

# NATIONAL COASTAL & MARINE SPATIAL BIODIVERSITY PLAN

VERSION 1.0



**INTERIM CBA MAP RELEASE NOTE**

*Securing South Africa's coastal and marine biodiversity to support economic development and sustainable resource use*

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## INTERIM CBA MAP RELEASE NOTE

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### Purpose of this release note

Given the need for early access to the National Coastal and Marine Map of Critical Biodiversity Areas and Ecological Support Areas (CBA Map), we are releasing it ahead of the full launch of the National Coastal and Marine Spatial Biodiversity Plan Version 1.0. The launch will likely happen sometime in April 2021. The purpose of this interim release note is to provide a very brief overview of the new data and refinements to the methodology that have been included in this version of the CBA Map, the details of which will follow in the technical report launched later this year.



environment, forestry  
& fisheries  
Department:  
Environment, Forestry and Fisheries  
REPUBLIC OF SOUTH AFRICA



On behalf of:  
Federal Ministry  
for the Environment, Nature Conservation  
and Nuclear Safety  
of the Federal Republic of Germany



## Executive Summary

Maps of Critical Biodiversity Areas (CBA Maps) have been used successfully to inform land-use planning and land-based protected area expansion in South Africa for many years, and have been and continue to be one of the key tools for protecting terrestrial and inland water biodiversity, and supporting sustainable development. This report describes South Africa's first National Coastal and Marine Spatial Biodiversity Plan, comprising the National Coastal and Marine CBA Map and accompanying sea-use guidelines. The intent of this plan is to consolidate the biodiversity sector's spatial prioritisation of the South African coast and ocean to provide inputs into national Marine Spatial Planning (MSP) as well as other planning and decision-making processes. This is to ensure that marine biodiversity assets and ecological infrastructure are secured, and that development of the ocean economy is sustainable. It also includes contributions towards identifying focus areas for Marine Protected Area (MPA) expansion, which builds on work that supported the declaration of 20 new MPAs in 2019.

A CBA Map presents a spatial plan for the natural environment, designed to inform planning and decision-making in support of sustainable development. In terms of the [Technical Guidelines](#) for CBA Maps developed by the South African National Biodiversity Institute, CBA Maps must be developed using the principles of systematic biodiversity planning. These maps comprise three categories of biodiversity priority areas: Protected Areas, Critical Biodiversity Areas (CBAs) and Ecological Support Areas (ESAs), which are jointly important for the persistence of a viable representative sample of all ecosystem types and species, as well as the long-term ecological functioning of the landscape or seascape as a whole.

This document presents the first released version of the first National Coastal and Marine CBA Map for the coast and ocean around the South African mainland. Both the map and the forthcoming technical report were developed (are being developed) in accordance with the Technical Guidelines for CBA Maps. The National Coastal and Marine CBA Map Version 1.0 includes 72 datasets comprising 886 biodiversity features; a cost layer comprising four components, two of which specifically aim to reduce conflict with 19 different sectors. All spatial prioritisation was done using the decision-support software, Marxan. In this interim release note, we briefly list what the input datasets are, note refinements to the methodology, and present the National Coastal and Marine CBA Map Version 1.0, with a link to the data. Ideally, it should be read in conjunction with the technical report for the National Coastal and Marine Spatial Biodiversity Plan Beta Version 2.

26 February 2021

## Updates since Beta Version 2

### Biodiversity data

Altogether, there are 886 biodiversity features and design elements included in the analysis from 72 different datasets (Table 1). We sincerely thank the authors and institutions who so readily shared their data, and in some cases, generated inputs specifically for this process. Note that the data are only listed here, and will be fully referenced and acknowledged in the technical report. We recognise that more biodiversity data can still be added; however, many of the outstanding datasets were not readily available to include within the timeframes of the analysis. Some scientists, social scientists, groups and institutions have indicated willingness to engage, prepare and/or share data for future versions of the National Coastal and Marine CBA Map. The current gaps notwithstanding, this is the most comprehensive compilation of biodiversity data included in a national marine spatial prioritisation analysis in South Africa to date.

**Table 1.** Biodiversity datasets included in the National Coastal and Marine CBA Map Version 1.0. Datasets that are new or had additional features added since Beta version 2 are indicated with stars (n=26).

<b>Ecosystem types and ecological condition</b>
Coastal and marine ecosystem types Portions of coastal and marine ecosystem types in natural and moderately modified ecological condition Pelagic ecosystem types
<b>Cetaceans</b>
Indo-Pacific humpback dolphin Heaviside dolphin Southern bottlenose whale Common dolphin Killer whale Risso's dolphin *Bryde's whale *Southern right whale *Sperm whale *Humpback whale Bays that are key whale habitat (whale-associated bays)
<b>Seals</b>
Seal colonies *Seal foraging areas
<b>Seabirds</b>
Colonies of threatened seabirds Threatened colonial seabird foraging areas: African Penguin, Cape Gannet, Bank Cormorant, Cape Cormorant *African Penguin core distribution areas *Atlantic Yellow-nosed Albatross core distribution areas *Cape Cormorant core distribution areas *Cape Gannet core distribution areas *Indian Yellow-nosed Albatross core distribution areas *Northern Giant Petrel core distribution areas *Wandering Albatross core distribution areas
<b>Turtles</b>
Turtle nesting grounds Loggerhead interesting areas Leatherback interesting areas Loggerhead migration routes Leatherback migration routes

<b>Unique and special habitats or features</b>
<p>Mallory slope  Alexandria dunefield  *Port Elizabeth ridge  *Namaqua fossil forest  Childs Bank  Anemone gardens  Rhodolith beds  *Algal-dominated reefs  Estuary mouths of flagship and non-flagship free-flowing rivers  Potential cold-water coral reefs  Potential Vulnerable Marine Ecosystems (VMEs), indicator species and features  Known fragile areas (reef points and polygons)</p>
<b>Other priority areas</b>
<p>Ramsar sites  Important Bird and Biodiversity Areas  Ecologically or Biologically Significant Marine Areas  IOSEA Marine Turtle Site of Importance  Previously identified priorities for sandy beaches  Previously identified priority estuaries  Previously identified priorities in the Algoa Bay Systematic Conservation Plan</p>
<b>Culturally significant areas</b>
<p>*Key cultural and historical sites (e.g., Shaka's Rock, Gompho Rock, Hole in the Wall, middens, caves, archaeological sites)  Fish traps  *Shipwrecks</p>
<b>Productivity</b>
<p>Beaches with surf diatom accumulations  Beaches with beach-cast kelp  *Areas with high chlorophyll-<i>a</i></p>
<b>Spawning, nursery and aggregation areas</b>
<p>Sardine spawning areas  Anchovy spawning areas  Squid spawning areas  *Pelagic fish spawning areas  *Pelagic fish nursery areas  Spawning and aggregation areas of Red Steenbras, Wreck fish, Giant guitarfish  Estuarine fish nursery areas</p>
<b>Ecological infrastructure</b>
<p>Coastal protection ecological infrastructure  Coastal recreational outdoor activities and sports events ecological infrastructure</p>
<b>Climate-change adaptation</b>
<p>*Seamounts  *Areas of very high productivity, including upwelling  *Portions of ecosystem types with the lowest climate change velocity measured over the past 50 years</p>
<b>Protected Areas</b>
<p>Existing land-based and marine protected areas</p>
<b>Land-sea and implementation alignment</b>
<p>*Gourtiz coastal corridor  Land-based Critical Biodiversity Areas  *Marine monitoring areas  *Portions of under-protected (Poorly Protected and Not Protected) ecosystem types within EBSAs and outside of MPAs</p>

## Industry data included in the cost layer

New or revised data were included for the following sectors following engagements with industry and scientists, all of whom we thank for their participation in and contribution to the process:

- Petroleum: refined leads and prospects in some areas; cost values assigned to each component revised to better reflect the petroleum sector's priorities
- Mining: prospecting areas included
- Demersal hake trawling: new layer included based on swept area ratios
- Squid jigging: new layer included based on fishing effort and using more recent data
- Crustacean trawling: footprint revised based on expert input
- Aquaculture: Phakisa Aquaculture Development Zones included

## Methodology refinements

### Cost layer

A few minor adjustments were made to the cost layer. These were as follows:

1. A fourth component was added to the equation used in Beta Version 2: area of planning unit in square kilometres. This provided a small (<3.1) addition to the cost value from the three components (maximum of 300) to ensure that no planning units had a zero-cost score. This means that the new equation for calculating cost is:  
**Cost = [sum of avoidance across cost elements<sup>1</sup>] + [max of avoidance across cost elements<sup>1</sup>] + [sum of cumulative impact across all pressures] + [area of planning unit in km<sup>2</sup>]**
2. A technical adjustment was made to cost values within 5 km of the EEZ perimeter in the high seas and international boundary portions of the planning domain. This was to account for the fact that some industry datasets were compiled using slightly different versions of the EEZ boundary, which resulted in artificially low-cost values and data gaps in some places along the boundary of the EEZ. The correction involved running a focal statistics analysis to calculate the maximum value in a rectangular neighbourhood of 165 x 165 cells (4950 x 4950 m) across the cost map. The maximum cost value between the original cost map and the focal statistics output was assigned to the planning units that intersected a 5-km buffer around the seaward edge of the EEZ.

### Marxan analysis

The method for running Marxan followed that of the Beta Version 2, and is as follows. Input parameters were calibrated, and the first Marxan scenario (comprising 100 runs of the algorithm) was run. All planning units with a selection frequency of  $\geq 90$  from scenario 1 were hardwired into the selection for scenario 2, parameters were recalibrated, and the second Marxan scenario was run (also comprising 100 runs of the algorithm). The selection frequency at which all feature targets are met was iteratively tested.

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<sup>1</sup> Cost elements are: petroleum, mining, transport, specific fisheries sectors, and marine aquaculture.

## CBA Map compilation

To build the CBA Map (marine extent), the method was also the same as for the Beta Version 2:

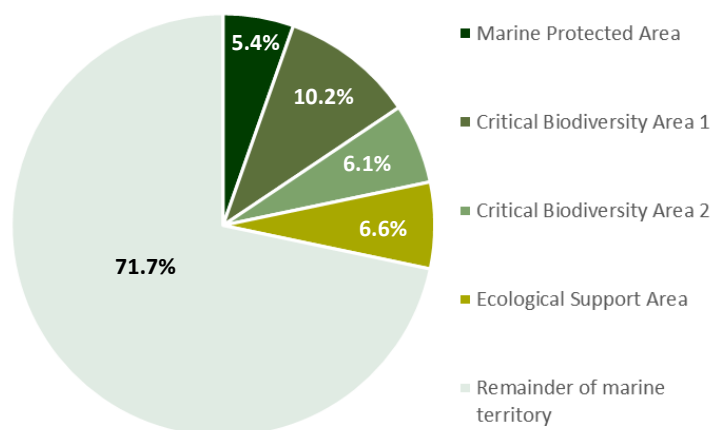
- **Protected area:** these are existing Marine Protected Areas (MPAs) and land-based protected areas that are within the planning domain
- **Critical Biodiversity Area 1:** planning units selected 100% of the time in the first scenario were used as the irreplaceable and near-irreplaceable sites
- **Critical Biodiversity Area 2:** all other planning units required to meet feature targets were used as the best-design sites
- **Ecological Support Area:** all portions of Ecologically or Biologically Significant Marine Areas (EBSAs) that are not in one of the other CBA Map categories

The EBSA project has included a transboundary process to align priorities within the Orange Cone and Orange Seamount and Canyon Complex EBSAs in Namibia and South Africa. The purpose of this is to facilitate effective conservation and management of biodiversity across the entire transboundary EBSA despite the administrative boundary. Therefore, one final step that differed from the Beta Version 2 methodology was to do an initial manual transboundary alignment within Orange Cone to remove slivers and fill small holes (the details of which will be presented in the full technical report).

Additional, dedicated transboundary alignment between Namibian and South African biodiversity priorities is recommended as a specific task for the EBSA team under the MARISMA project. This would require careful consideration of the zoning within the Orange Cone and Orange Seamount and Canyon Complex EBSA across the two countries. The refinement in boundaries and strengthened alignment will also serve as an illustration of the same kinds of revisions that will take place through the Marine Spatial Planning (MSP) process across the rest of the CBA Map.

## National Coastal and Marine CBA Map Version 1.0

The National Coastal and Marine CBA Map Version 1.0 (Fig. 2) is very similar to the Beta Version 2. Despite many more datasets being included, the overall proportion of the marine territory that was selected was only 2.14% more, i.e., 28.25% of the marine territory, comprising 5.4% MPAs, 10.2% CBA 1s, 6.1% CBA 2s, and 6.6% ESAs.



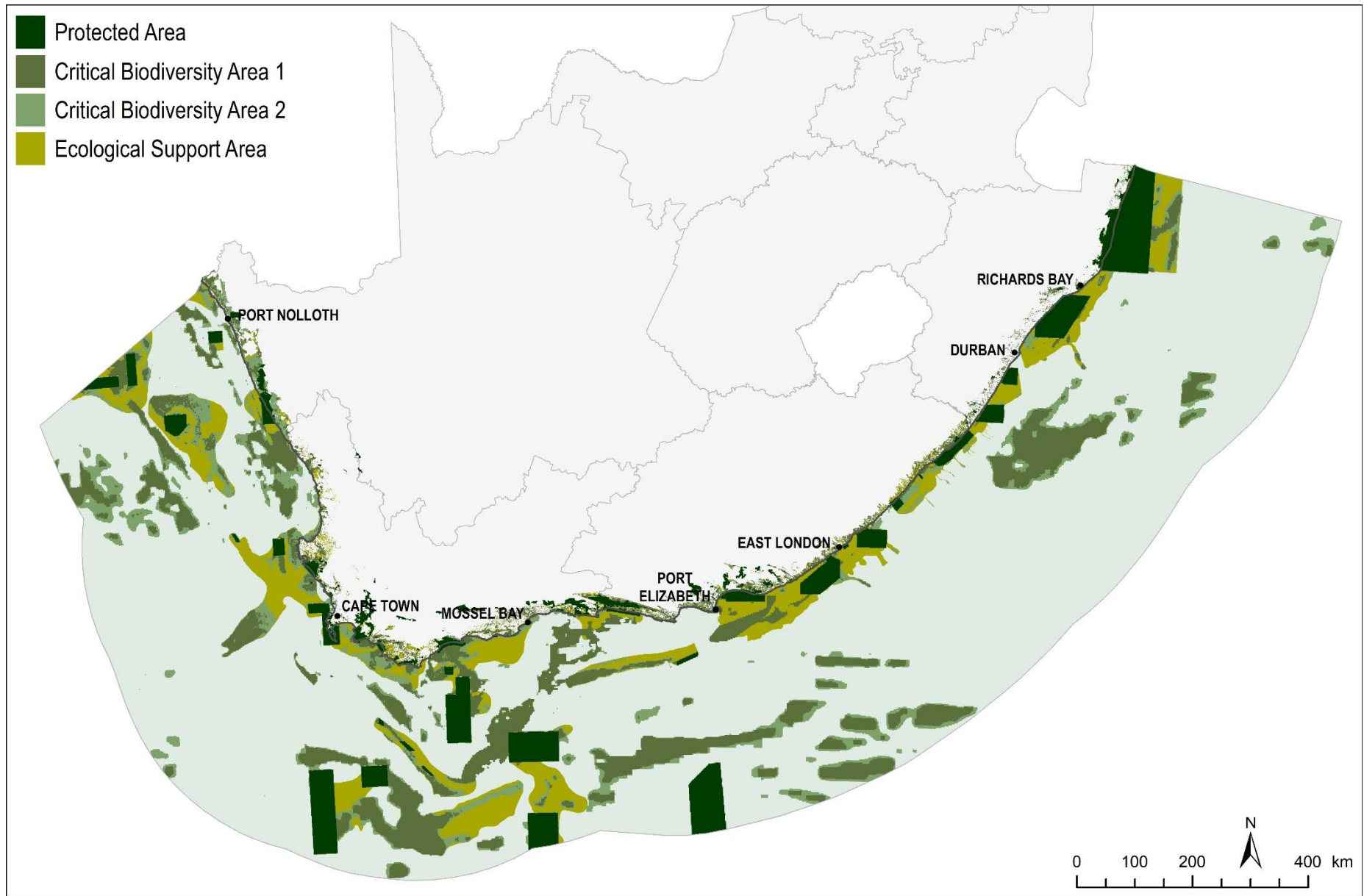


Figure 2. National Coastal and Marine CBA Map Version 1.0. Shapefile available on the [EBSA Portal](#).