



**Western Cape  
Government**

Environmental Affairs &  
Development Planning

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## **STATE OF THE COAST WESTERN CAPE**

A Review of the State of the Coastal Zone in the Western Cape

2018

# CONTENTS

<b>CHAPTER 1:</b>	<b>INTRODUCTION</b>	<b>1</b>
<b>CHAPTER 2:</b>	<b>COASTAL BIODIVERSITY</b>	<b>4</b>
	1. Introduction and Background	4
	2. Drivers of change to Coastal Biodiversity	4
	3. Pressures exerted on Coastal Biodiversity	4
	4. State of Coastal Biodiversity	5
	5. Impacts on Coastal Biodiversity	6
	6. Responses to Coastal Biodiversity pressures and impacts	9
	7. Conclusions and Recommendations	10
<b>CHAPTER 3:</b>	<b>ESTUARIES</b>	<b>12</b>
	1. Introduction	12
	2. Key Drivers and Pressures of Estuarine systems	12
	3. State of the Western Cape Estuaries	13
	4. Impacts experienced in the Western Cape Estuaries	13
	5. Responses to estuarine pressures and impacts	14
	6. Summary and Conclusions	15
<b>CHAPTER 4:</b>	<b>COASTAL SOCIAL AND ECONOMIC CONDITIONS</b>	<b>17</b>
	1. Introduction	17
	2. Economic and social drivers	17
	3. Economic and social pressures	18
	4. State of economic activity and social conditions on coastal assets	20
	5. Impact of economic and social conditions on coastal assets	20
	6. Response to impacts of economic and social conditions on coastal assets	20
	7. Conclusions and recommendations	21
<b>CHAPTER 5:</b>	<b>COASTAL RESOURCE USE</b>	<b>23</b>
	1. Introduction	23
	2. Drivers and pressures on coastal resources in the Western Cape	23
	3. State of coastal resources in the Western Cape	24
	4. Impacts	26
	5. Responses	27
	6. Conclusion	28
<b>CHAPTER 6:</b>	<b>COASTAL LAND USE</b>	<b>31</b>
	1. Introduction	31
	2. Pressures	32
	3. State	33
	4. Responses	34
	5. Conclusions	35

<b>CHAPTER 7:</b>	<b>COASTAL POLLUTION</b>	<b>37</b>
	1. Introduction	37
	2. Drivers and pressures	37
	3. Current state of pollution	37
	4. Responses	38
	5. Conclusion and Recommendations	40
<b>CHAPTER 8:</b>	<b>COASTAL VULNERABILITY</b>	<b>42</b>
	1. Introduction	42
	2. Drivers and pressures	42
	3. State of coastal vulnerability in the Western Cape	42
	4. Impacts of climate change on coastal assets	44
	5. Responses to coastal vulnerability	45
	6. Summary and Conclusion	47
<b>CHAPTER 9:</b>	<b>COOPERATIVE GOVERNANCE</b>	<b>49</b>
	1. Introduction	49
	2. Ability to implement ICMA by provision of adequate funding and human resources	49
	3. Effective communication amongst various stakeholder groups	49
	4. Adoption and implementation of Coastal Management Programs	50
	5. Enforcement of ICMA and MLRA	50
	6. Summary and Conclusions	51
<b>CHAPTER 10:</b>	<b>AWARENESS, EDUCATION AND TRAINING</b>	<b>54</b>
	1. Drivers and Pressures	54
	2. State of Awareness, Education and Training	54
	3. Impact of awareness, education and training	55
	4. Responses	55
	5. Conclusion and Recommendations	56
<b>CHAPTER 11:</b>	<b>CONCLUSION</b>	<b>58</b>
<b>REFERENCES</b>		<b>60</b>

## TABLES

<b>TABLE 1:</b>	Pressures on the Coastal Biodiversity of the Western Cape	4
<b>TABLE 2:</b>	The State of important biodiversity features in the Western Cape	5
<b>TABLE 3:</b>	Threats to biodiversity in the Western Cape coast	7
<b>TABLE 4:</b>	Threat status of Western Cape coastal ecosystems as calculated by the NBA (2011) and the WC BSP (2017)	7
<b>TABLE 5:</b>	Population trends in the Western Cape coast assessed as changes in species risk categories	8
<b>TABLE 6:</b>	The percentage of benthic macro-invertebrate and macrophyte communities of the Western Cape Estuaries that fall in the "excellent and fair to poor" condition categories	14
<b>TABLE 7:</b>	Change in extent of mining in the coastal zone (1990-2014)	19
<b>TABLE 8:</b>	DAFF annual catch data for each commercial fishing sector from 2015-2016.	25
<b>TABLE 9:</b>	IUCN and WWF_SASSI Status of commercially exploited species in the Western Cape.	27
<b>TABLE 10:</b>	Coastal access points by category and municipality	33
<b>TABLE 11:</b>	Drivers and responses to coastal vulnerability	42
<b>TABLE 12:</b>	IPCC Predictions for Climate Change	44
<b>TABLE 13:</b>	The average number of attendees and unique organisations per PCC	49
<b>TABLE 14:</b>	The average number of people participating regularly in MCCs and the range of organisations participating regularly in MCCs.	50
<b>TABLE 15:</b>	The coverage, review and reporting cycles implemented for all spheres of government's CMPs.	50
<b>TABLE 16:</b>	EMI's powers as conferred by NEMA	51
<b>TABLE 17:</b>	Outlook for each theme identified in the Western Cape State of the Coast report.	58

## FIGURES

<b>FIGURE 1:</b>	The status of commercially exploited species in the Western Cape in 2012, 2014 and 2016	26
<b>FIGURE 2:</b>	The coastal zone (Celliers et al., 2009)	31
<b>FIGURE 3:</b>	Land use changes in the Coastal Zone, 1990 - 2013/14	33
<b>FIGURE 4:</b>	Number and type of coastal leases issued by CapeNature	34
<b>FIGURE 5:</b>	Number of buildings located in high risk coastal areas for each of the coastal District Municipalities.	43
<b>FIGURE 6:</b>	The annual budget allocated versus the annual expenditure on disaster management in the Western Cape from 2012/13 to 2016/17 (Department of Local Government Annual Reports 2012-2017)	46



The State of the Coast Report (SoCR) describes the condition of the biophysical, socio-economic and institutional environments as they relate to the coastal zone. It achieves this by using reliable information to measure the state of the coast against a predetermined set of indicators. It is a valuable tool for informing policy makers, the public and other stakeholders on the status of coastal natural resources and the sustainability of coastal resource-use patterns. The SoCR describes the current condition as the baseline and uses historical information, where available, to assess changes to the coast over time. The SoCR also describes the impacts of projected climate change manifestations on the coastline. This summary document highlights a selection of the most pertinent indicators per thematic area.

The Western Cape SoCR (WC SoCR) 2018 is the first SoCR report that specifically focusses on aspects of the coastal environment in the Province. “The Coast” is described in the National Environmental Management: Integrated Coastal Management Act (No. 28 of 2008) as:

- The functional zone of all estuaries; which is delineated by the 5 m contour line;;
- In built up areas (urban): 100 metres inland of the high water mark;
- In natural areas (rural): 1000m inland of the high water mark;
- The full extent of Protected Areas located along the coast line;
- Coastal Protection Zones as delineated by the DEA&DP through the CML projects and CoCT for their CML project; and
- All marine and island habitats within 200 nautical miles offshore from the high water mark, also referred to as the Exclusive Economic Zone (EEZ).

The Driver-Pressure-State-Impact-Response (DPSIR) framework was used to report on the state of the coast. It begins with understanding the causes of change (**drivers**) in the coastal areas, how these changes result in **pressure** on the coast and the changes to the **state** of the coasts caused by specific **impacts** on the coastal environment, and finally what we do about it (our **response**). Indicators are used to report on the extent or significance of a particular driver, pressure, state, or impact.

Knowledge about the current coastal pressures and their associated impacts as well as tracking trends over time, enables us to understand coastal issues and respond by adapting behaviour, modifying our activities and directing our management actions in a more meaningful and effective way, to achieve sustainability. It also assists us with the development of business intelligence in order to enhance our natural capital.

The WC SoCR establishes our current knowledge through a reporting mechanism designed to indicate where progress is being made and where issues need to be addressed.

The ultimate purpose is to:

- Gain empirical knowledge on the condition of the coast;
- Achieve sustainability through providing business intelligence to enable evidence-led policy;
- Inform strategy and targets by setting goals for management interventions to reduce pressures and mitigate impacts;
- Detect emerging issues;
- Inform and guide the Western Cape Coastal Management Programme in terms of supplying information pertaining to the selected priority areas and providing direction for Coastal Management Objectives and resource prioritisation.

Photo by Nikite Steele  
Buffelsbaai



### 1. INTRODUCTION AND BACKGROUND

Biodiversity is described<sup>1</sup> as the variability of organisms and their collective ecological complexes. The study area of the SoCR incorporates the terrestrial, estuarine, shore and beach, and marine (oceans and islands) ecosystems.

### 2. DRIVERS OF CHANGE TO COASTAL BIODIVERSITY

Whilst there are a number of cross-cutting and specific indicators that relate to drivers of biodiversity change, the following drivers are important:



DRIVERS

- **Terrestrial:** Coastal sprawl: settlement patterns; Agriculture (crop and plantation cultivation); Industry (Ports, harbours, etc.)
- **Shore and Estuaries:** Resource use (including fishing); Upstream land use patterns (affecting catchments); Transport (shipping); Settlement patterns
- **Marine:** Fishing; Transport (shipping); Oil and gas
- **Cross-cutting Drivers:** Alien invasive species; New diseases; Increased urbanisation & industrialisation leading to increased pollution (solid waste & effluent); Protected Area network and Protected Area Expansion Strategies; Aquaculture, which affects all ecosystems where land-based and marine-based aquaculture is practiced.

### 3. PRESSURES EXERTED ON COASTAL BIODIVERSITY

Different pressures are experienced in the various coastal realms, as summarised in Table 1 below



PRESSURES

**Table 1: Pressures on the Coastal Biodiversity of the Western Cape**

TERRESTRIAL	ESTUARINE/ SHORELINE	MARINE	CROSS-CUTTING PRESSURES AND EMERGING ISSUES
Habitat loss due to land use change (transformation from natural to another landcover)	Habitat loss and degradation due to activities in the estuarine functional zone	The commercial fishing industry	Alien invasive species
Illegal trade of species	Hydrological regime changes	Offshore oil and gas	Climate change
	Changes to flow rate and water chemistry	Shipping transport	The spread of and infection of indigenous species with novel diseases and parasites
	Quality of freshwater inflow	Industry	Volume of plastic landing up in the ocean resulting in direct mortality of ocean biodiversity.
	Unsustainable resource use: over exploitation of species		

<sup>1</sup> Western Cape State of Environment and Outlook Report (WC SoEOR, 2018)

#### 4. STATE OF COASTAL BIODIVERSITY

The below table highlights the most pertinent indicators related to the State of Coastal Biodiversity.



**Table 2: The State of important biodiversity features in the Western Cape**

FEATURE	STATE		
<b>Protection levels (Priority areas)</b>	The level of protection of coastal/marine ecosystems <sup>2</sup> are:		
	<b>Terrestrial</b>	CR veg	<b>Well protected</b>
		EN veg	<b>Well protected</b>
		VU veg	<b>Well protected</b>
	<b>Beach/Shore</b>	CR beach	<b>Poorly protected</b>
		EN beach	<b>Moderately protected</b>
		VU beach	<b>Well protected</b>
	<b>Marine</b>	CR habitat	<b>Not protected</b>
		EN habitat	<b>Poorly protected</b>
		VU habitat	<b>Not protected</b>
Although there has been an increase in the number of terrestrial protected areas along the Western Cape Coast, it is clear that protection of Marine habitats and ecosystems is insufficient. The desired state is for all key habitats/ ecosystems to be "WELL protected".			
<b>Conservation targets</b>	The number of marine and coastal protected areas declared compared to the proposed targets was used as an indicator of the state of conservation targets of the Western Cape coast.		
	Currently 10 proclaimed Marine Protected Areas (MPAs), 3 unofficial MPAs and 10 proposed MPAs exist. The conservation target set for all coastal and marine ecosystems is 20%. However, targets achieved to date vary and include 0-488% (Coastal) and 0-87% (Marine). The Protected Areas Expansion Strategy needs to focus on ensuring that these conservation targets are met.		
	There exists a steady trend for achieving conservation targets of the Western Cape Coast, but the desired state is to achieve >100% for all coastal and marine ecosystems has not been achieved		
<b>Protected Areas (PA's)</b>	<b>Terrestrial:</b>		
	Within the coastal study area there are approximately 100 Protected Areas (PAs). In total, 47% of the Western Cape terrestrial coastal study area is under formal protection in terms of NEMPAA.		
	<b>Marine:</b>		
	Only 0.4% of the marine environment, which includes near shore, islands and lagoons, is under formal protection. Although not formally proclaimed as marine protected areas, some regions are managed as provincial marine nature reserves by CapeNature.		

Continued...

<sup>2</sup> CR = Critically Endangered; EN = Endangered; VU = Vulnerable

FEATURE	STATE
<b>Alien invasive coverage</b>	<p>The state of invasive alien species was assessed using the number of invasive alien species per taxonomic group found in the marine, estuarine and terrestrial coastal environment.</p> <p>The current state of the number of invasives in each taxonomic group found was:  Plants = 109 species  Mammals = 4 species  Birds = 10 species  Amphibians = 4 species  Reptiles = 4  Arthropods = 2  Marine invertebrates = 17</p> <p>No trend was identified as previous data sets were insufficient for comparisons to be made. However, the future desired state of Invasive species is "No alien invasive species for all taxonomic groups".</p>
<b>Species in a number of taxonomic groups (terrestrial and marine)</b>	<p>There is high species richness along the length of the Western Cape, with over 9000 plant species. In total 12% of mammals, 13% of plants, 14% of amphibians, 4% of birds and 9% of marine fish are threatened.</p>
<b>Ecosystems (terrestrial, shore and marine)</b>	<p>Within the study area, the Western Cape Biodiversity Spatial Plan (2017) has mapped 66 terrestrial ecosystems, 39 of which are threatened</p> <p>The National Biodiversity Assessment (2012) mapped 40 beach ecosystems, of which 28 are threatened. Of the 41 marine ecosystems, 21 are threatened</p>

## 5. IMPACTS ON COASTAL BIODIVERSITY

Different threats collectively result in consolidated impacts on taxonomic groups or ecosystems, which can result:

IMPACT

- Ecosystem/habitat destruction, fragmentation and degradation
- Localised or wide-scale extinction of species or ecosystems
- Ecosystem failure and loss of ecosystem services

### 5.1 Threats to biodiversity in the Western Cape coast

Threats associated with the key pressures on biodiversity in the coastal zone of the Western Cape are illustrated in Table 3.



Photo by Tarryn Martin  
Langebaan dune strandveld

**Table 3: Threats to biodiversity in the Western Cape coast**

	TERRESTRIAL	ESTUARINE/SHORE	MARINE
Threats/ Impacts	<ul style="list-style-type: none"> <li>• <b>Habitat loss</b> leading to reduction in population numbers.</li> <li>• Displacement of indigenous species due to <b>alien invasive species</b>.</li> <li>• <b>Climate change</b> causing extinction of species and altered migration patterns and species composition.</li> </ul>	<ul style="list-style-type: none"> <li>• Localised extinction of estuarine species due to <b>habitat loss and degradation</b>.</li> <li>• Loss of nursery function due to <b>altered hydrological regime</b>.</li> <li>• Fish kills due to quality of freshwater inflow.</li> <li>• Recruitment failure due to <b>alien invasive species</b>.</li> <li>• <b>Over exploitation of species/ unsustainable resource use</b> resulting in recruitment failure (limpets and grazers on rocky shores)..</li> <li>• Flow regime changes, die-offs and coastal erosion due to <b>climate change</b>.</li> </ul>	<ul style="list-style-type: none"> <li>• Mortality due to entanglements caused by the <b>commercial fishing industry</b>.</li> <li>• Decline in bird colonies due to food shortages resulting from pressure of <b>fishing industry</b>.</li> <li>• Habitat destruction, biodiversity loss, physical damage to marine life and noise pollution altering whale communication regimes due to <b>offshore oil and gas</b> exploration and mining.</li> <li>• Whale mortality, ballast water pollution, oil spills, introduction of alien invasive species and noise pollution due to the <b>shipping transport industry</b>.</li> <li>• Increased ocean temperatures and ocean acidification resulting from <b>climate change</b>.</li> </ul>

**5.2 Impact on biodiversity: ecosystems**

The ability of the ecosystem to provide valuable services is severely compromised when it is degraded. The threat status of Terrestrial and Marine ecosystems presented in Table 4 can be used to assess the impacts on biodiversity at the ecosystem level.

**Table 4: Threat status of Western Cape coastal ecosystems as calculated by the NBA (2011 and the WC BSP (2017))**

TERRESTRIAL	MARINE
<p>There are 32 gazetted Threatened Ecosystems. The WC BSP (2017) has calculated:</p> <ul style="list-style-type: none"> <li>• An increase in threat status of 9 ecosystems.</li> <li>• Critically Endangered (CR) ecosystems along the coast has increased from 15 to 17</li> <li>• Endangered (EN) ecosystems have increased from 9 to 11</li> <li>• The number of Vulnerable (VU) ecosystems has stayed the same</li> <li>• Least Threatened ecosystem has decreased from 31 to 27</li> </ul> <p>Of the 66 assessed ecosystems, almost 14% have declined as indicated by the increase in threat status. In total 11% of threatened ecosystems have been lost to development and agricultural activities, and are no longer in a natural state.</p>	<p>No threatened marine ecosystems have been proclaimed, however marine ecosystems are under threat due to a number of pressures (discussed above) and the threat status of such ecosystems can be monitored and assessed using beach stranding as indicators.</p>

### 5.2.1 Impact on biodiversity: species

Threats and pressures on biodiversity at a taxonomic level ultimately lead to localised and global species loss (extinction). An assessment of the population trends of terrestrial, estuarine and marine taxonomic groups was conducted (Table 5). This revealed that 72% of all plants in the coastal zone are declining. There is no information on population trends of over half (53%) of all the terrestrial reptiles known to occur along the coast, and even less is known about marine fish species. The trends illustrated by the changes in the species' risk categories generally is declining. The desired state of this impact is that all population trends are assessed and that species are stable or increasing.

**Table 5: Population trends in the Western Cape coast assessed as changes in species risk categories**

POPULATION TRENDS PER TAXONOMIC GROUP:	
Terrestrial	Marine
<b>Plants:</b> 72% decreasing, 4% unknown	<b>Plants:</b> 100% unknown
<b>Mammals:</b> 21% decreasing, 24% unknown	<b>Mammals:</b> 3% decreasing, 82% unknown
<b>Birds:</b> 31% decreasing, 12% unknown	
<b>Reptiles:</b> 4% decreasing, 53% unknown	<b>Reptiles:</b> (turtles): 100% decreasing
<b>Amphibians:</b> 14% decreasing, 70% unknown	<b>Fish:</b> 13.5% decreasing, 66.5% unknown
	<b>Echinoderms and other marine groups:</b> un-assessed, unknown, unavailable data

Impacts on marine species may be gauged by the number and type of marine animal strandings. Entanglement accounts for over 50% of the strandings, while ship strikes play a minor role. Since 1997, the number appears to be trending upwards, although with increased variability. The general trend identified was declining, but the desired state of marine animal strandings is that strandings should only occur due to natural causes.

### 5.2.2 Impact on biodiversity: ecosystems

The percentage loss of threatened ecosystems was assessed. In 1990, 13% of the threatened ecosystems were transformed, while in 2014 the number declined to 11%. Although the overall percentage was relatively similar, the difference is over 200ha of permanent loss to settlements<sup>3</sup>. The desired state of this impact is to have No further loss of ecosystems and to ensure Rehabilitation of threatened ecosystems.

<sup>3</sup> The recovery of Threatened Ecosystems is due to fallow agricultural land which has been mapped now as natural. The loss of Threatened Ecosystems is still 200ha.

## 6. RESPONSES TO COASTAL BIODIVERSITY PRESSURES AND IMPACTS



### 6.1 Legislation, policy, plans and programmes

The National (2015) and Western Cape (2017) Biodiversity Strategy and Action Plans (NBSAP and WCBSAP, respectively), have identified land use and natural resource use interventions to curtail biodiversity loss.

The **Western Cape Coastal Management Programme** (WCCMP, 2016) identified 9 priority management areas, with three of these being required to manage biodiversity pressures and impacts in the coastal zone:

- **Priority Area 5:** Manage land- and marine-based sources of pollution and waste to minimise the impacts of pollution on the coastal environment
- **Priority Area 6:** Manage natural and cultural resources to sustain ecosystem goods and services and cultural assets as the basis for coastal economic development and livelihoods
- **Priority Area 7:** Manage estuaries using a co-ordinated and integrated approach that optimises the ecological, social and economic value of these systems on an equitable and sustainable basis.

### 6.2 Protected area expansion strategies

One of the core priority strategies for conserving biodiversity is the establishment and maintenance of a Protected Area (PA) network. Currently, the terrestrial aspect of the coast is well protected, but estuaries, shoreline and marine ecosystems remain poorly represented in the PA network. There are currently two mechanisms driving protected area expansion:

- Western Cape Protected Area Expansion Strategy; and
- Operation Phakisa MPAs (marine protected area expansion)

The following activities are helping to improve this situation:

**CapeNature** has identified the following “top ten” estuaries selected for prioritised conservation: Olifants, Verlorenvlei, Groot Berg, Bot/Kleinmond, Klein, Uilkraal, Heuningnes, Goukou, Goukamma, and Keurbooms.

**Operation Phakisa** proposed establishing 10 MPAs off the coast of the Western Cape, which could potentially contribute a further 6% protection of marine habitat. The 10 MPAs are: Benguela Bank; Benguela Muds; Cape Canyon; Robben Island; Southeast Atlantic Seamounts; Browns Bank Corals; Browns Bank Complex; Agulhas Bank Complex; Agulhas Mud; and Southwest Indian Seamount.

**The National Water Act** provides for the determination of Resource Directed Measures and associated Resource Quality Objectives (RQOs) of water systems. This is a response mechanism used to manage and improve aquatic systems by ensuring that there is sufficient water of an acceptable quality in these systems. They describe and provide data on the quality, quantity, habitat and biotic conditions that need to be met in order to achieve the require management scenario (DWAf, now DWS, 2007). Measuring the RQOs for estuarine systems that have not yet been determined, and measuring how good the RQOs are for those systems that have them is an important response strategy.

## 7. CONCLUSIONS AND RECOMMENDATIONS

### 7.1 Conclusions

#### OUTLOOK: TERRESTRIAL – DECLINING MARINE – HIGH CONCERN

Although there has been, and continues to be, concerted effort placed into biodiversity conservation through the expansion of protected areas and the WC Biodiversity Spatial Plan (2017), the data indicates that, despite these efforts, species and ecosystems are still facing decline.

The loss of natural habitat and species, especially in critical biodiversity and ecological support areas, affects the delivery of ecosystem services and compromises the environment's resilience to climate change.

It is evident that there are fundamental differences between pressures, threats and impacts experienced in the terrestrial, estuarine and marine environments. It is also evident that there are large data gaps in knowledge and data availability with respect to the marine environment. Most of the priority actions recommended are therefore focused on marine data collection and conservation.



Crassula Succulent  
Photo by Christopher Salerno/Shutterstock.com Image 120594181,  
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## 1. INTRODUCTION

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

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

## 2. KEY DRIVERS AND PRESSURES OF ESTUARINE SYSTEMS

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

### 2.1 Mining in the EFZ

In the Western Cape, the only legal mining that currently affects estuaries directly are salt mines. Salt mining activities rely on the sheltered environment created by estuaries as well as the presence of brackish water. Salt pans are constructed within the EFZ, which results in the loss of salt marsh habitat in estuaries (Aswathanarayana, 2005). Currently four licensed salt mines are operating in WC estuaries. All four have Environmental Management Plans (EMPs) approved by DMR and are compliant with the conditions in those EMPs. However, they need to be closely monitored in order to assess the cumulative impact of mining activities occurring in the EFZ.

Illegal prospecting and mining activities are currently occurring in a number of estuaries (e.g. the Olifants estuary). Illegal mining poses a serious threat to the health and functioning of estuaries and these activities need to be addressed.

### 2.1 Climate change

The pressures exerted by climate change have a significant influence on the structure and function of estuaries (van Niekerk, 2017) due to rainfall and temperature variations and include:

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

### 3. STATE OF THE WESTERN CAPE ESTUARIES

STATE

#### 3.1 Land cover and land use in the Estuarine Functional Zone

Inappropriate land use development within the EFZ results in the degradation and loss of estuarine habitat, which in turn affects the ability of the estuary to effectively provide its ecosystem goods and services. Habitat loss and degradation results from low-lying developments, overgrazing of livestock, reclamation of land, mining activities, infrastructure development, channelisation, and estuary transformation. The land cover and land use indicator reported on the current state of the estuaries as follows:

- 23% of estuaries have a very high degree of habitat loss
- 7% of estuaries have a moderate degree of habitat loss
- 41% of estuaries have a low degree of habitat loss

#### 3.2 Estuarine mouth breaching

In South Africa, the primary reason for artificially breaching an estuary is as a result of poor urban planning where low-lying developments are situated within the estuarine floodplain (Whitfield et al., 2012). Other reasons include pollution spills, maintaining fish nursing function and when there is reduced freshwater inflow causing natural breaching to be too infrequent for regulating nutrient, salinity and oxygen levels (Whitfield et al., 2012).

The current state of artificial mouth breaching in the Western Cape is that artificial mouth management practices are recorded in 15 (27%) of the estuaries. Of these, 12 (80%) have approved Mouth Management Plans.

### 4. IMPACTS EXPERIENCED IN THE WESTERN CAPE ESTUARIES

IMPACT

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

Estuarine health is measured by using an Estuary Health Index and the Benthic Communities Index.

#### 4.1 Estuarine Health Index

The current state of the estuaries in the Western Cape according to the Estuary Health Index is:

- 39% of estuaries in good or excellent condition
- 39% of estuaries in fair condition
- 11% of estuaries in poor or non-functional condition

Estuaries in excellent condition include the Krom, Rooiels, Klipdriffontein, Sout (Oos) and the Bloukrans estuaries. Estuaries in poor condition include the Diep, Houtbaai, Zeekoei, Eerste, Onrus and Sout (Wes) estuaries (van Niekerk, 2015). A general trend identified for this indicator is that the health status of the estuaries are decreasing. The desired state for all estuaries is the improvement of estuary health.

## 4.2 Benthic community index

This index provides environmental managers with a simple tool for assessing the health of benthic macro-invertebrate and macrophyte communities. While no formal benthic communities index has been developed and adopted in South African estuaries, macrophytes and invertebrates are used to determine the Present Ecological State of estuaries.

The current state of the benthic macro-invertebrate and macrophyte communities in the Western cape estuaries is presented in Table 6 and it is clear that most are in poor condition.

**Table 6: The percentage of benthic macro-invertebrate and macrophyte communities of the Western Cape Estuaries that fall in the "excellent and fair to poor" condition categories**

CONDITION	MACROPHYTES %	INVERTEBRATES %
Excellent	11%	14%
Fair to poor	52%	57%

## 5. RESPONSES TO ESTUARINE PRESSURES AND IMPACTS



### 5.1 Estuary Management Plans

The National Environmental Management: Integrated Coastal Management Act (Act No. 24 of 2008) (ICMA) requires all estuaries in South Africa to be managed in a co-ordinated and efficient manner, which is best achieved by preparing and implementing an estuary management plan (EMPs) in accordance with the National Estuarine Management Protocol guidelines.

There are 56 estuaries within the Western Cape (NBA, 2011). Currently, 64% of all estuaries in the Western Cape have EMPs in various stages of development. The remainder do not have any EMPs in progress. Although none of these EMPs have been formally adopted, there exists an increasing trend in terms of the number of estuaries where EMPs are being prepared.

### 5.2 Implementation of Estuarine Management Plans

The National Estuarine Management Protocol addresses the institutional structures and arrangements necessary for co-operative coastal governance with regards to the implementation of EMPs and their long term monitoring programmes. The potential Responsible Management Authorities (RMA's) are identified and these organisations become involved in the implementation of the EMP and its monitoring plans.

However, the role of a municipal RMA was questioned in a recent case where the Supreme Court of Appeal (SCA) handed down judgment in *Abbott v Overstrand Municipality* (99/2015) [2016] ZASCA 68 (20 May 2016). Section 154(1) of the Constitution places an obligation on the National and Provincial authorities to support and strengthen the capacity of local government to perform their functions. DEA&DP has committed to enter into Implementation Protocols with Municipalities for the implementation of these functions in terms of the Intergovernmental Relations Framework Act (No. 13 of 2005).

The Implementation Protocols will differ from one estuary to the next, as implementation is site specific. The percentage of estuaries with bodies informally implementing estuary management and monitoring plans is currently 34%. The desired state is that all estuaries finalise, adopt and implement EMPs.

### 5.3 Estuarine Ecological Reserves

The National Water Resources Classification process (required by the National Water Act (No. 36 of 1998)) allows for the development of the Resource Directed Measures Strategy. The classification process requires that the desired condition (Management Class), the freshwater flow requirement (Reserve) and the Resource Quality Objectives for each estuary in the Western Cape be set. This process is currently being implemented in the Western Cape.

The number of river systems within the Western Cape that have had their ecological reserve and Ecological Water Requirement (EWR) (in-stream flow requirement and estuarine flow requirement) determined is as follows:

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

The desired state for the Western Cape Estuaries in terms of their Estuarine Ecological Reserves is to have their EWRs signed off and implemented and furthermore to ensure the EWR is meeting required protocols.

## 6. SUMMARY AND CONCLUSIONS

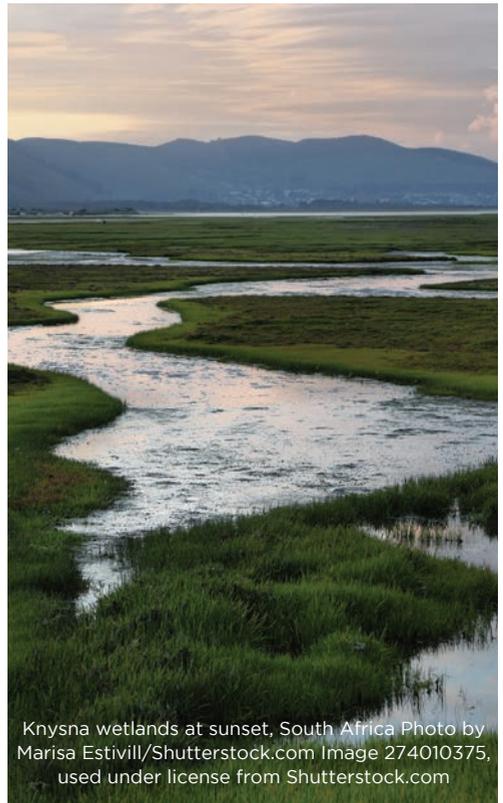
### OUTLOOK: **HIGH CONCERN**

#### 6.1 Concluding Remarks

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

Critical areas for action include:

- Implement the required protocols in the EWR studies
- Finalise and adopt EWR assessments that are still in progress
- Finalise, adopt and implement EMPs that are still in progress



Knysna wetlands at sunset, South Africa Photo by Marisa Estivill/Shutterstock.com Image 274010375, used under license from Shutterstock.com



## 1. INTRODUCTION

The Western Cape Coastal Zone is an area where dense human settlements are concentrated due to the abundance of natural resources, livelihood and recreational opportunities found along the coast. It includes the City of Cape Town Metro, and three coastal District Municipalities, namely the West Coast, Overberg and Eden. The District Municipalities are predominantly rural in nature and have significantly lower populations and economic activity compared with the City of Cape Town.

Both economic and social conditions can impact on the state and quality of coastal environments. Recent data shows that growth in the Western Cape has largely been boosted by three sectors:

- Construction (average growth of 5.5% between 2006 and 2015)
- Finance, insurance, real estate and business services (average growth of 4.1%)
- General government (average growth of 3.7%)

Climate change will reconfigure economic competitiveness regionally and globally, but can also provide the catalyst for investment into climate adaptation that may increase economic competitiveness of the Western Cape.

Common economic activities include: fishing, aquaculture, agriculture, tourism, forestry, housing, and various infrastructure. Important industries that contribute to the Western Cape economy with high growth potential are; Oil and gas, Tourism and Agric-processing. Other coastal related activities that contribute to the economy include: Port and shipping, Marine vessel building, repairs and servicing, Commercial fishing, SA Navy and Koeberg power station.

The regulatory framework includes national and provincial development plans, the City of Cape Town Coastal Management Programme (CMP); the three coastal District Municipalities CMPs and the IDPs, SDFs and other sector plans that the constituent Local Municipalities have. These will include projects that could impose pressure on the coastal environment.

## 2. ECONOMIC AND SOCIAL DRIVERS

### 2.1 Contribution of the coast to Gross Geographic Product (GGP) and GDP

The total GDP for the Western Cape in 2016 was about R600 billion (or R426 billion at 2010 prices) (StatsSA 2016). It was found that GDP growth is relatively consistent in coastal municipalities compared with the Province as a whole. What is striking, and not unexpected, is the significantly higher contribution of the City of Cape Town (71% of GDP) to the Provincial economy compared with the other coastal municipalities combined (15% of GDP). Currently the growth rate of GDP in coastal municipalities from 2012 to 2016 is similar at **1.84%** compared with the provincial growth rate of **1.81%**.

DRIVERS

## 2.2 Total contribution of ports to the GDP of the province (incl. value of ship cargo)/ metric tonne.

Ports are a coastal dependent activity and are a critical gateway to the global economy for South Africa. Currently the total contribution of ports to the GDP of the province was 0.62% in 2016/17. Although the contribution of Ports to GDP is small, a measure of port activity and product throughput does nevertheless provide an indication of import/export economic activity.

There is no target or desired state relating to the above economic indicators of increasing pressure on the coastal environment and no trends in the data were able to be identified due to incomparable data sets.

## 3. ECONOMIC AND SOCIAL PRESSURES



### 3.1 Changes in population density in coastal municipalities

Coastal population size is a useful measure of the pressure that population increase has imposed on coastal areas in the past and will continue to do so into the future. Increased population will require the delivery of more services and increased economic growth to sustain a growing population. The average annual percentage population growth for the coastal municipalities from 2001 – 2016 was:

- City of Cape Town = 2.6%
- West Coast = 3.6%
- Overberg = 3.8%
- Eden = 2.7%

Although the City of Cape Town is the smallest municipality, in spatial terms, it accounts for the majority of the Provinces population (64%) compared with Eden DM (10%), West Coast DM (6%) and Overberg (4%). With regards to pressures exerted by population growth in the Western Cape Coastal region, an **increasing trend** was identified.

### 3.2 Extent of mining in the coastal zone and the contribution of the mining sector to the provincial GDP

Mining is one of the largest contributors to the economy of South Africa as a whole, contributing 8% to the National GDP in 2016 (StatsSA, 2016). The current extent of mining in the coastal zone and the contribution of each mining sector to the provincial GDP from 1990 to 2014 is summarised in Table 7. The general trend identified for this indicator is an **increasing trend** with regards to the pressures exerted by the mining sector on the Western Cape Coastal region.

**Table 7: Change in extent of mining in the coastal zone (1990-2014)**

LAND COVER CLASS	DESCRIPTION	AREA (HA) (1990)	AREA (HA) (2014)	CHANGE (HA) ('90-'14)	% GROWTH ('90-'14)	AVERAGE ANNUAL % GROWTH ('90-'14)
<b>Mines 1 bare</b>	Mining activity footprint, based on bare ground surface areas for both active and abandoned mines and may include open cast pits, sand mines, quarries, borrow pits etc.	233	399	166	71%	3,0%
<b>Mines 2 semi-bare</b>	Mining activity footprint, based on semi-bare ground surface areas for both active and abandoned mines and may include open cast pits, sand mines, quarries and borrow pits, etc.	81	135	54	67%	2,8%
<b>Mines water seasonal</b>	Water bodies inside mining areas which represent non-permanent water extents.	89	61	-28	-31%	-1,3%
<b>Mines water permanent</b>	Water bodies inside mining areas that represent permanent water extents.	583	606	23	4%	0,2%

### 3.3 Agricultural activities and contribution to the provincial GDP

Currently, 5.92% of the coast is utilised for agricultural activities and while agriculture, forestry and fishing only contributes 2% to National GDP, agriculture has contributed significantly to recent National economic growth. In the Western Cape, agriculture contributes 3.9% to the Provincial economy, and occurs mainly in the rural areas of the coastal DMs.

### 3.4 Extent and types of aquaculture activities in the coastal zone and contribution to the provincial GDP

Land-based aquaculture is a coastal dependent activity with direct impacts on the coastline in terms of water quality and land use change. It is estimated that over 67% of South African marine aquaculture producers are situated in the Western Cape, which in 2013 collectively accounted for 87% of the total annual South African production of about 3,000 tonnes (DAFF, 2015). This is generated from 27 facilities, and contributes about R600 million or 0.1% to the Western Cape economy annually.

### 3.5 Tourism and contribution to the provincial GDP

Tourism is seen as one of the most important sectors for economic growth in South Africa and the Western Cape. Any increases in tourism activity in the Western Cape will exert greater pressure on coastal assets and resources. During 2016, the Western Cape accounted for 15.7% of all South African tourist arrivals, and received 23.9% of South Africa's total tourist spend. The Western Cape experienced an 18.5% growth in 2016 with 1 568 357 tourist arrivals recorded, compared to the 1 323 283 tourist arrivals in 2014. During the same period the total spend for the Western Cape grew by 21.6%.

## 4. STATE OF ECONOMIC ACTIVITY AND SOCIAL CONDITIONS ON COASTAL ASSETS

STATE

### 4.1 The total number of Blue Flag beaches in the province

The total number of Blue Flag beaches per year, as a percentage of the number of major beaches in the province was used as an indicator to report on the state of coastal assets that influence the socio-economic environment. Currently (2017/18) 5% of the Western Cape beaches are Blue Flag beaches.

## 5. IMPACT OF ECONOMIC AND SOCIAL CONDITIONS ON COASTAL ASSETS

IMPACT

The impacts of economic activities and social conditions on the Western Cape coastline will vary according to the nature of the associated pressure. Some of the impacts that may be linked to economic activities and social conditions include:

- Pollution of coastal land and water from land based activities
- Alteration of physical features of estuaries, beaches and dune systems
- Transformation and loss of aquatic and terrestrial biological resources
- Changes in distribution patterns and population densities of communities living within coastal areas

## 6. RESPONSE TO IMPACTS OF ECONOMIC AND SOCIAL CONDITIONS ON COASTAL ASSETS

RESPONSES

The response to the impacts of economic activities and social conditions in coastal environments in the Western Cape mostly involves managing human activities in a manner that avoids, limits or mitigates against the impacts and include:

### 6.1 Protection of heritage resources along the coastline

The number and type of heritage resources on the coast and the formal protection of heritage assets along the Western Cape coastline is one of the responses to economic and social pressures and impacts. Currently, 72 heritage assets have received formal protection along the coastline.

### 6.2 Establishment of recognised stakeholder communication platforms

The establishment of functional forums are useful for dealing with coastal matters. In addition to the Western Cape Provincial Coastal Committee (PCC) and the coastal committees of the three District Municipalities (MCCs) which are legislated requirements in terms of the ICMA, 16 other forums have also been established for the Western Cape Coastal region below MCC level that further supplement and enhance stakeholder engagement and communications. Other stakeholder communication platforms that exist include Estuary Advisory Forums (EAFs) and Protected Area Advisory Committees (PAACs)

### 6.3 Working for the Coast - number of work opportunities created and budget allocated.

A total of R138 million has been spent on the Western Cape coastline thus far in the 2015-2018 budget cycle, and 1 056 employment opportunities were created.

## 7. CONCLUSIONS AND RECOMMENDATIONS

### OUTLOOK: IMPROVING

#### 7.1 Concluding remarks and Outlook

The socio-economic outlook is good, with improved GGP and GDP in line with Provincial growth rates. Future economic activities and social conditions are likely to continue to exert significant pressure on the coast due to the many economic and social benefits that can be derived from the coastal location. Thus future development and investment must be planned and directed in such a way that the existing economic and social value of the coastline is not compromised, but is further enhanced by retaining the natural and cultural capital, and integrating a natural systems approach for development and infrastructure. This can be achieved by ensuring that sustainable development principles are implemented.

In addition, it is important to recognise that the role and function of our coastline as a buffer to storm surge and predicted mean sea level rise in economic terms is extensive. If the natural functioning of the coastline is lost, replacement of the natural buffer of the coastline with engineered coastal defences is likely to be unaffordable.

The Western Cape Coastal Management Programme identifies nine priority areas and goals that promote sustainable development:

- Economic development
- Promote institutional innovation for cooperative governance in integrated coastal management;
- Promote coastal access and accessibility that is both equitable and sustainable;
- Promote resilience to the effects of dynamic coastal processes, environmental hazards and natural disasters;
- Minimise the impacts of pollution on the coastal environment;
- Coordinated and integrated estuarine management;
- Public awareness and education for integrated coastal management; and
- Monitor the State of the Coast (SoC) and promote compliance with coastal and other regulations.

Since the current report is part of the first State of Coast Report for the Western Cape, there is limited comparable historical information on the indicators. Therefore, reporting on the trends for certain indicators is not possible. In addition, it should be remembered that economic and social conditions are typically associated with negative impacts on coastal environments. As a result, ensuring that the principals of sustainable development are incorporated in the ongoing development of economic activities is critical.

Photo by Rodger Bosch  
Fisherman use handlines to catch bottom fish off Cape Point



## 1. INTRODUCTION

South Africa's marine environment is characterised by its high biodiversity. There are at least 12 900 recorded marine species found in South African waters, which represents 15% of the world's total number of species. South Africa's rich and productive coastal waters also support thousands of jobs and contributes millions of Rands to the national economy each year, with coastal goods and services estimated to contribute 35% to South Africa's Gross Domestic Product (GDP) (WWF-SA, 2016). The oceans are a key source of protein both locally and globally. In South Africa, approximately 312,000 tonnes of seafood is eaten annually, with per capita seafood consumption at 6.25kg in 2010 (WWF-SA, 2016).

## 2. DRIVERS AND PRESSURES ON COASTAL RESOURCES IN THE WESTERN CAPE

The vast majority of fisheries activities taking place in South Africa occur within coastal waters off the Western Cape. The abundance of inshore and offshore marine resources make these waters economically valuable.



### 2.1 Inshore marine resources

The Western Cape's inshore marine resources are accessible to commercial fisheries; recreational fishing; subsistence fishers and the small-scale fishing sector. The relative ease of access to inshore resources by all user groups and large numbers of rights holders/users pose a challenge to the effective governance of the inshore fisheries and results in high fishing effort in inshore regions (WWF-SA, 2016). Of particular concern are the abalone and West Coast rock lobster fisheries.

### 2.2 Inshore trawl

The inshore commercial fishery sector is dominated by the inshore trawl catch. The main component of the inshore trawl catch is hake (deep water hake and shallow water hake) with other species being caught in relatively large numbers. Other species that are targeted include Cape horse mackerel, gurnards, monkfish, panga, skates and St Joseph's shark.

### 2.3 Kelp harvesting in the Western Cape

Seaweed harvesting in the Western Cape primarily targets kelp (*Ecklonia maxima*) along the west coast with some *Gelidium* species being harvested on the south coast (DAFF, 2013). The kelp collection is currently based on beach-cast kelp (for alginate extract) and the harvesting of kelp from boats for abalone feed and liquid plant growth stimulants (KELPAK). There are 15 concession areas within FAO Area 1.6, from which the following is collected:

- 411, 850 kg/dry weight beach-cast kelp collected.
- 359, 074 kg/wet weight kelp for abalone feed collected.
- 2, 166, 293 kg/wet weigh kelp for KELPAK collected.

## 2.4 The emergence of the small scale and subsistence fisheries sector

Many communities along the Western Cape coast rely on the coastline for subsistence purposes. The main species that communities involved in the Interim Relief Measures (IRM) programme are allowed to harvest are West Coast rock lobster, linefish (snoek, yellowtail, and cape bream), white mussels and oysters. All are subject to various limits. The following provides an indication of the pressure of subsistence fishing activities on the Western Cape Coastal region: the number of communities dependent on the coast for subsistence; the number of permits issued for small scale fisheries operations; and the percentage of these issued to communities that were previously deprived of these rights. Currently **43 communities** are involved in IRM in the Western Cape, **100%** of which are previously disadvantaged.

## 2.5 Recreational fishing

Recreational fishing activities are sport or leisure activities, as opposed to subsistence and small scale commercial fishing activities. It is estimated that approximately 870 000 people participate in recreational angling activities in South Africa (WWF, 2016). The number of recreational fishing permits issued per year and the number of people with fishing or gathering permits provides a useful measure of the pressure exerted by recreational fishing activities. For the 2015/2016 financial year the number of fishing permits issued in the Western Cape was **138 387** and for the 2016/2017 financial year, **136 940**.

## 2.6 Offshore resources

The industrialisation of offshore fisheries can cause large environmental impacts that must be appropriately understood, monitored and managed (WWF, 2016). The status of stocks of commercially valuable large pelagic fish (e.g. tuna and swordfish) that are subjected to high fishing effort and weak governance outside of South Africa's Exclusive Economic Zone (EEZ) is not known. The offshore fisheries sector in the Western Cape targets the following resources; deepsea and midwater trawl, longline, small pelagics, tuna pole and demersal sharks.

## 2.7 Recreational activities occurring along the Western Cape coast

Recreational activities such as scuba diving, boat based whale watching (BBWW) and white shark cage diving (WSCD) are popular tourist attractions along the Western Cape coastline, and many of these activities take place within MPAs, with particular reference to scuba diving and BBWW. Consequently, these activities need to be regulated and monitored to ensure that the impact of the activities on the marine environment is carefully controlled.

# 3 STATE OF COASTAL RESOURCES IN THE WESTERN CAPE

The majority of commercial fishing activities occur within the Western Cape, and nearly all the major processing factories are based in the Province. The state of coastal resource use can be assessed by looking at the number of people employed in various sectors, the annual catch data recorded by DAFF, as well as the distribution of resource species.



STATE

## 3.1 Employment in the Western Cape fisheries sector

Approximately 90% of people directly employed in the commercial fisheries sector in South Africa are located within the Western Cape (24 300 people).

Currently, the number of people employed is approximately:

- **2500** people employed in the abalone sector.
- **8300** people employed in the hake trawl (deepsea, inshore, longline and handline).
- **4360** people employed on the small pelagics sector.
- **4100** people employed in the West Coast rock lobster sector

Evidently, over the years, the state of the fisheries sector continues to **worsen**, and therefore there is a **need to reduce the number of species whose populations have collapsed** by revising Total Allowable Catch (TAC) and Total Allowable Effort (TAE) and updating resource-specific Operational Management Plans (OMPs).

### 3.2 Annual catch data

The catch data indicates that the **deepsea hake trawl is the largest contributor** to the commercial fisheries sector in the Western Cape. The general trend shows that there was an increase in the annual tonnes caught from 2015 to 2016; with the exceptions being the gill and beach seine net fishery, demersal shark, tuna pole and tuna and swordfish pelagic long line, West Coast rock lobster and White mussel (Table 8). The most noticeable increase in tonnes per annum from 2015 to 2016 was found in the Abalone sector (84% increase), while the most significant decrease was in the Gillnet and beach seine sector (294% decrease).

**Table 8: DAFF annual catch data for each commercial fishing sector from 2015-2016.**

COMMERCIAL FISHERY SECTOR	TONNES PER ANNUM		TREND & CHANGE	
	2016	2015	2015-2016	
Abalone	85.96	13.45	84%	increase
Demersal Shark	37.29	37.293	0.008%	decrease
Gillnet and beach seine	643.06	2533.88	294%	decrease
Hake inshore trawl	3972.79	3076.895	22.55%	increase
Hake longline	8407.95	8016.819	4.65%	increase
Hake deepsea trawl	124619.12	123105.49	1%	increase
Horse mackerel midwater trawl	8855.25	2249.348	74.6%	increase
Oysters (South Coast)	374.66	330.392	11.8%	increase
Seaweed	6274.69	4508.54	28%	increase
Small pelagics	398.47	349.7	12%	increase
South Coast rock Lobster (Tail weight)	330.55	293.4	11%	increase
Linefishery	3474.07	1417.228	59%	increase
Tuna and swordfish pelagic longline	3948.19	4812.306	21.9%	decrease
Tuna pole	2540.49	4811.542	89.4%	decrease
West Coast rock lobster	1033.46	1418.06	37%	decrease
White mussel	1193984	1318403	10%	decrease

### 3.3 The distribution of commercial resource species

Most of the commercial fisheries sectors are restricted to specific fishing zones or areas that are dictated in the conditions of their permits. Currently, the distribution for all but two commercially exploited species has been mapped. These distribution maps provide the basis for the identification of designated fishing areas, which can then be closely managed and monitored.

## 4. IMPACTS

Commercial wild capture fisheries directly impacts target resources, and negatively impacts the sustainability of these resources by reducing their abundance and spawning potential. Wild capture fisheries can also potentially modify age and size structure of populations, sex ratios, genetics and species composition of the target resources, as well as of their associated and dependent species. When poorly controlled, overfishing can lead to major ecosystem, social and economic consequences (FAO, 2015).

IMPACT

### 4.1 Status of commercially exploited species

The number of exploited fish species that are currently: collapsed, overexploited, optimum exploitation, underexploited was analysed for the years 2012, 2014 and 2016. The current state and the trends are illustrated in Figure 1 below. The general trend is that the condition of commercially exploited species is worsening, and thus the desired state is to reduce the number of species whose populations have collapsed by revising TACs and TAEs and updating OMP, as applicable.

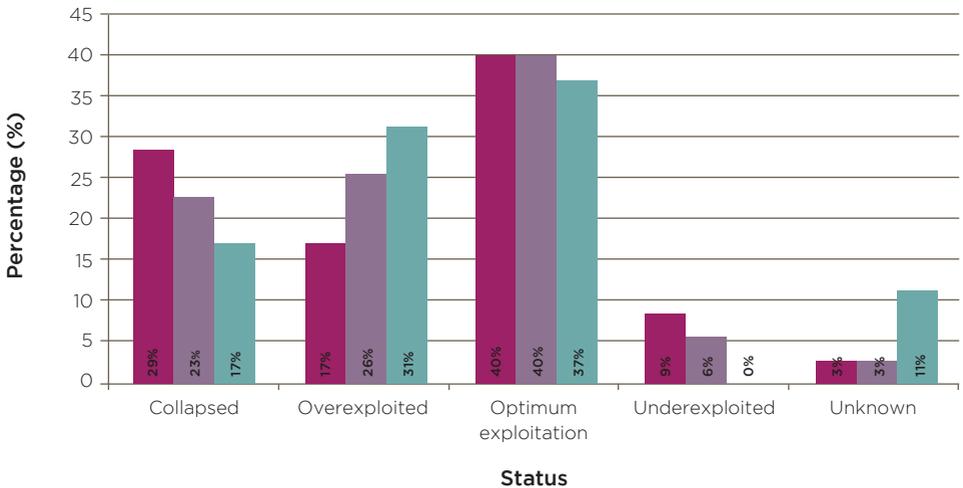


Figure 1: The status of commercially exploited species in the Western Cape in 2012, 2014 and 2016

#### 4.2 Conservation status of key fisheries species

The IUCN Global Species Programme working with the IUCN Species Survival Commission (SSC) has been assessing the conservation status of species to promote their conservation. Thirty six commercially exploited species in the Western Cape were assessed and the current state of the exploited species in terms of their IUCN status, population trends and WWF-SASSI Red List are presented in Table 9.

**Table 9: IUCN and WWF\_SASSI Status of commercially exploited species in the Western Cape.**

IUCN THREAT STATUS	IUCN POPULATION TRENDS	WWF-SASSI RED LIST
3% critically <b>endangered</b>	46% populations are in <b>decline</b>	32% WWF-SASSI <b>Red List</b>
6% <b>endangered</b>	9% population trends are <b>stable</b>	41% WWF-SASSI <b>Orange List</b>
27% <b>vulnerable</b>	9% population trends are <b>increasing</b>	27% WWF-SASSI <b>Green List</b>
12% near <b>threatened</b>	37% population trends are <b>unknown</b>	
27% least <b>concern</b>		
24% <b>no information</b> available on their conservation status		

#### 4.3 Threatened or Protected Species Regulations

The National Environmental Management: Biodiversity Act (No. 10 of 2004) Threatened or Protected Species (TOPS) Regulations were promulgated in 2015 by DEA. The number of species designated as TOPS was used as an indicator of the impacts of commercial fishing on threatened or protected species. Currently, one species, the great hammerhead shark is designated a TOPS.

#### 4.4 By catch

While many of the commercial fisheries in the Western Cape target a specific, high value species, the fishing methods employed result in non-target species (often comprising of top marine predators) being caught. This is known as by-catch. The by-catch portion of the commercial fisheries sector is considered to be one of the largest threats to the health of the marine environment. The incidental capture of these non-target species is estimated at 7 million tonnes annually around the world. As a result, valuable resources are wasted which causes declines in many marine species populations including; seabirds, sea turtles, sharks and finfish (FAO 2010). The unmonitored and uncontrolled discarding of these animals can have significant impacts on marine ecosystems. The practice of discarding unwanted species is contributing to the world wide problem of overfishing and declining marine ecosystem health, as well as endangering food security in poorer countries (FAO, 2010).

### 5. RESPONSES

In order to ensure the sustainability of marine fisheries resources and to prevent the total collapse of many of the fisheries, quotas and catch limits are placed on fisheries rights holders. Furthermore, a number of initiatives are being implemented by NGOs, with support from DAFF and commercial operators, that target consumers by creating awareness of the commercial fisheries sector and responsible fishery practices.



## 5.1 Management of fisheries resources

In order to monitor the condition of fisheries trends in catch statistics, parameters such as actual catch are being measured and reported on. In addition, the following management activities are being implemented:

- OMPs developed for 7 fisheries sectors.
- The National Plan of Action for the Conservation and Management of Sharks (NPOA-Sharks) 2013.
- Fisheries sectors managed through TAC, TAE, both or Precautionary Upper Catch Limit (PUCL).
- Six commercially exploited species in the Western Cape have stock assessments that are updated annually.
- Sixteen commercially exploited species in the Western Cape have stock assessments that were updated between 2010 and 2016.

## 5.2 Stock assessments

In order to adequately inform the allocation of annual TACs, TAEs and PUCLs, an understanding of the structure and status of the stocks is required for each fishery. While stock assessment for some fisheries are conducted on an annual basis (e.g. small pelagics, South Coast and West Coast rock lobster) other stock have not been recently assessed. These organizations are currently unable to adequately assess stocks due to poor life history data.

## 5.3 Consumer awareness (WWF-SASSI)

Consumer surveys conducted by WWF's Southern African Sustainable Seafood Initiative (WWF-SASSI) indicate that consumers are more aware of sustainable seafood challenges and are holding their seafood vendors accountable for the sustainability of the seafood they are selling. WWF-SASSI promotes voluntary compliance with the law, specifically the MLRA, through education and awareness. It also aims to shift consumer demand from over-exploited species to more sustainable ones. With regards to the commercially exploited species in the Western Cape, 32% of the species are WWF-SASSI red listed species with 41% of the species being orange listed species. Red listed species caught in the Western Cape are abalone, Big eye tuna, Mako shark, Silver kob, Smoothhound shark, Southern Bluefin tuna, St Josephs shark, West Coast Rock lobster and White steenbras.

# 6. CONCLUSION

## OUTLOOK: HIGH CONCERN

### 6.1 Concluding Remarks

The Western Cape is rich in marine resources and accounts for almost 17% of the global population's intake of protein. South Africa's commercial fisheries consist of 22 sectors with the majority of these sectors occurring in the Western Cape. Approximately 90% of people directly employed in the commercial fisheries sector in South Africa are located within the Western Cape (24 300 people). Each of the commercial fisheries sectors in the Western Cape are managed by allocating areas in which fishing activities are permitted. These areas are primarily based on the species distribution.

The Western Cape's inshore marine resources are accessible to all three major user groups, namely the commercial fisheries, recreational fishing and the small-scale fishing sector. Inshore fisheries comprise of inshore trawl fishing, harvesting of kelp, small-scale fisheries, subsistence fisheries and recreational fishing activities (shore-based, estuarine, boat-based anglers and spear fishers). The offshore fisheries sector consists of commercial activities; deepsea trawl, midwater trawl, longline, small pelagics, tuna pole and demersal sharks, as well as recreational fishing activities; scuba diving.

The commercial fishing sector poses negative impacts such that half the commercially exploited species in the Western Cape are considered to be of concern (25% over-exploited, and 25% collapsed). Almost half (46%) of the commercially exploited species that have been assessed by the IUCN have declining populations and only 9% are considered stable. Further negative impacts are evident on non-targeted species known as by-catch. Therefore, the management of the Western Cape commercial fishing sector, through continuous stock assessments is vital and consumer awareness generation of the environmental impacts of fishing on our oceans through educational programmes such as WWF-SASSI is critical so that consumers and retailers alike increasingly seek sustainable seafood alternatives.

Photo by Caren Clarke  
Hout Bay



Photo by Dan Grinwis on Unsplash  
12 Apostles, Cape Town



## 1. INTRODUCTION

### 1.1 Land use

Land use refers to how the landscape is used by people. The arid west coast exists in stark contrast to the wet and lush Garden Route stretching along the southern coast of the Western Cape, shaping different types of land use. In agriculturally suitable areas, dense fruit tree plantations and vineyards are cultivated. In the more arid areas, livestock farming (particularly sheep) is prevalent. Human settlement tends to be concentrated along the coast and transport routes. The large urban areas of Cape Town and Mossel Bay were originally settled due to their suitability as sea ports. Patterns of land use are derived from social and economic drivers.

### 1.2 The Coastal Zone

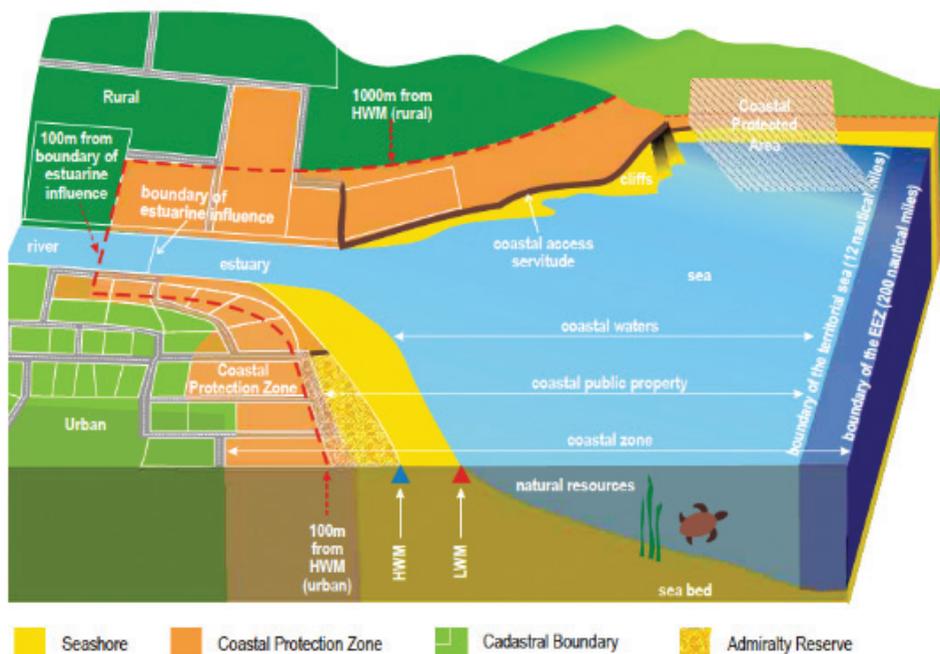


Figure 2: The coastal zone (Celliers et al., 2009)

The Coastal Zone is formally defined in the Integrated Coastal Management Act (ICMA) in order to give coastal management authorities a legal mechanism to promote and enforce the objectives of ICMA, which is to equitably and sustainably manage and conserve the

Coastal Zone. In terms of the ICMA, the various spatial aspects that make up **land** within the coastal zone (Figure 2) are:

- Coastal public property;
- Coastal protection zone (CPZ);
- Coastal access land;
- Coastal waters;
- Coastal protected areas;
- Special management areas; and
- Coastal Management Lines (CML).

### 1.3 Coastal Access Land

Coastal Access Land ensures that the public can gain access to Coastal Public Property via public access servitudes. The facilitation of the establishment of Coastal Access Land is listed as Priority Area 3 in the Western Cape CMP (2016). The goal is to promote coastal access and accessibility that is both equitable and sustainable.

## 2. PRESSURES (LAND USE CHANGES)

### 2.1 Land use changes (all categories) over time

Two comparable land use datasets were prepared in 1990 [Land Cover 1990, 72 Classes. GeoTerra Image] and 2013/14 [Land Cover Thematic Data 2013-14, 72 Classes. GeoTerra Image].

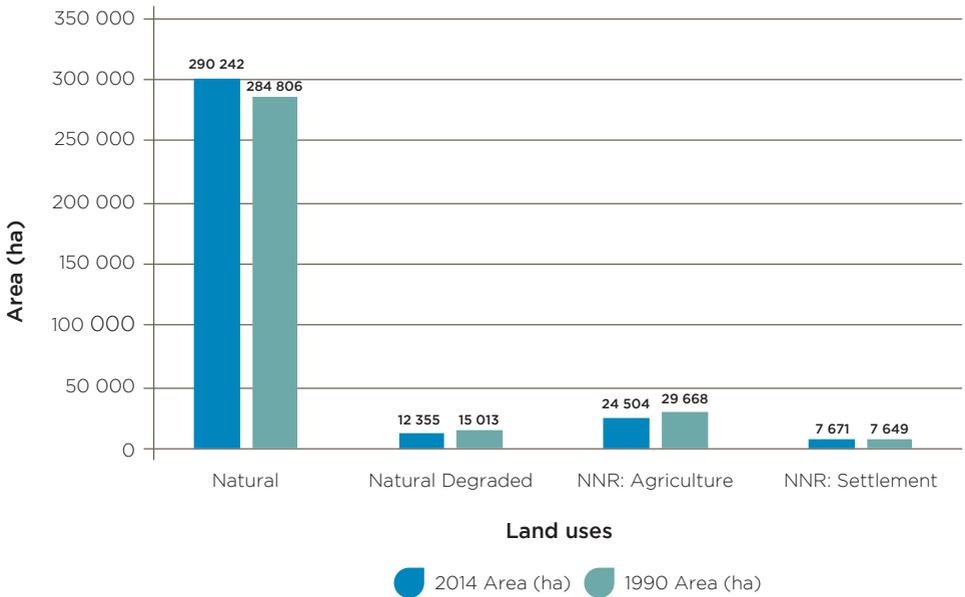
For the purposes of reporting on these indicators, the land use classes of the original datasets were simplified into four classes:

- Natural;
- Natural degraded;
- No Natural Remaining: Agriculture;
- No Natural Remaining: Settlement.

Land use changes between 1990 and 2013/14 in the terrestrial component of the Coastal Zone were assessed (Figure 2). Key trends, shown graphically in Figure 2 include:

- Natural areas have increased by 22142ha (+7.6 %)
- Natural degraded areas have declined by 2 658 ha (-17.7%)
- Agricultural land has declined by 5 164 ha (-17.4%)





**Figure 3: Land use changes in the Coastal Zone, 1990 - 2013/14**

An increase in the percentage of natural areas and a decline in the naturally degraded areas as well as a decline in the amount of agricultural fields illustrates improvement in the land use of the Western Cape Coastal region.

### 3. STATE (PROVISION OF COASTAL ACCESS)

#### 3.1 Number and type of access points (including Universal) along the coast, and the number of Coastal Access audits conducted in the Province



Currently eleven out of fourteen local municipalities have undertaken coastal access audits. However, some audits are currently being undertaken by municipalities who have not conducted them yet. Table 10 provides further detail on coastal access points in all local municipalities for which information was available. Bitou Local Municipality has the highest density of access points per kilometre of coastline. Generally, municipalities along the West Coast have higher numbers of access points than municipalities along the south coast. This is probably due to the terrain, which is easier to access along the West Coast.

**Table 10: Coastal access points by category and municipality**

LOCAL MUNICIPALITY	ACCESS TYPE				TOTAL	COAST LENGTH (KM)	ACCESS / KM
	PUBLIC	PRIVATE	UNKNOWN	UNIVERSAL			
Matzikama	8	21	37	0	66	156	0.42
Cederberg	74	0	17	0	91	58	1.57

Continued...

LOCAL MUNICIPALITY	ACCESS TYPE				TOTAL	COAST LENGTH (KM)	ACCESS / KM
	PUBLIC	PRIVATE	UNKNOWN	UNIVERSAL			
Bergrivier	74	0	0	0	74	44	1.68
Saldanha Bay	58	18	1	0	77	288	0.27
Swartland	82	0	0	0	82	58	1.41
City of Cape Town	0	0	147	0	147	293	0.50
Overstrand	0	0	0	0	0	245	
Cape Agulhas	0	0	0	0	0	170	
Swellendam	0	0	0	0	0	8	
Hessequa	5	9	5	0	19	134	0.14
Mossel Bay	17	0	0	1	18	101	0.18
George	6	0	17	0	23	61	0.38
Knysna	10	1	0	0	11	53	0.21
Bitou	30	0	42	0	72	38	1.89
					<b>Total</b>	<b>1707</b>	

### 3.2 Number of registered and unregistered launch sites.

Regulations state that members of the public may only launch vessels from a public registered launch site, however it is likely that many members of the public will continue to use un-listed launch sites. The current number of launch sites in the Western Cape is 485, but only 50 of these are listed and hence registered. Therefore, in terms of launch sites in the Western Cape, it is desired that there be sufficient Public Launch Sites to satisfy public demand, without members of the public resorting to the use of unregistered and illegal sites.

## 4. RESPONSES (COASTAL LEASES AND OFF-ROAD VEHICLE PERMITTING)

### 4.1 Number of coastal leases issued by CapeNature.

The current number and type of coastal leases issued in the Western Cape was 296 as of August 2017 (Figure 3). Of these, the majority either fall into the category jetty, or jetty and spillway.

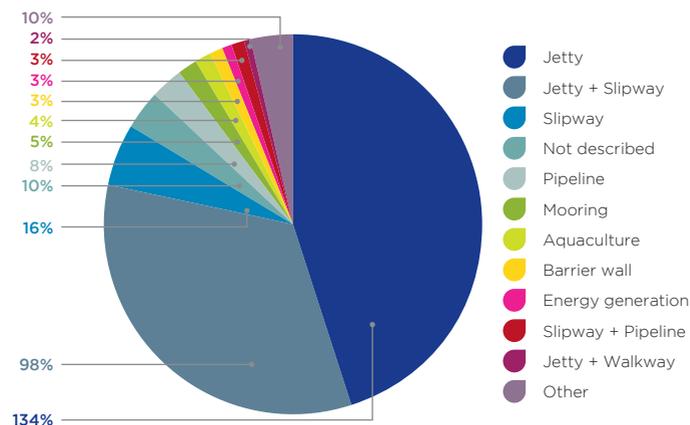


Figure 4: Number and type of coastal leases issued by CapeNature

#### **4.2 The number of coastal access strips per municipality across private land**

There are no officially designated coastal access strips in terms of Section 18 of ICMA. A draft coastal access by-law has been prepared by DEA&DP, which will assist municipalities in preparing a coastal access by-law within their municipality.

#### **4.3 Number of 4x4 permits issued for use within the coastal zone**

The number of 4x4 permits issued in terms of the MLRA was 6 in 2015/16 and 9 in 2016/17. The number of 4x4 permits issued for other reasons were 12 in 2015/16 and 6 in 2016/17.

### **5. CONCLUSIONS**

#### **OUTLOOK: IMPROVING**

##### **5.1 Concluding Remarks**

The following general summary points and conclusions regarding coastal land use can be drawn:

- The spread of urban settlement beyond urban edges appears to be well controlled.
- Agriculture has reduced significantly, with the “natural areas” claiming back this area through re-vegetation.
- The majority (90%) of launch sites in the Western Cape are unregistered and are therefore unmonitored/not controlled, resulting in possible negative impacts on the coastal zone.
- By August 2017 CapeNature had issued 296 coastal leases in 21 categories. The majority of leases are issued for the establishment of jetties and slipways (248 leases).
- No coastal access strips have been officially designated in terms of Section 18 of ICMA. A generic by-law is in the process of being prepared which will assist municipalities in preparing a coastal access by-law within their municipality. ICMA required that this process be completed within 4 years of the commencement of ICMA, so it is now long overdue. However, the Provincial Coastal Access Strategy and Plan has recently been completed and will assist the municipalities in this regard.
- In 2015/16 the Department of Environmental Affairs (Directorate: Oceans and Coasts) issued 18 permits in terms of the ORV regulations (27 June 2014) and in 2016/17, 15. The most common category of authorisation was in terms of the Marine Living Resources Act, and the second most common for the physically disabled. These numbers seem very low, and it is highly possible that many people accessing the coastline with an ORV are doing so without a permit.
- Compliance with the ORV regulations is not systematically enforced, and it was not possible to obtain records of the number of non-compliance notices issued.

Key areas that must be addressed for future assessment includes:

- Categorisation of all access points along the coastline;
- Review of the PLS listing to provide sustainable and equitable access;
- Officially designating coastal access strips on coastal municipal SDFs and IDPs;
- Implementation of a system of monitoring, enforcement and compliance with the ORV regulations.

Photo by WCG DEA&DP  
Robben Island clean-up 2017



## 1. INTRODUCTION

The coastal zone is influenced by the direct interaction between land and sea and is therefore affected by both land- and marine-based sources of pollution. Most people in the province live within 25 km of the coast (Oceans and Coasts, 2012). The global report on human settlements suggests that by 2025, 73% of the African Population will be living in coastal communities (UN Habitat, 2011). Consequently, development and other pressures on the coastal zone are expected to continue.

## 2. DRIVERS AND PRESSURES

There is a higher risk of pollution (including the risk of oil spills) in and around coastal metropolitan areas, which leads to deteriorating environmental health on the coastline, within coastal waters and on coastal islands. This is usually more significant in metropolitan areas. Some of the key sources of pollution are listed below:



- **Litter** (especially plastic) from human activity collects in ocean and coastal environments and negatively affects ecosystem health.
- **Wastewater** discharged into the coastal and marine environment comprising mainly of municipal effluent from waste water treatment (often also including industrial effluent), stormwater discharge, effluent from fish processing operations, wastewater from chemical works, refineries and other industries, and cooling water (Sink et al., 2012).
- **Dredging and dumping** of port sediment has a significant impact on the ocean and coastal environment as this causes loss and/or disturbance to habitat and biodiversity through physical smothering or chemical contamination of disposal sites.
- **Shipping activity** causing accidental spills (due to the harsh conditions off the Western Cape coast) and the introduction and spread of alien invasive species into marine environments through the discharge of ballast water.

It is very important to assess, monitor and predict the impacts of pollutants on South African marine ecosystems in order to ensure long term sustainability of their resources. The assessment, monitoring, prediction and control of pollutants entering coastal waters is also as a potential risk to human health.

## 3. CURRENT STATE OF POLLUTION

### 3.1 Licenced and unlicensed discharge points

The number of outfalls in the Western Cape totals 124. While there is no clear information on how many new outfalls are being installed annually, there is information on how many of the outfalls, currently operating, have licences to discharge and are compliant with their conditions. The state of outfalls in the Western Cape in 2017 is:

- 18 outfalls authorised

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- 62 outfalls applying for authorisation
- 44 outfalls not authorised

The total discharge of wastewater for 2017 was recorded for only 40/124 outfalls, at 312,408,957 m<sup>3</sup>/annum. The highest contributor is the Overberg District Municipality due to aquaculture facilities.

### **3.2 Wastewater management score (Green Drop status) and the pollutant loading entering the sea from land-based sources**

Wastewater discharge into the sea is common practice around the world, and there are standards determining the quality of the water that is discharged. The Green Drop Certification Programme for Wastewater Quality Management Regulation measures and compares the results of the performance of water service authorities in terms of treating waste water. The majority of waste water treatment facilities fell below 80% compliance with the Green Drop Certificate. There is therefore a need to improve effluent quality either through improved management of facilities or additional treatment steps prior to discharge.

### **3.3 Pollutant loading entering the sea from land-based sources**

In addition to wastewater entering the coastal environment, the increasing amount of plastics and other non-biodegradable waste is of significant concern. Single use plastics, such as straws, shopping bags, plastic utensils, plastic bottles, etc. are being identified as one of the largest contributions to solid waste ending up in coastal and marine systems.

### **3.4 Prevention/management of pollution incidents**

The number of pollution incidents along the coast indicates that 17 incidents occurred between 1994-2017. However, there is no detailed reporting on any associated spill. SANCOBB have recorded the number of penguins requiring treatment. In 2012, there seems to have been a major event where, 240 birds required treatment.

The DEA, in collaboration with the Department of Science and Technology (DST), are in the process of developing a National Ocean and Coastal Information Management System (OCIMS), which aims to support a variety of oceans and coastal initiatives by providing information and decision support to key stakeholders for the day-to-day management of South Africa's oceans and coasts. Through the OCIMS, information such as the identification of pollution events, including oil spills, will be reported.

## **4. RESPONSES**

### **4.1 Waste collection**

Waste, in this case litter/rubbish, along the Western Cape coastline is managed through the Working for the Coast (WftC) initiative, which is a national programme. WftC are responsible for collecting waste from the coastal environment and maintaining facilities at all the accessible beaches. Currently, the WftC programme is active along all sections of the coastline with a total budget of R 137 950 000.00 being allocated between 2015 and 2018.



## 4.2 Other responses

### 4.2.1 Blue Flag Beaches

Blue Flag for beaches is an international annual award which focuses on the environmental management of our coastline and coastal waters to help tourism growth and development. It is an international symbol of quality for beaches and marinas that meet a standard of excellence in the areas of safety, amenities, cleanliness, environmental information and environmental management. There are currently 28 official Blue Flag beaches in the Western Cape.

### 4.2.2 Green Coast

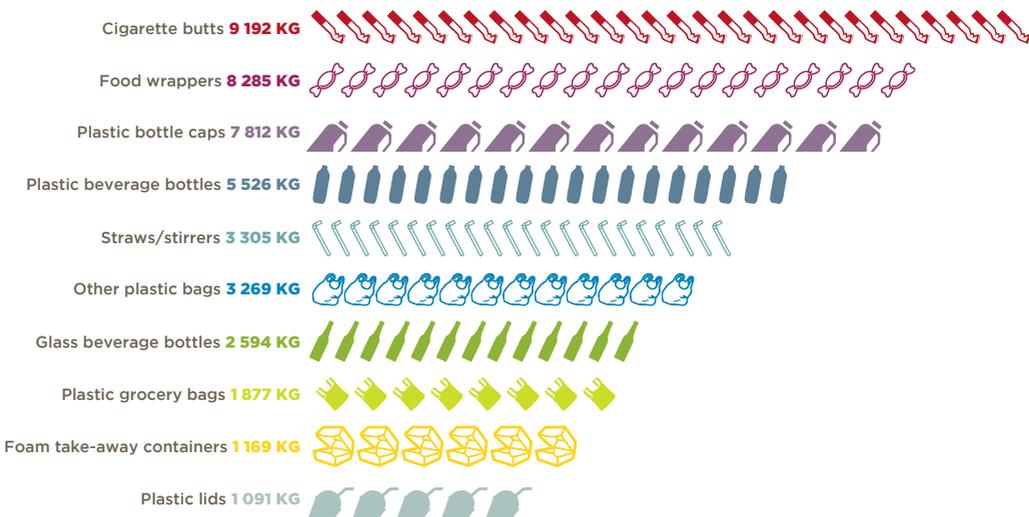
Green Coast is a new eco-label that's promoted by WESSA and is awarded to coastal sites in South Africa where a sensitive species, habitat or cultural heritage site is being sustainably managed. The Blaauwberg Nature Reserve was awarded the first WESSA Green Coast award in South Africa in 2018.

### 4.2.3 Operation Phakisa

The monitoring of coastal water quality in the Western Cape in response to pollution and waste is driven by Operation Phakisa. A National Lab has been commissioned for the analysis of samples collected along the coast. There are a number of other key stakeholders who conduct water quality monitoring in estuaries and the coastal environment and they include: the Department of Water and Sanitation (the National Estuarine Monitoring Programme); District Municipalities (monitoring environmental health parameters); CapeNature; Local Municipalities and NGO's.

### 4.2.4 Ocean Conservancy's International Coastal Clean-up

An operation that engages people to remove pollution from the world's beaches and waterways, identify the sources of debris and change the behaviours that cause marine debris in the first place. In 2016, there were 504 583 global volunteers who covered 24 136 km of coastline. The **top 10 items collected based on total numbers** (International Coastal Clean-up, 2017) are:



DEA&DP Coastal and Biodiversity Management Directorate encourages and supports the events in the District Municipal areas every year by contributing to catering and promotional items.

#### 4.2.5 The National Department of Environmental Affairs (DEA)

A number of local policies and legislation have been implemented and international conventions and agreements pertaining to coastal pollution have been signed by the DEA. Examples include the Coastal Waters Discharge Permit Regulations and Oil Spill Contingency Plans. Various policies have also been developed at Provincial and Local levels.

## 5. CONCLUSION AND RECOMMENDATIONS

### OUTLOOK: HIGH CONCERN

#### 5.1 Concluding Remarks

The state of pollution and waste in the Western Cape can be summarised as:

- The coast is under ever increasing pressure due to development within the coastal belt, ever increasing populations and a very heavy reliance on the environmental goods and services offered by the coast (i.e. disposal of effluent).
- Effluent monitoring at discharge outfalls require dedicated efforts.
- Waste water treatment works need intervention in terms of operation, management and improved or additional treatment approaches.
- It is recognised that measuring oil spills is subjective and inaccurate, but if organisations work together, the volume and frequency of oil pollution in the marine and coastal environment can be understood.

The state of pollution and waste of the Western Cape is not yet fully understood. There are some positive responses to pollution and waste (such as the WftC, Blue Flag Beaches and Green Drop programme). Other programmes that are currently being implemented include the Berg River and Breede River Improvement Projects. However, pollution and waste still remain an area of high concern due to the ever increasing pressures resulting in increasing levels of pollution and waste.



Photo by Alan Carter  
Coastal Infrastructure Buffelsbaai



## 1. INTRODUCTION

Coastal vulnerability is defined as “both the potential damage to the coastline as a result of natural hazards and the existing state of the coastline before it encounters an event” (Murali, et. al. 2013). The Western Cape coastline has both natural and man-made assets which require effective management in order to preserve their integrity. These natural and man-made assets are vulnerable to dynamic coastal processes that will be compounded by climate change impacts. Inappropriate planning and unregulated development in high risk coastal areas can compromise coastal infrastructure and the resilience of coastal ecosystems, reducing the ability of remaining natural areas to withstand these dynamic processes.

## 2. DRIVERS AND PRESSURES

Drivers and Pressures to the Western Cape Coastline are presented in Table 11 below:


**DRIVERS**

**Table 11: Drivers and responses to coastal vulnerability**

DRIVER	PRESSURE	DESIRED STATE
<ul style="list-style-type: none"> <li>Increasing populations along the coastline.</li> <li>Most people in the Western Cape live within 25 km of the coast (DEA, 2012).</li> <li>By 2025, 73% of the African population will be living in coastal communities (global report on human settlements).</li> </ul>	<ul style="list-style-type: none"> <li>Increasing pressure on coastal land for development and recreational use.</li> </ul>	<ul style="list-style-type: none"> <li>Measures to ensure coastal development, infrastructure and remaining natural areas become more resilient to the impacts of natural coastal processes and climate change-related impacts.</li> </ul>
<ul style="list-style-type: none"> <li>Climate variability and change.</li> <li>Threatens both natural and man-made assets along the coastline.</li> </ul>	<ul style="list-style-type: none"> <li>Sea level rise together with increasing storm frequencies, intensities and storm surge events.</li> <li>Infrastructure located in low lying coastal areas are particularly vulnerable to damage and destruction during extreme natural events.</li> </ul>	<ul style="list-style-type: none"> <li>Coastal management must carefully consider the effects of climate change.</li> </ul>

## 3. STATE OF COASTAL VULNERABILITY IN THE WESTERN CAPE

The state of coastal vulnerability can be assessed by looking at changes in weather patterns along the coast and the effect this has had on the coastal environment, as well as identifying areas along the coast where development is located in high risk coastal areas.


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### 3.1 Development in high risk coastal areas

High risk coastal areas are areas that are vulnerable to coastal erosion together with the impacts of climate change, including sea level rise, storm surges and wave attack. In order to determine development in high risk coastal areas, the high risk line and Eskom's Spot Building Count dataset were analysed. The assessment shows an increase in the number of buildings in high risk coastal areas in each coastal District Municipality (Figure 5), illustrating a worsening trend.

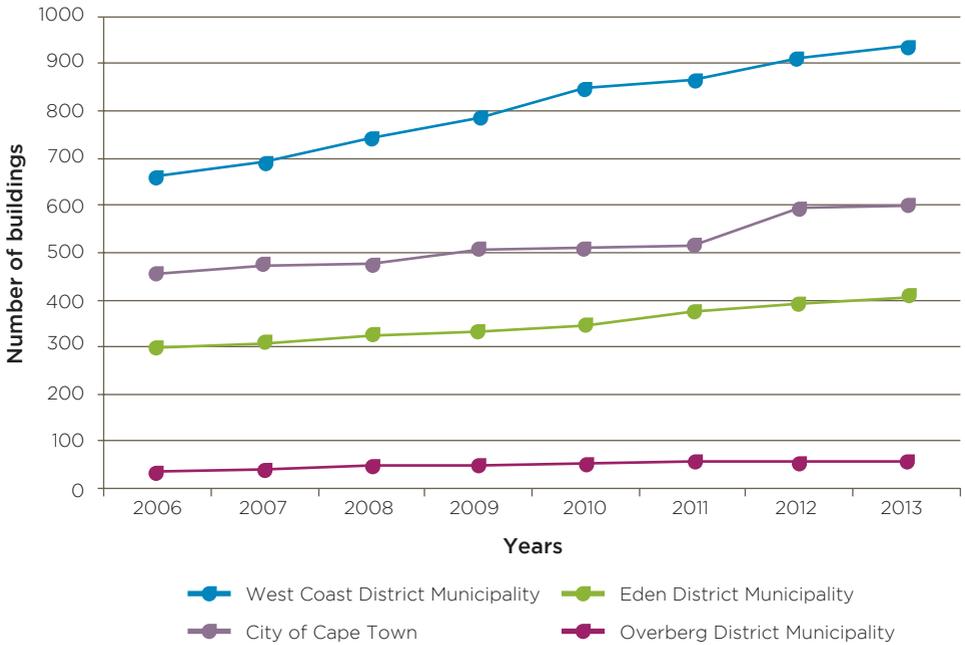


Figure 5: Number of buildings located in high risk coastal areas for each of the coastal District Municipalities.

### 3.2 Extreme weather events

Between 2011 and 2014, the Western Cape was severely affected by five high impact (flood triggering) weather events that resulted in four provincially gazetted flood disasters, one of which was located in Mossel Bay. A recent example of an abnormally large storm that affected the Western Cape is the storm that occurred in June 2017. Wave heights of up to 12 meters (Times Live, 02 August 2017) and wind speeds of up to 120 kilometres/hour (News24, 07 June 2017) were recorded. Extensive damage to buildings and infrastructure occurred, and water and electricity supply was interrupted to many areas for days. Eight people were reportedly killed as a result of the storm (Citizen, 09 June 2017).

## 4. IMPACTS OF CLIMATE CHANGE ON COASTAL ASSETS

Climate change is one of the primary pressures that impact the physical and biological integrity of the coastline, as well as posing a significant threat to coastal development and the safety of people living within coastal areas. Climate change also negatively affects coastal resources that many communities rely on as a source of income. The Intergovernmental Panel on Climate Change (IPCC) is the international body for assessing the science related to climate change. The impacts and future risks identified by the IPCC are expanded on below.

IMPACT

### 4.1 Climate change predictions of the Intergovernmental Panel on Climate Change (IPCC)

There is a need to increase the Western Cape's resilience to climate change through the effective implementation of coastal legislation, Coastal Management Lines, Western Cape Disaster Risk Profile and other relevant policies and plans. Some of the IPCC predictions that will impact the Western Cape are summarised in Table 12.

Table 12: IPCC Predictions for Climate Change

CURRENT PREDICTION	IMPACT
Increase in Global Sea Level Rise	<p><b>Negatively affect coastal ecosystems:</b></p> <ul style="list-style-type: none"> <li>alter the saline gradient in estuaries</li> <li>flood low lying areas</li> <li>induce changes to parameters (available light, salinity, and temperature)</li> <li>ultimately alter species composition.</li> </ul>
Increase in intensity of severe storms	<p><b>Storm surges affect and damage coastal areas due to:</b></p> <ul style="list-style-type: none"> <li>increased exposure to more intense and more frequent extreme events</li> <li>increased flooding with a greater extent and frequency</li> <li>more frequent destruction of coastal property and infrastructure</li> </ul>
Increase in Extreme Sea Levels	<p><b>Changes in sea level pose a significant risk to coastal systems and coastal development.</b></p> <ul style="list-style-type: none"> <li>Sea water inundation in low lying areas;</li> <li>Beach and dune erosion resulting in shoreline retreat;</li> <li>Salt water intrusion into freshwater coastal aquifers.</li> </ul>
No determinable trend for wind and waves	<p><b>Influences longshore current regimes and upwelling systems.</b></p> <ul style="list-style-type: none"> <li>Significantly affect sediment dynamics and shoreline processes</li> <li>Poses a threat to the coastal environment and populations living along the coast.</li> <li>Long period swells can pose a danger to coastal and offshore structures and shipping and can result in severe coastal flooding (Wong et al. 2014).</li> </ul>
Increase in Sea Surface Temperature (SST)	<p><b>Warmer temperatures have direct impacts on species:</b></p> <ul style="list-style-type: none"> <li>Increased SSTs raise the metabolism of species exposed to the higher temperatures</li> <li>Fatal to those already living at the upper end of their temperature range.</li> <li>The geographical distribution of many species of marine plants and animals shifts towards the poles in response to warmer temperatures.</li> <li>Increase in the frequency and strength of storms at sea.</li> </ul>
Increase in ocean acidification	<ul style="list-style-type: none"> <li>Affects the ability of marine 'calcifiers' to use key building blocks to produce their exoskeletons (shells, carapace, etc.).</li> <li>A decrease in pH weakens/ dissolves the calcium carbonate component of these organisms' exoskeletons affecting their development and survival (Wong et al., 2014).</li> <li>Negatively affects the fisheries sector (oysters and rock lobsters)</li> </ul>

## 4.2 Impacts of climate change related risks on coastal communities

Extreme weather events and other climate change related impacts have significant impact on the social and economic state of affected coastal communities. Between 2011 and 2014, government departments (excluding the Western Cape Department of Agriculture) and affected municipalities reported financial losses in excess R 683 million due to extreme weather events.

## 5. RESPONSES TO COASTAL VULNERABILITY

The ICMA makes provision for the protection of coastal habitats and integrity of the shoreline by providing mechanisms for responsible development planning. Two of the mechanisms that the DEA&DP have begun to implement are the delineation of Coastal Management Lines (CML) and Coastal Protection Zones (CPZ). The Disaster Management Act (No. 57 of 2002) also stipulates that a Disaster Management Framework be developed for the Western Cape. A Disaster Management Framework must include a disaster risk assessment as well as a response and recovery plan. A Disaster Management Framework for the Western Cape was completed in 2010, but it does not deal specifically with the coastline. However, inclusion of the coastal zone risk responses into disaster management planning is a key goal of the DEA&DP Biodiversity and Coastal Management Directorate.



### 5.1 Coastal Management Lines

CMLs are prescribed boundaries that may limit development in ecologically sensitive or vulnerable areas, or areas where dynamic natural processes pose a hazard or risk to humans. Through analysis of environmental buffers, social buffers and economic requirements, the ICMA allows CMLs to demarcate areas where authorities may prohibit or restrict the building, alteration or extension of structures that are either entirely or partly seaward of the CML. Currently draft CMLs have been delineated for the entire Western Cape Coastal region. However, the Draft CMLs are still (as of August 2018) in the process of being formalised and adopted by the MEC. Once this process has been completed, the CMLs should be incorporated into all municipal zoning schemes. It is important for the approved CMLs to be formally adopted and incorporated into zoning schemes and other spatial planning tools, in order to restrict further inappropriate development in sensitive and high risk coastal environments.

### 5.2 Coastal Protection Zone

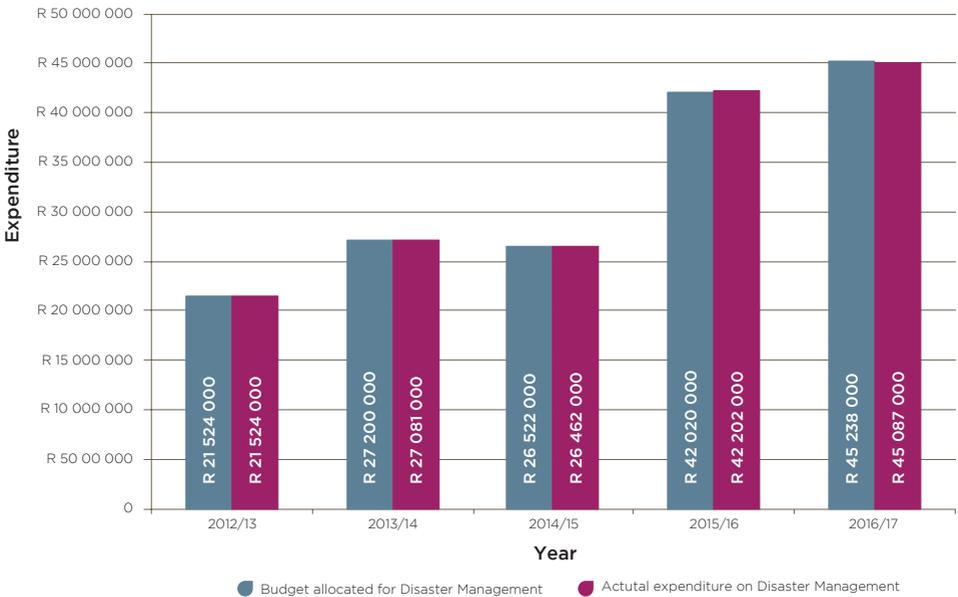
The CPZ comprises a continuous strip of land, starting from the HWM and extending 100 metres inland in developed urban areas zoned as residential, commercial, or public open space, or 1000 metres inland in areas that remain undeveloped or that are commonly referred to as rural areas (Cilliers, et. al. 2009). The purpose of the CPZ is to manage, regulate and restrict the use of land that is adjacent to coastal public property, or that plays a significant role in the coastal ecosystem (Cilliers, 2009). The CPZ in the Western Cape has been delineated through the CML projects and has included sensitive coastal environments, coastal critical biodiversity areas and ecological support areas amongst others in the Coastal Protection Zone. See the CML reports for more information.

### 5.3 Western Cape Climate Change Response Strategy Biennial Monitoring and Evaluation Report (BMER)

The Western Cape Climate Change Response Strategy Biennial Monitoring and Evaluation Report 2016 (BMER) highlights implementation efforts relating to the focus areas outlined within the Western Cape Climate Change Response Strategy 2014 (WCCRS).

### 5.4 Western Cape disaster management

The Western Cape's Disaster Management Framework (DMF) was adopted in 2010 in accordance with the Disaster Management Act (No. 57 of 2002) as amended. Figure 6 shows the Western Cape Province's annual budget allocation versus expenditure on disaster management from the 2012/2013 financial year to the 2016/2017 financial year. The amount of budget that has been to disaster management in the Province has gradually increased over the years, with a significant jump from the 2014/2015 financial year to the 2016/2017 financial year.



**Figure 6: The annual budget allocated versus the annual expenditure on disaster management in the Western Cape from 2012/13 to 2016/17 (Department of Local Government Annual Reports 2012-2017)**

### 5.5 Western Cape Disaster Risk Profile

The Provincial Disaster Management Committee has updated the Western Cape Disaster Risk Profile (WCDRP) during the 2016/17 financial year in accordance with the Western Cape Standardised Disaster Risk Assessment Methodology. The current WCDRP was updated in 2017 and includes comprehensive assessments of coastal, marine and estuarine related risks.

## 5.6 Tidal level at major ports to detect long-term changes in sea level rise

Many ports throughout the world will be significantly impacted by sea level rise in the future, as infrastructure could become damaged or destroyed, and the safety of vessels utilizing the facilities could become compromised. Although the Cape Town port does monitor its tidal levels, it is difficult to establish a trend due to astronomical events, abnormal tidal surges and wind speeds and land subsidence. Long term monitoring data would need to be collected and stored for future use as a potential indicator for sea level rise.

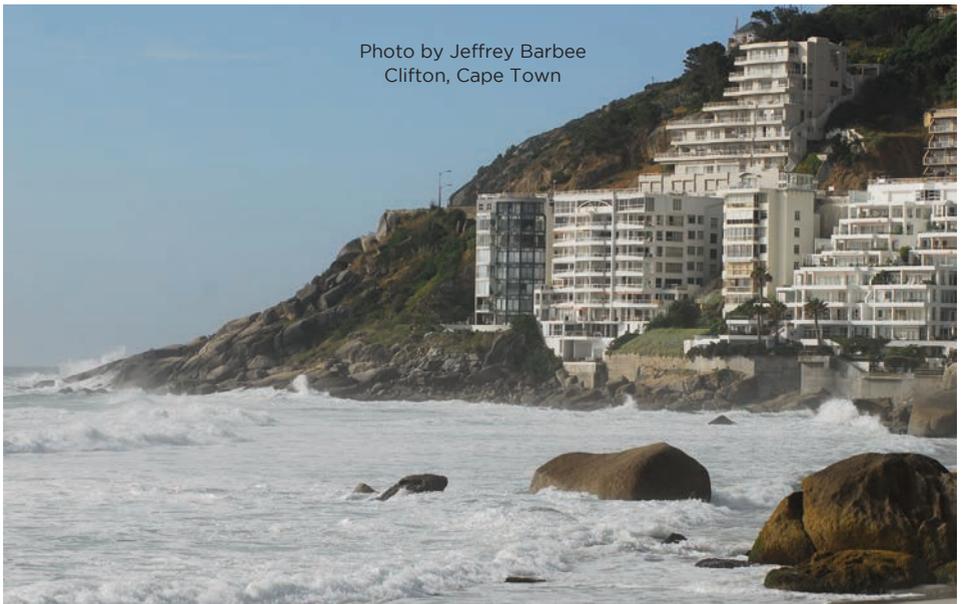
## 6. SUMMARY AND CONCLUSION

### OUTLOOK: IMPROVING

#### 5.1 Concluding Remarks

The state of coastal vulnerability in the Western Cape may be summarised as follows:

- The coast is under increasing pressure from anthropogenic activities, such as development in high risk coastal areas, as well as climate variability and change. These developments not only impact on the resilience of the coast to natural hazards but are at risk of damage and destruction as a result of sea level rise and storm surges.
- Climate change threatens the sustainability and viability of resource use in the marine and coastal environments, particularly the commercial, subsistence and recreational fishery sectors.
- The ICMA is the key legislative tool that has established CMLs and CPZs to control and restrict development in high risk coastal areas.
- The most recent WCDRP provides detailed assessments of numerous coastal risks in the province.



Coastal Pollution  
Photo by Grobler du Preez/Shutterstock.com Image 320124047,  
used under license from Shutterstock.com



## 1. INTRODUCTION

This chapter assesses governance in the Western Cape, as it relates to the implementation of the Integrated Coastal Management Act (ICMA) (Act 24 of 2008) and the Marine Living Resources Act (MLRA).

Aspects of governance that are discussed include:

- Ability to implement ICMA through provision of adequate funding and human resources;
- Effective communication amongst various stakeholder groups;
- Adoption and implementation of Coastal Management Programmes; and
- Enforcement of ICMA and MLRA.

## 2. ABILITY TO IMPLEMENT ICMA BY PROVISION OF ADEQUATE FUNDING AND HUMAN RESOURCES

Currently, just under 1% of provincial budget is allocated to DEA&DP. DEA&DP employ 8-9 staff who, as the lead agent, are required to implement the ICMA.

Only the City of Cape Town has a municipal budget and 11 staff dedicated to coastal management responsibilities. There are no dedicated budget allocations or staff at the three DMs.

## 3. EFFECTIVE COMMUNICATION AMONGST VARIOUS STAKEHOLDER GROUPS

### 3.1 Participation in Provincial Coastal Committee meetings

The number of stakeholders participating regularly in the PCC and the range of organisations participating regularly in the PCC was illustrated in Table 13, illustrating a representative and diverse range of participants and steady numbers attending meetings.

**Table 13: The average number of attendees and unique organisations per PCC**

YEAR	ATTENDEES PER PCC	UNIQUE ORGANISATIONS PER PCC
2014	29	15.8
2015	40.5	22
2016	29	19
2017	25	14

### 3.2 Establishment and participation in Municipal Coastal Committees (GC04 & GC05)

All coastal district municipalities have established MCCs and attendance in the West Coast and Overberg once again illustrates a representative and diverse range of participants and steady numbers attending meetings. However, in terms of the ICMA, it is not mandatory for coastal committees to be established at municipal level and as such, the City of Vape Town do not have an MCC

Table 14: The average number of people participating regularly in MCCs and the range of organisations participating regularly in MCCs.

YEAR	WEST COAST DM		OVERBERG DM		EDEN DM
	Number of people in MCC	Number of unique organisations	Number of people in MCC	Number of unique organisations	
2014	17	10	18	11	No data available.
2015	19	10	16	10	
2016	15	9	15	10	
2017	19	13	14	7	
Trend	Steady (good)	Steady (good)	Declining	Declining	

#### 4. ADOPTION AND IMPLEMENTATION OF COASTAL MANAGEMENT PROGRAMS

##### 4.1 Coverage, review and reporting cycles implemented for all spheres of government's CMPs

Currently all municipalities have adopted CMPs. The status of CMP review and reporting is provided below in Table 15.

Table 15: The coverage, review and reporting cycles implemented for all spheres of government's CMPs.

MUNICIPALITY	CMP EXIST?	DATE OF LAST UPDATE	UPDATE SCHEDULE
West Coast DM	Yes	2013	Every 5 years
CoCT Metro	Yes	2016	As and when required
Overberg DM	Yes	2016	Every 5 years
Eden DM	Yes	2012	Every 5 years. Due for updating in 2017.

#### 5. ENFORCEMENT OF ICMA AND MLRA

Environmental Management Inspectors (EMI's) (depending on the designation) are able to enforce the various pieces of legislation aimed at protecting the coast and its resources (Department of Environmental Affairs, 2016). The current number of EMIs and Fisheries Control Officers employed in the Western Cape is summarised below:

**Table 16: EMI's powers as conferred by NEMA**

YEAR	GRADE	DEA&DP	CAPE NATURE	LOCAL MUNICIPALITIES	DEA
2012/13	1	5	0	11	7
	2	31	21		43
	3	32	1		21
	4	0	0		12
	<b>Total</b>	<b>68</b>	<b>22</b>	<b>11</b>	<b>83</b>
2013/14	1	7	0	14	5
	2	25	21		16
	3	31	1		30
	4	3	0		12
	<b>Total</b>	<b>66</b>	<b>22</b>	<b>14</b>	<b>63</b>
2014/15	1	6	0	24	5
	2	32	17		15
	3	26	2		35
	4	8	0		10
	<b>Total</b>	<b>72</b>	<b>19</b>	<b>24</b>	<b>65</b>
2015/16	1	5	0	30	5
	2	38	38		15
	3	25	1		35
	4	8	0		8
	<b>Total</b>	<b>76</b>	<b>39</b>	<b>30</b>	<b>63</b>

The 2015/16 financial year (FY) was the first year ICMA contraventions were reported and the current number reported is zero. The following MLRA contraventions were reported by CapeNature:

- 2012/13 FY: **39**
- 2013/14 FY: **29**
- 2014/15 FY: **33**
- 2015/16 FY: **65**

## 6. SUMMARY AND CONCLUSIONS

### OUTLOOK: **STEADY**

#### 6.1 Concluding Remarks

The following general conclusions regarding the state of Cooperative Governance relating to implementation of the ICMA in the Western Cape can be drawn:

- At provincial level, the Coastal Management Unit's budget has grown by 22% annually since 2013/14. The number of staff employed in the same unit has remained constant for the past 4 years.
- At the district municipal level the funding and staffing situation is inadequate, and there are no staff with dedicated coastal responsibilities, and no dedicated funding is available.
- Representation of specific stakeholder types at PCCs is in line with the provisions as indicated in ICMA.
- The average number of unique organisations represented at the PCC has remained constant.
- All District Municipalities in the Western Cape have established MCCs.
- Average attendance at the West Coast DM MCCs remained relatively constant and data indicates that the MCCs for West Coast and Overberg DMs are functioning.
- All municipalities have a CMP, but the lack of funding limits implementation.
- In terms of enforcement of the provisions of ICMA and MLRA:
  - ICMA: No contraventions were reported by any of the enforcement arms in that year.
  - MLRA: CapeNature has reported a number of contraventions. While information on the number of FCOs employed in South Africa was received from DAFF, they numbers could not be assigned to a specific province as they operate across all regions.
- In addition to DEA&DP and CapeNature, EMI's are also employed by the local municipalities and SANParks.

Photo by WCG DEA&DP  
Stony Point Nature Reserve, Betty's Bay



In order to address the sustainable management of coastal regions and their resources, the National Coastal Management Programme (NCMP, 2014) identified 9 key priority areas that need to be addressed. Priority 8 speaks to **“Strengthening awareness, education and training to build capacity with the goal of ensuring that the general public and decision-makers are capacitated to collectively take responsibility for managing and protecting the coastal environment”**. Priority Area 8 also outlines the need to develop capacity, facilitate cooperation and engage in educational and awareness programmes to ensure an effective and coordinated cooperative governance approach.

## 1. DRIVERS AND PRESSURES

### 1.1 Introduction and background

A number of coastal drivers of change and associated pressures have been discussed in the various chapters of the SoCR. The severity of pressures and resulting impacts can be in part attributed to the lack of awareness and knowledge amongst coastal resource users and coastal stakeholders in general. Pressures such as overexploitation of marine and estuarine species, especially fish, may be alleviated to some degree by educating and empowering coastal stakeholders and communities.



## 2. STATE OF AWARENESS, EDUCATION AND TRAINING

### 2.1 Awareness and Education

A number of environmental education (EE) programmes are active in the Province. Examples of coastal programmes that are implemented in partnership with government and non-profit organisations (NGOs) include: International Coastal Clean-up is an NGO, and the Blue Flag programme. The DEA&DP, promote and support environmental awareness and education through Environmental Calendar events and programmes. The DEA&DP hosted two awareness campaigns throughout the entire Western Cape during the year 2017; Marine Week and Coastal Clean-up Week. These programmes include training, education and public awareness activities relating to the protection, conservation and enhancement of the coastal environment and the sustainable use of coastal resources.



Coastal education is also disseminated by the Two Oceans aquarium, which facilitate scholar groups who visit the aquarium, and they also visit schools with a mobile aquarium. Over the last 3 years (2014-2017), the numbers of learners visiting the aquarium each year has increased by 15,000 learners (from 59,500 to 75,000/annum).

Furthermore, data indicates that the number of schools reached through the outreach programme in 2017 was 3 034 (2017).

## 2.2 Training and Capacity building

The number of persons receiving coastal training/capacity building per year is an important aspect of coastal management that ensures comprehensive understanding of the Integrated Coastal Management Act (ICMA). Over the last three years, there has been, at the very least, an ICM training session, with some years undergoing two training sessions.

## 3. IMPACT OF AWARENESS, EDUCATION AND TRAINING

The impact of awareness, education and training lies in its potential to reduce the impacts on the coastal environment relating to prevalent coastal pressures such as land use, pollution (such as solid waste) and resource exploitation usually caused by ignorance and lack of knowledge. Furthermore, capacity training of coastal management officials to improve the effective implementation of coastal legislation, policies and programmes should also have a positive impact on coastal governance.

IMPACT

## 4. RESPONSES

Creating awareness and providing education and training is a response to alleviated coastal pressures and impacts. Awareness and education is primarily aimed at providing knowledge and making the general public aware of coastal features and coastal pressures in an effort to change behaviour and instilling a sense of collective ownership and responsibility of coastal conservation and preservation.

RESPONSES

As part of the Western Cape Coastal Management Programme (WC CMP) (2016), an implementation plan for Priority Area 8: Capacity building, advocacy and education, with the goal of developing capacity and promoting public awareness and education for integrated coastal management has been developed. The three management objectives with associated 5-year implementation strategies include:

- Educate stakeholders and build their awareness to instil a sense of ownership and an appreciation of the value of the coast
- Build political and stakeholder support for effective coastal management
- Undertake a prioritised capacity development programme to support the implementation of ICM

The successful implementation of the management objective strategies need to be reviewed and the desired outcomes assessed in the next update of the WCCMP.



Photo by WCG DEA&DP  
Robben Island clean-up 2017

## 5. CONCLUSION AND RECOMMENDATIONS

### OUTLOOK: IMPROVING

#### 5.1 Concluding Remarks

“An educated public can be one of the most powerful weapons in the world’s battle against harm to the environment” (Carl E. Bruch, Elizabeth Mrema, UNEP 2006).

In general, environmental awareness and education programmes are aimed at communicating knowledge, skills and the desired attitude of an individual with the intention of getting people to adapt and pursue their activities and development in a sustainable manner.

#### 5.2 Outlook for Coastal Awareness, Education and Training

The current awareness, education and training campaigns and programmes run by DEA&DP indicate that efforts to create awareness and provide education and training appear to be either increasing or steady.

The framework for future education, capacity building and awareness campaigns is contained in the WCCMP (2016). Collaborative campaigns could be used to leverage efforts to reach a wider audience or have a bigger impact. The next SoCR should attempt to report on the partnerships leveraged by the DEA&DP as part of Priority Area 8 (WCCMP, 2016).

In order to provide direction for future capacity building, DEA&DP should conduct online surveys of Provincial and Municipal officials involved in environmental and coastal management, in order to determine training levels and training needs. Future training should also include capacity building relevant to the imminent release of the National Biodiversity Assessment (2018) and how the outcomes of the coastal assessment should influence management responses.

Seagulls in Lamberts Bay  
Photo by PhotoSky/Shutterstock.com Image 135761423,  
used under license from Shutterstock.com



The State of the Coast Report presents information on the nine coastal themes, and each coastal theme was assessed in terms of the outlook for the coast. Table 17 concludes the findings on the state of the Western Cape coast for each theme that was evaluated.

**Table 17: Outlook for each theme identified in the Western Cape State of the Coast report.**

THEME	OUTLOOK	DESCRIPTION
Coastal Biodiversity and Protection	TERRESTRIAL <b>DECLINING</b>  MARINE <b>HIGH CONCERN</b>	Data indicates that species and ecosystems are still facing decline. Of great concern and high priority is the significant data deficiency and low levels of protection in the marine realm.
Estuaries	<b>HIGH CONCERN</b>	Activities occurring within the catchment, development in the EFZ and exploitation of estuarine resources has resulted in more than half of the estuaries in the Western Cape experiencing high levels of degradation.
Coastal Economy	<b>IMPROVING</b>	There has been significant economic growth, as well as a 40% overall increase in the population size over 15 years from 2001 to 2016. Although pressures have increased due to this growth, the coastal municipalities have ensured sound management.
Coastal Resource use	<b>HIGH CONCERN</b>	Approximately half the commercially exploited species in the Western Cape are considered to be of concern and have declining populations (IUCN Red Data List).
Coastal Land use	<b>IMPROVING</b>	The minor increase in hard, non-vegetated surfaces in the coastal zone infers that there is a move towards more sustainable land use.
Pollution and Waste	<b>HIGH CONCERN</b>	The pollution data limitations of the current SoCR does not permit clear observations of the state of pollution and waste within the province, and this remains a high concern.
Coastal Vulnerability	<b>IMPROVING</b>	The coast is under increasing pressure from development in high risk coastal areas, as well as climate variability and change. However, the measures that are being implemented (CML, CPZ, etc.) indicate that policy makers and planners are taking precautions to minimise the impacts of projected climate change manifestations.
Cooperative governance	<b>STEADY</b>	The lead agent, DEA&DP, has set up structures such as the Provincial Coastal Committee which support and enable co-operative governance. All district municipalities and lead agent have prepared and adopted Coastal Management Programmes.
Awareness, Education and Training	<b>IMPROVING</b>	The framework is contained in Priority Area 8 of the WCCMP (2016). Current efforts are evident as awareness, education and training campaigns and programmes are run by DEA&DP.

Some of the key cross-cutting coastal environmental threats identified and evaluated in this SoCR include:

- Alien invasive species
- Climate change
- Mining
  - Offshore oil and gas
  - Sand and salt mining

In addition, emerging threats were also noted and include:

- Poor or unknown quality of the storm water effluent discharged to sea
- New diseases, especially associated with aquaculture facilities
- Illegal mining and prospecting in the EFZ

The evaluation of coastal drivers, pressures and impacts facilitate the identification and prioritisation of management interventions that are required to ensure that activities in the coastal zone are sustainable and meet the coastal management objectives provided in the Western Cape Coastal Management Programme.

Priority response actions are aimed at ensuring that the Western Cape achieves the mission statement of the Western Cape Coastal Management Programme. Priority actions emanating from the evaluation of the nine coastal themes include:

- Sustainable coastal land-use and ocean-based activities;
- Sustainable coastal resource utilisation;
- Coastal pollution;
- Good governance; and
- Inclusive stakeholder consultation (e.g. inclusion of research institutes and citizen science efforts)

Based on the detailed analyses of the various indicators, the overall impression is that the outlook of the Western Cape coast and management seems to be acceptable.

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Western Cape Government Department of Environmental Affairs and  
Development Planning

Directorate: Biodiversity and Coastal Management

Leeusig Building, 1 Dorp Street, Cape Town, 8001

Private Bag X9086, Cape Town, 8000

**Telephone:** 021 483 5126

**Website:** [www.westerncape.gov.za/eadp](http://www.westerncape.gov.za/eadp)

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**Email:** [Coastal.enquiries@westerncape.gov.za](mailto:Coastal.enquiries@westerncape.gov.za)

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