

KWAZULU-NATAL COASTAL MANAGEMENT PROGRAMME

The provincial policy directive for the management of the coastal zone

2024/25 - 2028/29









KWAZULU-NATAL PROVINCE

ECONOMIC DEVELOPMENT, TOURISM AND ENVIRONMENTAL AFFAIRS REPUBLIC OF SOUTH AFRICA



make Durban a popular boating spot.

Photo: Kieran Alle

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EXECUTIVE **SUMMARY**



Introduction

Coastal environments are a rich and diverse asset, providing valuable economic, social and ecological services. As such, they need to be carefully managed to ensure long-term sustainability. South Africa, following global trends, developed and enacted the Integrated Coastal Management Act (24 of 2008) and its subsequent Amendment Act (36 of 2014), hereafter referred to as the ICMA.

The ICMA contains a variety of tools to ensure that the coastal zone will be managed co-operatively, of which the development of Coastal Management Programmes (CMPs) is key. A CMP is a policy directive for the management of the coast and includes strategies and plans for the effective implementation of the ICMA. The Provincial CMP (PCMP) sets out goals and objectives for the achievement of ICM in the province. This PCMP has been developed in the context of existing policy documents for KwaZulu-Natal (KZN) and South Africa.

Situation Assessment

The situation assessment provides a review of existing information on the KZN coast. It integrates currently available information, largely derived from the KZN State of the Coast Report (Goble and van der Elst 2022) and Ugu Lwethu - Our Coast (Goble *et al.* 2014), and gives an overview of the KZN coastal zone, its geography and climate, physical, biophysical and socioeconomic characteristics. The situation assessment informs the ICM planning needed going forward.

Vision and Priorities

The vision for the KZN coast was developed during the PCMP (2019-2023) process and is informed by the National CMP, the Coastal Policy for KZN (2004) and the expertise of the KZN Provincial Coastal Committee (PCC) amongst others. The vision and mission are underpinned by a set of core principles which follow international best practice.

Vision for the coast

A vibrant, healthy and resilient coast, with sustainable access to resources for all.

Mission

Through cooperative governance and best practice, the intrinsic value of the coast is protected, restored and enhanced, while ensuring climate change resilience and promoting equitable access and sustainable use of coastal resources for all stakeholders and user groups. KZN has identified eight priority areas for the implementation of ICM under this PCMP, each of which has a goal, a management objective, actions and performance indicators attached to it. These together with the vision and mission provide the primary policy directive for coastal management in KZN.



Implementation

Implementation of the PCMP is driven by the KZN Department of Economic Development, Tourism and Environmental Affairs (KZN EDTEA). This includes commitment to meeting the priorities, objectives and actions outlined, as well as various relevant national drivers such as the National Development Plan, the National CMP and Operation Phakisa. Where required, the Department commits to promoting and supporting the development of inter-governmental processes, structures and mechanisms to enable integrated coastal management.

The KZN coastal environment is unique and complex to manage. The PCMP is therefore intended to function as an integrative planning and policy instrument, guiding the management of a diverse array of activities within the KZN coastal zone, without compromising environmental integrity or economic development. In this context, however, the PCMP acknowledges the important role that Municipal CMP's and the iSimangaliso Integrated Management Plan must play in managing the coastal zone at the local level. The PCMP further recognises the respective mandates and functions of the DFFE, DWS, DMPR, DPWI, KZN COGTA, Ezemvelo KZN Wildlife and the KZN PCC in contributing to the overall management of the KZN coastal zone.

The PCMP will incorporate feedback from the KZN PCC and relevant government bodies, with these considerations added to the annual workplan to ensure the policy remains responsive to emerging issues.

ICM priority areas for KZN

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ABBREVIATIONS & **ACRONYMS**

ADZ	Aquaculture Development Zone
BLSMS	Boat Launch Site Monitoring System
CMLs	Coastal Management Lines
СМР	Coastal Management Programme
COGTA	Cooperative Governance and Traditional Affairs
СРР	Coastal Public Property
CPZ	Coastal Protection Zone
CSIR	Council for Scientific and Industrial Research
DAEA	Department of Agriculture and Environmental Affairs*
DAEA&RD	Department of Agriculture, Environmental Affairs and Rural Development*
DLRRD	Department of Land Reform and Rural Development
DEA	Department of Environmental Affairs*
DEAT	Department of Environmental Affairs and Tourism*
DFFE	Department of Forestry, Fisheries and the Environment
DWS	Department of Water and Sanitation
DM	District Municipality
DMPR	Department of Mineral and Petroleum Resources
DoT	Department of Transport
DPWI	Department of Public Works and Infrastructure
EDTEA	Department of Economic Development, Tourism and Environmental Affairs
EEZ	Exclusive Economic Zone
EFZ	Estuarine Functional Zone
EKZNW / Ezemvelo	Ezemvelo KwaZulu-Natal Wildlife
EMP	Estuarine Management Plan
FAO	United Nations Food and Agriculture Organisation
GDP	Gross Domestic Product
GEAR	Growth, Employment and Redistribution Strategy
ha	Hectares
HWM	High-water mark
ICM	Integrated Coastal Management
ICMA	Integrated Coastal Management Act (24 of 2008 and Amendment Act 36 of 2014)
IDC	Industrial Development Corporation
IDZ	Industrial Development Zone
IPBES	Intergovernmental Platform of Biodiversity and Ecosystem Services
IUCN	International Union for the Conservation of Nature
KZN	KwaZulu-Natal
MARPOL	International Convention for the Prevention of Pollution from Ships
LM	Local Municipality
МСС	Municipal Coastal Committee

MCMP	Municipal Coastal Management
MCP	Maputaland Coastal Plain
MEC	Member of the Executive Counc
MINTEC	Ministerial Technical Committee
MLRA	Marine Living Resources Act (18
MPAs	Marine Protected Areas
NCC	National Coastal Committee
NCMP	National Coastal Management I
NDP	National Development Plan
NEMA	National Environmental Manag
NEMP	National Estuarine Managemer
NGO	Non-Governmental Organisatio
NRF	National Research Foundation
ORI	Oceanographic Research Institu
PCC	Provincial Coastal Committee
PCMP	Provincial Coastal Management
PGDS	Provincial Growth and Developr
PPP	Public Participation Process
RBM	Richards Bay Minerals
RDP	Reconstruction and Developme
SAAMBR	South African Association for Ma
SADC	Southern African Development
SAHRA	South African Heritage Resourc
SALGA	South African Local Governmer
SAMAC	Macadamias, South Africa
SAMSA	South African Maritime Safety A
SANBI	South African National Biodiver
SANCOR	South African Network for Coas
SANParks	South African National Parks
SASA	South African Sugar Associatior
SDCEA	South Durban Community Envi
SDF	Spatial Development Framewor
SDG	Sustainable Development Goals
SEA	Strategic Environmental Assess
SPLUMA	Spatial Planning and Land Use
SSF	Small-Scale Fishery
TIKZN	Trade and Investment KwaZulu
TNPA	Transnet National Ports Authori
UNEP	United Nations Environment Pr
UPL	UPL South Africa (Pty) Ltd
WIO	Western Indian Ocean
WESSA	Wildlife and Environment Socie
WG7	Working Group 7

* Old Departmental names

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GLOSSARY

Admiralty Reserve: A narrow strip of state-owned land adjoining the inland side of the HWM.

Agulhas Current: This is the western boundary current of the southwest Indian Ocean, flowing south along the east coast of Africa.

Benthic: Associated with the seafloor, either sessile (attached) organisms or moving close to the bottom.

Blue Economy (Ocean Economy): The sustainable use of ocean resources for economic expansion while maintaining the health of marine and coastal ecosystems.

Climate Change: Includes both the global warming caused by humans, and its impacts on Earth's weather patterns.

CoastKZN: An interactive web-based information portal which aims to inform and share knowledge about the KZN coastal and estuarine environments (www.coastkzn.co.za).

Coastal Management Line: A line determined by the MEC in accordance with the ICMA, to demarcate an area within which development may be prohibited or controlled, to achieve coastal management objectives.

Coastal Management Programme: This is a policy directive for the management of the coast and includes strategies and plans for the effective implementation of the ICMA.

Coastal Squeeze: The loss of natural habitats or deterioration of their quality arising from anthropogenic structures or actions, preventing the landward transgression of those habitats that would otherwise naturally occur in response to sea-level rise in conjunction with other coastal processes.

COVID-19: A pandemic caused by an infectious virus (SARS-CoV-2) that results in moderate to severe respiratory disease.

Estuarine Functional Zone (EFZ): An area in and around an estuary which includes the open water area, estuarine habitat and the surrounding floodplain area. It is a spatial delineation and sensitive area requiring environmental authorisation for developments.

Exclusive Economic Zone (EEZ): An area of the ocean extending up to 200 nautical miles (370 km) immediately offshore from a country's coastline in which that country retains exclusive rights to the exploration and exploitation of natural resources.

High-Water Mark (HWM): The highest line reached by coastal waters, but excluding any line reached as a result of exceptional or abnormal weather or sea conditions, or an estuary being closed to the sea.

ICMA: The Integrated Coastal Management Act outlines the roles and functions of all spheres of government in managing the sustainable use of the coastal environment.

IUCN Red Data List of Threatened Species: This is a critical indicator of the health of the world's biodiversity, providing information on the extinction risk status of animal, fungus and plant species.

Macrophytes: Aquatic plants large enough to be seen by the naked eye.

Maputaland Coastal Plain: A natural region of Southern Africa located in the northern part of the KZN Province.

One Plan (District Development Model): A long-term plan of action for each identified district and metro, which sets out the service delivery challenges and opportunities for growth and development.

Operation Phakisa: A South African government initiative designed to fast-track the implementation of solutions on critical development issues, including the implementation of the Ocean Economy.

Pelagic: Living or occurring in the open sea.

Sea-Level Rise (SLR): An increase in the level of the world's oceans.

Submerged Macrophytes: Aquatic plants growing below the water surface.

Sustainable Development: An organising principle for meeting present human development goals without compromising the present and future integrity and ability of natural systems to provide the natural resources and ecosystem services on which the economy and society depend.

Sustainable Development Goals (SDGs) (Agenda 2030): A set of interconnected global goals set up by the UN General Assembly in 2015, intended to serve as a blueprint for achieving a sustainable future for all.

Transnet: South African rail, port and pipeline entity which runs operations in railways and harbours.





1

1. INTRODUCTION

1.1 Background

The National Development Plan (NDP) (National Planning Commission 2017) highlights several growing challenges for South Africa relating to environmental sustainability, economic growth, poverty, inequality and unemployment. In terms of building environmental sustainability and resilience, the coast is a key component. The coast is a valued environment within which ecological diversity, human activity and socioeconomic influences are interdependent and interact (Goble et al. 2014). It is frequently a destination to live, work and for recreation. This results in increased pressure for the provision of food, human settlement, businesses, industry, tourism and ports.

Coastal zones worldwide are among the most heavily exploited areas targeting their rich, diverse resources and space for development opportunities (DEA 2014). Currently it is estimated that approximately 40 per cent of the world's population live within 100 km of the coast (UN 2017). Simultaneously, coastal environments will be exposed to climate change with increased erosion, sea-level rise, intensification of tropical and extra-tropical cyclones, increased flooding and wash-over events leading to damage and loss of property (Goble et al. 2014). This was evident in the April 2022 flooding event in KZN which resulted in significant damage to coastal properties. Similar impacts were experienced in September 1987 when a cut-off low caused floods in Durban, and in April 1856 when roughly 700 mm of rain fell over three days in Durban (Bega 2022).

The need for wise planning and the effective management of the coast has long been recognised, with decision-makers developing policies and legislation aimed at better management of the coastal zone. Today, Integrated Coastal Management (ICM) is globally recognised and widely utilised as a strategy to improve management of the coast and its resources (Goble et al. 2014). South Africa, following global trends, recognised the need for dedicated legislation aimed at protecting the coastal environment (FAO 2007).

This led to a significant policy formulation process spanning several years, which culminated in the Integrated Coastal Management Act (24 of 2008) and its subsequent Amendment Act (36 of 2014), hereafter referred to as the ICMA. The ICMA contains a variety of tools to ensure that the coastal zone will be managed co-operatively, so that development is undertaken in a sustainable manner, thereby protecting the coast's conservation status (DEA 2014). It aims to balance the benefits from economic development and human uses of the coastal zone with protecting, preserving and restoring coastal zones, and while minimising the loss of human life and property. It also ensures the benefits from

public access to and enjoyment of the coastal zone, within the bounds set by natural dynamics and the carrying capacity of the coastal environment.

The development of Coastal Management Programmes (CMPs) is one of the most powerful of integrating tools. A CMP is a policy directive for the management of the coast and includes strategies and plans for the effective implementation of the ICMA. CMPs have an important role to play in bringing together various spheres and sectors of government, the private sector and communities to aid in effective implementation of ICM. This ensures that the development and use of natural resources is done in the best interests of people and the economy, while being ecologically sustainable (DEA 2014).



1.2 Value of our Coast

The coastal environment is a rich and diverse asset, providing valuable economic, social and ecological opportunities (DEA 2014). It provides opportunities for employment, income generation, recreation and a quality living environment. Paradoxically, this contributes to greater levels of human settlement in the coastal zone and associated pressure on resources.

The Gross Domestic Product (GDP) of KZN reached R488 billion in 2021, equivalent to almost 16% of South Africa's total GDP (KZN EDTEA 2022). Two primary macro-contributors to the Province's economy: its ports and tourism, are both intimately linked to the coastal and marine environment (van der Elst and Goble 2014). The ports of Durban and Richards Bay together handle 56% of South Africa's sea cargo and 62% of its container transport (KZN EDTEA 2022).

KZN's tourism was supported by approximately 520 000 domestic and 51 000 international visitors annually which boosted the local economy by R2.4 billion during the 2022 festive season (Ndou 2023). However, these are still well below the pre-COVID visitor numbers, likely exacerbated by the persistent sewerage issues in the province, particularly in eThekwini (Mngomezulu and Tiffin 2022).

Container ship entering Durban harbour. Photo: Kierran Allen





1.3 Context of Coastal Management Programmes

The Constitution of the Republic of South Africa requires that we secure ecologically sustainable development and use of natural resources, while promoting justifiable economic and social development. In this regard, the coastal environment is one with sought-after resources and as such, needs careful management. Furthermore, coastal management contributes to the global Agenda 2030 Sustainable Development Goals (SDGs). Goal 14 aims to "Conserve and sustainably use the oceans, seas and marine resources for sustainable development". Target 14.2 of this goal specifies "By 2020, [to] sustainably manage and protect marine and coastal ecosystems to avoid significant adverse impacts, including by strengthening their resilience, and take action for their restoration in order to achieve healthy and productive oceans" (UNEP 2018). This goal is part of a global action to protect the planet's natural resources and ensure healthy and sustainable living through the protection of the environment.

Operation Phakisa is an initiative of the South African government, designed to fast track the implementation of solutions on critical development issues. This is a unique initiative to address issues highlighted in the 2030 NDP such as poverty, unemployment and inequality. It focuses on bringing together key stakeholders from the public and private sectors, academia, as well as civil society organisations to collaborate. These collaboration sessions are called laboratories (labs). The results of the labs are detailed (3 feet) plans with ambitious targets as well as public commitment on the implementation of the plans by all stakeholders. The Oceans Economy Lab looks at unlocking the economic potential of the country's oceans. It considers marine transport and manufacturing, offshore oil and gas exploration, aquaculture, marine protection services and ocean governance.

In addition to the international context, the KZN Provincial Growth and Development Strategy (PGDS) identifies threats related to climate change for coastal areas and the potential damage of port infrastructure and low-lying settlements. It is estimated that if South Africa does not immediately act to adapt to the effects of climate change, it could cost the country about 1.5% of GDP by 2050 (KZN Provincial Government 2016). This places additional emphasis on pursuing green technologies and promoting the green economy. A sustainability approach governs the development of the KZN strategic framework, namely the inter-related nature of the environmental, social and economic landscapes (Figure 1). The development of a CMP is further identified as a strategic intervention in the PGDS (Strategic Objective 5.3: Adapt and Respond to Climate Change).



A CMP is a policy directive for the management of the coastal zone and plays an important role in bringing together various sectors of government, civil society and communities along the coast for effective management of the coastal environment (DEA 2014). Moreover, CMPs are required in terms of the ICMA (Sections 46-47), which specifies the elements that should be addressed by the CMP. Accordingly, all spheres of government are required to establish and implement their own but aligned versions of CMP's. For example, the Province needs to align its Provincial Coastal Management Programme (PCMP) with the (National) NCMP, while Municipal CMP's must be consistent with the NCMP and the PCMP of the province in which they are located. In terms of the ICM Act, the requirements of the "municipality" fall to the Metropolitan Municipality or the District Municipality (DM), unless the DM and the Local Municipality (LM) enter into an agreement assigning the implementation of any provision of the Act in that area to the LM.

This document follows on from the PCMP (2019-2023) (KZN EDTEA 2019) as aligned with the NCMP and the National Estuarine Management Protocol. It sets out broad goals and objectives for coastal management in KZN and includes strategies and plans for the effective implementation of the ICMA by provincial government. The primary objective of the CMP is to collect environmental, economic and political data that influence the sustainable utilisation of coastal resources and combine these into plans of action that will allow for a coordinated approach to coastal management (DEA 2012).

Figure 1. PGDS Sustainability Approach

1.4 Purpose of the PCMP for KZN

The PCMP provides direction for coastal management in KZN over a five-year period (2024-2029). The programme must (in terms of Section 47 of the ICM Act) provide a provincial policy directive for the management of the coast through an integrated, coordinated, uniform approach. This programme takes the unique and diverse qualities of the KZN coast into account through a situation assessment and identifies areas of concern which require attention.

The ICMA requires that a PCMP includes:

- A vision for the management of the coastal zone in the province, including the sustainable use of coastal resources;
- The coastal management objectives for the coastal zone in the province and for specific parts of the coastal zone;
- Priorities and strategies:
 - to achieve the coastal management objectives of the province;
 - to assist in the achievement of the national coastal management objectives as applicable in the province;
 - to develop estuarine management plans for estuaries in the province; and
 - performance indicators to measure progress with the achievement of these objectives.

1.4.1 Outcomes of the PCMP

The PCMP outcomes focus on practical implementation of the ICM Act at the provincial level, based on several primary underlying outcomes:



The development of a KZN-specific CMP that translates national goals and objectives into provincial outcomes and reflects provincial priorities and areas for implementation within a well-structured and integrated framework for coastal management and decision-making;



Collation of provincial needs and issues to formulate priorities, action plans and strategies;



A baseline situational analysis relevant to KZN leading to a transparent monitoring and evaluation reporting programme;



The development and smooth operation of a PCC to provide guidance, integration and decision support;



Implementation of key activities in terms of national principles and provincial priorities within a standardised and uniform approach to coastal management within the Province, ensuring consistency with the NCMP and National Estuarine Management Protocol; and



Guidance on the development and alignment of municipal CMPs and associated outcomes.

1.5 The KZN Coastal Management Programme Development Process

This PCMP has been developed in the context of existing policy documents for the Province and South Africa. Due consideration has been given to several national and provincial policies and plans including Operation Phakisa, the NCMP, the National Development Plan, the Coastal Policy for KZN (2004) and the Provincial Growth and Development Strategy (National Planning Commission 2017, KZN Provincial Government 2017).

The process followed is detailed in Figure 2. A first step, as a precursor to the development of the CMP, involved the province undertaking a broad situation assessment study to highlight the status, value and uses of the KZN coast. This is in the form of an illustrated book that provides technical information to coastal managers about key elements and the value of the KZN coast (see *Ugu Lwethu – Our Coast: A profile of coastal KwaZulu-Natal* (Goble *et al.* 2014). Thereafter, the PCMP (2019-2023) was drafted and followed several steps including stakeholder engagement and adoption. This update and review of the CMP was based on provincial needs and priorities as guided by the KZN State of the Coast Report (Goble and van der Elst 2022) and other relevant documents.



The highly developed uMhlanga-Durban coastline, with the uMhlanga Estuary in the foreground. Photo: Kierran Allen

Local Anti-Witcheshill with a

2. SITUATION ASSESSMENT

The following section provides an overview of selected features of the coastal environment of KZN and is especially designed to serve as a baseline against which to develop a management approach and to set action plans.

2.1 The KZN Coastal Zone

The KZN coast is shaped by a unique assemblage of physical features comprising climatic, geological and oceanographic characteristics. Collectively they create a distinctive coastal environment rich in social, economic and ecological resources (Goble et al. 2014). The KZN coast stretches some 580 km from the Mozambigue border, near Kosi Bay in the north, to the uMthavuna Estuary on the border with the Eastern Cape Province in the south and encompasses a range of physical environments.

In terms of the ICM Act, the coastal zone is defined as "the area comprising coastal public property (CPP), the coastal protection zone (CPZ), coastal access land, coastal protected areas, the seashore and coastal waters, and includes any aspect of the environment on, in, under and above such area". This makes up the primary area requiring dedicated ICM management.

For management purposes the KZN coast is divided into five Coastal Districts, broken up into nine Local Municipalities. The iSimangaliso Wetland Park Authority falls outside of this governance framework, given its world heritage status. The five districts, from north to south are, uMkhanyakude, King Cetshwayo, iLembe, eThekwini and Ugu respectively (Figure 3).

Together they account for 32 423 km² of coastal lands and host a population of 6.35 million people, most in poverty, paradoxically, despite the richness of KZN's coastal resources. Each of these districts face a set of challenges if they are to benefit sustainably from their coast. Institutional capacity to regulate and monitor use of the coast, such as the impact of uncontrolled coastal development and pollution, needs to be strengthened.





2.1.1 uMkhanyakude District Municipality

The large uMkhanyakude District Municipality embraces 12 800 km² and is situated in northern KZN, within which the local municipalities of Mtubatuba, the Big 5 False Bay and uMhlabuyalingana are located along a 200 km coastline (Figure 3). However, the coast falls within the iSimangaliso Wetland Park and is subject to unique protected area management frameworks. This section of coast is rich in natural assets with long sandy beaches, high forested dunes and broad coastal plains. Several rivers, coastal lakes, estuaries and wetlands support a rich biodiversity including a wide variety of birds and large mammals. uMkhanyakude has the second smallest economy in the province after uMzinyathi and contributes only 1.93% to provincial GDP.

The tourism sector is thriving throughout the district, primarily focusing on large scale game viewing, fishing and beach tourism. Tourism and conservation is the lifeblood of many places in uMkhanyakude, being major employers (KZN EDTEA 2021). Tourism in the region is expected to grow due to new marketing initiatives, promoting attractions in Sector Sector

in Eswatini, Mozambique and KZN. Improved beneficiation of coastal tourism should be possible. The iSimangaliso World Heritage Site also provides a competitive advantage (KZN EDTEA 2021). Pressures in the district include high levels of poverty, underdevelopment and a lack of infrastructure.

2.1.2 King Cetshwayo District Municipality

The King Cetshwayo District Municipality of 8 200 km² is situated in northern KZN, with the local municipalities of uMhlathuze and uMfolozi having direct access to the coast. uMlalazi Municipality's access is limited through protected areas. However, almost 80% of the population of nearly one million resides in these coastal areas.

The manufacturing sector is the biggest economic driver within King Cetshwayo district with a well-established industrial base between Richards Bay and Empangeni. Commercial activities are concentrated along the coast, with the major drawcard being the port of Richards Bay, which specialises in bulk cargo (KZN EDTEA 2021). Agricultural activities are dominated by commercial sugar and timber, primarily along the coast. The area derives a competitive advantage through its geographic location linking the ports of Durban and Richards Bay on the eThekwini-uMhlatuze Corridor. The port of Richards Bay is the largest and deepest in South Africa, and is the country's primary cargo-handling port. This is supported by one of the largest coal terminals in the world (KZN EDTEA 2021). Pressures in the district, however, still include high levels of poverty and unemployment.

2.1.3 iLembe District Municipality

The iLembe District Municipality, embracing 3 260 km², is the smallest of the 11 districts in KZN, and is situated approximately in mid-KZN, north of eThekwini Municipality. Two of its four local municipalities have direct access to the coast: KwaDukuza and Mandeni. The population exceeds 650 000 (StatsSA 2016), 65% of which reside in these coastal municipalities. iLembe has a strategic advantage being located on the eThekwini-uMhlatuze Corridor, which is viewed as a priority development corridor for KZN.

iLembe's manufacturing sector makes a significant (nearly 25% contribution) to the District's GDP, with several industrial areas including the Ballito Business Park, Shaka's Head Industrial Park (Ballito), Shaka's Kraal Industrial Development, Stanger Industrial Development (Extension 15), Stanger Moolla Industrial Park, Stanger Mixed Use Area and Mandeni/Isithebe Industrial Area. It has a strong base in agriculture, with commercial farming contributing 9.42% of the 2019 GDP of the District's economy. While sugar production is the main commercial crop, farmers are diversifying into other crops, especially sub-tropical fruit and macadamia nut crops (KZN EDTEA 2021).

The district supports several emerging sectors including food, beverages and tobacco processing and a few smaller companies are observed to be entering the market. The Dube Trade Port should be seen as creating further opportunities in terms of agro-processing of goods for export. iLembe has a growing focus on upmarket beach resort tourism with major resort developments at Nonoti, Blythedale and Tinley Manor aiming to increase this comparative advantage (KZN EDTEA 2021). Despite its strategic location, iLembe faces numerous economic challenges such as high levels of poverty, which contrasts with rapid development along its coastal regions.

2.1.4 eThekwini Metropolitan

The eThekwini Metropolitan covers 2 297 km², having a 98 km coastline with 18 major catchments and 16 estuaries. Some 3.7 million people (StatsSA 2016) reside in this highly urbanised environment, many of whom are unemployed. The Metro accommodates a wide range of landuses including formal and informal, urban and rural settlements which are complemented by economic, transport, public and social infrastructure. eThekwini has initiated a range of programmes to assist in alleviation of food insecurity, such as structures to drive agriculture, aquaculture and poultry farming, community support farms and community gardens.

The eThekwini Metro is undisputedly the economic powerhouse of the province, contributing 54.66% to the provinces GDP. Besides port activities, other economic drivers include tourism, mainly concentrated along the coast stretching from Umkomaas in the south to Umdloti in the north. The GDP of the Metro is predominantly made up of the manufacturing sector (20%); food (16%); automotive (13%); basic and other chemicals (8% and 7% respectively); and paper products (6%). Transport and communication are viewed as a significant contributor to the economy of Durban (14.54%), largely due to the Port of Durban, Africa's busiest port and South Africa's major transportation hub; it's established road infrastructure of which the N2 and N3 (on the Gauteng Corridor) routes are critical; and the establishment of the King Shaka International Airport and Dube Trade Port (KZN EDTEA 2021).

Pressure because of urbanisation, industrial and commercial developments have raised serious challenges for the coastal environment in eThekwini. These include coastal pollution from industrial waste, sewage spills, and disposing of domestic waste in rivers and canals.







2.1.5 Ugu District Municipality

The Ugu District Municipality which embraces 5 866 km² is situated to the south of eThekwini, with the local municipalities of uMdoni, uMzumbe and Ray Nkonyeni having access to the coast. Ugu's coastline has many estuaries, rich rocky shores and sandy beaches, making it a popular domestic tourist destination. Urban development in the district is largely concentrated on the coast with the exception of the towns of Umzinto and Harding which are located inland. Additionally, it is estimated that 70% of economic activity in the district is concentrated in the Port Shepstone / Margate area (KZN EDTEA 2021). A rail system which stretches along the coast was historically linked to rail systems servicing the inland areas, but this has now ceased operation. Significant disparities exist between the former homeland region of KwaZulu and the former Natal area of the district; the latter endowed with many small towns and well-developed infrastructure and services. In contrast, the former KwaZulu is characterised by a large population, high unemployment, limited infrastructure and poor services. Indeed, 84% of Ugu's 753 336 residents are non-urbanised (StatsSA 2016).

While the tourism sector is well-developed along the coast, tourism infrastructure and facilities are generally outdated and in poor condition, with sewage spills on the rise. Most of the tourism falls within the south coast region, being driven by the towns of Scottburgh, Port Shepstone, Margate and Port Edward, and supported by the Sardine Run, golf, whale and dolphin watching, the Oribi Gorge, hibiscus flowers and golden beaches (KZN EDTEA 2021).



2.2 The Physical Environment

KZN has a relatively straight, northeast trending coastline, divided into gentle bays by short, low headlands or rocky outcrops. The coast is bathed by the warm waters of the Indian Ocean, with the strong Agulhas Current flowing in a south-westerly direction, transporting warm water polewards. The KZN coastal climate is moderate and can be described as ranging from warm temperate to sub-tropical. The warm Agulhas Current is a major influencing factor that shapes the climate of the KZN coastal region, giving it its humid subtropical character (Kruger 2014). The monthly average range of temperatures for the coast is between 11 and 28°C. Daily temperature highs average from 16 to 25°C in winter and 23 to 33°C in summer. Uncomfortably high "apparent" temperatures are common along the KZN coastal region, due to frequent high humidity levels.

Coastal KZN is subjected to a moderate wind regime. During autumn and winter the south-westerly winds are dominant, while north-easterly winds dominate during spring and summer. The strongest wind experienced along the KZN coast is commonly known as the 'south-westerly buster', which is associated with a coastal low. Extreme winds of very short duration also occur during the passage of a cold front, which is frequently accompanied by embedded thunderstorms. Despite such peaks in wind, the average daily wind speed is only 14.7 kph.

The KZN coastal region receives about 1 000 to 1 200 mm of rainfall per year. While most of the rainfall occurs in mid-summer, the winter months are not completely dry. In KZN, about 28 days per year receive more than 10 mm of rain over a 24-hour period. Extreme rainfall events are often associated with occasional 'cut-off low' pressure systems that cool and trap excessive moisture. While the region does experience tropical cyclones, their occurrence is infrequent (Kruger 2014).

The province experienced an extreme rainfall event in April 2022, with 311 mm of rain falling in a single day (Schulze 2022). This resulted in major flooding and damage to roads, schools, mobile networks and electrical and water systems. It is estimated that over 13 500 houses were damaged or destroyed (including ~ 4 000 informal dwellings) and over 6 250 people left homeless. Property damage is estimated at R17 billion (Pinto *et al.* 2022).



2.3 The Coastal Environment

2.3.1 Sandy Shores

Keeping the dune-beach connection intact, unconstrained and maintaining natural sand storage and transport are critical for resilience in sandy shores. Hence coastal development, coastal squeeze and mining cause the greatest impact to beaches. However, freshwater-flow reduction and impacts from less destructive pressures like resource harvesting are widespread and contribute to cumulative declines in ecological condition.

The main driver of change to sandy shores is human population and economic growth. The ongoing development in prime seaside locations often results in coastal squeeze, reducing the area for natural coastal processes. In addition, there is increased demand for sand for construction (increased sand mining), and more abstraction of water from catchments. These effects contribute to disrupting natural flows of sand between land and sea, and result in sand-starved shores.

The iSimangaliso and uThukela MPAs contribute most to protecting sandy shores in KZN. Importantly, both MPAs offer land-sea protection because of contiguous terrestrial protected areas that safeguard the adjacent dunes. Protecting the adjacent dunes is imperative for providing effective protection to sandy shores.

2.3.2 Swamp Forests

Swamp forest is a freshwater habitat that occurs as pockets and ribbons at altitudes between 20 m and 60 m and have an understory of ferns and creepers. The habitat is classified as Critically Endangered (Van Deventer *et al.* 2021) and was recently recognised as an integral part of the estuarine functional zone (EFZ), which has improved its level of protection nationally. Fortunately, 67% of swamp forests fall within protected areas. Total Swamp Forest in KZN estuaries is estimated to be 3430.5 ha, covering 140 systems (Van Niekerk *et al.* 2019). The largest cover occurs at the iMfolozi/uMsunduze Estuary (1683.1 ha).

Swamp forest is threatened by draining land to cultivate agricultural crops and by prolonged inundation from fresh or saltwater following closure of an estuary mouth. In rural areas, forest trees are sources of food, construction material and medicine. Illegal slash-and-burn agricultural practices in northern KZN, particularly in the iSimangaliso Wetland Park, have removed large swamp forest areas and threaten the survival of this sensitive habitat. Being a Critically Endangered habitat, swamp forest cover should be tracked. The dominant forest tree species are categorised (IUCN Red Data List) as of least concern because of their wide global distribution. However, this does not safeguard local stocks of these species which requires a more localised assessment.



2.3.3 Rocky Shores

KZN intertidal rocky shores are a valuable ecosystem which contributes to food security of coastal communities. Historical coastal middens of shellfish show that these species have supported communities for millennia (Van der Elst 2020). However, they are at risk of overexploitation due to recreational harvesting, poaching, pollution, invasive alien species and mining (including sand mining), (EDTEA 2017, Olbers 2017, Sink *et al.* 2019, Steyn and van der Elst 2014).

The tidal-driven inundation by waves creates unique physical environments with a vertical zonation of plants and animals (Branch and Branch 2018). The upper layers are dominated by minute periwinkles and the lowest levels are home to species such as redbait, echinoderms and seaweeds. Rocky shores and their associated micro-habitats and rock pools are important nursery grounds for nearshore coastal and estuarine fish species (Steyn and van der Elst 2014, Strydom 2008).

Rocky shore biota are indicators of water quality in that they are sessile filter feeders and hence bioaccumulate substances attributable to a specific site (Burrows *et al.* 2014). There are several sites where the species are at risk of decline and improved management of rocky shore subsistence fisheries is needed (Sink *et al.* 2005, Olbers 2015, 2017). Management interventions are needed at Isipingo where wastewater effluent and increased plastic pollution is having a detrimental impact on rocky shore communities (Olbers 2017). Biomonitoring programmes such as Mussel Watch add value and should be reinstated to monitor indicator species for water quality and heavy metal pollution.

2.3.4 Coastal Lakes

There are 13 coastal freshwater lakes in KZN. These have low surface water inflows and are mainly fed by groundwater from primary aquifers. Their coastal location highly influences their hydrological and chemical characteristics and therefore their plant and animal communities are distinctly different from typical freshwater bodies (MacKay *et al.* 2014). Estuarine faunal components make these systems biologically unique and they include IUCN endangered species, such as the barebreast goby, a small, cryptic species endemic to Southern Africa.

Coastal lakes in KZN are considered Critically Endangered and under-protected. The ecological condition of Lake Sibaya was 'Heavily to Severely/Critically Modified' under the assessment criteria adopted (Van Deventer *et al.* 2019). Weirs at the outlets of most systems are barriers to natural movement and migrations between lakes, estuaries and the ocean, compromising the full range of biodiversity capacity of these unique ecosystems, their connectivity with downstream systems and reducing the ecological function of these systems (Weerts *et al.* 2014).

Current pressures on coastal lakes in KZN are all increasing, such as those from expanding human populations in urban and rural coastal KZN. Water use through direct abstraction of surface water for domestic, agriculture, forestry and mining purposes, or indirectly through groundwater impacts (such as forestry), is especially problematic. Lake iNhlabane is adjacent to extensive dune mining activities and it was completely impounded in 1977 to provide water for dredge mining of heavy minerals (MacKay *et al.* 2014). Without management responses the state of these systems will continue to decline.

2.3.5 Wetlands

The diversity of coastal rivers and wetlands, when in good ecological condition and well-connected, offer a range of ecosystem services such as water provision, flow regulation, infiltration of rainfall to groundwater aquifers and sediment budget for the coast. However, when degraded, the impacts of climate change exacerbate the negative impacts of existing pressures. KZN has an areal extent of inland wetlands of 84 526 ha within the coastal zone (Van Deventer *et al.* 2020). The southern region of KZN has a total areal extent of 546 208 ha, while the northern region covers an areal extent of 516 426 ha (the Maputaland Coastal Plain - MCP).

The most extensive impact on the surface cover of inland wetlands is habitat transformation to agricultural food production. Dune mining is expected to have a detrimental impact on the hydrological regime of surface and groundwater resources, but to date no studies elucidate the effect of dune mining on rivers and wetland water quality. Sand mining in coastal rivers is a recurring pressure, with an estimated 50% of the coastal river systems already impacted.

Wetlands, including inland wetlands and estuaries, are considered the most threatened ecosystems globally and in South Africa (Van Deventer *et al.* 2019, Van Niekerk *et al.* 2019), with an estimated >85% of extent lost to date (Díaz *et al.* 2019). Most of the river and inland wetland ecosystem types assessed at a national scale in the National Biodiversity Assessment of 2018 (Van Niekerk *et al.* 2019, Van Deventer *et al.* 2019) are predominantly threatened and poorly protected. The Ecological Condition Index of mainstem rivers showed that only 12% of the extent of mainstem rivers on the KZN coast now remain in a natural ecological condition. River flow from source has been reduced by at least 20% because of water abstraction, inter-basin transfers and trapping in upstream dams.

2.3.6 Coastal Vegetation

Temperature, wind, salt spray, moisture from rainfall and coastal mist are major factors affecting the size, density and structural complexity of the terrestrial plant communities along the coast of South Africa. The KZN coast shows the most complex of vegetation types, with taller trees and shrubs and an abundance of herbaceous layers, reflecting the more equable temperatures and higher and more consistent rainfall along this coast (Lubke 2014). KZN coastal dunes are subject to change with seasons and storms, so that many of the coastal plant communities may disappear in a single storm event or gradually change in response to changing environmental factors.

Coastal development places an increased demand on the ecosystem goods and services provided by the coastal zone. Furthermore, these areas are being exposed to more risk from possible flooding. Poor planning results in the loss of natural habitat and functioning of coastal vegetation and dunes, which in turn limits the coastal environment's ability to deliver the very services and resources that attracted people to the coast. Habitat loss and land cover change are currently the leading cause of biodiversity loss worldwide (Jetz *et al.* 2007, MEA 2005, Vitousek 1994). In KZN, 7.6% of natural habitat was lost to anthropogenic conversion in only six years (Jewitt *et al.* 2015).



Coastal plant communities may disappear in a storm event or gradually over time, in response to changes in the environment. *Photo: Kierran Allen*

2.4 Estuarine Environment

2.4.1 Estuaries

Estuaries are amongst the most ecologically important and productive environments worldwide as they provide critical ecological services. They act as nurseries for fish species, filtering land-derived nutrients and pollutants, delivering freshwater and sediments to the coast and sequestering and storing carbon. They also provide resources for coastal communities and support various recreational and tourism activities (MacKay and Weerts 2022).

The KZN coast is home to 76 of the 300 estuaries found in South Africa. The profile of the coast, the subtropical climate and the nature of catchments all contribute to the characteristics of the different estuaries. Estuaries can be classified according to the way they were formed and how they function. Accordingly, there are nine estuarine types found in South Africa, of which six are found in KZN: Estuarine Lakes, Estuarine Bays, Predominantly Open-, Large Temporarily Closed-, Small Temporarily Closedand Large Fluvially Dominated systems. The classification or "typing" of estuaries is important for their management as different estuaries respond in diverse ways to change generated by human use or natural events (MacKay 2014). The 76 estuaries in KZN account for two-thirds (400 km2) of the total 600 km² of South African estuarine area.

Many KZN estuaries are vulnerable and under threat from direct and indirect pressures. These include flow alteration because of bulk water supply developments and damming; fishing pressure; land-use change within the catchment; artificial breaching of the mouth; introduction of alien species; and sand mining which results in habitat destruction. Pollution is by far the biggest threat to estuaries in KZN with wastewater discharges, urban runoff and agricultural return flows having a significant impact. Of KZN's estuaries, 39% are under high to very high pollution pressure and the frequency of major pollution incidents has increased significantly in the past few years.

Recent years have seen an increase in both the frequency, duration and levels of contamination. Sewerage infrastructure failures result in repeated and prolonged raw sewage overflows into many systems. The April 2022 flood event caused damage to sewerage infrastructure and has resulted in persistent raw sewage flowing into estuaries and out to sea as repairs to infrastructure have been slow.

In addition, the frequency of large-scale pollution events in KZN estuaries is a concern. This is highlighted by the massive agrochemical spill from the United Phosphorus Ltd (UPL) warehouse into the uMhlanga River during the July 2021 riots, which will have long-lasting pollution impacts (Weerts and Taljaard 2022). Others include the 2015 fire at Africa SunOil Refineries resulting in hundreds of thousands of litres of firewater and edible vegetable oil spilling into Durban Bay; a fire at a warehouse in 2017 which resulted in firewater and tons of wax entering Durban Bay; a massive spill of oil in 2020 into the Umbilo River and Durban Bay from a Transnet pipeline; two major sewage overflow events into the Port of Durban (May 2019, November 2021), and more recently in 2022 into the uMngeni Estuary.



2.4.2 Mangroves

Mangroves occur at the interface between land and sea along tropical and subtropical coasts. Present mangrove extent in South Africa is 2 087 ha recorded for 34 estuaries in the country, with the largest coverage in KZN's northern estuaries, the uMhlathuze Estuary (1082 ha), followed by St Lucia Estuary (305 ha). The Kosi Bay Estuary has high biodiversity importance as it is the only South African estuary with six mangrove species. Mangroves provide numerous goods and services to people, such as carbon storage and sequestration, nutrient cycling, nursery habitat for juvenile fishes and invertebrates, and shoreline protection from storms and erosion. In South Africa, mangroves are harvested for wood and associated faunal species are collected as a food source or for bait.

Population growth, poor agricultural management practices, coastal development (including harbours) and high demand for resources in rural areas, such as firewood, have been the main anthropogenic pressures on mangroves.

2.4.3 Submerged Macrophytes

Submerged macrophytes are rooted plants whose leaves and stems lie completely below the water surface. Their growth is related to optimum light, depth and salinity levels and these factors control their distribution, especially in the turbid estuaries of KZN. Submerged macrophytes occur in 14 of KZN's estuaries, with the largest beds found in the St Lucia (432 ha) and Kosi (652 ha) estuaries (Van Niekerk et al. 2019).

In KZN, losses have resulted from urban and industrial development, poor land-use practices in catchments and erosion of riverbanks which increase the rate and volume of sediment flowing into estuaries. High sediment loads reduce water clarity and limit the growth of submerged macrophytes.



2.5 Marine Environment

2.5.1 Subtidal Reefs (Coral and Rocky Reefs)

The KZN coast has important subtidal reefs, with coral reefs located in the northern subtropical region. These are South Africa's only coral reefs and are thus critical marine habitats, while rocky reefs are scattered intermittently along the rest of the KZN coast. The coral reefs in South Africa are classified as subtropical and occur at the southern limits of coral distribution, only being found along the 150 km Maputaland coast from Kosi Bay to Leven Point. These coral reefs differ from tropical coral reefs in that they are on average deeper (9-30 m) and geologically younger. The benthic communities on the rocky reefs are characterised by more temperate species.

Subtidal reefs provide valuable ecosystem services such as shoreline protection, through the absorption of wave energy, which is particularly important considering climate change. The fish life found on these reefs is also diverse, with an estimated 500 reef-associated species recorded (Floros 2014). This contributes significantly to the Province's economy through fisheries and tourism. For example, reefs at Sodwana Bay have a long history of attracting recreational fishers and scuba divers (Floros 2014). Despite the immense value of these ecosystems, coral reefs throughout the world are being degraded because of human-related disturbances, with 20% of the world's coral reefs destroyed. Whilst KZN's coral reefs are situated within Marine Protected Areas, they are still exposed to stressors such as climate change (coral bleaching and ocean acidification) and high resource use (recreational fishing and diving).

KZN's coral reefs are exposed to coral bleaching, ocean acidification and high resource use. Photo: Sean Porter

2.5.2 Soft Sediments

Coastal and marine sediments, ranging from large gravel elements to fine muds, occupy over 70% of the seafloor and constitute one of the largest habitats on earth. This is a three-dimensional habitat, due in part to its relatively unconsolidated nature (MacKay and Untiedt 2014), and it provides a variety of habitats for a diversity of benthic (bottom-dwelling) vertebrate, invertebrate and plant species (Lohrer and Hancock 2004).

In KZN, the most significant subtidal soft sediment habitat is found on the continental shelf between Richards Bay and Durban. This uncharacteristically wide shelf section, known as the Natal Bight, has been identified as being highly productive due to the influence of local oceanographic features as well as out-welling via the uThukela River. The soft sediment environments support high species diversity; small macrobenthic invertebrates (>1 mm) that live in the sediments are a dominant component. They promote decomposition, nutrient cycling and transferring energy to other food web components.

Habitat destruction occurs because of bottom trawling, with bottom-dwelling fauna taking up to five years or more to recover. Pollution can alter subtidal soft sediment ecology through eutrophication and even anoxia in shallow waters. Sewage effects on the seabed appear to increase productivity of animals there, but with time only hardy, tolerant species remain in sediments that become anaerobic.

2.5.3 Pelagic Environment

The pelagic environment is considered here as the sea's water column, the organisms it contains and the processes occurring there, from the surface to just above the seabed. The pelagic environment of KZN is very closely influenced by the Agulhas Current. Seasonal differences in Agulhas Current flow and the recent broadening and warming of the current are being driven respectively by spatial and temporal disparities between, and an increase in, wind speeds in the southern Indian Ocean.



2.6 Human Environment

2.6.1 Coastal Population and Settlement Patterns

The coastal environment provides many opportunities for employment, income generation, recreation and a quality living environment. As such, approximately 40% of the population resides within 100 km of the coast; those who do not enjoy that privilege often make great efforts to visit the coast. Population growth and in-migration are both major factors that continue to drive the growth of coastal urban human settlements. These in turn shape the landscape of the built environment (DEA 2012) and are an important component of social and economic systems. The IUCN (2007) succinctly summarises the situation: "Because of the economic benefits that accrue from access to the coast, ocean navigation, coastal fisheries, tourism and recreation, human settlements are often more concentrated in the coastal zone than elsewhere".

South Africa's population reached an estimated 60,6 million by the end of June 2022, with 19% (11,54 million people) living in KZN (StatsSA 2022), of which an estimated 52% live within the coastal local municipalities. Migration to coastal areas is driven by better access to infrastructure, natural resources such as water and land, and lifestyle elements such as beaches (EDTEA 2017). In KZN, coastal urban or metropolitan areas are characterised by extensive peri-urban developments as relics of apartheid. Increasingly, these areas are expanding through informal settlements, mostly highly populated and located in areas that are inappropriate for human settlement, such as unstable soils, wetlands and flood risk areas (DEA 2012). Inadequate services to these areas, especially water and sanitation, have a direct impact on the environmental quality of the coast.

2.6.2 Coastal Access

The cultural, historic, economic and spiritual value of the coast to the people of KZN makes it imperative that access to the coast is provided, maintained and where necessary, improved. Coastal access provides opportunities for economic development, extracting resources, recreation, education and overall improvement of both mental and physical health.

The south and central coasts of KZN are popular tourist destinations with a high demand for recreational activities. They are also characterised by ribbon developments with medium to high density establishments directly adjacent to the coastline. As a result, an extremely high density of routes is evident (Willemse 2022). While this provides easy access to the coast, many of these routes are private and thus limit public access. Furthermore, public access is often informal and damaging to natural coastal dunes. Along the north coast substantially fewer access routes exist. Nonetheless, this region provides many opportunities to subsistence fishermen, while more public routes are required to ensure sufficient access to these areas.



2.6.3 Small-scale Fisheries

Previously described as subsistence and/or artisanal fishing (Mann *et al.* 2014), the small-scale fishery (SSF) has only been formally recognised in South Africa since the promulgation of the SSF Policy in June 2012 (Government Gazette No. 35455). This fishery is primarily concerned with harvesting finfish/linefish and invertebrates/shellfish found in the nearshore zone.

Stock assessments of the main inshore linefish and invertebrate species have revealed that most are in a depressed state (Mann 2013, Steyn 2019). A further decline in popular linefish stocks is likely to harm the recreational tourist fishery, one of this province's important sources of revenue (McGrath *et al.* 1997). Without careful management and regulation, the major impacts of the SSF will likely be localised overfishing of inshore resources and the associated negative impacts on the fishing communities directly dependent on them. Effective monitoring is essential to determine the sustainability and socioeconomic viability of the SSF, to manage this fishery and provide support for fishers. Currently, there is a lack of capacity in the directorate responsible for the implementation of the SSF, which means that the roll-out of this process has been inadequate and there is still much uncertainty surrounding implementation (Mann and Mann-Lang 2020).

2.6.4 Recreational Fishing

Recreational fishing is considered an important economic activity through the boosting of other economies such as bait, tackle, boats and accommodation (Saayman *et al.* 2017). There are an increasing number of recreational anglers who practice catch-and-release angling and do not keep the fish they catch (Cooke and Suski 2005). In KZN, recreational fishing includes shore angling, kayak fishing, skiboat angling, charter-boat angling, spearfishing and shellfish/invertebrate collecting. Anglers must purchase a permit for each type of fishing and/or resource-type being harvested. Specific management controls such as size limits, daily bag limits, closed seasons and areas closed to fishing (e.g., no-take MPAs) are in place.

Recreational fishing can selectively target and remove larger individuals (e.g., trophy fish) and/or species, which can cause changes to a species' population structure and its ecology. Targeted fishing can also result in changes in fish communities and trophic cascades because of removal of top predators (Pauly *et al.* 1998). Fish species that are highly resident, aggregate to spawn, long-lived, slow-growing, late-maturing or have low fecundity and/or change sex are also vulnerable to overfishing. Long-term monitoring of recreational catches can provide an indicator of the status of targeted fish stocks and an indication of ecosystem health over time.

Pollution, sedimentation, habitat destruction and climate change also affect the availability of target fish species. As a result, many large predatory species have been reduced to critically low levels and fish at lower trophic levels are now targeted (Dunlop and Mann 2012, 2013). Multi-species, multi-user fisheries, such as the KZN marine recreational fishery, are extremely difficult and complex to manage. However, due to their high socioeconomic value to the province, it is essential that they are well managed.

2.6.5 Boat-based Activities

The KZN coast is host to a wide variety of recreational boating activities which range from the use of small vessels such as paddle-skis and surf-skis through to large, harbour-based yachts for scubadiving (including shark-diving), whale/dolphin watching and pleasure trips. Many thousands of people participate in such activities every year, facilitating the development of related industries such as boatbuilding, boat and motor servicing, diving equipment suppliers, diving companies and charter-boat companies.

These activities are linked to the availability of disposable income and contribute to tourism in KZN. Therefore, the state of the marine environment (biodiversity of diving reefs), the presence and abundance of sharks (e.g., tiger, blacktip, ragged-tooth, hammerhead, etc.) and whales (e.g., humpbacks) are all essential to draw tourists and maintain the viability of these industries. Ski-boats require sheltered bays or beaches for safe launching, which lead to the formal recognition and registration of boat launch sites. Further, the development of the KZN Boat Launch Site Monitoring System (BLSMS) provides information on the number of launches and associated activities undertaken along the KZN coastline (Mann *et al.* 2015). Permitting of scuba diving in MPAs, shark diving and boat-based whale watching along the KZN coast was implemented in the mid-2000s by the departments preceding the DFFE. Scuba diving mainly takes place at Sodwana Bay (iSimangaliso MPA), Umkomaas and Rocky Bay (Aliwal Shoal MPA) and Shelly Beach (Protea Banks MPA) and because all these sites fall within MPAs, scuba diving operators and individual scuba diving permits are also required.

It is important to note that boat-based activities increase the pressures on the natural environment, and with growing human demand, they need to be carefully managed. Monitoring use levels can provide coastal managers with valuable information to ensure informed management.

2.6.6 Coastal Pollution

In KZN, the main driver of coastal pollution is development related to ever increasing population growth and urban migration. Pollution takes several forms, but water pollution is the main issue. Impacted systems include coastal lakes, rivers, estuaries, beaches, nearshore and offshore marine waters (Goble and van der Elst 2022). Coastal urban areas have seen significant growth, namely in the eThekwini Metro and the local municipalities of uMhlathuze, KwaDukuza and Ray Nkonyeni (Section 2.2). Large areas of informal settlement with poor access to waste services invariably results in contaminated runoff into surface waters which reaches the coastal environment.

There are several pollution hot spots along the coast arising from a range of input factors, and management interventions need to focus on sewerage infrastructure maintenance, waste collection, and ongoing monitoring to inform proactive planning.



Post-storm accumulation of litter and debris at Blue Lagoon, Durban. Photo: SAAMBR

2.7 The Economic Environment

2.7.1 Ports and Shipping

KZN has two of South Africa's three major commercial ports, Durban and Richards Bay, which underpin much of the KZN and South African economy. The Port of Durban is the largest and busiest container port in Sub-Saharan Africa and the leading port for the Southern African Development Community (SADC) region, serving KZN and the Gauteng region as well as the Southern African hinterland (Humphreys *et al.* 2019). Its geographic location further enhances its appeal for relay transportation and hub-and-spoke networks, providing a strategic position for the transportation of goods from North and South America to Africa (Humphreys *et al.* 2019). The Richards Bay harbour is specially designated for bulk coal, timber and non-ferrous metals. Other exports include chrome ore; woodchips; titanium slag and mineral sand products from the Richards Bay Minerals' dune mining operations; pig iron, steel and base metals; and liquid-bulk acids and chemicals (Jones 2014).

In addition, maritime transport is considered one of the priority economic sectors towards unlocking the country's economy through the 'Blue Economy' as this would stimulate trade, increasing its contribution to the Gross Domestic Product (GDP), whilst at the same time creating employment opportunities (DoT 2017). However, shipping activities bring a range of environmental impacts such as poor air quality and polluted waters (Braathen 2011). The greatest concern remains pollution caused by non-native species following the discharge of untreated ballast water from ships.

While KZN port development may appear to have reached a maximum capacity, concepts are being explored adjacent to ports (e.g., industrial development zones (IDZ)), which creates an opportunity for enterprises dependent on sea imports or exports. These zones need to be strategically located to derive maximum economic benefits while minimising environmental impact (Department of Trade and Industry 2011).

2.7.2 Tourism

Tourism, both domestic and foreign, is an important economic driver for the KZN Province; it offers an enormous contribution towards the GDP, employment and investment (KZN Provincial Government 2017). As a holiday destination the KZN coast offers year-round warm climate and a rich natural environment, making it unmatched as one of the top markets for domestic tourism, having the highest share of intra-provincial travel (KZN Provincial Government 2017). Records show that there are almost 3 million trips made to KZN per year by local tourists, of which 40% visit the KZN beaches. They spend R5.04 billion in KZN (KZN Tourism Authority 2018), while foreign visitors favour Durban (68%) (KZN Tourism Authority 2018). This shows the significant value of these coastal areas, particularly the eThekwini beaches and surrounds.

While tourism remains a key focus area for economic development in South Africa, there are several pressing challenges that have adversely impacted the coastal environment. The COVID-19 pandemic brought the fragility of tourism into focus, being one of the worst affected economic sectors (KZN Tourism Authority 2019). More recently, significant coastal pollution events have led to the degradation of coastal areas, in many cases making them unusable. This has had a highly negative impact on the coastal tourism sector. Of concern is that this poor management and the lack of maintenance of infrastructure and attractions has been prolonged and detract from visitors' experience, in turn adversely affecting the image of KZN. There needs to be a focus on addressing these challenges at the local and provincial levels.

2.7.3 Aquaculture

Aquaculture (farmed fish) emerged as a global solution for feeding an increasing population in a sustainable manner (FAO 2016, FAO 2018, Hara *et al.* 2017). Between the 1970s and 2020, various attempts were made at aMatigulu Estuary, Mtunzini and Richards Bay to grow white prawns, brackish freshwater prawns, tiger prawns, freshwater ornamental fish, dusky kob, spotted grunter and Mozambican tilapia. However, all attempts failed for various reasons, except for the Mozambican tilapia at Zini Fish Farms. In March 2019, a Strategic Environmental Assessment (SEA) was done for the development of an Aquaculture Development Zone (ADZ) at the old Amatikulu site (NuLeaf Planning and Environmental 2019), which would make an ideal location for freshwater aquaculture (Trade & Investment KwaZulu-Natal 2020).

The current impact of aquaculture on the KZN coastal zone is negligible compared to other commercial and industrial uses. The positive impacts of aquaculture include economic development, job creation, food production and food security if undertaken following best practices.

2.7.4 Agriculture

Agriculture in KZN contributes around 4% to the province's GDP; it supplies produce of higher value than much of South Africa and contributes almost 13% to national agriculture employment. Sugar has been the mainstay of KZN agriculture, providing high levels of employment (SASA 2020). Tongaat Hulett and Illovo Sugar are the two major sugar producers whose operations contribute significantly to the national GDP, approximately R5,1 billion in value. (SASA 2020).

Of concern, sugar monoculture carries a risk of farmers shifting towards a wider range of high value crops, such as avocados and macadamia nuts. The KZN coastal region has developed into the largest producer of macadamia nuts in the world, with an estimated value of over three billion Rand (SAMAC 2018). KZN is also the country's main producer of timber (50% of all timber used in the country) and accounts for a significant percentage of South Africa's wood exports (KZN EDTEA 2022). The Sappi Saiccor Mill located at Umkomaas (50 km south of Durban) exports up to 800 000 tons of product annually (SAPPI 2021). The forest-product export sector in South Africa operates mainly via the port of Richards Bay.

Insecticides, other pesticides and both organic and synthetic fertilisers can affect the coastal environment, biochemical cycles and ecosystem functioning, causing damage due to run-off into rivers, leading to eutrophication (Bruinsma 2003, Goldblatt 2010). Food production takes an enormous amount of water, which, given current trends, could lead to critical water shortages. Thus, agricultural practices that promote more sustainable water use are needed (Goldblatt 2010).



2.7.5 Manufacturing and Industry

Access to excellent port facilities and maritime waste assimilation are two factors driving industrial development along the KZN coast (Goble and van der Elst 2014) - one of the most active industrial development regions in South Africa (IDC 2020). Several large, globally competitive industries are in the coastal districts of KZN, involved in manufacturing diverse products such as motor vehicles and vehicle parts, specialised metals, textiles, pulp and paper, cement, sugar, rubber, plastics, chemicals and petrochemicals, forestry products, food and beverages (Goble and van der Elst 2014). These primary industries have created considerable multiplier effects in secondary suppliers of components and service providers (TIKZN 2016).

KZN's manufacturing sector contributes 20% of the province's employment and 29% to its GDP (TIKZN 2016) and remains an important activity for growth and employment (Department of Trade and Industry 2011). However, successive government interventions to create growth, for example RDP, GEAR, NDP, Operation Phakisa, etc. have largely been thwarted by the global economy, domestic fraud, corruption and HIV (Gomersall 2004), and more recently, the COVID-19 pandemic. There is considerable variance in the levels of pressure brought about by the different industries, from aluminium, high-fluoride content gypsum waste in Richards Bay, to lethal mercury leaks into the Cato Ridge wetlands.

2.7.6 Commercial Fishing

Commercial fishing in KZN is at a low level, as the coast is relatively unproductive (narrow shelf, oligotrophic waters), and resources are mostly fully exploited or over-exploited. What is harvested is sold locally but is insufficient to meet demand. However, the province has a long history of industrial trawling for crustaceans which commenced in the 1960's and continues at a low-level today, being marginally economically viable. While KZN crustacean trawl grounds are well-defined, the area has been reduced by the declaration of the uThukela MPA and the extended iSimangaliso MPA.

Small beach-launched skiboats operate along the entire coast, using hook and line fishing. Stocks of the initially targeted large-sized species have declined and been replaced by other smaller species. Beachseine fishing, a form of traditional fishery, has increasingly focused on sardines as other species declined. There is only one seine-net boat which has a permit to catch species other than sardines. Around 25 beach-seine permits are issued annually for sardines in KZN; fishing mainly occurs on the south coast if the shoals come close inshore, with a very high interannual variation in catches.

Oyster harvesting began in KZN in 1888 and harvesting methods are virtually unchanged, except that masks are now allowed which permits harvesters to access oysters down to around 1.5 m water depth. Around 20-30 commercial oyster permits are issued by DFFE each year; harvesting is permitted between the uThukela River mouth in the north and the uMzimkhulu River mouth in the south (de Bruyn 2006, Steyn et al. 2010).



2.7.7 Mining

Half of KZN's dune mining output comes from Richards Bay Minerals (RBM) on the north coast (Global Africa Network 2017) with RBM mining zircon, rutile, titania slag, titanium dioxide feedstock and highpurity iron. RBM accounts for 3,3% of the national mining sector by value of output (Global Africa Network 2017), which includes 95% of titania slag and rutile and 33% of zircon (Williams and Steenkamp 2006). Other coastal mining activities include limestone, carbonates, stone and aggregates for the building and construction industries. Sand mining operations require significant freshwater inputs, which is a limited resource and therefore it often competes with a variety of activities, including tourism and leisure.

Mining operations also have the potential to leave irreparable damage to the natural environment, with several potential impacts identified, including air pollution, biodiversity loss, soil contamination and erosion, loss of vegetation cover, surface and groundwater pollution or depletion, large-scale disturbance of hydro and geological systems and reduced ecological connectivity. There are also additional impacts should a tailing spill occur (Ott 2017).

Sand mining is an increasing pressure, whereby sand is mined from riverbeds, estuaries, dunes or even the seafloor. Fluvially-derived sands are well-sorted (mix of different sand sizes) by natural sediment transport processes and are of the market-preferred structure and composition (Kondolf 1994, Koehnken et al. 2020). There are sand extractive processes throughout the province, mainly located on the major estuaries. Unsustainable sand mining rates in large urban estuaries affect the sediment supply downstream to coastal and marine environments, which exacerbates coastal erosion (de Lange et al. 2008, Corbella and Stretch 2012).

Internationally, offshore exploration for minerals is increasing, so it is likely that exploitation will also increase locally. This may become more economically viable as terrestrial reserves are depleted and technology improves. The Department of Mineral and Petroleum Resources (DMPR) aims to develop seabed mining in the South African Exclusive Economic Zone (EEZ), and applications for offshore prospecting rights have been lodged for phosphate and titanium-based minerals.



2.8 Governance Environment

2.8.1 Coastal Management

The goods and services delivered by KZN coastal ecosystems are a pivotal asset and underpin much of the development potential of the province. Hence, careful management of these resources is critical. Protection of the coastal environment is now entrenched in the ICMA. In terms of the Constitution. national government is responsible for coastal management and the implementation of the ICM Act, primarily achieved through the development of policies and the promulgation and application of regulations. However, much of the implementation responsibility is devolved to coastal provinces and accordingly to the next level of local government structures.

South Africa is signatory to several international agreements which outline requirements and standards to attain. Of particular relevance to KZN, the Nairobi Convention is a treaty that works to protect, manage and develop the Western Indian Ocean (WIO). This, coupled with the legislative framework outlined in the ICMA, drives regional coastal governance. However, coastal governance is complex, not only because it involves many different authorities, but because much of it is a common property resource, i.e., it is not 'owned' by the state or any individual. Unfortunately, this often leads to people considering the 'shared' resource for their use, but not taking equal and collective responsibilities in caring for it.

2.8.2 Marine Protected Areas

Marine protected areas (MPAs) in South Africa are, by definition, areas of the ocean (which may include the adjacent coast) that have been proclaimed as protected areas in terms of the National Environmental Management: Protected Areas Act (57 of 2003). MPAs are primarily established to protect marine biodiversity and to assist fisheries management by providing a refuge for overexploited stocks and to seed adjacent areas by spillover (Attwood et al. 1997). They can also provide important functions in terms of tourism, scientific research, marine education and offer resilience to climate change (Roberts et al. 2017).

MPAs range greatly in size and can be zoned from complete no-go, no-take restricted areas to controlled areas where different specified forms of human use are allowed (Edgar et al. 2014). KZN has four relatively large MPAs including iSimangaliso, uThukela Banks, Aliwal Shoal and Protea Banks, all of which are zoned for multiple use. Too few MPA's have "no-take" or "sanctuary" zones where 100% protection is in place. Such zones are important in achieving the overall goals of MPAs in terms of biodiversity protection and fisheries management. The MPAs of KZN are managed by Ezemvelo KZN Wildlife, which has a long history of conservation management. Assessment of the state of MPA management in South Africa shows KZN's MPAs to be well managed, although improvements in design, implementation of management plans, socioeconomic considerations, staff capacity and monitoring need attention.

2.9 Status of Coastal Management Units and Boundaries

The coastal zone is a complex system incorporating several components and factors that give it shape and definition (Glavovic and Cullinan 2009). In South Africa the coastal zone is defined in terms of the ICMA as comprising coastal public property (CPP), a coastal protection zone (CPZ), coastal access land, coastal waters, coastal protected areas and the seashore, and includes any aspect of the environment on, in, under and above such area (shown in Figure 4).



KWAZULU-NATAL COASTAL MANAGEMENT PROGRAMME

Figure 4. Schematic representation of the Coastal Zone

2.10 Coastal Spatial Planning and Conditions of Use

Legislation governing spatial planning either within the coastal zone, or overlapping with the coastal zone, is extensive. Spatial planning is already occurring in the coastal zone because of a range of planning processes. Those key to provincial and local government in KZN are highlighted in Table 1 (DEA 2014).

Table 1. Planning process and legislation governing coastal spatial planning

Planning process	Key legislation/plan	Lead authority	
National Spatial Development	National Development Plan 2030	The Presidency	
Perspective	Spatial Planning and Land Use Management Act (SPLUMA) (16 of 2013)	DLRRD	
	Marine Spatial Planning Act (16 of 2018)	DFFE	
Biodiversity Protection Area as	Biodiversity Act (10 of 2004)	DFFE/SANBI	
informed by Biodiversity Planning Processes	Protected Areas Act (57 of 2003)	DFFE/SANBI	
	National Protected Area Strategy	DFFE	
Sensitive Coastal Areas	Environment Conservation Act (73 of 1989) (Areas specifically gazetted, namely areas in the Garden Route and South Coast of KZN)	DFFE/Local Municipalities	
Marine Protected Areas (MPAs) and Protected Areas (PAs)	Protected Areas Act (57 of 2003) [formerly under the Marine Living Resources Act (18 of 1998) (MLRA)]	DFFE/SANParks/ Provincial entity	
National Parks	Protected Areas Act (57 of 2003)	SANParks	
Fishing Zones	Marine Living Resources Act (18 of 1998)	DFFE	
Mining and Exploration Concessions	Mineral and Petroleum Resources Development Act (28 of 2002)	DMPR	
Shipping and Navigation Routes	Marine Traffic Act (2 of 1981)	DoT	
	National Ports Act (12 of 2005)	TNPA	
	Strategic Infrastructure Projects (SIPs)	TNPA	
National Water Resource Strategy	National Water Act (36 of 1998)	DWS	
Agricultural Spatial Plans	Conservation of Agricultural Resources Act (43 of 1983)	DFFE	
Heritage Areas	National Heritage Resources Act (25 of 1999)	SAHRA	
Estuary Zoning Plans (as part of estuary management plans)	National Estuarine Management Protocol (as required by the ICMA)	DFFE / Provincial lead agency	
Coastal Management Lines	ICMA	Provincial lead agency	
Coastal Planning Schemes	ICMA	Local municipalities	
Special Management Areas	ICMA	DFFE	
One Plans	Intergovernmental Relations Framework Act (13 of 2005)	District municipalities and Metros	
Regional, Provincial and Municipal	Municipal Systems Act (32 of 2000)	COGTA / Local	
SDFs, land use plans and zoning schemes	Spatial Planning and Land Use Management Act (SPLUMA) (16 of 2013)	municipalities	

WAZULU-NATAL COASTAL MANAGEMENT PROGRAMM

Increasing demand for ocean and coastal space makes the coordination of ocean and coastal spatial planning a priority (DEA 2014), which is further underpinned by the National government initiative, Operation Phakisa.

In terms of the ICMA, coastal spatial planning is explicitly addressed in terms of special management areas, estuarine management plans and coastal planning schemes (DEA 2014).

2.10.1 Special Management Areas

The ICMA (Section 23) makes provision for the declaration of special management areas by the Minister (after consultation with the MEC) if environmental, cultural or socioeconomic conditions require measures to attain the objective of any CMPs; facilitate management of coastal resources for a local community; promote sustainable livelihoods for a local community; or conserve, protect or enhance coastal ecosystems and biodiversity in the area.

2.10.2 Estuarine Management Plans

The National Estuarine Management Protocol outlines the need and framework for the development of estuarine management plans (EMPs). In the main, this is the responsibility of Provincial Government. Local Government may only develop EMPs if the provincial lead agency enters into an agreement with a municipality in terms of section 156(4) of the Constitution (1996). Furthermore, the ICMA provides for these plans to be prepared and adopted as part of an Integrated Development Plan (IDP) and Spatial Development Framework (SDF) (DEA 2014).

2.10.3 Coastal Planning Schemes

Section 56 of the ICMA allows for the determination of coastal planning schemes by the Minister, the MEC, a municipality or the management authority of a protected area for specific purposes or activities.



2.11 Status of Activity-based Management Programmes

The management and control of activities taking place in the coastal zone are governed under numerous Acts, with activity-based regulations, norms and standards, and guidelines having been promulgated under these Acts. A summary of this is presented in Table 2.

Table 2. Coastal Zone activities and the Acts which govern these

Key activities	Key Act/s	Lead agency	
Managing of coastal access land	ICMA (24 of 2008), amended (36 of 2014)	Local	
Land reclamation	ICMA (24 of 2008), amended (36 of 2014)	National	
Coastal leases and concessions	Seashore Act (21 of 1935)	Provincial	
Unlawful structures	ICMA (24 of 2008), amended (36 of 2014)	National and provincial	
Off-road vehicles	ICMA (24 of 2008), amended (36 of 2014)	National	
Boat launch sites	ICMA (24 of 2008), amended (36 of 2014)	National and provincial	
Effluent discharges into coastal waters	ICMA (24 of 2008), amended (36 of 2014)	National	
Dumping at sea	ICMA (24 of 2008), amended (36 of 2014)	National	
Incineration at sea	Prohibited under the ICMA (Section 70), except under specific conditions as specified	National	
Environmental Impact Assessment	National Environmental Management Act (107 of 1998)	National and provincial	
Biodiversity and protected areas	Biodiversity Act (10 of 2004)	National and	
management	Protected Areas Act (57 of 2003)	provincial	
Marine Protected Areas	Protected Areas Amendment Act (21 of 2014)	National and provincial	
Sensitive Coastal Areas	Environment Conservation Act (73 of 1989)	National and local	
Heritage area management	World Heritage Convention Act (49 of 1999)	National and	
	National Heritage Resources Act (25 of 1999)	provincial	
Prevention and combating pollution from ships, including	International Convention for Prevention of Pollution from Ships Act (2 of 1986)	National	
solid waste (garbage) and ballast water	South Africa Maritime Safety Authority Act (5 of 1998)		
	Marine Pollution Act (2 of 1986)		
	Merchant Shipping Act (57 of 1951)		
Solid waste management (land- based)	Waste Act (59 of 2008)	National, provincial and local	
Atmospheric pollution	Air Quality Act (39 of 2004)	National, provincial and local	

Table 2 continued

Key activities	Key Act/s	Lead agency
Control of scuba diving, whale watching and shark cage diving and other protected or threatened species	Threatened or Protected Marine Species Regulations, 2017	National
State assets in coastal zone, including 12 fishing harbours.	Government Immovable Asset Management Act (19 of 2007)	National
	State Land Disposal Act (48 of 1961)	
	Marine Living Resources Act (18 of 1998, amended 2000)	
Fisheries management	Marine Living Resources Act (18 of 1998, amended 2000)	National
	Sea Fishery Act (12 of 1988)	
Marine aquaculture or harvesting of marine living	Marine Living Resources Act (18 of 1998, amended 2000)	National
resources (sea-based)	Fisheries management	
Harvesting of coastal resources (land-based)	Conservation of Agricultural Resources Act (43 of 1983)	National
	National Forests Act (84 of 1998)	
Port management	National Ports Act (12 of 2005)	National
	International Health Regulations Act (28 of 1974)	
Shipping	Marine Traffic Act (2 of 1981)	National
	SAMSA Act (5 of 1998)	
Freshwater flows (quantity and water quality) into coastal zone	National Water Act (36 of 1998)	National
Mining	Mineral and Petroleum Resources Development Act (28 of 2002)	National
Oil and gas exploration	Mineral and Petroleum Resources Development Act (28 of 2002)	National
Coastal infrastructure (land-	Municipal Systems Act (32 of 2000)	National, provincial
based)	National Building Regulations and Building Standards Act (103 of 1977, amended 1982, 1984, 1989, 1995, 1996)	and local
	Spatial Planning and Land Use Management Act (16 of 2013)	
	KZN Planning and Development Act (6 of 2008)	
Recreational water quality (e.g., beaches)	National Health Act (61 of 2003)	National and local
Renewable energy activities	Energy Act (34 of 2008)	National
Disasters	Disaster Management Act (57 of 2002)	National, provincial and local

2.12 State of the Coast Reporting

The KZN provincial lead agency is responsible for promoting, coordinating and monitoring coastal management in the province to ensure that it is undertaken in an integrated, effective and efficient manner and in accordance with the objectives of the ICMA. In terms of section 93(2) of the Act, the MEC of a coastal province must report on the State of the Coast every four years, through the preparation of a report which contains information as prescribed by the Minister.

The first KZN State of the Coast Report was released by EDTEA in March 2022 (Goble and van der Elst 2022) and provides detailed knowledge as to the current state of the KZN coastal environment. It outlines which pressures the various coastal and marine ecosystems are exposed to and better informs future management decisions. A summary of each sub-system is provided in a set of fascicles which can be independently reviewed and updated to track progress in coastal management. Overall, the state of the KZN coast is concerning with 23 of the 35 sub-systems (66%) identified as being in a moderate state and 11 (31%) in a poor state.

2.13 Progress in Cooperative Governance

2.13.1 Formal Institutional Arrangements

There are several formal institutional arrangements required to facilitate and achieve ICM. These include ministerial political (MINMEC) and technical (MINTEC) structures under the Intergovernmental Relations Framework Act (13 of 2005), which aim to facilitate a high level of policy and strategy coherence between the three spheres of government. MINMEC (Environment) is a standing intergovernmental body consisting of the Minister of Environment, members of the provincial Executive Councils (MECs) responsible for environmental management functions and the South African Local Government Association (SALGA). MINTEC (Environment) provides technical input into MINMEC. Historically, Working Group 7 (Oceans and Coasts) of MINTEC served to fulfil the role of the National Coastal Committee (NCC) as outlined in Section 35 of the ICMA. However, this changed in the 2023/2024 cycle, when the NCC was formally established as a more representative body. The NCC must promote integrated coastal management in the Republic and tangible cooperative governance by coordinating the effective implementation of the ICMA and the NCMP.

At a provincial level, the Provincial Coastal Committee (PCC) forms the core of the institutional framework for ICM under the ICMA (Section 39). The key function of this committee is to promote and coordinate ICM in the province and facilitate successful implementation of the ICMA. The KZN PCC was formally constituted under the ICMA in August 2014, prior to which it had been operating as a voluntary coordinating body.

The KZN PCC has been reconstituted and will resume its operations in 2024. It aims to hold quarterly meetings and is chaired by the Chief Director: Environmental Management (EDTEA), with secretariat support provided via EDTEA's Coastal Management Unit. Currently, the PCC has representation from the following authorities and organisations:

- National Department of Forestry, Fisheries and the Environment (DFFE);
- National Department of Water and Sanitation (DWS);
- National Department of Mineral and Petroleum Resources (DMPR);
- National Department of Public Works and Infrastructure (DPWI);
 - EDTEA:
- COGTA:
- Ezemvelo KZN Wildlife (Ezemvelo);
- iSimangaliso Wetland Park
 Authority;
- eThekwini Metropolitan, coastal

The KZN PCC will establish sub-committees as the need arises on either a permanent or temporary basis to deal with provincial issues or spatial areas which require more detailed coastal management attention.

At the local level, Municipal Coastal Committees (MCCs) have also been established in the coastal districts of King Cetshwayo, iLembe, eThekwini and Ugu. These promote dialogue between governmental and non-governmental stakeholders and improve coordination of coastal management within municipalities.



- district municipalities and local municipalities with ports;
- Transnet National Ports Authority;
- KZN Sharks Board;
- Tourism KZN;
- NGO/CBO representatives with expertise in coastal management;
- Representatives of the academic, scientific and research
- community;
- Research councils with expertise in coastal management;
- Private/Business sector; and
- Specialists.

2.13.2 Informal Support Elements

In addition to the formal structures, the framework for cooperative governance recognises the importance of governance "support elements" to achieve effective ICM. These include recognition and empowerment of marginalised or previously disadvantaged communities; data and information systems; awareness, education and training; capacity building; scientific (research) support programmes; financial support programmes; and coordinated coastal compliance and enforcement systems.

2.13.3 Data and Information Management Systems

Section 93 of the ICMA states that the Minister (Environment) and by extension the MECs of coastal provinces, must make sufficient information available and accessible to the public regarding the protection and management of the coastal environment. This is to allow the public to make informed decisions as to the State's achievements in terms of coastal management.

KZN has developed a single-portal information hub (i.e., CoastKZN: www.coastkzn.co.za) which makes relevant coastal and estuarine information accessible to the public. CoastKZN is being managed, updated and maintained on an ongoing basis.

2.13.4 Awareness, Education and Training

A major threat to sustainable coastal management in South Africa is insufficient capacity in government, from national to municipal levels. This has a cascading impact on the effectiveness and efficiency of coastal management institutions. Training and capacity building are, therefore, a critical support element in the long-term sustainability of ICM implementation. In terms of section 38 of the ICMA, provincial lead agencies are required to promote training, education and public awareness programmes which highlight protection, conservation and enhancement of the coastal environment, as well as sustainable use of coastal resources. This should be done in collaboration with appropriate bodies and organisations. Within KZN, some of the established role players for generating awareness and education about coastal issues include Coastwatch, uShaka Sea World Education, WildOceans, Wildlife and Environment Society of South Africa (WESSA), South Durban Community Environmental Alliance (SDCEA) and Conservation KZN.

Unfortunately, a persistent lack of capacity for coastal management in many municipalities presents a significant hindrance to the effective implementation of the ICMA (DEA 2014). At local government level, institutional arrangements for coastal management are still to be fully developed. There is a general lack of resources and skills dedicated to coastal management, particularly in rural areas. This means that there are needs and opportunities for intervention and proactive coastal management efforts. As a result, the mobilisation and allocation of dedicated funds by municipalities for ICM is crucial. To boost their capacity, some local authorities cooperate with nature conservation agencies and participate in co-management initiatives with community groups.

The PCMP can play an important role in capacity building and transfer of information to local levels. Its mandate is an expression of KZN's responsibility to wisely manage its coastal area with its unique natural resources and complex relationship with people. Guiding behaviour and actions in the coastal zone is important in ensuring that the benefits of the coast can be sustainably and equitably distributed amongst all users.

2.13.5 Financing Mechanisms

Roles and responsibilities are assigned by the ICMA to the lead agency for coastal management of each province. The onus is on the lead agency (i.e., EDTEA in the case of KZN) to ensure sufficient budget for meeting these objectives. To date, the budget allowances for coastal management, particularly for new roles and responsibilities assigned to authorities under the ICMA, have been limited.

2.13.6 Scientific Research Support to ICM

Sustainable coastal management must be underpinned by sound scientific research, which aims to extend and improve the available information and knowledge base. In KZN, support is provided directly through a longstanding working agreement between EDTEA and the South African Association for Marine Biological Research (SAAMBR). Indirect support to the provincial lead agency is also provided by national institutions, such as the South African Network for Coastal and Oceanic Research (SANCOR), the National Research Foundation (NRF) and the Council for Scientific and Industrial Research (CSIR). Locally, the Province draws considerable support from Ezemvelo KZN Wildlife. In addition, research focused on the KZN coast is undertaken by local research agencies, universities, NGOs and consultancies. In some cases, large international programmes generate important scientific information relating to the KZN coast, and participation in these should be fostered.

2.13.7 Coordinated Compliance Monitoring and **Enforcement Systems**

Section 32 of the ICMA tasks the lead agency for coastal management in the province with implementation and enforcement of the Act. The MEC may use any powers granted under the ICMA to implement or monitor compliance with provincial norms and standards. In addition, the Minister may specifically request provincial lead agencies to implement or monitor compliance with national norms and standards.

Our coast is a favoured residential and holiday destination, under constant pressure for development. Particularly on the KZN South Coast, there is encroachment into coastal public property (including the Admiralty Reserve). Not only is this illegal, but this results in the loss of natural habitat and functioning, which in turn limits the coastal environment's ability to deliver the very services and resources that attracted people in the first place. Public access to the coast is also negatively affected. The commencement of coastal development in traditional authority areas, without environmental authorisation, also represents a hurdle needing to be overcome urgently.

In dealing with such matters and to facilitate effective implementation of the ICMA, there needs to be good compliance monitoring and proper enforcement systems in place. Of concern is that this is a shortcoming for ICM, primarily due to lack of capacity and lack of coordination between the various responsible authorities (DEA 2014). As such, this priority area is closely linked to that of capacity building. To improve compliance and enforcement within the KZN coastal zone, consideration needs to be given to new and innovative ways of streamlining processes, with the appropriate ICMA delegations effected. An increase in the number of Fisheries Control Officers (FCOs) is also paramount. Overall, the continued support of DFFE, Ezemvelo, DMPR and coastal municipalities remains critical in the collective management of the coast.

The Richards Bay lighthouse was subsequently relocated due to erosion of the dunes. Photo: Kierran Allen

3. ROLES AND

1. 1.



3.1 Mandatory Roles and Responsibilities

The ICMA outlines the roles and responsibilities of national, provincial and local government, several of which are mandatory as detailed in Tables 3 to 5.

Table 3. Roles and Responsibilities of National Government

	Aspect	ICMA Section/s	Description
1	Management of coastal public property (CPP)	7,8,9,10,11, 12,13,14,15, 21,26,27,32	Ensure the State is the trustee of CPP; and provide for the protection, management and enhancement of CPP as an inalienable area within the coastal zone that belongs to the citizens of South Africa.
2	National Estuarine Management Protocol	33,34	Ensure that the NEMP is developed and that estuarine management plans are in place for prioritised estuaries.
3	National Coastal Committee	35,36,37	Establishment of the National Coastal Committee, determination of its powers and appointing representatives for the Committee.
4	Monitor the appointment of provincial lead agencies	38	Ensure that provincial lead agencies for ICM are appointed, established and functioning on a continual basis.
5	Development and implementation of the NCMP	44,45	Develop a NCMP aligned with the vision and objectives of the ICMA.
6	Consistency and alignment between the NCMP and other statutory plans	51,52	Ensure that any plan, policy or programme adopted by an organ of state that may affect coastal management is consistent and aligned with the NCMP.
7	Consultation and public participation	53	Ensure meaningful consultation with government and other coastal stakeholders.
8	Environmental authorisations for coastal activities	63,64	In terms of S63(4), ensure that the competent authority refers applications that are inconsistent with S63(2), but are in the public interest, to the Minister for consideration. Ensure that where an environmental authorisation is not required for coastal activities, the Minister considers listing activities that will require a permit or license in terms of S63(6).
9	Discharge of effluent into coastal waters	69	Ensure that point source discharges of effluent are effectively assessed, controlled and monitored.
10	Emergency dumping at sea	70,71	Prohibit incineration at sea and ensure that the overall intent of S70 and S71 is understood by stakeholders.
11	Emergency dumping at sea	72	Ensure that consideration is given to emergency situations relating to the dumping of waste at sea.
12	National Action List	73	Ensure that an effective screening mechanism is available to support assessment of dumping applications.
13	Prescribing regulations and fees	83	Develop regulations for the management of activities within CPP and consult the Minister of Finance before making any regulations which will entail expenditure of funds in future years, application fees, or regulations imposing fees, costs or any other charges.
14	General provisions applicable to regulations	85	Specify general procedures relating to regulations, including penalties for contraventions.

(Source: DEA 2014)

Table 4. Roles and Responsibilities of Provincial Government

	Aspect	ICMA Section/s	Description
1	Management of the coastal protection zone	16,17	The provincial ensure the pro
		26(1)(b), 28(1)	The MEC may cannot do this
2	Access to CPP	13(1)	The provincial reasonable acc
3	Establishment of coastal management lines	25	The provincial protect CPP, protect cPP, protect cPP, protect cPP, protect cPP, protect cPP, preserve the acceleration of the context of the
4	Marking coastal boundaries on zoning maps	31	Inform munici adjusted in ter
5	Estuarine management plans	34,47	Develop estuar prioritised basi
6	Designation of provincial lead agency	38	Designation of and must ensu management
7	Monitoring coastal management	38(2)(b)	The provincial management integrated, effe objects of the I
8	Support PCC	38(2)(e)	The provincial support to the
9	Establishment of PCC	39,40,41	The establishm and representa
10	Development and implementation of a PCMP	70,71	The provincial
11	Consistency and alignment between PCMP and other statutory plans	46,47	The provincial statutory plans NCMP.
12	Consultation and public participation	53	Consultation a or other persor
13	Environmental authorisation for coastal activities	63(1)(c)	Environmental whether CPP, the extent to w with the purpo
		63(1)(d)	Environmental estuarine man coastal manag
		63(1)(f)	Environmental likely impact of including the of existing activiti
		63(1)(g)	Environmental likely impact of activity.
14	Regulations by the MEC	84,85	The MEC of a p regulations that and may devel the coastal zor including pena
15	Information and reporting on coastal matters	93	Prepare a repo province which Minister.
16	Coordination of actions between Province and municipalities	94	Liaise with coa of the ICMA by

(Source: DEA 2014 and ICMA)

lead agency must ensure the designation of the CPZ to tection, management and enhancement of this area. determine and adjust the boundaries of the CPZ but in a manner that changes the boundaries of CPP. lead agency has oversight in ensuring people's right to cess, use and enjoyment of CPP. lead agency must establish coastal management lines to rivate property and public safety; to protect the CPZ; and esthetic values of the coastal zone. palities of any coastal boundaries determined or ms of S26. rine management plans in terms of the NEMP on a the provincial lead agency must be done by the Premier ure that there is at all times a lead agency for coastal in the province which is responsible to the MEC. lead agency is responsible for monitoring coastal in the Province to ensure that it is undertaken in an ective and efficient manner and in accordance with the ICMA. lead agency must provide logistical and administrative PCC. nent and functioning of a PCC needs to be undertaken atives appointed. lead agency is required to develop a PCMP. lead agency must ensure consistency and alignment of with the PCMP and that the PCMP is aligned with the nd public participation are required by the MEC. Minister ns exercising powers in terms of the ICMA. l authorisations for coastal activities must consider the CPZ or coastal access land will be affected, and if so, which the proposed development or activity is consistent ose for establishing and protecting those areas. l authorisations for coastal activities must consider agement plans, coastal management programmes and ement objectives. l authorisations for coastal activities must consider the f the proposed activity on the coastal environment, cumulative effect of its impact together with those of ies. authorisations for coastal activities must consider the f coastal environmental processes on the proposed province may, after consultation with the Minister, make at are consistent with any national norms or standards lop regulations for the management of activities within ne and specify general procedures relating to regulations, alties for contraventions. ort on the state of the coastal environment for the h must contain any information prescribed by the stal municipalities to coordinate actions taken in terms Province with actions taken by municipalities.

Table 5. Roles and Responsibilities of Local Government

	Aspect	ICMA Section/s	Description	Provincial Government's Role
1	Designation of coastal access land	18,19,20	 Ensuring that the public has equitable access to coastal public property by designating coastal access land. Make a by-law that designates strips of land to provide access to CPP along the coast. Withdraw inappropriate coastal access land and follow an environmentally sensitive and socially responsible process in designating coastal access land. 	Advisory – assisting LMs with determination of inappropriate/ appropriate coastal access.
2	Coastal management lines - demarcation on zoning maps	25	 Participation in the determination of coastal management lines. Delineating coastal management lines on municipal zoning maps. 	Provincial government is the lead agency for the establishment of coastal management lines.
3	Impose fees within coastal public property	13(3)	Obtain the approval of the Minister before charging any fee for access to CPP.	Advisory
4	Determining and adjusting coastal boundaries of coastal access land	29	Ensure specified considerations are taken into account when determining or adjusting a coastal boundary of coastal access land.	Advisory – assist with appropriate considerations for adjusting boundaries.
5	Marking coastal boundaries on zoning maps	31	Delineate coastal boundaries determined or adjusted in terms of S26 on zoning maps.	N/A
6	Municipal Coastal Management Programmes (MCMPs)	48,49,55	Prepare and adopt a municipal coastal management programme for managing the coastal zone or specific parts of the coastal zone in the municipality.	Guidance on the requirements of MCMP's and ensuring alignment with the PCMP.
7	Consistency and alignment between MCMPs and other statutory plans	51,52	 Ensure that any plan, policy or programme adopted by an organ of state that may affect coastal management is consistent and aligned with MCMPs which in turn is aligned with the PCMP and the NCMP. Ensure that IDPs (including its spatial development framework) are consistent with other statutory plans [See s52(1) (a-f)] adopted by either a national or a provincial organ of state. 	Advisory – Ensure that MCMP's align with the PCMP and other related documents.
8	Consultation and public participation	53	Adequate consultation and public participation should precede the exercising of a power by a municipality.	N/A
9	Implementation of land use legislation in the CPZ	62	In implementing any legislation that regulates the planning or development of land in a manner that conforms to the principles of cooperative governance contained in Chapter 3 of the Constitution, apply that legislation in relation to land in the CPZ in a way that gives effect to the purposes for which the protection zone is established as set out in s ¹ 7.	Advisory

(Source: DEA 2014 and ICMA)



4. VISION AND PRIORITIES



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4.1 Vision for the KZN Coast

This vision was developed through a participatory approach based on the NCMP (DFFE 2023), NDP (National Planning Commission 2017), PCMP (KZN EDTEA 2019) and the inputs of coastal stakeholders. The vision highlights the coastal management objectives for the coastal zone in the province and the need for sustainable use of coastal resources. As the PCMP enters its second cycle of implementation, this vision remains unchanged.

VISION FOR THE KZN COAST

A vibrant, healthy and resilient coast with sustainable access to resources for all.

MISSION

Through cooperative governance and best practice, the intrinsic value of the coast is protected, restored and enhanced, while ensuring climate change resilience and promoting equitable access and sustainable use of coastal resources for all stakeholders and user groups.



4.1.1 Principles Underpinning the Vision

The ICMA and coastal management in general are underpinned by several core principles as outlined by the NCMP (DFFE 2023). The principles outlined in Table 6 are applicable to coastal management, in addition to those highlighted by NEMA, as they provide a departure point for translating the KZN vision into practice.

Table 6. Principles applicable to integrated coastal management

Principle	Description
National and Provincial Asset	The coast must be retained as to access and benefit from the
Economic Development	Economic development oppor society and to promote the we
Social Equity	Coastal management efforts n and to promote the well-being
Ecological Integrity	The diversity, health and produ and where appropriate rehabil
Holism	The coast must be treated as a interrelationships between coase and air.
Assimilative Capacity Limitations	Coastal ecosystems have finite development and exploitation living resources.
Vulnerability	The coast is an ecosystem of g development and the impacts
Risk Aversion and Precaution	Coastal management efforts n approach under conditions of
Accountability and Responsibility	Coastal management is a shar accountable for their actions, i
Duty of Care	All people and organisations m the coastal environment and c
Integration and Participation	A dedicated, coordinated and conducted in a participatory, ir
Differentiated Approach	While a generic management implementation cannot be rig
Adaptive Management	Incrementally adjusting practi experience, experimenting and
Cooperative Governance	Working together to ensure co government and stakeholders

a national and provincial asset, with public rights e many opportunities provided by it.

rtunities must be optimised to meet the needs of ell-being of coastal communities.

must be optimised to meet the needs of society a of coastal communities.

uctivity of coastal ecosystems must be maintained litated.

a distinctive and indivisible system, recognising the astal users and ecosystems and between the land,

assimilative capacity to accommodate in a sustainable manner, for both living and non-

reat value but inherently vulnerable to of climate change.

nust adopt a risk-averse and precautionary uncertainty.

red responsibility, and all people must be including financial liability for negative impacts.

nust act with due care to avoid negative impacts on coastal resources.

integrated approach must be developed and nclusive and transparent way.

framework is important, mechanisms of gid as ICM is contextual.

ices based on learning through common sense, d monitoring "learning-by-doing".

onsistency in approach among all spheres of

4.2 KZN Priorities for ICM

The situation assessment outlined in Chapter 2 reflects the current state of the KZN coastal zone. This information, the outcomes of the KZN State of the Coast Report (Goble and van der Elst 2022) and the identified national priorities in the NCMP have been used to distil key priorities for ICM in KZN towards achieving the vision. These priorities, while some overlap with the 2019-2023 priorities, are relevant for the period 2024-2029. They are shown in Figure 5.

KWAZULU-NATAL COASTAL MANAGEMENT PROGRAMME

Figure 5. ICM priority areas for KZN

The uMhlanga Estuary boardwalk through the mangroves was damaged during the April 2022 floods. *Photo: Kierran Allen*

NATAL COASTAL MANAGEMENT PROGRAMM

The vision, together with the eight priorities, provide the primary policy directive for coastal management in KZN for the period 2024-2029. This section addresses the KZN coastal management objectives and highlights specific actions that will be undertaken by EDTEA as part of its commitments under this CMP.

5.1 Priority Area: Coastal Access

GOAL: Promote equitable and sustainable access to the coast

Objectives	Action	Performance Indicator	Completion Date
	Oversight management of	Listing (gazetting) of public launch sites in KZN	2026/2027
Enable physical public access to the sea and along	public launch sites in KZN	Annual boat launch sites report	Annually
the seashore, on a managed basis	Support local municipalities with coastal access	Engagements with local municipalities on coastal access priorities and challenges	Ongoing

5.2 Priority Area: Coastal Vulnerability: Adaptation and Resilience

GOAL: Promote resilience to the effects of dynamic coastal processes, environmental hazards and natural disasters

Objectives	Action	Performance Indicator	Completion Date
Ensure that	Public and stakeholder consultation for KZN CMLs	Register of meetings and comments report	2025/2026
coastal planning and development minimises the	Finalisation of CMLs for the KZN coast and estuaries	Gazetted coastal management lines for KZN	2025/2026
exposure of people, infrastructure and economic activities	Develop a guideline for implementation of CMLs	CML guideline document	2025/2026
from dynamic coastal processes	Support DFFE with the development of CML for iSimangaliso Wetland Park	iSimangaliso CML	2026/2027

5.3 Priority Area: Compliance and Enforcement

GOAL: Promote compliance with coastal and other regulations

Objectives	Action	Performance Indicator	Completion Date
Facilitate partnerships and protocols for cooperation with all spheres of government	Acilitate partnerships and protocols for poperation with all pheres of government	Reports on joint operations	Ongoing
compliance monitoring and enforcement in coastal areas	Support EDTEA coastal districts with ICM compliance monitoring and enforcement activities	Number of NEM: ICMA enforcement notices issued	Ongoing

5.4 Priority Area: Cooperative Governance

GOAL: Establish and strengthen institutional partnerships and mechanisms for ICM to facilitate better management

Objectives	Action	Performance Indicator	Completion Date
Oversight management of infrastructure in coastal waters from the HWM to the territorial sea	Manage seashore leases in KZN	Number of seashore leases issued	Ongoing
Promote provincial and local government objectives through participation in the National Coastal Committee and MINTEC Working Group 7 (WG7)	Elevation of priority issues from Municipal Coastal Committees (MCCs) and the KZN PCC to WG7 and the NCC	List of priority issues to WG7 and NCC	Ongoing
Strengthen PCC and support	Convene and record KZN PCC meetings	Minutes of PCC meetings	Quarterly
MCCs	Provincial representation and support to MCCs	EDTEA representative nominated to MCCs	Ongoing
Promote and support the development of inter- governmental processes, structures and mechanisms to enable integrated coastal management	Support the operations of intergovernmental structures where coastal pressures are discussed (e.g., sewage; sand mining; effluent pipelines)	Minutes of meetings	Ongoing

5.5 Priority Area: Education, Awareness and Training

GOAL: Develop capacity and promote public awareness and access to information for integrated coastal management

Objectives	Action	Performance Indicator	Completion Date
Build political and stakeholder support for effective coastal management in KZN	Develop and disseminate popular materials to support the implementation of the PCMP	PCMP summary distributed to stakeholders	2024/2025
Undertake ICM training and capacity development	ICM training workshops and appropriate short courses convened	l dedicated ICM training course per year	Annually
Sharing of coastal information with the public	Update and maintain a public coastal information portal	Live, interactive information-sharing portal (<u>www.coastkzn.co.za</u>)	Ongoing

5.6 Priority Area: Estuarine Management

GOAL: Undertake estuarine management which optimises the value of these systems on a sustainable basis

Objectives	Action	Performance Indicator	Completion Date
Ensure management	Identification of KZN estuaries for the development of estuarine management plans	List of priority estuaries	Ongoing
of estuaries in accordance with the National Estuarine Management Protocol	Develop Estuarine Management Plans (EMPs) in the province on a prioritised basis	Number of EMPs developed Review of KZN EMP implementation	Ongoing
	Assessment of EMP Review of KZN implementation implementation		Ongoing
Long-term monitoring of estuaries - including	Visual assessment of estuarine status		
nealth status, extent and distribution of habitats, alien species and indigenous species	Physical monitoring of priority estuaries	A three-yearly report with annual updates	Ongoing

5.7 Priority Area: Minimising Land and Marine-based Sources of Pollution

GOAL: Minimise the impacts of pollution and waste on the health of coastal communities and ecosystems

Objectives	Action	Performance Indicator	Completion Date
Develop and implement pollution control measures using best practices	Support DFFE in the development of oil and hazard spill contingency plans for sections of coast not covered by existing plans	Number of local oil and hazard spill contingency plans developed or reviewed	Ongoing
Develop and implement land-based pollution programme for prioritised coastal areas	Support Source to Sea initiatives in KZN	Number of Source to Sea initiatives supported	Ongoing

5.8 Priority Area: Monitoring

GOAL: Monitoring the state of the KZN coast

Objectives	Action	Performance Indicator	Completion Date
Long-term monitoring ensures a	ng-term Identification of additional indicators for KZN State of Coast (SoC) reporting List of indicators for KZN SoC monitoring	2024/2025	
better understanding of the state of, and changes to coastal	Update SoC Report for KZN	KZN SoC Report updated	2027/2028
ecosystems and resources	Undertake aerial inspections of the KZN coastline	Aerial inspection report	Annually

The implementation of this PCMP is driven by the KZN EDTEA and the KZN PCC. This includes commitment to meeting the priorities, objectives and actions outlined as well as supporting various relevant national drivers such as the NDP, NCMP and Operation Phakisa. Where required, the Department commits to promoting and supporting the development of inter-governmental processes, structures and mechanisms to enable integrated coastal management.

Implementation is pivotal to the success of the PCMP and achievement of its objectives through the actions detailed. Each action should outline key targets and resource requirements to assist with implementation. The PCMP requires monitoring and reporting procedures as well as indicators and interim indicators (adapted from DEA 2014). A summary of the proposed timing for implementation is shown in Table 7, from which it is evident that there is much to do over the next five years.

The PCMP advocates for a coordinated effort in implementing solutions to sustainably manage coastal ecosystems. Regional and international cooperation is also recommended in driving integrated coastal management, which is addressed within the NCMP. While the Programme provides the policy directive for the management of the KZN coastal zone, it duly recognises the importance that MCMP's, protected area management plans and the iSimangaliso Integrated Management Plan play in the management of the coast at the local level. Future revisions of these respective plans should therefore take guidance from the PCMP.

The actions and activities outlined in this policy directive align with the mandate of the ICMA as it pertains to the lead agency for coastal management in KZN. The implementation of these actions depends on the availability and allocation of funds from the Provincial Treasury. In addition, the PCMP will be guided by issues raised at the KZN Provincial Coastal Committee (PCC), particularly those that fall within the mandate of other organs of state. These additional considerations will complement the actions already outlined in this policy and will be incorporated into an annual workplan annexure to the PCMP, ensuring the policy remains responsive to emerging issues and aligned with the priorities of the KZN PCC.

The next substantive development of the PCMP will occur in 2029.

Table 7. Summary of proposed implementation

			Goal	Objectives	Action	Performance Indicator	2024/ 2025	2025/ 2026	2026/ 2027	2027/ 2028	2028/ 2029
1			Promote equitable and sustainable access to the coast	Enable physical public access to the sea and along the seashore, on a managed basis	Oversight management of public launch sites in KZN	Listing (gazetting) of public launch sites in KZN					
	1	tal Access				Annual boat launch sites report					
		Coas			Support local municipalities with coastal access	Engagements with local municipalities on coastal access priorities and challenges					
		esilience	Promote resilience to the effects of dynamic coastal processes, environmental hazards and natural disasters	Ensure that coastal planning and development minimises the exposure of people, infrastructure and economic activities to significant risk from dynamic coastal processes	Public and stakeholder consultation for KZN CMLs	Register of meetings and comments report					
2		tation and R			Finalisation of CMLs for the KZN coast and estuaries	Gazetted coastal management lines for KZN					
	2	ability: Adap			Develop guideline for implementation of CMLs	CML guideline document					
		Coastal Vulner			Support DFFE with the development of CML for iSimangaliso Wetland Park	iSimangaliso CML					
3		l Enforcement	Promote compliance with coastal and other regulations	Facilitate partnerships and protocols for cooperation with all spheres of government to enable improved compliance monitoring and enforcement in coastal areas	Participate in NEM: ICMA Compliance and Enforcement Task Team meetings (e.g., Operation Phakisa)	Reports on joint operations					
	3	Compliance and			Support EDTEA coastal districts with ICM compliance monitoring and enforcement activities	Number of NEM: ICMA enforcement notices issued					

		Goal	Objectives	Action	Performance Indicator	2024/ 2025	2025/ 2026	2026/ 2027	2027/ 2028	2028/ 2029
4	Cooperative Governance	Establish and strengthen institutional partnerships and mechanisms for ICM to facilitate better management	Oversight management of infrastructure in coastal waters from the HWM to the territorial sea	Manage seashore leases in KZN	Number of seashore leases issued					
			Promote provincial and local government objectives through participation in the National Coastal Committee and MINTEC Working Group 7	Elevation of priority issues from Municipal Coastal Committees (MCCs) and the KZN PCC to WG7 and the NCC	List of priority issues to WG7 and NCC					
			Strengthen PCC and support MCCs	Convene and record KZN PCC meetings	Minutes of PCC meetings					
				Provincial representation and support to MCCs	EDTEA representative nominated to MCCs					
			Promote and support the development of inter- governmental processes, structures and mechanisms to enable integrated coastal management	Support the operations of inter- governmental structures where coastal pressures are discussed (e.g., sewage; sand mining; effluent pipelines)	Minutes of meetings					
5	Education, Awareness and Training	Develop capacity and promote public awareness and access to information for integrated coastal management	Build political and stakeholder support for effective coastal management in KZN	Develop and disseminate popular materials to support the implementation of the PCMP	PCMP summary distributed to stakeholders					
			Undertake ICM training and capacity development	ICM training workshops and appropriate short courses convened	1 dedicated ICM training course per year					
			Sharing of coastal information with the public	Update and maintain a public coastal information portal	Live, interactive information- sharing portal (www.coastkzn.co.za)					

		Goal	Objectives	Action	Performance Indicator	2024/ 2025	2025/ 2026	2026/ 2027	2027/ 2028	2028/ 2029
		Undertake estuarine management which optimises the value of these systems on a sustainable basis	Ensure management of estuaries in accordance with the National Estuarine Management Protocol	Identification of KZN priority estuaries for the development of EMPs	List of priority estuaries					
	ient			Develop EMPs in the province on a prioritised basis	Number of EMPs developed					
6	Managem			Assessment of EMP implementation	Review of KZN EMP implementation					
	stuarine		Long-term monitoring of estuaries	Visual assessment of estuarine status	A three-yearly report with annual updates					
	E		- including health status, extent and distribution of habitats, alien species and indigenous species	Physical monitoring of priority estuaries						
	Minimising Land and Marine-based Sources of Pollution	Minimise the impacts of pollution and waste on the health of coastal communities and ecosystems	Develop and implement pollution control measures using best practices	Support DFFE in development of oil and hazard spill contingency plans for sections of coast not covered by existing plans	Number of local oil and hazard spill contingency plans developed or reviewed					
7			Develop and implement land-based pollution programme for prioritised coastal areas	Support Source to Sea initiatives in KZN	Number of Source to Sea initiatives supported					
	Monitoring	Monitor the state of the KZN coast	Long-term monitoring ensures a better understanding of the state of, and changes to, coastal	Identification of additional indicators for KZN State of Coast (SoC) reporting	List of indicators for KZN SoC monitoring					
8				Update SoC Report for KZN	KZN SoC Report updated					
			ecosystems and resources	Undertake aerial inspections of the KZN coastline	Annual aerial inspection report					

The KZN coastal environment is unique and complex to manage, and coastal management authorities are faced with a diverse array of challenges. Strategic coastal management objectives are required to set definitive and implementable targets to improve coastal management within the province.

The PCMP is intended to function as an integrative planning and policy instrument, guiding the management of a diverse array of activities within the KZN coastal zone, without compromising environmental integrity or economic development. It recognises the paradox of the high levels of poverty and unemployment in an otherwise bountiful coastal environment and strives towards equity in access to coastal resources and opportunities.

The growing pace of climate change, the high level of urbanisation and ribbon development along the coast, increasing coastal pollution impacts, and the increasing demand for coastal land and resources all add elements of urgency and importance to this PCMP process. In this context, the PCMP acknowledges the important role that MCMP's and the iSimangaliso Integrated Management Plan must also play in managing the coastal zone at the local level. The PCMP further recognises the respective mandates and functions of the DFFE, DWS, DMPR, DPWI, KZN COGTA, Ezemvelo KZN Wildlife and the KZN PCC in contributing to the overall management of the KZN coastal zone. In this regard, linkages are required with the relevant sectors, both in terms of implementation of this PCMP and considering any policies and plans developed within these various sectors. This will further support and facilitate the implementation of integrated coastal management in KZN.

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