

# THEME 2 ESTUARIES OF THE WESTERN CAPE

Estuaries form the interface between land, rivers and sea, and are an integral part of the coastal system. Estuaries are valuable assets providing essential ecosystem services, such as nursery functions to coastal fisheries, freshwater flows to the marine environment, replenishment of nutrients and organic material to coastal habitats, protection from floods and storm surges, carbon sequestration and safe bathing areas (NBA 2011).

The Western Cape Province has 56 estuaries within its boundaries, from the Sout estuary on the West Coast of the province to the Bloukrans estuary on the south east coast of the province (**Figure 1 to Figure 4**).



## DRIVERS

Most of the Estuaries are subjected to a number of pressures estuaries are subjected to are from mainly due to land use drivers located within the estuarine system and, also land use drivers located upstream in the river system. Flow modification, pollution, mining and other development within the Estuarine Functional Zone (EFZ), the exploitation of estuarine resources and climate change (changes in rainfall and sea level rise) are some of the key pressures identified for estuarine systems in South Africa.

## PRESSURES

Mining activities and climate change manifestations were identified as indicators to assess the pressures exerted on estuaries. Currently there are four licensed salt mines located with the EFZ of an estuary in the Western Cape (**Figure 5**). All four have approved Environmental Management Plans. However, illegal mining and prospecting activities are placing pressure on the health of estuaries, particularly the Oliphants estuary. The pressures exerted by climate change have a significant influence on the structure and function of estuaries (van Niekerk, 2017) due to rainfall and temperature variations and include:

- Modifications in the extent of saline water intrusion;
- Changes in the frequency and duration of mouth closure;
- Decreases or increases in nutrient fluxes; and
- Changes in the magnitude and frequency of floods and related sediment deposition/erosion cycles.

## STATE

The state of estuaries can be assessed by determining the current land uses and activities occurring in the EFZ. To assess the state of the Western Cape estuaries, land use, and mouth breaching were identified as indicators. Inappropriate land use development within the EFZ results in the degradation and loss of estuarine habitat, which in turn affects the ability of the estuary to effectively provide its ecosystem goods and services. 23% of estuaries have a very high degree of habitat loss in the EFZ, 7% a moderate degree and 41% a low degree of habitat loss (2017). 15 estuaries in the Western Cape experience artificial mouth manipulation practices and only 12 of these estuaries have approved Mouth Management Plans (2017) (**Figure 6**).

## IMPACT

Impacts on estuaries include: riverine flow modification, closure of estuary mouths that are normally open to the sea or conversely prolonged mouth opening, degradation of estuarine habitat, pollution due to runoff and discharges in the catchment or directly into estuaries, exploitation of estuarine resources and land-use development in the EFZ.

Measuring estuarine health provides an indication of the level of impact on an estuary. 39% of estuaries in the Western Cape are in good or excellent condition, 39% are in fair condition and 11% are in poor or non-functional condition (2012).

Determining the benthic community index provides environmental managers with a simple tool for assessing the health of benthic macro-invertebrate and macrophyte communities. While no formal benthic communities index has been developed and adopted in South African estuaries, macrophytes and invertebrates are used to determine the Present Ecological State of estuaries. 11% of estuaries have macrophytes in excellent condition and 52% in fair to poor condition. 14% of estuaries have invertebrates in excellent condition while 57% are in fair to poor condition (2012).

## RESPONSES

A number of responses are being implemented to ensure the effective management of estuaries. Estuarine Management Plans (EMPs) are in the process of being developed for 67% of the estuaries in the Western Cape. While none of these EMPs have been formally adopted, there exists an increasing trend in terms of the number of estuaries where EMPs are being prepared (2018). The Implementation Protocols estuaries in terms of their EMPs will differ from one estuary to the next, as implementation is site specific. The percentage of estuaries with bodies implementing estuary management and monitoring plans is currently 34% (2018). The National Water Resources Classification process (required by the National Water Act (No. 36 of 1998)) allows for the development of the Resource Directed Measures Strategy. The number of estuarine systems within the Western Cape that have had their ecological reserve and Ecological Water Requirement (EWR) determined is as follows (2017):

- 71% of estuaries have had their EWR determined
  - 5% of EWR assessments have been signed off and implemented
- It is unknown whether these EWR's are achieving required protocols

## OUTLOOK: HIGH CONCERN

The data gathered in the process of assessing the state of estuaries in the Western Cape suggests that the state of estuaries moving forward can be viewed in a positive light, provided that effective estuarine management continues. Estuaries still remain an area of high concern due to the constant pressures exerted on estuaries.



Figure 1: Estuaries in the City of Cape Town



Figure 2: Estuaries in the Eden District Municipality.



Figure 3: Estuaries in the Overberg District Municipality

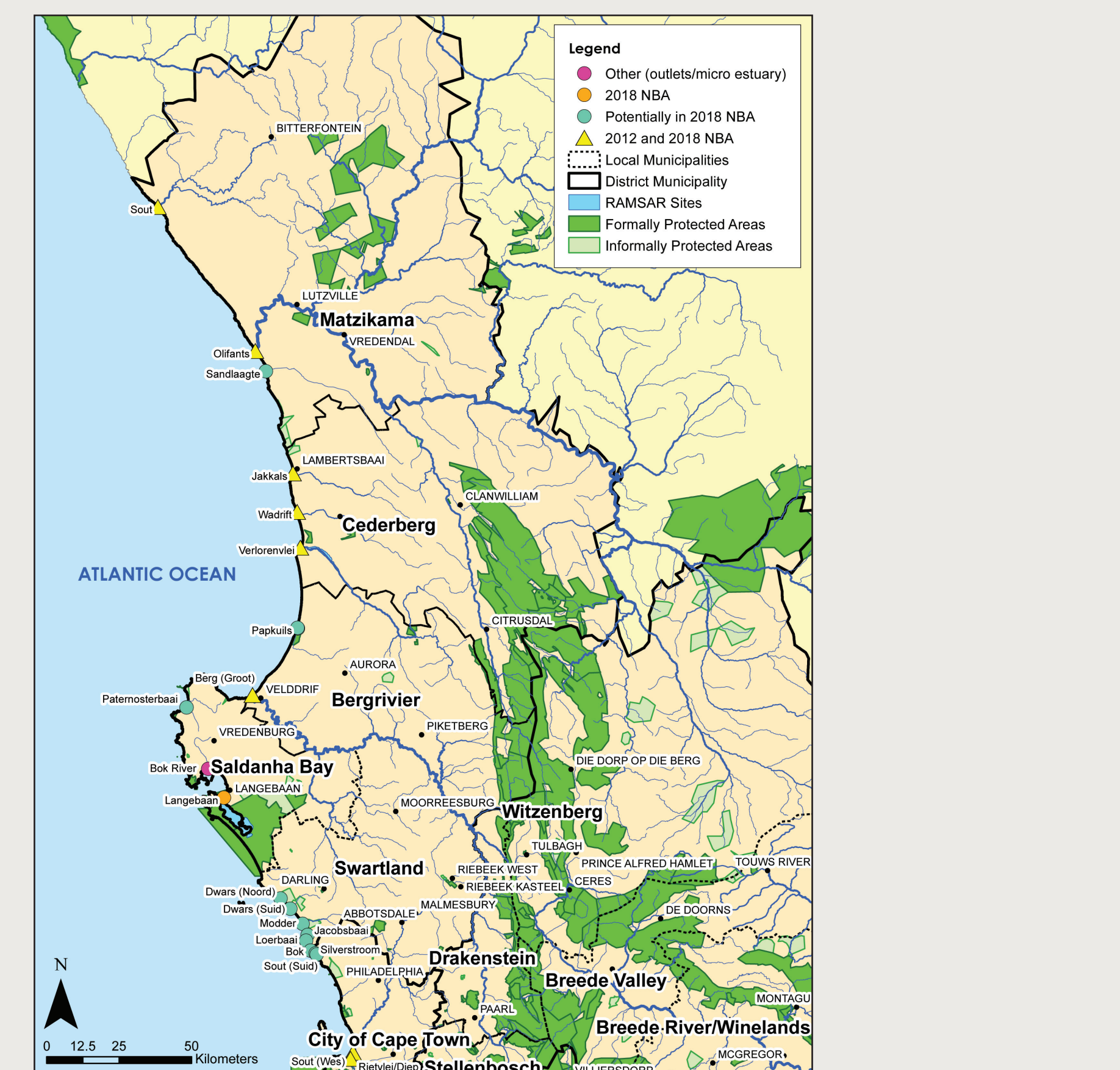


Figure 4: Estuaries in the West Coast District Municipality

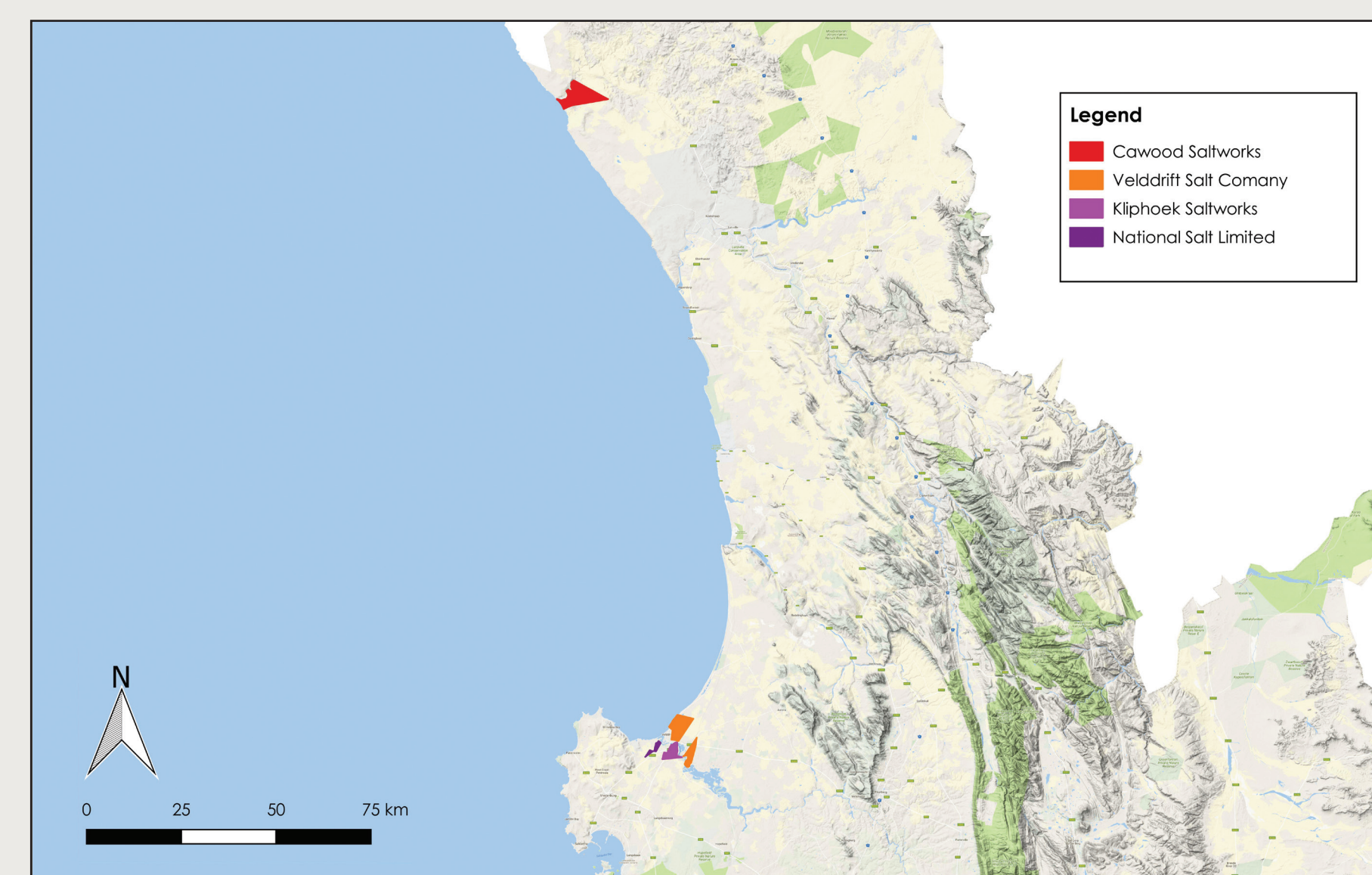


Figure 5: Licensed salt works in the Western Cape

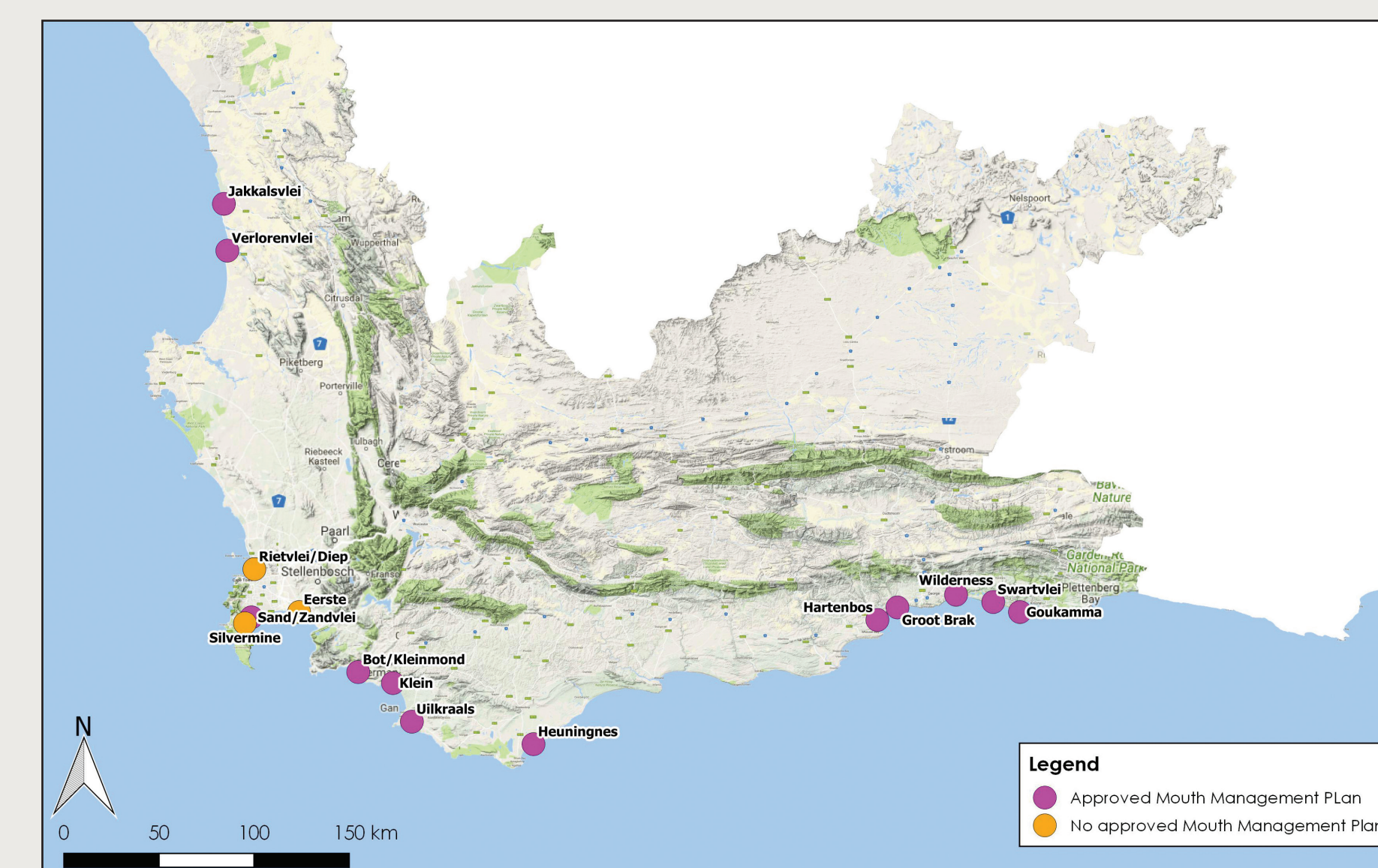


Figure 6: Estuaries experiencing artificial mouth manipulation