

To coordinate management actions, the National Environmental Management: Integrated Coastal Management Act (Act 24 of 2008) (ICMA) prescribes that Estuarine Management Plans (EMPs) be compiled for all estuaries in accordance with guidelines found in the National Estuarine Management Protocol (NEMP).

An EMP should provide a vision of the future desired state of the estuary and guide the management of human activities in and around the system by setting out strategic objectives, management priorities and detailed management strategies.

Estuary Advisory Forums

The Guidelines for the Development and Implementation of EMPs (2015), note that "... continuous stakeholder engagement remains critical even during the Implementation phase of the EMP as local stakeholders fulfil the important role of being watchdogs or custodians...".

In this light, the Western Cape Government supports the formation of Estuarine Advisory Forums (EAFs) for estuaries, to mobilise civil society and empower participation in governance and management. It is noted that typically, EAFs will provide a knowledge sharing space and at times perform a watchdog function.

What can I do?

- Provide inputs during EMP development and updating and participate in an EAF
- Assist with monitoring activities
- Report illegal activities to the relevant authorities
- Prevent pollution/litter from entering estuaries
- Do not interfere with the mouth of an estuary when it is closed, as this is illegal, dangerous and harmful to estuarine functioning
- Fish responsibly, and stick to bag and size limits
- Adhere to municipal signs and regulations
- Champion educational and awareness raising activities linked to estuaries

Who to contact?

If you need further advice or information on coastal or biodiversity matters, please contact:

Provincial Department of Environmental Affairs and Development Planning

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Email: enquiries.eadp@westerncape.gov.za

CapeNature Coastal Programme

Tel: +27 (0)83 236 2924

Fax: +27 (0)86 529 4983

Email: estuaries@capenature.co.za

Stony Point Research and Information Center

2411 Wallers Rd, Betty's Bay, 7141

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Further Information

www.westerncape.gov.za/eadp

mapservice.environment.gov.za/Coastal%20Viewer/biodiversityadvisor.sanbi.org/

www.environment.gov.za/branches/oceans_coast

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In the face of a changing climate,
we can ensure estuarine resilience
BETTER TOGETHER.

What is an estuary?

We include coastal lagoons, vleis and rivers that empty into the sea under the broader term 'estuaries'. The boundary of an estuary is taken to be the limit of tidal action or salinity penetration in the river course, or by back-flooding.

There are 290 estuaries along the South African coastline, 54 of which are found in the Western Cape. This includes the 2nd (Groot Berg) and 3rd (Knysna) largest estuaries in the country, as well as the only estuarine lagoon (Langebaan). In addition, 38 micro-estuaries are recognised in the Province.



The value of estuaries

The combination of terrestrial, freshwater and marine influences in estuaries result in a unique and vitally important ecosystem type.

Crucially, the shallow, warm and calm estuarine waters are nursery areas for many fish species and offer habitat for bait organisms (esp. invertebrates). Without estuaries, important marine fish like Dusky Kob and White Steenbras will disappear along with iconic species like the Knysna seahorse. Estuaries are also important feeding and roosting areas for many bird species, both resident and migratory, including African Black Oystercatcher, Cape Cormorant, Greater Flamingo, Caspian Tern and Great White Pelican.

The natural resource value and scenic appeal of estuaries make them focal points for cultural, recreational and tourism activities, fueling coastal development and supporting livelihoods. According to the 2018 National Biodiversity Assessment, estuaries contribute R 4.2 billion per annum to the South African economy even though they constitute less than 2% of South Africa's territory.

How do estuaries function?

Each estuary is unique in how it functions due to the infinite variation in hydrodynamics (e.g. water level and velocities), water chemistry (e.g. salinity, temperature, pH, nutrients and oxygen) and sediment dynamics. These variables also determine the characteristic biological components, namely vegetation, benthic invertebrates, fish and birds, in an estuary.

Two aspects in particular, freshwater river inflows and the extent of fresh/saltwater interchange, determine important system variables. They also influence the bathymetry (depth and shape), distribution of sediment types (e.g. mud vs. sand), and state of the mouth. Limited inflows (e.g. during dry seasons or drought) allows the sea's influence to become dominant, and prolonged low flows could cause premature closing of estuary mouths and lead to longer periods of mouth closure. In contrast, during floods most of the saline water in an estuary is flushed out to sea, whilst large volumes of sediment are scoured from the estuary. Strong flooding is therefore an important factor in estuarine functioning.

Estuarine ecology

Estuarine organisms are usually adapted to highly variable environments but can only exist as parts of a complex ecological web. **Microalgae** represent the lowest rung of the food chain and include phytoplankton and benthic microalgae. Vegetation, or **Macrophytes**, includes mangroves, salt marshes, submerged macrophytes, reeds & sedges and provides both shelter and food for fauna. **Benthic invertebrates** include organisms such as crabs, sandprawns, mudprawns, various mussel species

and surface feeders. These 'clean' the system by removing organic material 'litter', and in turn provide an important food source to other estuarine inhabitants such as fish (Ichthyofauna) and birds (Avifauna).

Fish and birds are the top predators in estuaries. A variety of fish species are found in estuaries, some completely dependent on estuaries for their survival and others only during spring and summer when juvenile fish enter the estuary to take advantage of its sheltered and food rich environment. Birds, similarly, rely on estuarine habitats for breeding, roosting and feeding, especially the intertidal and flood plain areas.

Key threats

The estuarine realm is the most threatened of all realms in South Africa. By type, about 86% of estuaries are threatened, representing 99% of estuarine area. Key threats are:

- Habitat destruction (e.g. low-lying developments, bridges, jetties and other structures, mining,)
- Over-exploitation of living resources
- Flow modification (e.g. water abstraction, alien plants, forestation, increased urban runoff)
- Pollution



Estuarine Management Plans

Active management of the whole estuarine functional zone, the adjacent shoreline and the river catchment above the estuary is required to mitigate the pressures on estuaries, and ensure their resilience in the face of a changing climate.