with the relevant role players and stakeholders from both the government and private sectors. These included various Directorates at the Department of Environmental Affairs and Development Planning (DEA&DP), National Department of Environmental Affairs (DEA): Oceans and Coasts, Department of Water and Sanitation (DWS), Breede - Gouritz Catchment Management Agency (BGCMA), the Department of Agriculture, Forestry and Fisheries (DAFF), Eden and Overberg district municipalities, Swellendam and Hessequa local municipalities, CapeNature, South African National Parks (SANParks), the former implementing agent, the Lower Breede River Conservancy Trust (LBRCT), the Witsand and Malagas Resident Associations, Infanta Residents and Ratepayers Association, Witsand Tourism, South African Police Services, the National Sea Rescue Institute and the Breede Angling Club.

To oversee the overall implementation of the original EMP, in terms of facilitating co-management and efficient governance, an Estuary Management Forum was established in February 2009. This body, now known as the Breede River Estuary Advisory Forum (BREAF), should be made up of representatives of national, provincial and local government as well as civil society.

The National Estuarine Management Protocol (NEMP) identifies the Western Cape Department of Environmental Affairs and Development Planning (DEA&DP) as the Responsible Management Authority (RMA) responsible for the development of the Breede River EMP as well as being responsible for the co-ordination of its implementation. The continued role the LBRCT as the former implementing agent, will need to be confirmed. Because of changes in the national regulatory regime for estuaries the role of the LBRCT, who have successfully managed aspects of compliance management on the estuary since 1986, will need to be re-evaluated and clearly defined taking into account their past successes and potential future contributions.

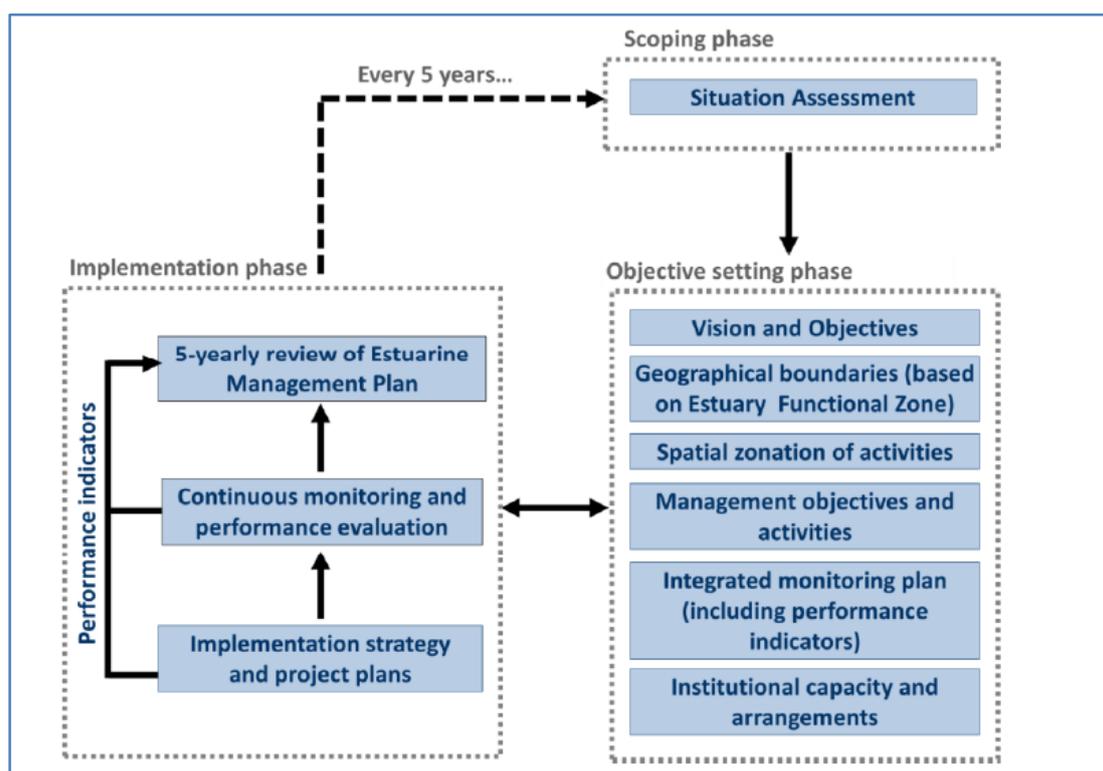
This EMP is a strategic planning document, and as such does not provide detailed, routine planning for the management of the estuary. This detail should be captured by the RMA or its assigned representative, in its annual budget, Plan of Operations, Integrated Development Plan (IDP), Annual Performance Plan (APP) etc. (as applicable) with the management plan forming the platform for more fine-scale planning. The EMP should also be recognized as a dynamic document, whereby certain components could be revised as important new information becomes

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available and management priorities change. Adaptive management should be continually pursued through a process of annually reviewing the progress made in achieving the management objectives. Finally, the management plan should be subject to a comprehensive revision on a five-year cycle, as required by NEMP.

## 2 FRAMEWORK FOR DEVELOPMENT OF THE MANAGEMENT PLAN

The Breede River EMP was initially developed using the generic framework for Estuarine Management Plans (Van Niekerk & Taljaard, 2007). The current update places it in line with NEMP. Figure 1 below is a graphical representation of this framework. Essentially it highlights that successful management of the estuary requires, in the first instance, the setting of a “Vision” of the future desired state of the estuary, followed by the development of overarching objectives, and subsequently management objectives to achieve this state. At the finer scale, an estuary zonation plan and management action plans are then developed as a blueprint for the implementation of the greater objectives, and therefore the EMP as a whole. The implementation of the EMP, should be continually monitored in terms of successes, shortcomings, and the availability of new data (gleaned from both monitoring and research studies), and re-calibrated accordingly. In such a way, management becomes adaptive, and the attainment of the Vision more realistic.



**Figure 1: The framework for the development of the estuarine management plans (DEA, 2015)**

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## 3 SUMMARY OF SITUATION ASSESSMENT

### 3.1 Introduction

The Breede River estuary was selected, as one of six estuaries in the Western and Eastern Cape, for the development of an estuary management plan, as part of a pilot study under the auspices of the C.A.P.E Estuaries Management Programme with funding from the World Bank. This was in line with Section 34 of the Integrated Coastal Management Act (Act 24 of 2008, as amended), which states that Estuarine Management Plans (EMPs) must be developed for all estuaries in South Africa. The Breede River EMP underwent its first revision in 2010.

With the promulgation of the National Estuarine Management Protocol, all previously developed plans must be aligned with the minimum requirements prescribed therein. This update of the Breede River estuary is in response to this directive.

### 3.2 Catchment Characteristics

The permanently open Breede River estuary is located on the border between the Overberg and Eden District municipalities. Most of the Breede River falls entirely within the Swellendam Local Municipality (LM), the second largest local municipality in the Overberg District Municipality (DM).

The Breede River is 322 km long from its source near Ceres to where it enters the Indian Ocean in Sebastian Bay, draining a catchment of approximately 12 600 km<sup>2</sup>. Pertaining to its size, the Breede River estuary is approximately 52 km long, i.e. from the mouth at Witsand to the extent of the tidal influence 10 km upstream of Malgas, and possesses a total surface area of 455 ha. Although the estuary falls within the winter/bimodal rainfall transition zone, most of the catchment falls within the winter rainfall area. Flows are strongly seasonal with peak flows and floods during the winter months. The estuary enters the sea through a permanently open mouth located at the southern end of an extensive sand spit and it is considered highly unlikely that the mouth will close under present day conditions. The channel of the estuary is incised in the coastal plain and depths of 3 to 6 m and deeper points are common over the first 28 km.

Three large and numerous smaller dams within the catchment impedes the mean annual runoff (MAR) reaching the estuary to the present day 1 034 x 10<sup>6</sup> m<sup>3</sup>, which is approximately 42 % of the MAR under natural conditions. The estuary is highly responsive to freshwater inflows and high flows of 20-95 m<sup>3</sup>.s<sup>-1</sup> are able to completely flush and reset the system during a tidal cycle. In turn, the estuary ranges from well mixed during spring highs to stratified during spring lows and neaps and the REI zone may shift 8-10 km between tides.

The Breede River catchment spans three main ecoregions, characterised by different topography, rainfall patterns, vegetation types, and geology. Historically, land use

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patterns within the Breede River Basin were significantly influenced by the availability of water for irrigation. Historically mixed farming types have been practiced. Overall 35.6 % of the lower Breede catchment within the Swellendam Municipal area is natural vegetation, 62.6% cultivated croplands, 0.08% urban development, 0.02% mining, 0.18% plantations or afforestation

### **3.3 Abiotic Characteristics of the Estuary**

The Breede River estuary falls within the warm-temperate Agulhas marine biogeographical region and functions as a permanently open estuary (Whitfield, 2000). The estuarine environment covers a surface area of 455 ha, extending almost 50 km upstream to 10 km past Malgas where tidal influence ceases. Harrison et al. (2000) classified the Breede as a large, normally open, barred estuarine system with two major geomorphological features of the mouth being the sand barrier and the flood tidal delta. Five possible abiotic states have been defined for the Breede River estuary. From the comprehensive sediment survey previously undertaken the system was divided into three zones, namely the estuarine sand zone, the estuarine mud zone and the fluvial sand zone.

The state of the physico-chemical environment is temporally variable and is linked to freshwater flows and tidal exchange. The Breede displays five different abiotic states based on these factors, ranging from strongly freshwater-dominated usually in winter (flows  $> 20 \text{ m}^3 \cdot \text{s}^{-1}$ ) to strongly marine-dominated only in summer ( $< 0.5 \text{ m}^3 \cdot \text{s}^{-1}$ ); the latter reflecting severe freshwater shortage under extreme drought conditions. Salinity is typically low during winter flows, with marine conditions occurring 3 km upstream during summer. Turbidity of the estuary is generally higher during winter with peak flows with relatively clear conditions prevailing during the summer months, particularly during high tide when saltwater intrusion is at its maximum. The concentration of suspended solids throughout the estuary is typically low ( $< 10 \text{ mg/L}$ ). The Breede River estuary is well-oxygenated attributed to strong outflow, strong residence times and weak stratification of the water column, which prevents the development of oxygen poor conditions even at depth. Nutrients are also strongly correlated with seasonal flows as run-off from precipitation transporting nutrients from upstream agricultural activities.

Compared to other estuaries in the Western Cape, the Breede River estuary is one of the estuaries that is not highly polluted, and while there are currently no measured inputs of toxic substances, pesticides and herbicides associated with agriculture may become problematic in future.

### **3.4 Biotic Characteristics of the Estuary**

Due to the Breede River estuary's geographic location and size, it possesses a relatively high level of biodiversity within a region of relatively high endemism. The micro-algal community is present in a lower biomass than other studied estuaries primarily due to the lower nutrient availability and retention time of the system. Twenty-

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three dominant macrophytes occur within the estuary with *Zostera capensis* and *Potamogeton pectinatus* as the principle species forming the basis of the macrophyte community. A critical macrophyte community within the estuary is the saltmarsh present at Green Point, which is in a relatively pristine condition and possesses the highest diversity of plant species.

In contrast to the zooplankton and hyperbenthic communities, the macrobenthos communities are distributed based on substrate type. The highest diversity of macrobenthos occurs within the *Zostera* beds and saltmarshes whereas sand flats possess the lowest diversity. These habitats are critical for the maintenance of bait organism populations. A total of 59 species of fish have been recorded in the Breede River estuary with the community dominated by marine estuarine-dependent and estuarine species. The estuary provides an important nursery and refuge area for coastal fishes. The distribution of the fish species for the Breede River estuary is dependent on habitat type and salinity gradients. A total of 48 waterbirds were recorded during summer and winter of 2000, with 1900 and 560 individuals counted during these periods, respectively. Invertebrate feeders (waders) are the most important group, comprising 55 % and 47 % of the bird community in summer and winter, respectively.

Recent data indicates that catch-composition has changed since the earlier estimates especially the relative contributions of spotted grunter and dusky kob. A “switch” has been recorded caused by the collapse of the dusky kob population to critical levels below 1% of pristine values as well as range expansion, stock separation and the establishment of a southern Cape (Breede & adjacent estuaries) breeding population of spotted grunter which is currently above equilibrium level/s. Recent estimates show that catches may exceed 80 tons in some years but are highly variable fluctuating by more than 50%.

### 3.5 Ecological State and Importance

Considering the size of the Breede River estuary, the diversity of habitats and their respective biota, the system has been classified as a ‘Highly Important’ estuary and is ranked as the 19th most important estuary within South Africa. Using several characteristics used to describe the vegetation communities, the Botanical Importance Score for the Breede River estuary was calculated as 350. This is the fifth highest score among all South Africa estuaries and exemplifies the importance of the Breede River estuary in terms supporting estuarine vegetation communities, particularly intertidal saltmarsh. In terms of fish, the system ranks among the top 20 most important estuaries in South Africa in terms of overall conservation importance. In addition, numerous tagged individual fish have been recaptured in adjacent coastal waters indicating the intrinsic connectivity between the Breede and neighbouring estuaries in terms of fish movement along the coastline. Furthermore, the estuary marks the most southerly distribution for *Carcharhinus leuca*, the Zambezi shark. This species is currently listed as Near Threatened by the IUCN Red List and the Breede River estuary is considered critical habitat for this species, and potentially a

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pupping and nursery ground. Importantly, the Breede River estuary is also utilised by two bird Red Data species, the African Black Oystercatcher and Caspian Tern.

The present ecological condition of the Breede River estuary is classified as “good” and is associated with a Present Status Category of “B”, i.e. largely natural, with few modifications. The Intermediate Determination of the Resource Directed Measures for the Breede River estuary found that the largest factor that contributed to the change in the state of the Breede River estuary from the Reference Condition to its Present State was the large reduction in river inflow. Given that large volumes of water could not be re-allocated to the estuary; estuarine specialists have decided to keep the REC of the Breede River estuary as Category B. Other potential threats to the integrity of the Breede River estuary are utilisation of marine living resources (e.g. through recreational fishing and bait collection), recreational activities (e.g. boating, skiing, etc.), water pollution, developments, agricultural activities, and invasive alien plants.

### **3.6 Ecosystem Goods and Services**

The concept of ecosystem goods and services stems from the perception of ecosystems as natural capital, which contributes to economic production.

The main types of ecosystem services that are likely to be produced by the Breede River estuary are provisioning services (food and raw materials); regulating services (Disturbance Regulation, Regulation of Diseases, and Water Quality Amelioration); Supporting services (Refuge Area and export of materials and nutrients); and cultural services (Tangible and Intangible cultural significance).

### **3.7 Exploitation of Living Resources**

Presently angling is the most important attraction of the Breede River estuary with exploitation from recreational anglers and bait collectors. Approximately 40.8 tons of line fish are caught annually from the Breede River estuary by recreational anglers (40 % of Cape south coast total) (Lamberth et al 2003). Recent estimates show that catches may exceed 80 tons in some years but are highly variable fluctuating by more than 50%. In addition, cast netting and illegal seine and gillnetting occur within the estuary. Numerous fish species are heavily exploited in the Breede River estuary and the current levels of fishing effort remain unsustainable. The stocks of white steenbras and dusky kob are collapsed, leervis are maximally exploited and the status of spotted grunter, is unknown.

All fishers, commercial, recreational and small-scale (subsistence) have an impact on the resource. It is correct to assume that recreational anglers can deplete fish stocks if they don't comply with regulations. It's equally true that similar can occur if they're compliant but restrictions were not set conservatively enough in the first place. There's no intention to repeal the legislation but rather consideration given by DAFF to extend the night-fishing prohibition to all estuaries countrywide. Stock assessment shows the dusky kob population is critical with breeding fish at <1% of pristine levels. The line fish

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Management Protocol requires a moratorium on the catching of dusky kob until such time as stocks have recovered. The night-fishing prohibition is a last-ditch attempt at stock recovery prior to the implementation of a moratorium. The Status Quo therefore remains.

### **3.8 Primary Impacts and threats**

It is evident that the Breede River estuary provides a variety of direct and indirect benefits to both the local and national economies which are dependent on the ecological wellbeing of the Breede River estuary. This is dependent on the water quality and quantity that enters into the system from the catchment. In addition, high levels of boating activity occur in the estuary during the summer season when the system is most active biologically. This negatively impacts on the productivity of estuarine biota, as well as causing bank erosion from the wave activity and beaching of boats, particularly on *Zostera* bed and mud flats. If the integrity of the Breede River estuary is to be maintained these threats needs to be addressed urgently and effectively.

### **3.9 Socio-Economic Context**

In terms of population distribution, the numbers within the municipal ward areas around the Breede River estuary are mostly low (<500 individuals), with isolated areas of larger settlement on the northern bank near Witsand and Port Beaufort at the coast (up to 500 individuals) and on the southern bank in the mid-estuary (up to 1000 individuals). Overall, service provision is of a relatively high standard. Close to 10 % of the households in the Malgas region are without access to hygienic toilets, while between 12.3 % and 14.3 % of the households in the Swellendam sub-region and Infanta, respectively, do not have access to piped water. Considerably more households are without electricity. The majority of households (76 %) around the estuary obtain an annual income ranging between R 19 601 and R 307 600. 9.6% have an income below that band, and 10.3% above it. Approximately 4 % of the remaining households receive no annual income.

The main economic sectors are primary agriculture (and related sectors like transport and storage), and agro-processing of products and other light industrial. Light industry, construction and vibrant financial & business services and retail, and catering and accommodation activities have seen noteworthy economic growth in recent years. Tourism focuses on cultural heritage tourism activities and eco-tourism particularly at resort towns along the coast.

### **3.10 Social Considerations**

The direct and indirect benefits derived from estuarine ecosystems services are manifested directly or indirectly in tangible income and employment. Overall, the Breede River estuary ranks among the top 20 estuaries in the Cape in terms of its subsistence value which was estimated at R120 000 per annum Turpie & Clark (2007). The Breede River estuary also holds substantial tourism value for the local communities

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positioned along its banks by means of visitors to the estuary and is estimated to be R 25 million per annum Turpie & Clark (2007), placing it in the top 10 Cape estuaries. In addition, the overall property value contributed by the Breede River estuary is estimated at R 884.1 million, the second most valuable estuary in the Cape, which translates to approximately R 26.7 million per annum in terms of the direct value to the real estate sector of the national economy.

### **3.11 Legislation, policy and Management review**

A legislative, policy and management review is included detailing all the important international obligations and agreements, national policies and legislation, as well as existing operational management strategies and plans relevant to the management of estuaries in South Africa.

### **3.12 Existing Institutional Arrangements**

The Lower Breede River Conservancy (LBRC) previously managed aspects of compliance management related to living resources on the estuary from 1986. They fulfilled the role of then estuarine management authority of the Lower Breede River by assisting DAFF and the Swellendam and Hessequa local municipalities (LMs). Currently, the Breede River Estuary is the designated responsibility of the Western Cape Province (as RMA) who is therefore required to collaboratively manage the estuary with CapeNature, Swellendam and Hessequa LMs, DEA: O&C, Department of Water and Sanitation (DWS) and DAFF<sup>2</sup>.

### **3.13 Opportunities and Constraints**

#### **3.13.1 Protected Area potential**

According to the conservation plan for temperate South African estuaries, partial protection of the Breede River estuary is recommended, i.e. a no-take sanctuary zone should be included. The recommended proportion of the estuary margin that should remain undeveloped, or with a >500m development 'setback' line is given as 50 % (Turpie & Clark, 2007).

#### **3.13.2 Restoration and Rehabilitation**

The main restoration actions required for the Breede River estuary is the long-term restoration of estuarine habitats, freshwater requirements, and the creation of a buffer zone around the estuary. A buffer zone linked to the effective protection of the estuarine functional zone (EFZ) is also supported by the designation of various coastal management lines, and those lines being cognisance of climate change It should be recognized that some of the restoration actions would be long term, while others may be achievable in the shorter to medium term.

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<sup>2</sup> Also refer to section 8.1 for further detail regarding institutional arrangements.

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### **3.13.3 Rehabilitation needs**

The source of erosion and siltation should be addressed and more information is needed in order to prepare and implement a satisfactory rehabilitation programme.

### **3.13.4 Local Economic Development**

Value opportunities are identified related to the following categories: Recreational Activities, Spiritual / Cultural, Tourism, Hospitality & Conferencing; and Education and Awareness. In addition, there are additional opportunities for employment through environmental management initiatives for the estuary.

## **3.14 Way forward**

As an interim measure, the SAR at the time proposed the establishment of an interim committee. It also proposed a provisional zoning map with the following provisional zones: No disturbance zone; No go areas (Restricted access); No take area for kob (0-5 km from mouth) and REI (River /estuarine interface). It was finally proposed that no development be allowed below the 5 m contour.

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## 4 VISION & OBJECTIVES

The Vision for an estuary should be inspirational, representing a higher level of strategic intent and aligned with the strategic objectives of NEMP and the greater Cape Floristic Region (CFR). The National Vision and Vision of the Estuaries of the CFR are as follows:

*The estuaries of South Africa are managed in a sustainable way that benefits the current and future generations*

*The estuaries of the CFR will continue to function as viable systems which are beautiful, rich in plants and animals, attract visitors, sustain our livelihoods and uplift our spirits*

The following Vision for the Breede River estuary was developed and agreed upon at a meeting of relevant stakeholders held at Witsand in 2008.

*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*

This Vision essentially captures the need to conserve the **functioning** and **biodiversity** of the Breede River estuary, which ultimately supply the ecosystem goods and services referred to in the Vision. Therefore, this Vision needs to be translated into objectives that address securing the appropriate water reserve (and hence hydrological, biophysical and ecological functions), biodiversity conservation and development needs, as well as the management objectives required in achieving these higher objectives, i.e. co-management, effective governance, and stakeholder support.

The following key objectives have been identified as the corner stones to the achievement of the Vision developed at the stakeholder workshop mentioned above.



**Figure 2: Strategic Objectives for the Breede River Estuarine Management Plan**

#### **4.1 Water quantity and quality**

The objective in terms of water quantity and quality is to ensure that the Breede River estuary retains its present Ecological Reserve Category (ERC) status as a Category “B” estuary, by securing both the Reserve for Water Quantity and the Reserve for Water Quality as defined in the Intermediate Determination of Resource Directed Measures (Taljaard, 2003).

#### **4.2 Conservation of biodiversity**

The biodiversity of the Breede River estuary (e.g. species, populations, communities, habitats, functioning, ecological processes and ecosystem services) should be protected from over-exploitation and other negative impacts, whether they are direct, indirect and/or cumulative.

#### **4.3 Land-use and infrastructure**

All developments, including infrastructural and agricultural, which impact or could impact on the Breede River estuary, should be controlled in terms of sustainability, biodiversity conservation and aesthetics.

#### **4.4 Institutional and management structures**

Ensure co-operative management of the Breede River estuary in terms of the involvement of the Swellendam and Hessequa local municipalities, Eden and

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Overberg district municipalities, the BGCMA, facilitated by the RMA (DEA&DP), through the effective functioning of the BREAf.

#### **4.5 Education and awareness, and knowledge enhancement**

Enhance public awareness of the ecosystem services that the Breede River estuary delivers, the legislation that affords protection of its integrity, and hence the reasons for compliance management.

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## 5 MANAGEMENT OBJECTIVES

The vision and key objectives should be achieved through the implementation of the following management objectives (Figure 2).

### 5.1 Water quantity and quality

- Ensure that the Reserves for Water Quantity and Water Quality, as identified by the Intermediate Determination of the Resource Directed Measures for the Breede River estuary are maintained, through ongoing interaction between the BREAf and the BGCMA, including active representation of BGCMA on BREAf;
- Identify and address activities that lead to bank de-stabilization, erosion and other activities that reduce water quality, e.g. detrimental agricultural activities such as ploughing and grazing in the riparian zone<sup>1</sup>, certain types of water-based recreation, and removal of reed beds<sup>3</sup>;
- Identify and address activities that lead to water pollution, e.g. siltation, agricultural chemicals and sewage run-off<sup>4</sup>; and
- Control the spread and densification of both aquatic and terrestrial invasive alien plant species that negatively impact on water quantity and quality and have knock-on effects for aquatic life<sup>2</sup>.

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<sup>3</sup> Cross links with appropriate land use and infrastructure planning

<sup>4</sup> Cross links with conservation of biodiversity

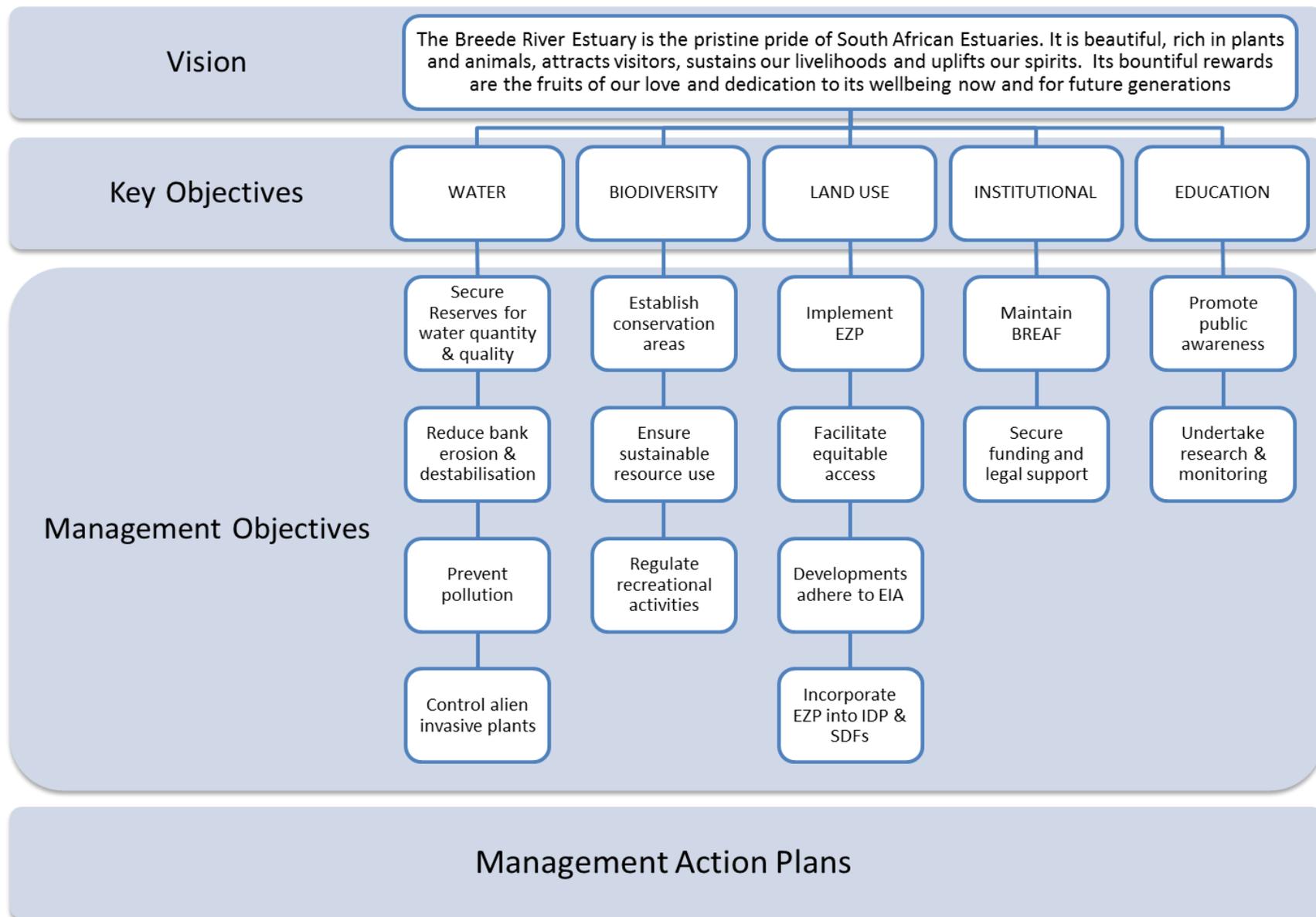


Figure 3: Vision, Key Objectives, Management Objectives, and Action Plans

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## 5.2 Conservation of biodiversity

- Ensure the conservation of the full suite of existing habitats, especially those that fulfil the role of zones of primary production, fish nurseries, wader feeding grounds (e.g. *Zostera* beds, salt marshes, etc.), and bank stabilization (e.g. Reed beds);
- Ensure sustainable resource use through effective compliance under the Marine Living Resources Act (Act 18 of 1998), in terms of fish and bait species, e.g. quotas, closed seasons, size limits, collection methods; and
- Regulate recreational use in and around the estuary, including water-based activity and aviation activity, through effective compliance management to reduce habitat degradation and disturbance to fauna and flora.

## 5.3 Land-use and infrastructure

- Implement an estuary zonation plan that directs infrastructural development and other land use practices (e.g. agriculture) within the coastal management lines, flood lines, buffer zones as defined in the relevant environmental legislation, e.g. Integrated Coastal Management Act (Act 24 of 2008, as amended), National Environmental Management Act (Act No. 107 of 1998), National Water Act (Act No. 36 of 1998) and the Conservation of Agricultural Resources Act (Act No. 43 of 1983), in terms of the Coastal Protection Zone, 100 m buffer, 32 m buffer, 100 year flood line, and 5 m contour;
- Ensure the incorporation of the EMP into the Integrated Development Plans and Spatial Development Frameworks of the Swellendam and Hessequa local municipalities, as well as of those of the Eden and Overberg district municipalities.
- Facilitate equitable access for both pedestrian and vehicular access. This entails ensuring boat launch sites are licensed and access is not restricted;
- Ensure that all proposed developments within the development buffer zones, adhere to the EIA process in terms of the full suite of relevant environmental legislation;

## 5.4 Institutional and management structures

- Maintain a fully functional estuary advisory forum (the **Breede River Estuary Advisory Forum**) that will facilitate **co-management and effective governance** between municipalities (local and district) and National government agencies, DEA&DP as the designated RMA, the two conservation agencies (CapeNature and SANParks), and the full suite of relevant private stakeholders (See Section 8).

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- Ensure that **appropriate funding** and **legal support** is secured for the execution of the various management actions and attainment of the objectives set out in this EMP.

## 5.5 Education and awareness, and knowledge enhancement

- Promote high levels of public awareness and appreciation of the ecosystem services provided by the Breede River estuary, threats posed to its integrity, and compliance management; and
- Enhance our scientific knowledge, through research and monitoring, to:
  - Improve the confidence of the Intermediate Determination of RDM of the Breede River estuary;
  - Estimate more accurate carrying capacity thresholds, and
  - Identify, understand and mitigate indirect and/or cumulative impacts of human activities, both within the estuarine zone, as well as those beyond its boundaries.

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## 6 SPATIAL ZONATION

### 6.1 Introduction

The management objectives identified in the previous section have been translated into an estuary zonation plan (EZP) (Figure 7). The EZP (and applicable management objectives) is the blueprint against which all development, and any other activities which impact on the estuary, should be tested for compliance.

The zonation of any estuary is necessary to guide sustainable utilization without degradation of the estuarine environment (Clark 1977). Zonation should therefore, essentially demarcate:

- a) the geographical boundaries of the estuary (see Figure 8) (e.g. the 5m amsl contour, river-estuarine interface, coastal protection zone, coastal management line, or flood lines);
- b) the conservation of biodiversity<sup>5</sup> through the setting aside of conservation areas/protected zones;
- c) appropriate buffers in which land use and development is strictly controlled and monitored; and
- d) appropriate recreational activities and carrying capacities thereof.

### 6.2 Estuarine boundaries

The C.A.P.E Estuaries Programme considered the National Water Act (NWA) definition of an estuary as the most appropriate definition, i.e. *“a partially or fully enclosed water body that is open to the sea permanently or periodically, and within which the seawater can be diluted, to an extent that is measurable, with freshwater drained from land”*.

For the purposes of determining the Resource Directed Measures (RDM), the then Department of Water Affairs defined the geographical boundaries of an estuary as follows, *“the seaward boundary is the estuary mouth and the upper boundary the full extent of tidal influence or saline intrusion, whichever is the furthest upstream, with the five meter above mean sea level (amsl) contour defined as the lateral boundaries”*.

The ICMA further defines an estuary as *“a body of surface water -*

- a) *that is permanently or periodically open to the sea;*
- b) *in which a rise and fall of the water level as a result of the tides is measurable at spring tides when the body of surface water is open to the sea; or*

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<sup>5</sup> which is also addressed in terms of compliance under the MLRA

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- c) *in respect of which the salinity is higher than fresh water as a result of the influence of the sea, and where there is a salinity gradient between the tidal reach and the mouth of the body of surface water".*

This 5 m topographic contour encapsulates the Estuarine Functional Zone, which in turn is defined by 2014 EIA Regulations (GNR 985) as *"the area in and around an estuary which includes the open water area, estuarine habitat (such as sand and mudflats, rock and plant communities) and the surrounding floodplain area..."*

The Breede River estuary is approximately 52 km long, i.e. from the mouth at Witsand to the extent of the tidal influence about 10 km upstream of Malagas at the mouth of the Napkuys River. According to Government Notice No. R. 727 dated 16 September 2011 (in terms of the Marine Living Resources Act, Act 18 of 1998), which addresses regulations for fishing in the estuary of the Breede River, the estuary of the Breede River is officially defined as the tidal portion of the Breede River that lies between the longitudes E20°51'342 and E20° 51'.000, as the western and eastern boundaries respectively. More specifically, the boundary lines denoting the Breed River Estuary's extent are as follows:

*To the west, the official land surveyor's mark as the official extent of the tidal reach placed at position 34°15'0495" latitude and 20°30'4945" longitude. To the east, the eastern boundary line be denoted by the line of latitude east 20°15, whereby the existing beacon on the buttress of the southern bank is anticipated as being in the correct position. The mouth shall then extend from that point, relevant to its variable extent, to the approximate end of the beach adjacent to the buildings of the beach restaurant and ablution block.*

Figure 4 to Figure 6 illustrate the boundaries of the Breede River estuary, including the River-Estuarine Interface (REI) and the Coastal Protection Zone.

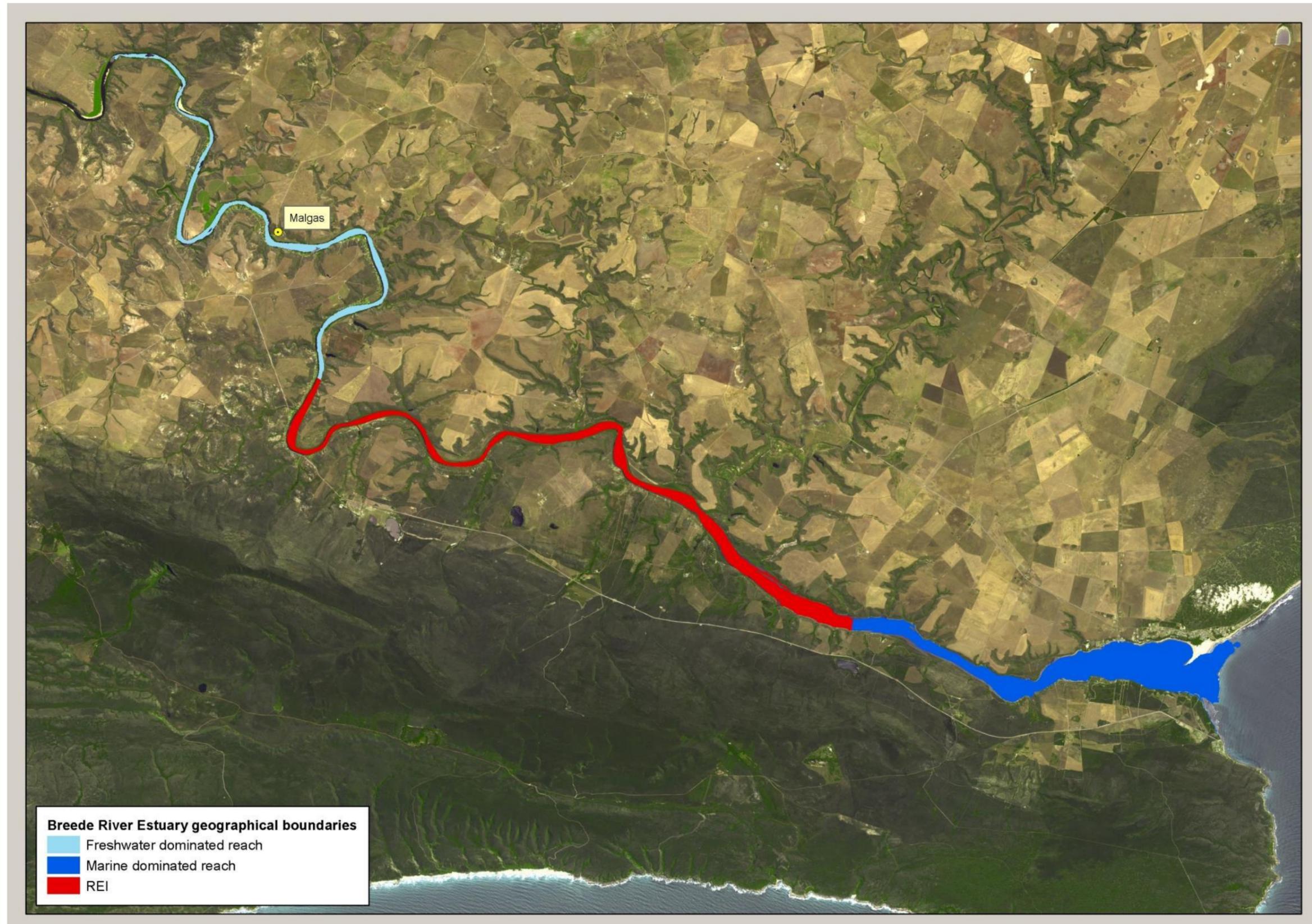


Figure 4: Geographical boundaries of the Breede River estuary, showing different biophysical regions

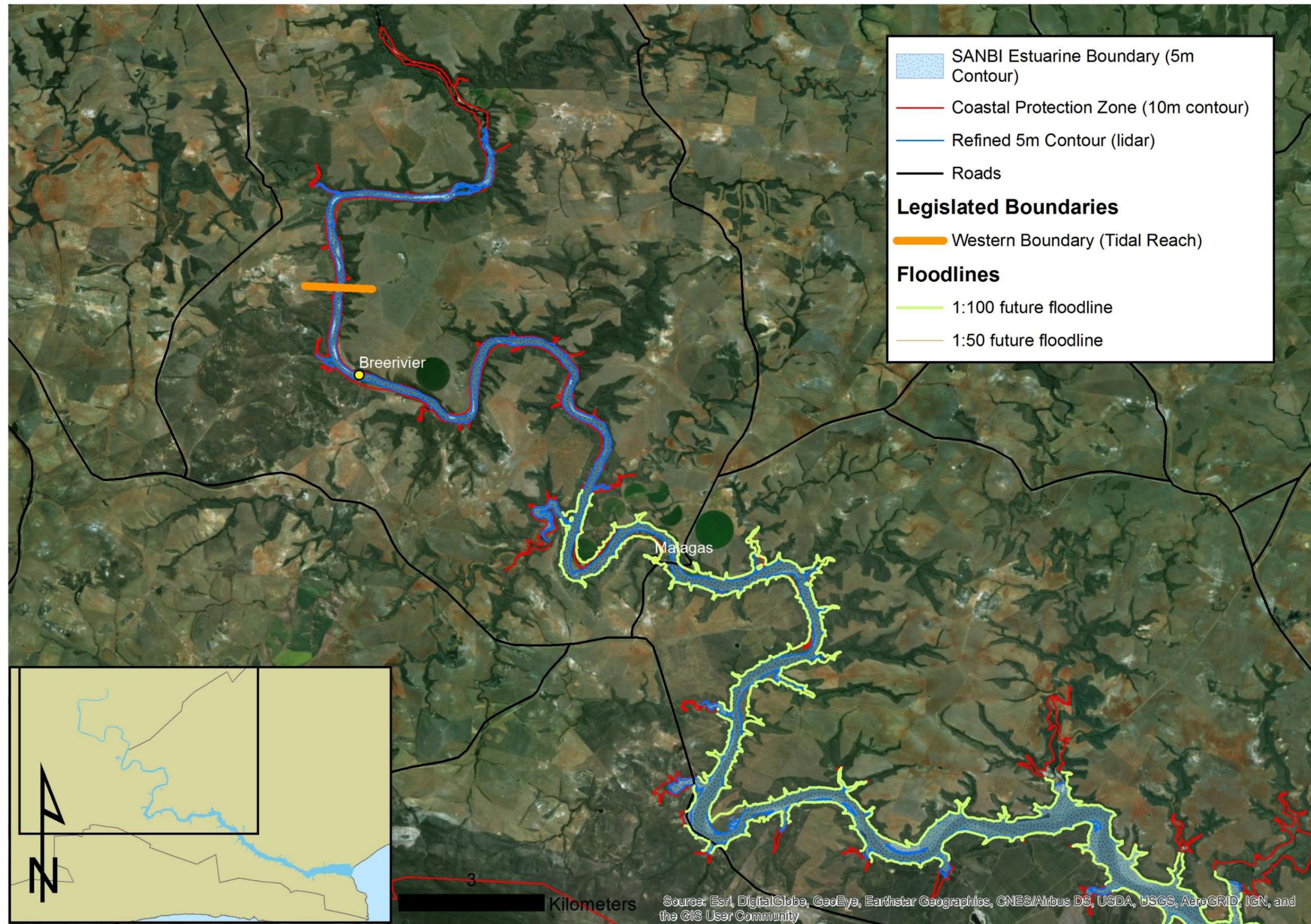


Figure 5: Geographical boundaries of the Breede River estuary – upper estuary

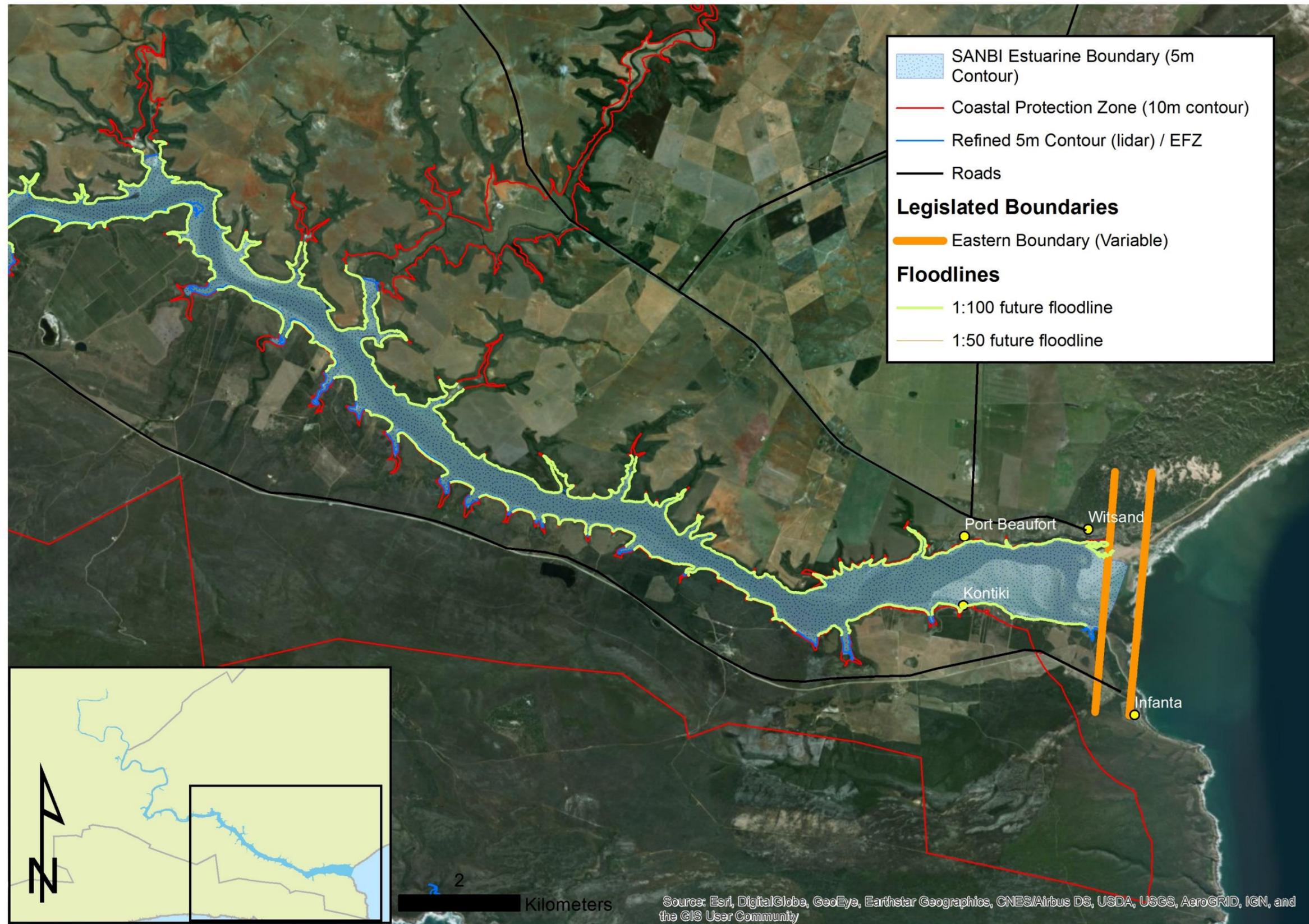


Figure 6: Geographical boundaries of the Breede River estuary – lower estuary

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### 6.3 Proposed Zonation Plan

A habitat sensitivity analysis should be the baseline which guides the differentiation of the various zones, identifying threatened, ecologically important habitats as no-go or minimal disturbance zones; those areas which can support controlled, sustainable exploitation of marine living resources; and those where various forms and levels of appropriate water-based recreation are acceptable.

The habitat map developed by Bornman (cf. SSI, 2008), was used as the baseline for the identification of sensitive estuarine habitats on the Breede River estuary (see Figure 8 and Figure 9). The zonation proposed in the first draft of the EMP, was mainly derived from a habitat perspective, but was deemed too complex, and therefore, from a compliance management perspective, too impractical to enforce (see Proceedings of Review Workshop; CSIR, 2009).

In this review, an attempt has been made to simplify the zonation, and consequently a total of three broad zones were then proposed:

- Conservation/protection zones;
- Development buffer zones; and
- Recreation-based zones.

Recreation-based zones were discussed in more detail at a workshop held on the 19<sup>th</sup> of October 2016 at Witsand. Specific recreation-based zones were agreed in respect to:

- Kitesurfing / Windsurfing zone;
- Skiing zone; and
- Wake boarding zone.

At the same workshop, it was confirmed that no exclusion zone for bait collecting was required. The purpose of the workshop was to make the zonation recommendation easy to understand, easy to implement, practical and workable in the local context.

Economies around estuaries change, and as new activities come into existence the zonation should be adjusted to manage and potential conflicts between new and different interests now and in the future. On the spatial level of the zonation plan it is desired to have all interests represented appropriately, identified sensitive areas be protected, and that there is clarity on where certain activities are permitted.

There are different users on the estuary and in the interest of orderly and better management it is important that it is clear to all what can and cannot happen on the estuary system without compromising the environmental integrity of the system in terms of sustainability and other management issues.

### 6.3.1 Conservation/protection zones

#### OPERATIONAL OBJECTIVES:

- Identify priority areas for conservation/protection;
- Estimate Thresholds of Potential Concern in terms of loss of habitat and species population dynamics;
- Identify an appropriate suite of conservation measures for each priority area;
- Maintain high levels of compliance in respect to conservation measures through the full suite of compliance management methods, e.g. awareness, legal support, law enforcement, etc.;
- Rehabilitate disturbed sites;
- Control of invasive alien plants;
- Control boating in protected or sensitive areas;
- Aircraft altitude restrictions; and
- Prevent encroachments.

The identification of conservation/protected zones should be based on studies such as Carter (1983) and Taljaard (2003) (in conjunction with Bornman's habitat map), wherein the ecological importance of habitats that fulfil the role of zones of primary production, fish nurseries, wader feeding grounds (e.g. *Zostera* beds, salt marshes, freshwater tributaries mud banks, etc.), and bank stabilization (e.g. Reed beds), are highlighted (Figure 10 and Figure 11).

An inherent problem with defining conservation/protected zones in the Breede River estuary is the spatial configuration of developments (both infrastructural and agricultural) and the levels of water-based recreation that already exist on this estuary. The sensitive habitats that should be afforded some level of conservation management, are also spread along the length of the estuary, often as fragmented units, whilst the main forms of recreation (e.g. boating and fishing) and associated activities (e.g. skiing and bait collection), are also practiced along extensive stretches of the estuary. This is exacerbated by two development nodes being spaced almost at opposite ends of the estuary, i.e. Witsand at the mouth and Malagas near the upper reach of the estuary. This makes it not only difficult from a compliance management perspective, but also in the identification of the priority areas for conservation (as per National and Provincial Protected Area Expansion Strategy).

Furthermore, some of the habitats can be transient, both spatially and temporally, e.g. episodic flooding events influence the spatial dynamics of the habitats in terms of geographical position and size. The challenge will therefore, with the assistance of estuary experts, be to identify the high priority sites and adequate representation thereof. Only then can different levels of compliance management be afforded to these areas in terms of how much disturbance, if any, is permissible. Conservation measures could include regulation of activities such as bait collection (if needed in the future), anchoring, beaching of boats, access by boat, grazing and trampling,

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whilst the more sensitive/irreplaceable areas, that are indeed locally threatened, could be protected by a total restriction of any direct human activity. Innovative forms of compliance management will be required to afford adequate conservation of representative areas of these habitats, including an element of self-regulation (e.g. providing people with information of what is trying to be achieved and involving civil organizations like angling and boating clubs). It will probably be necessary to enact any restrictions in by-law, to assist in conserving/protecting these zones. Regulatory controls would need to be informed by a feasibility analysis that considers institutional capacity and progressive implementation.

In the initial EMP review workshop (CSIR, 2009), it was noted that the freshwater input sites (tributaries) which provide refuge areas and ecotones in terms of salinity and therefore biodiversity, should be protected in terms of conservation. These sites are considered important fish nursery refuges. Salt marsh areas (supratidal, intertidal and floodplain salt marshes), *Zostera capensis* beds and mudflats have also been identified as ecologically important habitats in the estuary, which are sensitive to disturbance and require conservation (Carter, 1983; Taljaard, 2003). *Zostera* beds are important as they provide sheltered rich habitats for many estuarine invertebrates and juvenile fish, and feeding grounds for invertebrate feeding waders. *Zostera* beds are easily disturbed by bait digging, trampling and the beaching of boats. Once the root and rhizome system have been disturbed, the plants may take years to recover. The plants are also sensitive to increases in turbidity as a result of boating activities that stir up bottom sediments and reduce light available for photosynthesis. These habitats are reported to have decreased in area (Taljaard, 2003).

At the zonation workshop held on the 19<sup>th</sup> of October 2016, stakeholders agreed that if DAFF Regulations were complied with and proper bait collecting methods used, an exclusion zone for bait collecting was not required.

### 6.3.2 Development buffer zones

#### OPERATIONAL OBJECTIVES:

- To ensure that all proposed developments within the development buffer zones, adhere to the EIA process in terms of the full suite of relevant environmental legislation, e.g. ICMA, NEMA, NWA, CARA, WMA, NHRA, NPRDA etc.;
- To ensure that the relevant development buffer zones are captured into the municipal IDPs and SDFs;
- To register BREAF as an Interested and Affected Party (I&AP);
- To ensure that the BREAF is timeously aware of all proposed developments and is afforded adequate opportunity to make comment;
- To empower the implementing agent(s) to monitor compliance with Environmental Authorisations; and
- To take into consideration the possible implications of the 5m contour line and the determined flood lines, in terms of existing and proposed developments and activities.

Four development buffer zones are identified in the existing environmental legislation, e.g. the ICMA (Act No. 24 of 2008, amended 2014), the National Environmental Management Act (Act No. 107 of 1998) (NEMA), etc. (see Figure 12 and Figure 13).

#### 6.3.2.1 Coastal Overlay Zone and Coastal Protection Zone

Under the ICMA, the default Coastal Protection Zone (CPZ) is a continuous strip of land at extending from the coastal and estuarine high-water mark to at least 1 000 m inland in rural areas, and 100 m in urban areas, covering all areas not already zoned for residential or industrial development. The relevant municipalities are required to incorporate the default CPZ and coastal management lines and proposed coastal overlay zones, once adopted, within their spatial development frameworks and land use management systems in order to manage and regulate the use of land at the coast and ensure an adequate buffer for the estuary.

#### 6.3.2.2 32 m river and wetland buffer

A buffer area of 32 m from the edge/bank of all rivers, water bodies and wetlands/salt marsh is a buffer zone intended to protect the ecological functioning of the riparian system. Any activities within this area are controlled by the EIA regulations of NEMA. This 32 m zone is listed in terms of the new EIA regulations (2014). An environmental authorization is required for activities within this zone. The area is proposed as a development setback line along the estuary in order to facilitate the protection of river banks and the sensitive vegetation along these banks. It is also proposed as a rehabilitation priority area where current agricultural/development encroach into this buffer zone. In such areas (e.g. wherever ploughing is occurring within this 32 m buffer) the priority is to discourage such activities and rehabilitate existing disturbed areas.

### 6.3.3 Recreation-based zones

#### OPERATIONAL OBJECTIVES:

- To enforce by-laws in terms of the current suite of water-based activities, e.g. skiing and non-skiing zones, speed limits, etc.
- Achieve a basic level of voluntary compliance
- To investigate the environmental impacts of the existing water-based activities and to identify measures to mitigate these impacts (see also conservation zones)
- To identify and demarcate zones for other activities such as kite-surfing, windsurfing and catamarans
- To estimate the carrying capacity for recreational boating activities in terms environmental impacts

The main activities on the Breede River estuary are boating, recreational fishing, and skiing. Other uses include wind-surfing, kite-surfing, wake-boarding and catamarans. Skiing is perhaps the activity which conflicts with more other activities than any other individual activity, and for this reason, a “No-skiing” zone and a “Skiing” zone, were enacted in by-law (Province of the Western Cape: Provincial Gazette No 6697, 12/02/2010) Figure 14), i.e. no skiing below the confluence of the Slangrivier mouth.

Kite-surfing, windsurfing and catamarans are however, also activities that could potentially conflict with recreational fishing and boating. The lower estuary is recognised internationally as a world class kite-surfing site. However, the lower estuary is also a high boating hazard area, and for this reason, it was proposed that a kite-surfing /wind surfing/catamaran zone be identified, designated and enacted in by-law, in terms of human safety and user conflict. It was suggested that the kite surfing and wind surfing zone should be below the government jetty to the ocean. It is worth noting that the ideal conditions for kite-surfing are strong winds, which are usually conditions that discourage recreational fishing. The potential for conflict is therefore, perhaps less than anticipated.

Wake-boarding is an activity that may only take place in the “Skiing” zone. It has potential for environmental impacts, particularly in terms of bank erosion, and hence, may not, according to the existing by-law, take place closer than 30 m to the banks of the estuary. It was proposed that the existing by-law be changed to state that in areas where the river is less than 60 m wide, as well as opposite any development nodes, e.g. Lemoentuin, Malagas, and Riverine, etc. that wake-boarding should also not be permitted.

It is important to note, that the proposed zonation plan was proposed to be refined by means of a study dedicated to assessing the carrying capacity of the estuary relative to the various uses and consequently establishing a balance between biodiversity conservation and control of user groups.

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As a result of the zonation workshop held on the 19<sup>th</sup> of October 2016 the following recreation-based zones were agreed to:

- Kitesurfing / Windsurfing Zone
  - Proposed zone is the sweet spot between Infanta and Skuitbaai.
  - The Western zone delimitation line for kitesurfing and windsurfing is extended to the east of the Kraaltjie slip way, going diagonally West down to the western edge of the sand bank.
  - Beginners training preferable around the sand bank for safety reasons.
  
- Skiing Zone
  - Current skiing / wake boarding zone is from the Whitehouse / Slang River / D5 eastwards upriver to the pont at Malgas.
  - All other towing activities like tyres and water snakes are included in the skiing zone.
  
- Wake Boarding Zone
  - The wake boarding zone is limited to the area from the Whitehouse eastwards to before Riverine.
  - Wake boarders must remain within the main channel, at least 20 meters away from the banks.
  - The environmental impacts of wake boarding require further investigation, therefore specific monitoring of this area must be undertaken.

**A map indicating the various proposed zones is provided as Figure 7:  
Recreation-based zones for the Breede River estuary**

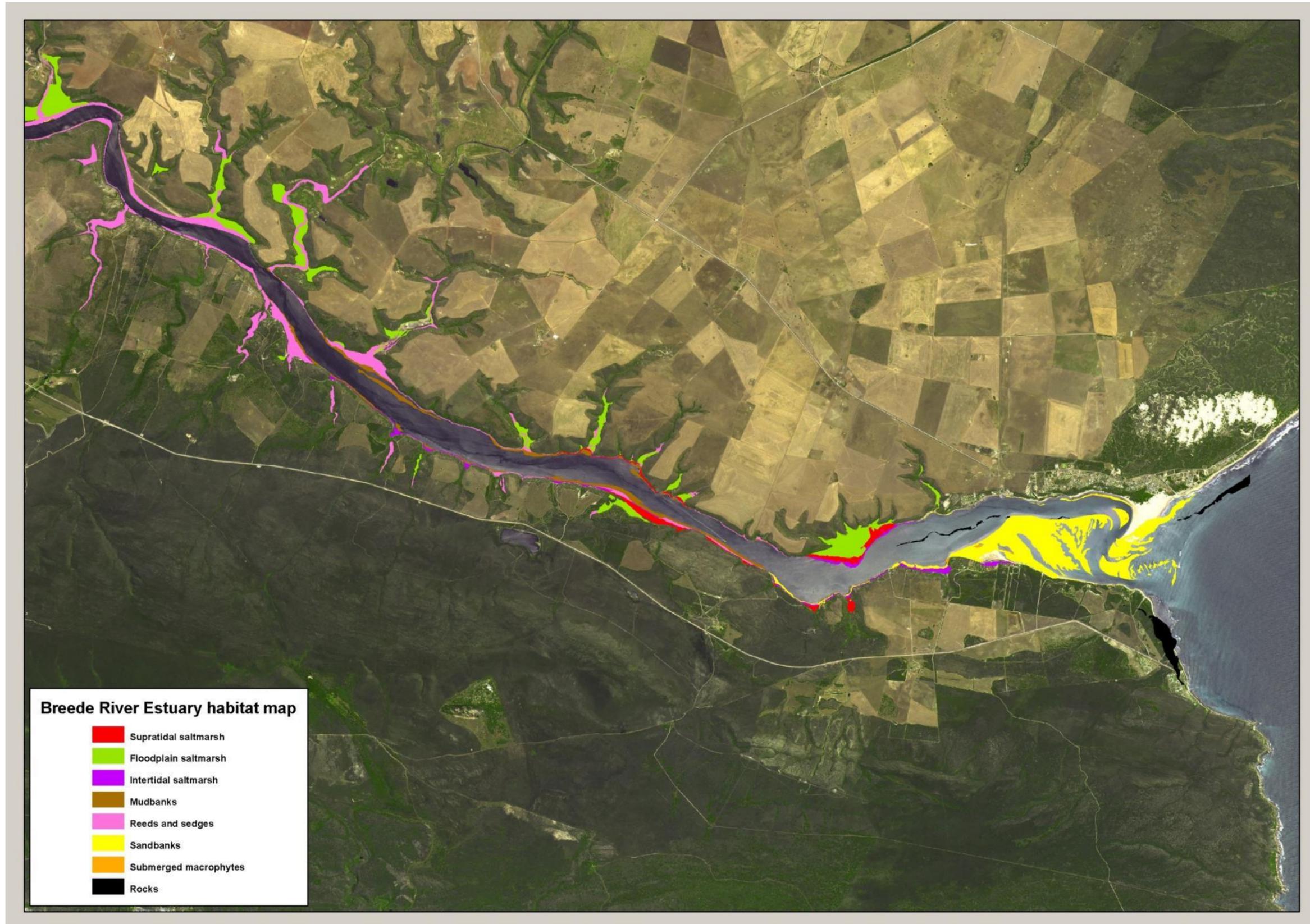


Figure 8: Habitats of the Breede River estuary (lower section)

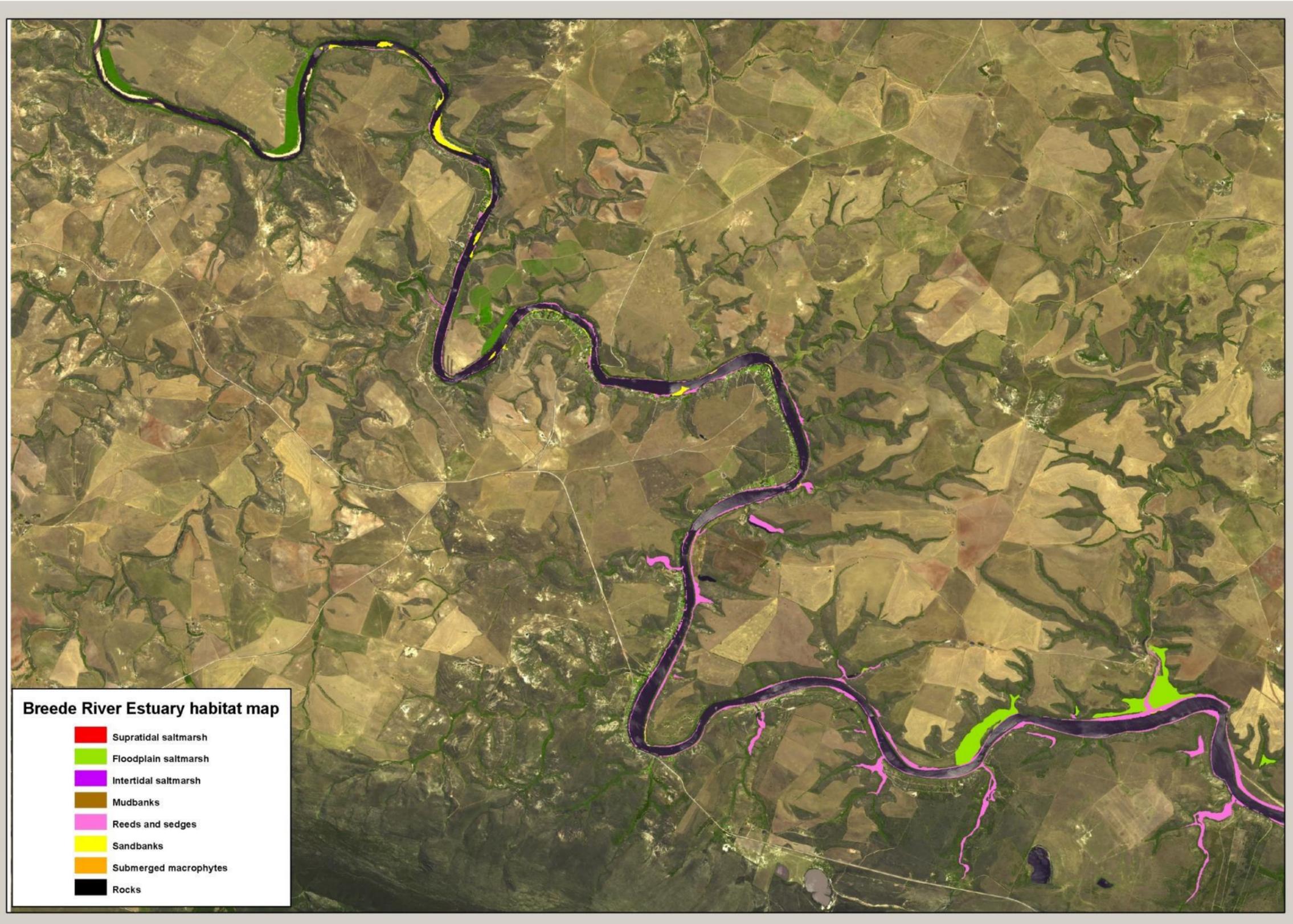


Figure 9: Habitats of the Breede River estuary (upper section)

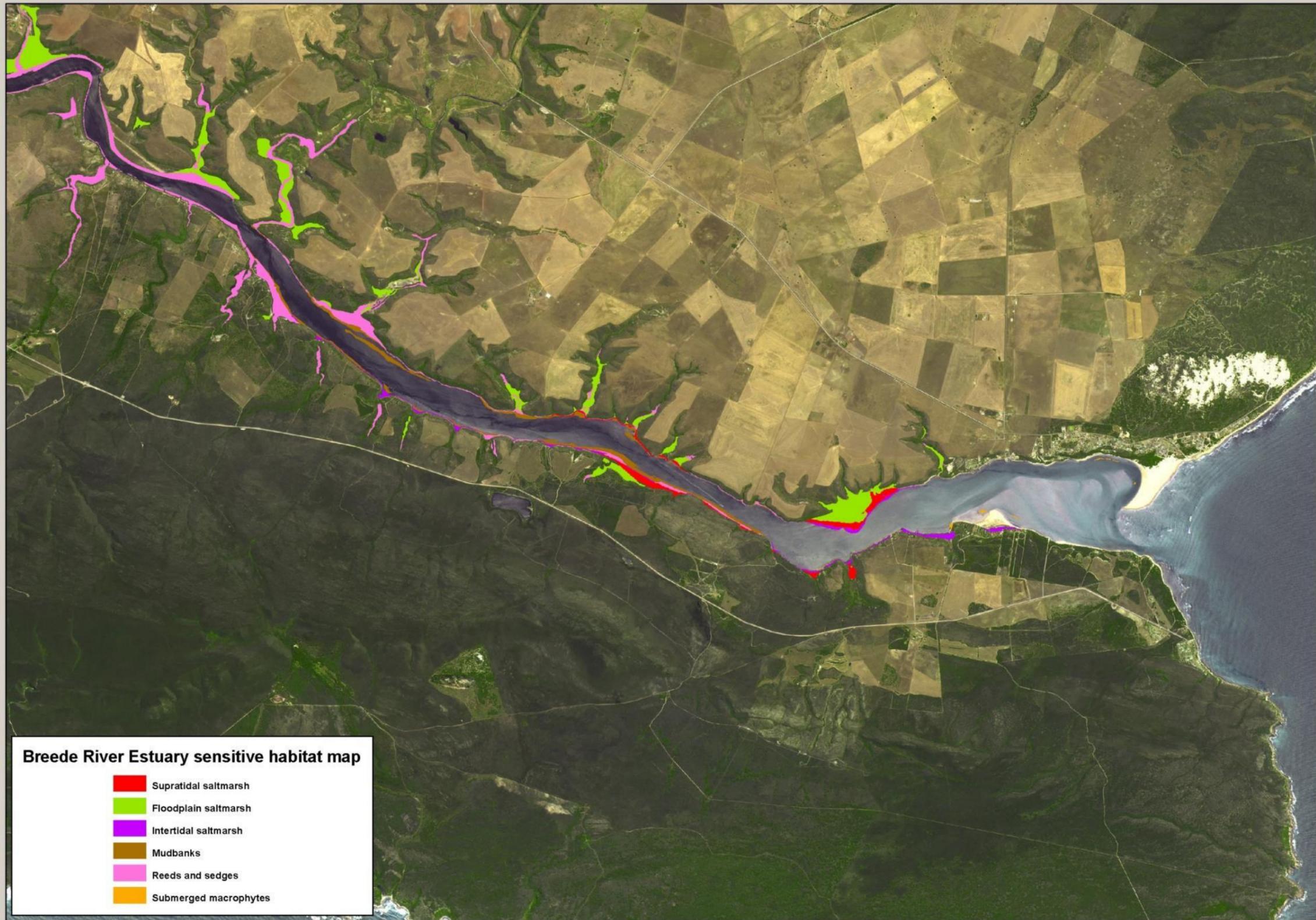


Figure 10: Conservation/protected zones proposed for the Breede River estuary (lower section)

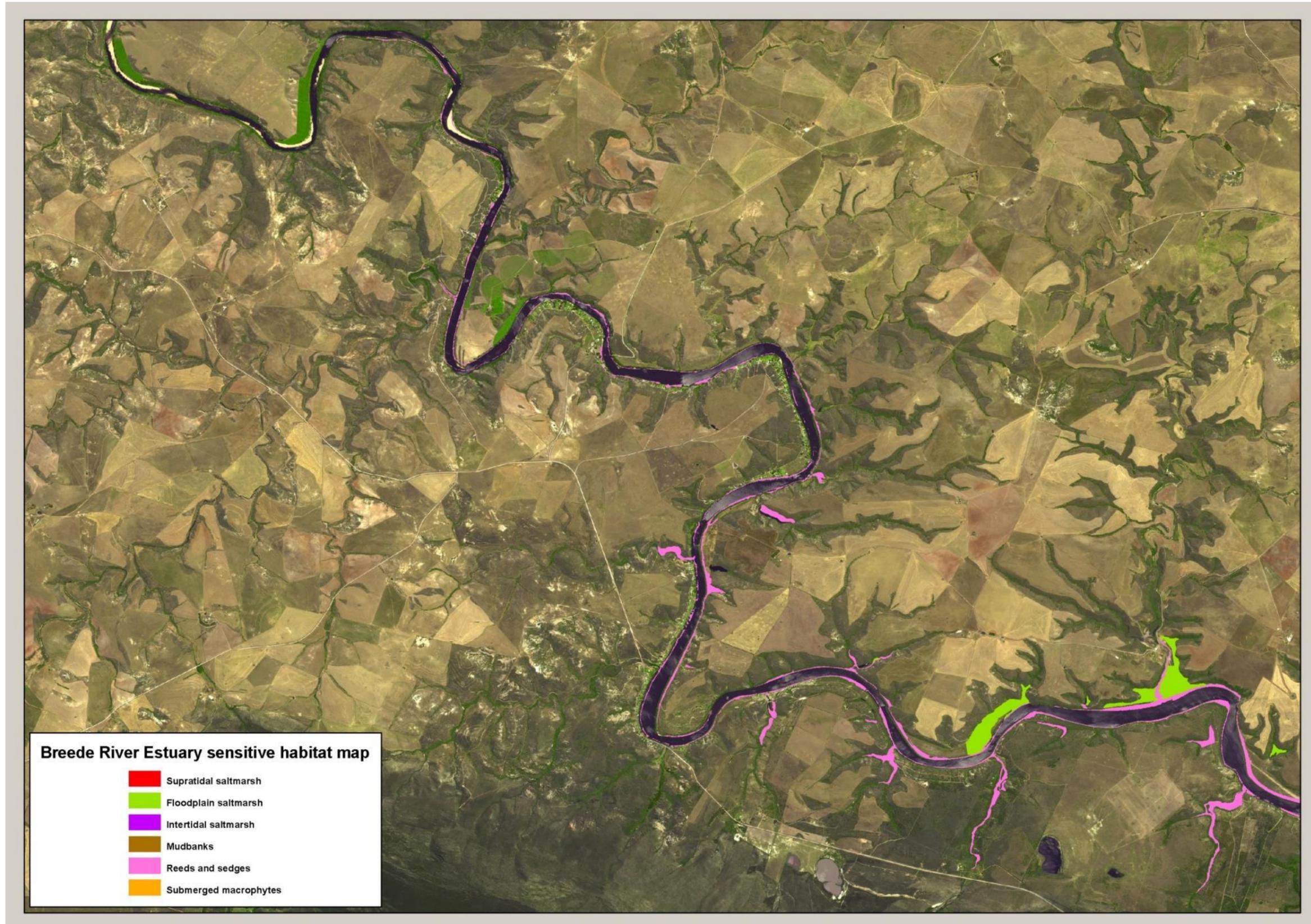


Figure 11: Conservation/protected zones proposed for the Breede River estuary (upper section)

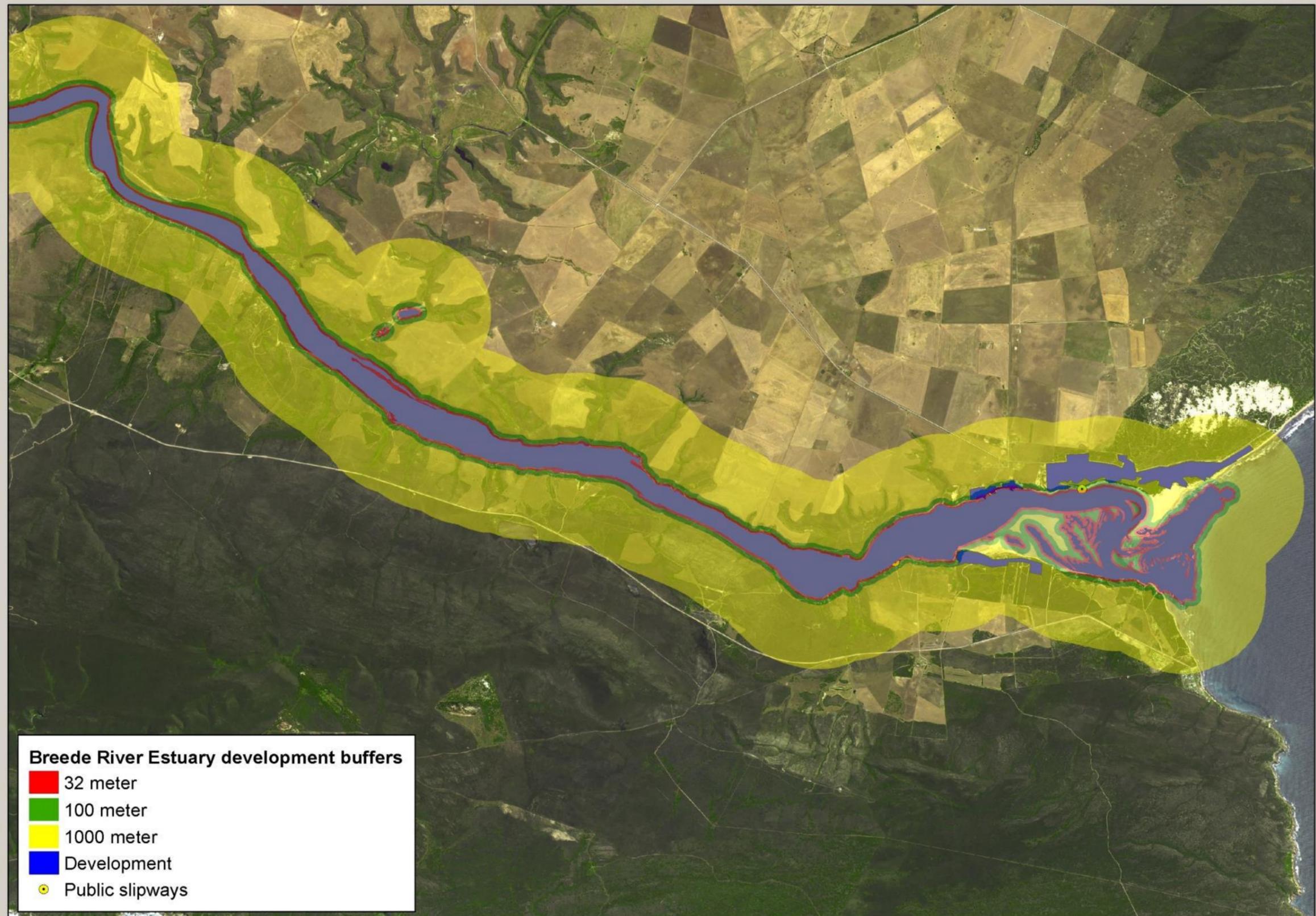


Figure 12: Development buffer zones for the Breede River estuary (lower section)

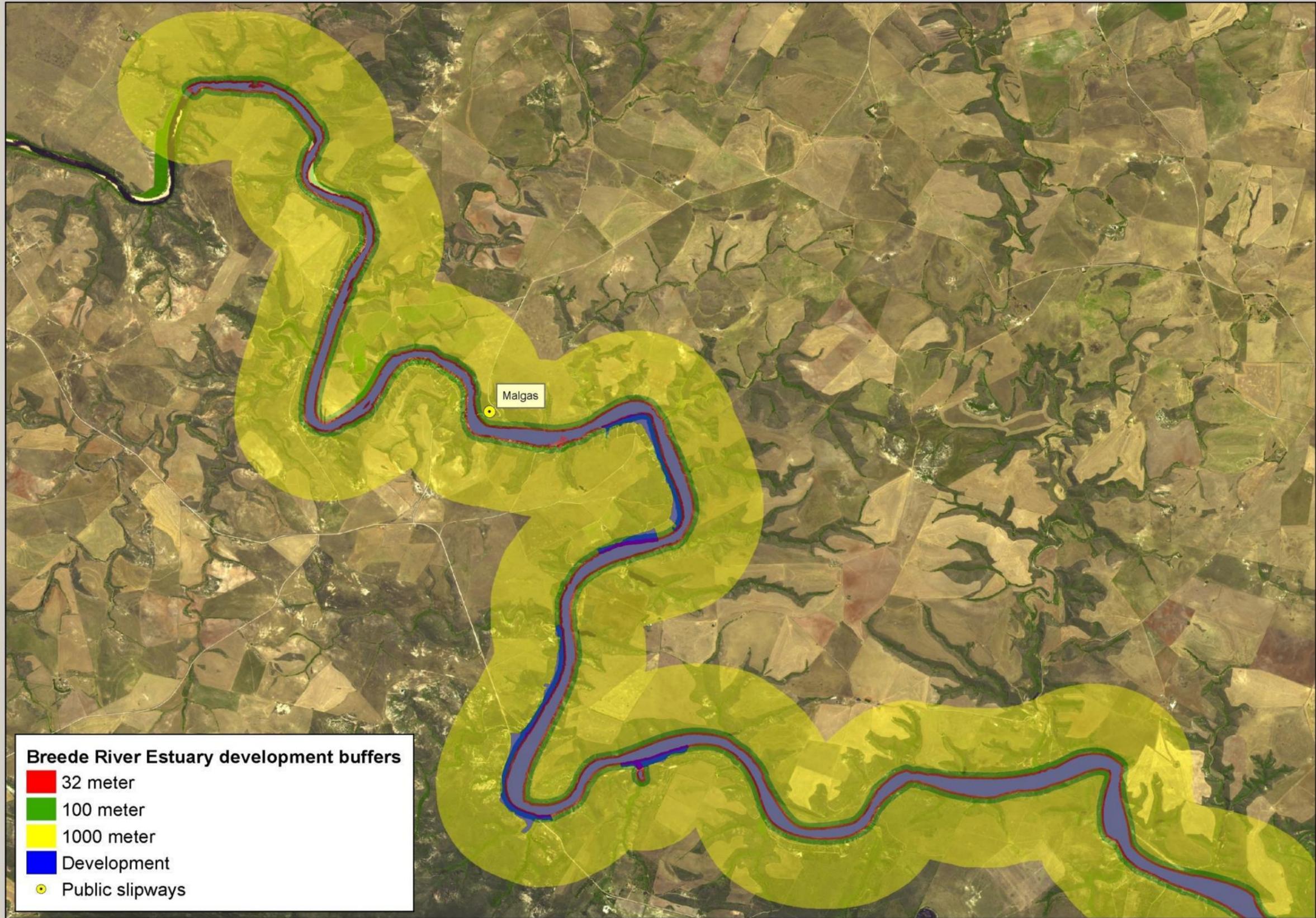


Figure 13: Development buffer zones for the Breede River estuary (upper section)

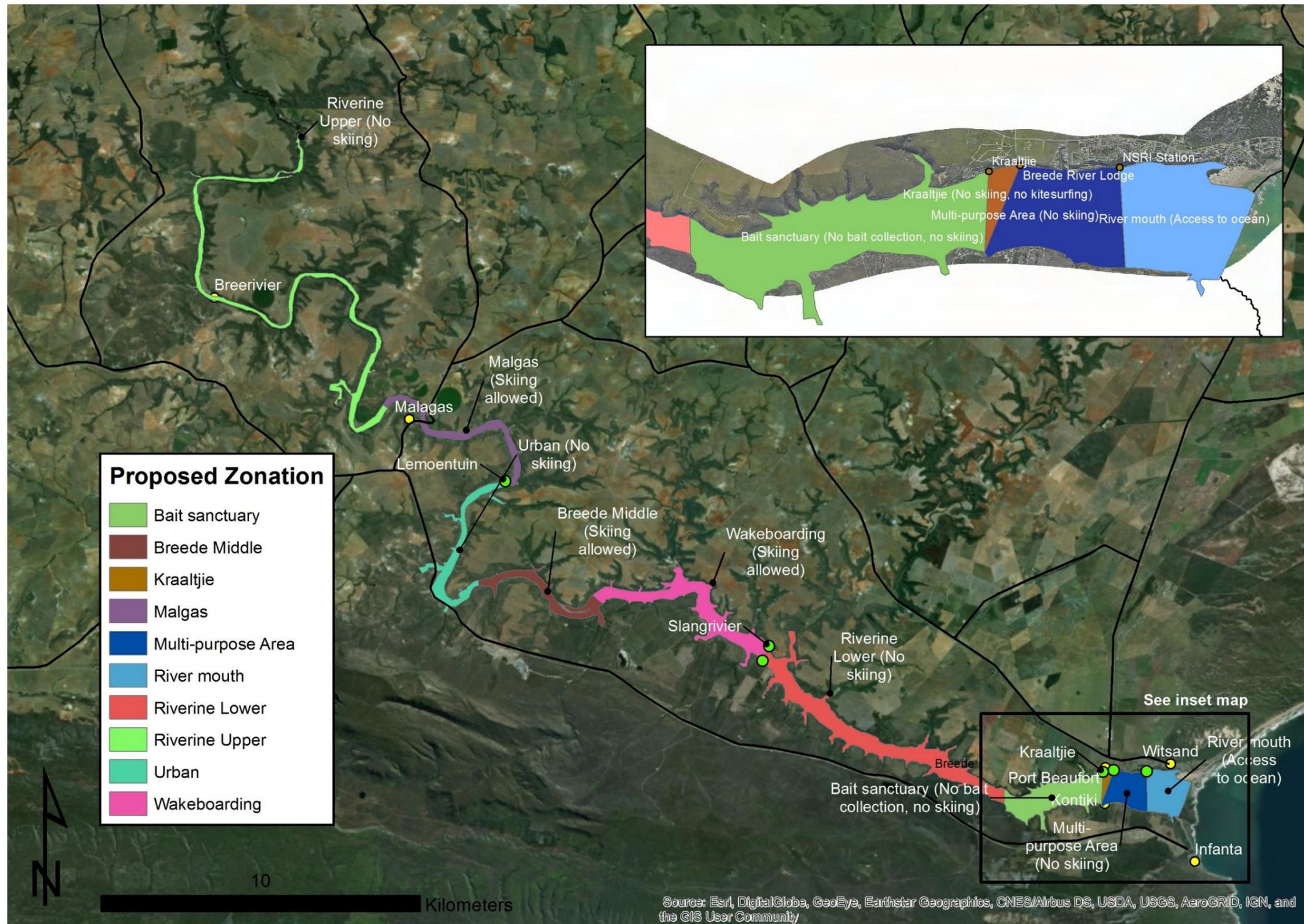


Figure 14: Recreation-based zones for the Breede River estuary

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## 7 RECOMMENDED MANAGEMENT PRIORITIES

The project plans discussed hereunder, give effect to the various management objectives and the EZP by identifying the priority management interventions that are required to ensure their realisation.

Five project plans have been compiled for the efficient and effective management of the Breede River estuary. Each plan corresponds to a key objective and contains applicable management actions, supporting regulations, level of priority, responsible institution(s), and required resources if such information is available. These are arranged in general order of priority, but nevertheless recognize that the neglect of any leg will compromise overall success:

- Co-management and effective governance;
- Sustaining water quality & quantity;
- Conservation of biodiversity;
- Sustainable development; and
- Public education and awareness and knowledge enhancement

It should be noted that there is some interconnectedness between the plans and some management actions, as they all ultimately contribute to the conservation of ecosystem function and patterns of biodiversity, which in turn leads to the conservation of a sustained supply of ecosystem goods and services delivered by the estuary.

### 7.1 Institutional and Management Structures

**Co-management and effective governance** is the keystone for achieving the vision set by the stakeholders for the Breede River estuary, and therefore attainment of the overall strategic objective of conserving its ecological functioning and biodiversity. Without well-structured and efficient institutional and management arrangements, integrated environmental management of the estuary may be no more than a series of uncoordinated reactions to immediate problems. Ensuring co-management and effective governance is therefore probably the most important objective to be achieved. To this end, DEA&DP is in the process of developing the Western Cape Estuarine Management Framework and Implementation Strategy to set criteria for conformance with respect to establishing institutional and management structures for estuarine management within the province.

Regarding the Breede, three main 'institutions' will be in effect regarding the management of activities in and around or relating to the Breede River estuary. These are: the **Responsible Management Authority (DEA&DP)**; the **BREAF**, which is a collection of stakeholders with vested interest in the estuary and the vehicle through which the implementation of the EMP can be monitored; and the **implementing agent on behalf of DEA&DP**, which can be designated by DEA&DP to implement certain priorities on behalf of the Management Authority in respect of the EMP (See Section 8 for more detail).

**Table 1: Management Actions for institutional and management structures**

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	WORK PLAN	
			TIMING	RESPONSIBILITY
<b>Management Objective 1: Maintain a fully functional estuary advisory forum (the BREAF) that will facilitate co-management and effective governance*</b>				
Review and finalise roles and responsibilities of BREAF in light of the NEMP	ICMA/NEMP	Roles and responsibilities agreed	2019	DEA&DP BREAF
Finalise institutional arrangements for the BREAF	ICMA/NEMP	Confirmed establishment of BREAF institutional arrangements (constitution, stakeholder list, terms of reference, etc.) confirmed with relevant organs of state	2019	DEA&DP BREAF
Identify and appoint implementing agent	ICMA MSA NEMP Intergovernmental Relations Framework Act (no. 13 of 2005) (IGRFA)	Implementing agent contracted through multi-lateral agreement.	2019 onwards	DEA&DP Swellendam and Hessequa Municipalities  Organs of State
Active collaboration of BREAF with other institutions through shared responsibilities and active representation on Municipal Coastal	ICMA	Representation on municipal coastal committees and any other relevant committees; Breede estuary issues raised on agendas; Minutes of meeting	2018 and ongoing	DEA&DP BREAF DEA

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	WORK PLAN	
			TIMING	RESPONSIBILITY
Committee(s) and other relevant committees				
Active participation and collaboration from relevant government departments and organs of state on BREAF	ICMA NWA Municipal Systems Act IDP MLRA CARA NEMA Disaster Management Act	Participation at BREAF by relevant national, provincial & municipal representatives; Minutes (highlighting completed actions), reporting, correspondence and information associated with the meeting	2018 and ongoing-	DEA&DP BREAF
<b>Management Objective 2: Unlock the strategic value of the Breede river estuary's ecological infrastructure</b>				
Cost Benefit Analysis (CBA) for the management of Breede estuary	ICMA/NEMP MSA	CBA for the management of the Breede estuary completed	2018	DEA&DP
Identify key priorities and appropriate funding strategies linked to the action plans, recommended by the CBA, per relevant organ of state		Funding Strategy completed.	2019	DEA&DP DEA BREAF Swellendam and Hessequa Municipalities Overberg and Eden district municipalities
Investigate and facilitate partnerships and research opportunities for key priority actions		Report produced highlighting the partnerships and research opportunities investigated.	2019 onwards	DEA&DP Swellendam and Hessequa Municipalities Overberg and Eden District municipalities

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	WORK PLAN	
			TIMING	RESPONSIBILITY
				Implementing agent DEA: Oceans and Coasts branch

\* Cross cutting with water quantity & quality in terms of cooperative governance with BGCMA

## 7.2 Water quantity and quality

Securing an appropriate quantity and quality of freshwater input into the Breede River estuary, is the primary action that must be taken to conserving functioning and biodiversity of this unique system. Other conservation management activities aimed at sustaining the integrity of patterns and processes, is the rehabilitation of degraded areas, (e.g. bank erosion, trampling, etc.) as well as effective control of invasive alien plant species. The latter is cross cutting in terms of preserving biodiversity. An affiliation between BGCMA and BREAf will facilitate securing and maintaining the Reserves for Water Quality and Water Quantity for the Breede River estuary. A representative from BGCMA should be a member of BREAf.

**Table 2: Management Actions for water quantity and quality**

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	DURATION	WORK PLAN RESPONS-IBILITY
<b>Management Objective 1: Ensure that the Reserves for Water Quantity and Water Quality are maintained through ongoing interaction between the RMA and BGCMA</b>				
BREAf to provide input and comment into the Breede-Gourits Water Classification and Resource Quality Objective project through the DEA&DP and CapeNature.	NWA	Recorded attendance at project meetings; Report back from project meeting to BREAf meetings; Estuarine matters included in agenda of BGCMA	2018-	CapeNature DWS DEA&DP
Active representation of BGCMA on BREAf		Recorded attendance at BREAf meetings; Catchment related matters included in agenda of BREAf Signed membership of BGCMA on BREAf Minutes of BREAf meetings	2018-	BREAf BGCMA DEA&DP

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	DURATION	WORK PLAN RESPONS-IBILITY
<b>New management Objective 2: Ensure Disaster Management planning and risk identification</b>				
Develop and implement the Disaster Management Plans for the Breede Estuary, including early warning and reaction protocols in response to for e.g. riverine flooding, sea-level rise, storm events.	Disaster Management Amendment Act (Act No. 16 of 2015)  Municipal Disaster Risk Assessment Reports	Estuary-specific disaster management Early warning and reaction protocols developed Database of disasters and emergency events created and maintained Flood line incorporated into risk register and spatial tools	2018-	Western Cape: Department of Local Government: Disaster Management Centre (WCDMC)  Swellendam and Hessequa Municipalities  Eden and Overberg District Municipalities
Determine the 1:50 and 1:100 year flood lines for the Breede estuary		Breede flood line determination study completed	2018	DEA&DP
<b>Management Objective 3: Reduce bank de-stabilization, erosion and degradation</b>				
Identify, prioritise and develop cost estimates for the rehabilitation of degraded and disturbed areas (e.g. bank erosion, trampling, disturbed riparian vegetation)	ICMA CARA	Fine scale GIS map generated; Site-specified rehabilitation methods identified; Implementation of rehabilitation	2018 onwards	Swellendam and Hessequa Municipalities  DWS DEA DEA&DP CapeNature Implementing agent

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	DURATION	WORK PLAN RESPONS-IBILITY
<b>Management Objective 4: Minimise water pollution</b>				
Identify sources & types of pollution & prioritise mitigation measures	NWA NEM: WA	Pollution sources identified; Mitigation measures devised; Database of offenders developed	2018	DWS DEA&DP DEA Implementing agent
Formalise water quality monitoring programme within the estuary		Water quality monitoring programme formalised & maintained; Database & analysis of baseline data and results	2018-	DWS (Green Drop) DEA&DP DEA
Facilitation of the Implementation of Environmental Resources Protection Plan for the Breede River Catchment in the Western Cape		Reporting on relevant actions of the Environmental Resources Protection Plan for the Breede River Catchment in the Western Cape	2018 ongoing	DEA&DP Swellendam and Hessequa Municipalities  Overberg and Eden District Municipalities DWS BGCMA Implementing Agent CapeNature DoA
<b>Management Objective 5: Control the spread and densification of both aquatic and terrestrial invasive alien plant species</b>				
Identify, prioritise and control invasive alien plant infestation	CARA NEMA NEM:BA	Fine scale GIS map of alien invasive generated; Prioritisation of areas for alien invasive removal.	2018 onwards	Landowners EPIP DWS

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	DURATION	WORK PLAN RESPONS-IBILITY
		Volume/ weight/ ha of areas cleared		Swellendam and Hessequa Municipalities DEA&DP DAFF DoA: LandCare

### 7.3 Conservation of Biodiversity

**Conservation** of the functional attributes and biodiversity patterns and processes of the Breede River estuary is obviously crucial to securing the environmental goods and services that the estuary provides. In terms of conserving biodiversity, more specific actions relate to preserving and affording protection to vital estuarine habitats and species, and compliance management, both in terms of sustainable consumptive use (e.g. fishing, bait collecting) as well as non-consumptive use (e.g. minimizing damage caused by boating-related activities in sensitive habitats, building of jetties, altitude restrictions etc.).

**Table 3: Management Actions for conservation of biodiversity**

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	WORK PLAN	
			TIMING	RESPONSIBILITY
<b>Management Objective 1: Ensure the conservation of an optimal representation of vital estuarine habitats and associated species</b>				
Secure and conserve through a network of conservation areas representative biodiversity in terrestrial, coastal, wetlands, estuarine and the marine environments including ecosystems, habitats, species, genes and ecological infrastructure.	ICMA  Provincial Biodiversity Strategy and Action Plan	Identify high priority areas for active conservation; Identify Thresholds of Potential Concern (TPCs) for habitats & species; Identify conservation measures for each zone; Identify appropriate special conservation measures for individual species where deemed necessary, e.g. Dusky kob lure restrictions & Zambezi shark	2018	DEA DAFF Implementing agent CapeNature SANParks
Identify conservation important areas in line with Protected Area Expansion Strategy (PAES)	Protected Area Expansion Strategies	Areas of conservation importance identified and protection motivated and applied for under PAES	2019	DEA&DP CapeNature

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	WORK PLAN	
			TIMING	RESPONSIBILITY
Enact conservation important zones / areas and associated measures	Municipal By-laws	By-laws enacting conservation zones & associated measures compiled	2018	Swellendam and Hessequa Municipalities
<b>Management Objective 2: Ensure sustainable resource use through effective compliance management</b>				
Implement a compliance management system to enforce conservation measures for living and non-living resources (including fish & bait species related quotas, closed seasons, bag limits, collection methods)	CARA NWA ICMA MLRA Sea Birds & Seals Protection Act Seashore Act NEM:BA MPRDA MSA Municipal By-laws	Habitat surface area & health maintained; Healthy populations of all species; Low levels of non-compliance Record (database) of non-compliance	2018	DEA DAFF CapeNature Implementing agent
Assess the socio-economic and economic impacts of restrictions on fishing, and identify mitigation measures where necessary	MLRA	Report on the implications of the fishing restrictions	2019	DAFF
<b>Management Objective 3: Regulate recreational use in and around the estuary, including water-based and aviation activities, to reduce habitat degradation and disturbance to fauna and flora</b>				
Implement a compliance management system pertaining to water-based activities, e.g. skiing and non-skiing zones, speed limits, wake-boarding etc.	Municipal By-laws	Compliance management system effective, well maintained & ongoing; Number of infringements reduced	2018-	Swellendam and Hessequa Municipalities Implementing agent

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	WORK PLAN	
			TIMING	RESPONSIBILITY
Identify, enact & demarcate zones, and access, for other activities such as kite-surfing, windsurfing and catamarans	Municipal By-laws	Beacons erected; Monitoring & compliance enforcement regularly undertaken; By-laws developed & enforced	2018-	Swellendam and Hessequa Municipalities Implementing agent
Determine carrying capacities for each water based activity using the 'Recreational Water Use Manual' (DWA, RW GP2.2) in consultation with relevant organs of state	Municipal By-laws	Carrying capacities set for each activity; Carrying capacities enacted into by-laws	2018	Swellendam and Hessequa Municipalities  Implementing agent DWS
Regulate water-based competitions by maintaining an application database	Municipal By-laws-	Database developed to manage & analyse historical data, fee collection, scheduling, no. of participants, boats, zoning	2018-	Swellendam and Hessequa Municipalities  Implementing agent
Negotiate with Civil Aviation Authority to investigate the possibility of a 'special flight rules area' for the air space over the CPZ	CAA Section NEM: PAA	Special flight rules area of 500 ft amsl enacted for Breede CPZ	2018	Civil Aviation Authority BREA Implementing agent

## 7.4 Land-use and infrastructure

The Swellendam and Hessequa municipalities are required, in terms of the ICMA, to incorporate the proposed coastal management line and updated Coastal Protection Zone within their spatial development frameworks. The BREAF should champion the integrating of the coastal management line and the EMP as a whole into the Integrated Development Plans (IDPs) and Spatial Development Frameworks (SDFs) of the four municipalities. Additional special planning regulations, in terms of style and sustainability, should also be identified and adhered to.

**Table 4: Management Actions for sustainable development**

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	WORK PLAN	
			DURATION	RESPONSIBILITY
<b>Management Objective 1: Implement an estuary zonation plan that directs infrastructural development and other land use practices (e.g. agriculture) within the various floodlines, coastal management lines, buffer zones and overlay zones</b>				
Ensure that the EFZ, CML, risk zones, floodlines and the critical biodiversity areas (identified in the BSP and PAES) (sensitive areas) are included in the Spatial Development Framework and IDPs of Municipalities.	ICMA NEMA CARA MSA	EFZ is demarcated in the SDF.	2018 ongoing	BREAF CapeNature Implementing agent DEA&DP DAFF
Identify appropriate development setback/ coastal management line(s), coastal protection zone & obtain legal status	ICMA MSA NEMA	Coastal management lines determined Coastal management line gazetted in relevant legislation Coastal management lines integrated into IDPs & SDFs	2018	BREAF DEA DEA&DP Swellendam and Hessequa Municipalities  Implementing agent

<b>Management Objective 2: Facilitate equitable access for both pedestrian and vehicular access</b>				
Development & maintenance of spatially-explicit database on which existing jetties and public and private launching sites are captured	Seashore Act ICMA	Database of jetties and slipways developed & maintained	2018	CapeNature Implementing agent
Surveys/patrols to monitor for new structures being built without authorisation	Seashore Act ICMA	Report on outcomes of survey patrols or incidents reporting	2018 ongoing	BREAF CapeNature Implementing agent
Efficient authorisation & licensing system with respect to lease agreements as issued by CapeNature	Seashore Act	Efficient management and collection fees for leases agreements	2018	CapeNature
<b>Management Objective 3: Ensure that participation of BREAF in all applications/authorisations that may impact on the estuarine functional zone</b>				
Ensure that all new EIA, development, rezoning applications include the BREAF as an I&AP.	ICMA NEMA NWA CARA NEM:WA EIA Regulations MPRDA	Database of all new developments & comments through EIA process Developments tabled at BREAF meetings	2018	DEA&DP DWS DAFF Implementing agent BREAF
Develop & maintain database to monitor adherence to building plan system	Municipal By-laws	Data with current information i.t.o. applications, designs & approvals	2018-	Swellendam and Hessequa Municipalities

## 7.5 Public education and awareness, and knowledge enhancement

Raised public appreciation in terms of the environmental goods and services provided by the estuary, and the compliance management rules and regulations necessary to protect these resources, is a crucial. The former implementing agent, the LBRCT developed a website ([www.breede-river.org](http://www.breede-river.org)) that provides a valuable platform for the dissemination of all relevant information in terms of conservation on the Breede River estuary, including compliance issues, monitoring and research results, and general values of the estuary. The LBRCT also produced a newsletter than deals with topical issues. Educational and compliance signage has also been provided at strategic points. These existing efforts must be sustained on the long term, through funding secured from the local municipalities.

**Table 5: Management Actions for public education and awareness and knowledge enhancement**

ACTION	RELEVANT LEGISLATION	PERFORMANCE INDICATOR	WORK PLAN	
			DURATION	RESPONSIBILITY
<b>Management Objective 1: Promote high levels of public awareness and appreciation of the ecosystem services provided by the Breede River estuary, threats posed to its integrity, and compliance management</b>				
Raise and maintain public awareness of the values of the estuary, threats & compliance measures		Strategically placed signage; Dissemination of information via website, newsletters, pamphlets etc., relating to both compliance awareness & environmental education	2018	BREAF  DEA&DP Implementing agent
Promote public involvement in data collection and estuary monitoring (through Citizen science and Adopt-a-Beach initiatives)		Number of public events held Number of participants Annually updated database maintained by BREAF	2018-	BREAF  DEA&DP Implementing agent

**Management Objective 2: Enhance our scientific knowledge, through research and monitoring**

Establish a comprehensive monitoring programme (as per Appendix 1 Resource Monitoring Protocol)	ICMA	Research projects and publications; Specific bio-indicators identified to monitor the state of the estuary; Monitoring database produced & maintained;	2018-	DEA&DP DWS Implementing agent BREA DAFF
Investigate carrying capacity (i.r.t. resource use, users, boat numbers, etc.)	MLRA, NWA, ICMA, NEM:BA	Monitoring reports; Active research network		DEA&DP Implementing agent BREA DST
Engage Dept of Science and Technology, academic and research institutions to undertake scientific research				
Investigate the environmental impacts of the existing water-based activities and identify mitigation measures	NEMA			DEA&DP Implementing agent BREA DEA

## 8 IMPLEMENTATION

### 8.1 Key role players

It is essential that this EMP is regarded as a strategic plan that can guide the detailing of implementation actions and identification of implementing agents. Therefore, it does not specify the required resources (human and financial) required for proper management of the estuary. However, it does offer a schedule or phased planning approach that incorporates capacity building and implementation at the local level over a five-year period. It is crucial that champions/project leaders/teams are identified who will be responsible for the formulation of detailed action plans and the implementation thereof. Ways of empowering historically disadvantaged individuals with regards to the local management of the Breede River estuary must be explored and implemented.

Co-management and effective governance has already been identified as the keystone to the efficient and effective management of the Breede River estuary.

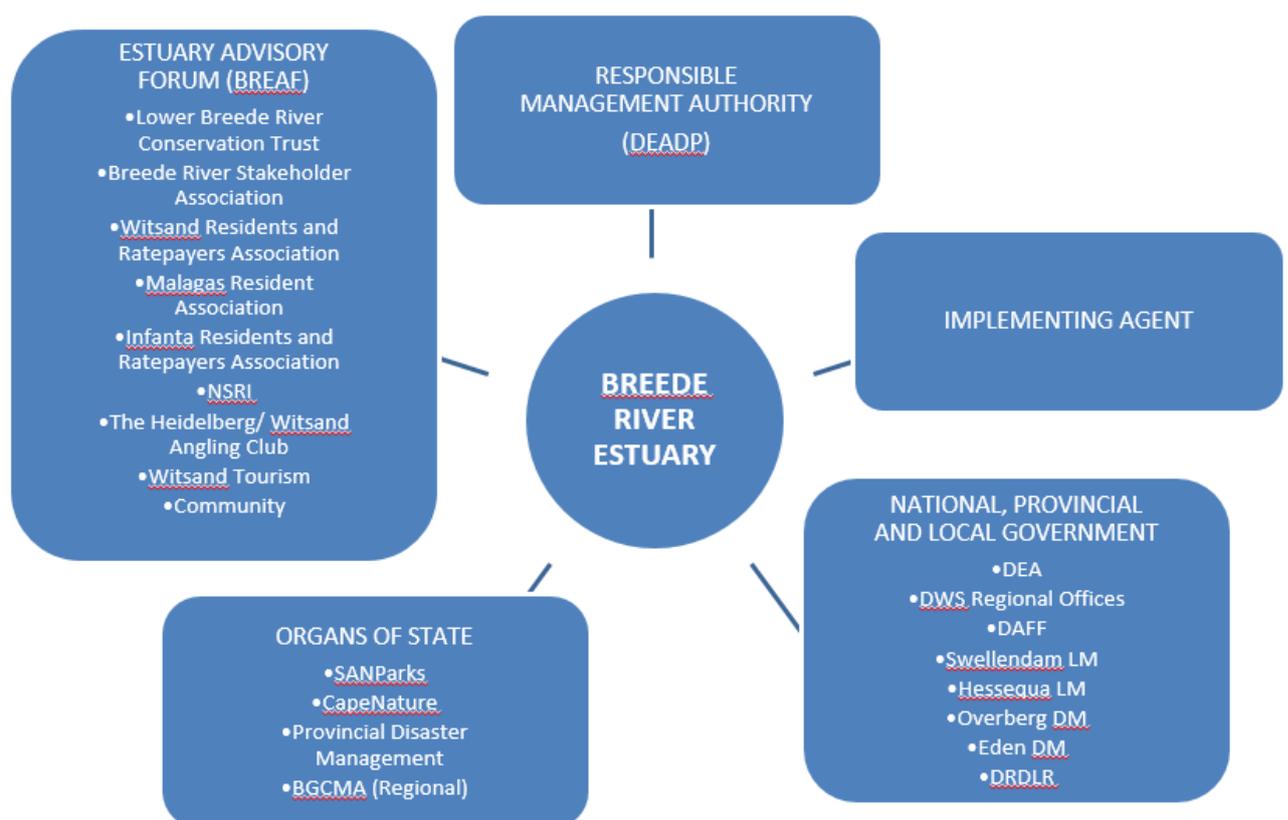


Figure 15: Key role players for the management of the Breede River estuary

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### 8.1.1 Estuary Management Authority

NEMP identifies the **Western Cape DEA&DP**, or its assigned representative, as the **Responsible Management Authority** responsible for the development of the Breede River EMP as well as being responsible for the co-ordination of its implementation. This implementation function can be effected through a range of different forums and actors.

### 8.1.2 Implementing Agent

The previous implementing agent, the **Lower Breede River Conservancy Trust (LBRCT)**, was established in 1996, and was originally contracted as service provider to the municipalities of Hessequa and Swellendam as well as the then Marine and Coastal Management and now Department of Agriculture, Forestry and Fisheries through the Swellendam Municipality, to implement specific activities mandated by relevant legislation pertaining to the Breede River estuary from the mouth upstream for approximately 56 km to Nuyshoek.

Management of the LBRCT's operations was directed and supervised by an executive committee comprising of elected voluntary LBRCT members who performed their assigned executive duties without any monetary or material reward.

The LBRCT was responsible for compliance management in terms of recreation-related by-laws and historically was also responsible for the implementation of the Marine Living Resources Act on behalf of Marine and Coastal Management, as well as fulfilling important functions in conservation management, monitoring development, ecological research and monitoring, water quality monitoring and public awareness.

Because of changes in the national regulatory regime for estuaries, the role of the LBRCT will be re-evaluated and clearly defined taking into account their successful past successes and potential future contributions.

According to the NEMP, the **role of BREAF** is interpreted as providing an advisory service to the RMA on issues specific to the management and implementation of the EMP, as well as being the hub that links all stakeholders, which serves to foster stakeholder engagement and to facilitate the implementation of the project plans identified (see Appendix II: Draft Constitution of the Breede River Estuary Advisory Forum). The broader **community** will be able to voice concerns and raise issues via the BREAF.

### 8.1.3 Breede River estuary Government Departments and organs of state

The successful implementation of the EMP may be seen as also dependent on the contribution of a number of governmental role players, including:

- **Western Cape Government departments:** Responsible for legislative support, including compliance, funding, research and monitoring;

- **Municipalities, including Hessequa and Swellendam Local Municipalities, and Eden and Overberg District Municipalities:** Responsible for legislative support and funding;
- Relevant **National government departments**, especially Environmental Affairs, Water Affairs (via the regional office), Rural Development and Land Reform; and
- Organs of State (SANparks, CapeNature, BGCMA).

The National Department of Environmental Affairs is generally responsible for national standardisation of estuarine management and approval of provincially-led estuarine management plans. Direct involvement in individual estuaries, such as the Breede, will occur via existing forums for intergovernmental coordination. These forums will have the management of the Breede River estuary on their agendas from time to time, and include:

- **Western Cape Provincial Coastal Committee:** Responsible for facilitating co-management and effective governance and provincial co-ordination of estuarine management;
- **Overberg District Municipal Coastal Committee:** Responsible for facilitating co-management and effective governance; and
- **Eden District Municipal Coastal Committee:** Responsible for facilitating co-management and effective governance.

## 8.2 Research and monitoring

### 8.2.1 Resource monitoring

Although a considerable amount of ecologically-based research and monitoring has been undertaken on the Breede River estuary, there are nevertheless gaps in knowledge that should be addressed to contribute to the effective management of this ecosystem. Research and monitoring should focus on abiotic and biotic components, as well as on the impacts of resource utilisation (see Appendix I), to evaluate the health of the estuary, achievement of biodiversity targets and for compliance monitoring purposes. Taljaard (2003) also identified future monitoring requirements to (a) improve the confidence in the data required by the Intermediate determination of the RDM, for the estuary, (b) to meet the requirements of a Comprehensive Determination of RDM, and (c) to validate the predictions made during the allocation of Reserve and Resource Quality Objectives. The collection of data for the projects identified in Appendix I should be aligned with the requirements of the RDM studies.

### 8.2.2 Review and evaluation

This EMP should be reviewed and updated on a five-yearly from the date it was approved and adopted to ensure that objectives and targets are being achieved. An audit should be undertaken alongside the review and evaluation to determine and grade the success and failures with the implementation of the management plan

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according to the specified performance indicators (Appendix 2). The audit should ultimately be the responsibility of the RMA or its assigned representative and the BREAF.

The review will involve revisiting the Situation Assessment to determine the progress or changes that have come about as a result of the EMP in terms of the objectives that were originally set as well as any changes in legislation or policies, and followed by revisions or refinement of the objectives and where necessary, aspects of the management actions plans or monitoring protocol.

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## APPENDIX 1: RECOMMENDED RESOURCE MONITORING PROTOCOLS

The following table provides a list of recommended abiotic and biotic parameters that should be monitored for the Breede River estuary to assess compliance with the recommended freshwater reserve for the estuary (see Taljaard, 2003) as referred to under Management Objective 1: Water Quality and Quantity and Management Objective 2: Conservation of Biodiversity. Additional recommendations have been included for monitoring estuarine usage.

COMPONENT	OBJECTIVES	INDICATORS	SPATIAL SCALE	TEMPORAL SCALE	Sampling/analytical techniques
<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>	Designated sites (existing and new ones to be identified)	Quarterly	<ul style="list-style-type: none"> <li>• Water column chlorophyll</li> <li>• Map using aerial photos</li> <li>• Surveys</li> </ul>
<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>	Throughout estuary for fish  Throughout for bait (sand- and mud banks)	Quarterly	Permits issued  Non-compliance data
<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 water quality in each of the river reaches	Physical and chemical: <ul style="list-style-type: none"> <li>• Nitrate</li> <li>• Ammonium</li> <li>• Phosphate</li> <li>• pH</li> </ul>	Sampling sites in each respective reach	Quarterly	Collect water quality samples according to laboratory specifications and sending it for analysis

COMPONENT	OBJECTIVES	INDICATORS	SPATIAL SCALE	TEMPORAL SCALE	Sampling/analytical techniques
		<ul style="list-style-type: none"> <li>• EC/Salinity</li> <li>• Oxygen</li> <li>• Temperature</li> </ul>			pH, EC, salinity, Temp and Oxygen measured <i>in situ</i>
<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>	Sampling at problem sites where full-contact recreation is exercised	Quarterly	Collect water quality samples according to laboratory specifications and sending it for analysis
<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>	At pre-selected sites	Quarterly	<ul style="list-style-type: none"> <li>• Secchi measurements as at water quality sites – filter and weigh</li> <li>• Fixed photo monitoring (annually)</li> <li>• Landsat interpretation</li> <li>• Bathymetric measurements</li> </ul>
<b>Groundwater:</b> <ul style="list-style-type: none"> <li>• quality</li> <li>• water level</li> </ul>	To assess groundwater quality and water levels  To inform management interventions and effectiveness	Groundwater quality: <ul style="list-style-type: none"> <li>• EC</li> <li>• pH</li> <li>• Hydro-geochemistry</li> <li>• Aquifer “type” characteristics</li> </ul>	Groundwater usage within CPZ and within 10 km thereof	Quarterly	<ul style="list-style-type: none"> <li>• Collect water quality samples according to laboratory specifications and sending it for analysis</li> </ul>

COMPONENT	OBJECTIVES	INDICATORS	SPATIAL SCALE	TEMPORAL SCALE	Sampling/analytical techniques
		Groundwater level data: <ul style="list-style-type: none"> <li>• Rising</li> <li>• Declining</li> <li>• Rainfall relation</li> </ul>			<ul style="list-style-type: none"> <li>• pH and EC can be measured <i>in situ</i></li> </ul>
<b>Chemical pollution</b>	<ul style="list-style-type: none"> <li>• To assess level of chemical pollution at problem sites</li> <li>• To intervene with management where appropriate</li> </ul>	Chemical compound & concentration: <ul style="list-style-type: none"> <li>• Concentration</li> <li>• Possible source</li> </ul>	At pre-selected sites only ( <i>ad hoc</i> )	Quarterly	Collect water quality samples according to laboratory specifications and sending it for analysis
<b>1: 100 year flood line</b>	To record the level of the 1: 100 year flood line	Data captured into a GIS	Entire estuary	2018 onwards	Capture waypoints into a GPS and download into a GPS
<b>Estuarine usage:</b> <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> <li>• Public slipways</li> <li>• Jetties</li> </ul>	<ul style="list-style-type: none"> <li>• To assess level of estuarine use by different user groups</li> <li>• To relate estuary use to all of the above</li> <li>• To inform management interventions where appropriate</li> </ul>	<ul style="list-style-type: none"> <li>• Number of boats registered</li> <li>• Numbers of permits issued</li> <li>• Number of non-compliance documented</li> <li>• Number of organized events and participants</li> <li>• Number of reported incidents</li> </ul>	Through-out estuary: Access points (public slipways, boat permits etc.)	Quarterly	<ul style="list-style-type: none"> <li>• Permits issued</li> <li>• Non-compliance data for each respective activity</li> <li>• <i>Ad hoc</i> counts</li> </ul>

To improve the confidence of the Intermediate determination of RDM of the Breede River estuary, in particular, the following monitoring surveys are recommended (Taljaard, 2003):

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### **Abiotic components:**

1. Atypical rain patterns during the study period, prevented specialists from measuring the extreme extent of saline intrusion typically encountered during low flow periods in the Breede River estuary. To improve confidence, particularly for the low flow period, salinity distribution patterns, as well as water quality conditions at such times still need to be monitored.
2. The levels of water quality variables, such as suspended solids and toxic substances (e.g. pesticides and herbicides) in inflowing river water need to be established for the Present State.
3. Reference Conditions for water quality variables need to be established for inflowing river water needs to be established.

### **Biotic Components:**

1. To improve confidence of the predictions that need to be made in RDM determinations requires more data on the relationships between different biotic and abiotic variables. This requires in-depth research – a cross-sectional analysis across different states or systems to determine these relationships. Some of these issues are being addressed in a Water Research Commission Project aimed at improving information requirements and understanding in terms of determination of Resource Directed Measures.
2. The utilisation of microphytobenthos needs to be better established, i.e. “Who eats what” is not well understood.
3. Plant habitat monitoring: Area of intertidal flats should distinguish *Zostera* beds, and area of unvegetated sandflat versus mudflat.
4. The extent to which macrophytes in the Breede River estuary rely on groundwater must be established.
5. Phytomicrobenthos species and biomass assays need to be conducted to determine the extent of species change with seasons.

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6. Monitoring the distribution of fringing macrophytes along the banks of the estuary, particularly *Phragmites australis*. If average salinity increases in an upstream direction, dieback of macrophytes may occur as a consequence. Sampling during the wet and dry season.
  7. Monitor distribution and abundance (hole counts) of intertidal macrobenthos, particularly large burrowing forms. If average salinity increases in an upstream direction, more suitable conditions provided by higher salinity values may allow colonization of new intertidal banks by some species. At the same time, subsurface sediment samples should be collected at high, mid and low tide levels for particle size analysis.
  8. For fish, four sampling exercises at 25 sites from the mouth to 40 km upstream during spring, summer, autumn and winter need to be undertaken. At least one sampling exercise must be done over a complete weather cycle or 7 days to get some idea of the short-term responses of fish to changes in flow.
  9. To improve confidence and to evaluate performance in the long term, the following would be required for birds: all water birds need to be counted in the different estuarine section described in this report during late summer (Feb-Mar) (essential), midwinter (Jun-Jul) (important), and spring (Sep) (could be important) at spring low tides. Also, birds in the lower estuary should be counted in one low tide period, upper estuary in one day (the following day at low tide), count on days of low human disturbance.

## APPENDIX 2: RECOMMENDED PERFORMANCE MONITORING PLAN

MANAGEMENT OUTPUTS	PERFORMANCE INDICATOR	TIMING	LEGISLATION	RESPONSIBILITY
<b>6. Institutional and Management Structures</b>				
1.1 Maintain a fully functional estuary advisory forum (the BREAf) that will facilitate co-management and effective governance	Constituted BREAf Ongoing record of meetings held	Assess twice a year	ICMA	BREAf DEA&DP DEA
1.2 Secure appropriate funding and legal support for implementation of the Breede River EMP	Guaranteed annual allocation of funds Specific by-laws developed	Assess twice a year	ICMA MSA	DEA&DP Municipalities BREAf Implementing agent
<b>7. Water Quantity &amp; Quality</b>				
2.1 Ensure that the Reserves for Water Quantity and Water Quality are maintained through ongoing interaction between the BREAf and BGCMA	Sustained estuarine health and function Sustained river flow Good water quality	Biannual for BGCMA	NWA: RDM	DWS DEA&DP BGCMA BREAf CSIR
2.2 Reduce bank de-stabilization and erosion, and habitat degradation	Number of degraded areas rehabilitated and secured	Ad hoc visual monitoring during normal daily activities or responsibilities	ICMA CARA	Implementing agent Local municipalities DWS: WfW
2.3 Minimise water pollution	Number and volume of sources of pollution reduced	Annually for DWS Monthly Implementing agent	NWA NEM: WA	DEA DWS DEA&DP Implementing agent

				Local municipalities
2.4 Control the spread and densification of both aquatic & terrestrial invasive alien plant species	Increased number of tons removed/ hectares cleared	Annually for disturbed sites	CARA NWA	Implementing agent DWS: WfW DEA: WfC Swellendam and Hessequa Municipalities  Landowners
<b>8. Conservation of Biodiversity</b>				
3.1 Ensure the conservation of an optimal representations of vital estuarine habitats and associated species	Conservation areas secured through by-laws	Once a year	Municipal By-laws Protected Area Expansion strategies	DEA DAFF DEA&DP BREAf CapeNature Implementing agent Swellendam and Hessequa Municipalities
3.2 Ensure sustainable resource use through effective compliance management under the Marine Living Resources Act	Reduction in infringement incidences	Ongoing for compliance and MLRA appointed personnel; daily patrols and inspections. BREAf &	MLRA	DEA DAFF CapeNature Swellendam and Hessequa Municipalities

		angling club members may assist.		
3.3 Regulate recreational use in and around the estuary, including water-based and aviation activities, through effective compliance management	Reduction in infringement incidences	Ongoing for compliance monitors and appointed personnel; daily patrols and inspections.	Municipal By-laws	Local municipalities BREAf DWS Implementing agent
<b>9. Land-use and Infrastructure</b>				
4.1 Implement an estuary zonation plan that directs infrastructural development and other land use practices (e.g. agriculture) within the various development setback lines/buffer zones	Reduction/cessation of inappropriate development in and around the estuary	Every 5 years	ICMA MSA	BREAf DEA&DP DAFF Implementing agent
4.2 All jetties and slipways authorised and licensed	Reduction in illegal development and operations of jetties & slipways	Every 6 months	Seashore Act NEMA	Implementing agent CapeNature
4.3 Ensure that all proposed developments within the development buffer zones adhere to the EIA process	Each development lawfully constructed	Depends on number of developments and EA granted	NEMA ICMA	BREAf DEA&DP DAFF DWS Implementing agent Swellendam and Hessequa Municipalities  CapeNature

4.4. Ensure the incorporation of the EMP into the Integrated Development Plans and Spatial Development Frameworks	EMP is adopted into IDPs and SDF	Every IDP/SDF review cycle	MSA ICMA	Swellendam, Hessequa, Eden & Overberg municipalities BREAD
<b>10. Public Education and Awareness and Knowledge Enhancement</b>				
5.1 Promote high levels of public awareness and appreciation of the ecosystem services provided by the Breede River estuary, threats posed to its integrity, and compliance management	Increase in number of newsletters; Sufficient number of public notice boards; Increase in number of conservancy members and voluntary monitors; Increase public participation in coastal/estuary/river clean ups and other initiatives eg. Breede Watch Increase in number of visiting school groups	Once year		BREAD Implementing agent
5.2 Enhance our scientific knowledge, through research and monitoring	Increase in number of research projects and monitoring programmes	Once a year		BREAD DEA&DP DWS DAFF Implementing agent DST

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## APPENDIX 3: THE DRAFT CONSTITUTION OF THE BREEDE RIVER ESTUARY ADVISORY FORUM

### 1. Mission

The Breede River estuary, in all the beauty and bio-diversity of its eco-systems (flora, fauna, avifauna and aquatic life) ranks as the foremost estuary in South Africa, and, as such, it must be preserved as the rightful heritage of future generations.

### 2. Purpose

The purpose of the BREAF is:

- 2.1. To liaise with, and advise the RMA and any other of its member's constituencies on any matter concerning the environmental management of the Lower Breede River estuary, including the setting of objectives, how to achieve those objectives and the priorities for environmental governance;
- 2.2. To act as an effective communication channel between the RMA and relevant stakeholders, including all Government departments, both national and local, and in particular, to be a channel through which speedy and decisive action can be motivated in the best interests of the management of the Breede River estuary;
- 2.3. To ensure that the Breede River estuary is being managed in accordance with all applicable national and local legislation and in alignment with all prevailing policies;
- 2.4. To ensure that recreational activities, both consumptive and non-consumptive, are carried out and permitted within a framework that guarantees sustainability and the least amount of peripheral interference and negative effect to the system.

### 3. Forum Status

- 3.1. The Forum status shall be that of an advisory body, whose resolutions shall be taken into account by all relevant public bodies or authorities as shall be affected by same in regard to the stated mission and objectives, to the extent of the area of the estuary as determined by the Forum in consultation with its role players and the consultants.

### 4. The Estuary Extent

- 4.1. Subject to no further instruction being given to the Forum by any Legislated authority, the boundary lines denoting the Breede River estuaries extent shall be;

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- 4.1.1. To the west, the official land surveyors mark as the official extent of the tidal reach placed at position 34°15'0495'' latitude and 20°30'4945'' longitude
  - 4.1.2. To the east, the eastern boundary line be denoted by the line of latitude east 20°15, whereby the existing beacon on the buttress of the southern bank is anticipated as being in the correct position. The mouth shall then extend from that point, relevant to its variable extent, to the approximate end of the beach adjacent to the buildings of the beach restaurant and ablution block".

## **5. Membership**

- 5.1. The BREAf shall consist of at least 12 but not more than 18 members.
- 5.2. Members shall represent stakeholder sectors and/or be such persons having appropriate experience, expertise and skills in order to enable the BREAf to carry out its functions.
- 5.3. Any member who represents any Government department NGO or any organization on the BREAf shall provide the BREAf with proof of their appointment on behalf of the appropriate organization.
- 5.4. With the agreement of its members, BREAf shall be entitled to co-opt ad hoc representation of individuals or representatives of bodies who it considers necessary to perform its duties in any matter from time to time.
- 5.5. The basic membership structure shall be as detailed in the final EMP.

## **6. Meetings and Procedures**

- 6.1. The initial BREAf shall comprise of members identified via the Breede River EMP, who shall serve for an initial period of two years. Thereafter those members, who are not subject to nomination by Governmental Departments, shall resign, though may stand for re-election with other nominees by the remaining appointees, at a bi-annual General Meeting to be held within twenty-six months of the inaugural and subsequent biennial General Meetings.
- 6.2. Members of the BREAf shall elect office bearers as determined by the BREAf from time to time, which as a minimum shall comprise a chairman and a vice-chairman, with a duly appointed secretary / treasurer.
- 6.3. The BREAf shall agree the frequency meetings, which shall be at least twice a year, and the venue of such meeting. The BREAf shall further agree the formalities to be followed at each meeting, including the option to hold meetings via email if necessary, and then the procedures to be followed.
- 6.4. The quorum shall consist of half of the members of the BREAf plus one, but which must include either the Chairman or the Vice Chairman.

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- 6.5. In the event that a quorum is not achieved at a meeting where the required notice as determined by BREAF has been given, then such meeting shall be stood down for a period of seven days. On re-convention at the same time and the same place, those members present shall constitute a forum and in the event that neither the Chairman nor the Vice Chairman is present, shall elect a Chairman from their number.
  - 6.6. Should any member of the forum fail to attend two consecutive meetings such member shall be assumed to have resigned, and, in the event that it is a nominee of a Governmental Department, the department shall be advised accordingly.
  - 6.7. Any member who is reasonably deemed incapable of fulfilling his duties for physical, mental, or practical reasons, or convicted of a felony, shall be required to resign.
  - 6.8. In all instances the BREAF shall endeavour to reach decisions by consensus.
  - 6.9. However, the chairman may exercise the prerogative to determine that a resolution, on which consensus has not been achieved, should be put to the vote where a majority of 60% of positive votes shall cause it to be carried.

## **7. Liability**

- 7.1. No forum member shall be liable to any other person whatsoever for any act of omission by himself, by the forum, or by its servants or agents.

## **8. Finance**

- 8.1. The BREAF shall draft a budget for its financial requirements and endeavour to find a source / sources or party / parties that will undertake the funding thereof.

## **9. Amendments to the Constitution**

- 9.1. From time to time members shall be entitled to amend the constitution subject to due notice thereof being given and such amendments being approved unanimously at any formal (BREAF) meeting.