


R. INFANTA AND BREEDE

Desk Note R3a. Breede River Estuary - Overview



Oblique aerial view to the west on the lower section of the Breede River Estuary.

Source: The Breede River Estuary (Cape Province, South Africa): A historical perspective on hydrology, geomorphology and sedimentology. By Burg Flemming and Keith Martin. In *Geo-Marine Letters* (2021) 41: 15].

<p><i>Secrets of De Hoop and Environs</i></p>	<p>Field notes on the GEOMORPHOLOGY, HYDROLOGY and ARCHAEOLOGY Between CAPE AGULHAS and CAPE INFANTA</p>	 <p>Geomorphological Research</p>
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The information in this Desk Note is taken verbatim (with several necessary omissions and text adjustments) from: Breede River Estuarine Management Plan, Final Draft, Jun2 2016, by the Western Cape Government.

Introduction

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 km². 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.

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 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 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.

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 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.

Catchment area and tributaries

The first catchment area of the river is in the Skurweberg mountain range close to Ceres. The head waters then run through the modern day Mitchells Pass before plaining out on its middle course in the Worcester area. The river mouth is in an estuary at Port Beaufort on the Indian Ocean.

On its course through the Breede River Valley, it is joined by the Holsloot and Smalblaar Rivers, from their catchment areas, the Du Toitskloof and Stettyn mountain ranges. The Hex River with its catchment area in the Hex River Mountains also joins the Breede River from the north-east. Further downstream the Slang River and Buffeljags River drain the southern slopes of the Langeberg mountains before depositing their water in the Breede River. Near Swellendam the river is joined by the Riviersonderend, with its catchment area in the mountains surrounding the Theewaterskloof Dam near Villiersdorp.(Figure 1).

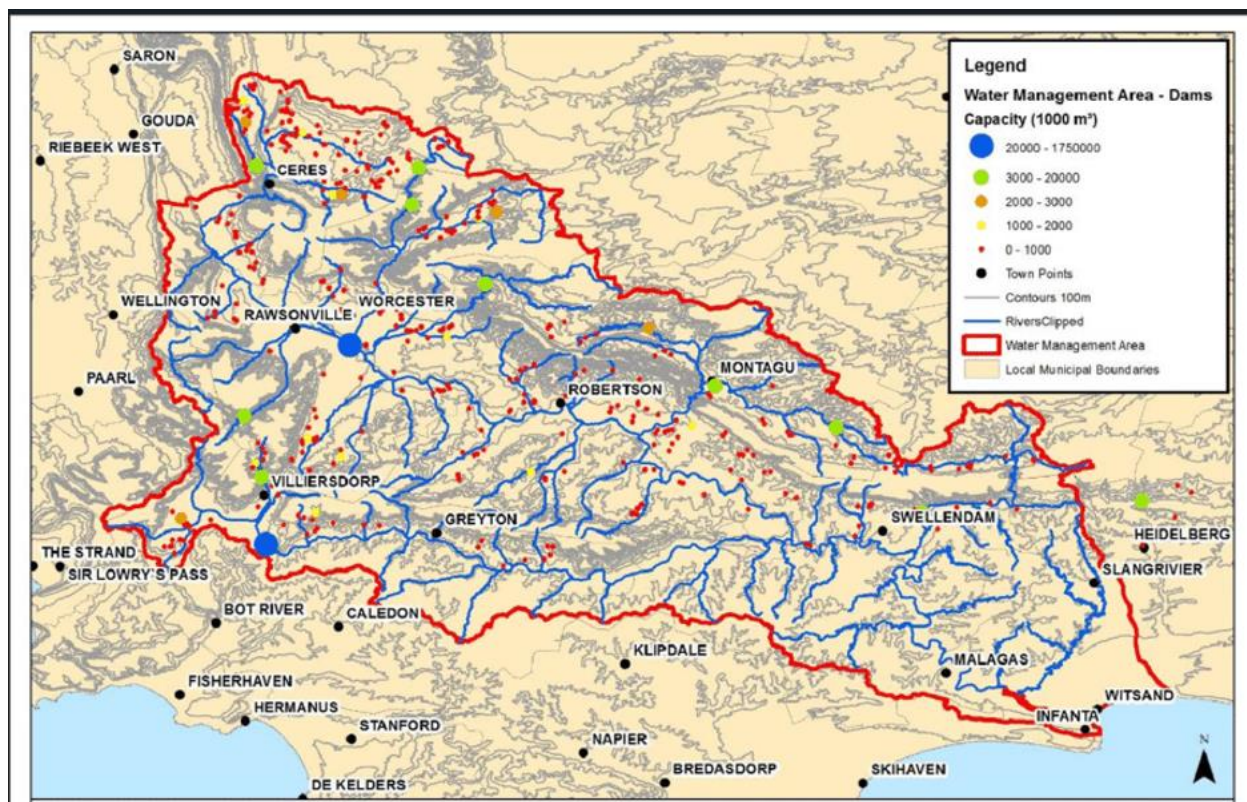


Figure 1. Breede River catchment area.

Source: Breede River Estuarine Management Plan, Final Draft, Jun2 2016, by the Western Cape Government.

Estuary

By the hydrological definition of an estuary*, the Breede River Estuary limit is about 50 km inland from the ocean (Figures 2 and 3).

* The word "estuary" is derived from the Latin word *aestuarium* meaning tidal inlet of the sea, which in itself is derived from the term *aestus*, meaning tide. There have been many definitions proposed to describe an estuary. The most widely accepted definition is: "a semi-enclosed coastal body of water, which has a free connection with the open sea, and within which seawater is measurably diluted with freshwater derived from land drainage"

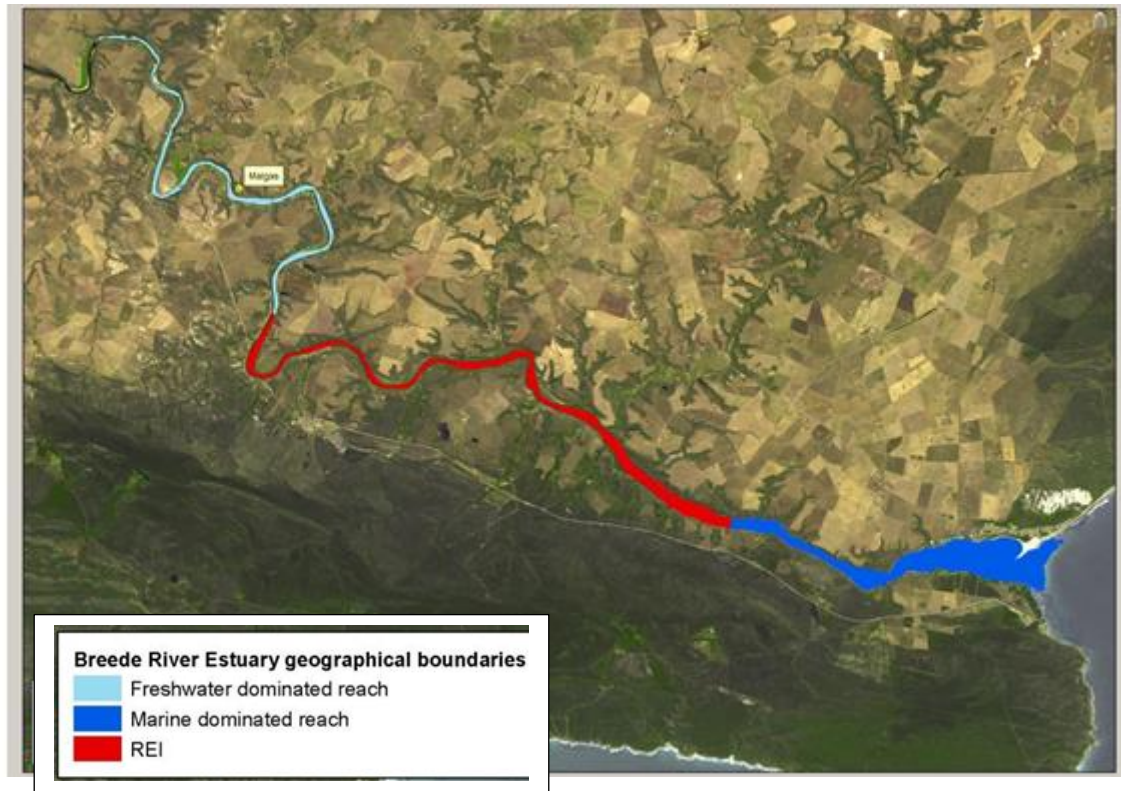


Figure 2. Geographical boundaries of the Breede River, showing different biophysical regions.

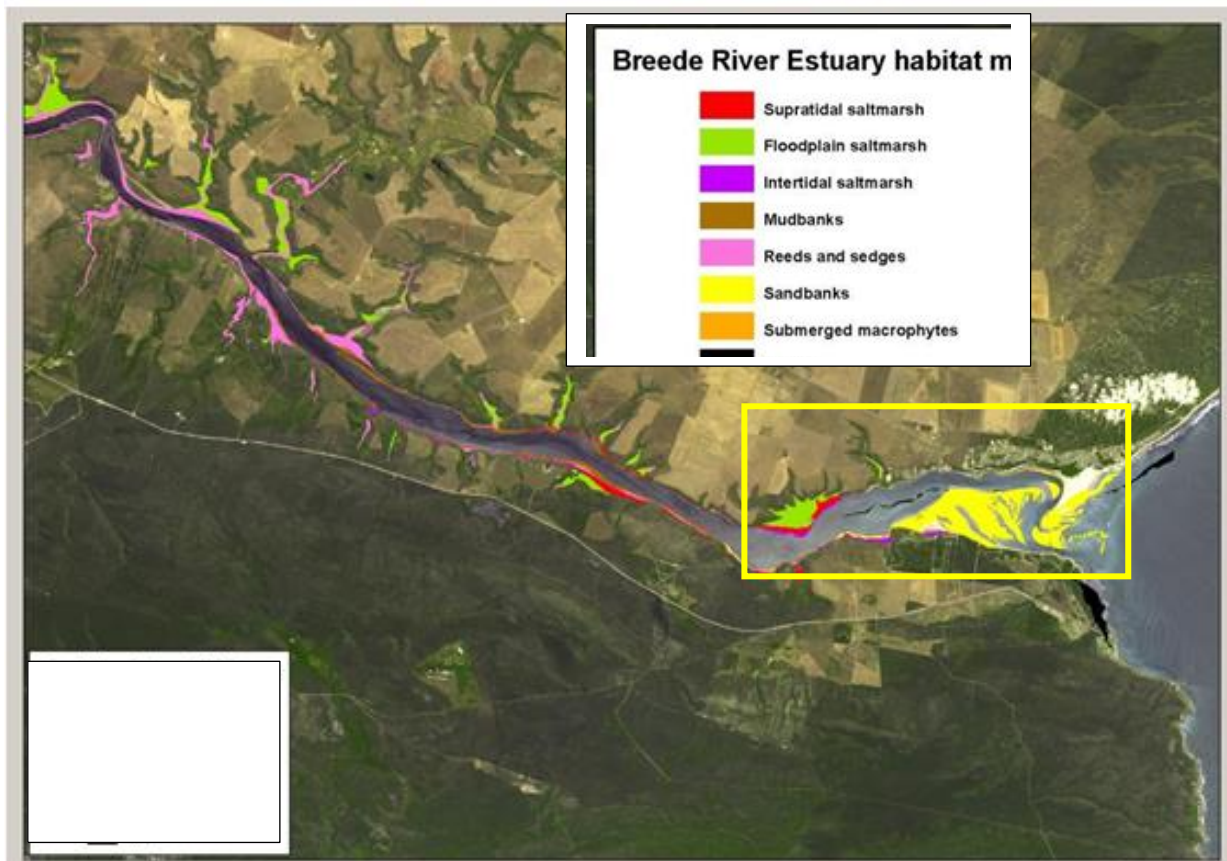


Figure 3. Habitats of the lower section of the Breede River Estuary. The lowest section, in a yellow box, is the Breede River Mouth (enlarged in Figure 5).

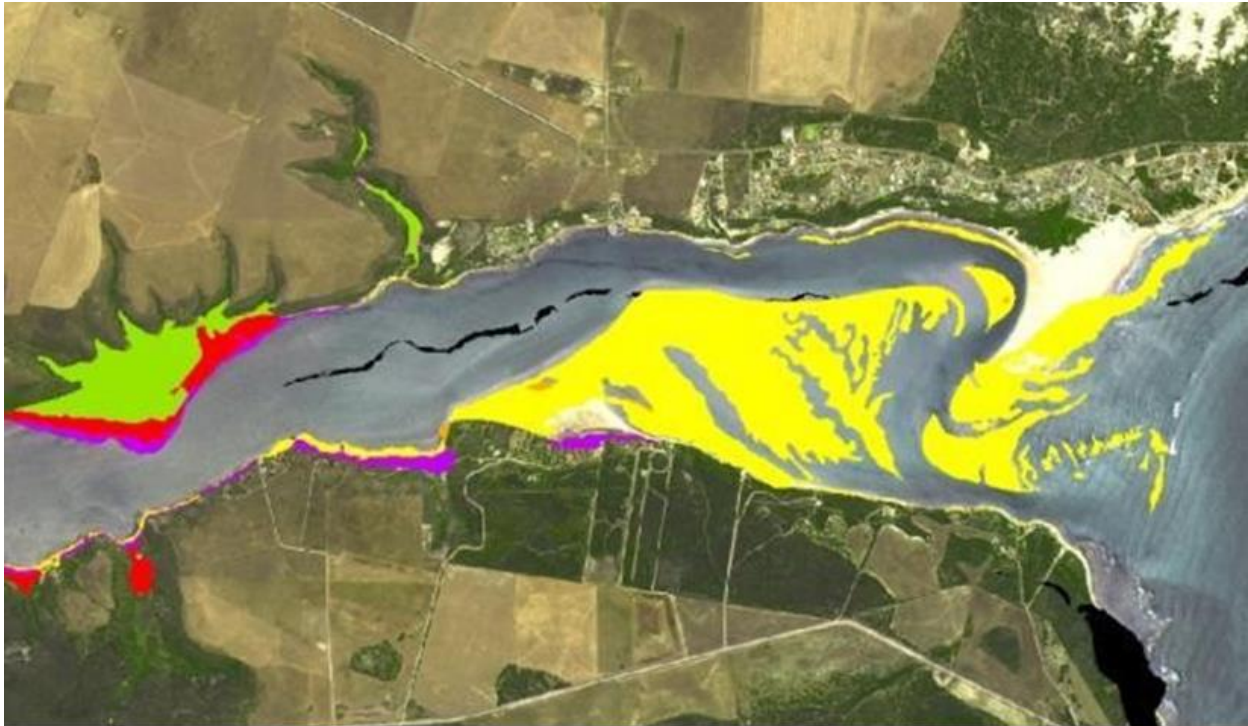
Source of Figures 3 and 4: Breede River Estuarine Management Plan, Final Draft, Jun2 2016, by the Western Cape Government.

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The lowest section of the Breede River Estuary is the Breede River Mouth (Figures 4 to 6).



Figure 4. The Breede River Mouth. Top – topography map; bottom satellite image.
(Figure by the author).



Legend:

Breede River Estuary sensitive habitat map



Figure 5. The Breede River Mouth sensitive habitat map.

(Author's note: the black areas – rocks – are inaccurately marked).

Source: Breede River Estuarine Management Plan, Final Draft, Jun2 2016, by the Western Cape Government.



Figure 6. The Breede River Mouth.
(Photograph by Jean Tresfon)