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ABBREVIATIONS AND ACRONYMS

METT	Management Effectiveness Tracking Tool
MPA	Marine Protected Area
NBA	National Biodiversity Assessment
NNR	No Natural Remaining
NPAES	National Protected Areas Expansion Strategy
PES	Present Ecological State
SANBI	South African National Biodiversity Institute
SAPAD	South African Protected Areas Database
SASSI	Southern Africa Sustainable Seafood Initiative
SoC	SoC State of the Coast
SoEOR	State of the Environment Outlook Report
WCG	Western Cape Government
WCCCRS	Western Cape Climate Change Response Strategy
WESSA	Wildlife and Environment Society of South Africa
WWF	World Wide Fund for Nature

GLOSSARY

Aquaculture	The rearing of fish, shellfish, and certain aquatic plants under controlled and managed conditions either in their natural environment in the sea or on land-based sea farms. Also called mariculture or fish farming.
Artificial breaching	The digging of a trench/ movement of sediment in order to allow the estuarine water to flow out into marine water. Reasons for artificial breaching include prevention of extensive flooding, facilitation of fish recruitment, etc.
Blue Economy	Marine-based economic development that leads to improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities.
Coastal Management Line	A line which demarcates an area in which development will be prohibited or controlled in order to achieve coastal management objectives (previously referred to as a coastal setback line).
Coastal Zone	The area of land and sea along a coast. It includes estuaries, onshore areas, and offshore areas, wherever they form an integral part of the coastal system.
Coastal Public Property	Coastal waters, land submerged by coastal waters, any natural island within coastal waters, seashore, any land owned or controlled by the State. The purpose of the coastal public property is to improve access to the seashore, protect sensitive coastal ecosystems, to secure the natural functioning of dynamic coastal processes and to protect people, property and economic activities from risks arising from dynamic coastal processes.
Coastal Protection Zone	The continuous strip of coastal land, starting from the HWM and extending 100m inland in developed urban areas zoned as residential, commercial, or public open space, or 1 000m inland in areas that remain undeveloped or that are commonly referred to as rural areas. It also includes certain sensitive or at-risk land such as estuaries, littoral active zones and protected areas.
Desalination	The process of removing dissolved salts from salt- or brackish (slightly salt) water, through the use of a wide spectrum of water treatment technologies, making it fit for consumption by humans or for use for agricultural and other purposes.
Estuary	a body of surface water, that is permanently or periodically open to the sea; 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 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, and "estuarine" has a corresponding meaning.
Estuary Functional	The zone identified as encapsulating all estuarine processes and biotic

Zone	responses, including maximum extent of open water areas that are subjected to tidal effect and or back flooding under closed mouth conditions, all estuarine associated habitats, floodplain areas, islands, geomorphic active zones, marinas, harbours and similar artificial habitats in or adjacent to estuaries
High Water Mark	The highest line reached by coastal water, excluding any line reached as a result of exceptional or abnormal weather or sea conditions, or an estuary being close to the sea.
Marine Protected Area	An area of marine or estuarine habitat where certain fish or plants are protected or where an entire ecosystem is set aside as a park or reserve in terms of the National Environmental Management: Protected Areas Act 57 of 2003.

1. INTRODUCTION

The Western Cape has a coastline in excess of 1000 km, and consequently possesses both the longest coastline of South Africa's four coastal provinces and the largest percentage of coastline relative to total provincial jurisdiction, with roughly one third of the boundary of the Western Cape bordered by the sea. The province is home to some 7.43 million people, accounting for nearly 12% of South Africa's total population (StatsSA, 2023) with a population increase of 2.4% between 2011 and 2022. Biophysically, the coastline of the Western Cape consists of sandy beaches interspersed with occasional rocky outcrops, headlands and wave-cut platforms, and it has a number of important estuaries and coastal lakes. For the Western Cape, development pressures are taking place along the coast in Cape Town, Saldanha Bay, Swartland, George, Mossel Bay, Knysna, and Plettenberg Bay. Important ports for the province are located at Cape Town, Saldanha Bay (one of only two deepwater ports in South Africa) and Mossel Bay, which remain areas of oceans and coastal pressure.

The Western Cape coast is rich in biodiversity, due in no small part to the conjunction of the warm Agulhas and cold Benguela ocean currents, which includes upwelling of nutrients along the coast. This province enjoys the benefits of many ecosystem services offered by the coastal ecosystems, including provisioning services like the extensive fisheries resources which form the core of South Africa's commercial fishing industry; kelp, penguin and seal colonies; fynbos; and indigenous coastal forests at various points along the coastline.

According to CapeNature (2023) and Skowno *et al.* (2019) a total of 84.6% of estuary ecosystem types in the Western Cape Province are threatened. This is concerning because freshwater ecosystems provide crucial services such as ecosystem services, water resilience and water security. There have been fish kills in the last 10 years within 13 estuaries in the Western Cape and that indicates a clear sign of ecosystem stress (Van Niekerk, *et al.*, 2019). Over abstraction of freshwater, alien invasive species, pollution, over harvesting of natural resources (fish, bait, etc.), and illegal development within the floodplain or estuary functional zone continue to pose threats and impact the estuarine ecosystems. There are several mechanisms that can be used to manage these threats such as the designation of funded Protected Areas or Marine Protected Areas, the establishment and implementation of Resource Quality Objectives, and the use of funded other effective area-based conservation methods, amongst other tools.

This chapter on Oceans and Coasts attempts to describe the current state of the coastal zone in the Western Cape and interpret the environmental changes that are evident along the coastline. The Department of Environmental Affairs and Development Planning (DEA&DP) has developed a more detailed "State of the Coast" (SoC) study which informs the Oceans and Coasts Chapter of the State of Environment Outlook Report (SoEOR – this chapter).

Indicators which report on the state of the Western Cape ocean and coastal environment have been selected based on the indicators reported on in the 2013 and 2018 SoEOR along with a few key additional indicators identified through the SoC study. These include coastal water quality, estuary health, conservation areas, marine health, transformation of threatened ecosystems along the coastline, buildings located in high risk coastal zones and exploitation of fish species, however the SoC Report will include a much more extensive and comprehensive list of indicators. The information presented in this chapter has also largely been informed by information gathered for the SoC report.

2. DRIVERS AND PRESSURES

Ecosystems are naturally dynamic but are stressed and pressured by human activity through the disturbance of natural processes such as energy flows and nutrient cycles (Mateus & Campuzano, 2008). Nowhere are these pressures more acutely felt than in the ocean and coastal areas which are the ultimate recipients of the effects of local as well as distant human activities. Coastal areas are popular for recreation and commercial purposes, which adds additional pressures of resources, especially during tourism season.. Various authors have identified the drivers that exist within coastal areas. According to Lin et al. (2007) the exponential growth of human population and economic development led to increased human-made activities. It was identified that the two major drivers are resource utilization and land/habitat occupation. Given that coastal areas are particularly desirable locations for settlement, industry, harvesting of natural resources as well as human recreation, pressure on these unique environments is greatly increased. These pressures range in scale and magnitude and include issues such as global climate change, interruption of dynamic coastal processes, over-use of natural resources, the introduction of alien invasive species and the effects of multiple anthropogenic discharges of waste and toxins into rivers and the ocean (Mateus & Campuzano, 2008; Pauw, 2010; Wouter, 2023).

One of the key pressures is the over-exploitation of fishing resources. Vanas (2020) argues that overfishing is exacerbated by abalone poaching syndicates in the Western Cape. According to Whitfield *et al.* (2019), for the past 30 to 50 years estuary researchers have shown that fish stocks are decreasing at an accelerated rate, mostly due to overfishing and environmental degradation. Munien *et al.* (2019) indicates that unsustainable activities such as, over-fishing and not complying with laws pertaining to the number of fish to catch or when to fish can have negative impacts on the natural resource base that tourism thrives on.

Coastal areas are becoming increasingly vulnerable to coastal storm surge and flooding events due to the increase in new developments and build-up areas within high-risk areas, along with climate change related sea-level rise. A recent example is the storm surge event which took place in September 2023 along the Western Cape coastline. This event resulted in approximately R46 million worth of damage to municipal infrastructure within the Garden Route District alone. Climate change is exacerbating the impacts of storm surges and flooding events within coastal district municipalities such as Garden Route. The impacts of climate change related aspects such as rising sea level and more intense and severe rainfall events can include:

- More severe and more frequent flooding of low-lying urban areas, infrastructure flooding and damage, and flooding of coastal and estuarine developments and adjacent shores;
- Expanded flooding during severe high tides;
- Increased coastal nearshore wave energy;
- Upward and landward migration of the high water mark and beach profiles;
- Accelerated coastal retreat, including dune and cliff erosion, breaching of coastal barriers and destabilization of coastal inlets;
- Damage to coastal and inland infrastructure;
- Impacts on coastal and inland ecological ecosystems such as uprooted trees, erosion and mudslides;

- Broad impacts on public safety, communities and displacement, and livelihoods, and;
- Economic impacts.

A recent example of increasing vulnerability along the coast is that of the storm surge event which took place in September 2023 along the Western Cape coastline. This event resulted in approximately R46 million worth of damage to municipal infrastructure within the Garden Route District alone (Source: (Wouter, 2023)

A large flood event also occurred with the Western Cape region in September 2023. See some imagery of some impacted areas along the Western Cape coastline below.



Photograph of exposed infrastructure in Brenton on Sea – Image courtesy of Knysna Municipality.



Photograph of flooding in the Breede estuary – Image courtesy of Swellendam Municipality

The 2018 National Biodiversity Assessment (NBA) indicates that climate change is a threat across the different ecosystems and provinces. Climate change increases other pressures such as competition by invasive species, disease, habitat loss and habitat degradation. While impacts of climate change on biodiversity are best understood in the terrestrial realm, coastal and estuarine ecosystems are particularly at risk from extreme weather events, especially where human settlements limit the natural resilience of these ecosystems by encroaching into dune systems and the estuarine functional zone.

According to Dube *et al.* (2021) approximately 80% of the City of Cape Town 2019/2020 Blue Flag beaches are at risk from rising sea level and coastal erosion. The study also found that some of the iconic tourist attractions such as Cape Point, V&A Waterfront, Robben Island, and several beaches along the False Bay area are under the same threat. Tourism facilities may be damaged by extreme weather events from climate change and these facilities include servitudes, coastal roads, railway facilities and tidal pools: all threatening the attractiveness of some resorts.



The Draft Oceans Economy Master Plan, presented to parliament in February 2023, has highlighted several coastal economic activities such as:

- Marine Manufacturing and Repairs
- Marine Transport (including Freight, Logistics and Cargo)
- Aquaculture (Freshwater and Marine)
- Fisheries (Small-scale and Commercial)
- Offshore Oil and Gas (Exploration)

Various authors have identified the pressures that exist within coastal areas that is brought by the above five focus areas. Kagalou *et al.* (2012) state that unsustainable agricultural activities, sewage, changes in land use and urban wastes, for example, have been regarded as important drivers for the poor quality of water systems. According to Lin *et al.*

(2007) the four significant pressures are resource exploitation, urban growth, industrial development and aquaculture activities. Quevedo, *et al.* (2021) and Kristensen (2004) have separated pressure

In addition to the key drivers and pressures affecting the ocean and coastal areas, the following emerging issues are affecting these environments:

- **Effects of climate change and associated droughts on water resources**, for which desalination sea water is considered to increased infrastructure development and discharge of water into the coastal and marine environment
- **Effects of loadshedding** on the management of sewage infrastructure and the potential to impact negatively on water quality (coastal and estuarine) when sewage pump stations fail and/or treatment works are not operating adequately.

indicators into three central groups comprising: excessive use of environmental resources, land-use changes, and emissions to soil, water, and air.

An additional concern regarding estuarine ecosystems and estuarine fish species is that, according to Skowno (2018), eutrophication and ongoing flow modification as a result of water abstraction is causing fish to be threatened with extinction. Examples from the Garden Route District include the Knysna Seahorse (*Hippocampus capensis*) endemic to three estuaries the Knysna, Swartvlei, and Keurbooms estuaries. Examples from the Overberg District include the Bot River Klipvis (*Clinus spatulatus*), known only from the Bot/Kleinmond and Klein estuaries.

The 2018 National Biodiversity Assessment stated that the modifications in the hydrological system and poor quality of the water are the major pressures on biodiversity in estuarine and coastal ecosystems. The over-abstraction of water and building of flow reductions structures such as dams, weirs, flow diversions and inappropriate river crossings can negatively affect species and ecosystems since they need water to function. Some of the indirect impacts of over-abstraction include the disruption of important ecological processes such as sediment supply to the coast. Water quality from inland aquatic systems is negatively impacted by a combination of mining, industrial and urban wastewater, and agricultural return flows.

Loureiro *et al.* (2022) indicated that South Africa depends on ocean and marine resources for economic growth. South Africa's Ocean economy contributed roughly R 54 billion to the national Gross Domestic Product (GDP) and accounted for about 316 000 jobs in 2010.

The 2030 National Development Plan (NDP) is South Africa's socio-economic development blueprint. The NDP aims to eliminate poverty and reduce inequality by creating job opportunities and redistributing and balancing access to opportunities by 2030. One of the key programmes that supports the NDP was the South African Operation Phakisa Programme that was launched in 2014. (With Phakisa meaning 'to hurry' in Sesotho). The programme includes several national sectors, including those linked to the ocean economy (Loureiro, *et al.*, 2022).

Operation Phakisa is an initiative of the South African government designed to fast track the implementation of solutions to address issues such as poverty, unemployment and inequality. Operation Phakisa focuses on unlocking the economic potential of South Africa's oceans, which could contribute up to R 177 billion to the GDP by 2033 and between 800 000 and 1 million direct jobs. Forty seven (47) detailed initiatives have been identified, aiming to increase the ocean economy's GDP contribution by R 20 million and lead to the creation of 22 000 direct new jobs by 2019. <https://www.environment.gov.za/projectsprogrammes/operationphakisa/oceanseconomy>

Operation Phakisa, considered a key driver of change in the marine and coastal environment, is focused on unlocking the economic potential of South Africa's oceans. Six priority growth areas (work streams) identified are (DEA, 2017):

- Marine transport and manufacturing: aimed at expanding South African port capacity for repairs to oil ships and rigs;
- Offshore oil and gas exploration: aimed at creating an enabling environment to give industry the comfort to invest in this capital investment sector;
- Aquaculture work stream: acknowledging the high growth potential of the aquaculture sector due to increasing demand for fish and the potential for rural development, especially for marginalize coastal communities;
- Marine protection services and oceans governance: aimed at developing an overarching integrated ocean governance framework for sustainable growth of the ocean economy;
- Small harbours: to develop un-proclaimed small harbours; and
- Coastal and marine tourism: to identify the high impact coastal tourism initiatives, interventions and projects.

3. STATE

A State of the Coast report (SoCR) is being updated for the Western Cape Province including a substantial number of indicators against which the state of the oceans and coastal environmental will be tracked. A selected number of key indicators have been included in this document, based on the indicators used in the 2018 State of the Coast report and previous SoEOR reporting. Additional key indicators identified through the National State of the Coast study will inform future iterations of the SoEOR and SoCR.

3.1. Coastal water quality

The Blue Flag programme, implemented in South Africa by the Wildlife and Environment Society of South Africa (WESSA) is a voluntary international initiative aimed at standardizing and promoting world-class clean, safe and attractive beach environments. Blue Flag is categorized as an “eco- label”, and strict monitoring requirements are needed to both attain and retain Blue Flag status where beaches are assessed according to 33 criteria in four specific categories namely: water quality, environmental management, environmental education and safety (Slater & Mearns, 2018). Water quality measured at Blue Flag beaches provides a useful and independent indicator of the quality of marine and coastal waters based on the monitoring undertaken at popular swimming beaches.

According to Carnie (2022) during the 2023 season, 51 beaches, four marinas and two tourism boats in South Africa will receive a Blue Flag status after they successfully met 33 criteria linked to water quality, environmental education and information, environmental management, and safety and services. The majority, 64%, of beaches that were awarded blue flag status are from the Western

The state of the ocean and coastal areas is tracked using the following key **indicators**:

- Coastal water quality- Blue Flag status
- Estuary Health state
- Quantity and extent of conservation and protected areas
- Marine ecosystem health status
- Extent of transformation of threatened ecosystems
- Number of buildings in high risk coastal areas
- Exploitation of fish species

Blue Flag is an international annual award which focuses on the environmental management of the South African coastline and coastal waters to help tourism growth and development. Although it's a voluntary eco-label, it's become an international symbol of quality for beaches, boats and marinas that meet a standard of excellence in the areas of safety, amenities, cleanliness, environmental information and environmental management.

Cape.

The Blue Flag Programme indicates that the beach must fully comply with the water quality sampling and frequency requirements. According to WESSA (2020), a blue flag beach must have at least one sampling point, which must be placed where the concentration of swimmers is highest. In addition, where there are potential sources of pollution, e.g., near streams, rivers or other inlets, storm water outlets, etc. additional sampling points must be established at these sites to provide evidence that such inflows do not affect bathing water quality.

The applicant must ensure that all sampling points of the applicant beach comply with the

Blue Flag bathing water quality criteria. Samples for microbiological and physical-chemical parameters must be taken. Similarly, in the case of inland waters where the water is supplemented by outside sources during dry periods, the water quality of the outside source must meet the Blue Flag bathing water quality standards.

WESSA has selected *Escherichia Coli (E. Coli)* and *Intestinal Enterococci (IE)* as the microbiological indicators used to test the faecal contamination in Blue Flag bathing waters. These two parameters are not harmful to human health, but they are used to indicate the potential presence of pathogenic organisms.

WESSA calculates the average amount of pollution in beaches using the 95th percentile methodology. In terms of bathing water sampling results, the value shows the results that are less than or equal to the limit values 95% of the time. The water quality results need to adhere with the limits established by the Blue flag programme. These limits are stricter than the standards set nationally for water quality. The limits established by WESSA for *E. coli* state that the beaches should have not exceeded 250 cfu/100ml and for *IE* 100 cfu/100ml. It should be noted that Blue flag beach applications are often only in place for the peak seasons and this is mainly due to funding constraints related to the monitoring requirements.

The South African Water Quality Guidelines indicate a minimum requirement for safe recreation activities of 500 cfu/100 ml for *E. coli* and 185 cfu/100ml for *IE*. The National Department has recently commenced with monitoring programme which is sampling coastal water quality at priority sites across the country. Subsequent reports will reflect on the data collected by and provided by DFFE within the Western Cape waters. It should be noted that the DFFE OCIMs has developed a water quality and algal bloom tool, which is available at the following link: <https://ocims.environment.gov.za/WaterQuality.html> .

It is thought that poor quality water entering estuaries (and the coastal zone) from poor practices along rivers and in catchments, contamination from sewer blockages / overflows (particularly during loadshedding) and runoff from informal settlements are the main contributing factors to poor water quality at certain bathing beaches. It should also be noted that water quality deteriorates during winter periods when pollutants that have accumulated during the preceding dry season are

mobilized and washed from the catchments to the sea with the winter rains.

It is important to note that kelp wrack (the common name for several species of seaweed that have washed ashore after becoming detached from the kelp forest) on beaches is known as a breeding ground for bacteria and may therefore contribute to misleading water quality results. Despite this being a natural process, it must be taken into account with the monitoring of beaches which commonly experience kelp wrack.

Figure 1 below shows the number of Blue Flag Beaches Including Pilot Sites awarded in the Western Cape from 2018/19 to 2022/23. There has been a steady increase in the number of Blue flag beaches and pilot sites from 2018/2019 to 2019/20. Five (5) beaches were removed from the Blue flag status and pilot status in 2020/21, namely, Seaforth, Struisbaai, Buffalo Bay, Wilderness and Brenton-on-Sea. During the 2021/22 Financial Year, the number of Blue flag beaches and pilot sites increased to 39 due to the addition of Struisbaai, Buffalo Bay, Herolds Bay, Leentjiesklip, Victoria Bay, and Wilderness. In 2022/23 Financial Year, previously awarded Blue flag beaches were downgraded; Strandfontein (Cape Flots), Ballots Bay, Leentjiesklip (Garden Route) were removed as a Blue Flag beaches while Mnandi and Buffalo Bay became pilot sites in 2022/23. .

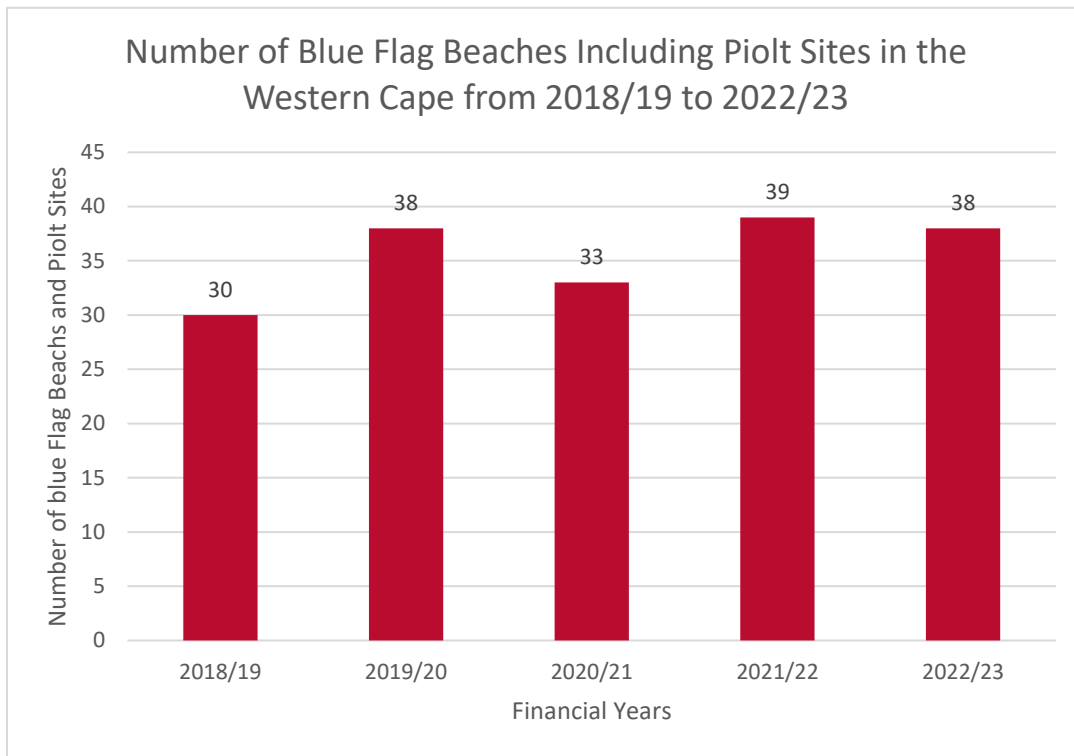


Figure 1 Number of Blue Flag Beaches including Pilot Sites in the Western Cape from 2018/19 to 2022/23

It should be noted that the City of Cape Town has a coastal water quality monitoring programme which measures water quality at the swimming beaches within the municipal boundaries. The "Know your coast" report provides information on the water quality from 2018-2022 and the Marine Outfalls and more information can be found at the following link: [https://resource.cape-town.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/Know Your Coast 2022 Report.pdf](https://resource.cape-town.gov.za/documentcentre/Documents/City%20research%20reports%20and%20review/Know%20Your%20Coast%202022%20Report.pdf)

3.2. Estuary health

Estuaries are unique environments where fresh water from rivers meets saline seawater. These dynamic ecosystems perform numerous essential ecological functions and support important subsistence, commercial and recreational activities. They also form a crucial link between terrestrial systems and processes, catchments and the ocean (Pauw, 2010; Van Niekerk et al. 2012). Estuaries are amongst the most threatened habitats in South Africa, which is a result of a combination of factors including reduced freshwater inflow, coastal development and over-exploitation of living resources (Pauw, 2010). South Africa's estuaries are spatially defined by the "estuarine functional zone" which encompasses all estuarine processes and biotic responses (Van Niekerk et al., 2017).

The Western Cape has 54 estuaries within its geographical borders stretching from the Sout (Noord) Estuary on the West Coast to the Bloukrans Estuary on the Southeast Coast. The estuaries are indicated below in Figure 2 In addition, 38 micro estuaries are also recognised within the Western Cape (SANBI, 2019).

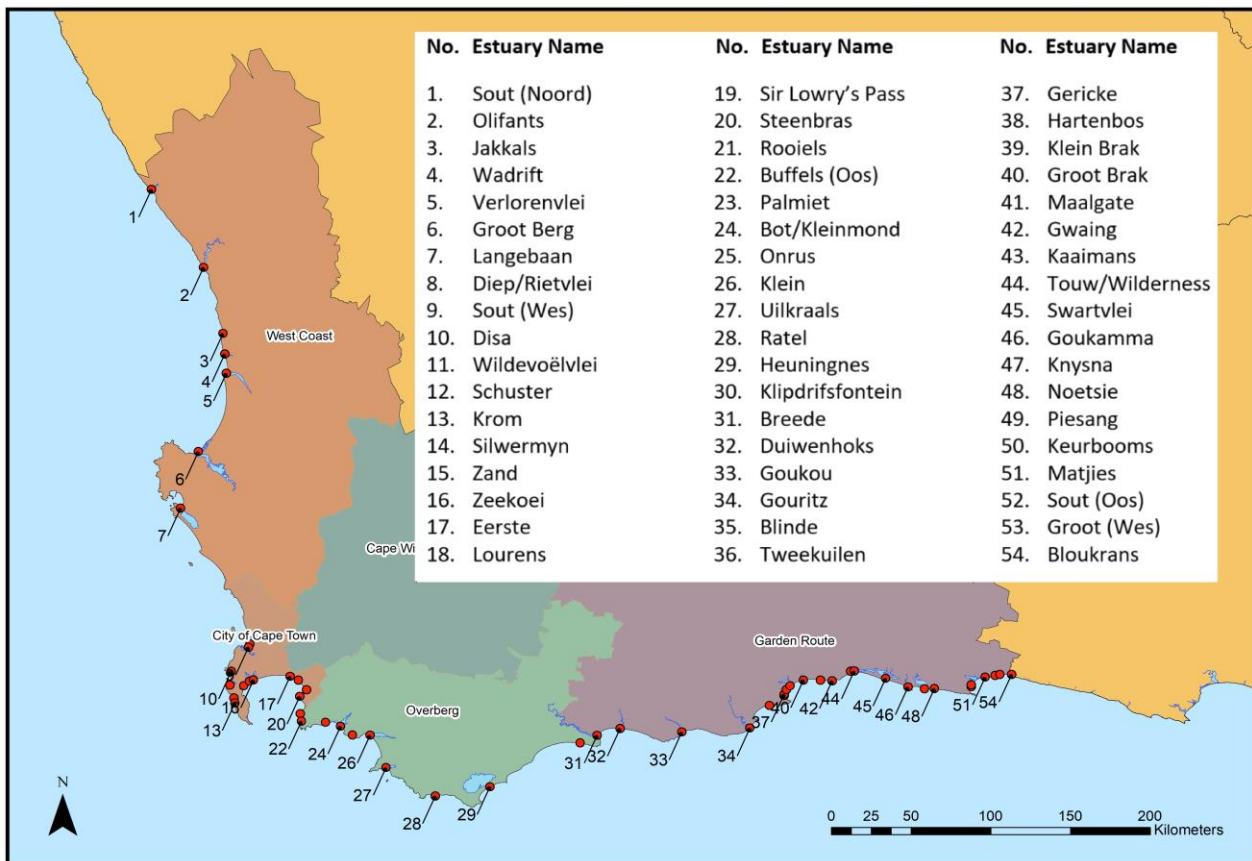


Figure 2 Names and location of estuaries within the Western Cape

The Department of Water and Sanitation (DWS) has developed a National Estuarine Monitoring Programme (NESMP) (Cilliers & Adams (2016). The objectives of the Programme are to measure, assess and report on a regular basis on the status and trends of the nature and extent of the condition of South African estuaries in a manner that will support strategic management decisions to ensure sustainable use of estuaries and ensure ecosystem integrity, being mindful of financial and capacity constraints, while also being scientifically sound. The provision of capital equipment, including boats, in-situ multiprobes and sampling material, is largely the responsibility

of DWS, however the responsibility can be shared in certain instances, where capital equipment is already available within the management authorities/other monitoring entities. Sampling is undertaken by ground personnel i.e. conservation bodies (e.g., SANParks and CapeNature), local authorities, DEA&DP officials, etc. Due to current financial and staff constraints, the programme is being rolled out in a phased approach and where local/ground personnel are able to assist. The data being collected through the NESMP and the DFFE Fisheries Research, and other partners, supports the development of the National Biodiversity Assessment, a key informant to the management of the estuaries in the Western Cape.

The National Biodiversity Assessment considers all available information to assess the present state of estuaries in South Africa. Ecological categories used to indicate estuarine health are explained in more detail in Table 1, with estuaries which retain >90% of their natural processes and patterns being rated as Excellent/Natural and estuaries degraded to less than 40% of natural functionality rates as Poor/Degraded (SANBI, 2019).

Condition (% of pristine)	≥91%	90-75	75 - 61	60 - 41	40-21	≤20					
Continuum	A	A/B	B	B/C	C	C/D	D	D/E	E	E/F	F
Ecological Management Category (DWS)	A Natural	B Largely natural / few changes		C Moderately modified		D Largely modified		E Highly degraded		F Extremely degraded	
NBA Ecological modification	Natural/Near natural			Moderate		Heavily		Severe/Critical			
Functionality	Retain Process & Pattern (Representation)			Some loss of Process & Pattern		Significant loss of Process & Pattern		Little Process & Pattern			
Restoration cost	None/ Low			Low/ Medium		High		Very high, potentially irreversible structural changes			

Category	Description
A	Unmodified, approximates natural condition. The natural abiotic processes should not be modified. The characteristics of the resource should be determined by unmodified natural disturbance regimes. There should be no human induced risks to the abiotic and biotic processes and function.
B	Near natural with few modifications. A small change in natural habitats and biota may have taken place, but the ecosystem functions are essentially unchanged.
C	Moderately modified. A loss and change of natural habitat and biota have occurred, but the basic ecosystem functions are still predominantly unchanged.
D	Heavily modified. A large shift natural processes and ecosystem functions and/or loss of habitat, biota have occurred.
E	Severely modified. The loss of natural habitat, biota and basic ecosystem functions is extensive.
F	Critically modified. Modifications have reached a critical level and the system has been modified completely with an almost complete loss of natural abiotic processes and associated biota. In the worst instances the basic ecosystem functions have been destroyed and the changes are irreversible.

Table 1 Description of Ecological Condition Categories (NBA, 2019)

Estuary health (expressed as Present Ecological State on a scale from A-F in Table 1) is illustrated in Figure 4. In the Western Cape, the large predominantly open estuaries on average are in a fair state, while the temporarily open/closed estuaries vary from good to poor condition depending on the level of pressure on them. The NBA 2018 (SANBI, 2019) concludes that less than half (44%) of the 54 systems are in a 'fair' state, 15% are ranked as excellent and 26% ranked as 'good' indicating an improvement in the ecological health of Western Cape estuaries (9% improvement to those ranked as 'excellent' and a 6% improvement to those ranked as 'good' when compared

to the 2011 NBA). However, some estuaries have decreased in quality with an additional 3% of reported to in be in a 'poor' state (15%) compared to NBA 2011. See Figure 3.

The estuaries along the West Coast are generally in a fair to poor state as a result of significant flow reduction, pollution and in the case of the large systems, fishing pressure. The numerous small temporarily open/closed estuaries around Cape Town were generally in a poor condition due to the impact of development and poor water quality. Estuaries along the south and southeast coast tend to be healthier than those in the rest of the Province, with the estuaries around towns of George and Mossel Bay experiencing pressure from development and associated pollution impacts.

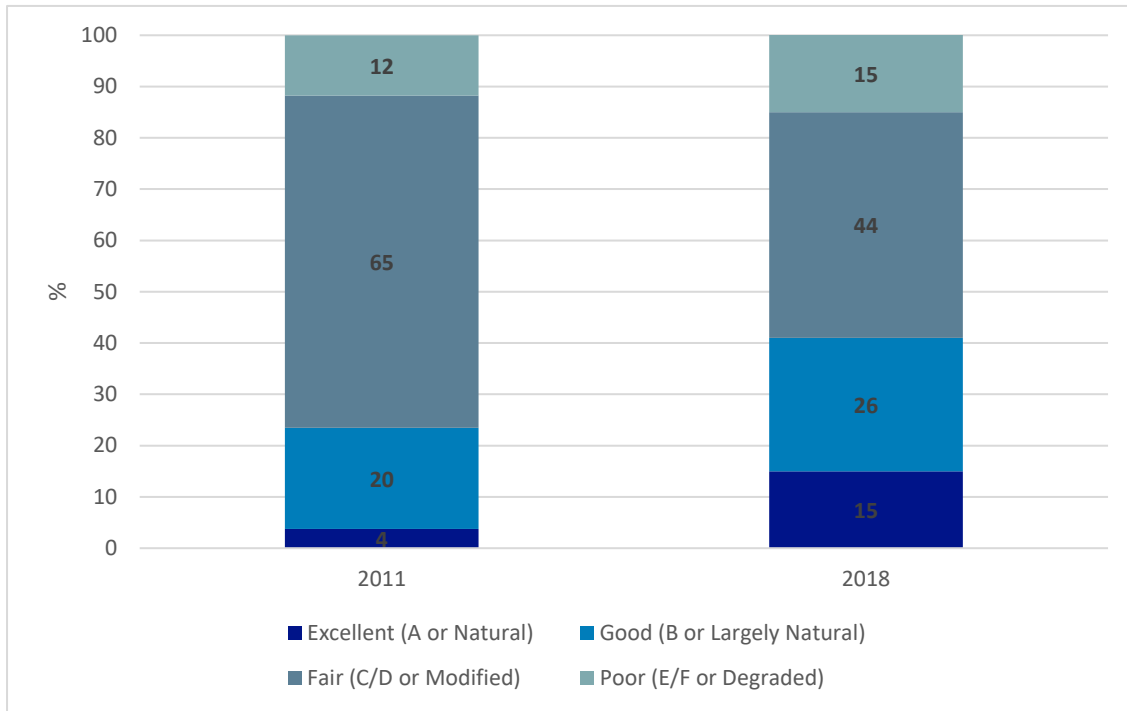


Figure 3 Present Ecological State for Estuaries in the Western Cape NBA 2011 vs NBA 2018

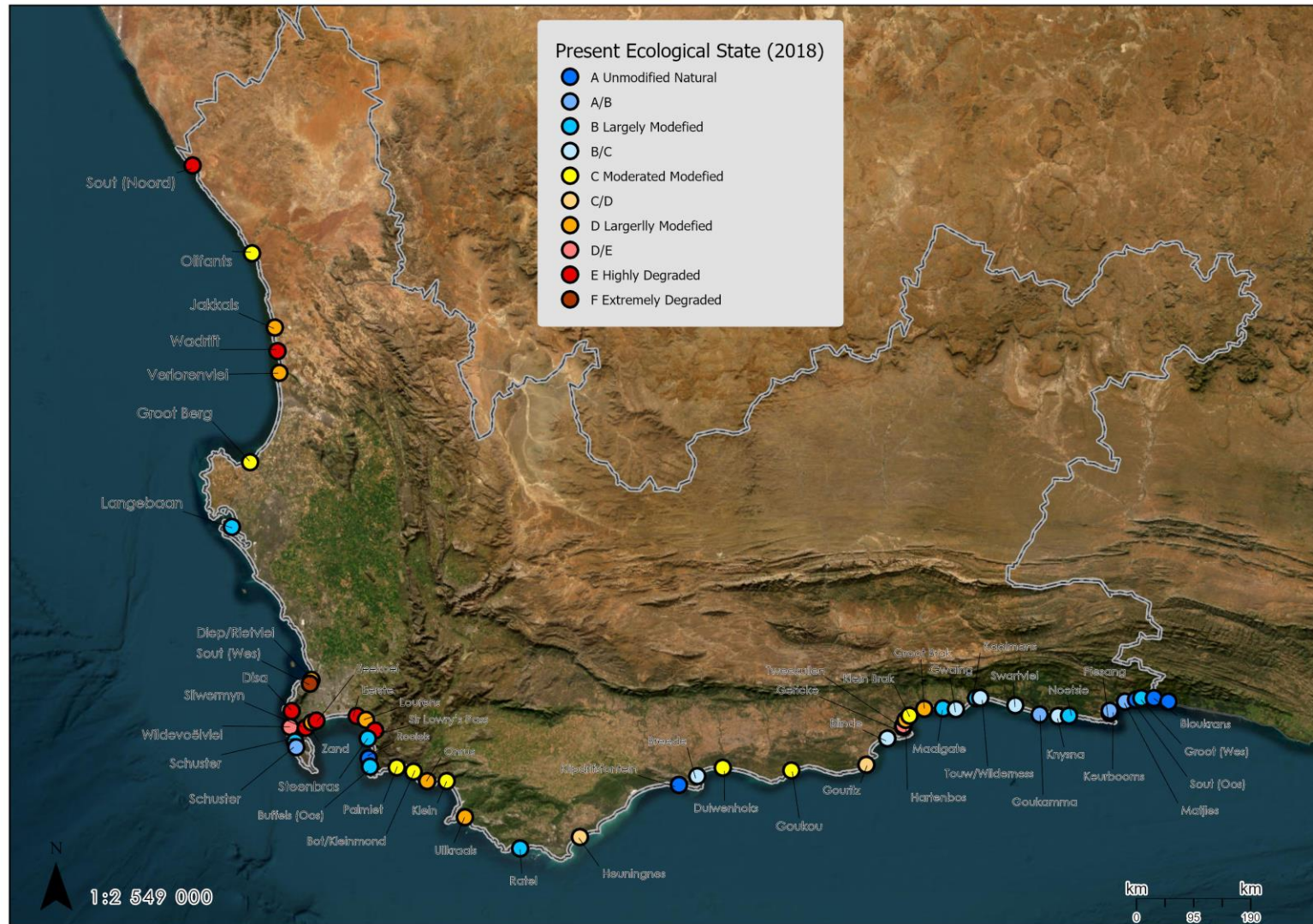


Figure 4 Present Ecological State of Estuaries in the Western Cape (2018) and adjacent estuaries.

3.2.1. City of Cape Town

The estuary health condition (Present Ecological State) and estuarine threat status of the 13 estuaries within the City of Cape Town (CCT) are described in Annexure A and Figure 5, respectively. The majority of the estuaries under the jurisdiction of CCT are characterised by very high to high levels of change in flow, high levels of pollution and habitat loss. The numerous small and temporarily closed estuaries around Cape Town are generally in a poor condition. There are a number of estuaries considered to be of high biodiversity priority, including the Rietvlei/Diep, Wildevoelvlei and Zandvlei estuaries (SANBI, 2019). Eight estuaries, 61% of all estuaries within the CCT, are classified as critically endangered.



Figure 5 Estuarine Threat Status in the City of Cape Town.

3.2.2. West Coast

The estuary health condition (Present Ecological State) and estuarine threat status of seven estuaries occurring within the West Coast District are described in Annexure B and Figure 6, respectively. The West Coast estuaries are impacted by significant flow reduction, pollution and in the case of large systems, fishing pressures. The estuaries which are predominantly closed tend to be in a good state, while the large estuaries which are predominantly open are on average in a fair state. The Olifants, Berg, Langebaan and Verlorenvlei estuaries are identified as being of high biodiversity priority. One estuary (Jakkalsvlei), 14% of all estuaries within the West Coast, is classified as critically endangered (SANBI, 2019).

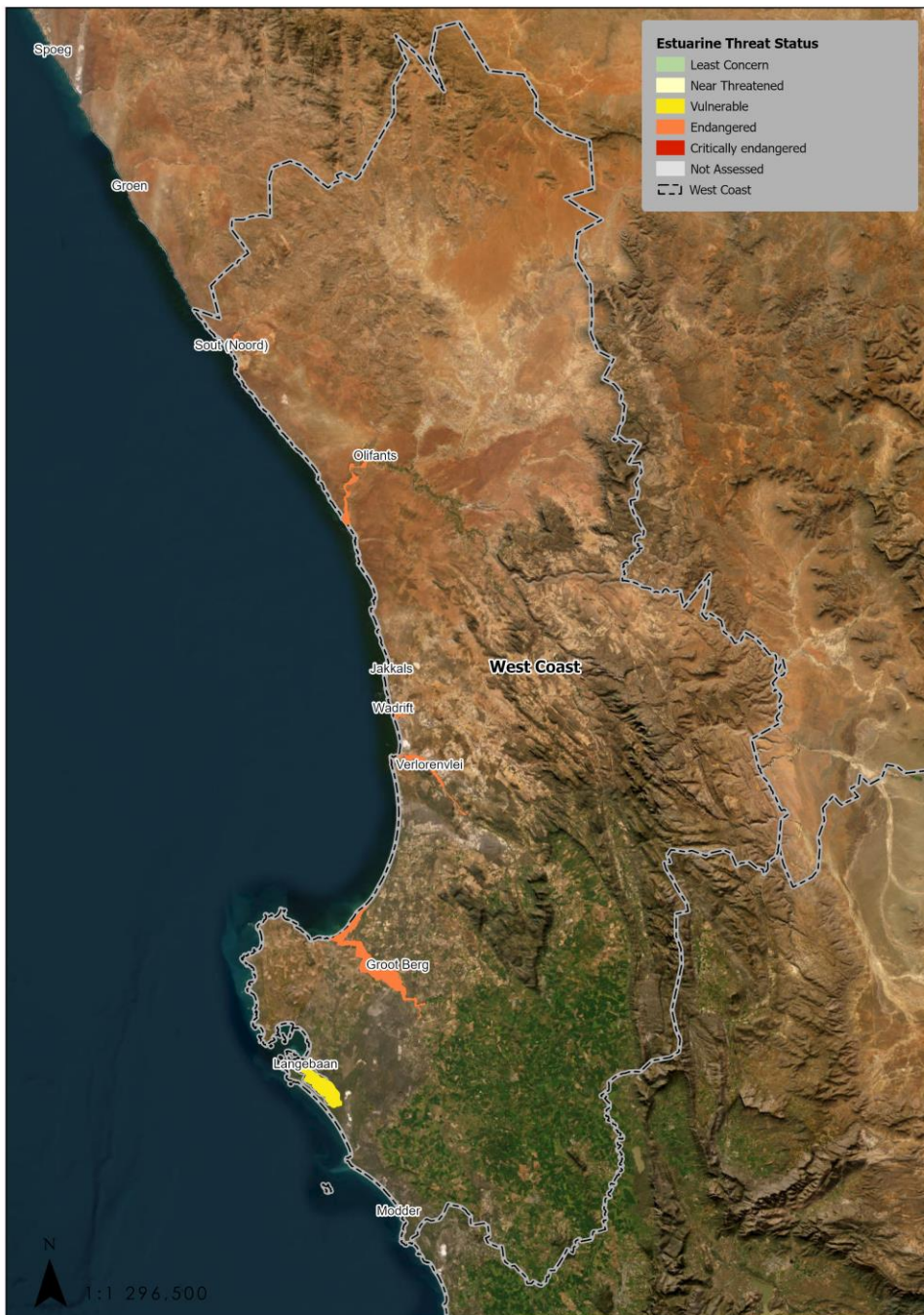


Figure 6 Estuarine Threat Status in the West Coast.

3.2.3. Overberg

The estuary health condition (Present Ecological State) and estuarine threat status of the 11 estuaries occurring within the Overberg is described in Annexure C and Figure 7 respectively. Pollution levels for these systems are moderate to low, with exception for the Onrus and Uilkraals estuaries which have high levels of pollution. These two estuaries are also characterised by very high levels of change in flow. Six estuaries in the region including Palmiet, Bot/Kleinmond, Klein, Uilkraals, Heuningnes and Breede estuaries are of high biodiversity priority. One estuary, the Palmiet estuary is critically endangered (SANBI, 2019) and eight estuaries are classified as endangered.



Figure 7 Estuarine Threat Status in the Overberg District

3.2.4. Garden Route

The estuary health condition (Present Ecological State) and estuarine threat status of the 23 estuaries within Garden Route District is described in Annexure C and Figure 8 respectively. The majority of the estuaries in this region are characterised by low levels of modification and pollution, while more than half of the estuaries are considered to be well protected. Twelve estuaries are identified as being of high biodiversity priority. Two systems, namely the Swartveli and Touw/Wilderness estuaries, 9% of all estuaries within the Garden Route are classified as endangered and zero are classified as critically endangered (SANBI, 2019).

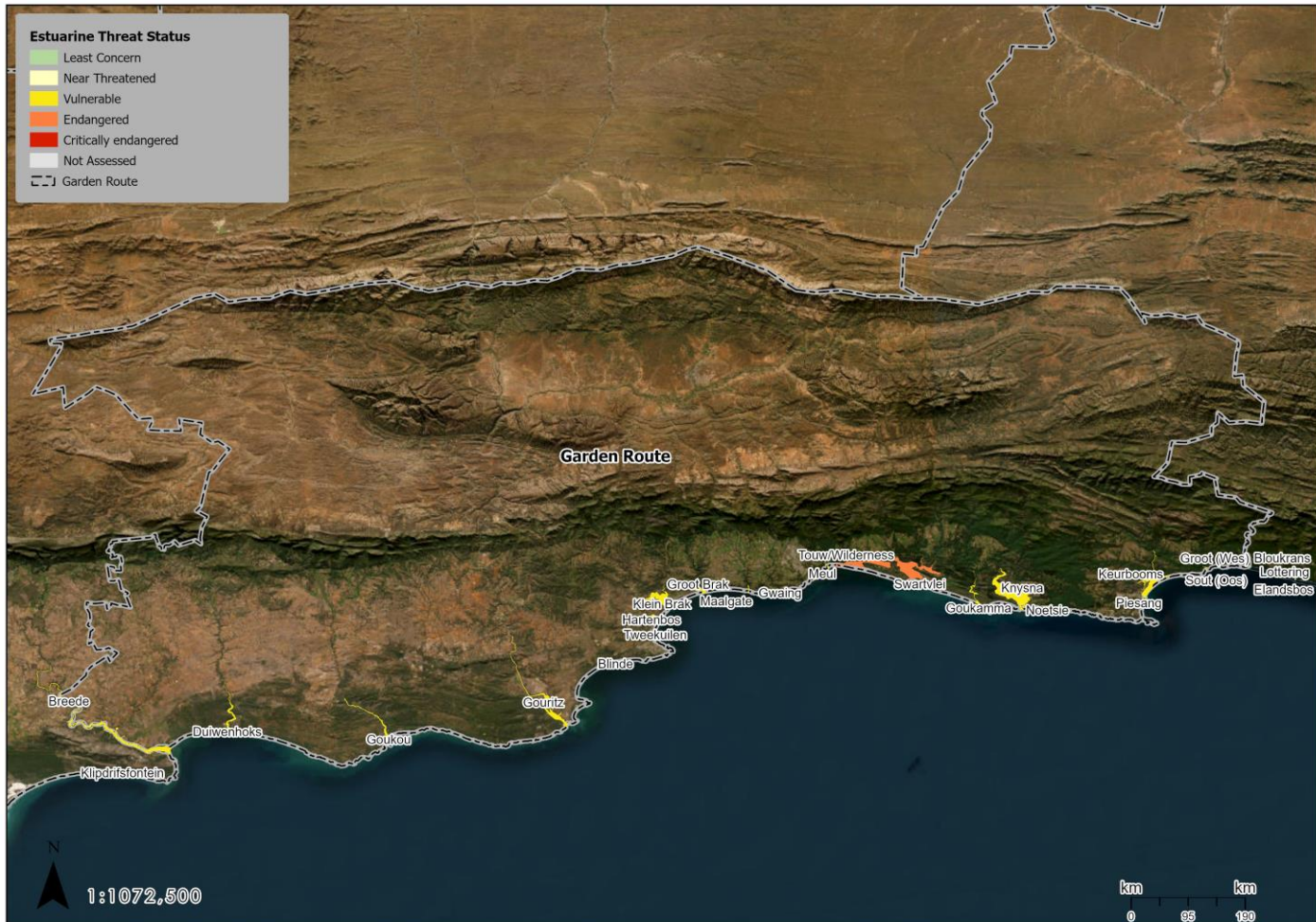


Figure 8 Estuarine Threat Status in the Garden Route District

3.3. State of Western Cape estuarine management

According to the NBA 2018 Estuarine Realm Technical Report, 18 out of 22 estuarine ecosystem types are threatened and under-protected. Three of these are highly threatened (Critically Endangered or Endangered) and not protected. These estuary types include most of the Large Fluvially Dominated, Estuarine Bays, Predominantly Open types of the Western Cape (Van Niekerk, et al., 2019). This data highlights the need to intensify biodiversity conservation and management efforts since a high proportion of the estuaries are critically endangered and protection levels are low (Van Niekerk, et al., 2019)).

Significant progress has been made in the development and approval of EMPs within the Western Cape. The Western Cape now has 20 approved EMPs, 37% of the estuaries in the Western Cape, compared to one approved EMP in the previous SoEOR assessment. Furthermore, there are an additional 23 EMPs in existence, with 12 EMPs having been formally gazetted for public comment and nearing approval by MEC/Minister. Mouth management plans have been developed for priority estuaries in the Western Cape, and relevant Maintenance Management Plans have been approved in terms of the NEMA: EIA regulations for the implementation of artificial breaching of estuaries where required. Table 2 summarises the progress of each of the estuary management plans, estuary advisory forum establishment and responsible management authority, at the time of reporting and Figure 9 and Figure 10 illustrates the overall status of EMP development and spatial distribution, respectively. It should be noted that the Breede River EMP is currently being reviewed and is expected to be formally approved in 2024.

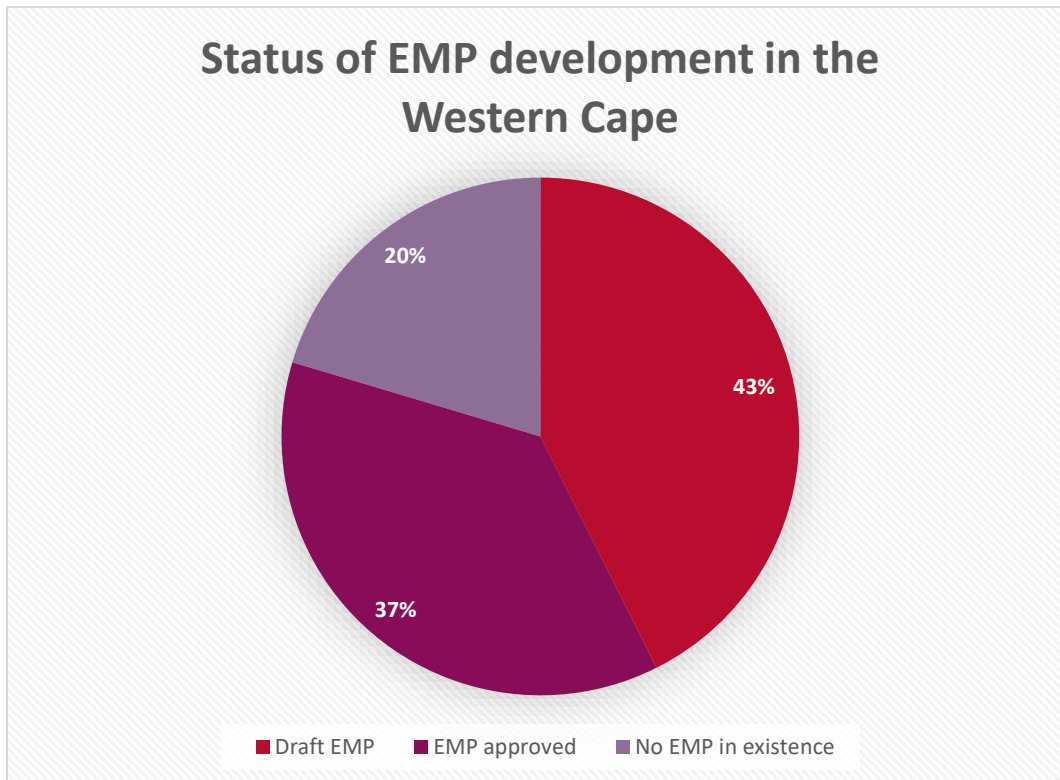


Figure 9 Overview of Status of EMP development in the Western Cape

Table 2 Estuary Name, Responsible Management Authority, Estuary Advisory Forum established and Status of Estuary Management Plans within the Western Cape

Estuary Name	Responsible Management Authority	Advisory Forum	Draft EMP	EMP approved
West Coast District				
Sout (Noord)	DEA&DP	No	Yes	Yes
Olifants	CapeNature	Yes	Yes	Yes
Jakkalsvlei	CapeNature	No	Yes	Yes
Wadrift/Langdrift	DEA&DP	No	Yes	Yes
Verlorenvlei	CapeNature	Yes	Yes	Yes
Berg	DFFE	Yes	Yes	No
Langebaan	SANParks	No	No	No
City of Cape Town				
Rietvlei/Diep	City of Cape Town	Yes	Yes	Yes
Sout(Wes)	DEA&DP / City of Cape Town	No	No	No
Disa / Hout Bay	DEA&DP / City of Cape Town	No	Yes	No
Wildevleivlei	SANParks	No	No	No
Schuster	SANParks	No	No	No
Krom	SANParks	No	No	No
Silvermine	DEA&DP / City of Cape Town	No	Yes	No
Zandvlei	City of Cape Town	Yes	Yes	No
Zeekoei	City of Cape Town	No	Yes	No

Estuary Name	Responsible Management Authority	Advisory Forum	Draft EMP	EMP approved
Eerste	DEA&DP / City of Cape Town	No	Yes	No
Lourens	DEA&DP / City of Cape Town	No	Yes	No
Sir Lowry's Pass	City of Cape Town	No	Yes	No
Steenbras	City of Cape Town	No	No	No
Overberg District				
Bot/Kleinmond	CapeNature	Yes	Yes	Yes
Buffels (Oos)	DEA&DP	No	Yes	No
Klein	CapeNature	Yes	Yes	Yes
Onrus	DEA&DP	Yes	Yes	No
Palmiet	CapeNature	No	Yes	Yes
Rooiels	CapeNature	No	Yes	Yes
Uilkraals	CapeNature	Yes	Yes	Yes
Heuningnes	CapeNature	Yes	Yes	Yes
Klipdriffontein	CapeNature	No	Yes	Yes
Ratel	SANParks	No forum	Yes	No
Garden Route District				
Duiwenhoks	DEA&DP	In progres	Yes	No
Goukou	CapeNature	Yes	Yes	Yes
Breede	DEA&DP	Acknowledged by Province	Yes	Yes
Blinde	DEA&DP	No	Yes	Yes

Estuary Name	Responsible Management Authority	Advisory Forum	Draft EMP	EMP approved
Tweekuilen	DEA&DP	No	No	No
Gericke	DEA&DP	No	No	No
Groot Brak	DEA&DP	Yes	Yes	No
Hartenbos	DEA&DP	Yes	Yes	No
Klein Brak	DEA&DP	Yes	Yes	No
Gouritz	DEA&DP	Yes	Yes	No
Gwaing	DEA&DP	No	Yes	No
Kaaimans	DEA&DP	No	Yes	No
Maalgate	DEA&DP	No	Yes	No
Goukamma	CapeNature	Yes	Yes	Yes
Knysna	SANParks	Yes	Yes	No
Noetsie	SANParks	No	No	No
Wilderness/Touw	SANParks	Yes	No	No
Swartvlei	SANParks	Yes	Yes	No
Keurbooms	CapeNature	Yes	Yes	Yes
Bloukrans	SANParks	No	No	No
Groot (Wes)	SANParks	Yes	No	No
Matjies	DEA&DP	No	Yes	Yes
Piesang	DEA&DP	In progress	Yes	Yes
Sout (Oos)	SANParks	No	Yes	No

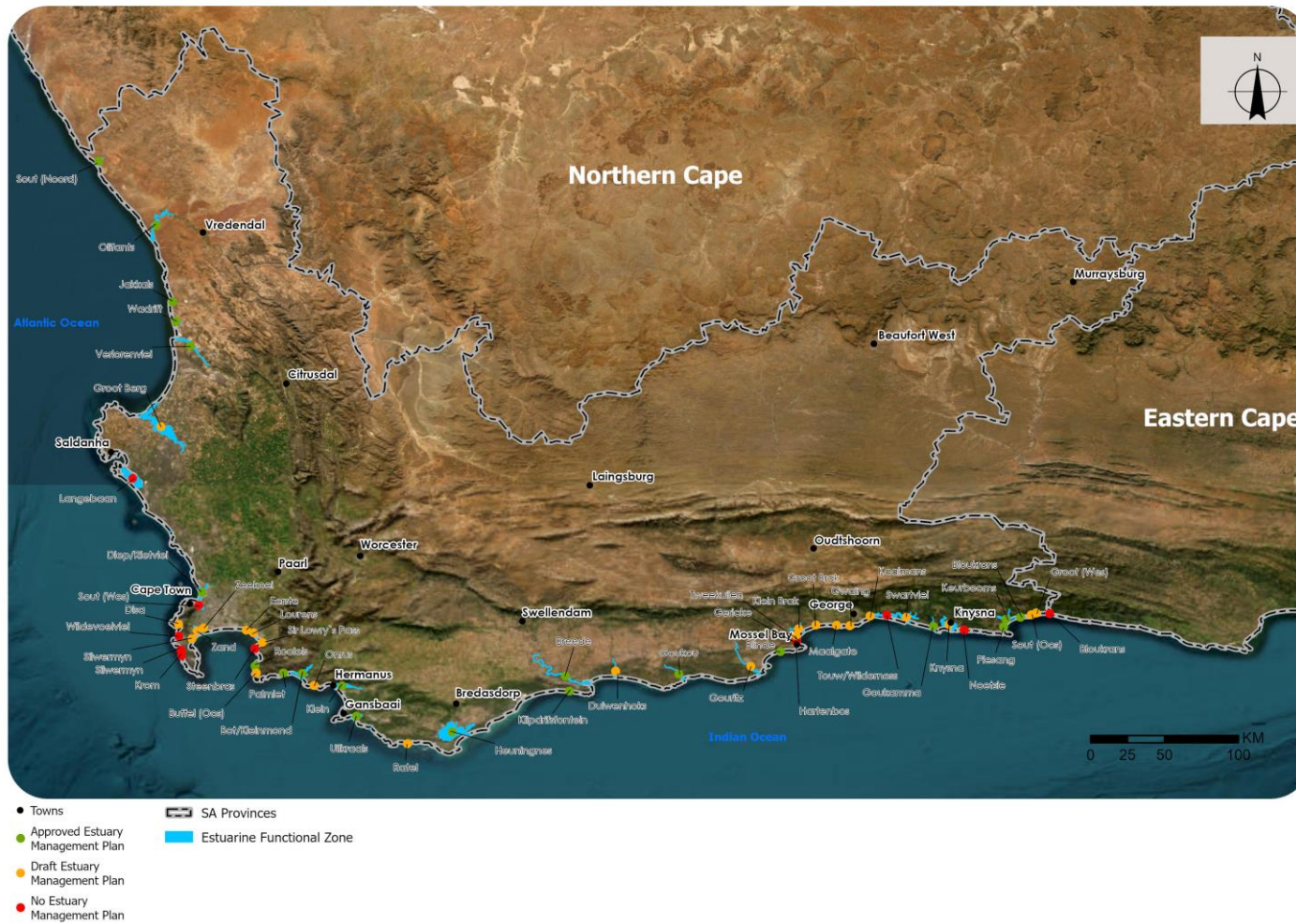


Figure 10 Spatial representation of Estuarine Management Plan (EMP) status of estuaries within the Western Cape province.

3.4. Marine ecosystem threat status

According to Sink *et al.* (2019), the 2004 marine ecosystem threat assessment that was driven by experts excluded mapping of pressures, but a similar cumulative pressure mapping approach employed in both 2011 and 2018 yielded similar threat patterns. The NBA (2018) technical report on the Marine Realm states that the 2004 assessment did not consider the high pressure and degradation of shelf edge ecosystems on the West Coast. The more optimistic result from 2018 is due to the shift to stricter IUCN standards that are relevant at global scales.

Unfortunately, it is not possible to compare the results from the Marine Ecosystem Threat Status results between 2004, 2011 and 2018 due to differences in the data that was used and the methodology of the assessment. It was concluded from the NBA Marine Realm Technical Report that the results are broadly similar. Despite these differences, similar threat patterns emerge between the NBA 2011 and 2018. Figure 11 shows the maps for the Marine ecosystem threat status between 2004, 2011 and 2018 NBAs.

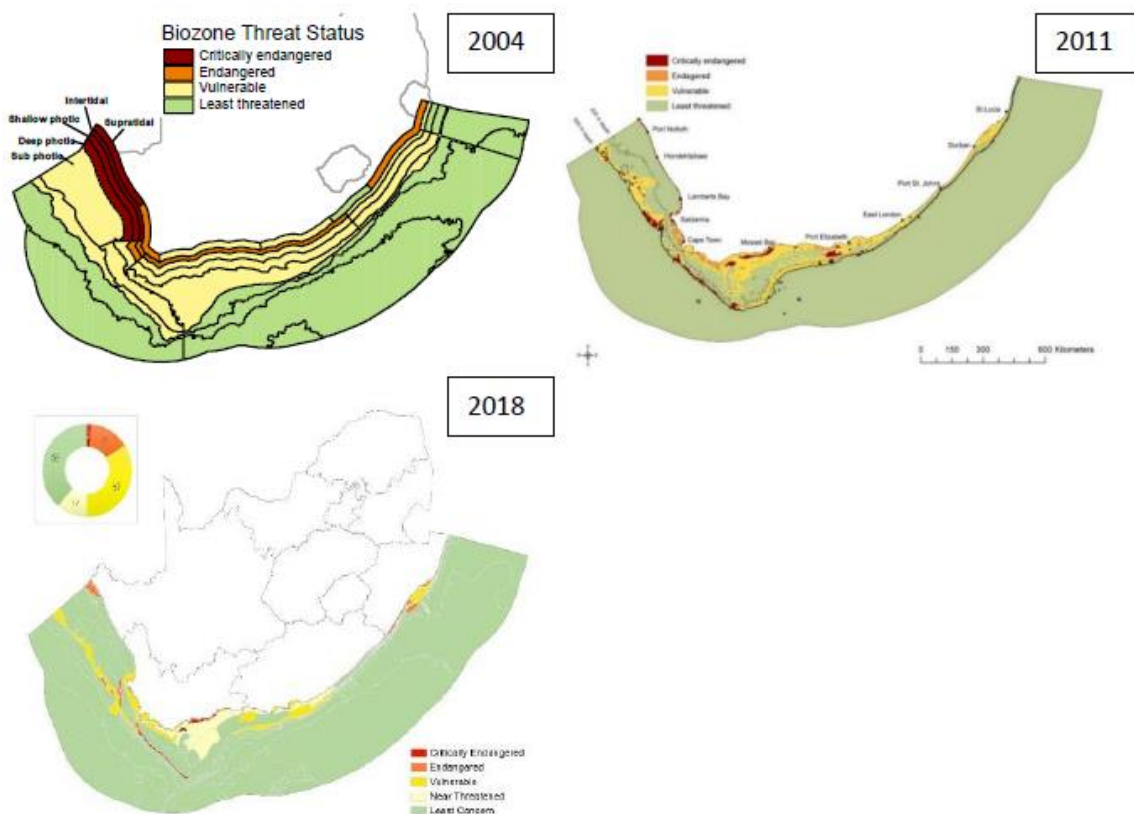


Figure 11 Comparative analysis on the Marine Ecosystem Threat Status from NBA 2004, 2011 and 2018 (Sink, *et.al.*, 2019)

The NBA 2018 identified that in the Western Cape, within the marine realms, the unsustainable use of biological resources (in this case overfishing of key fish and bait species) is a significant pressure on biodiversity (Skowno, 2018). The map below in Figure 12 shows the Marine ecosystem threat status within the Western Cape for 2018.

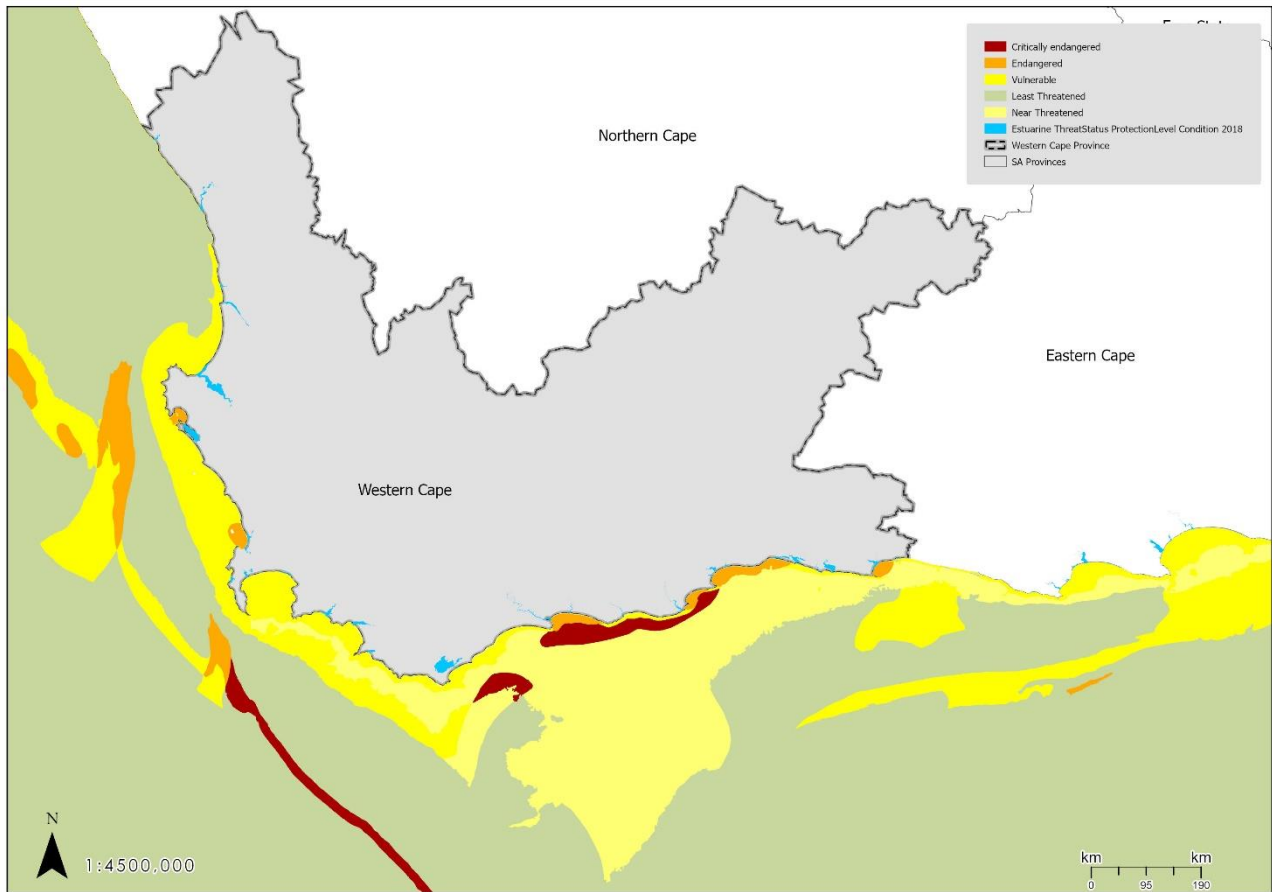


Figure 12 Marine ecosystem threat status within the Western Cape

The threat status of an ecosystem was determined by evaluating the area of each habitat in a specific condition against a series of thresholds. Four ecosystem threat categories were defined, and are described in Table 1Table 3 (adapted from Sink 2012; Sink, *et al.*, 2019; Van Niekerk, *et al.*, 2019) and Harris, *et al.*, 2019).

Table 3 Condition thresholds and descriptions of marine ecosystem threat status categories

Ecosystem threat status	Condition thresholds	Description
Critically endangered	Less than 20% Good	Ecosystem types that have very little of their original extent (measured as area, length, or volume) left in natural or near natural condition. Most of the ecosystem type has been severely or moderately modified from its natural state. These ecosystem types are likely to have lost much of their natural structure and functioning, and species associated with the ecosystem may have been lost. We are in danger of losing the last remaining natural examples of these ecosystem types. Any further loss of natural habitat or deterioration in condition of the remaining healthy examples of these ecosystem types must be avoided, and the remaining healthy examples should be the focus of urgent conservation action.
Endangered	Less than 35% Good	Ecosystem types that are close to becoming critically endangered. Any further loss of natural habitat or deterioration of condition in these ecosystem types should be avoided, and the remaining healthy examples should be the focus of conservation action.
Vulnerable	Less than 80% Good and Fair	Ecosystem types that still have the majority of their original extent (measured as area, length or volume) left in natural or near natural condition but have experienced some loss of habitat or deterioration in condition. These ecosystem types are likely to have lost

		some of their structure and functioning and will be further compromised if they continue to lose natural habitat or deteriorate in condition. Identified biodiversity priority areas should guide planning, resource management and decision making in these ecosystem types.
Least threatened	More than 80% Good and Fair	Ecosystem types that have experienced little or no loss of natural habitat or deterioration in condition. Identified biodiversity priority areas should guide planning, resource management and decision making in these ecosystem types.
Near Threatened		An ecosystem type or species is Near Threatened when it has been evaluated against the IUCN criteria but does not qualify for Critically Endangered, Endangered or Vulnerable, but it is close to qualifying for or is likely to qualify for a threatened category in the near future. (NBA 2018 – Coastal Chapter)

Source: (Van Niekerk, et al., 2019) and (Harris, et al., 2019)

These threat categories assume that the condition of ecosystems and habitats is directly related to pressures and anthropogenic drivers of ecosystem change, of which extractive resource use, such as fishing, form's part of (Sink *et al.* 2012).

Sink *et al.* (2019) in the NBA Marine Technical Report states that fish resources such as Abalone (*Haliotis midae*) and West Coast Rock Lobster (*Jasus lalandii*) are being severely affected by poaching activities. These fish resources have collapsed and have faced severe decline over the past decades with Abalone legal commercial catch having declined from 613 tonnes in 1993 to 95 tonnes in 2015 (84.5% decline). The National Biodiversity Assessment 2018 states that the West Coast Rock Lobster commercial catch declined from 18 000 tonnes in the 1950's to more recent landings in 2016 being approximately 2000 tonnes, a 90.6% decline since the 1950's.

The decline of West Coast Rock Lobster can be caused by an accumulation of factors such as changes in fishing methods, spatial shifts in distribution, changes in management measures, reduced growth rates and overexploitation. The declines in Abalone are mostly caused by illegal harvesting coordinated largely through complex criminal syndicates (Sink, et al., 2019). Further information on the exploitation of marine species is included in Section 3.7 of this report.

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3.5. Transformation of threatened ecosystems in the coastal belt

The National Environmental Management: Biodiversity Act (Act No. 10 of 2004) provides for the listing of threatened or protected terrestrial ecosystems in one of four categories: critically endangered, endangered, vulnerable or protected. The purpose of listing threatened ecosystems is primarily to reduce the rate of ecosystem and species extinction, including sites of exceptionally high conservation value by preventing further degradation and loss of structure, function and composition of these threatened ecosystems (SANBI, 2011). Van Niekerk et al. (2019) from the NBA Estuarine Technical Report state that of the 22 estuarine ecosystem types, 18 are threatened and under-protected. Three of the estuarine ecosystem types are highly threatened (Critically Endangered or Endangered) and Not Protected. These estuary types, include most of the Large Fluvially Dominated, Estuarine Bays, Predominantly Open types of the Western Cape, represent priority estuarine ecosystem types for urgent protected area expansion and management planning.

There are more threatened ecosystem types in the coast (60%) compared to that for the rest of the land and sea (16%). This trend is driven by the fact that pressures within the land largely result in more habitat loss in localized contexts related to a direct pressure (e.g., mining, urban development) whereas estuarine and marine ecosystem types are more affected by several diffuse pressures that cause severe ecological degradation (e.g., flow modification, pollution, trophic cascades from over-fishing).

CapeNature's State of Biodiversity report 2023 (CapeNature, 2023), see Figure 13 below, identifies all areas that have been modified at a 100% rate as they relate to the threatened ecosystems in the Western Cape Province and shows that habitat degradation is prevalent within the coast and immediate inland areas of the coast.

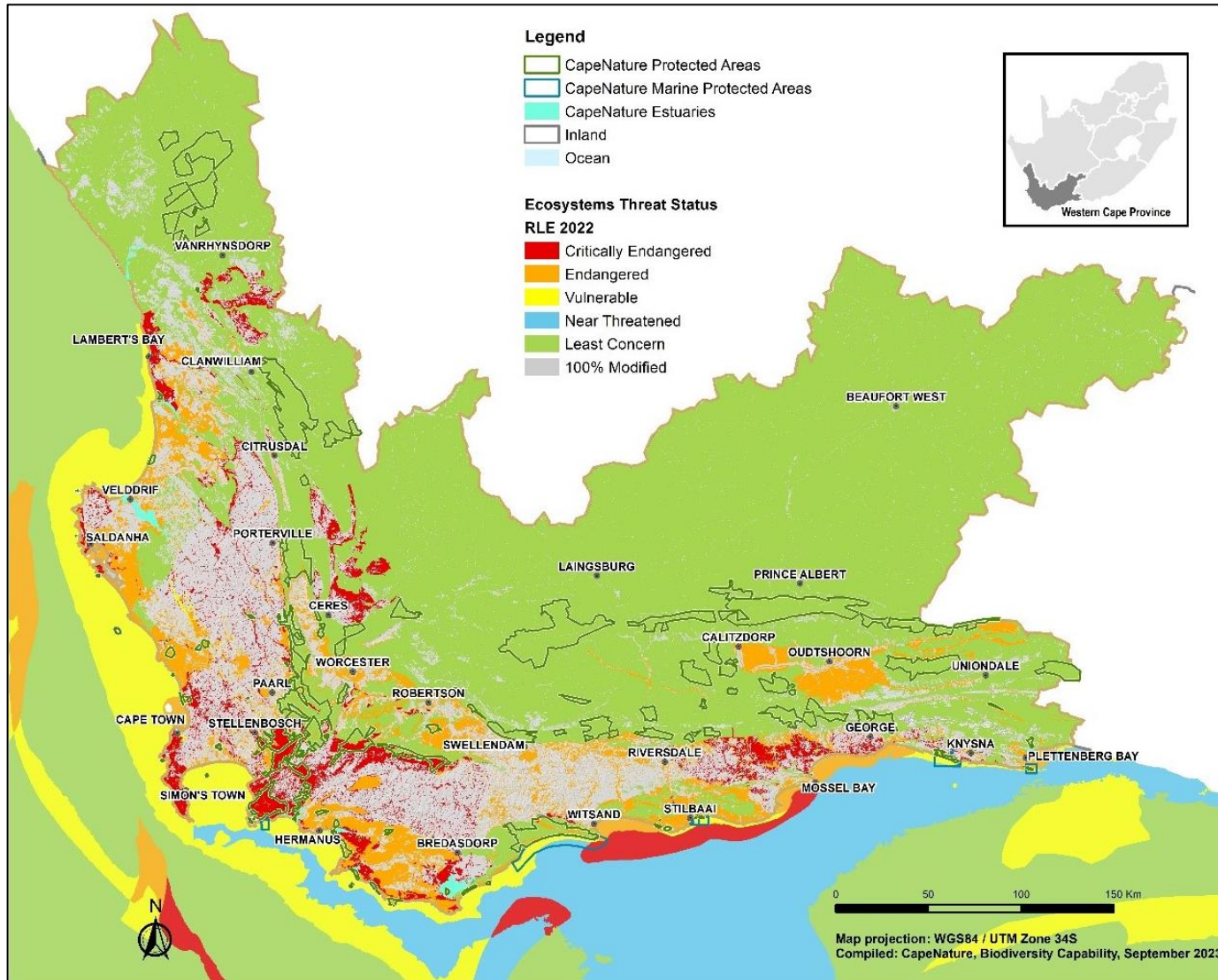


Figure 13 Habitat areas that are 100% modified in relation to the Threatened Ecosystems (RLE = Red Listed Ecosystem). Source: (CapeNature, 2023)

3.6. Number of buildings in high-risk coastal areas

The number of buildings located in high-risk coastal areas was reported in the previous SoEOR. The previously reported data has been presented below again as, unfortunately, an updated and accurate count could not be included at the time of finalizing this report. Upon review of the data analysis undertaken using the Eskom 2018 Spot building count (Eskom Spot building counts were used in the previous indicator data) it was established that the buildings were being under counted.

The high-risk coastal zone was delineated based on the 1:20 year West Coast, Overberg, the Garden Route (Eden) coastal risk line and the CCT Coastal Inundation Risk line (2m). The number of buildings located in this zone was determined based Eskom's building count dataset (2006 – 2013). Note that 2006 was considered the base year and data presented for 2006 thus includes all buildings in the high-risk zone prior to and including 2006, with the cumulative number of buildings in the high-risk zone presented for subsequent years (Table 4). Figure 14, 15,16 and 17 illustrates the number of buildings in the high-risk zone within the three District areas and within the City of Cape Town.

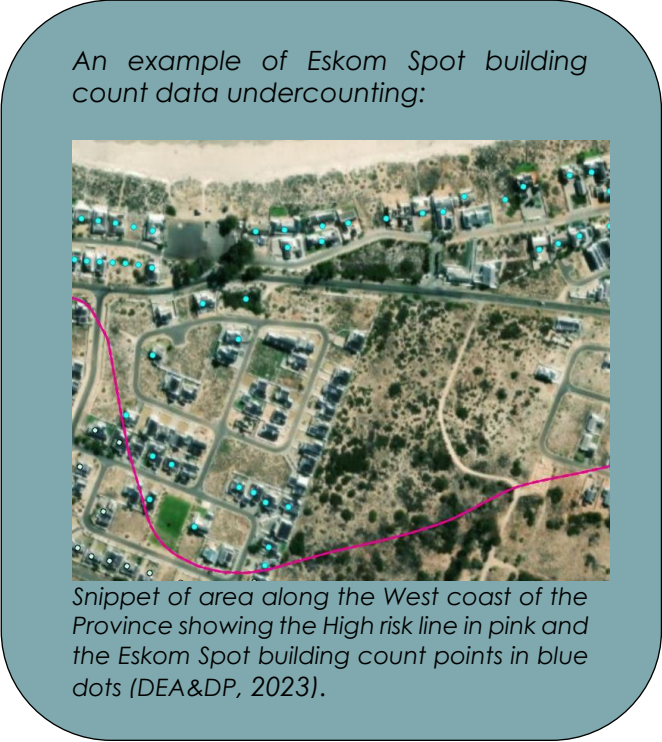


Table 4 Number of Buildings in High-risk Coastal Areas

COASTAL AREA		YEAR							
District	Region/ Municipality	2006	2007	2008	2009	2010	2011	2012	2013
	City of Cape Town	456	474	475	504	510	514	596	597
West Coast	Bergrivier	54	66	79	88	110	114	125	132
	Cederberg	21	21	21	22	24	24	25	25
	Matzikama	39	45	46	46	46	49	51	52
	Saldanha Bay	526	528	570	613	650	653	687	704
	Swartland	35	41	44	46	63	69	70	70
	Total		675	701	760	815	893	909	958
Overberg	Cape Agulhas	1	2	2	2	2	2	2	2
	Overstrand	33	36	44	45	47	50	50	50
	Swellendam	2	2	3	3	4	4	5	5

COASTAL AREA		YEAR							
District	Region/ Municipality	2006	2007	2008	2009	2010	2011	2012	2013
	Total	36	40	49	50	53	53	57	57
Garden Route	Bitou	30	30	34	40	40	40	44	47
	George	32	32	32	32	32	32	32	38
	Hessequa	130	137	146	146	155	180	182	185
	Knysna	2	2	4	4	4	7	8	8
	Mossel Bay	104	104	109	110	114	117	124	128
	Total	298	305	325	332	345	376	390	406
Grand Total		1465	1520	1609	1701	1801	1855	2001	2043

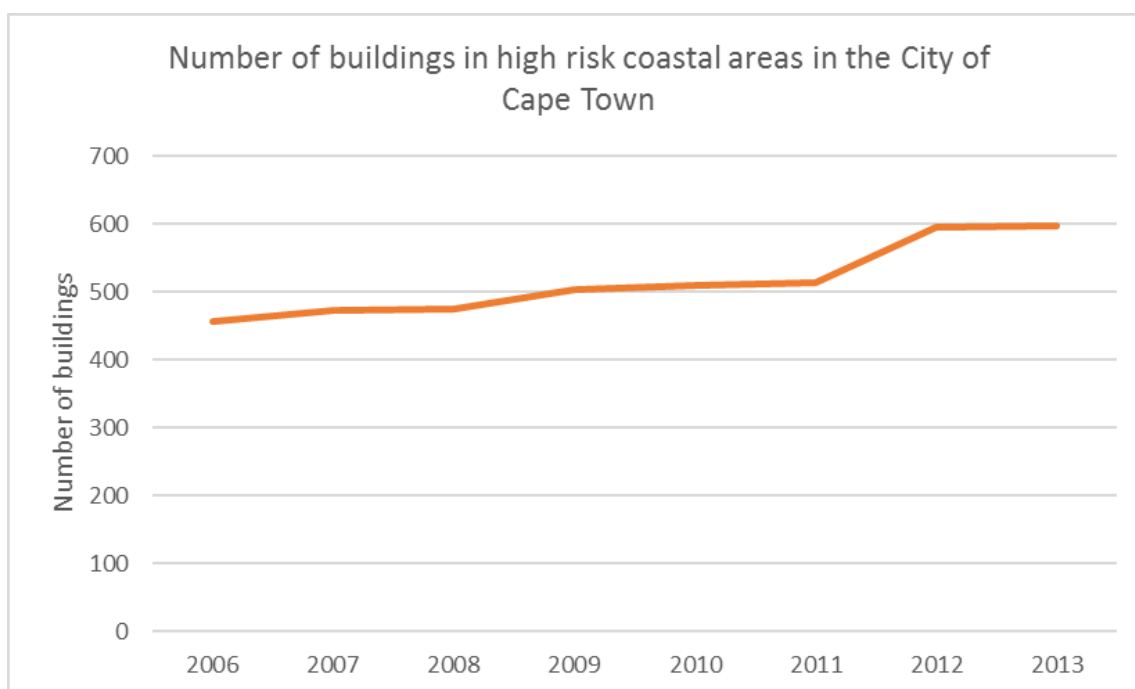


Figure 14 Number of buildings in high-risk coastal areas in the City of Cape Town

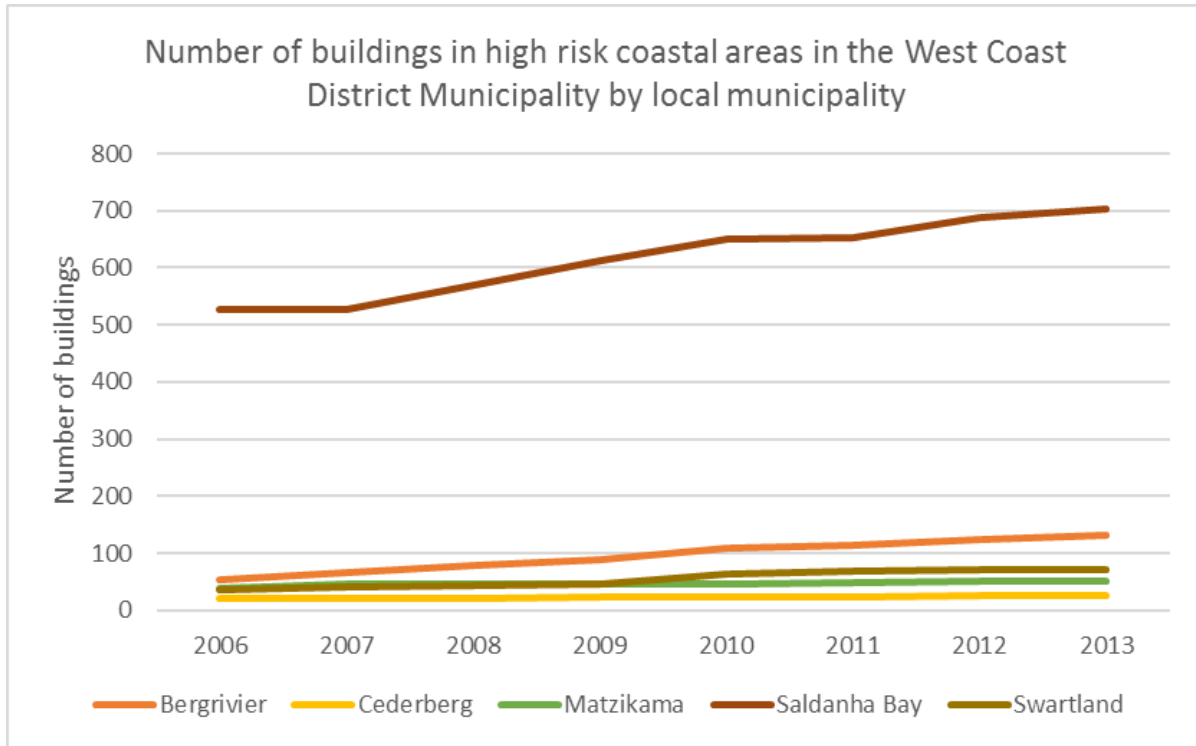


Figure 15 Number of buildings in high-risk coastal areas in the West Coast District

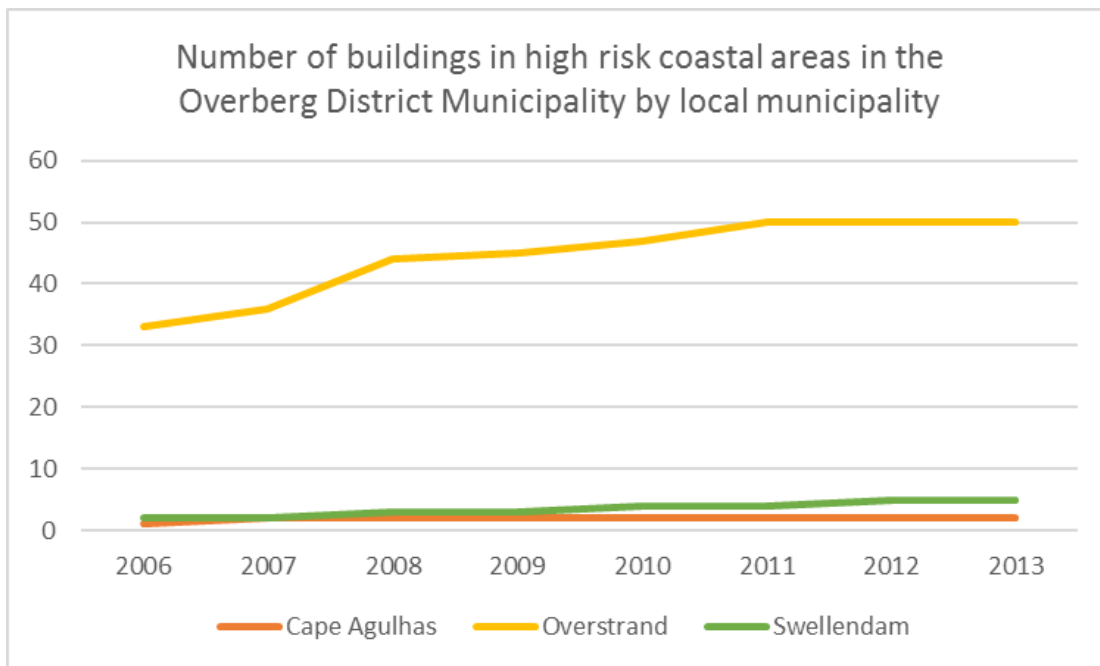


Figure 16 Number of buildings in high-risk coastal areas in the Overberg District

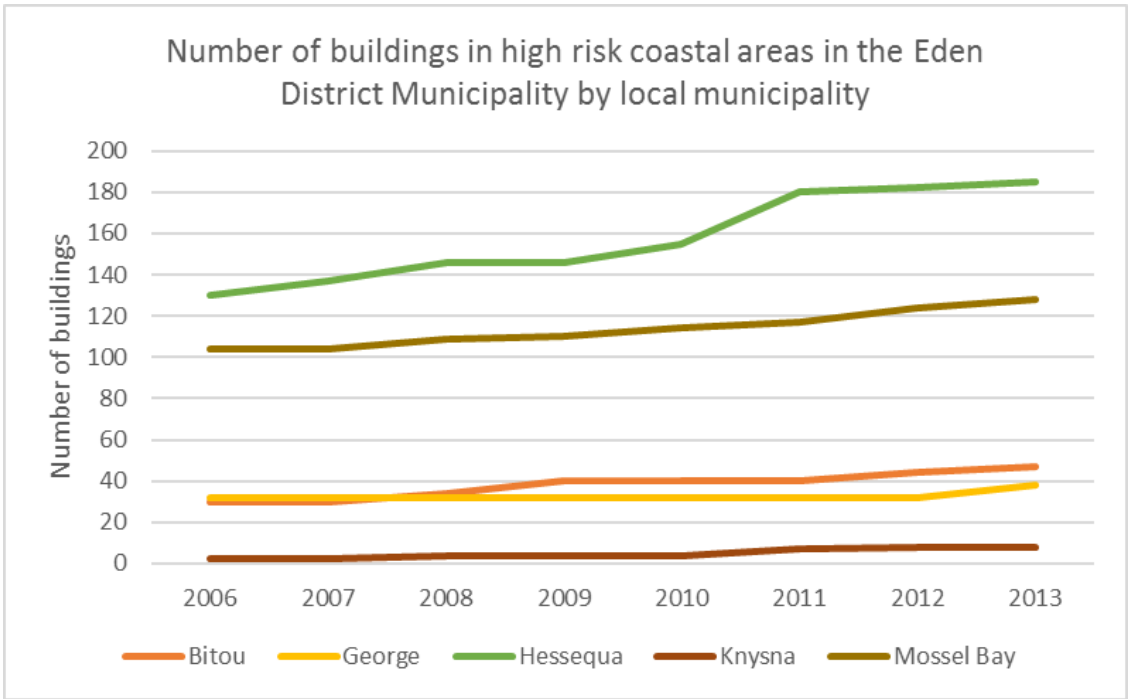


Figure 17 Number of buildings in high-risk coastal areas in the Garden Route District

The DFFE appointed the CSIR in 2023 to assist with the development of a Climate Change Adaptation Response Plan (CARP) and this work included the estimation of the number of buildings in the high-risk zone within the country. The input data used in this analysis included for the Coastal Hazard Zone delineation, the GIS DFFE Coastal Vulnerability Assessment 2020 and for the building count, the Microsoft SPOT Building Count 2020. For the high-risk class which included 1:30 year and 0.3m SLR (bathtub approach), the following results were noted for the Western Cape (CSIR, 2023):

Risk Type (1:30 year and 0.3m SLR)	Building count
Coastal flooding	7196
Coastal short-term Erosion	707
Coastal long-term Erosion	1029
Estuarine flooding	4942
Estuarine Erosion	3461

Due to methodological differences, the values recorded between the Departmental and DFFE (CSIR) assessments are substantially different and further work is required to ensure that the reporting of buildings in high-risk area can be accurately tracked over time.

3.7. Exploitation of fish species

Tracking the exploitation of fish species is considered an important indicator of the health of the population of the exploited species and can be considered an indicator of the marine and coastal ecosystem. In addition, it provides insight into the potential impacts/pressures on the coastal economy and coastal communities relying on these resources for subsistence.

3.7.1. Commercial

The Department of Forestry, Fisheries and Environment (DFFE) published the Status of South African Marine Fisheries Resources Report for 2014, 2020 and 2023 which highlight the stock status of fish species in South Africa. The status of these key resource species is reported as being either heavily depleted, depleted, optimal, abundant, and unknown in Annexure F.

Figure 18 below indicates the status of the key resources species that are commercially exploited in the Western Cape for the 2014, 2020 and 2023 period, with the exploitation status of each of the species assessed presented in Annexure F. The percentage of key resource species that have been assessed and heavily depleted has increased by 3%, species that are depleted have increased by 6% between 2014 and 2023. Optimally exploited species increased by 5% whilst abundant species decreased by 6%. Note that these values include the species assessed in that year and only 16 species were assessed in all three stock assessment years. Figure 19 shows the stock status of the 16 species assessed in all three stock assessments which shows that there was a decrease of 6.25% of heavily depleted species, an increase of 12.5% in optimally exploited species and a decrease of 6.25% in abundant species. However, there is an overall shift towards high use and depletion of key resource species commercially exploited in the Western Cape.

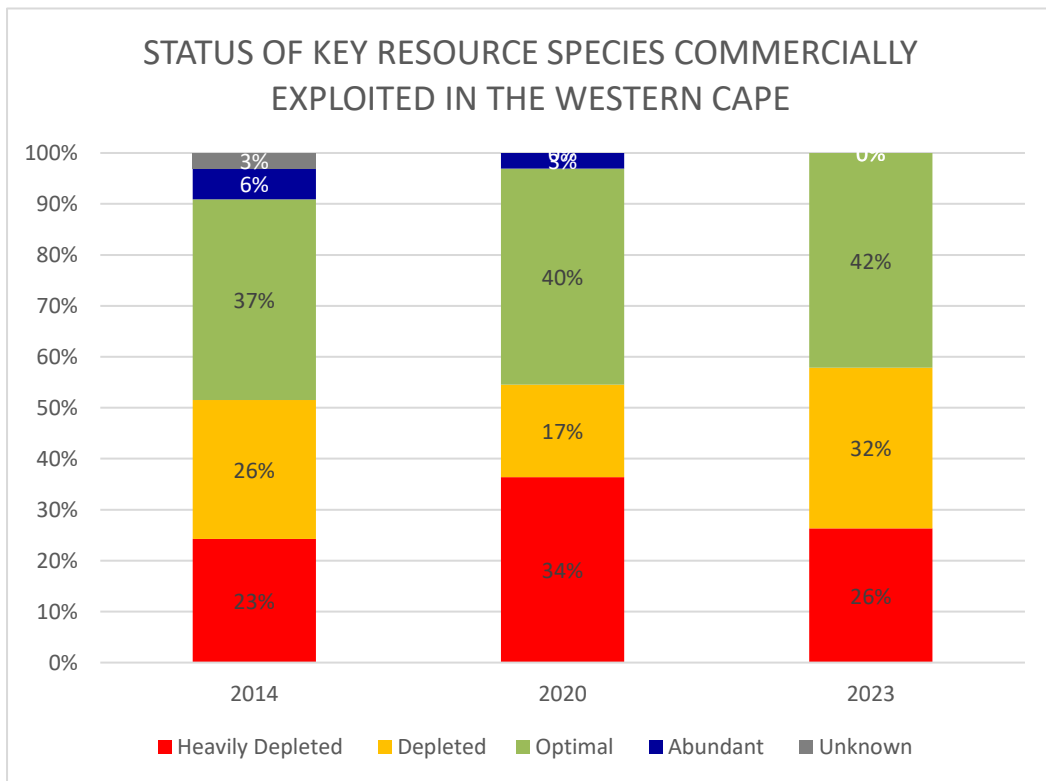


Figure 18 Status of Key Resource Species Commercially Exploited in the Western Cape Source: DFFE, 2014, DFFE 2020 and DFFE 2023.

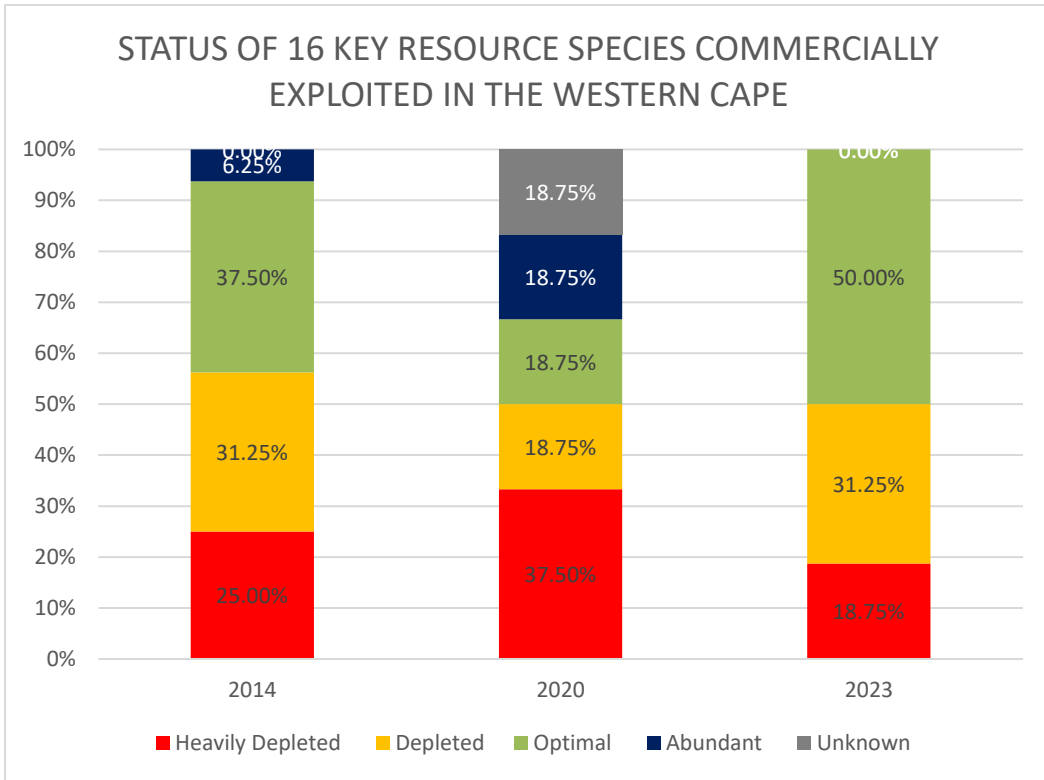


Figure 19 Status of 16 Key Resource Species Commercially Exploited in the Western Cape for species assessed across 2009-2024 Source: DFFE, 2014, DFFE 2020 and DFFE 2023.

Anchovy and sardine off South Africa have both shown marked changes in population size as well as shifts in distribution. According to the DFFE 2023 report, the 2022 pelagic biomass survey indicated some recovery in sardine but the population remains below the long term average and that resource is considered as being between a depleted and an optimal status. Coetzee et al., (2019) reported that the 2019 total catch was 2050 tonne, compared to 500 000 tonne in 2005.

The aim of sustainable management of the marine fishery is to have resources that are in an optimal state and that are fished at optimal levels (DFFE, 2022). However, historical overfishing may have reduced some stocks to depleted or heavily depleted levels, and rebuilding these stocks could be attempted by reducing fishing pressure. Such rebuilding can take several years or even decades as the rate of recovery is dependent both on the biology of the species concerned and on natural recruitment fluctuations.

The DFFE 2023 Status of Marine Fisheries Resources Report highlighted the importance of ongoing monitoring being implemented and that Total Allowable Catches (fishing pressure) are adjusted each year to ensure that resource species stocks are being appropriately managed.

3.7.2. Recreational

South Africa has in excess of 200 "linefish" species that are targeted by recreational anglers. These species are diverse and their vulnerability to fishing pressure varies from highly resilient to highly vulnerable (WWF, 2016). Twenty-one linefish species were identified by the WWF (2016) as being key species targeted by anglers in South Africa. Of these 21 species, 14 are relevant to the Western Cape. This was also determined by establishing the distribution of each of the key species and reporting on the species that were found within waters around the Western Cape coast. Annexure

G provides an indication of the stock status of each of these important linefish species between 2014, 2020 and 2023 as indicated from the South African Marine Fishery Resources Reports (DFFE 2014, 2020 and 2023).

Figure 20 below indicates the status of the key resource species that are recreationally exploited in the Western Cape for the 2014, 2020 and 2023 period. The exploitation status of each of the species assessed is presented in Annexure G. The percentage of key resource species that have been assessed and heavily depleted has increased by 5%, species that are depleted have increased 13% between 2014 and 2023. Optimally exploited species increased by 12% whilst abundant species decreased by 10% between 2014 and 2023. Note that these values include the species assessed per year and only 6 species were assessed in all three stock assessments. Figure 21 shows the stock status of the 6 species assessed in all three stock assessments. There was a decrease of 16% of heavily depleted species, an increase of 16% in optimally exploited species and a decrease of 16% in abundant species. However, there is an overall shift towards high use and depletion of key resource species recreationally exploited in the Western Cape.

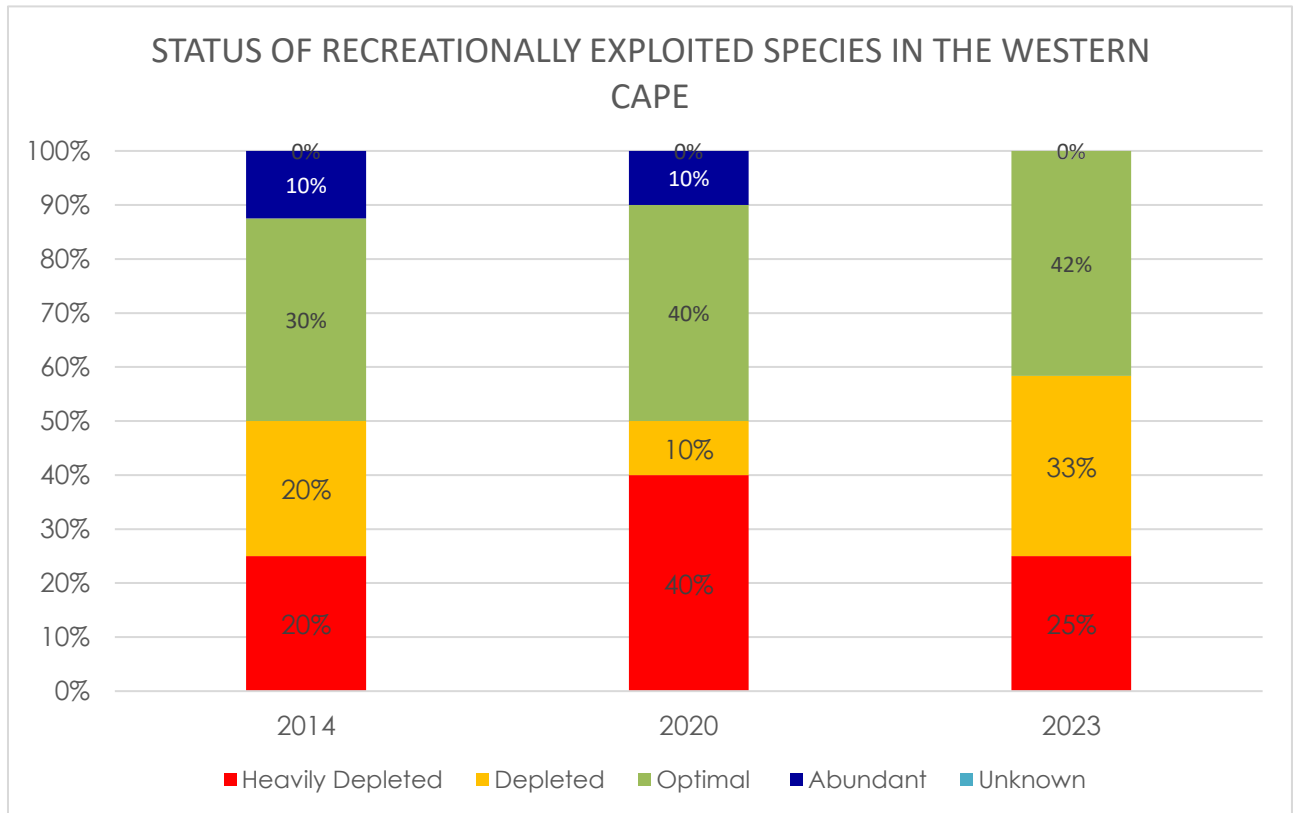


Figure 20 Status of recreationally exploited species within the Western Cape Source: DFFE, 2014, DFFE, 2020 and DFFE 2023.

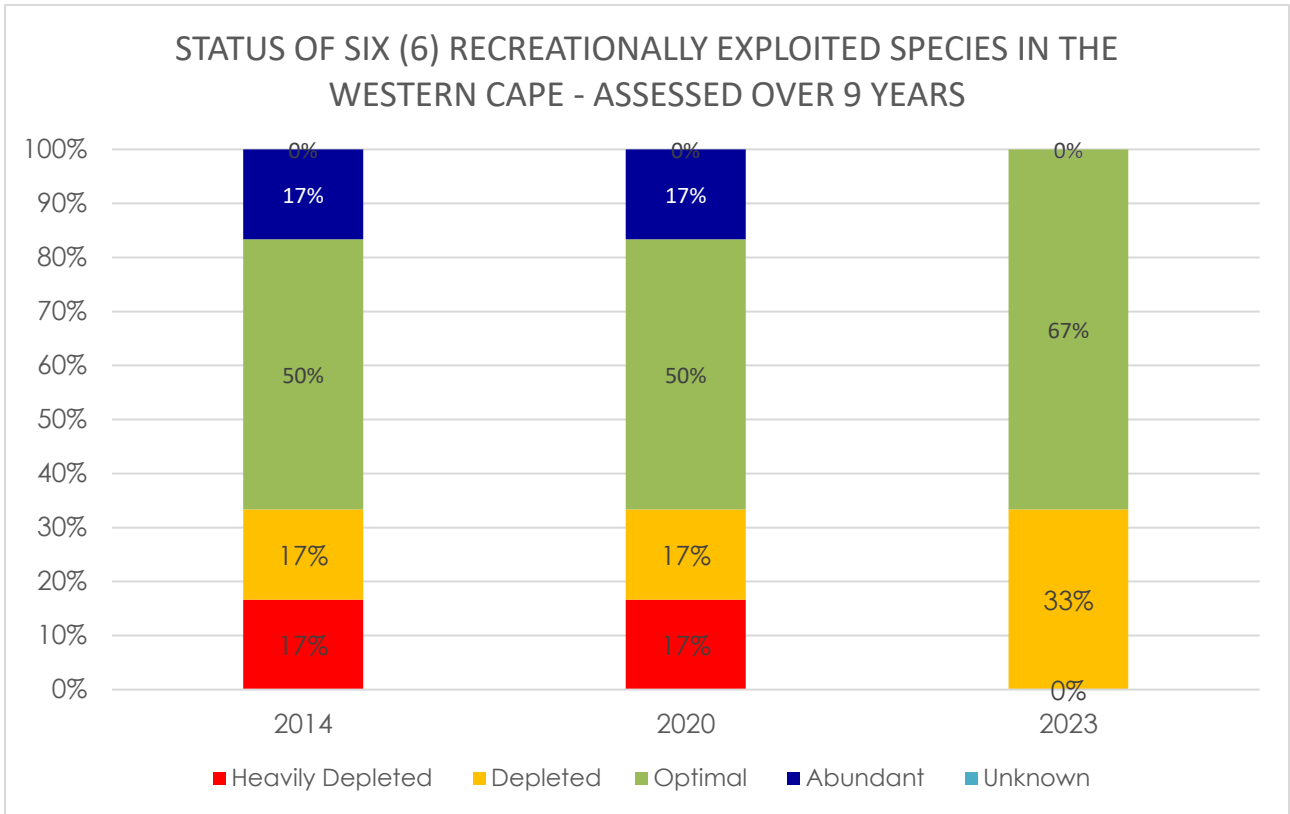


Figure 21 Status of six (6) recreationally exploited species within the Western Cape across 2014-2023. Source: DFFE, 2014, DFFE 2020 and DFFE 2023

Recreational anglers' awareness has increased in recent years with many anglers now practice 'catch and release' and competitive angling formats are constantly adapting to minimise fish mortalities (DFFE, 2023). However, the number of recreational anglers remains high (in excess of 450 000 individuals). Furthermore, a recent study found that although catch and release takes place, there may still be significant (up to 20% observed) post-release mortality of fishes due to barotrauma, extreme fatigue and hook damage (DFFE, 2023).

4. IMPACTS

Taking into consideration the state of- and pressure on- the Western Cape oceans and coast, this section discusses the impacts of oceans and coastal changes on the Western Cape environment.

4.1. Pollutants

Pollutants from marine and land-based sources which result in fluctuations in coastal water quality will lead to a reduction in the ability of coastal and marine environments to provide "free" ecosystem goods and services such as waste processing and dilution of pollutants. Civil society, that is dependent on fish resources for survival and recreational use/activities could be negatively impacted by ongoing pollution entering the coastal area. Furthermore, pollution of beaches and estuaries could negatively affect the tourism industry, a key economic driver in the Western Cape.

An increase in the human population along the Western Cape coastline drives pollution of oceans and coasts, with pollution exacerbated by pollution management failures in the context of increased demand for resources and pollution management. In terms of pollution, there are also other sources of marine and coastal pollution including that of agricultural runoff, municipal wastewater (and wastewater treatment works malfunctioning, compounded by Eskom loadshedding impacts on sewage pump stations), stormwater runoff and oil spills. Emerging Estuarine biota and water quality are equally impacted by pollution inputs including nutrients, microbial, heavy metals, and solid litter. Fish kills are clear manifestation of such pollution. Of the Western Cape's estuaries, 25% of the estuaries are under very high pollution pressure and an additional 20% are under high levels of pollution pressure (Van Niekerk *et al.*, 2017).

Following the large, approximately 170 tonnes, nurdle spill that occurred off the Western Cape in 2020, the Directorate Biodiversity and Coastal Management (D: B&CM) participated in the Joint Operations Committee (JOC) dealing with the nurdle spill response and are members of the Environmental Sub-committee which oversees the cleanup operations. Cleanup operations were undertaken and monitoring is currently underway to determine if further cleanup operations are required. Any nurdle sightings can be reported to the following hotline: 063 404 2128. The DFFE and SAMSA are leads in managing ship-based incidents of pollution in South African waters.

4.2. Alteration of estuarine environments

Estuaries provide many ecosystem services and negative alterations of estuarine habitats and ecosystems could lead to increased flooding, increased erosion of banks, reduction in food supply, decreased sequestration of carbon, amongst many other impacts.

Estuarine environments are physically altered through artificial breaching of seasonally closed estuaries, land-use changes e.g. agricultural activities and development in estuarine functional zones. These activities cause impacts to estuarine environments including altered flows and tidal exchanges, sediment loading, loss of estuarine biota and with development, loss of sense of place. Altering estuarine environments can lead to changes in estuary type, for example, changing from a temporarily open to a predominantly open system which result in physical estuarine and biota impacts. These impacts also effect the ecological integrity of the system. Estuarine environments characterised by poor health and low levels of protection are indicative of impaired ecological integrity.

4.3. Transformation

The presence of critically endangered and endangered marine ecosystems indicates an overall reduction in marine and coastal ecosystem integrity, not least of which as a result of overexploitation of resources and permanent compromise through transformation (Sink *et al.*, 2012). Dynamic coastal processes interact with land transformation and other pressures on the coastline to increase coastal environmental risks which manifest in impacts such as mobile sand dunes, increased intensity, frequency and duration of extreme events as well as decreased ecosystem resilience. Transformation of ecosystems in the coastal belt leads to alteration of natural coastal dynamics, the introduction of alien invasive species and decreased resilience to the impacts of climate change.

4.4. Exploitation of living resources

Exploitation of living marine and coastal resources result from an increased demand for these resources, whether for recreational purposes (increasing angling activities), commercial fishing and to a lesser extent, for subsistence support (demand for food supplies). Of particular concern is the impact on highly targeted depleted and heavily depleted species, and their habitats. The species exploited varies between commercial, recreational angling and subsistence activities and include commercial fish described in Section 3.7.1 but also others including the sandprawn (*Callichirus kraussi*), mudprawn (*Upogepia africana*) and bloodworm (*Arenicola loveni*), and other invertebrates used as bait. Over-fishing and illegal gill netting remain key impacts requiring management responses.

Overexploitation of species could result in collapse of stocks and could result in food shortages (protein), livelihoods derived from fishing/tourism related fishing could be at risk and ecosystems could be at risk of collapse.

4.5. Alien invasive species

Indigenous coastal and estuarine species are subjected to impacts of alien invasive species that spread and naturalise local coastal and estuarine environments mainly because of human and commercial activities. The National SoEOR (2017) reports on the aquaculture species, the Pacific Oyster (*Crassostrea gigas*) that became invasive in South Africa, impacting coastal areas including those in the Western Cape. As the only aquaculture oyster species in South Africa, with declining aquaculture production, the spread of the alien invasive species could be contained to an extent. However, the example illustrates the vulnerability of coastal and estuarine environments to alien invasive species.

5. RESPONSES

Managing human activities in the coastal zone is necessary to lessen anthropogenic impacts, protect people from the risks and hazards that arise from changes in climatic conditions, as well as to prevent current poor coastal development practices from recurring and increasing. This is especially critical in the face of increasing environmental change related to climatic shifts and increased levels of human activities along the coastline.

The 2022-2027 Western Cape Provincial Coastal Management Programme (PCMP), in addition to guiding coastal management in the Western Cape, also focuses on growing the blue and green economies through unlocking the economic potential of coastal assets. It will contribute directly to enabling a resilient, sustainable, quality and inclusive living environment through improved coastal spatial and development planning, access, protection and Local Government support (DEA&DP, 2022). The nine Priority Areas for Coastal Management identified in the Western Cape Coastal Management Programme include:

- 1) Social and economic development;
- 2) Partnership, Cooperative governance, and Local government support;
- 3) Facilitation of coastal access;

- 4) Climate change, dynamic coastal processes and planning for resilient communities;
- 5) Land and marine-based sources of pollution and waste;
- 6) Natural and cultural resource management;
- 7) Estuarine Management;
- 8) Capacity building, advocacy, and education; and
- 9) Compliance, monitoring and enforcement

Responses to the impacts described in the previous section are categorised according to how it aims at addressing the drivers and pressures that are giving rise to the impacts (and as captured by the indicators in this report). A summary of more general policy, tools and legislative responses which occur at national, provincial and local levels is presented in Annexure H. Responses to address pressures in the coastal zone may also include coastal by-laws, coastal overlay zones and various other coastal management specific policies. Coastal management lines and estuary management plans are two responses described in more detail below.

5.1. Conservation and protected areas

Protected areas are areas of land or sea that are protected by law and managed primarily for biodiversity protection. Protected areas are important for the sustainability of ecology and adaptation to climate-change. Protected areas recognized in the National Environmental Management: Protected Areas Act (Act 57 of 2003; hereafter, NEMPAA) are reflected as protected areas in the NBA. NEMPAA offers numerous categories of Protected Areas, including Special Nature Reserves, National Parks, Nature Reserves, Marine Protected Areas, and Protected Environments.

Adams & Kowalski (2021) indicates that a Marine Protected Area (MPA) is a lawfully selected area of coast and/or ocean that is managed to protect marine habitats, ecosystems, species and natural processes. MPAs provide resilience, maintenance and restoration of ecosystem services while promoting good governance as well as socio-economic and cultural objectives.

There are two nationally recognized zones within MPAs, dealing with the harvesting of living resources, namely:

- Restricted – This is a no-take area or zone in an MPA (or a complete MPA) where no disturbance, extraction or harvesting of marine resources and plant life is permitted.
- Controlled – This is an open area or zone in an MPA where the extraction and harvest of marine resources are allowed with a valid permit and under restrictions related to species, bag and size limits.

It should be noted that MPAs that are not declared restricted zones can sometimes become sites that experience significant fish exploitation by recreational, subsistence and/or commercial fishers and thus contribute to over-exploitation (Tunley, 2009). In addition, some MPAs may be further zoned to improve management of the system, for example, the Goukou estuary which forms part of the Stilbay MPA is also zoned for management of boating.

The Sub Directorate: Coastal Management (SD: CM) conducted a Gender and Human Rights Gap Analysis Report for the 2016 Provincial Coastal Management Programme. Some the key pieces of literature show that small scale fishers' concerns should be addressed in Marine Protected Area Planning. According to (Masifunidse, 2018) the Langebaan Coastal Links fishers highlighted in the Cape High Court that the fisheries authorities should recognise customary rights of fishers and that fishers should be consulted during MPA planning processes. The Cape High Court in 2016 ruled in favor of Coastal Links and indicated that traditional fishers' rights/ claims need to be considered during the planning, management, and implementation of MPAs.

There are positive socio-economic impacts emanating from MPAs such as De Hoop MPA. According to Mann-Lang *et al.* (2021) a study on the De Hoop MPA noted that Public-Private Partnerships (PPP) generate employment opportunities for locals, stimulates local business growth and collective income sources, with additional capacity-building.

Mann-Lang *et al.* (2021) recommends that relevant authorities need to identify and implement innovative opportunities to enhance tangible benefits associated with MPAs to build support for the MPA. Once identified, it is important to follow through with initiatives and to track and report evidence of progress (as can be done through the Management Effectiveness Tracking Tool [METT]).

According to (Adams & Kowalski, 2021) before 2019, the South African MPA network consisted of 24 MPAs (19 coastal, 1 lagoon and 4 island MPAs) within South Africa's mainland Exclusive Economic Zone (EEZ), plus 1 MPA located outside of the mainland EEZ (Prince Edward Islands MPA). These MPAs—excluding Prince Edward Islands MPA—made up 0.5% of South Africa's EEZ. However, by declaring an additional 20 MPAs in 2018, South Africa increased its MPA network to 5.4% of its EEZ, resulting in a total of 42 MPAs. Seven MPAs were declared within the marine ecosystems along the Western Cape as part of the 2019 declaration process. The newly established MPAs (depicted in Figure 3.9) include:

- Agulhas Bank Complex Marine Protected Area.
- Agulhas Muds Marine Protected Area.
- Benguela Muds Marine Protected Area.
- Cape Canyon Marine Protected Area.
- Southeast Atlantic Seamounts Marine Protected Area.
- Southwest Indian Seamount Marine Protected Area.
- Browns Bank Corals Marine Protected Area.

The Minister of the Department Forestry, Fisheries and Environment published for public comment draft notices and regulations for the expansion and rezoning of three MPAs in the Western Cape: Betty's Bay, Robberg and Goukamma MPAs. As of 2023, the MPA rezoning process has not moved forward, as DFFE MPAs unit needs to meet with the DFFE Fisheries unit to establish the process that needs to be followed.

The Final Draft for the 2021-2025 Western Cape Protected Area Expansion Strategy (WC PAES) has been approved by the CapeNature Board, however it will be submitted to the Western Cape MEC of Local Government, Environmental Affairs and Development Planning for approval for public comment, prior to adoption, in terms of the WC Biodiversity Act during 2024/25 financial year.

The table in Annexure E shows the MPAs in the Western Cape and provides a description

for each. Figure 22 illustrates a map of the MPAs, proposed expansion areas and marine bioregions of the Western Cape. Table 5 focuses on the management effectiveness scores for each Marine Protected Area from the METT Report. There are different types of management categories in the METT Report namely:

- Optimal - Sound level of management.
- Basic Management - Basic level of management with improvement(s) required.
- Priority - No management or seriously constrained.

CapeNature's Annual Report (2022) reflected that 94% of their MPAs achieved a METT score of over 67%, which represents the "Sound management" category) in 2021/22 reporting period compared to 87% in 2019/20. 13% of the MPAs fall within the "Basic management" category in 2021/22. This shows an improvement in the management of MPAs within the Western Cape.

According to Adams & Kowalski (2021), while certain indicators of MPA management effectiveness were optimally managed across all MPAs in South Africa, a major challenge will be maintaining the MPAs that have been effectively managed and overcoming the challenges within MPAs that are not effectively managed. Some of the key actions to address the challenges include:

- Adequate funding, staffing and resources.
- Extensive monitoring to inform adaptive MPA management.
- Improved public awareness.
- Effective law enforcement.
- Improved cultural heritage management.

It should be noted that the WWF-SA METT report does not reflect the management effectiveness scores for the following coastal and offshore MPAs from Western Cape:

- Cape Canyon
- Walker Bay
- Childs Bank
- Southeast Atlantic Seamounts.
- Browns Bank Corals
- Agulhas Bank Complex
- Agulhas Mud

Furthermore, Walker Bay was proclaimed as a sanctuary area for whales and it was granted protection to allow for cetacean aggregations to remain free from disturbance (Adams & Kowalski (2021)).

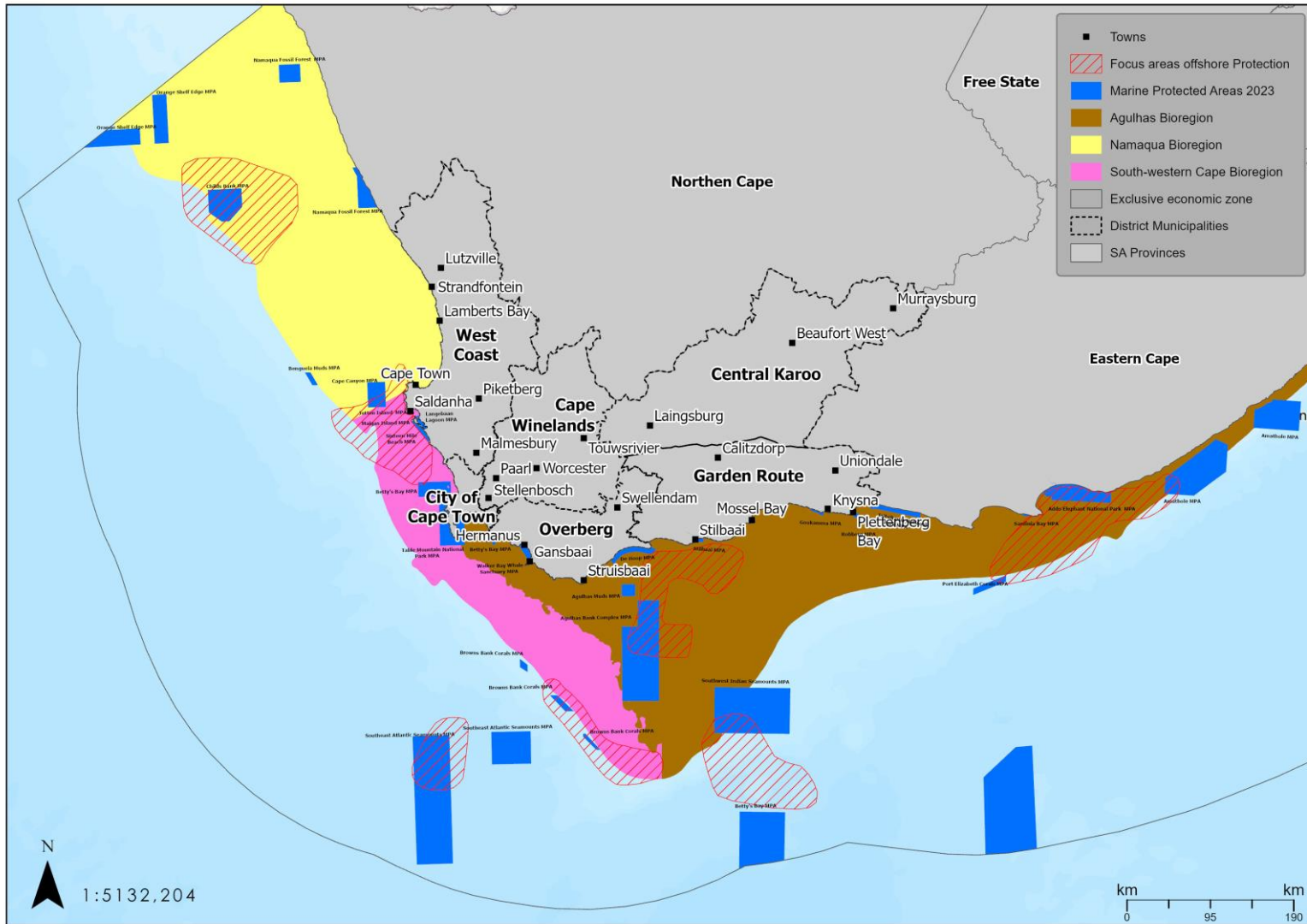


Figure 22 Marine protected areas, proposed Cape expansion areas and marine bioregions of the Western Cape

South Africa is party to the United Nations Convention on Biological Diversity (UNCBD) and is a signatory to the Global Biodiversity Framework and endorsed Target 3, the “30x30”, of the Kunming-Montreal Global Biodiversity Framework (GBF) of December 2022. This target aims to protect 30% of land-and seas-scapes through the establishment of Protected Areas (PAs) and Other effective area-based Conservation Measures (OECMs). The Department of Forestry, Fisheries and the Environment is the lead institution for this Target and is engaging relevant stakeholders including the Western Cape Government. The DFFE and partners are working towards protecting the Marine, Coastal and Estuarine ecosystems amongst others.

Table 5 The number of indicators between the different management levels in the WWF METT Report 2021 (Source: (Adams & Kowalski, 2021))

Marine Protected Area	Management Agent	Status	Area of protected ocean	Optimal Management	Basic Management	Priority Indicator
West Coast National Park	SANParks	Controlled Zone with Sanctuary and Restricted Zones in Langebaan Lagoon	280 km ²	34	23	1
Table Mountain National Park	SANParks	6 Restricted Zones within Controlled Zone	984 km ²	24	16	16
Tsitsikamma National Park	SANParks	Restricted Zone	186 km ²	26	26	9
Betty's Bay	CapeNature	Controlled Zone	20.14 km ²	25	17	14
De Hoop	CapeNature	Restricted Zone	288.9 km ²	28	15	11
Stilbaai	CapeNature	Controlled Zone and three Restricted Zones	20 km ²	28	19	11
Goukamma	CapeNature	Controlled Zone	32 km ²	29	23	10
Robberg	CapeNature	Controlled Zone	42 km ²	26	16	11
Dyer Island Nature Reserve	CapeNature	Species/Habitat Protection Zone	0.16 km ²	26	19	11
Dassen Island Nature Reserve	CapeNature	Species/Habitat Protection Zone	2.3 km ²	31	20	7
Rocherpan Marine Protected Area	CapeNature	Species/Habitat Protection Zone	1.5 km ²	6	2	42
Helderberg	City of Cape Town	Species/Habitat Protection Zone	24.6 km ²	24	24	9

5.2. Coastal management lines

The coastal zone attracts people, for recreational purposes, natural resources use, scenic views, or for spiritual purposes amongst many other purposes. A large percentage of the population reside in coastal areas and thus there is pressure to develop more infrastructure and residential dwellings within the coastal zone. Section 2 of the NEMA states that "sensitive, vulnerable, highly dynamic or stressed ecosystems, such as coastal shores, estuaries, wetlands, and similar systems require specific attention in management and planning procedures, especially where they are subject to significant human resource usage and development pressure.

The Western Cape Government, specifically the Department of Environmental Affairs and Development Planning, being the lead agent for coastal management, is under obligation to protect and preserve the inherent value of the Western Cape's coastal zone. Conservation agencies and municipalities are also key partners in the management of the coastal zone. By implication, the Department needs to ensure that decision-making, at all levels, regarding further development is responsive to the dynamic nature and risks associated with the coastal zone.

The NEM: ICMA provides for various tools for and specifies provisions that guide responsible land use decision making in the coastal zone that is cognisant of the sensitivities of the receiving environment. One such tool is the establishment of coastal management lines along the provincial coastline. In the Western Cape, the delineation of the draft coastal management lines was informed by the relevant provisions of the NEM: ICMA as well as scientific data related to coastal risk and coastal dynamic processes.

The sub-Directorate: Coastal Management, together with the other relevant components of the Department have engaged and supported municipalities with the incorporation of the coastal management lines in zoning/land use schemes as required in terms of Section 25(3) of the NEM: ICMA. Conservation Agencies are also required to demarcate CMLs within protected areas. The Garden Route National Park has formally established CMLs for their park in July 2023.

Furthermore, the Western Cape Coastal Risk Management Policy is under development and will assist with further guidance related to decision making in the coastal zone in the Western Cape.

Of paramount importance is the identification of the most appropriate, effective, streamlined and responsive regulatory framework for implementation of Coastal Management Lines. The Department is currently in a process of confirming the best approach for the implementation of the Coastal Management Lines in the Western Cape through consultations with legal professionals and authorities.

5.2.1. City of Cape Town

The City of Cape Town's Coastal Management Line (CML) is also referred to as the Coastal Urban Edge. The Coastal Urban Edge was already visible on the City of Cape Town MSDf map in 2016, 2018 and more recently in the Municipal SDF and District Spatial Development Frameworks (DSDF) 2022. The CML is pivotal in protecting Cape Town's unique coastline against the impact of climate change, while at the same time, promoting appropriate economic activities and development.

The City of Cape Town's coastal edge was formally approved in the Cape Town Spatial Development Framework (CT: MSDf) on the 8th of May 2021 and was approved as a component of the

City's Integrated Development Plan in terms of the Municipal Systems Act (Act No. 32 of 2000, section 34), as well as the Land Use Planning Ordinance (No. 15 of 1985, section 4(6)). On 19 March 2021, the City of Cape Town's coastal edge was gazetted and established by the MEC as the coastal management line in terms of Section 25 of the NEM: ICMA. The CML is pivotal in protecting Cape Town's unique coastline against the impact of climate change, protecting people, and promoting appropriate economic activities and development.

Certain land use proposals, or natural urban development or urban encroachment have occurred since the CML was first delineated. The MSDF and DSDFs in some cases have accepted or provided for such development and hence a process of review of the CML will be undertaken.

5.2.2. West Coast District Municipality

Draft CMLs have been determined for the entire West Coast District Municipal coastline. However, the Draft CMLs are in the process of being established by the MEC. In the meantime, it is important that the CMLs are incorporated into all municipal zoning schemes and considered in all planning decisions. Two of the LMs have already begun to consider the CMLs in terms of their planning processes through their SDFs. These LMs include the Cederberg LM and the Swartland LM.

The SD:CM have reviewed and drafted written description of the West Coast CML in preparation for engagement with municipalities for establishment of the CMLs. The CML has been amended in certain areas in response to erosion events and evidence of more dynamic coastal processes.

5.2.3. Overberg District Municipality

Overberg Coastal Management Lines (CMLs) were developed in 2015 and includes risk zones for the Overberg coast based on projected sea level rise, littoral active zones (mobile sand), projected sea level rise, storm-driven coastal inundation and projections of storm-driven coastal erosion. The low, medium and high-risk zones correspond to 1:20 year storm event and 20cm sea level rise, 1:50 year storm event and 50cm sea level rise and 1:100 year storm event and 100cm sea level rise, respectively. Once established by the Minister of Environmental Affairs and Development Planning these zones will be integrated into municipal zoning schemes, until then municipalities are directed via a provincial circular issued by the Head of Department to consider the risk areas in their spatial planning. The CMLs and risk areas can be viewed online on the interactive WCG Environmental Affairs and Development Planning Atlas.

The SD:CM have reviewed and drafted written description of the Overberg District CML in preparation for engagement with municipalities for establishment of the CMLs. The CML has been amended in certain areas in response to erosion events and evidence of more dynamic coastal processes.

5.2.4. Garden Route District Municipality

The Garden Route District (formerly known as Eden District) CML was informed by the risk lines, but incorporate social, economic, and administrative considerations to determine a realistic planning boundary. It also addresses the need to protect conservation areas and biodiversity hotspots, areas of heritage significance, current public access and amenity and landscape value / sense of place. The CML therefore demarcates the area seaward of current developments, the area below the projected hazard zone where no development has taken place, undeveloped littoral active zones and undeveloped areas below the 5m amsl / Estuarine Functional Zone boundary (DEA&DP, 2018).

The SD:CM have reviewed and drafted written descriptions of the Garden Route district Municipality CML in preparation for engagement with municipalities for establishment of the CMLs. The CML has been amended in certain areas in response to erosion events and evidence of more dynamic coastal processes.

The Minister of Forestry, Fisheries and the Environment published the Coastal Management Line for the Garden Route National Park in terms of section 25(1), read with section 25(5), of the National Environmental Management: Integrated Coastal Management Act, 2008 (Act No. 24 of 2008) on the 14 July 2023.

5.3. Focus areas for future protection

The protection levels of marine ecosystem types have improved dramatically, such that 87% of the 150 marine ecosystem types now have at least some representation in the MPA network. These MPA's offer protection to coastal ecosystem types. The new MPA network will help to protect marine ecosystems, rebuild fish stocks, provide improved recreational offerings, support climate resilience and sustain South Africa's emerging ocean economy (Sink et al. 2019d). The MPAs also significantly contribute to South Africa's achievement of the United Nations Sustainable Development Goal: Target 14.

According to the Draft 2021 to 2025 Western Cape Protected Area Expansion Strategy (WCPAES) CapeNature has prioritised 13 priority estuaries (Olifants, Verlorenvlei, Groot Berg, Klein, Bot/Kleinmond, Uilkraals, Heuningnes, Goukou, Goukamma, Keurbooms, Palmiet, Rooiels and Breede) in need of improved conservation and protection. An investigation is underway to determine the best legal mechanism to protect priority estuaries (CapeNature, 2021).

5.4. Climate change response

Given the impacts of changing weather patterns and increasing sea-level rise along the coast, it becomes important for the Western Cape to invest in increased climate resilience. Building resilience requires an appreciation of the inevitable climate related disasters – whether they be in the form of floods, droughts or storms - as well as the possible response measures that can be implemented (DEA&DP, 2023).

The Western Cape Climate Change Response Strategy: Vision 2050 (WCCCRS) indicates that the Western Cape Government will reduce risk and increase resilience through investment into restoration and enhancement of our natural capital. The WCCCRS has several priority actions that respond to the climate emergency within the coastal and estuarine realm in the Western Cape:

- Developing a coastal risk assessment, policy and regulatory framework that includes a coastal vulnerability and risk assessment, coastal risk policy that details the roles of coastal management lines and active retreat, as well as the legal framework for the implementation of coastal management lines.
- Ensuring the integration of climate change considerations in all development and spatial planning processes including the implementation of coastal and estuary management instruments.
- Reducing coastal risks through development management, coastal defence, reinforcement and deployment of natural defences, with a focus on priority coastal defence or

retreat projects and the reduction of estuarine risk through climate resilient estuarine management plans.

- Capacitating local municipalities to deal with coastal risk as part of a broader coastal risk assessment, policy and regulatory framework.

Another key action include developing an Adaptation Pathway for the Western Cape aligned with the WCCCRS.

The Western Cape Coastal Management Programme 2022-2027 will contribute directly to enabling a resilient, sustainable, quality and inclusive living environment through improved coastal spatial and development planning, access, protection and Local Government support (DEA&DP, 2023) Priority Area 4 focusses on "Climate change, dynamic coastal processes and planning for resilient communities" with the goal of promoting resilience to the effects of dynamic coastal processes, environmental hazards and natural disasters" (DEA&DP, 2023). This ties in with the responses identified in the WCCCRS.

The Department of Forestry, Fisheries and the Environment (DFFE) has initiated the development of the National Coastal Adaptation Response Plan (CARP) as a strategic framework to enable decision makers to effectively develop responses to climate change hazards in coastal areas in line with the requirements of the Integrated Coastal Management (ICM) Act and National Climate Change Adaptation Strategy (NCCAS). The project is being developed with the assistance of CSIR (Council for Scientific and Industrial Research) and supported by GIZ (Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH).

5.5. Coastal Access Strips

Access to the coastal zone and its assets has historically been inequitable. There are currently large tracts of private land through which the public may not traverse, resulting in restrictions of access to the coast and its resources. To rectify this, the NEM: ICMA requires each District and Metropolitan Municipality, whose areas include coastal public property, to promulgate a by-law designating coastal access land to secure public access to coastal public property (DEA&DP, 2017a). The Western Cape has developed the Provincial Coastal Access Strategy and Plan 2017, in line with the national Strategy for the facilitation of Coastal Access (2014). The DEA&DP also commissioned coastal access audits for the West Coast, Overberg and Garden Route Districts in order to determine where the public are currently accessing the coast, desire to access the coast and where access should be managed or facilitated. The City of Cape Town has secured public access to the coast through their zoning scheme and therefore has no need to designate coastal access land. The management of coastal public property, in the interest of the public, is managed through the City of Cape Town's Coastal Bylaw.

The draft coastal access bylaws that were developed by DEA&DP in the 2021/2022 financial year was circulated to all coastal municipalities on the 23 May 2022 by the office of Provincial Minister, Anton Bredell. Municipalities were also instructed to submit a plan of action for the promulgation and implementation of the coastal access by-laws. The Department regularly follows up with municipalities regarding their progress with the promulgation of the coastal access by-law(s) and reports monthly progress. Municipalities are at various stages of implementation from having advertised the coastal access by-law for public comment to having obtained Council approval to proceed with implementation of the by-law. Support and capacity building on these bylaws are

provided to municipalities according to their level of need and implementation. The challenge for municipalities is the lack of agreements in place between the District and Local municipalities as required in terms of the NEM: ICMA. The DEA&DP is supporting municipalities in this regard with the assistance of DEA&DP: Legal Services and DotP: Legal Services to draft agreements for municipalities.

Although progress on the pilot coastal access implementation project within the Overberg District Municipality has been slow, the Department, together with the Provincial Minister, has continued to support both the local and district municipality by providing legal advice for this matter. The service provider for the DFFE Coastal Access Infrastructure Programme, for which the Overberg coastal access pilot study was selected, was appointed and work has commenced with assessing the site as well as conducting stakeholder engagement with the public. The Department is supporting this initiative by providing all information that was generated during the DEA&DP pilot study assessment as well as participating in the steering committee and stakeholder engagements for this project. The Department will continue to support municipalities and provide strategic and technical guidance in alignment with our provincial priorities and local government support strategy.

5.6. Southern African Sustainable Seafood Initiative

The Southern African Sustainable Seafood Initiative (SASSI) was established in 2004 by the World-wide Fund for Nature (WWF) to drive change in the local seafood industry by working with suppliers and sellers of seafood, as well as informing and inspiring consumers to make sustainable seafood choices.

WWF-SASSI promotes voluntary compliance with the law – specifically the South African Marine Living Resources Act 18 of 1998 – through education and awareness. It also aims to shift consumer demand from over-exploited species to more sustainable options and creates awareness around marine conservation issues (WWF-SASSI, 2017).

The WWF-SASSI Retailer/Supplier Participation Scheme Report 2022 unpacked findings from the WWF-SA consumer survey. It was found that 59% of consumers actively eat sustainable seafood, whereas one third 33% did not know. Over the years, with increased awareness of the state of our oceans and vulnerable marine species, this number will keep climbing and it is important for retailers to adhere to consumer demands. When asked what would help consumers make it easier to choose sustainable seafood, the responses show that there is an opportunity for retailers and seafood suppliers to teach their consumers about sustainable seafood. They can do this by providing the necessary information about what species it is, where it is from and how it was caught/farmed. WWF-SASSI participants can do this through packaging and eco-labelling, a consistent drive to ensure well-trained staff, information awareness through media and more. All these are things that WWF-SASSI can assist with and why partnerships within the scheme are more crucial as ever.

DFFE Stock Assessment Status from the Status of South African Marine Fishery Resources has been included in Annexure F and Annexure G. It is further expanded within the exploitation of fish species section of this document. WWF-SA are using color-coded SASSI list categories for selected South African and imported seafood species according to their conservation status (WCG, 2017). The table in Annexure I shows the different categories, descriptions and fish species within those categories.

5.7. Marine Protection Services and Ocean Governance

The importance of correctly managing our coastal areas, as well as the economic opportunities

that the coast offers, is enjoying increasing attention, as evidenced by the recent focus by national government on the coastal economy in the form of Phase 1 of Operation Phakisa, undertaken by the Presidency and DEA in 2014. The WC PCMP 2022-2027 supports the Identification and implementation of mechanisms for appropriate protection status of priority areas including expansion of MPAs as identified in the WC Protected Area Expansion Strategy (PAES) as part of Operation Phakisa (DEA&DP, 2023).

Under Operation Phakisa, the Marine Protection Services and Ocean Governance focus area looked at South Africa's jurisdiction over a very large exclusive economic zone, with an extent of one and a half million square kilometers. With such a large ocean jurisdiction, effective governance is critical but will be challenging given the size and complexity of our oceans. This work stream undertook the task of developing an overarching, integrated ocean governance framework for the sustainable growth of the ocean economy and in doing so identified 10 initiatives to be implemented by 2019 (Figure 23). Table 6 shows the progress regarding the 10 initiatives.



Figure 23 Focus areas for marine protection services and ocean governance (DFFE, 2019).

Table 6 Progress regarding the 10 initiatives

Initiative	Progress
1. Oceans Economy Secretariat	The Oceans Economy Secretariat provides support towards the implementation of Operation Phakisa.
2. Enhancement of legislation for the Integrated Coastal and Oceans Management Act or Oceans Act	The Marine Spatial Planning Act was promulgated by the South African President on 29 April 2019.
3. Review of ocean-related legislation	During the development of the MSP Act coastal and marine related legislation were reviewed and assessed.
4. Accelerated	<ul style="list-style-type: none"> 240 careers were recognized for the Marine Protected Services

Capacity Building Intervention in Ocean Governance	<p>and Governance. 24 of 240 identified careers within the sector were new.</p> <ul style="list-style-type: none"> The International Oceans Institute (IOI) will be conducted a Skills Assessment for the Marine Protected Services and Governance Initiative under Operation Phakisa and the results were handed over to the South African International Maritime Institute (SAIMI).
5. Enhanced and co-ordinated enforcement programme	During the 2015/2016 Financial Year a Working Group (WG) was established to address this priority area. The WG operates within the four coastal provinces and it is in charge for planning, monitoring, and operation executions.
6. National Ocean and Coastal Information System (OCIMS) and extending earth observation capacity	The ZA-cube2 cube satellite was launched on 28 December 2018. The satellite collected location data pertaining to vessel and it will be used to validate data from the Integrated Vessel Tracking System (IVTS).
7. National oceans and coast water quality management	Walter Sisulu University developed and manage the National Pollution Laboratory (NPL). The lab gathers and analyse samples from the coastal provinces. Further testing is required in cases where there are high mercury and iron levels however generally water quality is of an acceptable standard. The lab has been refurbished.
8. Creation of a Marine Protected Area (MPA) representative network	On the 24 October 2018 20 new MPAs were declared. These MPAs provide for 5% of South Africa's total ocean protection from 0.4%.
9. MSP/MPA discovery research and monitoring programme	<p>Three discovery cruises were conducted along the Southwest Indian Ocean. The findings of the discovery cruises and recommendations were published in the African Coelacanth Ecosystem Programme (ACEP) annual report 2016/2017.</p> <p>An Indian Ocean discovery cruise has been secured for January to February 2018.</p>
10. Marine Spatial Planning process (MSP)	The National Framework on Marine Spatial Planning was approved and gazetted on 26 May 2017. Chapters, maps and activity pressure assessments have been drafted for the MSP Management Plans.

Adapted from Oceans Economy Summary Progress Report, DFFE, 2019

5.8. Capacity Building, Advocacy and Education

The WC CMP 2022 to 2027 addresses this key priority that deals with Capacity Building, Advocacy and Education, with the goal to develop capacity and promote public awareness and education for integrated coastal management. Coastal management covers a range of aspects that cut across all spheres of government, coastal stakeholders and affects a broad spectrum of individuals that experience and enjoy the coast. It is essential to gain appreciation and support for coastal policy and management through capacity building, advocacy, and education. Capacity building is required at all levels, including all spheres of government, stakeholders and civil society. It is vital to recognise the important contributions of partners to achieving aims and promote collaboration between all other relevant role-players. There is a need to strengthen the coordination among relevant government sectors and between government and other stakeholders in the coastal management

sectors. Effective awareness, education and training programmes for all stakeholders will assist in improved coastal governance and general public awareness in South Africa.

The three management objectives with the associated 5-year implementation strategies include:

- Educate Youth and build their awareness to instil a sense of ownership and an appreciation of the value of the coast and our coastal heritage;
- Build political and stakeholder support for effective coastal management; and
- Undertake a prioritised capacity development programme to support the implementation of the NEM: ICMA in the Western Cape.

The coastal municipalities are in agreement that shared ownership and accompanied shared responsibility of the coastal zone can be a good approach going forward. The need for facilitated co-operation and coastal managers and stakeholders that are effectively trained is recognized. Applied training and capacity-building of coastal managers and other stakeholders as well as accessible and co-ordinated research will ensure effective cooperative governance and government. Table 7 shows the number of people participating in awareness events during period 2018/19 to 2022/2023.

Table 7 Number of people participating in awareness events during period 2018/19 to 2022/2023

District	2018/2019	2019/2020	2020/2021	2021/2022	2022/2023
West Coast	1 173	1 289	267	427	280
Garden Route	1 523	1 125	450	692	660
Overberg	1 343	1305	712	974	785
City of Cape Town				40	60

The decrease in numbers experienced from 2020/2021 is due to the impact of COVID and budget reductions. Unfortunately, programme funding has been systematically reduced and completely cut for the next MTEF.

5.9. Policy, tools and legislation

There are various responses in the form of policies, tools and legislation across all spheres of government that are applicable to the marine and coastal environment. These responses are included in detail in the Provincial Coastal Management Programme, including the roles and responsibilities of various stakeholders and government bodies.

6. CONCLUSION

OUTLOOK: STABLE

On consideration of the information, the trend analysis and summaries presented in this document, there are concerning features along the Western Cape coastal zone that require improvement. Enhanced effort and resourcing needs to be mobilised to manage the negative impacts on the dynamic and often sensitive coastal and marine environments. The continued high levels of transformation of terrestrial threatened ecosystems in the coastal zone, mostly as a result of human activity, increasing pollution, as well as the rapid decline in fish resources is alarming.

Effective responses to the impacts and pressures on the receiving environment are heavily dependent on the best available data and information, in parallel to response implementation and ongoing coastal management. With this in mind, data and information needs with respect to the Western Cape oceans and coasts are as follows:

- Expansion of monitoring of coastal water quality for all district municipalities, according to the most recent national water quality guidelines;
- Expansion of stock assessments for commercial and recreational fish species;
- Coastal erosion and movement of mobile sediment needs to be tracked in risk prone areas of the province; and
- Expansion of estuarine water quality monitoring

However, significant progress has been made in terms of some of the institutional responses such as the development and approval of Estuarine Management Plans and associated Mouth Maintenance Management Plans, determination of Coastal Management Lines, municipalities voluntarily increasing the number of Blue Flag beaches, Coastal legislation developed (updated NEMP, Coastal Access bylaws, etc.) and approval of the updated Provincial Coastal Management Programme. The addition of eight marine protected areas as well as the planned expansion of protected areas in the coastal zone is also highlighted as a significant step to improving the condition of the coastal environment.

Additional information emanating from the National Biodiversity Assessment (2024), expected to be published in 2025, will aid in understanding the trends. The timing of the release of this report is not synchronised with the NBA process and perhaps the timing of future updates should be better aligned to enable more current evaluation.

In summary, an overall stable outlook has been assessed for the Western Cape Oceans and Coasts chapter. Table 8 contains a brief summary of the key pressures, impacts, challenges, progress and recommended critical areas for action. Table 9 contains the anticipated changes or outlook for the future of oceans and coasts, based on the findings in this chapter. All of these aspects have been identified in the chapter and should be referred to in more detail for a complete understanding of the dynamics associated with the ocean and coastal management. Additional information is also available within the Provincial Coastal Management Programme.



Table 8 Overview of key oceans and coasts aspects







Aspect	Summary of key points
Pressures	<ul style="list-style-type: none"> • Human settlements and related increased water demand and harmful outflows • Tourism • Resource extraction (legal and illegal) and use (living resources (fish, plants, etc.); off road driving; mining etc.) • Climate Change
Impacts	<ul style="list-style-type: none"> • Transformation of threatened ecosystems in the coastal zone

Aspect	Summary of key points
	<ul style="list-style-type: none"> • Risks to infrastructure in the coastal zone • Disrupted coastal dynamics and estuarine systems. • Pressure of coastal livelihoods and subsistence communities • Compromised marine and estuarine water quality affecting ecosystem health. • Economic value compromised • Increased need for management response
Challenges	<ul style="list-style-type: none"> • Managing existing development in areas subject to coastal risk. • Understanding sustainable resource extraction levels. • Lack of appropriate actions from stock assessments of commercial and linefish species. • Climate change impacts on resource distribution and increased intensity and occurrence of severe weather events affecting high risk coastal zones. • Redressing privatization of the coastline and estuaries • Compliance and enforcement constraints • Poorly resourced and integrated monitoring of important indicators
Progress	<ul style="list-style-type: none"> • Operation Phakisa initiatives intend to stimulate and provide sustainable jobs in the Blue Economy. • Small Scale fishing policy is being implemented. • Coastal vulnerability assessments • Development of Coastal Management Lines • National Coastal access strategy • Roll out of Western Cape Coastal Management Programme • Development and approval and initial implementation of Estuary Management Plans • Coastal Management Plans have been adopted by National, Provincial and District Municipal level • Western Cape Coastal Access Strategy completed • Provincial Coastal Committee and Municipal Coastal Committees established and operational • State of the Coast reporting • Public launch site official list has been gazetted for the Province

Aspect	Summary of key points
	<ul style="list-style-type: none"> • Various NGO interventions (WESSA Blue Flag & Green Coast, Bird-lifeSA, WWF-SASSI) • Strengthened EAF and partnerships
Critical areas for action	<ul style="list-style-type: none"> • Implement key coastal management plans and estuary management plans • Increased protection of sensitive marine and estuarine ecosystems • Development of sustainable coastal livelihoods programme • Extend Blue Flag beach programme • Designate coastal access land/strips where equitable and sustainable access is required • Institutional strengthening across all spheres of government to enable effective coastal and estuary management including compliance and enforcement • Co-ordinated monitoring of estuarine and coastal environment • Securing ecological reserve (water) for estuaries • Implementation of the RQOs and appropriate monitoring

Table 9 Summary of the outlook for oceans and coasts based on the findings of the Western Cape State of Environment Outlook Report

Indicator	Quantification	Target/Desired State	Trend
Coastal water Quality	<ul style="list-style-type: none"> • Substantial increase in number of Blue Flag Beaches from 18 in 2013 to 31 in 2017 and now 33 (and 5 pilot sites) in 2023 indicative of good water quality management at high use beaches. 	Coastal water quality meeting relevant standards	Improving 
Estuary health	<p>15% "excellent", 26% "good", 44% "fair" and 15% "poor" condition estuaries in the Western Cape. An overall improvement in estuary health but a 4% increase in estuaries in the "poor" category (NBA, 2018).</p> <ul style="list-style-type: none"> • EMP development has substantially improved. 	<p>No nonfunctional Estuaries</p> <p>No decline in estuary health</p>	Improving overall (but more estuaries in the poor category) 

<p>Conservation areas</p>	<ul style="list-style-type: none"> • 9 MPAs in 2017 with an increase to 17 MPAs within the Western Cape in 2018. • Increased recognition of management functions 	<p>Increase in extent and adequate management of MPAs.</p>	<p>Improving</p> 
<p>Exploitation of fish species</p>	<ul style="list-style-type: none"> • Commercial: key resource species that have been heavily depleted has increased by 3%, species that are depleted have increased by 6% between 2014 and 2023. Optimal exploited species increased by 5% whilst abundant species decreased by 6%. Overall, there is a shift towards high use and depletion of stocks. • Recreational: 3% increase in heavily depleted species; 10.8% increase in Depleted species, Optimal species increase of 8.5%, decrease of 10% in abundant species between 2014 and 2023. 	<p>All species are optimally exploited</p>	<p>Declining</p> 
<p>Marine ecosystems threat status</p>	<ul style="list-style-type: none"> • the NBA Marine Realm Technical Report indicated that the results over the 2011, 2014 and 2018 are broadly similar. • Estuary ecosystem threat status was recently assessed and there is no previous data for trend analysis. 35% of estuary ecosystems are classified as endangered and 18% as critically endangered. 	<p>No increase in threat status.</p>	<p>No change, high concern</p>  
<p>Transformation</p>	<ul style="list-style-type: none"> • Loss of 13 % habitat in critically endangered ecosystems, 12% in endangered ecosystems and 12% in vulnerable ecosystems (majority in the coastal area) between 2013/14 and 2020. 	<p>No loss of threatened ecosystems in the coastal belt</p>	<p>Declining</p> 
<p>Number of buildings in high-risk coastal areas</p>	<ul style="list-style-type: none"> • 40% increase in the total number of buildings in high-risk coastal areas in the province between 2006 and 2013. • DFFE data analysis in 2020 indicates significant increase in buildings, however the 	<p>No increase in number of buildings in high-risk coastal zones</p>	<p>Trend analysis not possible as recent datasets not comparable</p> 

	analysis was undertaken using a different methodology.		
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Annexure A: Overview of City of Cape Town Estuaries (NBA 2018)

NAME	X-Coordinate	Y-Coordinate	NBA 2018 Condition Status	Present Ecological State (2018)	Hydrology	Hydrodynamics	Water Quality	Physical habitat	Microalgae	Macrophytes	Invertebrates	Fish	Birds
Diep/Rietvlei	18°29'38.24"E	33°50'13.18"S	Heavily	D	C	B	E	E	D	E	F	E	C
Sout (Wes)	18°28'17.7095"E	33°54'28.925" S	Severely/Critical	F	E	F	E	F	E	F	F	F	F
Wildevoeëlmei	18°20'35.8332" E	34°7'38.6796" S	Heavily	D/E	C	E	E	D	F	D	E	E	D
Schuster	18°22'15.2651" E	34°12'7.3619" S	Near Natural	B	C	B	A	B	B	B	B	B	B
Krom	18°22'42.2436" E	34°13'51.391" S	Natural	A/B	B	A	B	A	B	A	A	A	A
Zeekoei	18°30'17.7623" E	34°5'54.3083" S	Severely/Critical	E	D	F	F	F	E	E	F	F	D
Eerste	18°45'13.4028" E	34°4'43.7771" S	Severely/Critical	E	E	C	F	E	E	E	F	F	C
Lourens	18°48'39.0347"E	34°6'0.18719" S	Heavily	D	B	B	D	E	D	E	E	D	D

NAME	X-Coordinate	Y-Coordinate	NBA 2018 Condition Status	Present Ecological State (2018)	Hydrology	Hydrodynamics	Water Quality	Physical habitat	Microalgae	Macrophytes	Invertebrates	Fish	Birds
Sir Lowry's Pass	18°51'53.6220" E	34°9'20.0160" S	Severely/Critical	<i>E</i>	<i>C</i>	<i>B</i>	<i>E</i>	<i>F</i>	<i>D</i>	<i>F</i>	<i>F</i>	<i>F</i>	<i>E</i>
Silwermyn	18°26'20.1227" E	34°7'57.9467" S	Severely/Critical	<i>E</i>	<i>D</i>	<i>F</i>	<i>E</i>	<i>E</i>	<i>D</i>	<i>E</i>	<i>E</i>	<i>D</i>	<i>E</i>
Steenbras	18°49'9.88319 E'	34°11'41.348" S	Near Natural	<i>B</i>	<i>E</i>	<i>A</i>	<i>B</i>	<i>B</i>	<i>B</i>	<i>A</i>	<i>A</i>	<i>B</i>	<i>A</i>
Zand	18°28'35.4000"	34°6'22.9823"	Heavily	<i>D</i>	<i>A</i>	<i>F</i>	<i>E</i>	<i>F</i>	<i>D</i>	<i>E</i>	<i>C</i>	<i>D</i>	<i>C</i>

Annexure B: Overview of West Coast Estuaries (NBA 2018)

NAME	X-Coordinate	Y-Coordinate	NBA 2018 Condition Status	Present Ecological State (2018)	Hydrology	Hydrodynamics	Water Quality	Physical habitat	Microalgae	Macrophytes	Invertebrates	Fish	Birds
Sout (Noord)	17°50'54.2831 E"	31°14'41.207" S	Severely/Critical	E	F	F	D	E	E	F	F	F	E
Olifants	18°11'13.6283 E"	31°42'3.7583"S	Moderate	C	C	A	D	B	C	D	C	E	A
Wadrift	18°19'30.9719 " E	32°12'16.509" S	Severely/Critical	E	E	F	D	E	E	E	E	E	D
Verloren-vlei	18°19'59.4263 " E	32°18'57.319" S	Heavily	D	E	D	D	C	E	D	D	E	C
Groot Berg	18°8'37.9860" E	32°46'11.096" S	Moderate	C	C	B	E	D	C	D	D	D	B
Jakkals	18°18'48.2976 " E	32°5'4.70759" S	Heavily	D	E	E	D	C	D	D	D	E	C

Annexure C: Overview of Overberg Estuaries (NBA 2018)

NAME	X-Coordinate	Y-Coordinate	NBA 2018 Condition Status	Present Ecological State (2018)	Hydrology	Hydrodynamics	Water Quality	Physical habitat	Microalgae	Macrophytes	Invertebrates	Fish	Birds
Rooiels	18°49'15.7620"	34°17'44.786"	Natural	A	A	A	A	B	A	B	A	B	B
Palmiet	18°59'38.9075"	34°20'43.584"	Moderate	C	C	D	C	B	C	D	D	B	B
Bot/Kleinmond	19°5.'49.6751"	34°22'6.3516"	Moderate	C	C	C	C	B	C	B	B	D	B
Buffels (Oos)	18°49'46.3259"	34°20'20.209"	Near Natural	B	C	B	B	B	B	B	B	B	B
Onrus	19°10'43.2912"	34°25'7.1472"	Heavily	D	D	B	D	D	E	D	D	D	C
Klein	19°17'53.3723"	34°25'14.354"	Moderate	C	B	C	B	C	C	C	C	D	E
Uilkraals	19°24'27.4859"	34°36'27.176"	Heavily	D	E	C	B	C	D	D	D	D	E
Ratel	19°44'47.4216"	34°46'15.668"	Near Natural	B	B	B	B	A	B	B	B	B	B
Heuningnes	20°7'9.28560"	34°42'53.244"	Heavily	C/D	C	D	D	C	C	D	D	D	C
Klipdriksfontein	20°43'52.7951"	34°27'6.8616"	Natural	A	A	A	A	A	A	A	A	A	A
Brede	20°50'43.1951"	34°24'26.762"	Near Natural	B/C	C	A	C	B	B	B	B	C	B

Annexure D: Overview of Garden Route Estuaries (NBA 2018)

NAME	X-Coordinate	Y-Coordinate	NBA 2018 Condition Status	Present Ecological State (2018)	Hydrology	Hydrodynamics	Water Quality	Physical habitat	Microalgae	Macrophytes	Invertebrates	Fish	Birds
Duiwenhoks	21°0'4.25520" E	34°21'54.107" S	Moderate	C	D	A	C	B	C	D	C	C	B
Goukou	21°25'24.6972" E	34°22'42.067" S	Moderate	C	D	A	C	C	D	C	D	C	C
Gouritz	21°53'9.25440" E	34°20'43.227" S	Moderate	C/D	E	A	B	D	C	E	D	D	C
Blinde	22°0'46.6092" E	34°12'39.060" S	Moderate	B/C	D	B	C	B	D	B	D	E	B
Gericke	22°6'37.50" E	34°8'38.35" S	Severely/Critical	D/E	D	D	E	E	E	D	E	E	F
Klein Brak	22°8'54.9096" E	34°5'34.5480" S	Moderate	C	D	A	B	D	C	D	C	D	F
Groot Brak	22°14'21.4511" E	34°3'26.1144" S	Heavily	D	C	D	D	B	D	E	D	E	C
Maalgate	22°21'15.9803" E	34°3'15.8039" S	Near Natural	B	D	C	B	A	C	B	D	A	A
Hartenbos	22°7'32.8152" E	34°6'54.4032" S	Heavily	D	C	D	D	E	D	D	D	D	D
Kaaimans	22°33'25.4015" E	33°59'52.130" S	Near Natural	B	D	A	B	B	B	B	C	B	B
Tweekuilen	22°6'42.11" E	34°9'5.51" S	Severely/Critical	D/E	D	D	E	E	E	E	E	E	F
Gwaing	22°26'2.90039" E	34°3'23.2883" S	Moderate	B/C	B	B	E	A	C	B	C	D	B
Touw/Wilderness	22°34'52.0571" E	33°59'44.728" S	Moderate	B/C	B	C	B	B	C	B	B	C	D

NAME	X-Coordinate	Y-Coordinate	NBA 2018 Con- dition Status	Present Ecologi- cal State (2018)	Hydrology	Hydrodynamics	Water Quality	Physical habitat	Microalgae	Macrophytes	Invertebrates	Fish	Birds
Swartvlei	22°47'46.521 5" E	34°1'53.457 6" S	Near Natural	B/C	B	C	B	B	B	C	B	C	C
Goukamma	22°56'56.885 9" E	34°4'37.779 5" S	Near Natural	A/B	B	B	B	B	B	B	B	B	B
Knysna	23°3'41.2308" E	34°4'57.741 6" S	Near Natural	B/C	A	A	C	B	C	B	C	D	C
Noetsie	23°7'44.9543" E	34°4'49.087 2" S	Near Natural	B	B	B	B	A	B	B	D	A	B
Piesang	23°22'43.543 1" E	34°3'37.674 0" S	Heavily	D	D	E	D	D	D	D	D	C	D
Keurbooms	23°22'41.473 2" E	34°2'59.459 9" S	Near Natural	A/B	A	A	A	B	B	C	A	C	B
Matjies	23°28'12.655 2" E	34°0'7.0739 9" S	Near Natural	A/B	A	C	B	A	B	B	B	A	B
Sout (Oos)	23°32'11.554 8" E	33°59'22.20 7" S	Natural	A	A	A	B	A	B	A	A	B	A
Groot (Wes)	23°34'9.0479 9" E	33°58'54.41 1" S	Near Natural	B	B	A	A	B	B	B	B	B	B

Annexure E: Description of Western Cape Marine Protected Areas

Marine Protected Area ¹	Description
West Coast National Park	"The West Coast National Park was established in 1985. The MPA covers approximately an area of 280 km ² of the ocean. The length of protected coastline is 65 km. The key features encompass five individual MPAs namely Malgas, Island, Juffen Island, Marcus Island, the Langebaan Lagoon and Sixteen Mile Beach. The habitat of the MPA include lagoon, sandy beaches, coastal dune system and subtidal reefs. The notable species include the mullet, black mussel, abalone, sand prawn and the white steenbras" (Adams & Kowalski, 2021).
Table Mountain National Park	"The Table Mountain National Park was established in 2004. The area of protected ocean is 984 km ² . The length of protected coastline is 127 km. The key features of the MPA include rich biodiversity and contains culturally significant areas with fish traps, numerous wrecks, and traditional fishing communities. The habitat consists of rocky shores, sandy shores, coastal dunes, offshore reefs, inshore reefs and kelp forests. The notable species include but not limited to great white shark, broadnose sevengill, shark, orca, abalone, African penguin, Cape fur seal, dolphins, southern right whale, sunfish, humpback whales, hottentot, red roman, geelbek, galjoen, black musselcracker and red steenbras" (Adams & Kowalski, 2021).
Betty's Bay	"The Betty's Bay MPA was established in 1981 and the area of protected ocean is 20.14 km ² . The length of protected coastline is 3.2 km. The key features are Stony Point African penguin colony. The habitat includes but not limited to kelp beds, rocky shores, and offshore reefs. The notable species consist of African penguin, abalone, west coast rock lobster" (Adams & Kowalski, 2021).
De Hoop	"The De Hoop MPA was established in 1985. The area of protected ocean is 288.9 km ² . The length of protected coastline is 51 km. The key features include migratory route and calving area for southern right whales. The habitat consists of Offshore reefs, rocky shores with intertidal rock pools, sandy shores, coastal dunes and seagrass. The notable species consists of abalone, galjoen, black musselcracker, white musselcracker, spotted gulley shark, hammerhead sharks, great white shark, southern right whale" (Adams & Kowalski, 2021)
Stilbaai	"The Stilbaai MPA was established in 2008. The area of protected ocean: 20 km ² . The length of protected coastline is 13.8 km. The key features include a permanently open estuary, sandy and rocky, bays and stone-age fish traps. The habitat consists of an estuary, coastal dune system, salt marshes, reefs, estuarine reeds, The notable species consist of the southern right whale, ragged-tooth shark, African mottled and longfin eels, pansy shell" (Adams & Kowalski, 2021).
Goukamma	"The Goukamma MPA was established: in1990. The area of protected ocean is 32 km ² . The length of protected coastline is 16 km. The MPA contributes to improved fishing in adjacent areas through MPA 'spill-over'. The habitat consists of Subtidal rocky reefs, offshore reefs, and intertidal rock pools. The notable species include the east coast sole, loggerhead, green, hawksbill and leatherback turtles, whales, dolphins, great white shark and Cape fur seals" (Adams & Kowalski, 2021).
Robberg	"The Robberg MPA was established in 1998. The area of protected ocean is 42 km ² . The length of protected coastline is 9.5 km. The key features of the MPA include a World Heritage Site and National Monument. The habitat contains rocky coastline, sandy beaches, offshore reefs, and soft sediment areas. The notable species consists of loggerhead, green and hawksbill turtles, whales, dolphins, Cape fur seals, red steenbras, black mussel cracker, east coast sole and silver kob" (Adams & Kowalski, 2021).

¹ The City of Cape Town manages the Helderberg MPA on behalf of DEA however this is not reflected in WWF, 2014.

Marine Protected Area ¹	Description
Dassen Island Nature Reserve	"The MPA was established in 1988. The area of protected ocean is 2.3 km ² . The key features include the second largest South African coastal island on the continental shelf. The habitat includes the Cape sandy inner shelf, Cape rocky mid-shelf mosaic, Cape Island shore and the Cape kelp forest. The notable species: African penguin, Leach's storm petrel, west coast rock lobster, abalone, southern right whale, humpback whale, Bryde's whale, minke whale, orca and heaviside's dolphin" (Adams & Kowalski, 2021).
Dyer Island Nature Reserve	"The MPA was established in 1988. The area of protected ocean is 0.16 km ² . The key features include the protected bird sanctuary and hotspot for shark cage diving. The habitat contains the sandstone formations, granite coastline, shingle beach and sandy beach. The notable species include the leach's storm petrel, African penguin, bank cormorant, crowned cormorant, Hartlaub's gull, great white shark, Cape fur seal and abalone" (Adams & Kowalski, 2021).
Helderberg	"The MPA was established in 2000. The area of protected ocean is 24.6 km ² . They key features include undeveloped sandy and rocky shore. The habitat consists of rocky reefs, kelp beds and mobile dune system. The notable species include Roman, Red Stumpnose, Galjoen, Red Steenbras, Broadnose Sevengill Shark, Spotted Gulley Shark (Adams & Kowalski, 2021).
Cape Canyon	The MPA was proclaimed in 2019. The area of protected ocean is 580 km ² . The key species in the MPA include the groves of seafans, scurrying hermit crabs and burrowing mantis shrimps. Hake, monk and john dory. The key features include rocky areas in the west support fragile rocky habitat, but the area also includes sandy and muddy habitats, which have been trawled in the past. Near the surface, seabirds and humpback whales feed in the productive waters, as well as cape fur seals (DFFE; SANBI; DST , n.d.)
Walker Bay	The MPA was proclaimed in 2001 and consists of 108 Km ² of protected ocean. It provides an important refuge for southern right whales and their calves to rest from July to November. The MPA protects rocky and sandy shore habitats and kelp forests immediately offshore that provide refuge for overexploited abalone and west coast rock lobster. (DFFE; SANBI; DST , n.d.)
Childs Bank	The MPA was proclaimed in 2019. The MPA provides critical protection to deep sea habitats (180 - 450 m) as they allow for the recovery of important nursery areas for young fish. The habitats filled with a kaleidoscope of seastars; raspberry stars, pancake stars, brittle stars, and beautiful basket stars (DFFE; SANBI; DST , n.d.).
Southeast Atlantic Seamounts.	The MPA was proclaimed in 2019. The key features of the MPA include seamount, slope and abyssal ecosystems, spanning a depth range of 750 to 4600 m. The MPA is 6000 km ² (DFFE; SANBI; DST , n.d.).
Southwest Indian Seamounts	The MPA was proclaimed in 2019. The shallower part includes mostly untrawled rocky shelf edge with several kinds of habitat forming cold water corals including coral gardens at 200 to 300 m and reef building taxa that build towers of coral standing more than 50 m off the seabed at depths of 800 to 1200 m. This 7500 km ² . (DFFE; SANBI; DST , n.d.)
Browns Bank Corals	The MPA was proclaimed in 2019. The MPA consists of 300 km ² of protected ocean. The habitat has bottlebrush soft corals and unidentified stony corals and serves important spawnings grounds for hake (DFFE; SANBI; DST , n.d.)..
Agulhas Bank Complex	The MPA consists of 4300 km ² of protected ocean. They key features include 45 and 72 Mile Banks. It attracts pelagic animals such as the blue marlin, stingrays and turtles. This MPA provides the first protection for the offshore ecosystems that have supported more than a century of South African fisheries, and the first production of oil and gas resources found in our seascape (DFFE; SANBI; DST , n.d.).

Marine Protected Area ¹	Description
Agulhas Mud	The MPA was proclaimed in 2019. The MPA consists of 207 km ² protected ocean. The habitat includes critically endangered shallow mud habitats between 80 and 100 m. Notable species include Sole and Silver Kob (DFFE; SANBI; DST , n.d.).

Annexure F: Exploitation status of commercial fish species.

<u>Commercial Species</u>	2014					2020					2023				
Species	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown
Abalone	Red					Red					Red				
Agulhas sole				Blue				Green			Not Assessed				
Albacore tuna (Indian Ocean)		Yellow						Green			Not Assessed				
Albacore Tuna (Atlantic Ocean)			Green					Green			Not Assessed				
Anchovy					Grey			Green			Not Assessed				
Bigeye Tuna (Atlantic Ocean)			Green			Red					Not Assessed				

<u>Commercial Species</u>	2014					2020					2023				
	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown
Bigeye tuna (Indian Ocean)		Depleted					Depleted				Not Assessed				
Blue shark		Depleted					Depleted						Optimal		
Carpenter			Optimal					Optimal				Depleted			
Deepwater hake			Optimal					Optimal			Not Assessed				
Elf	Heavily Depleted					Not Assessed						Depleted			
Geelbek					Not Assessed	Heavily Depleted					Heavily Depleted				
Great hammerhead shark	Heavily Depleted										Not Assessed				
Harders	Heavily Depleted					Heavily Depleted					Heavily Depleted				
Horse mackerel			Optimal					Optimal					Optimal		
Hottentot				Abundant					Abundant			Depleted			

<u>Commercial Species</u>	2014					2020					2023				
	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown
Kelp			Optimal					Optimal					Optimal		
Mako shark	Heavily Depleted					Heavily Depleted						Depleted			
Oceanic white-tip shark	Heavily Depleted					Heavily Depleted					Not Assessed				
Sardine			Optimal				Depleted				Not Assessed				
Shallow-water hake			Optimal					Optimal					Optimal		
Silver kob		Depleted				Heavily Depleted					Heavily Depleted				
Smooth-hound shark		Depleted					Depleted						Optimal		
Snoek			Optimal					Optimal					Optimal		
Southern bluefin tuna	Heavily Depleted					Heavily Depleted					Not Assessed				
South Coast rock lobster			Optimal					Optimal			Not Assessed				

<u>Commercial Species</u>	2014					2020					2023				
Species	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown
(Indian and Atlantic Ocean)		Depleted				Heavily Depleted									
Southern Cape Oysters		Depleted					Depleted					Depleted			
St Joseph shark		Not Assessed					Depleted				Heavily Depleted				
Swordfish (Atlantic Ocean)			Optimal					Optimal			Not Assessed				
Swordfish (Indian Ocean)			Optimal			Heavily Depleted					Not Assessed				
West Coast Rock Lobster		Depleted				Heavily Depleted						Depleted			
Yellowfin tuna (Atlantic Ocean)	Heavily Depleted							Optimal			Not Assessed				
Yellowfin Tuna (Indian Ocean)		Depleted				Heavily Depleted					Not Assessed				

<u>Commercial Species</u>	2014					2020					2023				
	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown
Yellowtail (line and net)															

Annexure G: Exploitation status of line-fish species.

Recreationally Exploited Species	2014					2020					2023				
	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown
Elf						Not Assessed									

Recreationally Exploited Species	2014					2020					2023				
Species	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown
Yellowbelly Rockcod	Not Assessed					Not Assessed									
Soupfin shark															
Carpenter															
Roman	Not Assessed														
Hottentot															
Snoek															
Yellowtail															
Dageraad	Not Assessed														
Dusky Kob	Not Assessed														
Geelbek	Not Assessed														
Red Stumpnose	Not Assessed					Not Assessed					Not assessed				

Recreationally Exploited Species	2014					2020					2023				
Species	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown	Heavily Depleted	Depleted	Optimal	Abundant	Unknown
White Steenbras	Heavily Depleted					Not Assessed					Heavily Depleted				
Smoothound Shark		Depleted					Depleted						Optimal		

Annexure H: List of policy responses relevant to Oceans and Coasts

Responses	Year	Name
International Responses	2009	Inter-governmental Panel on Climate Change (IPCC): South Africa Country Report: Sea-level rise: trends, impacts and mitigation for South Africa Phase I: Qualitative overview and analysis
National Response	1998	Marine Living Resources Act 18 of 1998
	2000	White Paper for Sustainable Coastal Development (2000)
	2003	National Environmental Management: Protected Areas Act 57 of 2003
	2004	Southern African Sustainable Seafood Initiative
	2005 & 2013 & 2018	Western Cape State of the Environment reporting (including State of the Oceans)
	2005	National Ports Act 12 of 2005
	2008	National Environmental Management: Integrated Coastal Management Act 24 of 2008 (amended in 2014)
	2010	Environmental Impact Assessment Regulations - coastal specific listed activities
	2011	National Biodiversity Assessment
	2011	National Climate Change Response White Paper

Responses	Year	Name
	2012	Recreational Coastal Marine Waters Quality Guideline
	2012	Draft National Environmental Management of the Oceans (NEMO)
	2021	National Estuarine Management Protocol
	2012	Policy for the Small-Scale Fisheries Sector in South Africa
	2012	South African Water Quality Guidelines For Coastal Marine Waters
	2014	National Guideline for the Discharge of Effluent from Land-based Sources into the Marine Environment
	2014	National Strategy for the Facilitation of Coastal Access
	2014	NEM: Control of Use of Vehicles in Coastal Areas Regulations (2014)
	2014	NEM: Management of Public Launch Sites in the Coastal Zone Regulations
	2016	NEM: ICMA Dumping at Sea Regulations
	2017	NEM: ICMA Draft Coastal Waters Discharge Permit Regulations (2017)
	2017	NEMA Environmental Impacts Assessment (EIA) Regulations (as amended)
	2020	National Coastal Management Programme
Provincial Responses	2010	Garden Route District Municipality Sea Level Rise and Flood Hazard Risk Assessment

Responses	Year	Name
	2011	West Coast District Municipality Sea Level Rise and Flood Hazard Risk Assessment
	2011	Checklist for the determination of the applicability of the NEMA EIA regulations 2010-2012
	2012	Overberg District Municipality Sea Level Rise and Flood Hazard Risk Assessment
	2013	Development parameters guidelines
		CAPE Estuaries Program – several estuary management plans
	Various	Development of Coastal Management Line for West Coast, Overberg and Garden Route Districts
	2016	Western Cape Coastal Management Programme
	2017	Provincial Coastal Access Strategy and Plan
	2018	Western Cape State of the Coast
	2015 - 2019	Estuary Management Framework and Implementation Strategy Project.
Local Authority Responses	2003	City of Cape Town Coastal Zone Management Strategy
	2005	City of Cape Town By-law Relating to Stormwater Management
	2009	City of Cape Town Floodplain and River Corridor Management Policy
	2009	City of Cape Town Management of Urban Stormwater Impacts Policy

Responses	Year	Name
	2010	2010 City of Cape Town Coastal Protection Zone draft by-laws
	2010	City of Cape Town Sustainable Coastal Management Plans
	2010	2010 Garden Route District Coastal Management Programme (in preparation)
	2010	West Coast District Coastal Management Programme (in preparation)
	2010	City of Cape Town Set-back – method and process report
	2010	City of Cape Town draft Integrated Protection Policy
	2010	City of Cape Town draft General Coastal Over-lay zones
	2010	City of Cape Town draft Large Marine Animal Stranding Policy
	2010	City of Cape Town Coastal Events and Filming Policy
	2012	Garden Route District Coastal Management programme.
	2012	City of Cape Town Inland and Coastal Water Quality Improvement
	2013	Draft Integrated Coastal Management Strategy
	2014	City of cape Town Integrated Coastal Management Policy.
	2016	Overberg Coastal Management Programme
	2016	West Coast District Coastal Management Programme

Responses	Year	Name
	2016	West Coast District Coastal Management Programme.

Annexure I: SASSI Categories, Descriptions and Fish Species.

CATEGORY	DESCRIPTION	FISH SPECIES
Green	This is the group from which consumers are encouraged to choose, as it contains the most sustainable choices from the healthiest and most well-managed populations. These species can handle current fishing pressure.	<ul style="list-style-type: none"> • Albacore tuna • Angelfish (SA offshore trawl) • Cape bream (SA) • Carpenter (SA linefishing) • Dorado (SA linefishing) • East Coast spiny lobster (excl. KZN) • Hake (SA & Namibia MSC) • Kingklip (SA demersal longline) • Mussels (various) • Oysters • Prawns / Shrimp • Queen mackerel (SA linefishing) • Rainbow trout • Slinger (SA linefishing) • Snoek • Yellowfin tuna • Yellowtail (SA linefishing) • Calamari / Squid
Orange	This group includes species that have associated reasons for concern, either because the species is depleted as a result of overfishing and can't sustain current fishing pressure, or the fishery that catches them may cause particularly severe environmental damage and/or has high bycatch, or the lifestyle of the species makes it vulnerable to high fishing pressure. Consumers are encouraged to think twice and consider the implications of these choices.	<ul style="list-style-type: none"> • Atlantic / Norwegian salmon. • Baby clam • (handcollected in Vietnam) • Black musselcracker (SA linefishing) • Blue shark (SA pelagic longline) • Big-eye tuna (SA pelagic longline – Indian Ocean) • Dorado (SA pelagic longline) • East Coast sole (SA inshore demersal trawl) • Englishman (SA linefishing) • European pilchard/sardine • Geelbek / Cape salmon (SA

CATEGORY	DESCRIPTION	FISH SPECIES
		<ul style="list-style-type: none"> linefishing) • Jacopever (SA offshore trawl & demersal longline) • Kingklip (SA offshore trawl)* • King mackerel (SA linefishing) • Red roman (SA linefishing) • Sardine / Pilchard (SA purse seine) • Shad/Elf (linefishing excl. KZN) • Smooth-hound shark (SA linefishing) • Swordfish (SA pelagic longline) • Octopus (SA offshore trawl) • Yellowtail amberjack (Japan purse seine or uncovered pound nets) • Yellowfin tuna (SA pelagic longline) • Prawns (various) *
Red	<p>This group includes both unsustainable species, which are from collapsed populations or have extreme environmental concerns and/or lack appropriate management, and species that are illegal to buy or sell in South Africa (no-sale species). These species should never be bought by consumers. Fish highlighted in bold in this category are illegal to sell in South Africa.</p>	<ul style="list-style-type: none"> • Bigeye tuna (SA pelagic longline – Atlantic Ocean) * • Blue swimming crab (Indian Ocean demersal trawl) • Bluefin tuna (all catch types) * • Cape dory (SA inshore trawl) * • Dusky kob (SA linefishing & inshore demersal trawl) • Prawns (various) * • Galjoen (SA) • Garrick (SA) • Hake (Argentina, Peru & Chile bottom trawl) * • Natal wrasse • Red steenbras (SA) • Red stumpnose / Miss Lucy (SA linefishing & inshore trawl) • Seventy-four (SA)

CATEGORY	DESCRIPTION	FISH SPECIES
		<ul style="list-style-type: none"> • Silver kob (SA linefishing & inshore trawl) • Soupfin shark (SA longline & inshore trawl) • Shortfin mako shark (SA pelagic longline) • Squaretail kob (SA linefishing) • St Joseph shark (SA inshore trawl) • West Coast rock lobster • White musselcracker (SA) • White steenbras (SA) • Yellowtail amberjack (Japan & China caged farmed)

Sources: WCG (2017) and WWF-SA (2023)

Email: Marlene.Laros@westerncape.gov.za

Tel: 021 483 5126

Department of Environmental Affairs and Development Planning

Chief Directorate: Environmental Sustainability

Directorate: Biodiversity and Coastal Management

www.westerncape.gov.za

Department of Environmental Affairs and Development Planning: General Enquiries

Email: coastal.enquiries@westerncape.gov.za



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