ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS

in the Benguela Current Large Marine Ecosystem

SOUTH AFRICA

Technical Report

Ecologically or Biologically Significant Marine Areas in the Benguela Current Large Marine Ecosystem

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Descriptions, status assessment and management recommendations for new and revised EBSAs in South Africa. Other existing EBSAs that extend beyond national jurisdiction or are shared with Mozambique are not covered by the review and remain unchanged.

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Revised EBSAs

Childs Bank and Shelf Edge (Formerly Childs Bank)

Revised EBSA Description

General Information

Summary

Childs Bank and Shelf Edge is a unique submarine bank feature occurring within South Africa's EEZ, rising from -400 m to -180 m on the western continental margin on South Africa. This area includes seven ecosystem types, including those comprising the bank itself, the outer shelf and the shelf edge, supporting hard and unconsolidated ecosystem types. Two of these ecosystem types are Vulnerable and five are Least Concern. The benthic area of the bank is considered to be largely in Good ecological condition, indicating that the ecological patterns and processes are intact. Childs Bank and associated habitats are known to support structurally complex cold-water corals, hydrocorals, gorgonians and glass sponges; species that are particularly fragile, sensitive and vulnerable to disturbance, and recover slowly. The Childs Bank and Shelf Edge area is highly relevant in terms of the following EBSA criteria: "Uniqueness or rarity", "Vulnerability, fragility, sensitivity or slow recovery" and "Naturalness". Since its original description, the boundary of this EBSA has been refined to improve precision based on new bathymetric data, ecosystem information (condition and threat status of local benthic and pelagic ecosystem types, and presence of key features including fragile species), and to align with new MPA expansion initiatives.

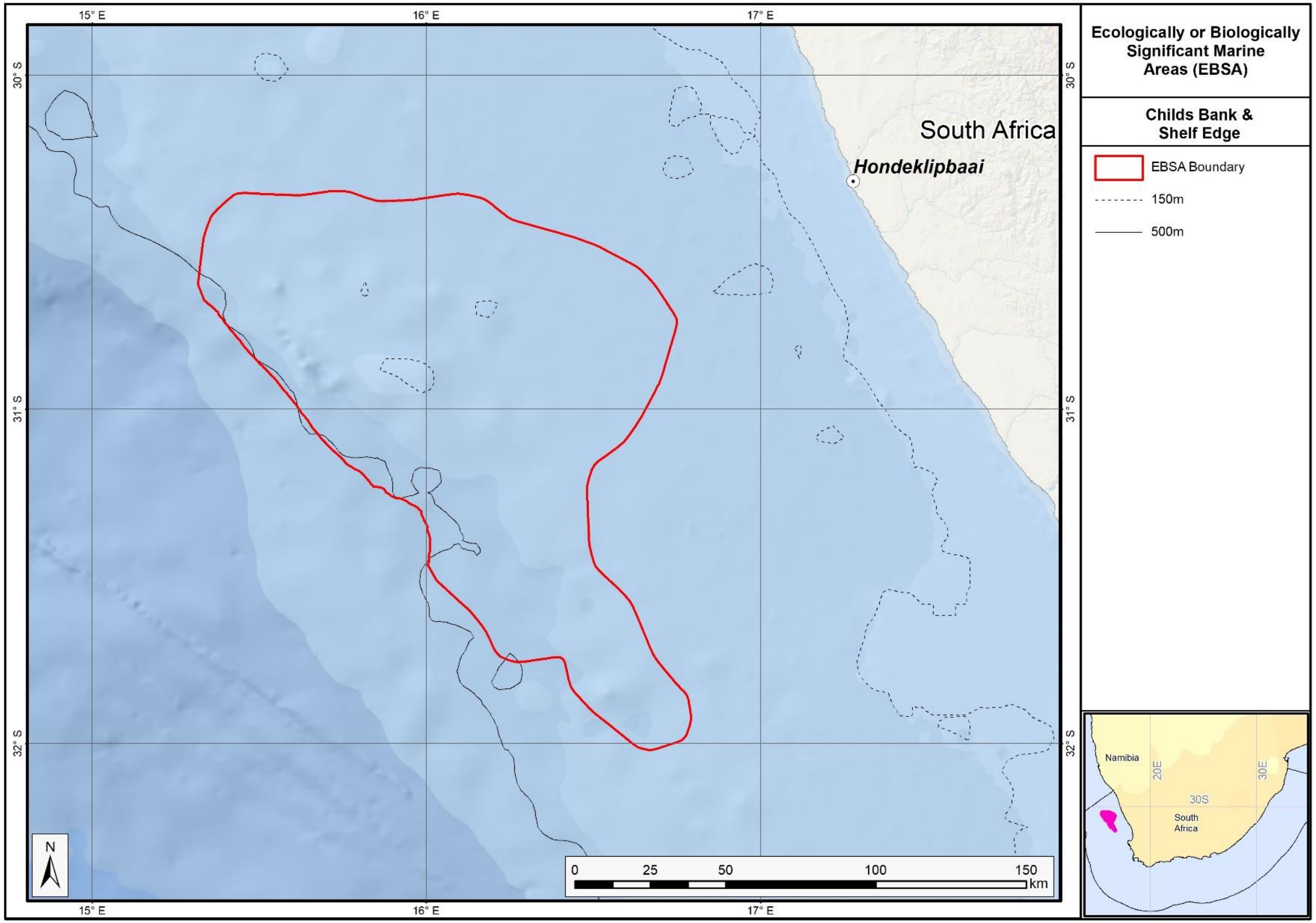
Introduction of the area

Childs Bank is the only known submarine bank in South Africa. It's a rugged limestone feature found on the shelf, close to the shelf edge, on the western continental margin of South Africa, approximately 125 km offshore. It rises from a depth of -260 m in the east and -350 m in the west to form a large, flattened plateau at -200 m (De Wet 2012). The margins of the bank slope gently on the north, east and south sides, but the western edge is a slump-generated outer face of 150 m in height that lies at the edge of the continental shelf, dropping steeply from -350 to -1500 m across a short distance of <60 km (De Wet 2012; Birch and Rogers 1973). The bank area has been estimated to cover 1450 km^2 (Sink et al., 2012a). The EBSA includes Childs Bank, the shelf and the shelf edge adjacent to the bank, the latter of which is considered likely to host vulnerable hard-ground species. The sediment adjacent to the bank is predominantly fine sand with approximately 25% mud, and in some locations, small amounts of gravel have been detected (Atkinson 2010). This area was identified as a priority area for protection through two planning studies identifying areas for offshore protection (Sink et al., 2011, Majiedt et al., 2013). Benthic protection in the region of Childs Bank and Shelf Edge would ensure protection of the only submarine bank within South Africa's EEZ, some protection of the adjacent shelf edge and protection of areas where coral records have been detected. This has been achieved through recent proclamation of the Childs Bank Marine Protected Area (MPA).

Description of the location

EBSA Region

South-Eastern Atlantic



Proposed boundaries of the Childs Bank and Shelf Edge EBSA.

Description of location

The Childs Bank and Shelf Edge area is located approximately 125 km off Hondeklipbaai on the west coast of South Africa, with its northern edge about 90 km from national border with Namibia. It lies entirely within South Africa's national jurisdiction, largely on the outer shelf but also extending across the shelf edge and slope in some places.

Feature description of the area

Childs Bank is a unique offshore submarine bank within South Africa's EEZ; no other known submarine banks occur in this area. The EBSA comprises seven ecosystem types, two of which are Vulnerable (Childs Bank Coral Slope, Southern Benguela Sandy Shelf Edge), the rest of which are Least Concern (Childs Bank Plateau and Sandy Slope, Southern Benguela Hard Shelf Edge Mosaic, Southern Benguela Muddy Sands, Southern Benguela Outer Shelf Rocky Sand Mosaic, Southern Benguela Sandy Outer Shelf; Sink et al., 2019). 37% of the Childs Bank and Shelf Edge slopes are trawled (Sink et al., 2012b), highlighting the importance of this site for marine living resources. However, there are several very fragile, vulnerable and sensitive species present in the area. Hydrocorals (e.g. *Stylaster* sp.), cold-water coral fragments, gorgonians (*Acbaria rubra*) and glass sponges (*Rossella antarctica*) were sampled at a virtually untrawled site adjacent to Childs Bank (Atkinson 2010; see also Gilchrist 1922, 1925, Van Bonde 1928, Atkinson et al., 2011). Further, skippers and deck hands from the trawl industry report fragments of corals sometimes caught in isolated locations in this area and that there are several patches of hard ground, requiring additional footrope protection (e.g., bobbins and rockhopper gear, Sink et al., 2012b).

The shelf edge area adjacent to Childs Bank is also a biodiversity hotspot for demersal fish and cephalopods in the southern Benguela (Kirkman et al., 2013). Benthic communities sampled adjacent to the Childs Bank mound revealed high abundance and biomass of benthic infauna and epifauna (Atkinson 2010, Atkinson et al., 2011), indicating that a rich benthic fauna occurs in this region. Two species of burrowing urchins (*Spatangus capensis* and *Brissopsis lyrifera capensis*) and a burrowing anemone species (*Actinauge granulosus*) were detected in high abundances in the Childs Bank and Shelf Edge region, contributing to the bioturbation and oxygenation of sediment, which are important ecological functions.

The boundary of this EBSA has been refined since its original delineation to improve precision based on new information (e.g., De Wet 2012; GEBCO Compilation Group 2019; Harris et al., 2014; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). The new delineation was based on new bathymetric data, new ecosystem information, site selection frequency in two systematic conservation plans covering the area to meet biodiversity targets, the condition and threat status of the local benthic and pelagic ecosystem types, key features including the bank itself and associated fragile species, and focus areas for MPA expansion in South Africa. The new boundary comprises about two thirds of the original EBSA area and falls mostly within the previous delineation, except for a protrusion along the south east edge. It is presented as a Type 2 EBSA because it contains "spatially stable features whose individual positions are known, but a number of individual cases are being grouped" (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

Childs Bank and Shelf Edge is currently in Good ecological condition, based on cumulative impact scores from multiple anthropogenic pressures (Sink et al., 2012a; Sink et al., 2019). Good-condition sites are those which, based on the low levels of pressure, are expected have both biodiversity pattern and process largely intact and hence can be considered to be in a largely "natural" or "pristine" state. However, the area south and towards the shelf edge of Childs Bank were categorized as Fair and Poor, indicating that there is some impact on biodiversity pattern and/or ecological processes in a small component of the broader area (Sink et al., 2012a; Sink et al., 2019).

The trawl fishing intensity in the northern region of the fishing grounds, including Childs Bank and Shelf Edge, has declined since the mid-1990s (Russell Hall, Sea Harvest pers. comm.), and it is unlikely that this region was as intensively fished as the western grounds, closer to the port of Cape Town. No trawling occurs on the top of the bank, with most fishing taking place around the slope where hard ground, supporting vulnerable habitat-forming species, is most likely to occur. A new MPA came into effect in 2019, and covers most of Childs Bank itself.

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Summary of ecosystem types and threat status for Childs Bank and Shelf Edge EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Vulnerable	Childs Bank Coral Slope	505.5	3.7
	Southern Benguela Sandy Shelf Edge	2221.6	16.4
Least Concern	Childs Bank Plateau & Sandy Slope	1620.3	11.9
	Southern Benguela Hard Shelf Edge Mosaic	1497.7	11.0
	Southern Benguela Muddy Sands	9.7	0.1
	Southern Benguela Outer Shelf Rocky Sand Mosaic	5989.2	44.1
	Southern Benguela Sandy Outer Shelf	1742.8	12.8
Grand Total		**13586.7**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

The Childs Bank submarine mound is the only such feature known to occur within South Africa's EEZ and therefore represents a unique feature in this region (Sink et al., 2011, Sink et al., 2012, Majiedt et al., 2013). The selection of this area in a systematic biodiversity plan for the South African west coast is driven by the uniqueness of the site and reduced cost values (few anthropogenic pressures) in the area (Majiedt et al., 2013).

C2: Special importance for life-history stages of species **Low**

Justification

There is little known evidence that the Childs Bank and Shelf Edge area is of special importance for life history stages of particular species or populations. However, the ecosystem types comprising the bank feature are unique to this EBSA, and it is possible that they may support key ecological processes that are, as yet, unstudied (Sink et al., 2011). More research is required to determine the significance of this site for key life-history stages. For example, tuna fishers report that this area is a feeding area for tuna (Sink et al., 2011).

C3: Importance for threatened, endangered or declining species and/or habitats **Medium**

Justification

There are two threatened ecosystem types in Childs Bank and Shelf Edge: the Vulnerable Childs Bank Coral Slope and Southern Benguela Sandy Shelf Edge ecosystem types (Sink et al., 2019). This area also has some importance for declining species. Some long-lived pelagic species (e.g., blue shark (IUCN Near Threatened) and mako shark (IUCN Vulnerable)) are also caught in fair numbers (~15% of total Atlantic catch) around Childs Bank (DAFF Linefish Section). Populations of these species are believed to be in global decline (Camhi et al., 2009).

C4: Vulnerability, fragility, sensitivity, or slow recovery **High**

Justification

This area has hard ground habitats on the outer shelf and shelf edge that are considered sensitive to demersal trawling and mining (FAO 2006, FAO 2009, Rogers et al., 2008, Sink et al., 2011, 2012a, 2012b). Samples of cold-water corals, sponges and gorgonians have been reported from this area (Gilchrist 1922, Von Bonde 1928 and Atkinson 2010, 2011) and more recently, skippers and deck hands from commercial trawl vessels have indicated occurrences of such species in their nets when fishing in this area (Sink et al., 2012b).

C5: Biological productivity **Low**

Justification

Fine-scale variability within this area has not been examined but this area falls within the highly productive shelf area of the Benguela upwelling region (Lagabrielle 2009, Sink et al., 2011, Roberson et al., 2017).

C6: Biological diversity **Medium**

Justification

There are seven ecosystem types represented in the EBSA (Sink et al., 2019). Further, this area is considered to host high levels of species diversity, e.g., infauna and epifauna (Atkinson 2010, Atkinson et al., 2011), demersal fish and cephalopods (Kirkman et al., 2013) and fragile and sensitive habitat-forming species.

C7: Naturalness **High**
Justification
Childs Bank and Shelf Edge is largely natural, with cumulative impact scores from multiple anthropogenic pressures indicating that 73% of the area is in good ecological condition, 22% fair and only 5% poor ecological condition (Sink et al., 2019). This suggests that, based on the low levels of pressure, the site is expected have both biodiversity pattern and process largely intact and hence can be considered to be mostly in natural/pristine state.

Status of submission

The Childs Bank EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised name, description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

Motivation for Revisions

Some technical revisions and updates to the description were made, even though little additional information was available. Small additions, such as biodiversity information from OBIS were made, but none of these edits were significant enough to drive a change in the EBSA criteria ranks. A supplementary table of the habitats represented in the EBSA and their associated threat status were also included.

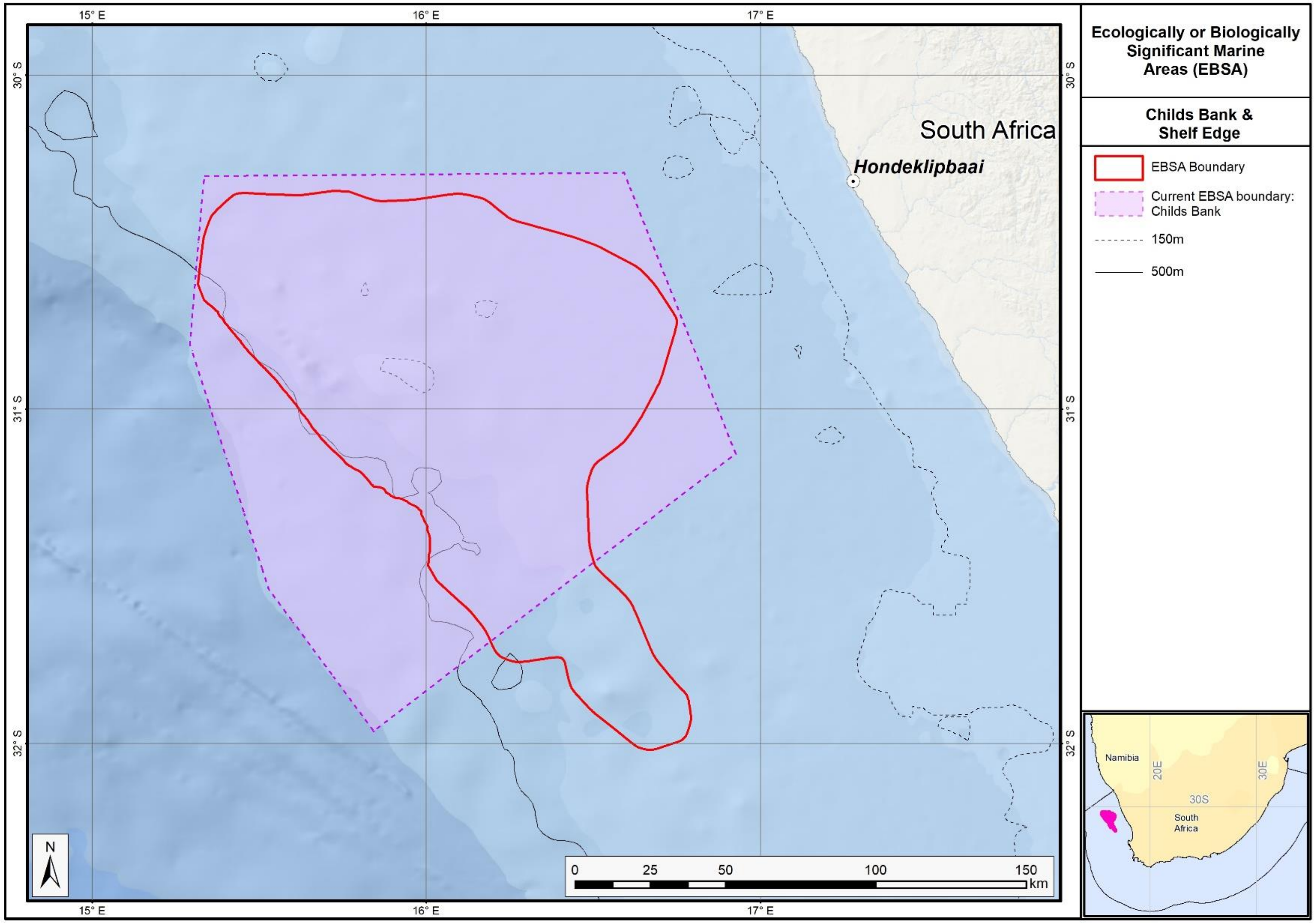
The boundary of this EBSA has been refined to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status. The delineation process included an initial stakeholder review, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA.
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the SCP undertaken for the BCLME by Holness et al. (2014) and Majiedt et al. (2013) were incorporated. In addition, focus areas for marine protection identified by Sink et al. (2011) were included.
- Key physical features such as the submarine bank from the National Biodiversity Assessment 2011 (Sink et al., 2011) and BCC spatial mapping project (Holness et al., 2014) were incorporated. These data were refined using the latest GEBCO data (GEBCO Compilation

Group 2019) and global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014), and new national bathymetric data (De Wet 2012).

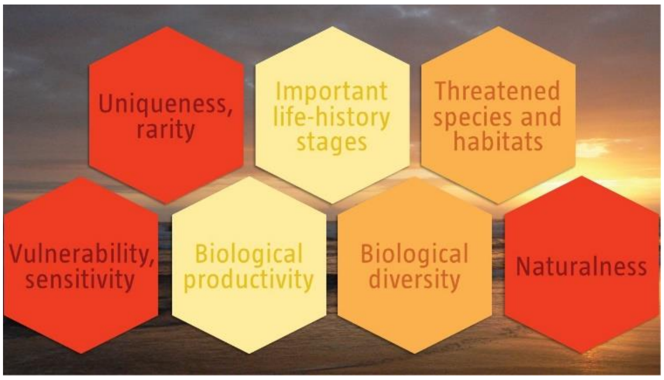
- Areas of high relative naturalness identified in the National Biodiversity Assessment 2011 (Sink et al., 2011), the West Coast (Majiedt et al., 2013) and the BCLME spatial assessments (Holness et al., 2014) were included in the analysis. Both pelagic and benthic and coastal condition were incorporated.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).

The multi-criteria analysis resulted in a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop. The new boundary comprises about two thirds of the original EBSA area and falls mostly within the previous delineation, except for a protrusion along the south east edge.



The proposed revised boundaries for the Childs Bank and Shelf Edge EBSA in relation to the original boundaries of the Childs Bank EBSA.

Status Assessment and Management Options

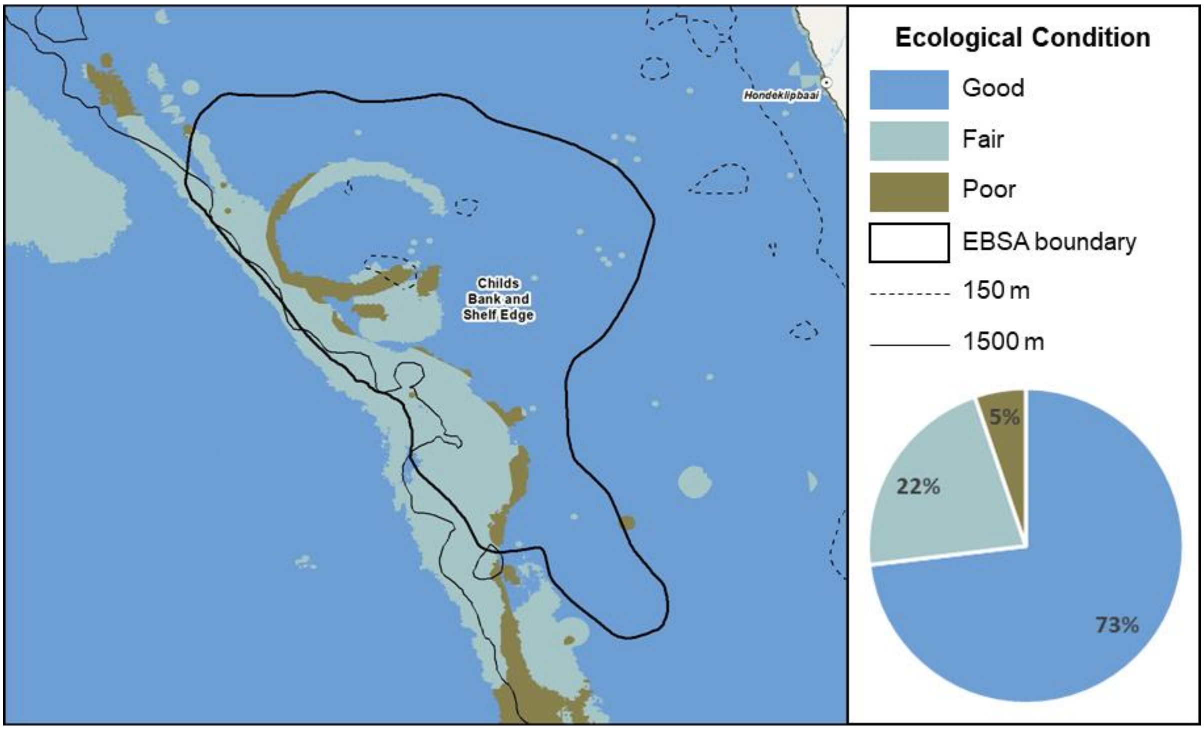


***Childs Bank and Shelf Edge** is a unique submarine bank feature on the western continental margin of South Africa, rising from -400 m to -180 m. The area is known to support structurally complex cold-water corals, hydrocorals, gorgonians and glass sponges; species that are particularly fragile, sensitive and vulnerable to disturbance, and recover slowly. The area is still in good ecological condition, and in a natural state.*

EBSA criteria coloured by rank for Childs Bank and Shelf Edge: red=high, orange=medium, yellow=low.

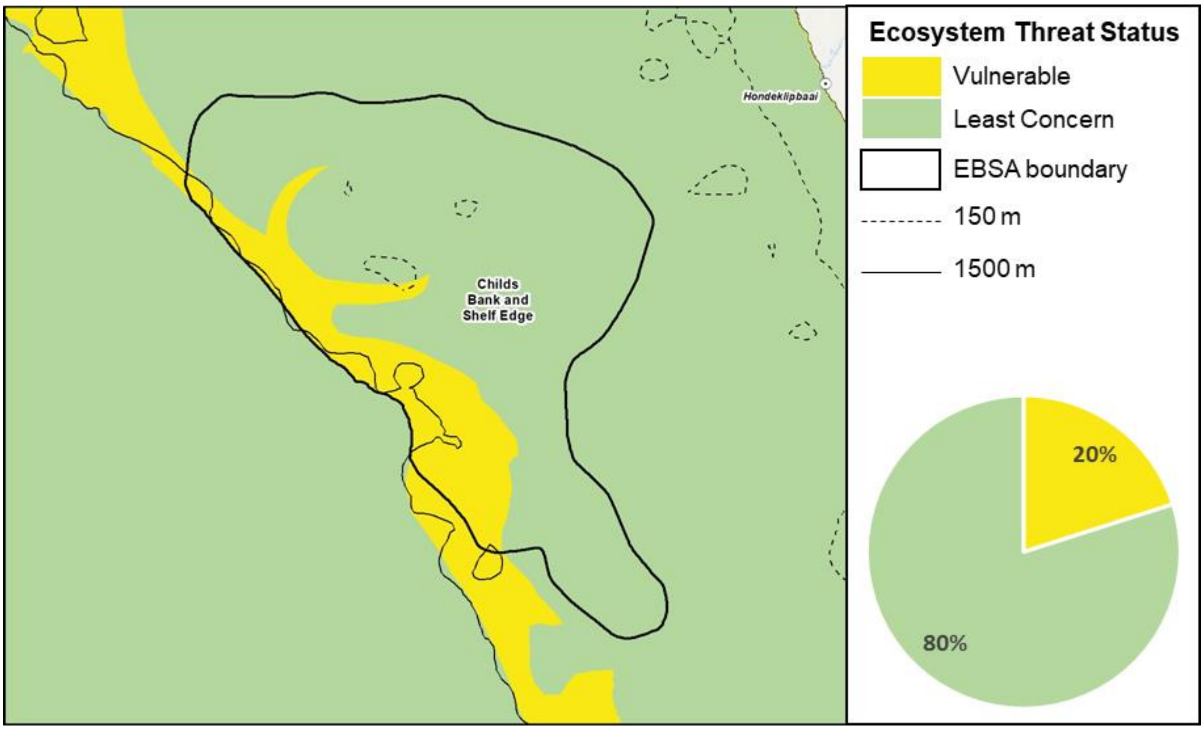
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Childs Bank and Shelf Edge is focussed on key geological features (Childs Bank carbonate mound) and threatened ecosystem types that need to be protected for the area to maintain the features and processes that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity, vulnerability and sensitivity, and naturalness. There are seven ecosystem types represented, notably including the Childs Bank Coral ecosystem type and other rocky or and mosaic shelf and shelf edge ecosystem types that contain fragile, habitat-forming structurally complex cold-water corals, hydrocorals, gorgonians and glass sponges that are especially sensitive to damage.

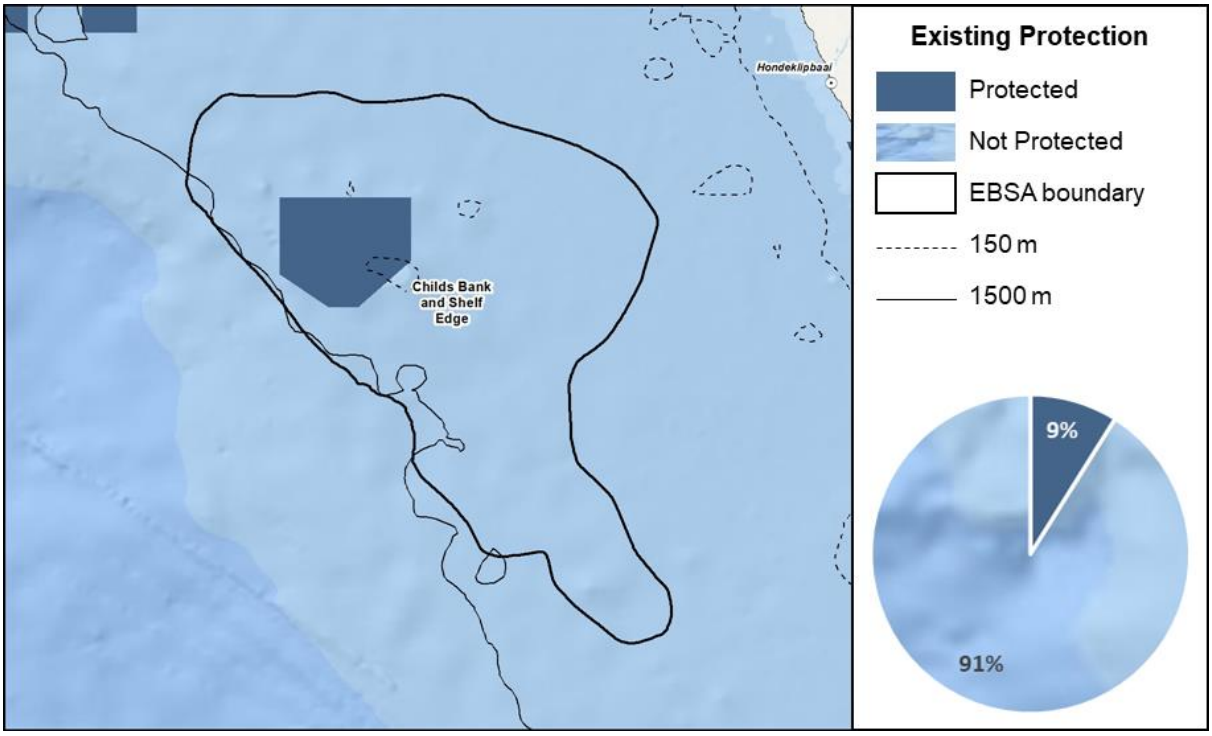


Childs Bank and Shelf Edge proportion of area in each ecological condition category.

Childs Bank and Shelf Edge is mostly in good ecological condition (73%), with some portions that are fair (22%), and only 5% in poor ecological condition. Consequently, the bulk of the offshore extent is either Least Concern (80%) or Vulnerable (20%). The more impacted and degraded areas are located on the shelf edge, and thus this is where the threatened ecosystem types are found, as well as around half of Childs Bank.



Childs Bank and Shelf Edge proportion of area in each ecosystem threat status category.



Childs Bank and Shelf Edge proportion of area in a Marine Protected Area (MPA).

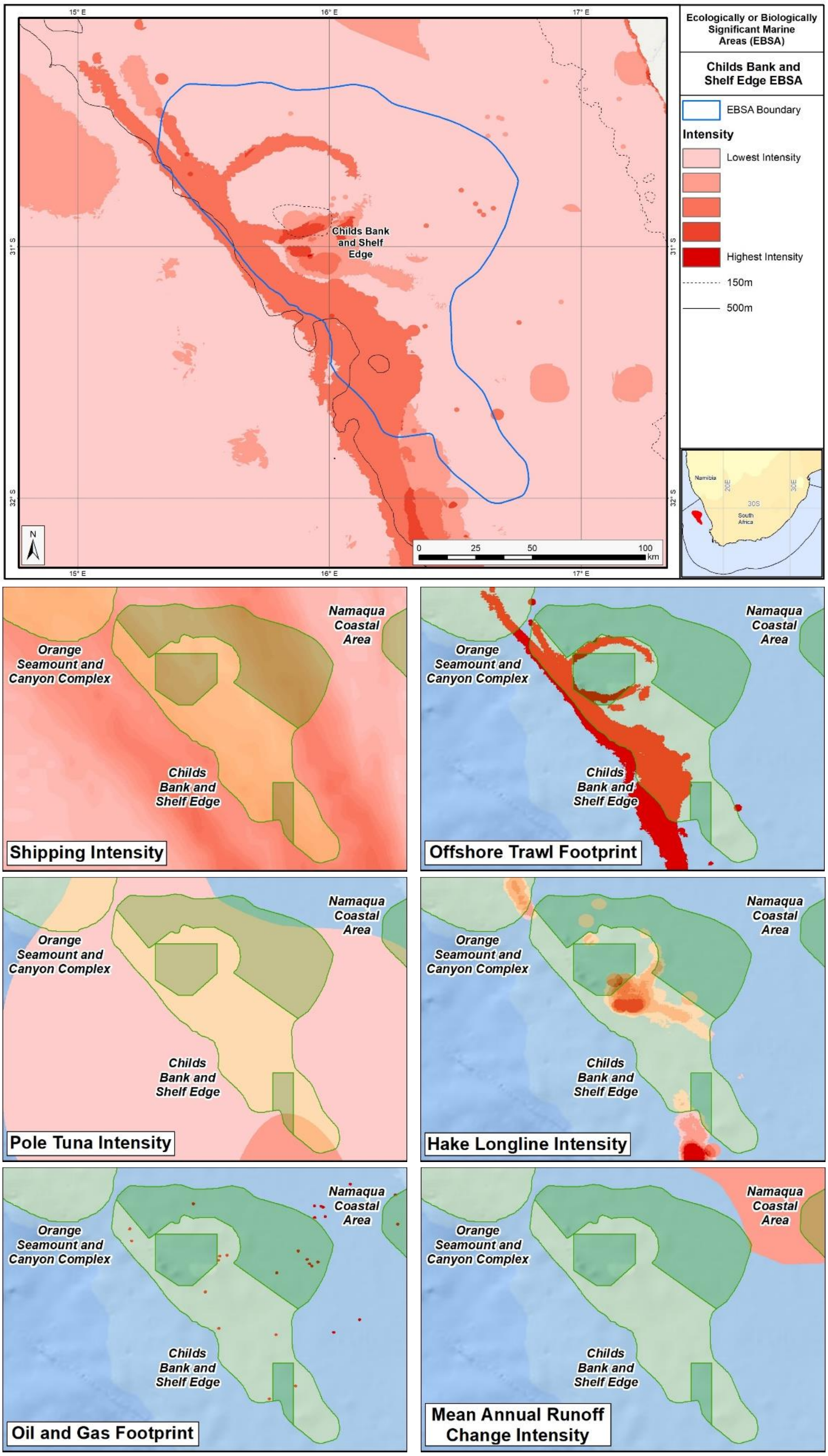
Protection of Childs Bank in MPAs was afforded for the first time following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing from no protection to 9%. The new MPA covers most of Childs Bank itself, increasing the protection level of two ecosystem types to Well Protected. However, there are five other ecosystem types in this EBSA that are either Poorly Protected, or are Not Protected.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

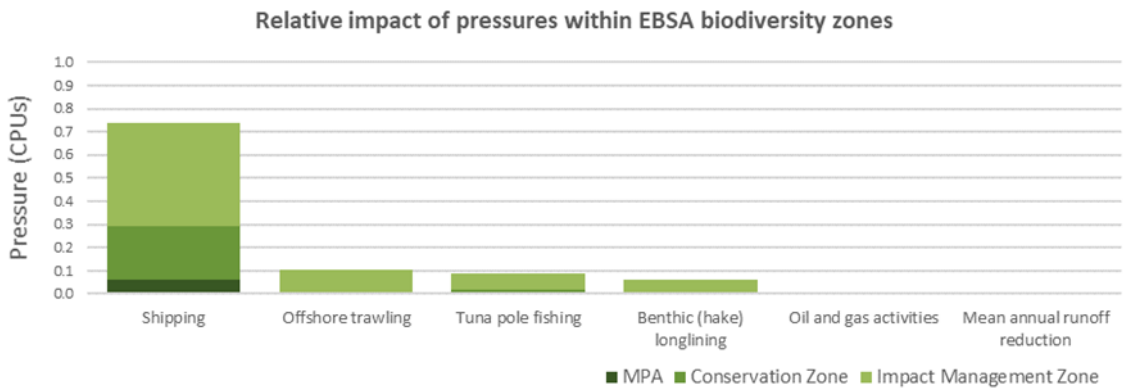
Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Childs Bank Coral	VU	WP	27.3	15.0	57.7
Childs Bank Plateau	LC	WP	78.0	18.3	3.7
Namaqua Muddy Sands	LC	NP	100.0	0.0	0.0
Southern Benguela Outer Shelf Mosaic	LC	NP	95.6	3.2	1.2
Southern Benguela Sandy Outer Shelf	LC	PP	85.9	13.8	0.2
Southern Benguela Sandy Shelf Edge	VU	PP	2.9	94.7	2.4
Southern Benguela Shelf Edge Mosaic	LC	NP	79.9	8.8	11.3
Other Features					
• Childs Bank • Fragile, habitat-forming structurally complex cold-water corals, hydrocorals, gorgonians and glass sponges • Feeding area for tuna • Blue and mako sharks					

Relevant Pressures and Activities (impact, extent)

- There are six pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent (although tuna pole fishing spans almost the entire EBSA) and has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: offshore trawling, tuna pole fishing, benthic (hake) longlining, and oil and gas (exploration and production). These activities will need to be managed particularly well in order to protect the fragile benthic biodiversity, fish and shark assemblages for which this EBSA is recognised. For all of these pressures, the larger portion of the activity is located in the Impact Management Zone.
- Mean annual runoff reduction is the only pressure that comprises <1% of the EBSA pressure profile, and likely has little impact on the key biodiversity features described in this EBSA.
- Activities in South Africa that are not present in this EBSA include: abalone harvesting, alien invasive species, beach seining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, kelp harvesting, linefishing (commercial and recreational), mariculture, midwater trawling, mining (prospecting and mining), naval dumping (ammunition), oyster harvesting, pelagic longlining, ports and harbours, prawn trawling, recreational shore angling, shark netting, small pelagics fishing, south coast rock lobster harvesting, squid fishing, subsistence harvesting, inshore trawling, wastewater discharge, and west coast rock lobster harvesting; noting that some of these are coastal pressures that do not apply to offshore EBSAs.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



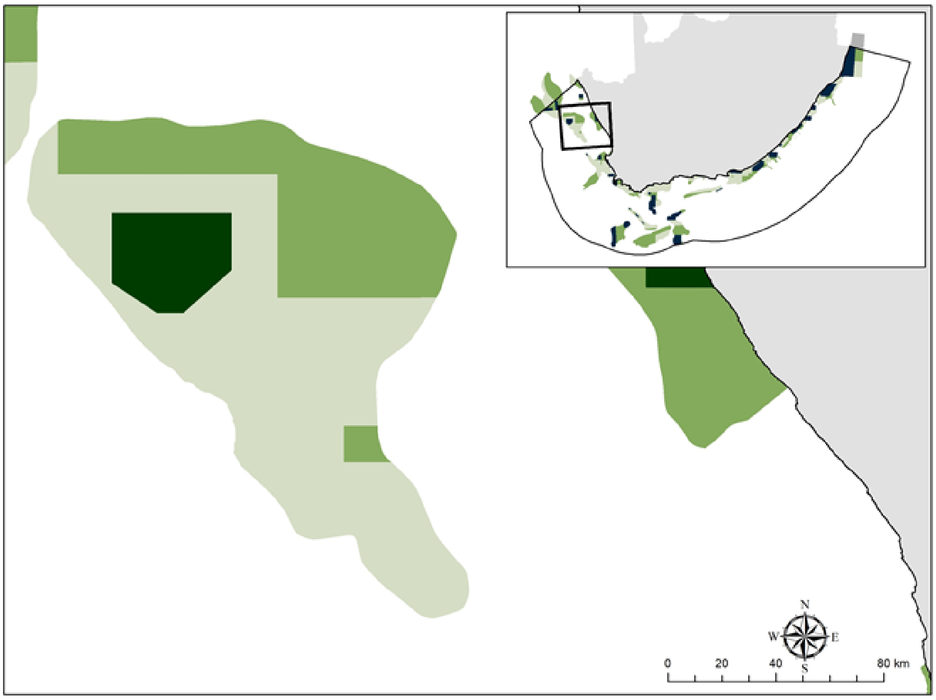
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that oil and gas (exploration and production) and mean annual runoff reduction comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. It also includes one MPA that is wholly within the EBSA: Child Banks MPA. The activities permitted within this MPA are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

Childs Bank MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_childsbankmarine_regulations_g42479gn785.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

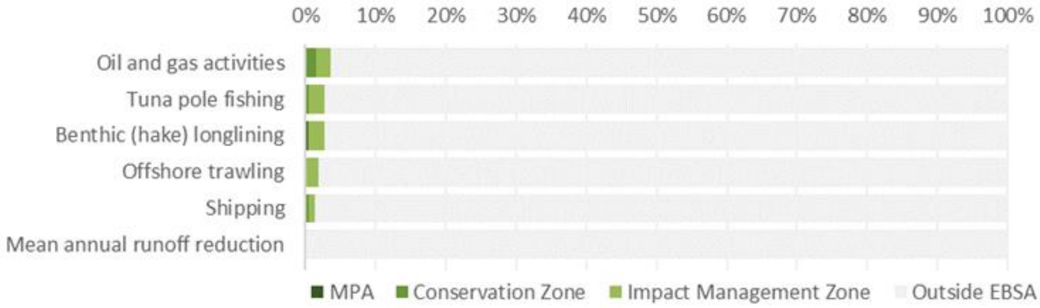
Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

Activity Evaluation Per Zone: Zoning Feasibility

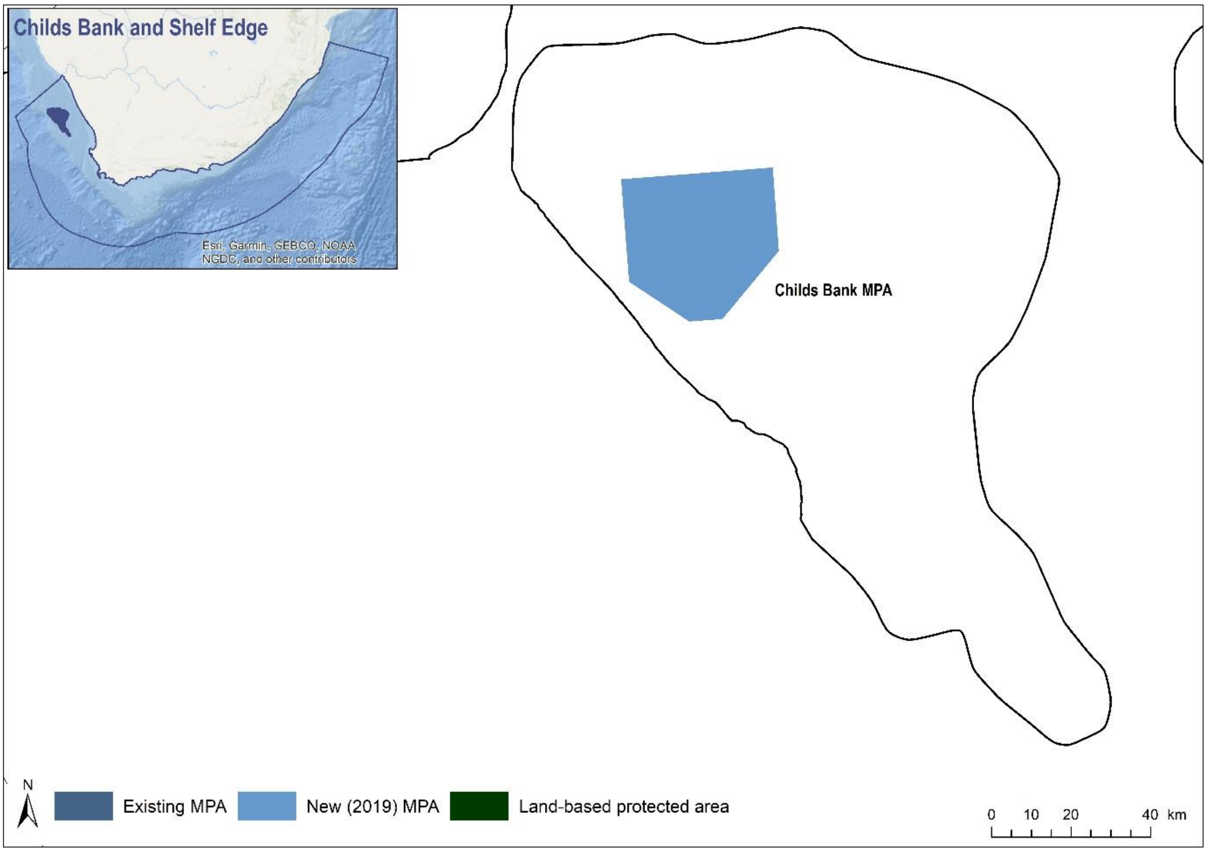


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Of the activities that are present in the EBSA, a very limited proportion of their respective national footprints is within the EBSA extent, the bulk of which are in the Impact Management Zone. Offshore trawling has the highest proportion (<10%) of the national footprint within the EBSA. This activity is conditionally compatible with the Impact Management Zone, and thus in the MSP process, the recommendation is for this activity continue in the Impact Management Zone with appropriate management measures. This activity is not compatible with the management objectives of the Conservation Zone, and is thus recommended to be not permitted in that zone. Benthic (hake) longlining and tuna pole fishing are compatible or conditionally compatible with the EBSA zones and thus are recommended to continue with appropriate management measures. The commercial interests of oil and gas (exploration and production) are accommodated, where exploration is conditionally compatible in both EBSA zones, and production is conditionally compatible in the Impact Manaement Zone. However, production is not compatible with the Conservation Zone and is recommended to be not permitted. Shipping is compatible with both EBSA zones and is recommended to continue in both the Conservation and Impact Management Zone under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Childs Bank MPA in 2019. It is recommended that full operationalisation of the new MPAs is implemented, including a management plan, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

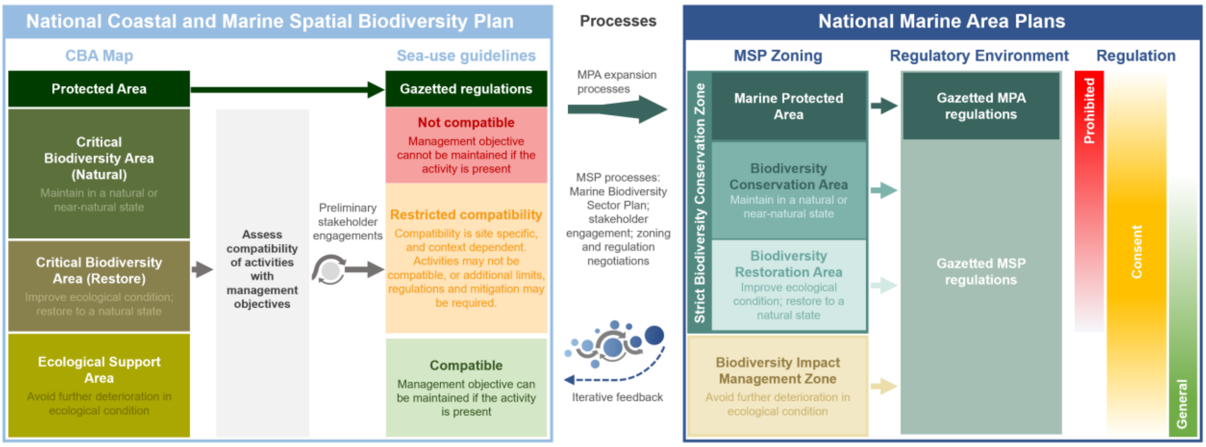


Marine protected areas (MPAs) in the Childs Bank and Shelf Edge EBSA.

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Childs Bank and Shelf Edge, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

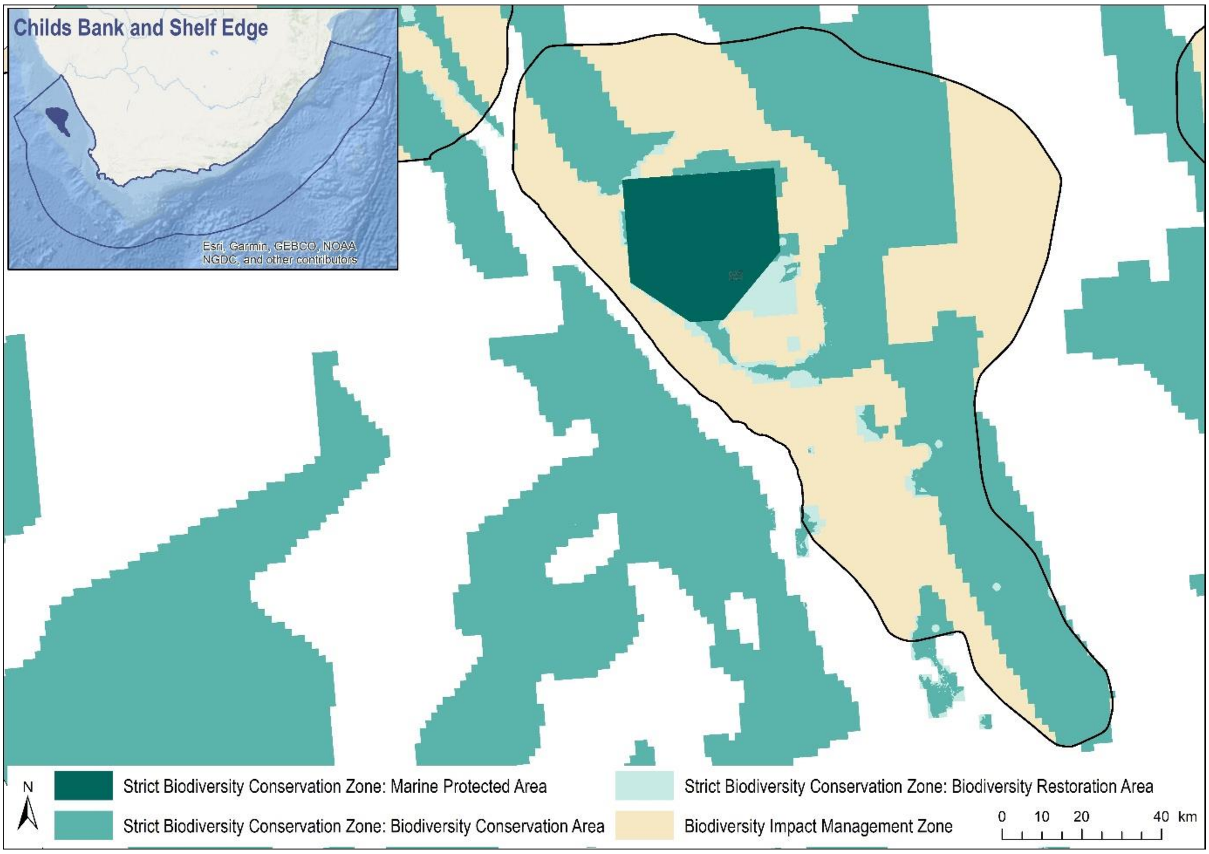


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Childs Bank and Shelf Edge.

Childs Bank MPA is the only MPA in this EBSA. It is managed according to the gazetted management regulations for this MPA. The rest of the Strict Biodiversity Conservation Zone is primarily a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. A much smaller portion comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Childs Bank and Shelf Edge EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Childs Bank and Shelf Edge. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

In addition to the research needs for all EBSAs (see EBSA Research Needs below), there needs to be fine-scale mapping of seabed features within this EBSA that can support an improved fine-scale assessment of ecological condition. This includes exploring and mapping seep habitats, which are likely to be present. Research needs to be particularly focussed in the Benguela Bank area, in order to support potential MPA expansion in the EBSA (see Future Process below).

Future Process

There needs to be full operationalisation and practical implementation of the Childs Bank MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Particular attention should be paid to the Benguela Bank area, where an MPA was proposed as part of Operation Phakisa, but was not declared with the other new MPAs in 2019.

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Namaqua Fossil Forest

Revised EBSA Description

General Information

Summary

The Namaqua Fossil Forest itself is a small (2 km^2) seabed outcrop composed of fossilized yellowwood trees in the 136-140 m depth range, approximately 30 km offshore on the west coast of South Africa. The EBSA boundaries are larger at approximately 25 km by 35 km as this is necessary to accommodate likely extended area of the feature, which is not precisely known. The fossilized tree trunks have been colonized by fragile, habitat-forming scleractinian corals, confirmed by images from submersible surveys. The outcrops are composed of laterally extensive slabs of rock of dimensions >5 x <1 x <0.5 m. Based on interpretations of regional side scan sonar, the outcrop is believed to be unique to the area. The site is un-mined although it falls within a current diamond mining lease area; however, there is a "no go" buffer area around the known locations of the fossils. Hard grounds have been reported north of the original fossil forest discovery that are hypothesized to be part of this fossil forest. Further, a newly described habitat-forming sponge is present in the area. In summary, the Namaqua Fossil Forest is a unique feature with substantial structural complexity that is highly vulnerable to benthic impacts.

Introduction of the area

The Namaqua Fossil Forest is a small (2 km^2) seabed outcrop composed of fossilized yellowwood trees in the 136-140 m depth range on the mid-shelf off the Namaqualand coast in South Africa. The EBSA boundaries are larger at approximately 25 km by 35 km as this is necessary to accommodate likely extended area of the feature which is not precisely known. The area is approximately 30 km offshore between Port Nolloth and Kleinsee. Fossilized tree trunks have been colonized by fragile, habitat-forming scleractinian corals. Based on regional side-scan sonar interpretations, the outcrop is believed to be unique to the area. Fragments of fossil tree trunks were, however, recovered from mined areas about 60 km away from this site but those fragments are no longer in-situ and were removed from the seabed. The site is within the productive southern Benguela ecosystem but there is no information on local-scale oceanography for this area.

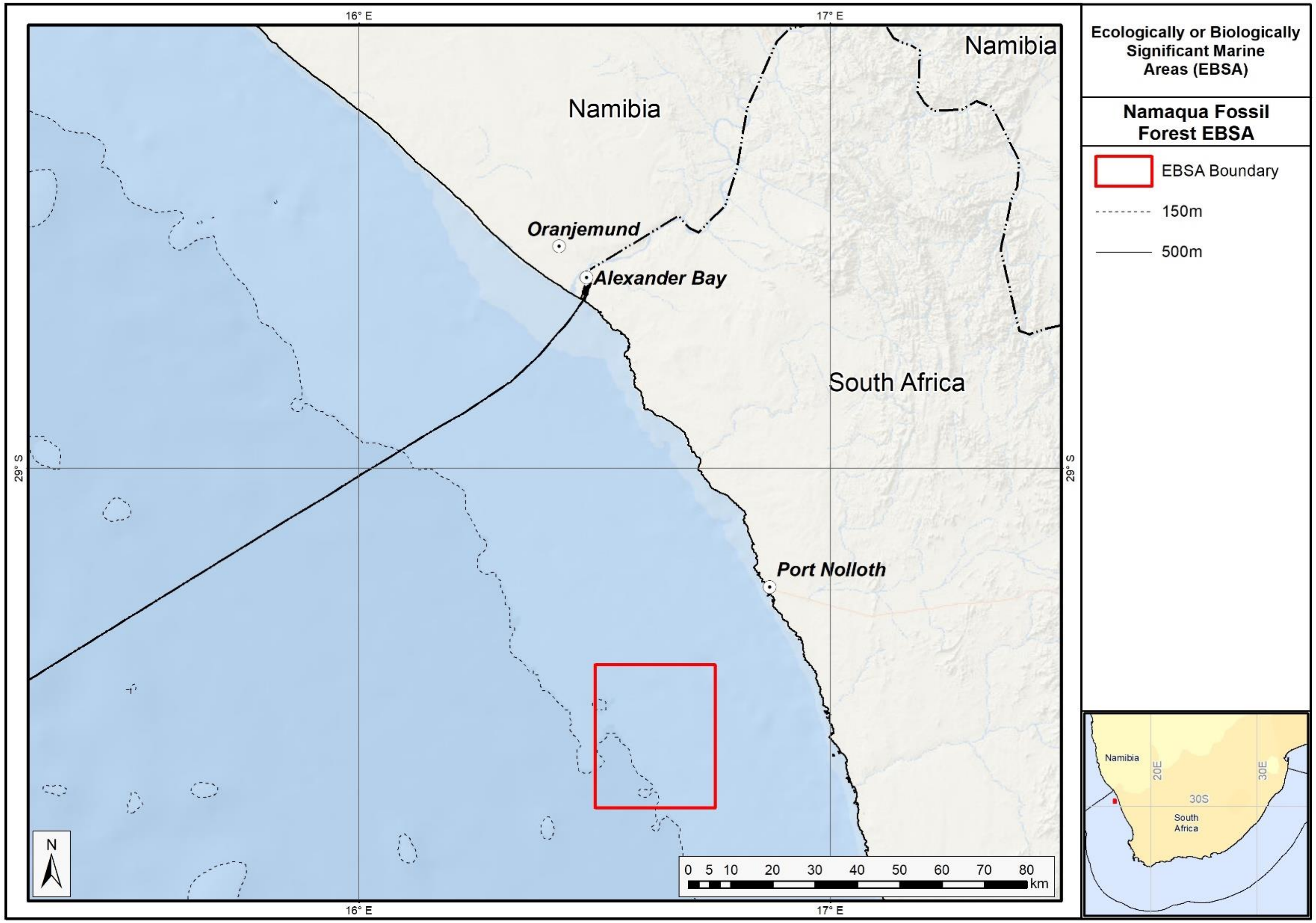
Description of the location

EBSA Region

South-Eastern Atlantic

Description of location

This area occurs on the mid-shelf in the 136-140 m depth range off the Namaqualand coast in South Africa. It is entirely within the EEZ of South Africa.



Proposed boundaries of the Namaqua Fossil Forest EBSA.

Area Details

Feature description of the area

This is a benthic feature composed of laterally extensive slabs of rock of lengths greater than 5 m and usually less than 1 m in width. The fossilized wood is reported to extend to 0.5 m in height although the geology of the broader area includes erosion-resistant, high-relief areas (up to 5 m) (Stevenson and Bamford 2003). The lithology has not been sampled directly, but is believed to be claystone. According to in-situ observations during submersible surveys, the fossilized wood has been colonized by scleractinian corals. Apparently, no biological sampling has been conducted previously at the site, with research activities being focused rather on the geology of the area. Two species of fossil wood were documented in the area, both from the Podocarpidae family; *Podocarpus jago* and *P. umzambense*, the former being a species described from this site (Bamford & Stevenson, 2002).

Since the original description and delineation of this EBSA, more recent surveys in the area have revealed hard grounds immediately north of the known location of the fossil forest, which are believed to be part of the same feature. Further, a newly described habitat-forming sponge has been recorded in the area (Samaai et al., 2017). Consequently, the boundary of the Namaqua Fossil Forest has been expanded to cover a broader area, which includes the delineation of a currently proposed MPA in South Africa. Although the boundary is still a geometric shape, the revision has improved the precision of the delineation by encompassing a more realistic representation of the full extent of the feature. More dedicated research in this area is required to refine the boundary further to the actual extent of the feature rather than this current approximation. Consequently, this site is presented as a Type 3 EBSA: Spatially stable features whose individual positions are not known (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

The *in-situ* surveys of this unique site showed large, intact, fossilized tree trunks that support habitat-building corals and sponges. The site is considered to be unmined. It used to fall within a mining licence area (South African Sea Area MPT 25/2011 (in Concessions 5C and 4C)) where De Beers Consolidated Mines held a marine diamond mining right, but they have subsequently abandoned it. Since then, Belton Park Trading 127 (Pty) Ltd have been granted Prospecting Rights for marine diamonds in Concessions 2C, 3C, 4C and 5C, which overlaps with this EBSA (in 4C and 5C). However, the Basic Assessment Report requires a 250 m "no-go" buffer around all known locations of fossilized yellowwood trees (CCA Environmental (Pty) Ltd, 2015). Currently, sampling operations have been undertaken in Concession 2C and 3C, but not near the EBSA (Andrea Pulfrich, pers. comm). There is no known future research planned for the area.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for Namqua Fossil Forest. Data from Sink et al. (2019).

Threat status	Ecosystem Type	Area (km^2)	Area (%)
Least Concern	Namaqua Mid Shelf Rock Outcrops	20.1	2.4
	Namaqua Muddy Mid Shelf Mosaic	331.2	39.8
	Namaqua Sandy Mid Shelf	230.0	27.7
	Southern Benguela Muddy Sands	250.3	30.1
Grand Total		**831.6**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

Based on interpretations of regional side-scan sonar covering more than 2300 km2 between the area offshore of Chamais Bay in Namibia and offshore of the Buffels River in South Africa, there are no other known in situ fossilized yellowwood forests in the region (Stevenson and Bamford 2003). Further, the published images of in situ habitat-building corals prove this site to be one of the few confirmed localities of in situ cold-water corals in the region (Stevenson and Bamford 2003). Other fragments of fossil tree trunks were recovered from test-mine areas north-west of the area that meets the EBSA criteria, but these were buried fragments (Stevenson and Bamford 2003).

C2: Special importance for life-history stages of species **No information**
Justification
Little is known about the biodiversity and ecology of this small area (Sink et al., 2012a).

C3: Importance for threatened, endangered or declining species and/or habitats **No information**
Justification
Little is known about the local-scale biodiversity and ecology of this small area (Sink et al., 2012a). However, at a national scale, the most recent map of ecosystem types indicates that there are four ecosystem types present in the area, all of which are Least Concern (Sink et al., 2019).

C4: Vulnerability, fragility, sensitivity, or slow recovery **High**
Justification
The fossilized wood, accompanying cold-water coral colonies, and habitat-forming sponges are considered vulnerable to any activities that could impact on the seabed (FAO 2006, Rogers et al., 2008, FAO 2009, Sink et al., 2012a,b).

C5: Biological productivity **Medium**
Justification
This small localized area is unlikely to be more or less productive than the area surrounding it, but it does occur within the productive Southern Benguela ecosystem (Lagabrielle 2009, Sink et al., 2012a).

C6: Biological diversity **No information**
Justification
Little is known about the biodiversity and ecology of this small area (Sink et al., 2012a). However, the most recent map of ecosystem types indicates that there are four ecosystem types present in this small area (Sink et al., 2019).

C7: Naturalness **High**
Justification
The area has some overlap with a diamond mining lease area but apparently, it has not yet been mined (Leslie Roos, De Beers, South Africa pers. comm.). Although there is currently no mining within this offshore diamond mining lease, the future of mining in the area is uncertain (Sink et al., 2011, 2012a). Based on a cumulative-pressures assessment of known activities and impacts, almost the entire area (>99%) is in good ecological condition (Sink et al., 2019), and there is no known fishing activity within the site.

Status of submission

The Namaqua Fossil Forest was recognized as meeting EBSA criteria by the Conference of the Parties. The revised description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

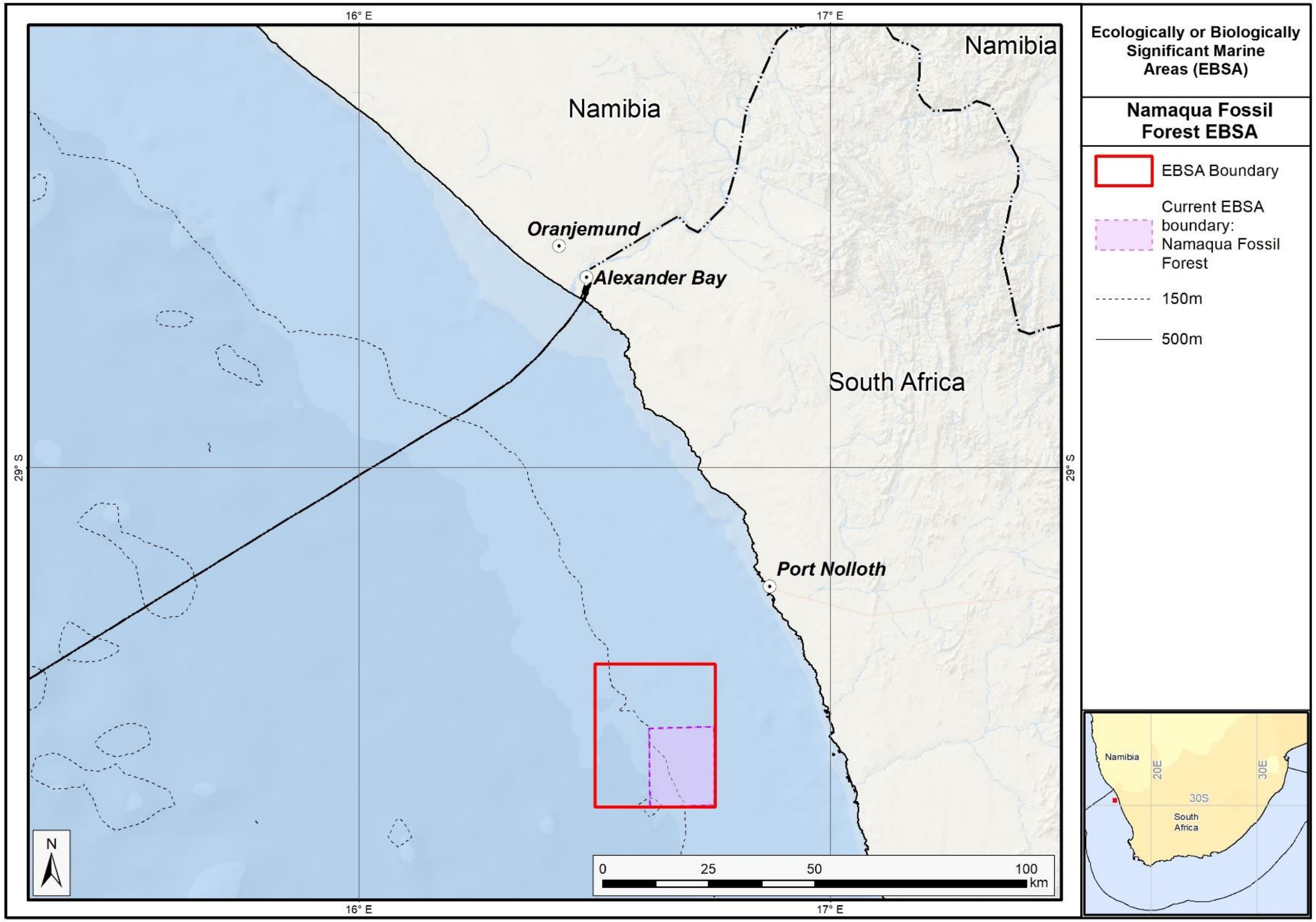
COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

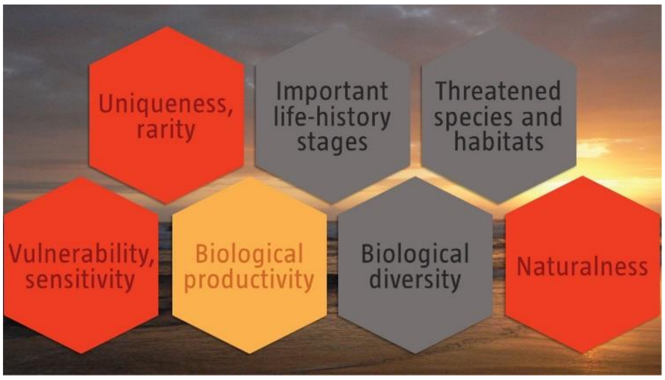
Motivation for Revisions

A few technical revisions and updates to the description were made, even though little additional information was available. The boundaries were expanded based on new information from recent surveys in the adjacent area so that the new delineation now includes the likely full extent of the fossil outcrop. The new boundaries also include the extent of the proposed Namaqua Fossil Forest MPA, which also contains an adjacent unprotected inner shelf mud ecosystem type. Based on new information from the National Biodiversity Assessment 2018 (Sink et al., 2019), the Naturalness criterion was changed from Data Deficient to High.



The proposed Namaqua Fossil Forest EBSA in relation to its original extent.

Status Assessment and Management Options

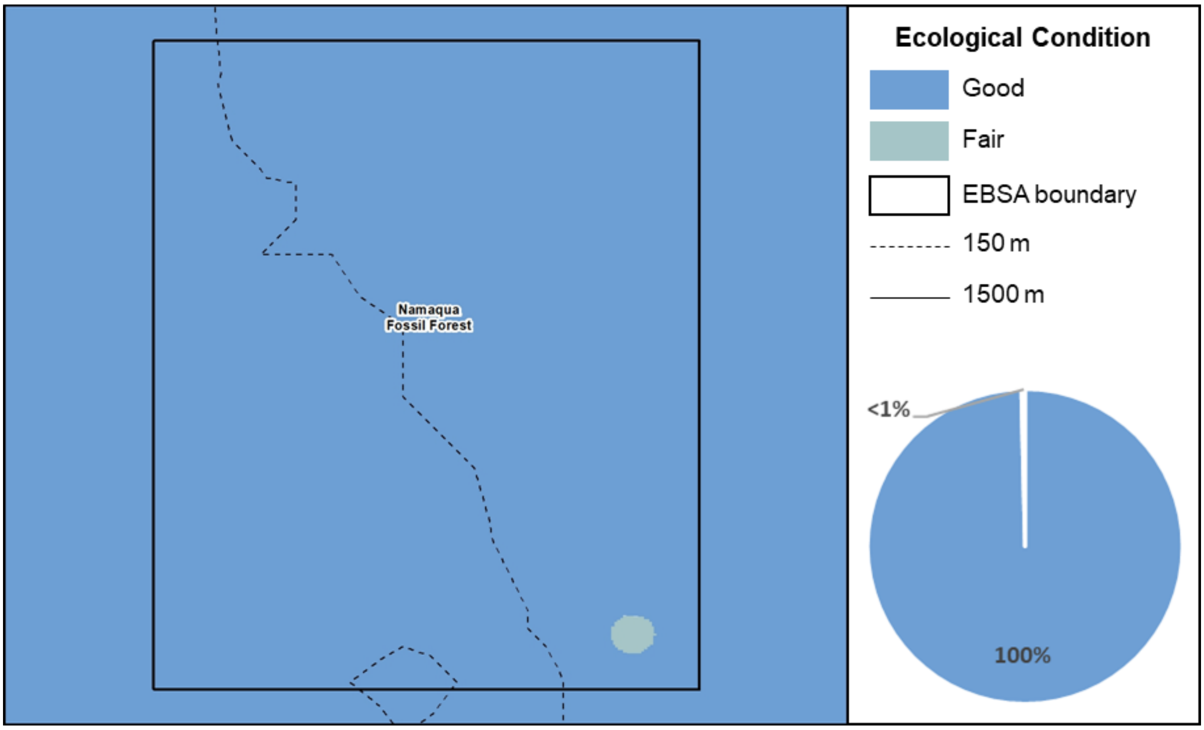


***Namaqua Fossil Forest** is a unique site of historical importance; it comprises two species of fossilised yellowwood trees, one of which was described from the area. They have been colonized by fragile, habitat-forming scleractinian corals, and a newly described habitat-forming sponge is present in the area too. The site is within the productive Benguela Current region, but very little biological information exists for this site.*

EBSA criteria coloured by rank for Namaqua Fossil Forest: red=high, orange=medium, grey=data deficient.

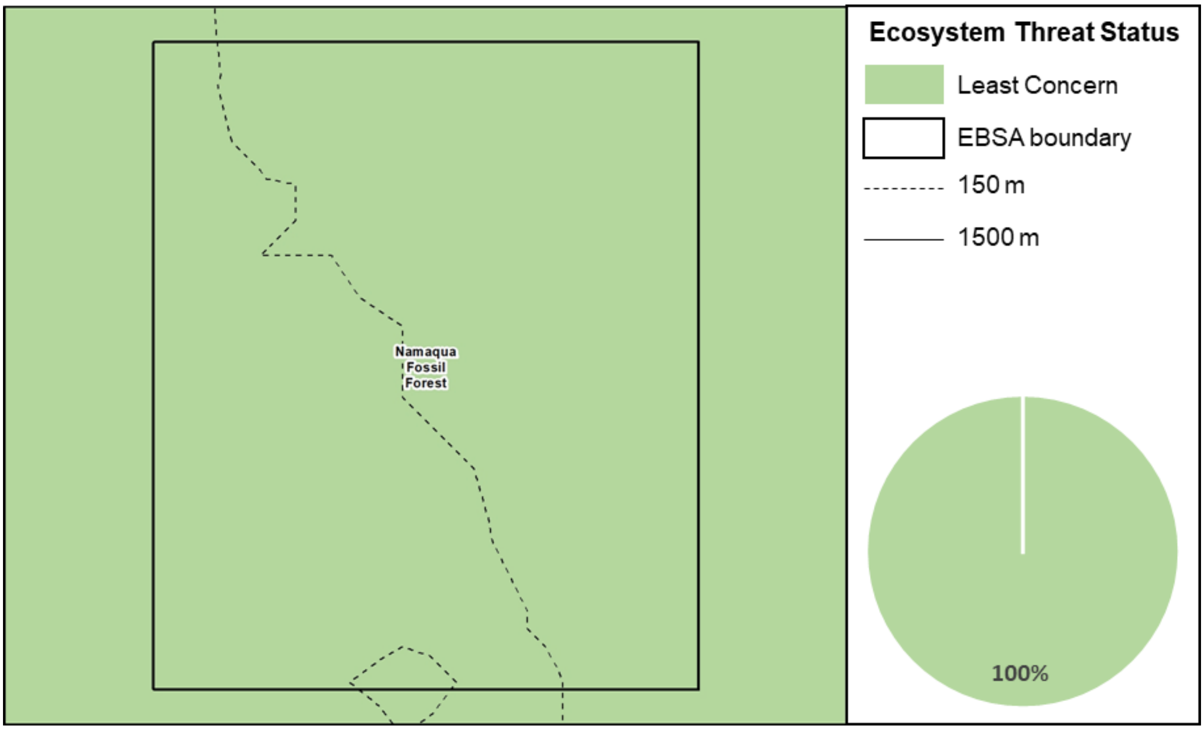
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Namaqua Fossil Forest comprises particularly sensitive, fragile features that are unique and need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity, and vulnerability and sensitivity. There are four ecosystem types represented; most are muddy or sandy, with the Namaqua Mid Shelf Fossils ecosystem type containing the fossils themselves, and fragile scleractinian corals and habitat-forming sponges that are sensitive to damage. The Namaqua Muddy Mid Shelf Mosaic ecosystem type also likely supports fragile species. Productivity in the area is generally high owing to its location in the Benguela Current, where upwelling cells are nearby.

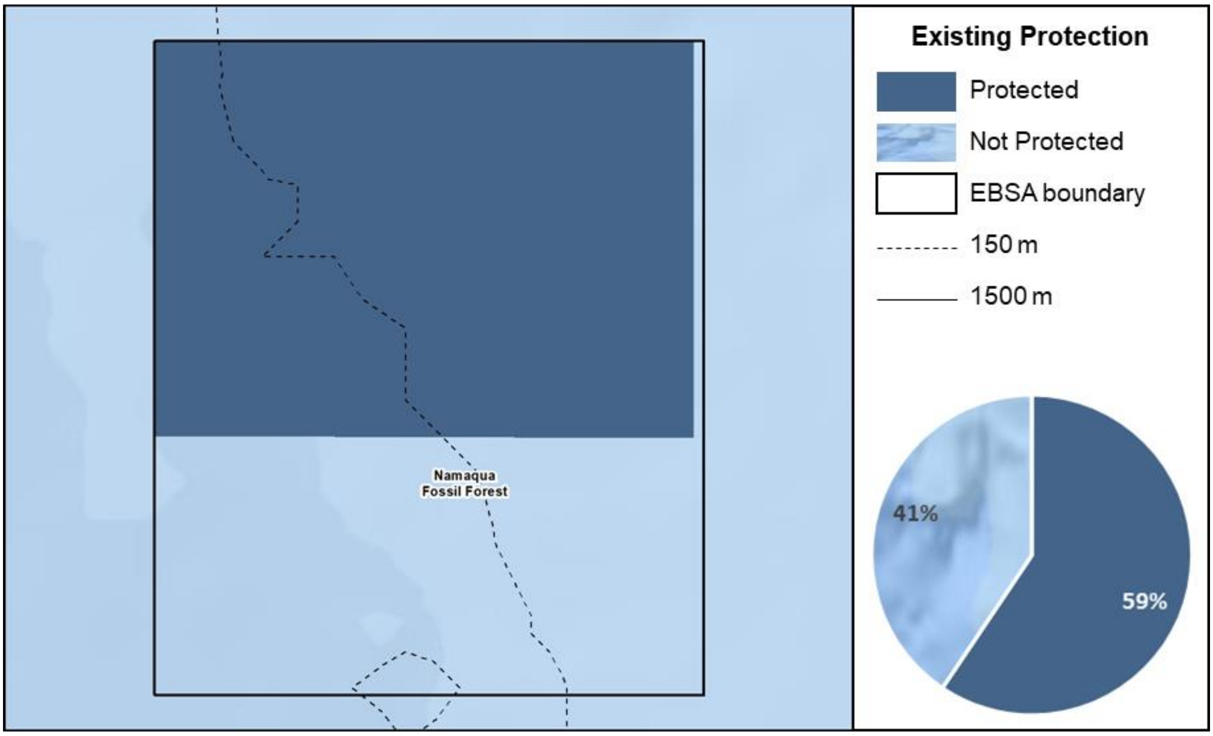


Namaqua Fossil Forest proportion of area in each ecological condition category.

Namaqua Fossil Forest is almost entirely in good ecological condition (100%), with a fraction that is in fair ecological condition (<1%). This is because the original location where the fossils were discovered have been protected from mining, despite the fact that they occur within a mining lease area. Consequently, the whole EBSA comprises ecosystem types that are Least Concern (100%).



Namaqua Fossil Forest proportion of area in each ecosystem threat status category.



Namaqua Fossil Forest proportion of area in a Marine Protected Area (MPA).

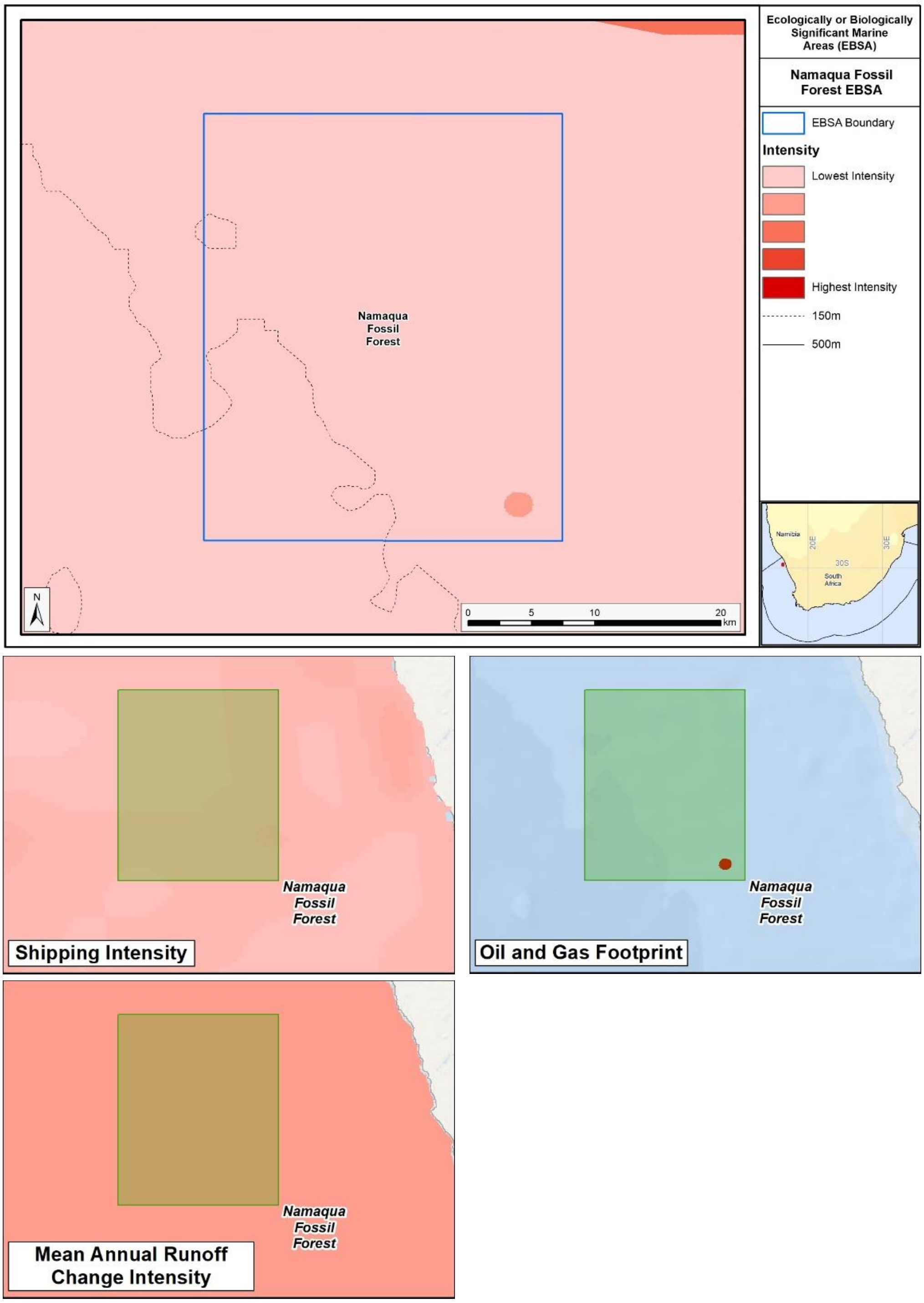
Protection of features in MPAs has been exceptionally improved following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing from no protection to 59% protected. The new MPA covers the area most accurately known presence of fossils. However, three of the four ecosystem types represented in the EBSA are still poorly or not protected.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

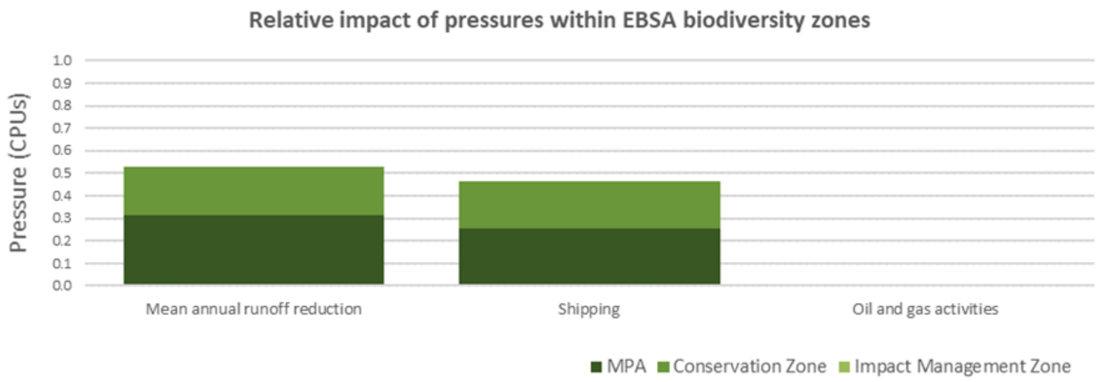
Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Namaqua Mid Shelf Fossils	LC	WP	100.0	0.0	0.0
Namaqua Muddy Mid Shelf Mosaic	LC	PP	99.1	0.9	0.0
Namaqua Muddy Sands	LC	NP	100.0	0.0	0.0
Namaqua Sandy Mid Shelf	LC	PP	100.0	0.0	0.0
Other Features					
• Yellowwood fossils • Fragile, sensitive species, e.g., habitat-forming sponges and scleractinian corals					

Relevant Pressures and Activities (impact, extent)

- There are three pressures present in this EBSA, of which shipping and mean annual runoff reduction cover the entire EBSA extent.
- There is only one oil and gas well in this EBSA, which has a very small footprint. Consequently, >99% of the cumulative pressure profile is split between mean annual runoff reduction and shipping.
- The key pressure in this EBSA that most directly impacts the features for which the EBSA is described is oil and gas (exploration and production). This will need to be managed particularly well in order to protect the fragile benthic biodiversity and fossils for which this EBSA is recognised. In many ways this is already the case given that no mining is allowed where the fossils are known to occur.
- Activities in South Africa that are not present in this EBSA include: abalone harvesting, alien invasive species, beach seining, benthic (hake) longlining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, kelp harvesting, linefishing (commercial and recreational), mariculture, midwater trawling, mining, naval dumping (ammunition), oyster harvesting, pelagic longlining, tuna pole fishing, ports and harbours, prawn trawling, recreational shore angling, shark netting, small pelagics fishing, south coast rock lobster harvesting, squid fishing, subsistence harvesting, inshore trawling, offshore trawling, wastewater discharge and west coast rock lobster harvesting; noting that some of these are coastal pressures that do not apply to offshore EBSAs.



Map of cumulative pressure (top) and maps of the three pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



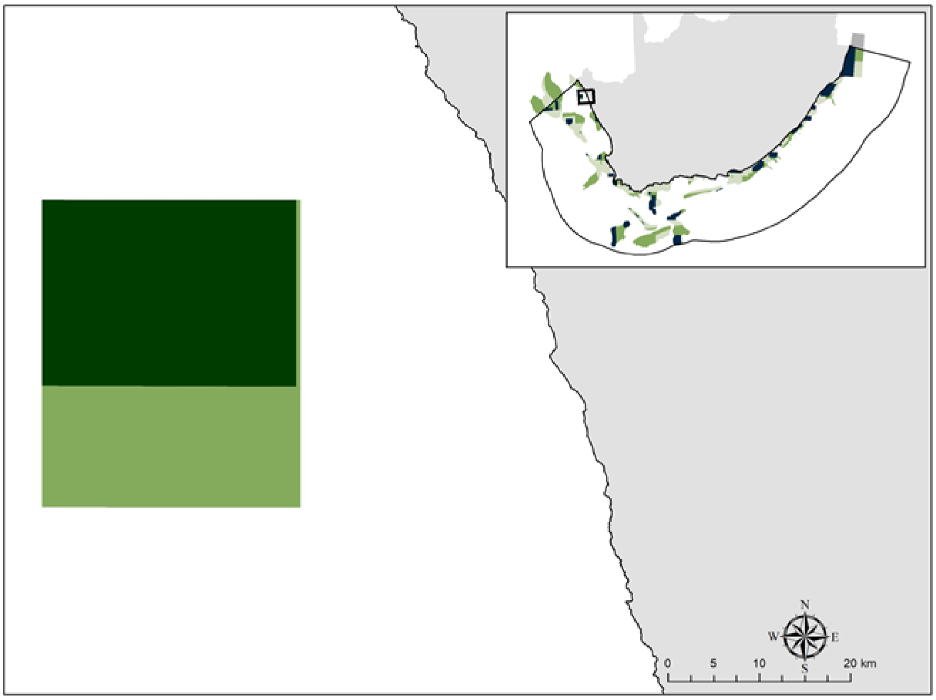
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that oil and gas (exploration and production) comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

However, Namaqua Fossil Forest is relatively small in extent, delineated around the unique, rare and fragile underlying fossil features. Thus, the entire EBSA is a Conservation Zone, the bulk of which is covered by a new Marine Protected Area: Namaqua Fossil Forest MPA. Activities permitted within the MPA are not considered as part of the EBSA management recommendations because these are given as per the gazetted regulations.

Namaqua Fossil Forest MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_namaquafossilforestmarine_regulations_g42479gn786.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of the EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

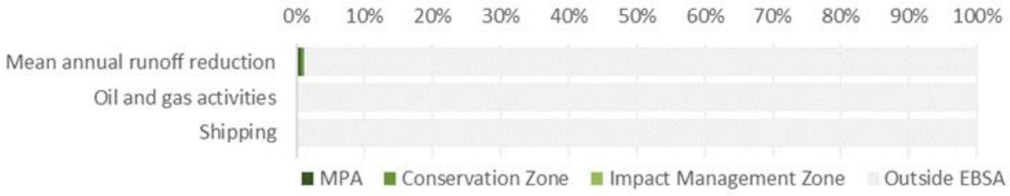
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A
Heritage	Heritage Protection Zone	Shipwrecks	Y
		Sites of historic importance	Y
		Sites of land- or seascape value	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y
		SCUBA diving	Y
		Shark cage diving	Y
		Whale watching	Y
		Motorised water sports (e.g., jet skis)	C
		Recreational boat-based linefishing	C
		Recreational shore-based linefishing	C
		Spearfishing	C
		Shark control	C
Fisheries	Commercial Fishing Zone	Crustacean trawling	N
		Demersal inshore trawling	N
		Demersal offshore trawling	N
		Abalone harvesting	C
		Beach seining	C
		Commercial linefishing	C
		Demersal hake longlining	C
		Gillnetting	C
		Kelp harvesting	C
		Midwater trawling	C
		Oyster harvesting	C
		Pelagic longlining	C
		Small pelagics fishing	C
		South coast rock lobster harvesting	C
		Squid fishing	C
		Tuna pole fishing	C
		West coast rock lobster harvesting	C
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C
	Fisheries Resource Protection Zone	Resource protection	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C
Mining	Mining Zone	Mining: prospecting (non-destructive)	C
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C
		Mining: mining construction and operations	N
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C
		Petroleum: production	N
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C
Military	Military Zone	Missile testing grounds	C
		Training areas	Y
Transport	Maritime Transport Zone	Shipping lanes	Y
		Ports and harbours	N
		Anchorage areas	C
		Bunkering	C
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C
		Seawater inlets	C
		Pipelines	C
	Land-based Infrastructure Zone	Coastal development	N
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*
		Wastewater discharge	C
		Dumping of dredged material	N

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



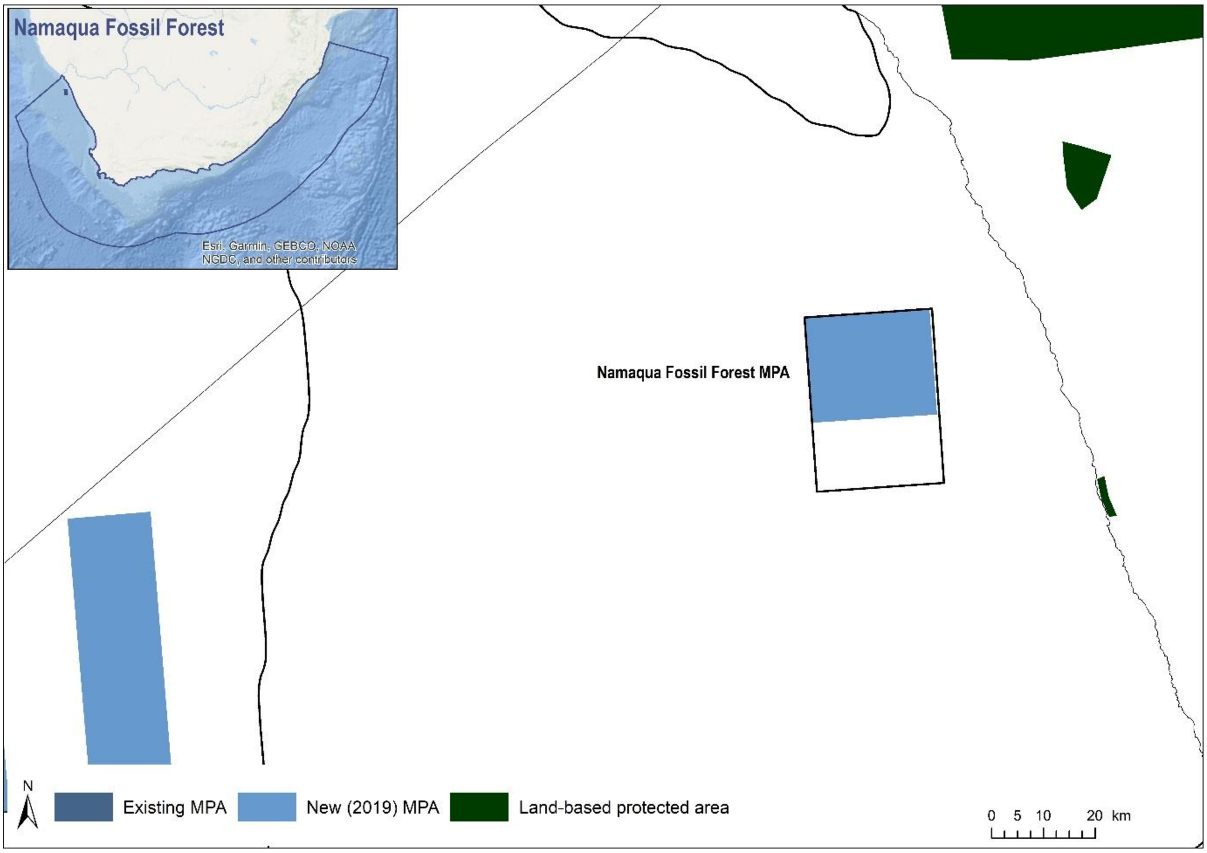
Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Namaqua Fossil Forest is the smallest of the South African EBSAs, and has been recognised as a sensitive site since discovery of the fossils. Consequently, of the few activities that are present, the proportion of their respective national footprints that lie within the EBSA is negligible. Oil and gas activities are present, with exploration considered conditionally compatible with the Conservation Zone; however, production is considered not compatible. Shipping is compatible with both EBSA zones and is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. Improved estuary management through development of appropriate freshwater flow requirements and estuarine management plans can improve the ecological condition of the surrounding marine environment in support of the biodiversity features included in this EBSA.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Namaqua Fossil Forest MPA in 2019. It is recommended that full operationalisation of the new MPA is implemented, including a management plan, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

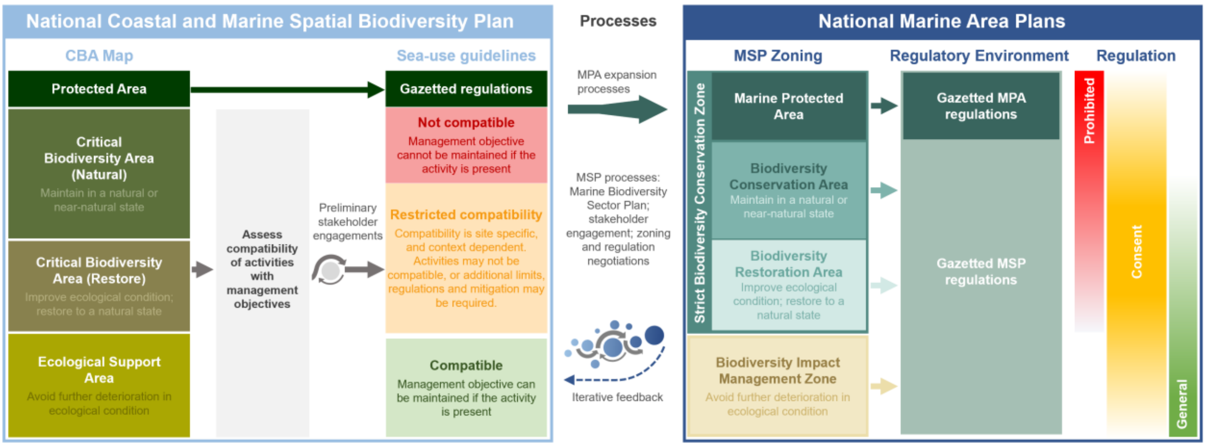


Marine protected areas (MPAs) in the Namaqua Fossil Forest EBSA. Land-based protected areas are from DFFE (2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Namaqua Fossil Forest, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

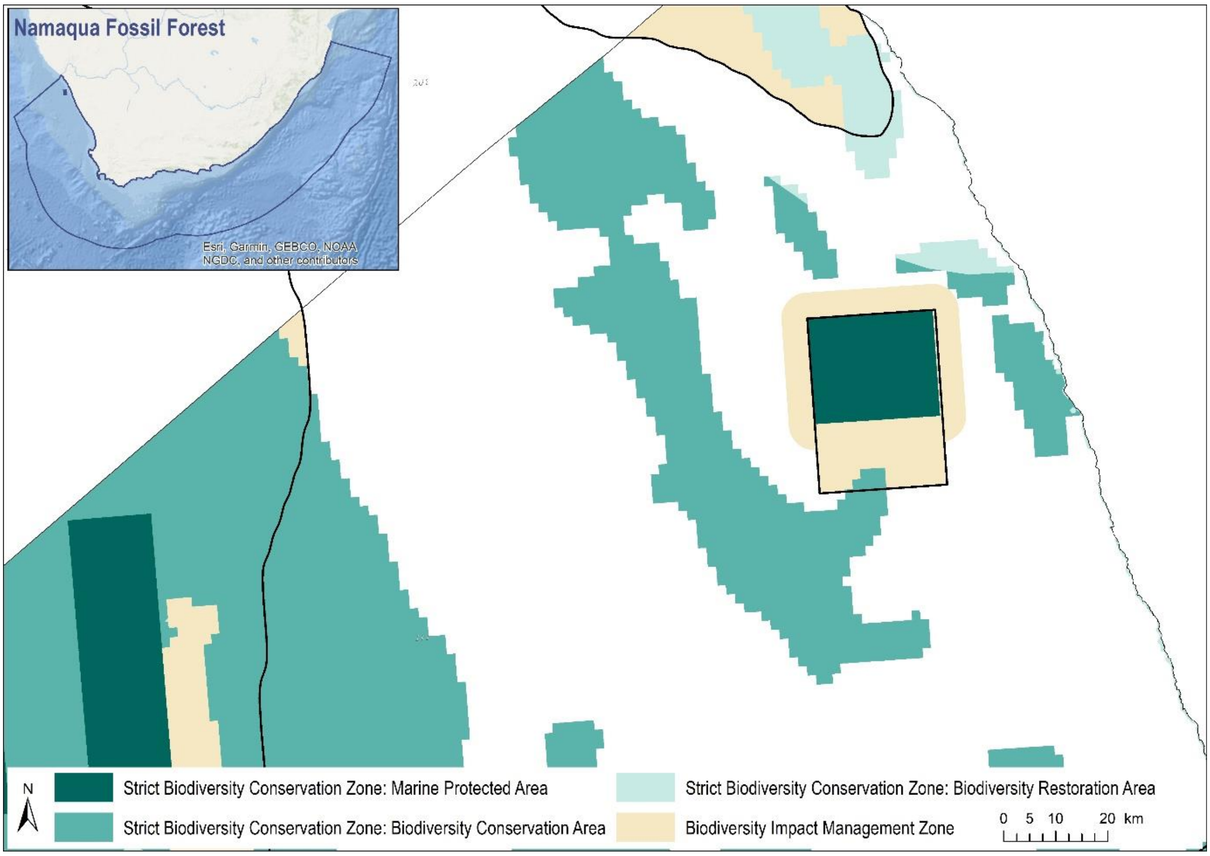


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Namaqua Fossil Forest, except the Strict Biodiversity Conservation Zone: Biodiversity Restoration Area.

Namaqua Fossil Forest MPA is the only MPA in this EBSA, and comprises the biggest zone. It is managed according to the gazetted management regulations for this MPA. The rest of the Strict Biodiversity Conservation Zone is a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Namaqua Fossil Forest EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Namaqua Fossil Forest. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- Not compatible: The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

In addition to the general research needs (see EBSA Research Needs below), finer-scale revision of the EBSA would be possible if additional data on the core feature were available. This may require engagement with the lease-holder, and possible co-operative research to determine the actual extent of the fossil forest.

Future Process

There needs to be full operationalisation and practical implementation of the Namaqua Fossil Forest MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement.

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Namaqua Coastal Area

Revised EBSA Description

General Information

Summary

The Namaqua Coastal Area is on the west coast of South Africa, within the Namaqua bioregion, and is characterized by high productivity and community biomass along its shores. A large proportion of the area is characterized by habitat that is in relatively good (natural/pristine) condition due to much lower levels of anthropogenic pressures relative to other coastal areas in the Northern Cape Province. Consequently, the area is important for several threatened ecoystem types represented there (including two Endangered and four Vulnerable ecosystem types). The area is also important for conservation of estuarine areas and coastal fish species. In summary, the area is highly relevant in terms of the following EBSA criteria: "productivity", "importance for threatened, endangered or declining species and/or habitats" and "naturalness". Since its original delineation, the boundary of this EBSA has been extended further offshore by approximately 7-20 km to better align with the underlying biodiversity features following recent research, rather than following an old proposed MPA boundary that was not adopted nor proclaimed.

Introduction of the area

The Namaqua Coastal Area is located from the estuary of the Spoeg River to the estuary of the Sout River in the Namaqua bioregion of South Africa (Sink et al., 2012), and from the dune base to approximately 33-36 km offshore. It consists of Namaqua coastal, inner, mid and outer shelf ecosystem types (Sink et al., 2019). The associated pelagic environment is characterized by upwelling, giving rise to very cold waters with very high productivity/chlorophyll levels (Lagabrielle 2009, Roberson et al., 2017). Altogether, the area includes three estuaries (van Niekerk and Turpie, 2012).

Description of the location

EBSA Region

South-Eastern Atlantic

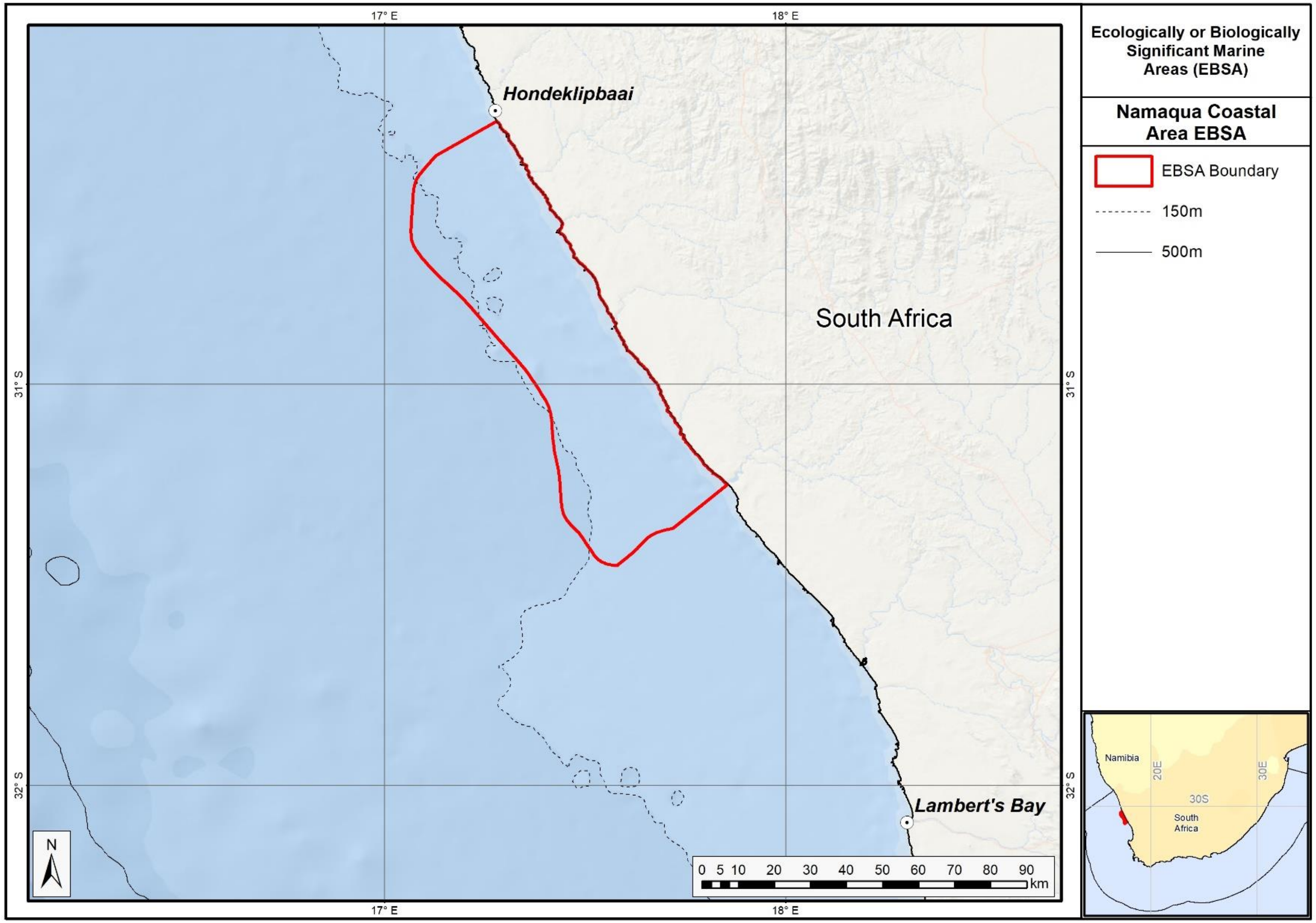
Description of location

The area is within the national jurisdiction of South Africa, occurring on the west coast, in the Namaqua bioregion. It is bounded to the north and south by the Spoeg and the Sout estuaries, respectively, extending offshore by approximately 33-36 km.

Area Details

Feature description of the area

The area consists of Namaqua coastal, inner, mid and outer shelf ecosystem types (Sink et al., 2019). There are also three estuaries in the area (van Niekerk and Turpie 2011). The associated pelagic environment is characterized by very high productivity, high chlorophyll and very cold water (mean



Proposed boundaries of the Namaqua Coastal Area EBSA.

SST = 15.2°C) caused by upwelling (Lagabrielle 2009, Roberson et al., 2017), also serving as an important area for coastal fish (Turpie et al., 2000). There is a small part of the EBSA (midway along the shore) that was recently declared as a marine protected area that came into effect in 2019. The terrestrial habitat adjacent to the part of the EBSA that stretches between the Groen and Spoeg estuaries is within the Namaqua National Park and is, therefore, also protected.

Since original description, the EBSA has been extended offshore by approximately 7-20 km so that the new offshore extent is 36 km at its widest point. The alongshore extent remains the same as before between the Spoeg and Sout estuaries. The extension was based on better alignment with the features comprising the EBSA, and their condition and threat status, based on the best available information (e.g., Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). This was also based on new research (Karenyi 2014) that has allowed better ecosystem mapping in the area, thus affording more accuracy in the EBSA boundary rather than following an old proposed MPA boundary that was not adopted. New fine-scale mapping of the coast (Harris et al., 2019) also allowed a more accuracte coastal boundary to be delineated. The site is presented as a Type 1 EBSA because it contains "Spatially stable features whose positions are known and individually resolved on the maps" (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

Sink et al. (2012, 2019) determined the threat status of coastal and marine ecosystem types in South Africa by assessing the (weighted) cumulative impacts of various pressures (e.g., extractive resource use, pollution, development, and others) on each ecosystem type. Six of the ecosystem types represented in the area are threatened, including two Endangered (Cool Temperate Arid Predominantly Closed Estuary; Southern Benguela Reflective Sandy Shore) and four Vulnerable types (Namaqua Exposed Rocky Shore; Namaqua Kelp Forest; Namaqua Mixed Shore; Namaqua Very Exposed Rocky Shore; Southern Benguela Intermediate Sandy Shore). This implies that there has been substantial degradation in natural/pristine condition of these ecosystem types, and it is expected that important components of biodiversity pattern have been lost and that ecological processes have been moderately to heavily modified.

Part of the coastal extent of the area (between the Brak and Sout rivers) is the only stretch of coast in the Northern Cape province of South Africa that is in good (natural/pristine) condition (Sink et al., 2012). This is because very little mining (the most prominent anthropogenic pressure on this coastline) or other pressures have affected this section. Moreover, other habitat in the area (particularly that between the Spoeg and Groen estuaries) was assessed to be mainly in fair condition, with little industry present in the area except for some boat-based mining for which SCUBA is used (Majiedt et al., 2013). Of the three estuaries in the EBSA, two (the Groen and the Spoeg) have been identified as national priorities for estuarine protection (van Niekerk and Turpie 2012). The lack of marine protected areas in South Africa's Northern Cape province was previously highlighted as an issue of concern (Sink et al., 2012, Majiedt et al., 2013). Considering this and the following characteristics of the area: (i) the threatened ecosystem types represented there, (ii) the relative lack of human industry and consequently the good condition of much of the habitat in the area, (iii) the connectivity between part of the area and an established terrestrial national park, and (iv) the priority for national estuarine conservation of two of the river mouths in the area, most of the extent of the area has been identified as priority marine/coastal habitat for spatial protection (Sink et al., 2012, Majiedt et al., 2013). Furthermore, a complementarity analysis based on fish distribution data indicated that the coast within the area is a priority area for the conservation of coastal fish species in South Africa (Turpie et al., 2000). Therefore, among the newly proclaimed MPAs in South Africa is a relatively small Namaqua National Park MPA in the middle of this EBSA.

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Summary of ecosystem types and threat status for the Namaqua Coastal Area. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Endangered	Cool Temperate Arid Predominantly Closed Estuary	0.5	0.0
	Southern Benguela Reflective Sandy Shore	1.4	0.0
Vulnerable	Namaqua Exposed Rocky Shore	12.1	0.3
	Namaqua Kelp Forest	1.7	0.0
	Namaqua Mixed Shore	19.2	0.5
	Namaqua Very Exposed Rocky Shore	1.2	0.0
Near Threatened	Southern Benguela Intermediate Sandy Shore	3.1	0.1
Least Concern	Namaqua Muddy Mid Shelf Mosaic	2333.1	66.5
	Namaqua Sandy Inner Shelf	303.7	8.7
	Namaqua Sandy Mid Shelf	230.9	6.6
	Southern Benguela Dissipative-Intermediate Sandy Shore	4.2	0.1
	Southern Benguela Muddy Sands	345.1	9.8
	Southern Benguela Sandy Outer Shelf	250.6	7.1
Grand Total		**3507.1**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **Low**

Justification

None of the ecosystem types or features represented in the area are unique to the area (Sink et al., 2012, 2019, Majiedt et al., 2013).

C2: Special importance for life-history stages of species **Medium**

Justification

The area is part of the important west coast nursery area for commercially caught pelagic fish species in South Africa (Hutchings et al., 2002). Further, it includes three estuaries that may also provide nurseries for coastal fish species (van Niekerk and Turpie 2000), many of which species are in an over-exploited state (Mann 2000). The site also includes breeding habitat for birds, such as white breasted cormorants (Crawford et al., 2013) and roost sites for African black oystercatchers (Rao et al., 2014).

C3: Importance for threatened, endangered or declining species and/or habitats **High**
Justification
Two of the ecosystem types represented in the area (Cool Temperate Arid Predominantly Closed Estuary; Southern Benguela Reflective Sandy Shore) are Endangered (Sink et al., 2019). This implies that very little of the total area of these ecosystem types in South Africa is in natural/pristine ecological condition. The Vulnerable Namaqua Exposed Rocky Shore, Namaqua Kelp Forest, Namaqua Mixed Shore, Namaqua Very Exposed Rocky Shore and Southern Benguela Intermediate Sandy Shore are also found in the area. The portions of these ecosystem types inside the EBSA were all found to be in good ecological condition, therefore emphasizing the importance of the EBSA for the conservation of these threatened ecosystem types (Majiedt et al., 2013). The Namaqua Coastal Area is also important for estuarine conservation, given the presence of three estuaries and the fact that the conservation status of ±80% of South Africa's estuarine area is classified as threatened (van Niekerk and Turpie 2012). Furthermore, populations of many coastal fish species in South Africa are under severe conservation threat, mainly due to overexploitation (Mann 2000), and the Namaqua Coastal Area is a key site for protection of coastal fish species in South Africa (Turpie et al., 2000).

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**
Justification
The threatened status of ecosystem types that occur in the EBSA (Sink et al., 2012, 2019), implies that degradation and some loss of ecosystem processes has been associated with these ecosystem types in other areas, and therefore that they are vulnerable to effects of human activities.

C5: Biological productivity **High**
Justification
The pelagic environment associated with this area is characterized by very cold water, high chlorophyll concentrations and high biological productivity due to wind-induced upwelling (Hutchings et al., 2009, Lagabrielle 2009, Roberson et al., 2017). As a result of the abundance of nutrients associated with the upwelling, the biomass of communities along the shore (intertidal) is significantly higher than that in the other two bioregions of South Africa (Bustamante and Branch 1996).

C6: Biological diversity **Low**
Justification
Although the productivity and biomass of communities along the shore of the Namaqua bioregion (where the EBSA occurs) is higher than elsewhere in the country, the species diversity is lower than elsewhere (Bustamante and Branch 1996). Notwithstanding, there are 13 ecosystem types present in this EBSA (Sink et al., 2019) that likely harbour a variety of species collectively.

C7: Naturalness **High**
Justification
There is a relative lack of human activities (past and present) in the Namaqua Coastal Area. A recent analysis of cumulative anthropogenic pressure of South Africa's marine environment showed that 98% of this EBSA is considered in good ecological condition, 2% fair and <1% poor ecological condition (Sink et al., 2019). Consequently, even ecosystem types that are threatened at a national level are in good ecological condition in this area (Sink et al., 2012), and hence have been highlighted as conservation priority areas along the South African west coast (Majiedt et al., 2013).

Status of submission

The Namaqua Coastal Area EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

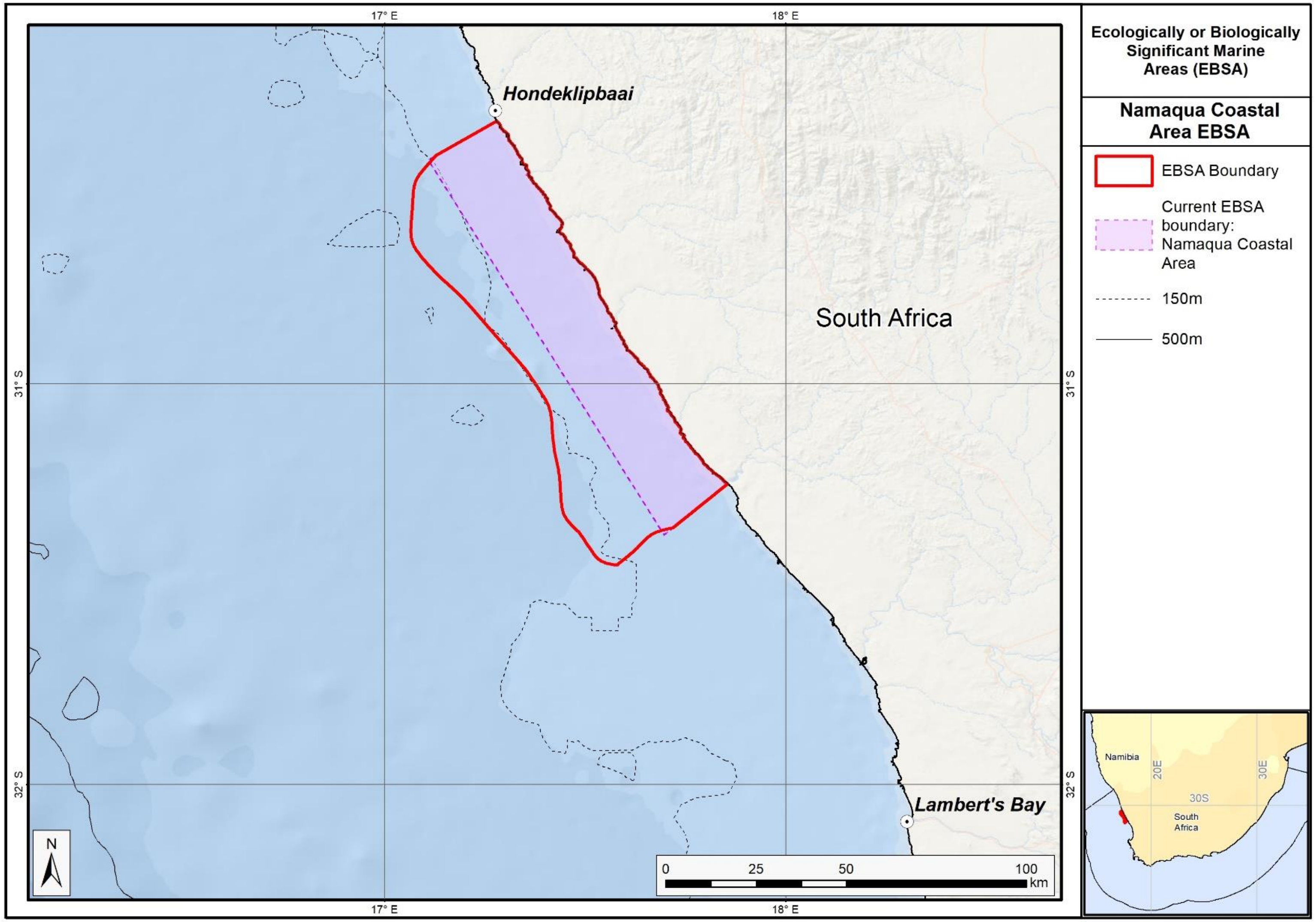
Motivation for Revisions

Some technical revisions and updates to the description were made, even though little additional information was available, and no new research has been carried out in the area since its original adoption in 2014. Small additions were made, but none of these edits were significant enough to drive a change in the EBSA criteria ranks. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included.

The boundary of this EBSA has been refined to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status. The delineation process included an initial stakeholder review, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

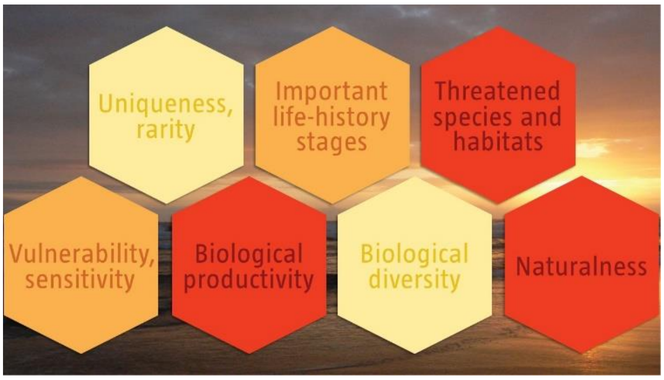
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA.
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the SCP undertaken for the West Coast by Majiedt et al. (2013) and for the BCLME by Holness et al. (2014) were incorporated.
- Areas of high relative naturalness of benthic and coastal systems identified in the National Biodiversity Assessment 2011 (Sink et al., 2012), the West Coast (Majiedt et al., 2013) and the BCLME spatial assessments (Holness et al., 2014) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).
- The coastal boundary was refined to be more accurate based on new data (Harris et al., 2019).

The multi-criteria analysis resulted in a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Namaqua Coastal Area EBSA in relation to the original boundaries of the EBSA.

Status Assessment and Management Options

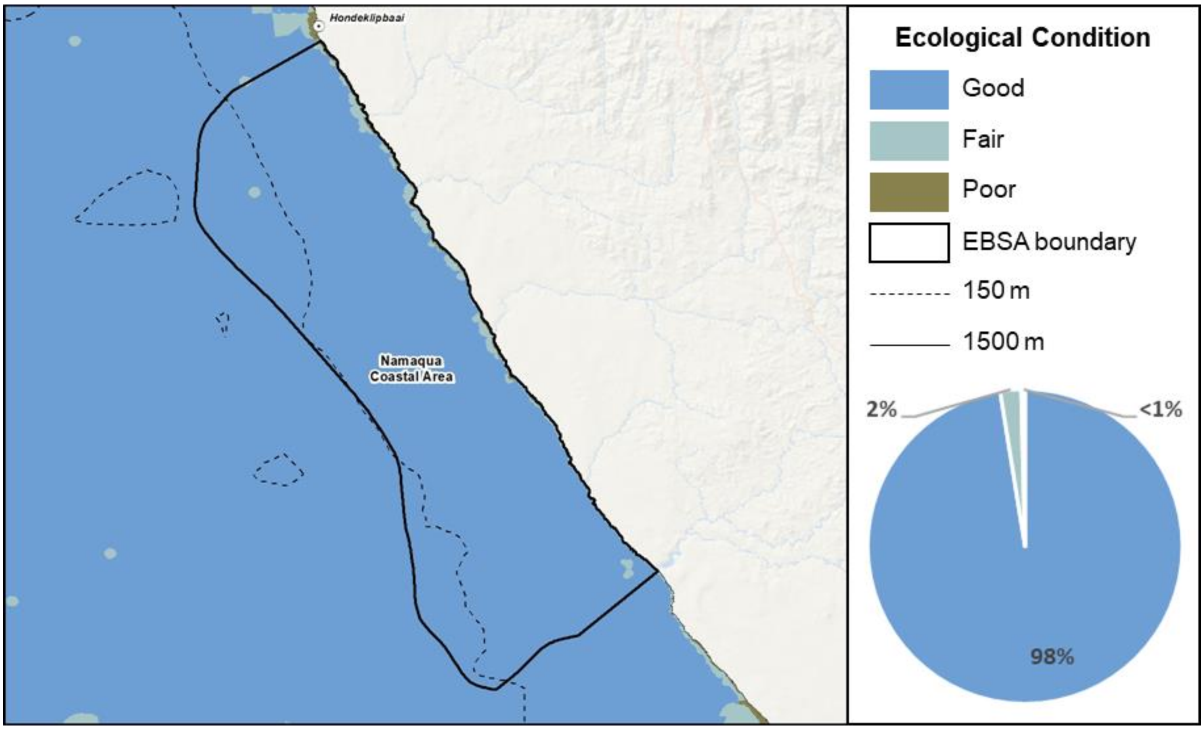


Namaqua Coastal Area *is characterized by high productivity (due to upwelling) and community biomass along its shores. It is subject to relatively low pressures compared to other areas in the Northern Cape, and thus is an excellent place to protect portions of threatened ecosystem types that are in good ecological condition. There are three priority estuaries adjacent to the site. It is also important for coastal fish communities.*

EBSA criteria coloured by rank for Namaqua Coastal Area: red=high, orange=medium, yellow=low.

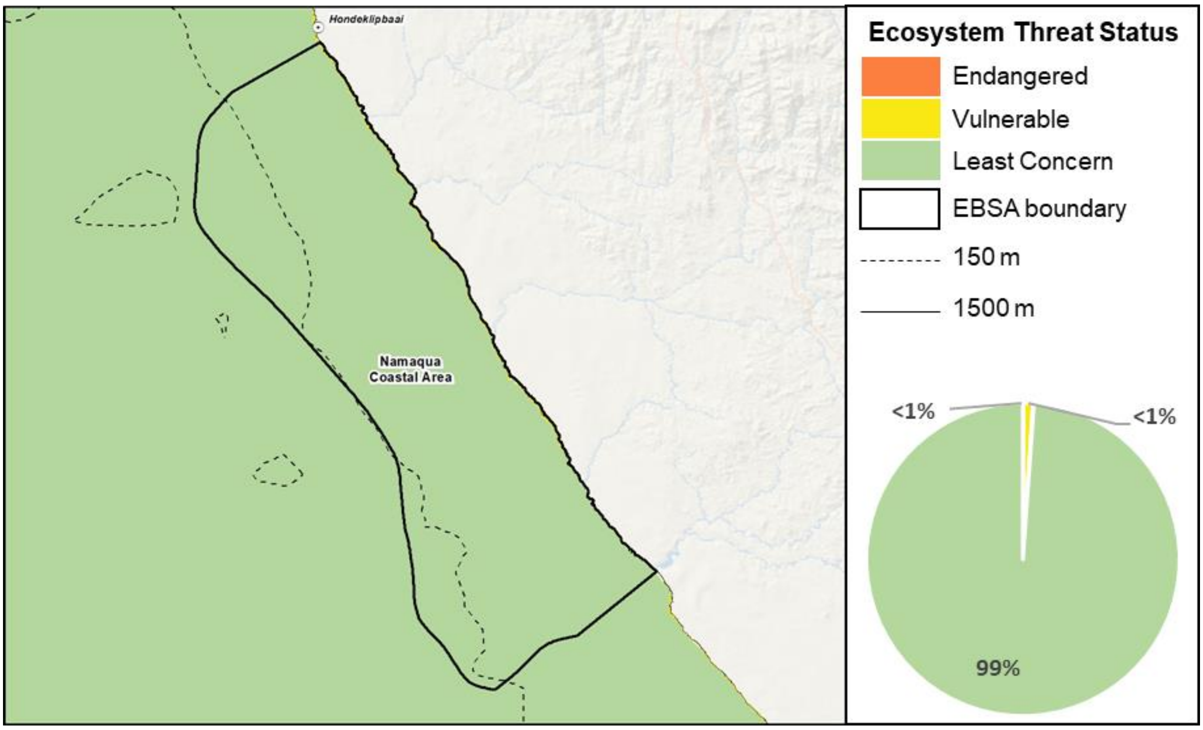
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Namaqua Coastal Area has a several features and threatened ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for threatened species and habitats, biological productivity and naturalness. There are 13 ecosystem types represented, of which mosaic and rocky shore ecosystem types contain fragile species that are especially sensitive to damage. Along with the adjacent estuaries, kelp forests also contribute to the nursery function of the EBSA and are sensitive to disturbance, although these can recover relatively quicker than some of the other more fragile and delicate species. The area is important for coastal fish, roosting and breeding birds, and resting sites for seals.

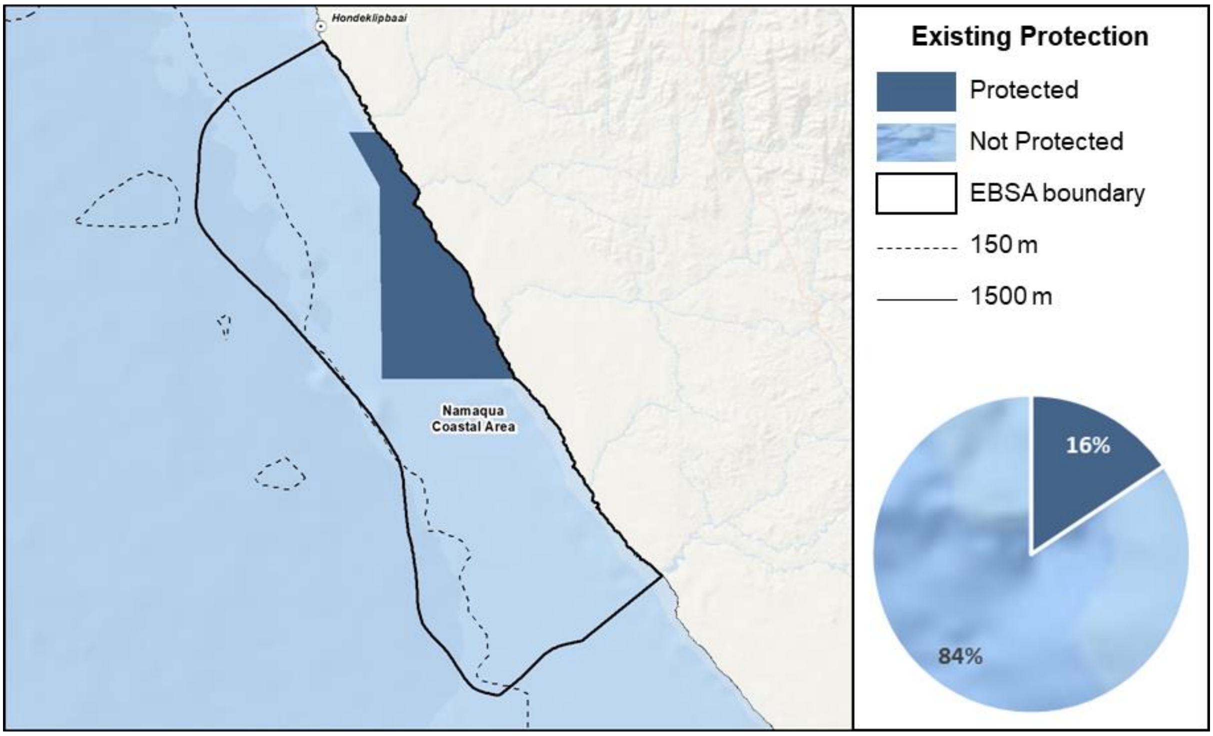


Namaqua Coastal Area proportion of area in each ecological condition category.

Given that the adjacent land is a terrestrial reserve, Namaqua Coastal Area is almost entirely in good ecological condition (98%), with fractions that are in fair (2%) and poor (<1%) ecological condition. Consequently, almost the whole EBSA comprises ecosystem types that are Least Concern (99%), with fractions that are Endangered (<1%) and Vulnerable (<1%).



Namaqua Coastal Area proportion of area in each ecosystem threat status category.



Namaqua Coastal Area proportion of area in a Marine Protected Area (MPA).

Protection of features in MPAs has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing from no protection to 16%. The new MPA is the first and only MPA along South Africa's west coast (north of Langebaan Lagoon and adjacent islands), and the only coastal reserve in the Namaqua ecoregion. Consequently, many of the represented ecosystem types are still poorly protected overall, although some are now moderately protected, and one is well protected.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

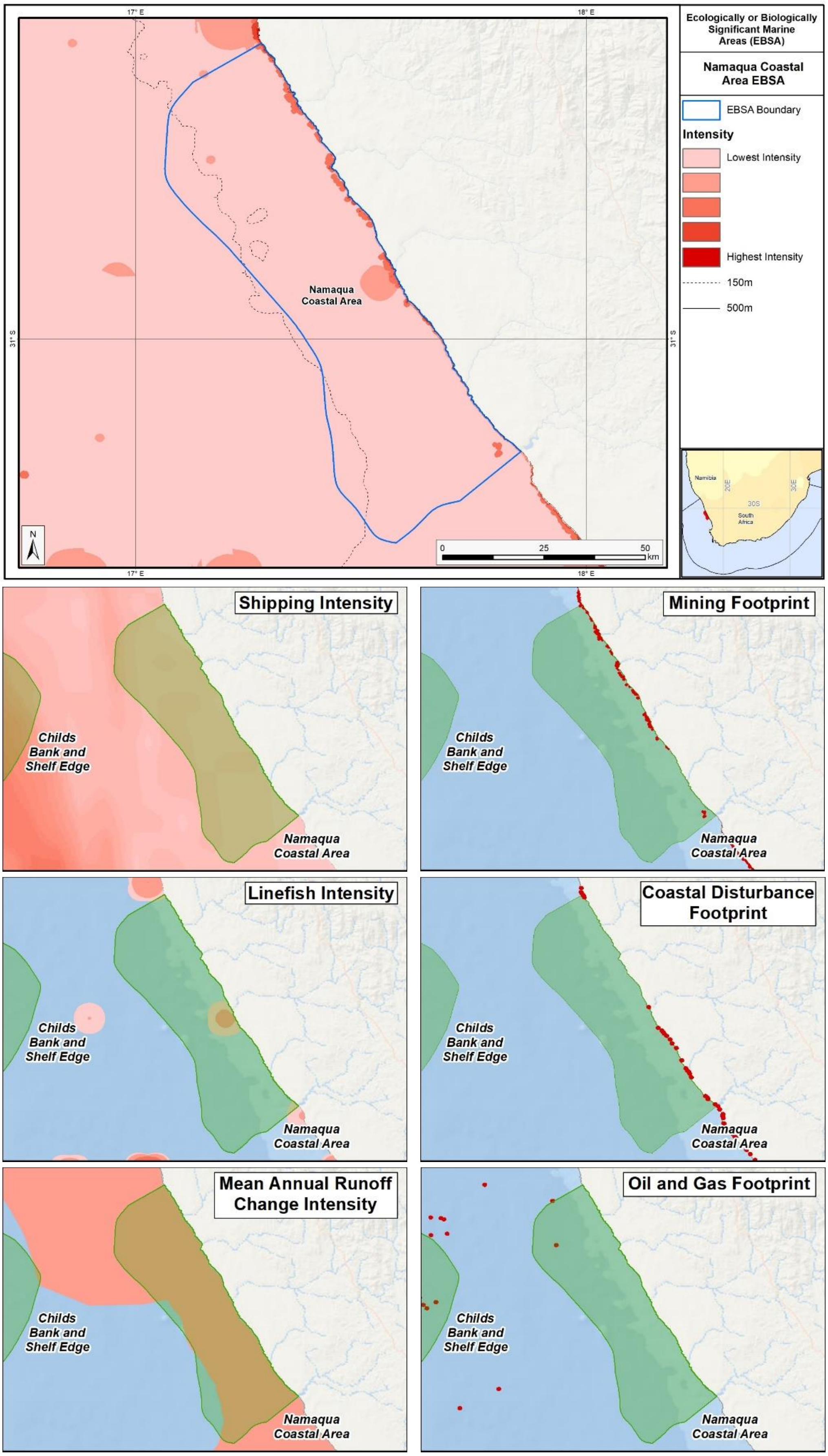
Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Cool Temperate Arid Predominantly Closed	EN	PP	6.4	89.2	4.4
Namaqua Exposed Rocky Shore	VU	MP	2.8	48.7	48.5
Namaqua Kelp Forest	VU	MP	16.6	50.2	33.2
Namaqua Mixed Shore	VU	MP	4.0	55.2	40.8
Namaqua Muddy Mid Shelf Mosaic	LC	PP	99.9	0.1	0.0
Namaqua Muddy Sands	LC	NP	99.7	0.3	0.0
Namaqua Sandy Inner Shelf	LC	MP	82.4	17.0	0.5
Namaqua Sandy Mid Shelf	LC	PP	99.3	0.7	0.0
Namaqua Very Exposed Rocky Shore	VU	MP	3.5	56.4	40.1
Southern Benguela Dissipative Intermediate Sandy Shore	LC	WP	52.8	41.9	5.3
Southern Benguela Intermediate Sandy Shore	NT	PP	29.0	55.6	15.3

Southern Benguela Reflective Sandy Shore	EN	MP	16.8	74.6	8.5
Southern Benguela Sandy Outer Shelf	LC	PP	100.0	0.0	0.0
Other Features					

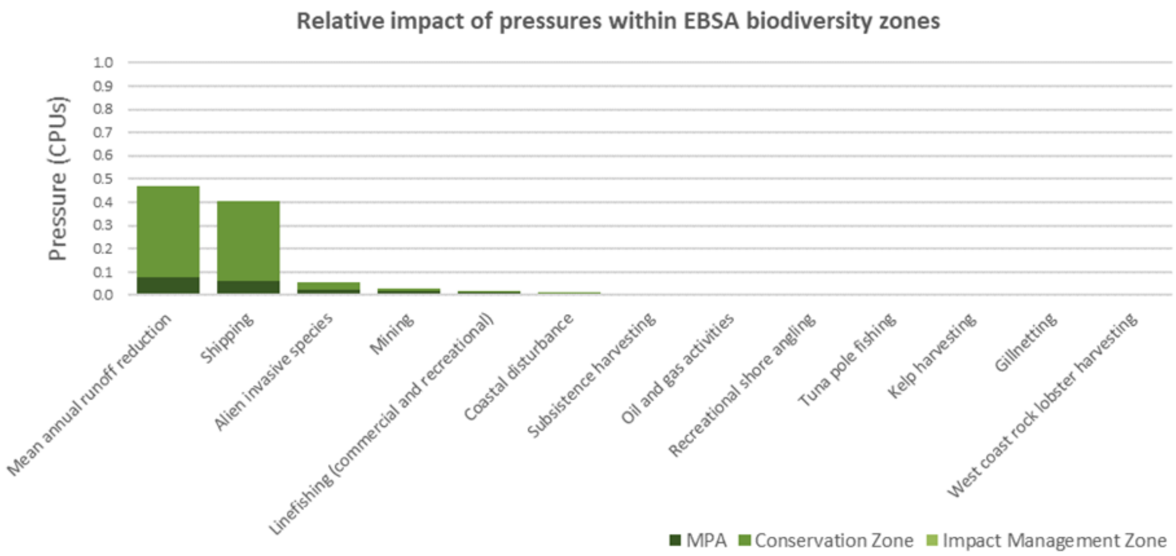
- Three estuarine areas
- Importance for coastal fish, including nurseries for commercially important species
- Upwelling
- Breeding and roosting sites for shorebirds and seabirds (e.g., African black oystercatcher, cormorants)
- Seals

Relevant Pressures and Activities (impact, extent)

- There are 13 pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent; mean annual runoff reduction follows closely in spatial overlap with the EBSA, and has the highest cumulative pressure profile (followed by shipping).
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: mean annual runoff reduction, mining (prospecting and mining), linefishing, invasive species, coastal disturbance (recreational activities that, for example, would disturb breeding, roosting or foraging birds) and subsistence harvesting. These activities tend to cover discrete portions of the EBSA, and will need to be managed particularly well in order to protect the nursery habitats, fish assemblages, and coastal (including intertidal) benthic communities, and birds for which this EBSA is recognised.
- Eight of the 13 pressures each comprise <1% of the EBSA pressure profile, including: coastal disturbance, subsistence harvesting, oil and gas (exploration and production), recreational shore angling, kelp harvesting, tuna pole fishing, gillnetting, and west coast rock lobster harvesting.
- Activities in South Africa that are not present in this EBSA include: abalone harvesting, beach seining, benthic (hake) longlining, coastal development, dredge spoil dumping, mariculture, midwater trawling, naval dumping (ammunition), oyster harvesting, pelagic longlining, ports and harbours, prawn trawling, shark netting, small pelagics fishing, south coast rock lobster harvesting, squid fishing, inshore trawling, offshore trawling, and wastewater discharge.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



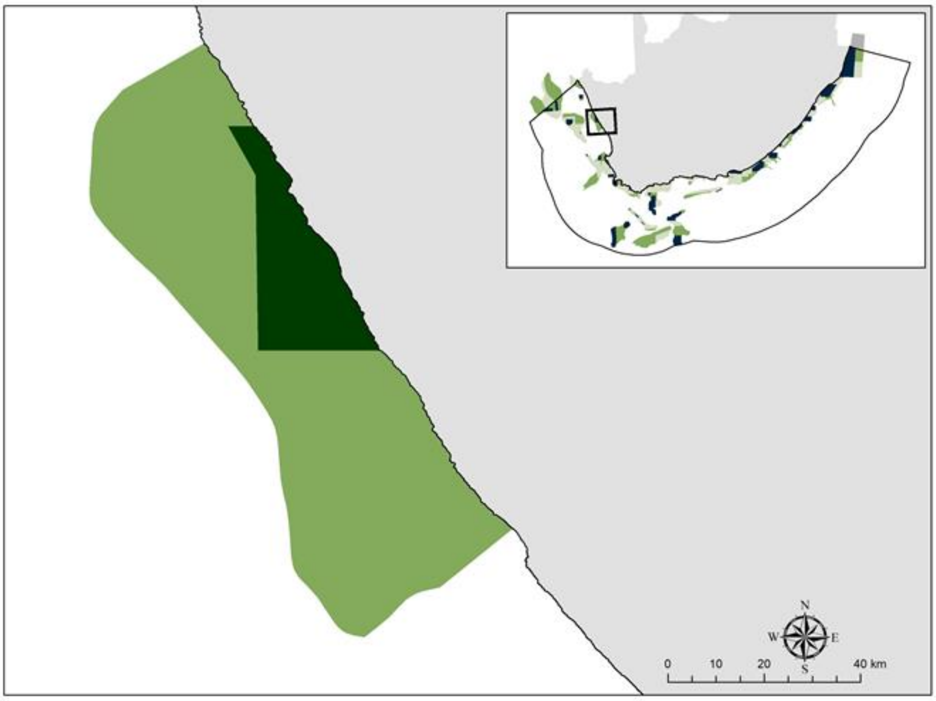
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from subsistence harvesting to wetst coast rock lobster harvesting each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

However, the biodiversity value of this EBSA is so high at a national level that it comprises a single Biodiversity Conservation Zone, which is partly covered by a new Marine Protected Area adjacent to the Namaqua National Park. The activities permitted within this MPA are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

Namaqua National Park MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_namaquanational_parkmarine_regulations_g42479gn787.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of the EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

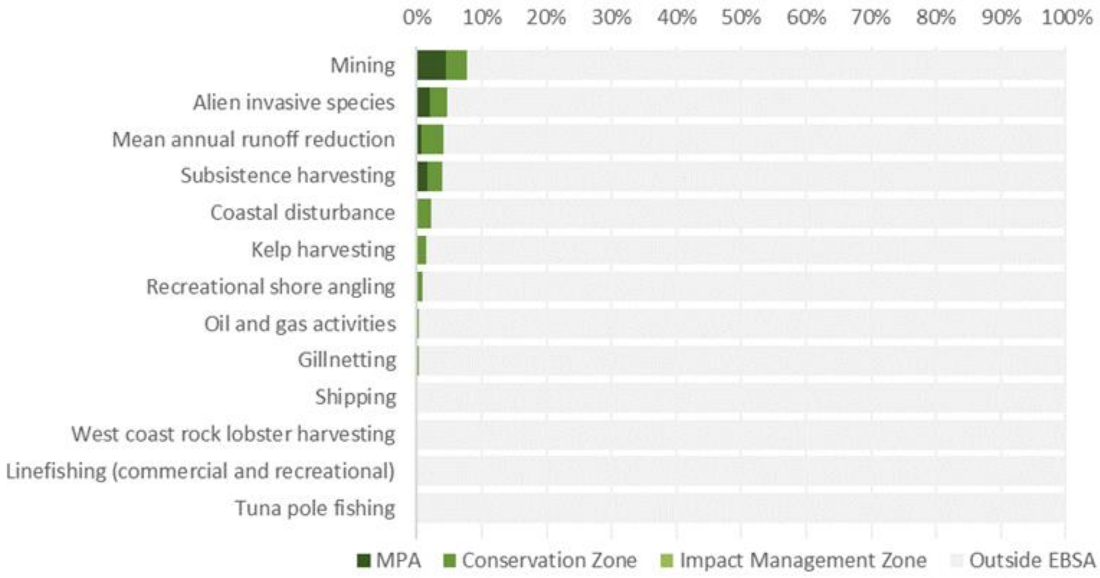
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A
Heritage	Heritage Protection Zone	Shipwrecks	Y
		Sites of historic importance	Y
		Sites of land- or seascape value	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y
		SCUBA diving	Y
		Shark cage diving	Y
		Whale watching	Y
		Motorised water sports (e.g., jet skis)	C
		Recreational boat-based linefishing	C
		Recreational shore-based linefishing	C
		Spearfishing	C
		Shark control	C
Fisheries	Commercial Fishing Zone	Crustacean trawling	N
		Demersal inshore trawling	N
		Demersal offshore trawling	N
		Abalone harvesting	C
		Beach seining	C
		Commercial linefishing	C
		Demersal hake longlining	C
		Gillnetting	C
		Kelp harvesting	C
		Midwater trawling	C
		Oyster harvesting	C
		Pelagic longlining	C
		Small pelagics fishing	C
		South coast rock lobster harvesting	C
		Squid fishing	C
		Tuna pole fishing	C
		West coast rock lobster harvesting	C
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C
	Fisheries Resource Protection Zone	Resource protection	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C
Mining	Mining Zone	Mining: prospecting (non-destructive)	C
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C
		Mining: mining construction and operations	N
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C
		Petroleum: production	N
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C
Military	Military Zone	Missile testing grounds	C
		Training areas	Y
Transport	Maritime Transport Zone	Shipping lanes	Y
		Ports and harbours	N
		Anchorage areas	C
		Bunkering	C
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C
		Seawater inlets	C
		Pipelines	C
	Land-based Infrastructure Zone	Coastal development	N
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*
		Wastewater discharge	C
		Dumping of dredged material	N

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



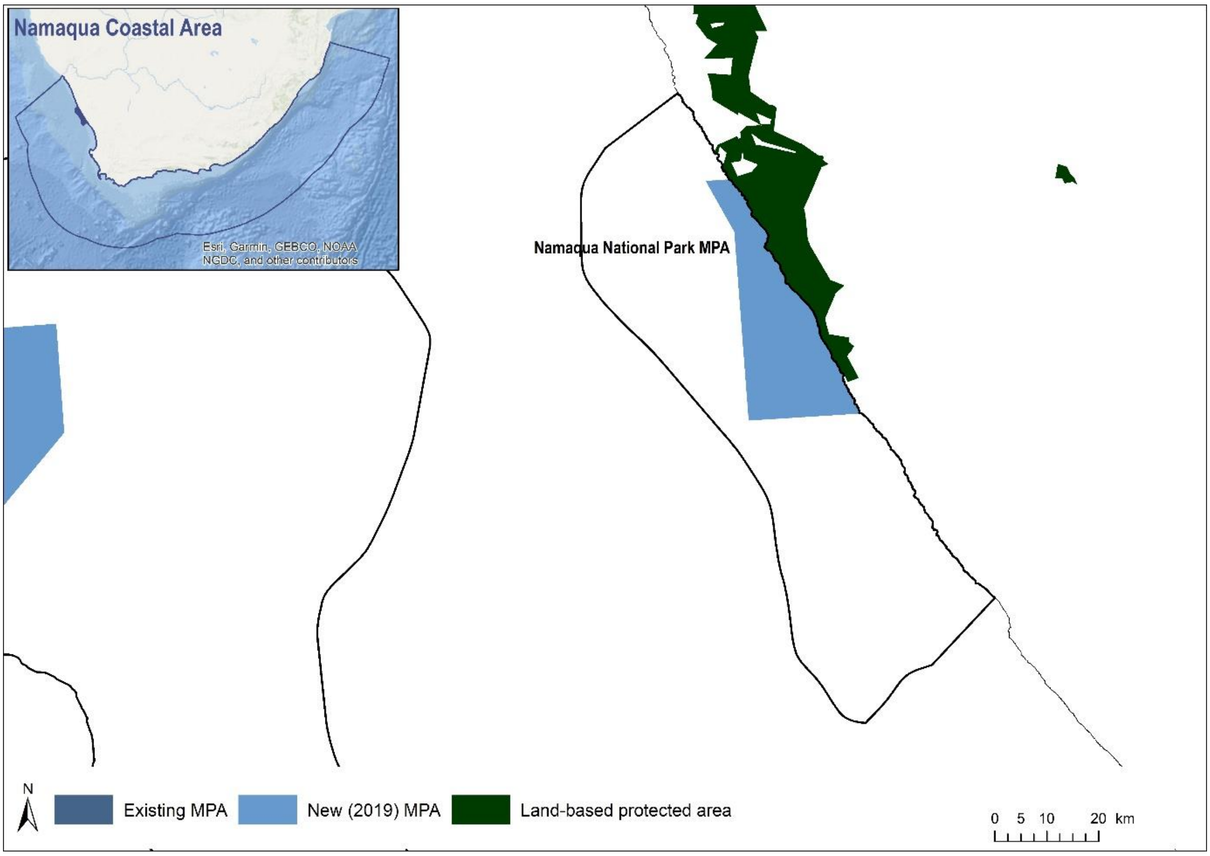
Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

The area has had significant historical value for South Africa's mining industry, and although most areas are mined out, some activity still occurs in the area (13.5% of the national footprint), most of which is in the new Namaqua National Park MPA where it will be managed according to the MPA management plan. Prospecting is considered conditionally compatible; however, mining construction and operations are considered not compatible with the Conservation Zone. It is important that mining activities are strictly controlled in the EBSA because the west coast of the country is heavily impacted by mining, and this is one of the few areas in this bioregion where the shores and associated biodiversity are still in fair ecological condition. Fishing and harvesting activities are compatible or conditionally compatible in the EBSA, with subsistence harvesting, kelp harvesting, recreational shore angling, gillnetting, linefishing (commercial and recreational), west coast rocklobster harvesting and tuna pole fishing recommended to continue with appropriate management measures. Oil and gas activities within the EBSA comprise a very small proportion of the national footprint, with exploration considered conditionally compatible and production, not compatible with the Conservation Zone. Shipping is compatible with the EBSA and is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction and coastal disturbance. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements and estuarine management plans can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Namaqua National Park MPA in 2019. This builds on existing protection already afforded by the land-based protected areas in the area. It is recommended that existing management is strengthened, and that full operationalisation of the new MPA is implemented, including a management plan, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

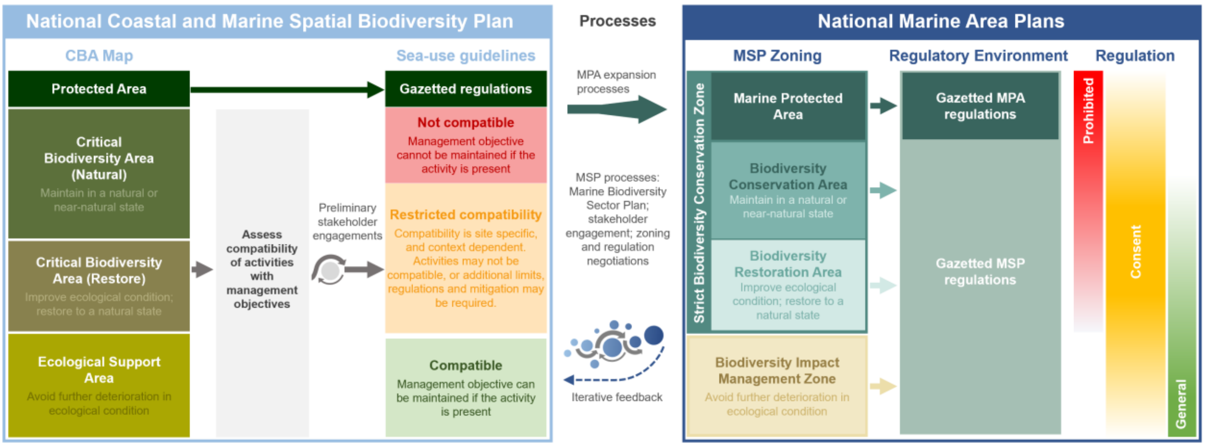


Marine protected areas (MPAs) in the Namaqua Coastal Area EBSA. Land-based protected areas are also shown (from DFFE 2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Namaqua Coastal Area, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

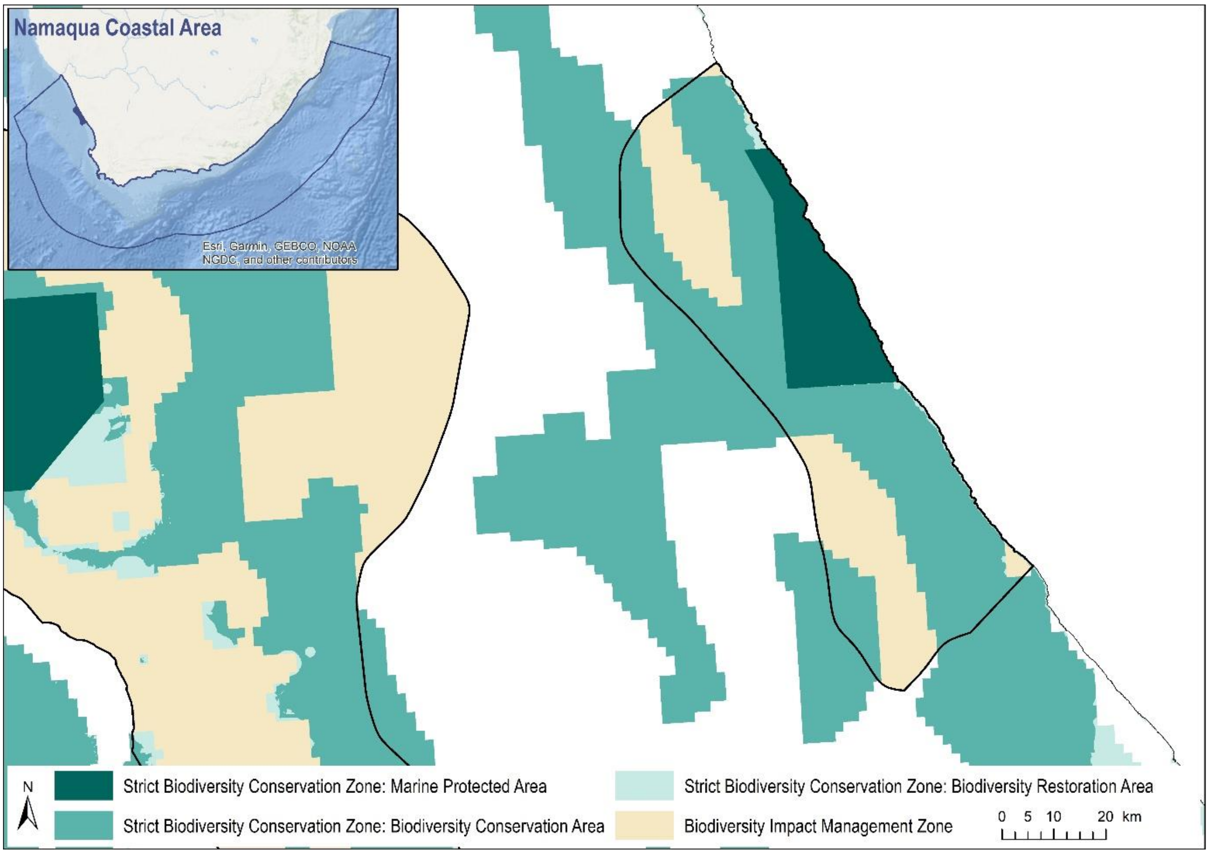


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Namaqua Coastal Area.

Namaqua National Park MPA is the only MPA in this EBSA. It is managed according to the gazetted management regulations for this MPA. The rest of the Strict Biodiversity Conservation Zone is primarily a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. A much smaller portion comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Namaqua Coastal Area EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Namaqua Coastal Area. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below).

Future Process

There needs to be full operationalisation and practical implementation of the Namaqua National Park MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project.

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Cape Canyon and Associated Islands, Bays and Lagoon (Formerly Cape Canyon and Surrounds)

Revised EBSA Description

General Information

Summary

Cape Canyon is one of two submarine canyons off the west coast of South Africa (the other being the Cape Point Valley). This broader area, including St Helena Bay, has been recognized as important in three systematic conservation plans. Both benthic and pelagic features are included, and the area is important for pelagic fish, foraging marine mammals and several threatened seabird species. The area is also important for threatened ecosystem types; there are nine Endangered and 12 Vulnerable ecosystem types, and two that are Near Threatened. There is evidence that the submarine canyon hosts fragile habitat-forming species, and there are other unique and potentially vulnerable benthic communities in the area. The hard ground areas, particularly those outside of the trawl footprint, are also likely to be susceptible to damage and there are increasing petroleum and mining applications in this area. There are several small coastal MPAs within the EBSA.

Introduction of the area

Cape Canyon and Associated Islands, Bays and Lagoon is bounded along the shore from the Sixteen Mile Beach MPA in the south to about 10 km south of Lamberts Bay in the north, extending further offshore in the southern part compared to the northern part. The EBSA includes Langebaan Lagoon, Saldanha Bay, eight islands (Robben, Dassen, Vondeling, Marcus, Malgas, Jutten, Schaapen, Meeuw), the Cape Canyon submarine canyon and adjacent shelf edge, and has been extended to include the whole of St Helena Bay. This area was identified as a priority area through a national plan to identify areas for offshore protection (Sink et al., 2011) and by a systematic biodiversity plan for the west coast (Majiedt et al., 2013). It was also identified as an important area for pelagic ecosystems and species (Grantham et al., 2011). Langebaan Lagoon and Dassen Island Nature Reserves are also both Ramsar sites.

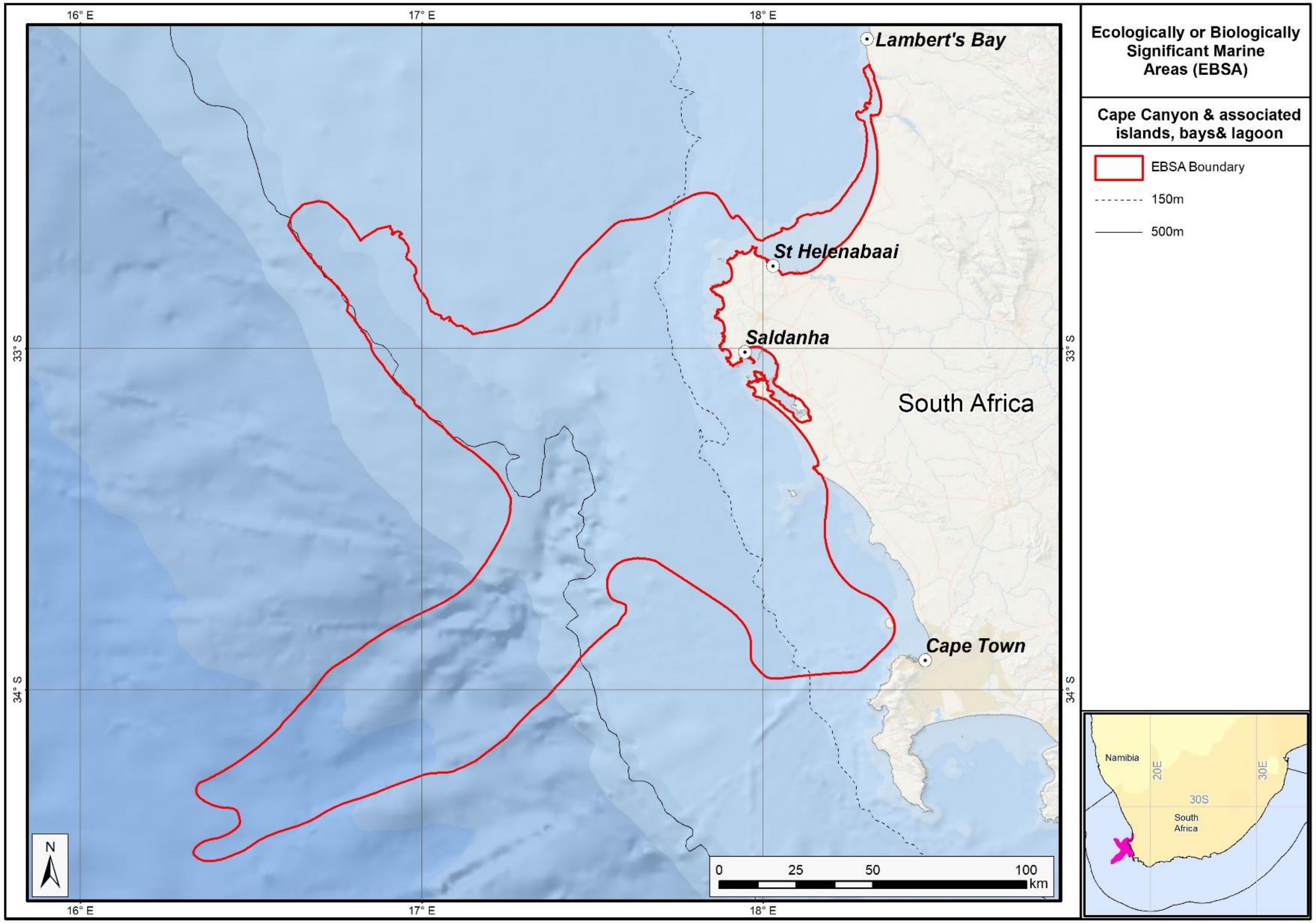
Description of the location

EBSA Region

South-Eastern Atlantic

Description of location

This focus area is located around the southwest coast of South Africa and is completely within South Africa's national jurisdiction. Cape Canyon and Associated Islands, Bays and Lagoon is bounded along the shore from the Sixteen Mile Beach MPA in the south to about 10 km south of Lamberts Bay in the north, extending much further offshore (approximately 70 km) in the southern part compared to that in the northern part (<10 km).



Proposed revised boundaries of the Cape Canyon and Associated Islands, Bays and Lagoon EBSA.

Area Details

Feature description of the area

Cape Canyon and Associated Islands, Bays and Lagoon is a productive area with important benthic and pelagic habitats and physical features that jointly support important life-history stages of species, and threatened, fragile and vulnerable species and habitats. The main geological feature of this EBSA is Cape Canyon itself. It is one of two canyons on the South African west coast (the other being the Cape Point Valley), which has its head about 23 km offshore of Cape Colombine at -168 m depth, and incises to a depth of about -900 m (De Wet 2012). New bathymetry data clearly show that the main channel (at the canyon head) comprises two separate, parallel channels in the northern and middle sections that combine to form a deeply incised main channel in the south that runs all the way to the outer continental slope, ending at about -3500 m in the Cape Basin (De Wet 2012). The western branch of the main channel is much more deeply incised than is the eastern branch by up to 100 m, and the slope of the western canyon margin is much steeper than that of the eastern side (De Wet 2012). The eight islands are other key geological features in this EBSA, as well as the adjacent lagoon and bay system on the coast. The area includes unconsolidated sand, mud and gravel benthic habitats and a pelagic ecosystem type that is characterised by elevated productivity and frequent fronts associated with shelf-edge upwelling (Lutjeharms et al., 2000, Lagabrielle 2009, Roberson et al., 2017).

The key geological features, described above, in turn support important biological communities: from fragile to threatened species. These include four distinct benthic macrofaunal communities characterized by molluscs, polychaetes, amphipods and brittle stars (Karenyi 2014), and hard-ground habitats that are poorly known (Sink et al., 2012b). Fragile cold-water corals have been collected within the area. Further, a recent survey sighted seapens, anemones, starfish and cloaked hermit crabs (Sink 2016); all of which species are sensitive to impacts to the seabed. Parts of this dynamic area, particularly within St Helena Bay, experience low-oxygen water that may support unique biological communities (Sink et al., 2011) that are also sensitive to disturbances. The small islands contained in the EBSA provide breeding habitat for several endemic seabird species, most of which are threatened, or seals (Kemper et al., 2007). The area encompasses a key foraging area for marine mammals (Best 2006, Barendse et al., 2011) and the following Important Bird Areas: West Coast National Park and Saldanha Bay Islands; Robben Island; and Dassen Island, and is adjacent to the Berg River Estuary and Veloerenvlei Estuary IBAs. The focus area has also been included in annual demersal fish trawl surveys conducted by the Department of Agriculture, Forestry and Fisheries.

Since the original description and delineation of the EBSA, new research has been conducted within the area, allowing a more comprensive understanding of the features and communities at this site. Consequently, the boundary has been revised to improve accuracy in representing the key benthic and pelagic ecosystem types and features, as well as key biodiversity features that underpin the EBSA status, such as: fragile and sensitive habitat-forming species, islands, the canyon, and key species (e.g., colonial seabirds). Revisions were based on the best available information (e.g., De Wet 2012; GEBCO Compilation Group 2019; Harris et al., 2014; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). Much of the improvement in the delineation was based on new bathymetry data (De Wet 2012), which has allowed a more precise, data-driven boundary for the EBSA rather than an expert-based boundary. It also also based on new biological sampling that, for example, motivates for extending the EBSA to include the full extent of St Helana Bay to encompass those sensitive communities (Karenyi 2014, Sink 2016). The new boundary also better aligns with South Africa's recently expanded MPA network, and new, fine-scale coastal mapping (Harris et al., 2019). It is presented as a Type 2 EBSA because it contains “spatially stable features whose individual positions are known, but a number of individual cases are being grouped” (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

Habitat condition within this broad area ranges from good to poor (Sink et al., 2012a, 2019). Pressures are increasing, although the area includes several coastal MPAs (Langebaan, Sixteen Mile Beach, Marcus Island, Malgas Island and, Jutten Island) that protect habitats and species to varying extents. It was recommended that MPAs in the area should be considered for consolidation, extension, or re-zoning to resolve existing resource conflicts, protect threatened species in their core areas, and minimize stakeholder impacts (Sink et al., 2011). As a result, several new MPAs were recently proclaimed within this EBSA, including Cape Canyon MPA, Benguela Mud MPA, and Robben Island MPA. The lagoon system is vulnerable to further impacts, and the islands with their associated seabird colonies are all threatened (Kemper et al., 2007). Petroleum exploration is increasing in the area, and there are new applications for seabed mining for phosphates and other minerals.

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Summary of ecosystem types and threat status for the Cape Canyon and Associated Islands, Bays and Lagoon. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km²)	Area (%)
Endangered	Cape Bays	114.3	0.7
	Cape Island Shore	2.9	0.0
	Cape Sheltered Rocky Shore	1.4	0.0
	Cape Upper Canyons	1893.8	11.4
	Cool Temperate Arid Predominantly Closed Estuary	0.1	0.0
	Cool Temperate Estuarine Lake	0.2	0.0
	Cool Temperate Predominantly Open Estuary	0.3	0.0
	Southern Benguela Muddy Shelf Edge	814.0	4.9
	Southern Benguela Reflective Sandy Shore	5.7	0.0
Vulnerable	Cape Boulder Shore	1.3	0.0
	Cape Exposed Rocky Shore	16.0	0.1
	Cape Kelp Forest	4.7	0.0
	Cape Lower Canyons	2483.7	15.0
	Cape Mixed Shore	12.4	0.1
	Cape Rocky Inner Shelf	249.3	1.5
	Cape Rocky Mid Shelf Mosaic	2714.0	16.4
	Cape Sandy Inner Shelf	253.9	1.5
	Cool Temperate Estuarine Lagoon	60.2	0.4
	Southern Benguela Rocky Shelf Edge	1457.2	8.8
	Southern Benguela Sandy Shelf Edge	6.7	0.0
	St Helena Bay	545.3	3.3
Near Threatened	Cape Very Exposed Rocky Shore	0.2	0.0
	Southern Benguela Intermediate Sandy Shore	11.3	0.1
Least Concern	Cape Basin Abyss	628.4	3.8
	Namaqua Sandy Mid Shelf	9.4	0.1
	Southeast Atlantic Lower Slope	1994.2	12.0
	Southeast Atlantic Mid Slope	7.1	0.0
	Southeast Atlantic Upper Slope	180.3	1.1
	Southern Benguela Dissipative Sandy Shore	14.1	0.1
	Southern Benguela Dissipative-Intermediate Sandy Shore	21.2	0.1
	Southern Benguela Outer Shelf Rocky Sand Mosaic	555.8	3.3
	Southern Benguela Sandy Outer Shelf	2526.0	15.2
Grand Total		**16585.5**	**99.9**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

This area was identified by two systematic plans because of rare ecosystem types including the canyon, rare muds and low-oxygen benthic habitats (Sink et al., 2011, 2012a, 2012b, Majiedt et al., 2013). The Southern Benguela Muddy Shelf Edge comprises only two patches off Saldahna, covering an estimated 567 km^2, which is included in the EBSA. Cape Canyon is the largest of only two reported submarine canyons on the west coast of South Africa and in the southern Benguela. Further, this site contains the only lagoon in South Africa, and Saldanha Bay is the largest natural harbour in the country.

C2: Special importance for life-history stages of species **High**
Justification
The area encompasses a key foraging area for marine mammals including humpback and southern right whales (Best 2006, Barendse et al., 2011) and two marine Important Bird Areas. Closer to shore, Cape Canyon is adjacent to several terrestrial IBAs, with Dassen Island also being a Ramsar site. The seas extending from these sites have been proposed as a marine IBA for the following seabird species: African Penguin, Bank Cormorant, Cape Cormorant, Cape Gannet, Caspian Tern, Crowned Cormorant, Damara Tern, Great Crested Tern, Kelp Gull and Hartlaub's Gull. Further offshore, along the shelf edge where commercial fisheries are concentrated, BirdLife International has identified a large area, which overlaps with the Cape Canyon area, as a potential marine IBA for Atlantic Yellow-nosed and Black-browed albatrosses and Cory's Shearwater. Several other species (e.g. Shy Albatross and White-chinned Petrel) are likely to qualify as trigger species in this area, but tracking data or analyses are lacking. Grantham et al. (2011) also showed that this area had the highest density of breeding seabirds that feed on pelagic species. High densities of sardine and anchovy eggs contributed to the high selection frequency of this broader area in the offshore systematic biodiversity plan for South Africa (Sink et al., 2011). Spawning and nursery habitat for Cape hakes is also included in this area (Sink et al., 2011, Kone et al., 2013).

C3: Importance for threatened, endangered or declining species and/or habitats **High**
Justification
This area is important for several threatened seabirds, including four Endangered seabirds – African Penguin, Bank Cormorant, and Black-browed and Atlantic Yellow-nosed albatrosses. These animals are highly dependent on this area for some or all of their life stages, particularly for foraging. In addition, several species of lower conservation threat status are similarly dependent on this area: the Vulnerable White-chinned Petrel, Cape Cormorant and Cape Gannet. Dassen Island is recognised for its value for these species as a Ramsar site.

The area is dominated by a plethora of threatened ecosystem types identified in the National Biodiversity Assessment 2011 (Sink et al., 2012), BCC assessment Holness et al. (2014), and National Biodiversity Assessment 2018 (Sink et al., 2019), with the results from the most recent assessment (NBA 2018) reported here (Sink et al., 2019). Altogether, there are 21 (of 32) ecosystem types represented in the EBSA that are threatened. These include nine Endangered ecosystem types, namely: Cape Bays, Cape Island Shore, Cape Sheltered Rocky Shore, Cape Upper Canyons, Cool Temperate Arid Predominantly Closed Estuary, Cool Temperate Estuarine Lake, Cool Temperate Predominantly Open, Southern Benguela Muddy Shelf Edge and Southern Benguela Reflective Sandy Shore. A further 12 Vulnerable ecosystems are found in the area, namely: Cape Boulder Shore, Cape Exposed Rocky Shore, Cape Kelp Forest, Cape Lower Canyons, Cape Mixed Shore, Cape Rocky Inner Shelf, Cape Rocky Mid Shelf Mosaic, Cape Sandy Inner Shelf, Cool Temperate Estuarine Lagoon, Southern Benguela Rocky Shelf Edge, Southern Benguela Sandy Shelf Edge and St Helena Bay. There are also two ecosystem types that are Near Threatened (Sink et al., 2019).

C4: Vulnerability, fragility, sensitivity, or slow recovery **High**
Justification
The submarine canyon in this area is considered vulnerable to impact because cold-water corals, gorgonians and other slow-growing, habitat-forming species were observed within this area on submersible footage (Diamondfields International unpublished footage, Sink and Samaai 2009). Gilchrist (1921) also reported cold water corals, black corals and two hundred large sponges in a single otter trawl in this area in 1920, and it was only in the 1990s that trawling was initiated in the hard-ground habitats within this area (Sink et al., 2012b). Deep reefs and hard grounds in the area are also likely to host fragile three-dimensional, habitat-forming species, although this has not been confirmed by in-situ research. These habitats are all considered sensitive to demersal trawling and mining (Sink et al., 2011, 2012a, 2012bb). The low-oxygen habitats and likely biological communities they support are also considered vulnerable.

C5: Biological productivity **High**
Justification
The most persistent and intense upwelling cell on the entire South African west coast is found within this area at Cape Columbine, resulting in the area downstream having the highest productivity, organic loading (Demarq et al., 2007) and organic carbon deposits on the seafloor (Bailey 1991) on this coast. St Helena Bay has also been identified as the area having the most persistent oxygen-deficient water in the region (Bailey 1991). South of Cape Columbine, a different set of oceanographic features dominate, and frequent pulse upwelling events result in high productivity over shorter periods (Demarq et al., 2007). Cape Canyon and Surrounds includes part of the area with highest copepod biomass on the west coast (Grantham et al., 2011). Large populations of marine top predators forage and/or breed within the area, including several species of seabirds, cetaceans and seals (Best 2006, Barendse et al., 2011, Hutchings et al., 2012).

C6: Biological diversity **High**
Justification
South Africa's national marine ecosystem map indicates 32 ecosystem types in this area (Sink et al., 2019), and this diversity of ecosystem types is a key driver of this area's selection in two systematic biodiversity plans (Sink et al., 2011, Majiedt et al., 2013). The submarine canyon, sand and mud habitats, patches of low oxygen water, bays, islands and the adjacent lagoon system contribute to the high habitat diversity in this area (Sink et al., 2011, 2012a, 2019, Majiedt et al., 2013). This is also the only place where two genomic clusters for *Zostera capensis* are present (in Langebaan). The importance of sites like Langebaan and Dassen Island for biodiversity are highlighted by the fact that they are both Ramsar sites.

C7: Naturalness **Medium**
Justification
There is a moderate level of naturalness within this area. Of the two mapped submarine canyons, there is lower trawling effort and fewer pressures in Cape Canyon, which is the closer canyon to the city of Cape Town (Sink et al., 2011, Sink et al., 2012a,b). Some of the canyon habitat is outside of the trawling footprint, and there are adjacent hard ground areas that are also untrawled (Wilkinson 2009, Sink et al., 2012b). However, there is a port at Saldanha, and several fisheries sectors operate within this area. An assessment of cumulative anthropogenic pressure on South Africa's marine environment

indicates that 17% of the EBSA is in good ecological condition, 40% fair and 43% poor ecological condition (Sink et al., 2019).

Status of submission

The Cape Canyon and Surrounds EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised name, description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

Motivation for Revisions

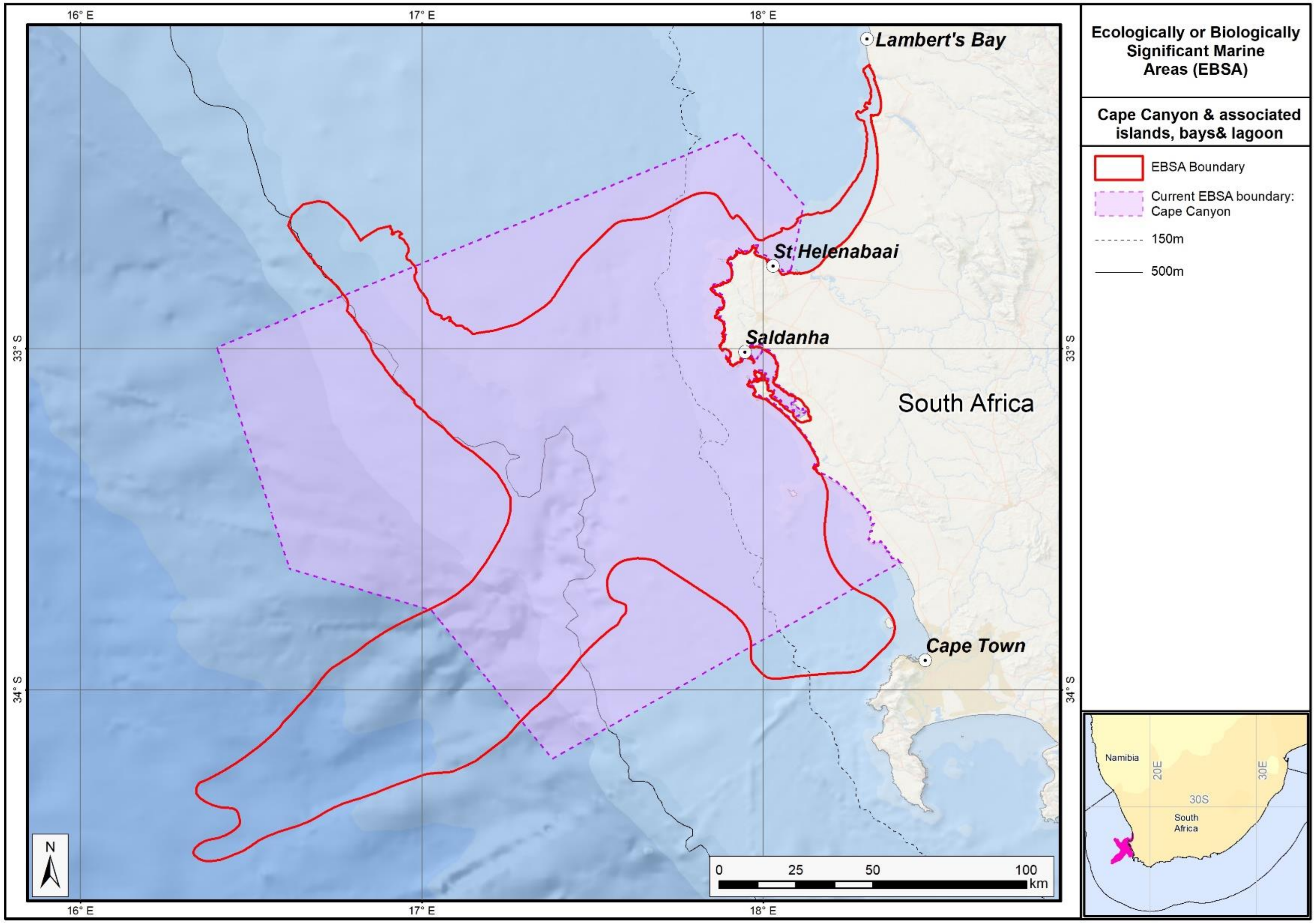
Some technical revisions and updates to the description were made, with two of the criteria being upgraded from medium to high (criterion 1 and criterion 6) given the more substantiated evidence. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included.

The main change is that the boundary of this EBSA has been significantly refined to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status. The delineation process included an initial stakeholder review which identified the need to include additional features such as the full extent of the Cape Canyon and St Helena Bay, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

- Key physical features (i.e. canyons and islands) from GEBCO data (GEBCO Compilation Group 2019), global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014), new national bathymetric data (De Wet 2012), and data from the South African National Biodiversity Assessment (Sink et al., 2012) and BCC spatial mapping project (Holness et al., 2014) were compiled. In addition, bays were mapped and included as these have been identified as important features in the new National Biodiversity Assessment 2018 (Sink et al., 2019).
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA (Sink et al., 2019).
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019), the West Coast (Majiedt et al., 2013) and the BCLME spatial assessments (Holness et al., 2014) were included in the analysis.

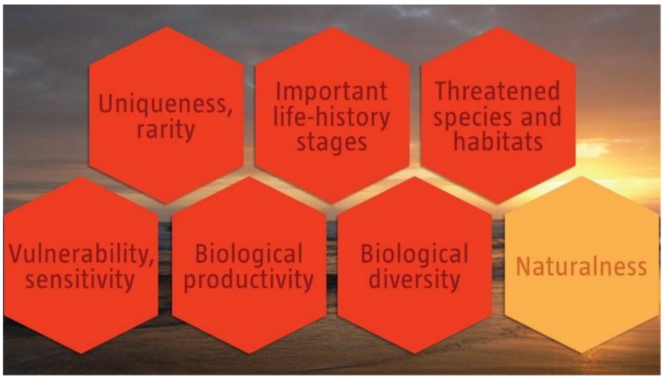
- Areas important for threatened and special species were included. The priority areas and buffer distances around colonies were from Holness et al. (2014). Note that the full extent of the buffer was not necessarily included in the EBSA. Features included in the analysis were:
    - African Penguin colonies and a 20-km buffer.
    - Bank Cormorant, Cape Cormorant, White Breasted Cormorant and Crowned Cormorant colonies and a 40-km buffer.
    - Gannet colonies with a 40-km buffer.
    - Seal Colonies and a 20-km buffer.
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the SCP undertaken for the West Coast by Majiedt et al. (2013), offshore areas (Sink et al., 2011) and for the BCLME by Holness et al. (2014) were incorporated.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).
- The coastal boundary was refined to be more accurate based on new data (Harris et al., 2019).

The multi-criteria analysis resulted in a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Cape Canyon and associated Islands, Bays and Lagoon EBSA in relation to the original boundaries of the Cape Canyon and Surrounds EBSA.

Status Assessment and Management Options

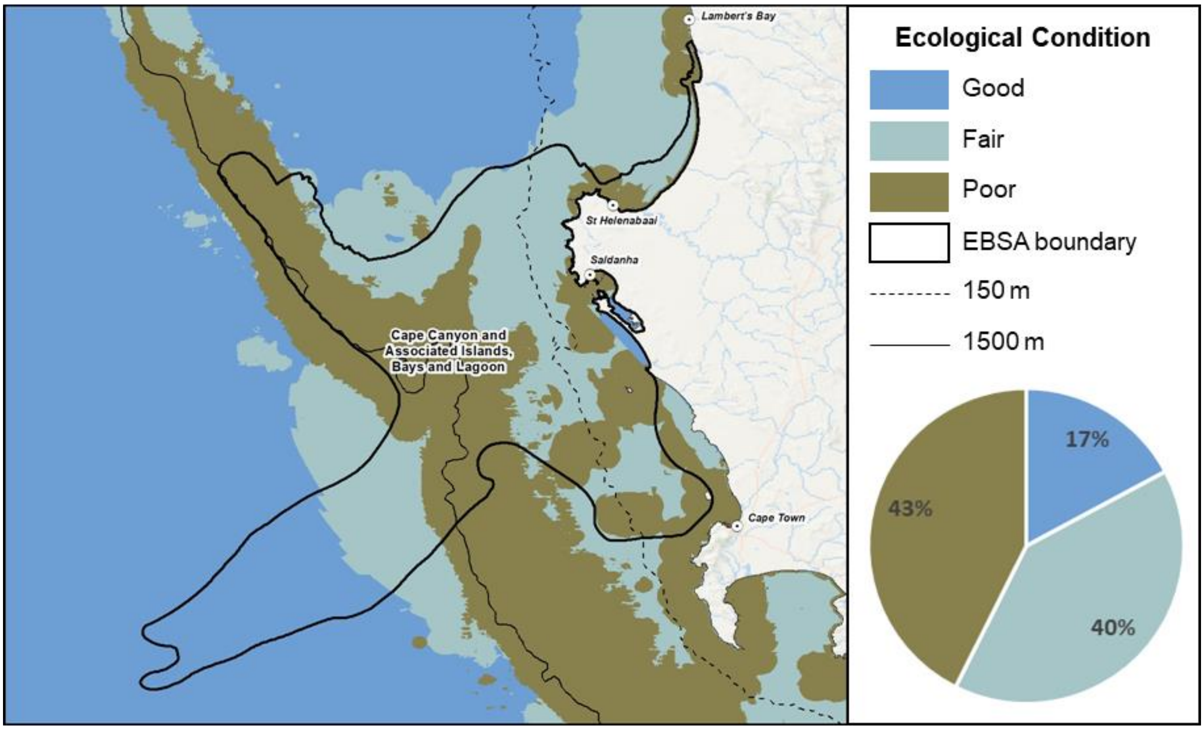


Cape Canyon and Associated Islands, Bays and Lagoon *comprises a collection of special features, ecosystems and species that support a rich diversity and high productivity. Cape Canyon itself is the largest of two submarine canyons on the South African west coast and Langebaan is the only lagoon in the country. The area supports numerous threatened species and ecosystems, and many fragile, sensitive species.*

EBSA criteria coloured by rank for Cape Canyon, and Associated Islands, Bays and Lagoon: red=high, orange=medium.

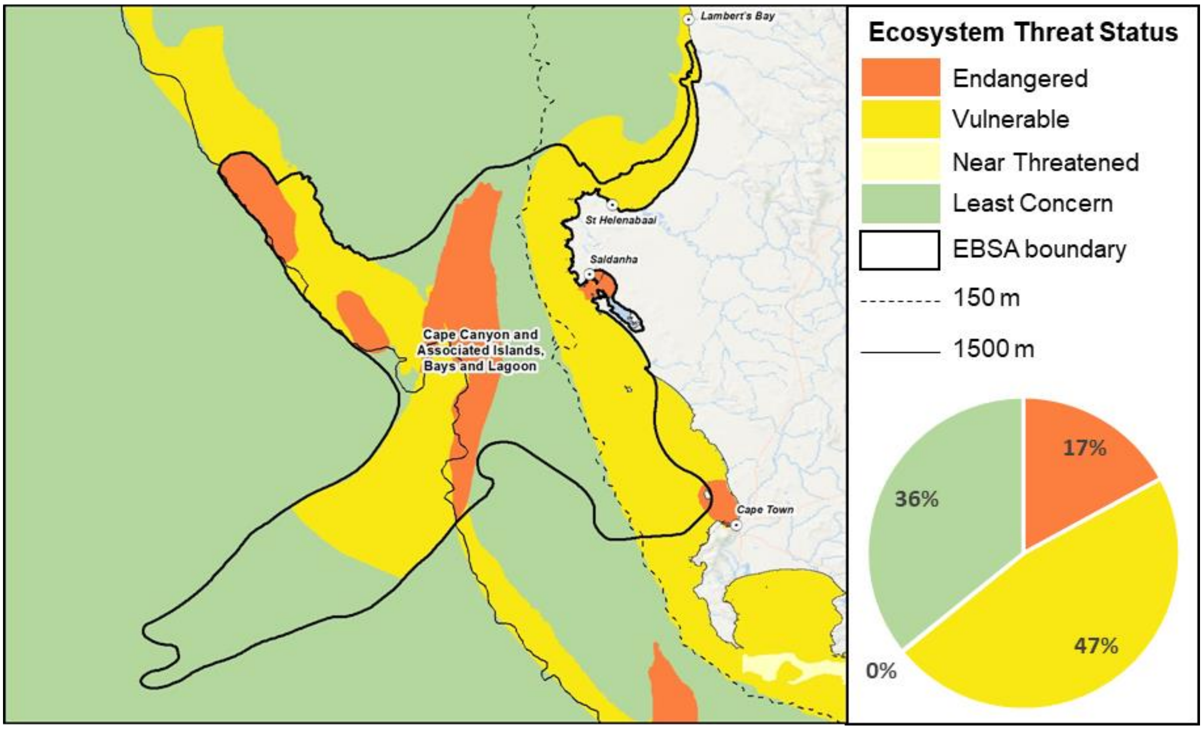
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

As its name suggests, Cape Canyon, and Surrounding Islands, Bays and Lagoon has a particularly diverse collection of features and ecosystem types that need to be protected for the area to maintain the features and processes that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity, importance for life history stages, importance for threatened species and habitats, vulnerability and sensitivity, biological productivity and biological diversity. There are 32 ecosystem types represented, of which the mosaic (matrix of hard and soft substrate), rocky shores, rocky shelf and shelf edge, canyon and islands ecosystem types contain fragile species that are especially sensitive to damage. The lagoon also supports a number of bird species and provides shelter and nursery functions for many fish and invertebrates. Kelp forests also contribute to the nursery function of the EBSA and are also relatively sensitive to disturbance.

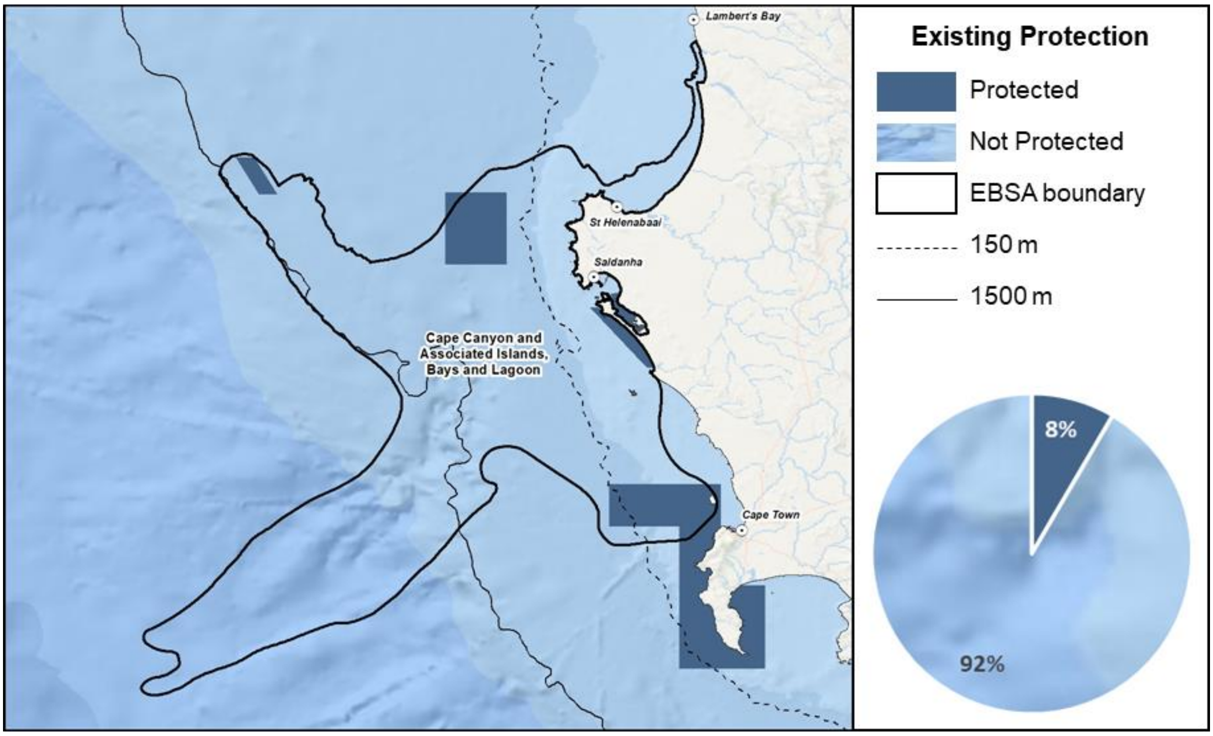


Cape Canyon, and Associated Islands, Bays and Lagoon proportion of area in each ecological condition category.

Cape Canyon, and Surrounding Islands, Bays and Lagoon is mostly in good (17%) or fair (40%) ecological condition. However, just less than half the area (43%) is in poor ecological condition, largely along the shelf edge and in the shallower parts of the EBSA. Consequently, the bulk of the offshore extent is either Endangered (17%) or Vulnerable (47%), with the Endangered types along the shore or around the shelf edge. However, there are many ecosystem types that are Least Concern that cover a third (36%) of the EBSA.



Cape Canyon, and Associated Islands, Bays and Lagoon proportion of area in each ecosystem threat status category.



Cape Canyon, and Associated Islands, Bays and Lagoon proportion of area in a Marine Protected Area (MPA).

Protection of features in MPAs has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing by almost an order of magnitude from 1.1% to 8.4%. These new MPAs cover the Benguela Muds in the north west, a portion of Cape Canyon, and Robben Island. Existing protection was and is afforded to Langebaan Lagoon, Jutten, Malgas and Marcus Islands and Sixteen Mile Beach, and to Rocherpan in St Helena Bay.

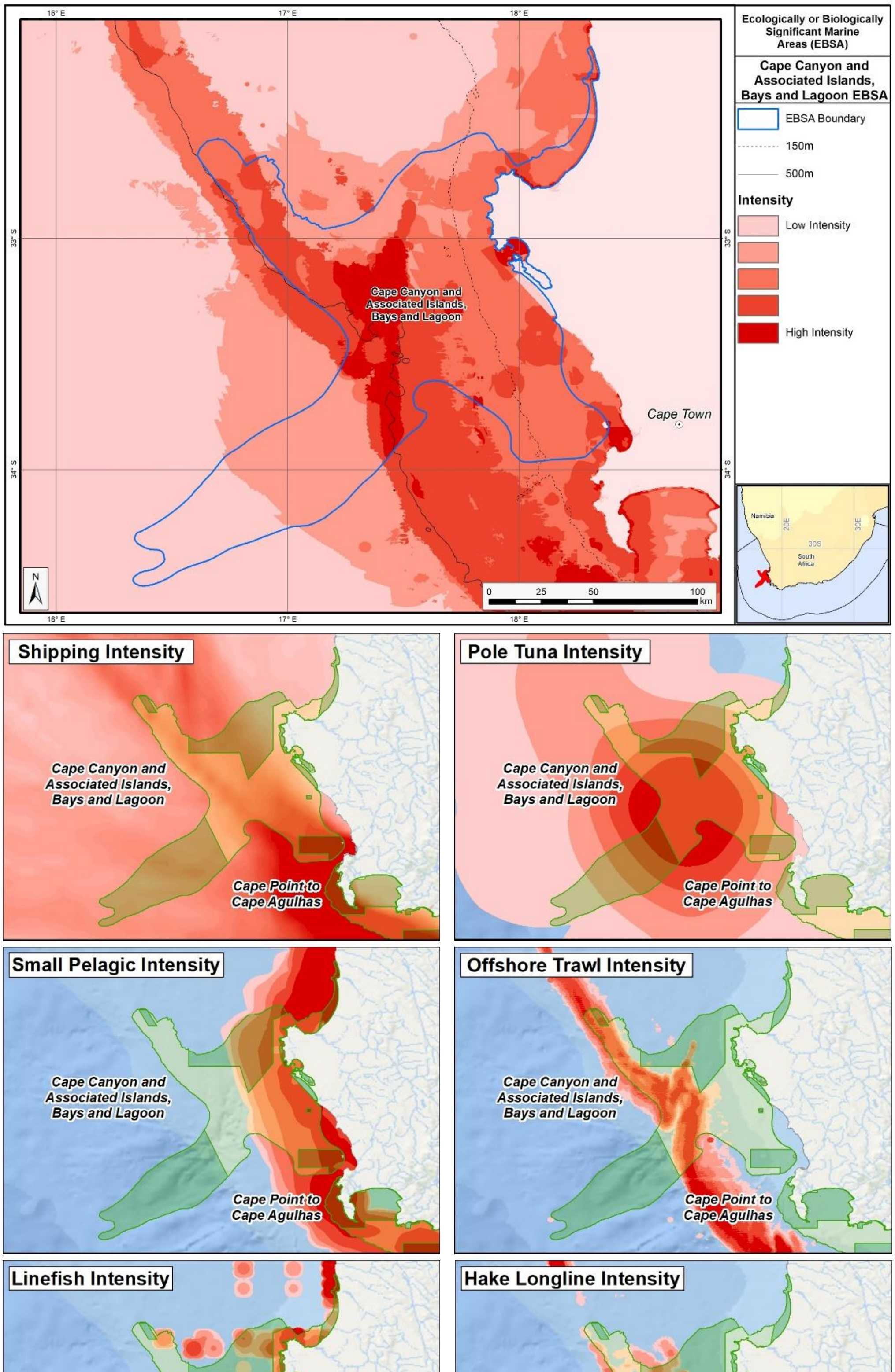
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Cape Basin Abyss	LC	PP	100.0	0.0	0.0
Cape Bay	EN	MP	0.0	5.5	94.5
Cape Boulder Shore	VU	MP	4.8	35.2	60.1
Cape Exposed Rocky Shore	VU	MP	4.3	31.5	64.3
Cape Island	EN	MP	3.3	15.9	80.8
Cape Kelp Forest	VU	MP	1.7	24.3	74.0
Cape Lower Canyon	VU	NP	6.5	56.3	37.1
Cape Mixed Shore	VU	MP	5.0	40.0	54.9
Cape Rocky Inner Shelf	VU	MP	0.0	61.4	38.6
Cape Rocky Mid Shelf Mosaic	VU	MP	0.4	55.8	43.8
Cape Sandy Inner Shelf	VU	MP	26.2	3.8	69.9
Cape Sheltered Rocky Shore	EN	PP	1.6	5.0	93.4
Cape Upper Canyon	EN	MP	0.0	32.8	67.2
Cape Very Exposed Rocky Shore	NT	WP	15.4	73.5	11.1
Cool Temperate Estuarine Lagoon	VU	MP	99.5	0.5	0.0
Cool Temperate Estuarine Lake	EN	PP	0.0	0.0	100.0
Cool Temperate Predominantly Open	EN	NP	0.7	24.5	74.8
Namaqua Sandy Mid Shelf	LC	PP	0.0	100.0	0.0
Southeast Atlantic Lower Slope	LC	NP	95.1	4.9	0.0
Southeast Atlantic Mid Slope	LC	PP	0.0	100.0	0.0
Southeast Atlantic Upper Slope	LC	PP	0.0	4.7	95.3
Southern Benguela Dissipative Intermediate Sandy Shore	LC	WP	85.9	9.9	4.1
Southern Benguela Dissipative Sandy Shore	LC	WP	87.6	4.8	7.7
Southern Benguela Intermediate Sandy Shore	NT	PP	51.3	26.0	22.7
Southern Benguela Muddy Shelf Edge	EN	MP	0.0	0.0	100.0
Southern Benguela Outer Shelf Mosaic	LC	NP	0.0	71.2	28.8
Southern Benguela Reflective Sandy Shore	EN	MP	5.0	30.4	64.6
Southern Benguela Rocky Shelf Edge	VU	MP	0.5	30.7	68.9
Southern Benguela Sandy Outer Shelf	LC	PP	0.3	63.7	36.0
Southern Benguela Sandy Shelf Edge	VU	PP	0.0	0.0	100.0
St Helena Bay	VU	NP	0.0	52.9	47.1
Other Features					

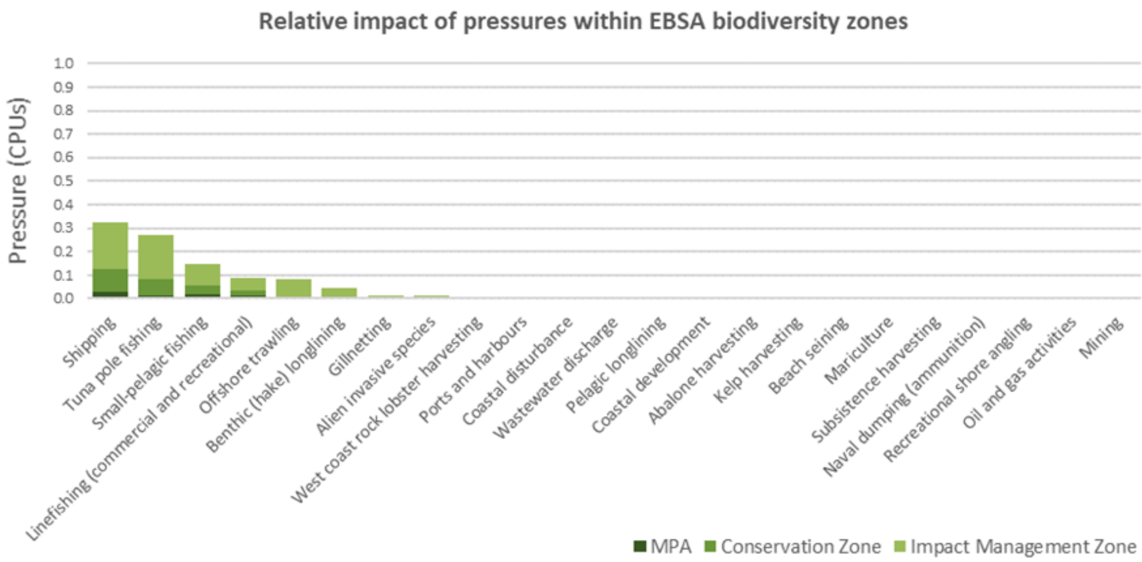
• Fragile habitat-forming species, and other unique and potentially vulnerable benthic communities, including species such as cold-water corals and brittle stars • Seabirds, including several threatened species and Marine IBAs • Seals and seal colonies • Foraging cetaceans • Spawning and nursery habitat for Cape hakes

Relevant Pressures and Activities (impact, extent)

- There are 22 pressures present in this EBSA, of which shipping and tuna pole fishing are the only ones that cover the entire EBSA extent, and have the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: small pelagics fishing, offshore trawling, linefishing (commercial and recreational), benthic (hake) longlining, and gillnetting. These activities will need to be managed particularly well in order to protect the fragile benthic biodiversity, fish assemblages, and spawning and nursery areas that in turn support top predators, for which this EBSA is recognised. For all of these pressures, the larger portion of the activity is located in the Impact Management Zone.
- Sixteen of the 22 pressures each comprise <1% of the EBSA pressure profile, including: alien invasive species, west coast rock lobster harvesting, ports and harbours, coastal disturbance, wastewater discharge, pelagic longlining, coastal development, abalone harvesting, kelp harvesting, beach seining, mariculture, subsistence harvesting, naval dumping (ammunition), recreational shore angling, and oil and gas (exploration and production).
- Activities in South Africa that are not present in this EBSA include: mining (prospecting and mining), dredge spoil dumping, mean annual runoff reduction, midwater trawling, oyster harvesting, prawn trawling, shark netting, south coast rock lobster harvesting, squid fishing and inshore trawling.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



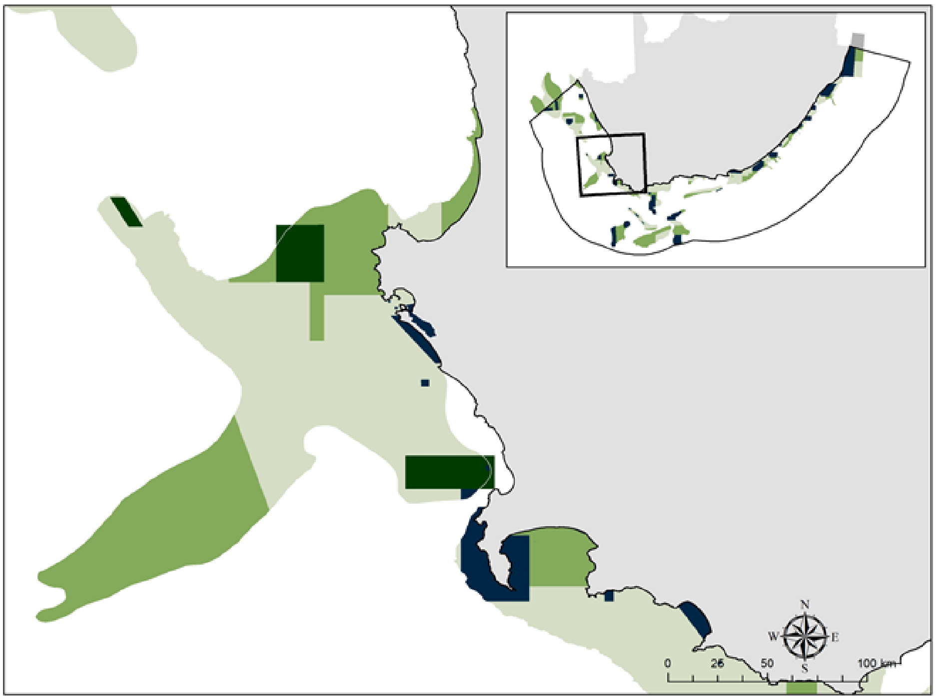
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from alien invasive species to oil and gas (exploration and production) each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. It also includes nine MPAs that are wholly or partially within the EBSA: Rocherpan MPA; Langebaan Lagoon MPA; Sixteen Mile Beach MPA; Malgas Island MPA; Marcus Island MPA; Jutten Island MPA; Benguela Mud MPA; Cape Canyon MPA; and Robben Island MPA. The activities permitted within these MPAs are not considered as part of the EBSA management recommendations because these are as per their respective gazetted regulations.

Rocherpan (proclaimed 1976, revised in 1990, 1992)	No available link to the regulations
Langebaan Lagoon MPA (proclaimed 1973, revised 1985, 1987, 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Sixteen Mile Beach MPA (proclaimed 1985, revised 1987, 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Malgas Island (proclaimed 1985, revised in 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Marcus Island (proclaimed 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Jutten Island (proclaimed 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Benguela Mud MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_benguelamudsmarine_regulations_g42479gn782.pdf
Cape Canyon MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_capecanyonmarine_regulations_g42479gn784.pdf
Robben Island MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_robbenislandmarine_regulations_g42479gn794.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

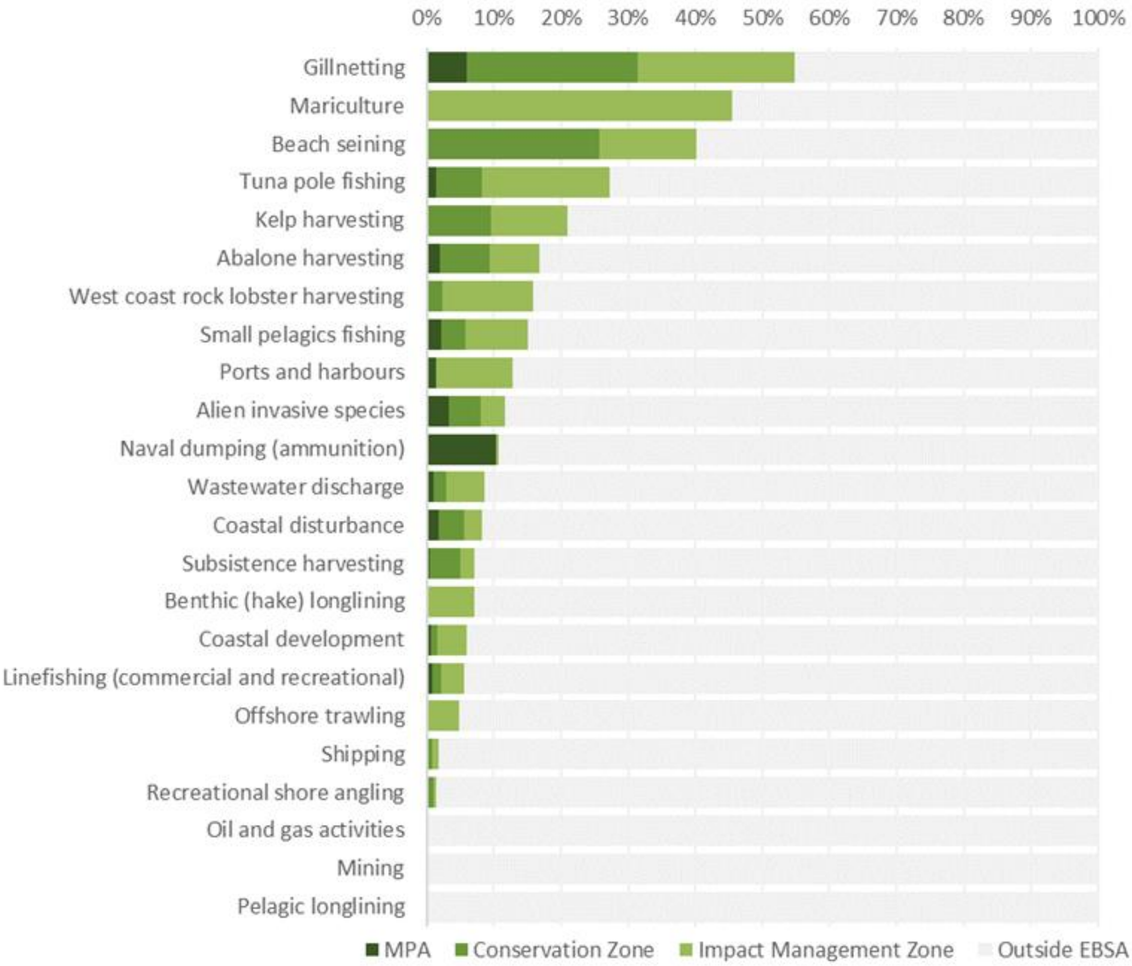
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Restricted zone			
	Marine Protected Area: Controlled zone			
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Estuarine management plans

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

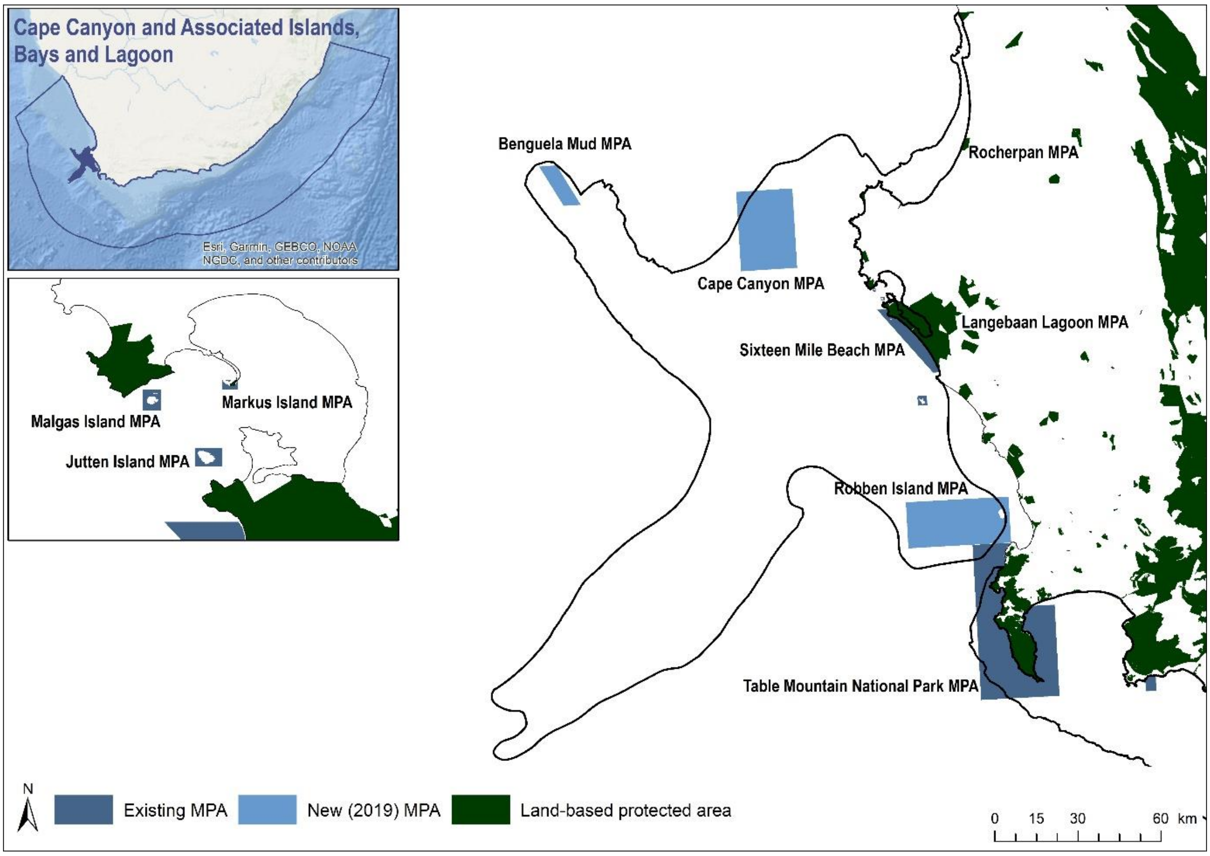
Even though almost 80% of the country's mariculture takes place within this EBSA, it all falls within the proposed Impact Management Zone, where it is considered compatible and thus is recommended to continue in the EBSA with appropriate management as a Consent activity. It currently does not exist in the Conservation Zone and is thus recommended to be Prohibited in this zone. Gillnetting and beach seining in the EBSA also comprise a substantial proportion of the national footprint for these activities, and are recommended to continue as Consent activities in both EBSA zones, subject to careful controls in the Conservation Zone particularly. Similarly, more than a third of the country's tuna pole fishing takes place in the EBSA but it is recommended to continue as a Consent activity in both zones. Other activities relating to biological resource use that have more than 10% of the national footprint within the EBSA and are proposed as Consent activities include: small pelagic fishing, kelp harvesting, abalone harvesting, west coast rock lobster harvesting, benthic (hake) longline fishing, and offshore trawling. Similar Consent activities that comprise less than 10% of the national footprint include subsistence harvesting and linefishing (commercial and recreational) and recreational shore angling. The bulk of the footprint of these extractive activities are in the Impact Management Zone. Where these activities do not currently exist in the Conservation Zone (recreational shore angling) or are incompatible with the management objectives of the Conservation Zone (ports and harbours, offshore trawling), they are recommended to be Prohibited in this zone.

Dumping ammunition at sea historically occurred within the EBSA, but is no longer an active activity in South Africa. The sites where ammunition was dumped are within the Conservation Zone where it is listed as a Consent activity. The EBSA includes the major Saldanha Bay Port and several minor harbours within the Impact Management Zone. Port and harbour activities should be carefully managed to avoid unacceptable impacts on adjacent Conservation Zones. Particularly, careful management of mariculture operations and ports and harbours are necessary to avoid the introduction of additional alien invasive species. General ship movement can continue in both the Conservation and Impact Management Zone under current legislation. Shipping is recommended to continue in both the Conservation and Impact Management Zone under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation and mariculture.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Benguela Mud, Cape Canyon, and Robben Island MPAs in 2019. This builds on existing protection already afforded by the Rocherpan, Langebaan Lagoon, Sixteen Mile Beach, Markus Island, Malgas Island, Jutten Island, and Table Mountain National Park MPAs, and land-based protected areas in the area. It is recommended that existing management is strengthened in the older MPAs, and that full operationalisation of the new MPAs is implemented, including management plans, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

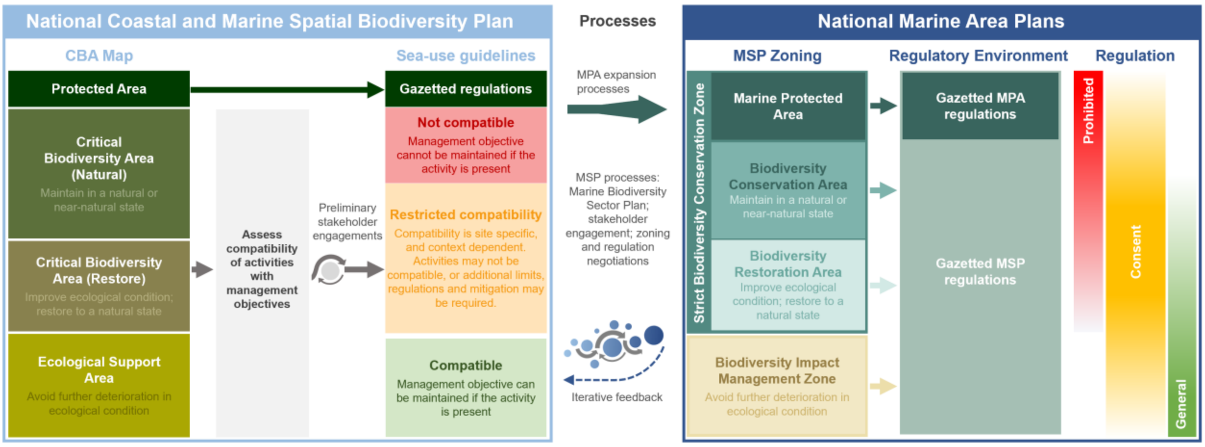


Existing and new marine protected areas (MPAs) in the Cape Canyon and Associated Islands, Bays and Lagoon EBSA. Land-based protected areas are also shown (from DFFE 2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Cape Canyon and Associated Islands, Bays, and Lagoon, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

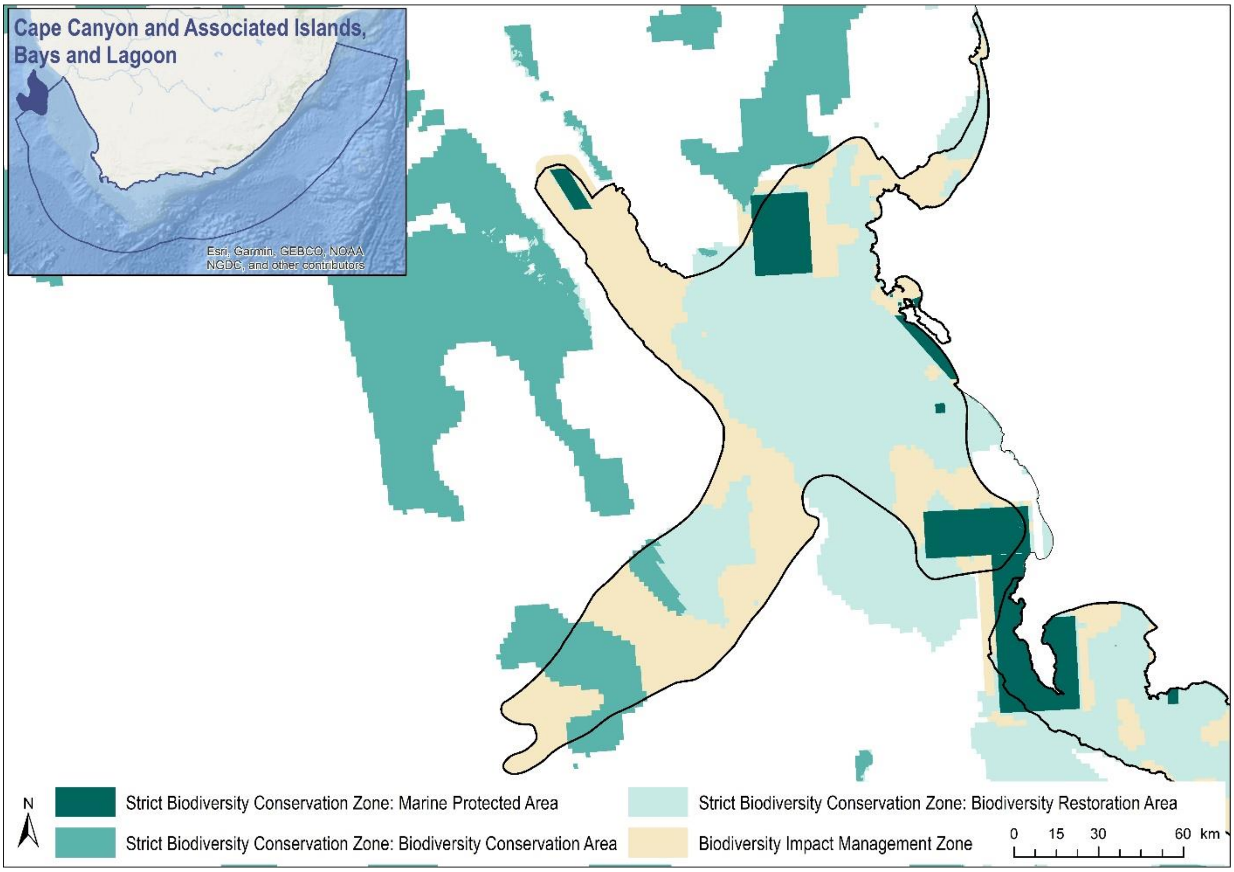


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Cape Canyon and Associated Islands, Bays, and Lagoon.

There are 10 MPAs that are wholly or partly in this EBSA: Benguela Mud, Cape Canyon, Robben Island, Langebaan Lagoon, Jutten Island, Malgas Island, Marcus Island, Sixteen Mile Beach, Rocherpan, and a small portion of Table Mountain National Park MPA. These MPAs are managed according to their respective gazetted management regulations. The Strict Biodiversity Conservation Zone includes a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. Because this area is well used by other sectors, a much larger portion of the Strict Biodiversity Conservation Zone comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Cape Canyon and Associated Islands, Bays and Lagoon EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al.

2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Cape Canyon and Associated Islands, Bays and Lagoon. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There is ongoing research on the distributions of fragile, sensitive and vulnerable habitat-forming species in the area, although it is unlikely to have bearing on the revised boundaries. Otherwise, there are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below).

Future Process

There needs to be full operationalisation and practical implementation of the Benguela Mud, Cape Canyon, and Robben Island MPAs, including management plans, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project. This EBSA is also part of a World Heritage Site proposal that is being developed.

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Browns Bank

Revised EBSA Description

General Information

Summary

Browns Bank includes benthic and pelagic habitats of the outer shelf and shelf edge along the western continental margin of South Africa. The area includes reef-building cold-water corals and untrawled hard grounds. It is an important fish spawning area for demersal and pelagic species. The spawning area is linked to nursery grounds on the inshore area of the west coast and the Agulhas Bank, and has better retention than that of areas further north. The Agulhas and Southern Benguela ecoregions meet at the south-eastern boundary of the area and sporadic shelf edge upwelling enhances the productivity along the outer margin. The area is important for threatened habitats and species, including a Critically Endangered benthic ecosystem type and overlapping substantially with two proposed marine Important Bird Areas, namely for Cory's Shearwater and Atlantic Yellow-nosed Albatross. The area was also identified as a priority area through two systematic biodiversity plans, meeting targets for habitat representation, hake spawning, and fragile and sensitive habitat-forming species. The boundary of this EBSA has been refined since its first description to improve precision based on focus-area delineation for national MPA expansion, threat status of benthic ecosystem types, and presence of vulnerable, sensitive, fragile and slow-growing species.

Introduction of the area

The area is along the outer shelf and shelf edge of the western continental margin of South Africa, south and slightly east of Cape Agulhas. It includes benthic habitats, including rocky, sandy and reef substrates (Sink et al., 2019), and a pelagic ecosystem type that is characterised by elevated productivity and frequent fronts due to shelf-edge upwelling (Lutjeharms et al., 2000, Lagabrielle 2009, Roberson et al., 2017). The area ranges from approximately 150 m – 800 m depth and the Agulhas and Southern Benguela ecoregions meet at the its south-eastern edge (Sink et al., 2012), with sporadic shelf-edge upwelling that enhances the productivity along its outer margin (Lagabrielle, 2009, Roberson et al., 2017). The area includes the western Agulhas Bank spawning ground, and is part of a critical area for retention of spawning products (Hutchings et al., 2002). It was identified as a priority area through a national plan to identify areas for offshore protection (Sink et al., 2011) and by a systematic biodiversity plan for the South African west coast (Majiedt et al., 2013).

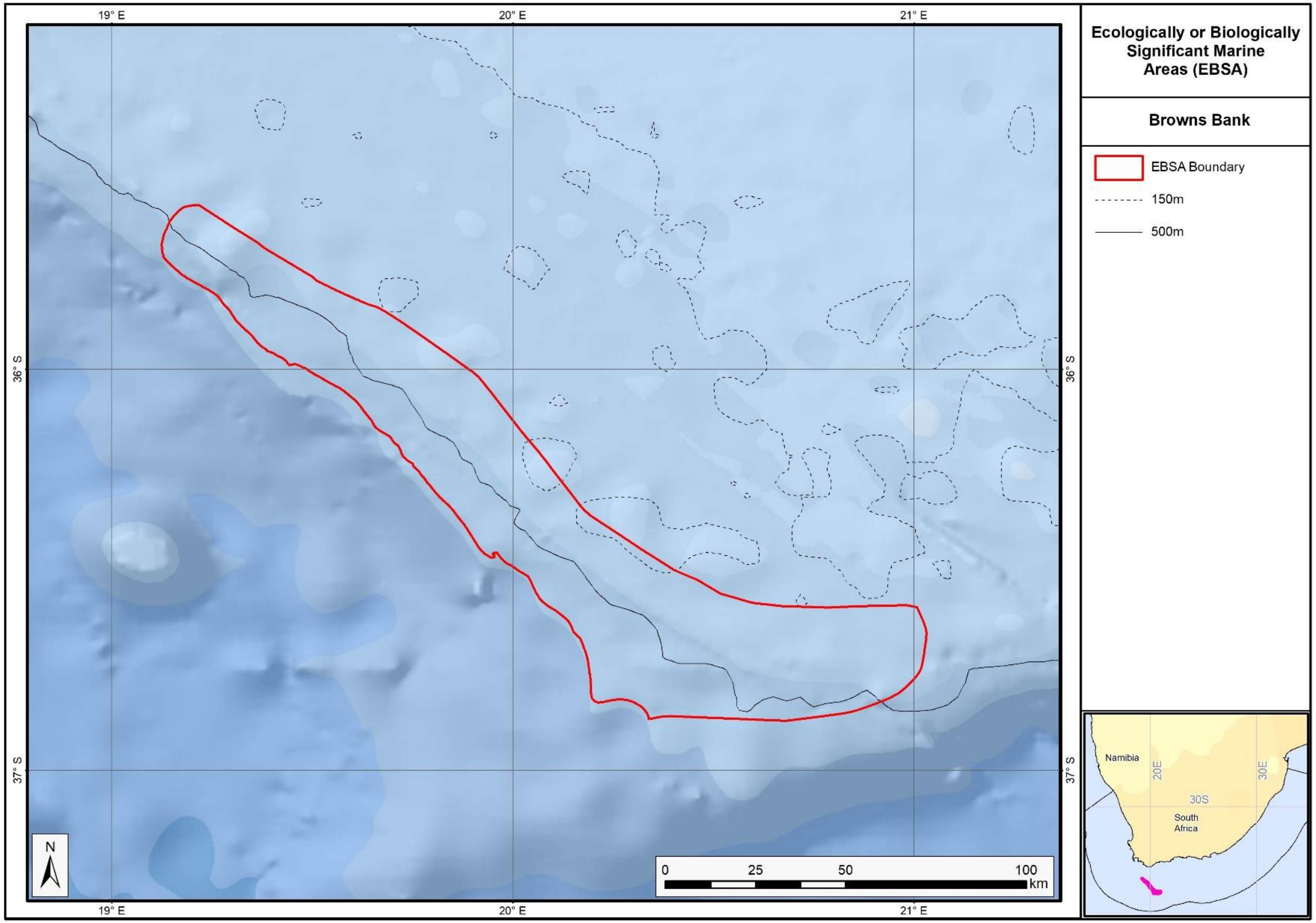
Description of the location

EBSA Region

South-Eastern Atlantic

Description of location

Browns Bank includes benthic and pelagic habitats of the outer shelf and shelf edge along the western continental margin of South Africa. This area is off the southwest coast of South Africa, almost directly south of Cape Agulhas, and is completely within national jurisdiction.



Proposed revised boundaries of the Browns Bank EBSA.

Area Details

Feature description of the area

The Browns Bank area includes unconsolidated sandy habitats, hard ground and reef habitats (Sink et al., 2019). The pelagic habitat is characterised by elevated productivity and frequent fronts due to shelf edge upwelling (Lutjeharms et al., 2000, Lagabrielle 2009, Roberson et al., 2017). The biodiversity at Browns Bank includes benthic macrofaunal communities characterized by high abundances of brittle stars and many species of polychaetes (Karenyi, 2014); cold-water corals, brisingid starfish, and 77 morphospecies of macroinvertebrates have also been collected within the area (Sink 2016). Further, it is a proposed marine Important Bird Area (IBA) for two species of seabirds, Cory's Shearwater and Atlantic Yellow-nosed Albatross (BirdLife International 2013), indicating that it holds a significant proportion of the global population of these species during some periods of each year for which data are available. Wandering, Shy, Black-browed, and Atlantic yellownose albatrosses sighted in the area, and Pintado petrels are noted as commonly occurring (Sink 2016). Browns Bank is also part of the western Agulhas Bank spawning ground as described by Hutchings et al. (2002). This area has been included in annual demersal fish trawl surveys conducted by the Department of Agriculture, Forestry and Fisheries, and was surveyed during the *Deep Secrets* cruise in 2016 (Sink 2016).

The boundary of this EBSA has been refined since it was first described, using the best available data (e.g., Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012a, 2019). The new boundary falls almost entirely within the old boundary, comprising an area about two thirds of the original delineation. It was refined to improve precision based on selection frequency in the two systematic biodiversity plans covering this area (Sink et al., 2011; Majiedt et al., 2013), MPA expansion in South Africa, presence of fragile and sensitive habitat-forming species, and benthic ecosystem types that are threatened. The site is presented as a Type 1 EBSA because it contains "Spatially stable features whose positions are known and individually resolved on the maps" (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

According to Wilkinson (2009) there are three areas of untrawled hard grounds on the shelf edge within this area, suggesting they are still intact. However, a recent assessment of cumulative pressures to South Africa's marine environment showed that there is a small portion of the EBSA that is in good ecological condition, some parts in fair condition, but that most of the EBSA has been heavily modified and is in poor ecological condition (Sink et al., 2019).

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Summary of ecosystem types and threat status for the Browns bank EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Critically Endangered	Southern Benguela Rocky Shelf Edge Mosaic	1197.1	21.2
Least Concern	Agulhas Outer Shelf Reef Coarse Sediment Mosaic	385.5	6.8
	Agulhas Rocky Shelf Edge	414.8	7.3
	Southeast Atlantic Upper Slope	1938.1	34.3
	Southern Benguela Sandy Outer Shelf	1541.7	27.2
	Southwest Indian Upper Slope	180.5	3.2
Grand Total		**5657.7**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

When first described, Browns Bank was identified by two systematic plans as a priority area because it is the only place where targets for the Southern Benguela Gravel Outer Shelf habitat (which is Critically Endangered) can be met (Majiedt et al., 2013, Sink et al., 2011). It should be noted that this ecosystem type has a limited extent with an estimated total area of less than 450 km^2. Since the revision of the National Marine Ecosystem Type Map (Sink et al., 2019) and the EBSA boundary, this is still true; however, the ecosystem type is now called Southern Benguela Rocky Shelf Edge Mosaic. It is still Critically Endangered, but does extend a little beyond the extent of the EBSA along the shelf edge; the most intact parts of this ecosystem type are included in the EBSA.

C2: Special importance for life-history stages of species **High**

Justification

This area is part of the western Agulhas Bank spawning ground as described by Hutchings et al. (2002). The gadoid Cape hakes *Merluccius capensis* and *M. paradoxus*, the gempylid *Thyrsites atun* (snoek) and the clupeid *Etremeus whiteheadii* (round herring) move to the western Agulhas Bank and southern west coast to spawn, generally in late winter and early spring when offshore Ekman losses are at a minimum. The eggs and larvae drift northwards and inshore to the west coast nursery grounds. Browns Bank, an apex area of the Agulhas Bank, is recognized as a critical area for retention of spawning products because eddies in this area help to re-circulate water inshore and link important nursery areas with this spawning habitat on the shelf edge. Strong jet currents on the west coast oblige adult hake to shift southwards to spawn, to ensure that juveniles enter the west coast nursery grounds downstream (Hutchings et al., 2002). The area is also important for juvenile spiny lobsters (Santos et al., 2014). This shelf-edge area also constitutes foraging area for offshore seabirds (BirdLife International 2013). Limited tracking datasets have shown that the shelf edge is heavily used by a diversity of pelagic seabirds. In particular, the Browns Bank site is a proposed marine IBA for two species of seabird: Cory's Shearwater and Atlantic Yellow-nosed Albatross (BirdLife International 2013). Additional seabird tracking datasets may result in this site being an IBA for additional species in future.

C3: Importance for threatened, endangered or declining species and/or habitats **High**

Justification

The Atlantic Yellow-nosed Albatross is globally Endangered, and Browns Bank is a proposed marine IBA site for this species, indicating that it holds a significant proportion of the global population of this species during some periods of each year for which data are available (BirdLife International 2013). This area also contains the last moderately intact patches of Southern Benguela Rocky Shelf Edge Mosaic, a rare habitat type that is considered Critically Endangered (Sink et al., 2012a,b, 2019). Wandering albatross, Shy, Black browed, Atlantic yellownose and Pintado petrels are common in area (Sink 2016).

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**

Justification

This area has hard ground habitats on the outer shelf and shelf edge that are considered sensitive to demersal trawling and mining (Sink et al., 2011, 2012a, 2012b). Recently, fisheries observers collected two species of cold-water corals within this area (Capricorn Fisheries Monitoring, unpublished information). The specimens are in the invertebrate collection at iZiko, the South African Museum in Cape Town. Further, recent samples of coral, *Thouarella*, hermit crabs, and brisingid sea stars have been collection or seen, and 77 invertebrate morpho-species were identified from the area in a recent survey (Sink 2016).

C5: Biological productivity **Medium**
Justification
The Agulhas and Southern Benguela ecoregions meet at the southeastern boundary of the area and sporadic shelf edge upwelling enhances the productivity along its outer margin. Based on tracking data, the area holds a significant proportion of the global population of at least two species of seabirds, namely Cory's Shearwater and the globally Endangered Atlantic Yellow-nosed Albatross (BirdLife International 2013).

C6: Biological diversity **Low**
Justification
The national marine ecosystem map indicates a moderate number of ecosystem types within the area (Sink et al., 2019).

C7: Naturalness **Medium**
Justification
There are three areas of untrawled hard grounds on the shelf edge within this area (Wilkinson 2009). The Southern Benguela Rocky Shelf Edge Mosaic ecosystem type is in poor condition and there is no remaining area of this ecosystem type left in good condition, and only fragments in moderate condition (Sink et al., 2012a,b, 2019). Across the EBSA, 2% of the habitat is in good ecological condition, 26% is in fair ecological condition and 72% is in poor ecological condition (Sink et al., 2019).

Status of submission

The Browns Bank EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

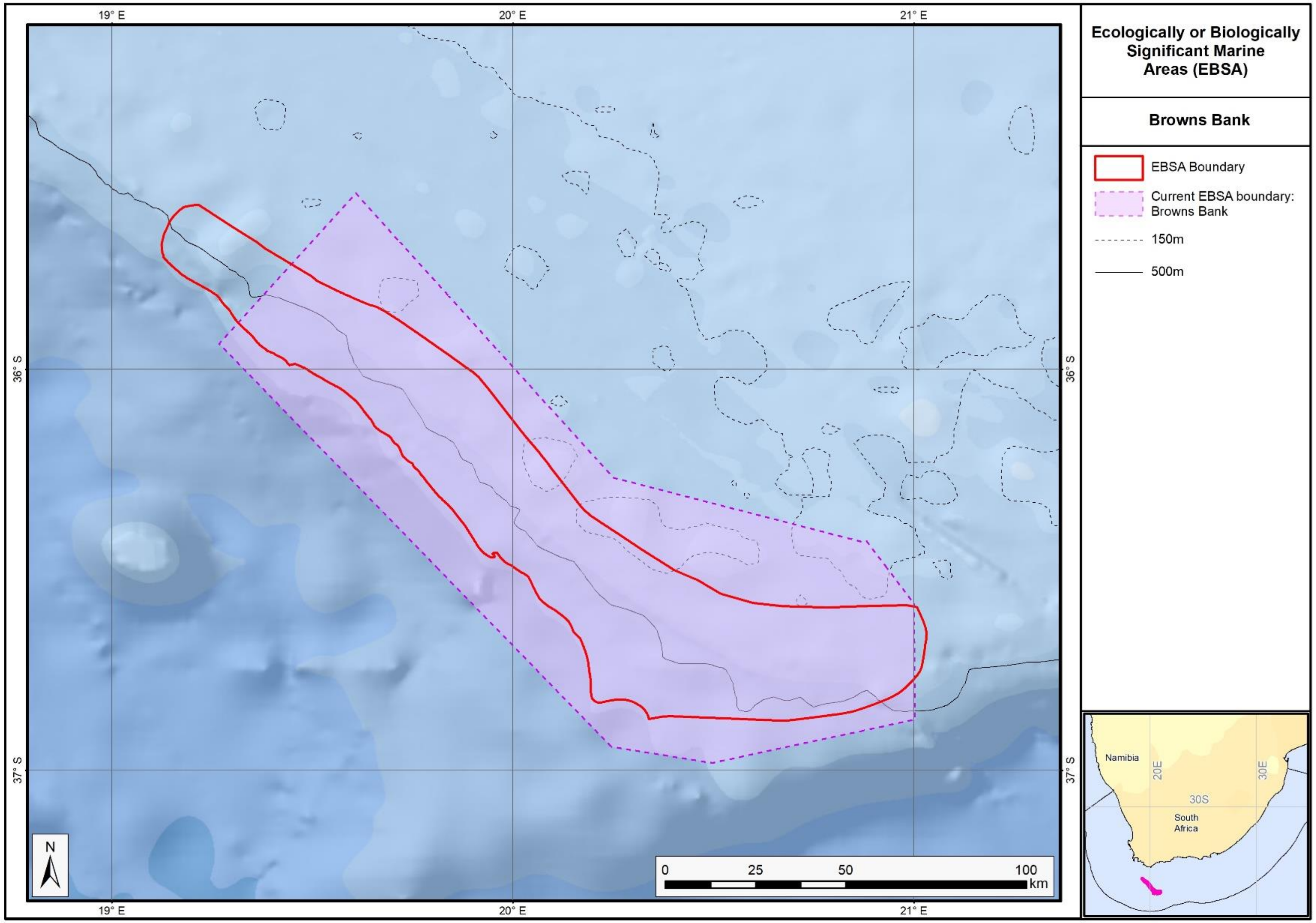
Motivation for Revisions

Some technical revisions and updates to the description were made, even though little additional information was available. However, given the most recent assessment of ecological condition (Sink et al., 2019), the Naturalness criterion was downgraded from medium to low. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included.

The main change is that the boundary of this EBSA has been slightly adjusted to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status. The delineation process included an initial stakeholder review which identified the need to update boundaries, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

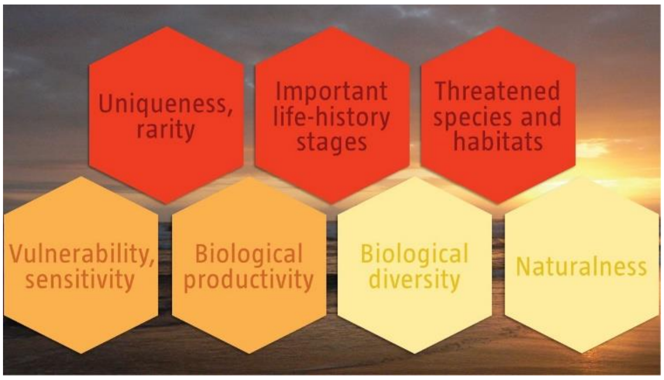
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the SCP undertaken for the West Coast by Majiedt et al. (2013), offshore areas (Sink et al., 2011) and by Holness et al. (2014) were incorporated.
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA.
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012a, 2019) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).

The multi-criteria analysis resulted in a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Browns Bank EBSA in relation to its original boundaries.

Status Assessment and Management Options

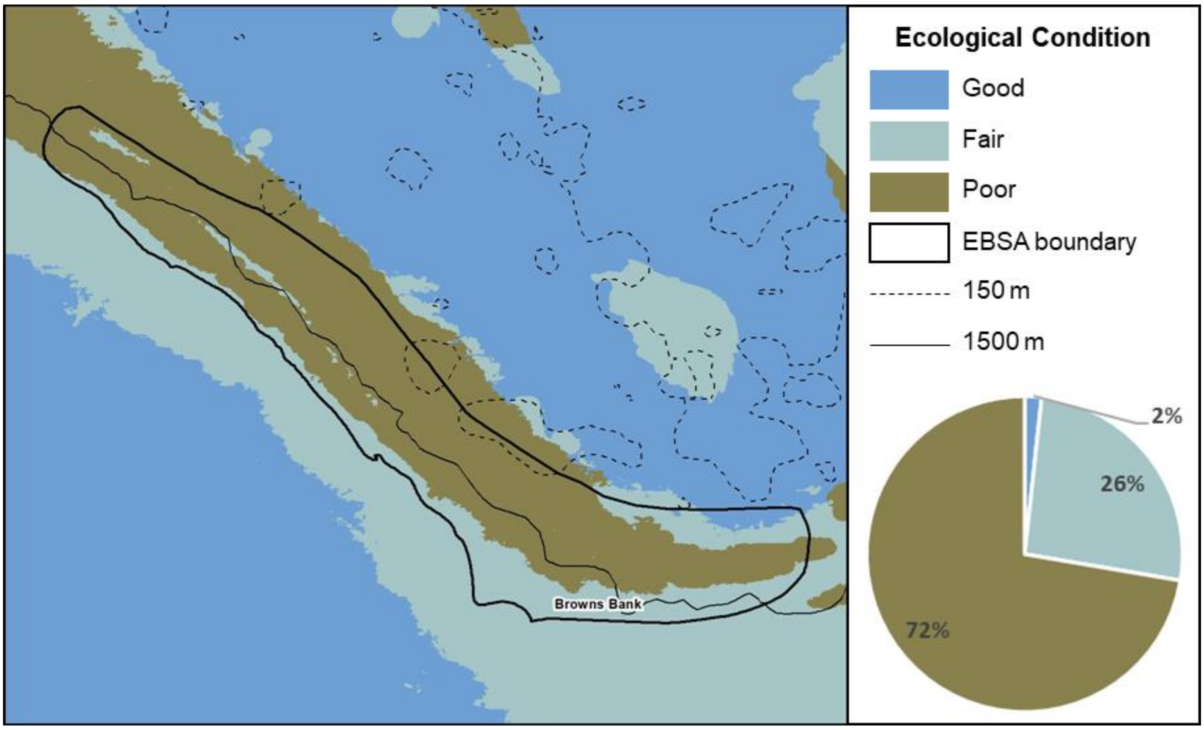


***Browns Bank** is an important fish spawning area for both demersal and pelagic species, which links to the nursery grounds in the Agulhas Bank Nursery Area EBSA. The area contains fragile reef-building cold-water corals and untrawled hard grounds, and is the only place where a Critically Endangered gravel ecosystem type exists. The shelf edge area is also important for many seabirds, and covers two proposed Important Bird Areas.*

EBSA criteria coloured by rank for Browns Bank: red=high, orange=medium, yellow=low.

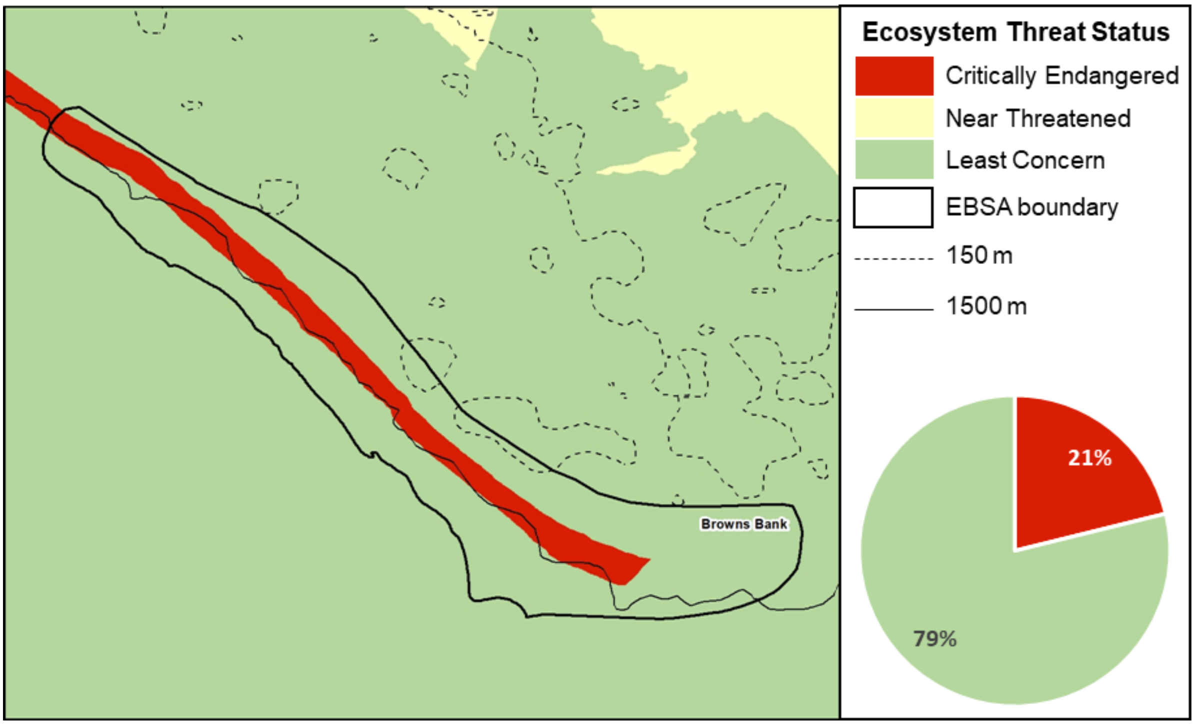
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Browns Bank has several key features and ecosystem types that need to be protected for the area to maintain the features and processes that give it its EBSA status. There are six ecosystem types represented, of which the Browns Bank Rocky Shelf Edge and the mosaic (matrix of hard and soft substrate) ecosystem types contain fragile species that are especially sensitive to damage, especially reef-building cold-water corals.

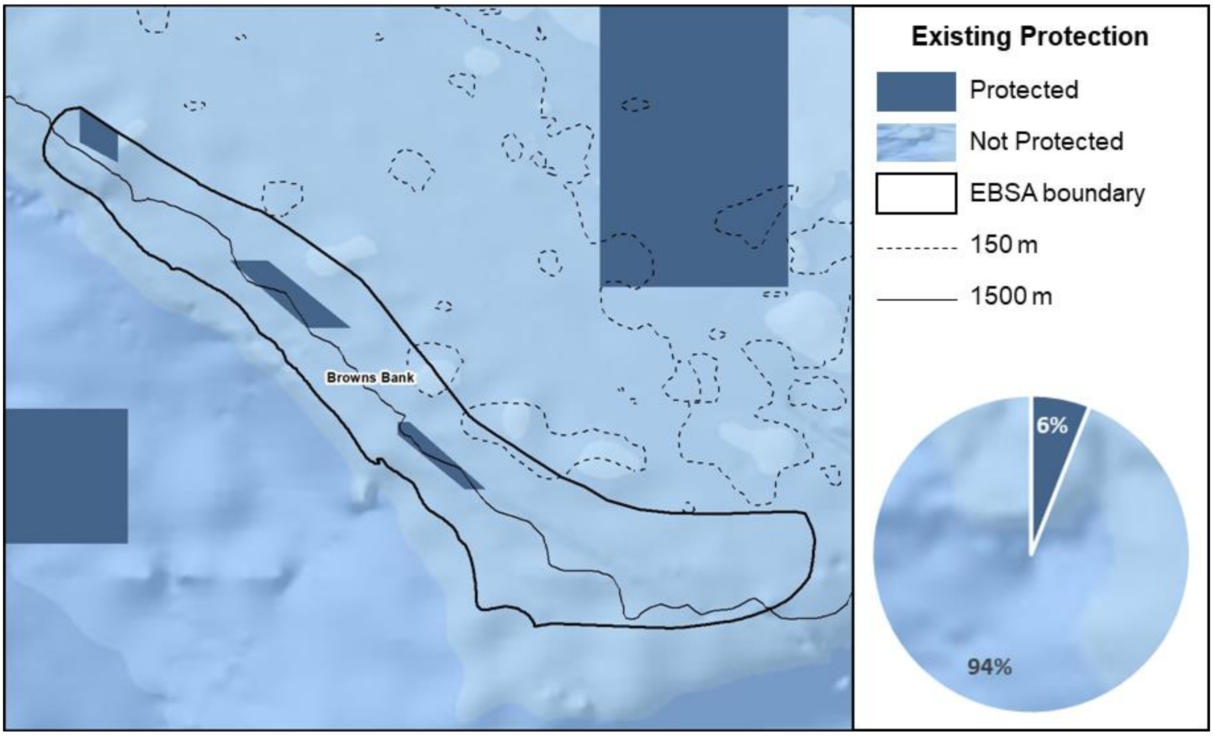


Browns Bank proportion of area in each ecological condition category.

Browns Bank is heavily impacted, and largely in poor ecological condition (72%), with some portions that are fair (26%), and only a fraction (2%) that is in good ecological condition. Despite this, the bulk of the area (79%) and ecosystem types (5 of 6) are Least Concern because the ecosystems extend beyond this area where they are less impacted. However, the 21% that is Critically Endangered makes up a large part of the remaining extent of the Browns Bank Rocky Shelf Edge ecosystem type.



Browns Bank proportion of area in each ecosystem threat status category.



Browns Bank proportion of area in a Marine Protected Area (MPA).

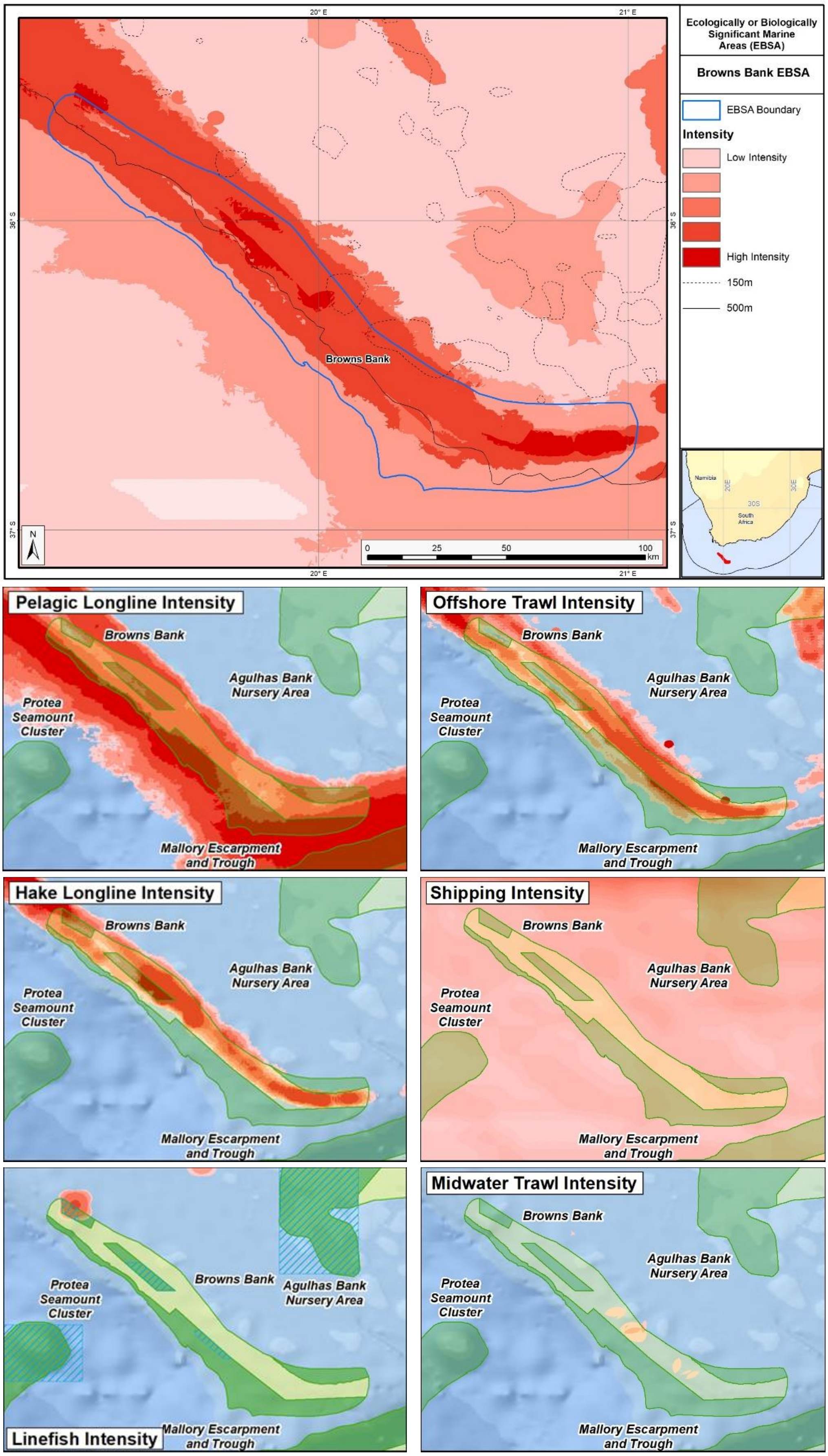
Protection afforded to this EBSA, and particularly Browns Bank Rocky Shelf Edge, occurred for the first time following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing from no protection to 6%. These new MPAs cover portions of the Critically Endangered Browns Bank Rocky Shelf Edge, raising its protection level to Moderately Protected.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

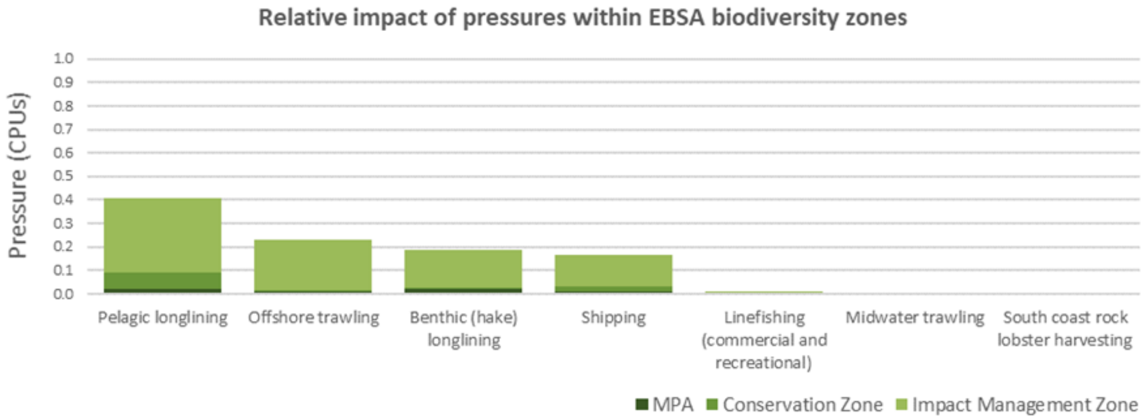
Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Agulhas Plateau Mosaic	LC	MP	0.0	37.5	62.5
Browns Bank Rocky Shelf Edge	CR	MP	0.0	6.1	93.9
Eastern Agulhas Outer Shelf Mosaic	LC	PP	24.5	47.2	28.2
Southeast Atlantic Upper Slope	LC	PP	0.0	40.8	59.2
Southern Benguela Sandy Outer Shelf	LC	PP	0.2	5.7	94.2
Southwest Indian Upper Slope	LC	WP	0.0	99.4	0.6
Other Features					
• Fragile reef-building cold-water corals and untrawled hard grounds containing fragile species, e.g., brisingid sea stars • Fish spawning area for demersal and pelagic species • Upwelling areas • Two proposed Marine Important Bird and Biodiversity Areas, namely for Cory's Shearwater and Atlantic Yellow-nosed Albatross • Other seabirds, e.g., Wandering, Shy, Black-browed, and Atlantic yellownose albatrosses and Pintado petrels					

Relevant Pressures and Activities (impact, extent)

- There are seven pressures present in this EBSA, of which shipping and pelagic longlining cover the entire EBSA extent, with pelagic longlining and offshore trawling having the highest cumulative pressure profiles.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: pelagic longlining, offshore trawling and hake longlining. These activities will need to be managed particularly well in order to protect the fragile benthic biodiversity, fish spawning areas and seabirds (in terms of mitigating bycatch) for which this EBSA is recognised. For all of these pressures, though, the larger portion of the activity is located in the Impact Management Zone.
- Three of the seven pressures each comprise <1% of the EBSA pressure profile, including: linefishing, midwater trawling, and south coast rock lobster harvesting.
- Activities in South Africa that are not present in this EBSA include: inshore trawling, squid fishing, small pelagics fishing, ports and harbours, alien invasive species, mean annual runoff reduction, coastal disturbance, coastal development, wastewater discharge, oil and gas (exploration and production), recreational shore angling, abalone harvesting, subsistence harvesting, mariculture, naval dumping (ammunition), oyster harvesting, mining (prospecting and mining), shark netting, prawn trawling, tuna pole fishing, kelp harvesting, gillnetting, west coast rock lobster harvesting, dredge spoil dumping, beach seining; noting that some of these are coastal pressures that do not apply to offshore EBSAs.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



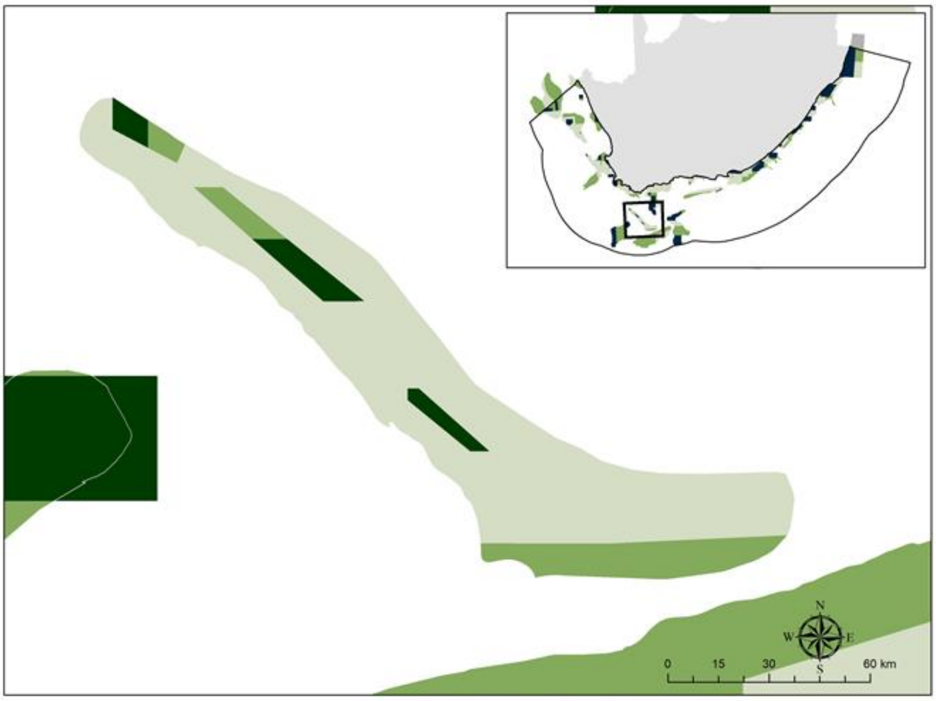
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from linefishing (commercial and recreational) to south coast rock lobster harvesting each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. The EBSA also includes the Browns Bank Corals MPA that is wholly within the EBSA. The activities permitted within this MPA are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

Browns Bank Corals (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_brownsbankcoralsmarine_regulations_g42479gn783.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

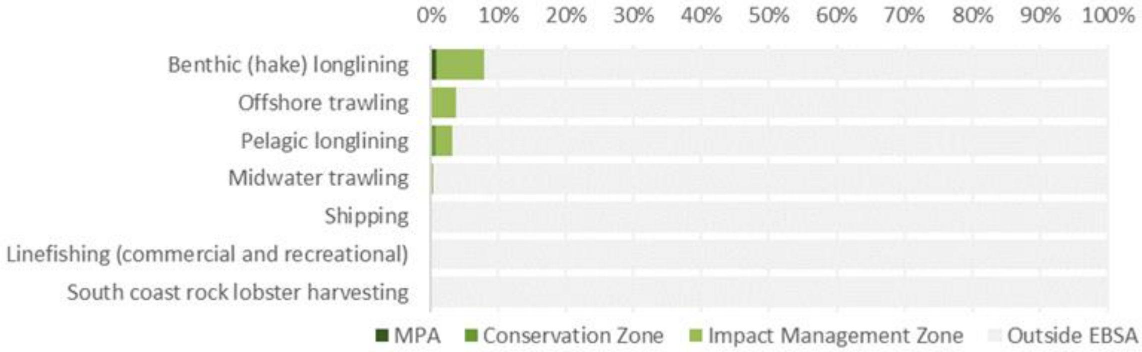
Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

Activity Evaluation Per Zone: Zoning Feasibility

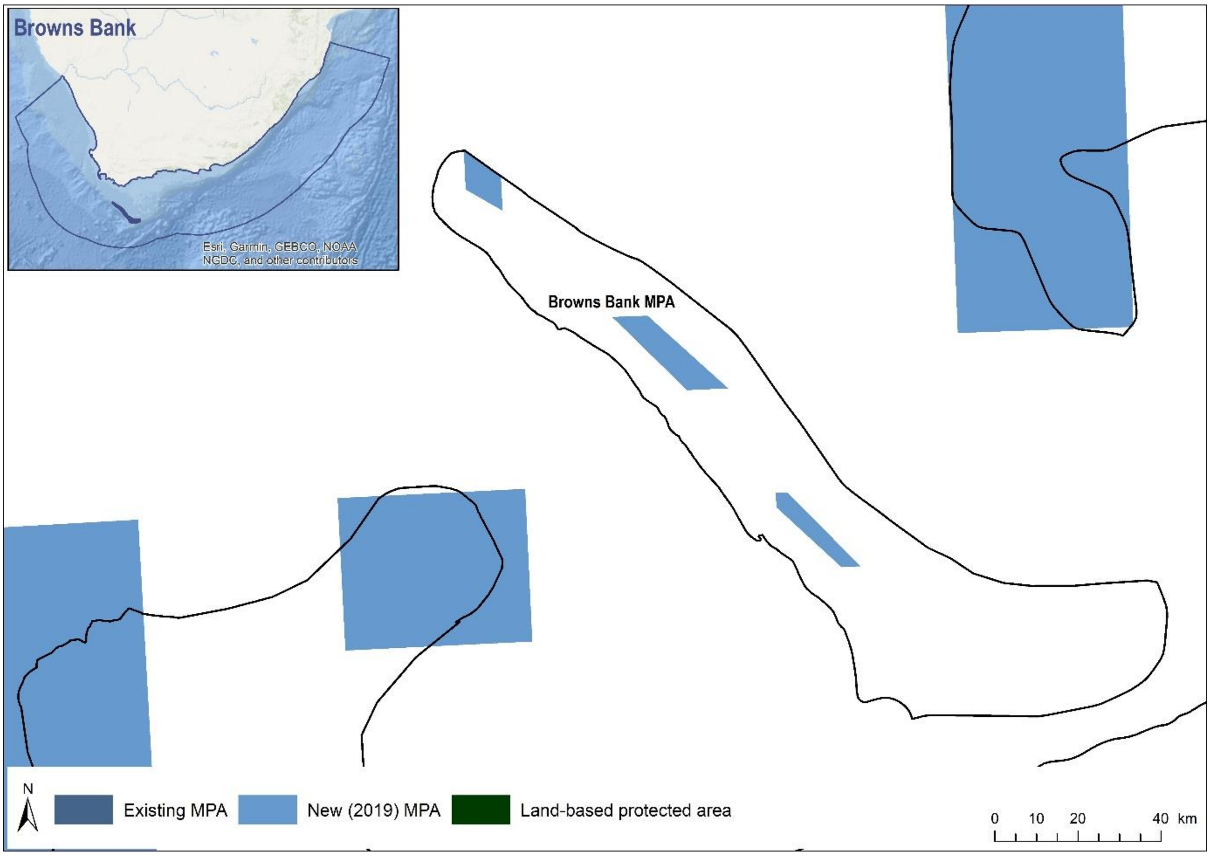


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

There are seven key activities within this EBSA, only three of which comprise more than 5% of the national footprint: benthic (hake) longlining, offshore trawling, and pelagic longlining. Most of their footprint is within the Impact Management Zone. These, together with benthic (hake) longlining and pelagic longlining are compatible with the Impact Management Zone and conditionally compatible with the Conservation Zone and thus are recommended to continue with appropriate management measures. Offshore trawling is conditionally compatible with the Impact Management Zone, where it is recommended to continue with appropriate management, and is not compatible with the Conservation Zone, where it is recommended to be not permitted. Shipping is compatible with both EBSA zones and is recommended to continue under current general rules and legislation. In all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Browns Bank MPA in 2019. It is recommended that full operationalisation of the new MPA is implemented, including a management plan, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. It is also important to consider ways in which connectivity among MPAs in the Protea Seamount Cluster, Mallory Escaparment and Trough, Browns Bank, and Shackleton Seamount Complex can be enhanced to strengthen persistence of biodiversity and climate-change adaptation. See Future Process below for more details.

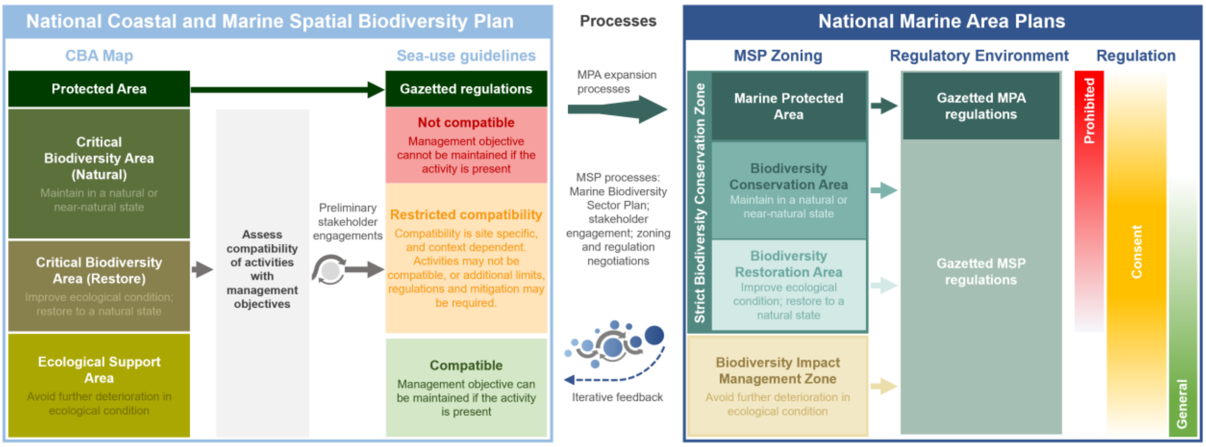


Marine protected areas (MPAs) in the Browns Bank EBSA. Browns Bank MPA comprises three parts, all of which are in the EBSA.

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Browns Bank, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

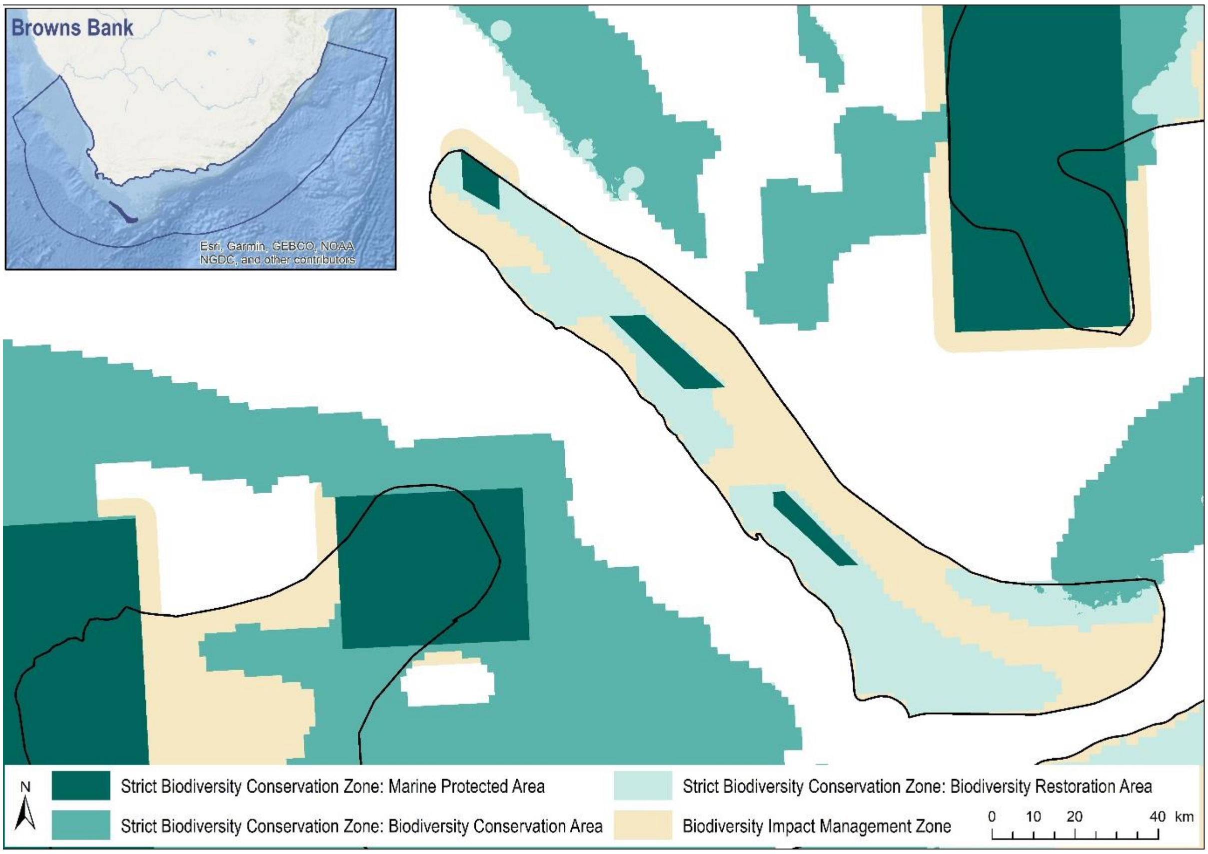


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Browns Bank.

Browns Bank MPA, comprising three parts, is the only MPA in this EBSA. It is managed according to the gazetted management regulations for this MPA. A small component of the Strict Biodiversity Conservation Zone is a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. Because the area is so heavily used by other sectors, a much larger portion comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Browns Bank EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Browns Bank. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

In addition to the research needs for all EBSAs (see EBSA Research Needs below), there needs to be fine-scale mapping of seabed features within this EBSA that can support an improved fine-scale assessment of ecological condition. This includes exploring and mapping potential cold water corals, which are likely to be present. This could also support potential refinement of the trawl footprint.

Future Process

There needs to be full operationalisation and practical implementation of the Browns Bank MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Options for MPA expansion also need to take strengthening connectivity among MPAs in Protea Seamount Cluster, Browns Banks, and Shackleton Seamount Complex.

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Mallory Escarpment and Trough (Formerly Agulhas Slope and Seamounts)

Revised EBSA Description

General Information

Summary

The outer margin along the southern tip of the Agulhas Bank is a dynamic offshore area with high productivity and high pelagic and benthic habitat heterogeneity. The Agulhas and Southern Benguela ecoregions meet at this point, and sporadic shelf-edge upwelling enhances the productivity along the outer margin. The area is recognized as a spawning area for sardine, anchovy, horse mackerel and hake, and this apex area of the Agulhas Bank is recognized as a critical area for retention of spawning products. Eddies in this area help recirculate water inshore and link important nursery areas with spawning habitat on the shelf edge. Importantly, the EBSA includes the Mallory escarpment and trough segment of the Agulhas-Falkland Fracture Zone. This is a unique feature in the region, and certainly slopes as steep as this one (20°) are globally very rare. The area was identified as a priority through a national spatial plan because of high habitat diversity. Since the original description (of Agulhas Slope and Seamounts), the boundary has been refined and split into two EBSAs to better represent the underlying EBSA features. No ecological research has been conducted in this EBSA but is strongly recommended.

Introduction of the area

Mallory Escarpment and Trough includes the outer margin along the southern tip of the Agulhas Bank in South Africa, chiefly encompassing the key features of the Agulhas-Falkland Fracture Zone, including a slope as steep as 20° in some places (De Wet 2012). The Agulhas and Southern Benguela ecoregions (Sink et al., 2012) meet at this point, resulting in a dynamic offshore area with high pelagic and benthic habitat heterogeneity. Further, sporadic shelf-edge upwelling enhances the productivity along the outer margin (Lagabrielle, 2009, Roberson et al., 2017). The area is recognized as a spawning area for sardine, anchovy, horse mackerel and hake, and this apex of the Agulhas Bank is recognized as a critical area for retention of spawning products (Hutchings et al., 2002). Eddies in this area help recirculate water inshore and link important nursery areas with spawning habitat on the shelf edge. Leatherback turtles also frequent this area along their migrations (Harris et al., 2018). This area was identified as a priority through a national plan to identify focus areas for offshore protection (Sink et al., 2011) because it has relatively high habitat diversity and can meet multiple benthic and pelagic habitat conservation targets in a small area. It also contains regionally unique, globally very rare features.

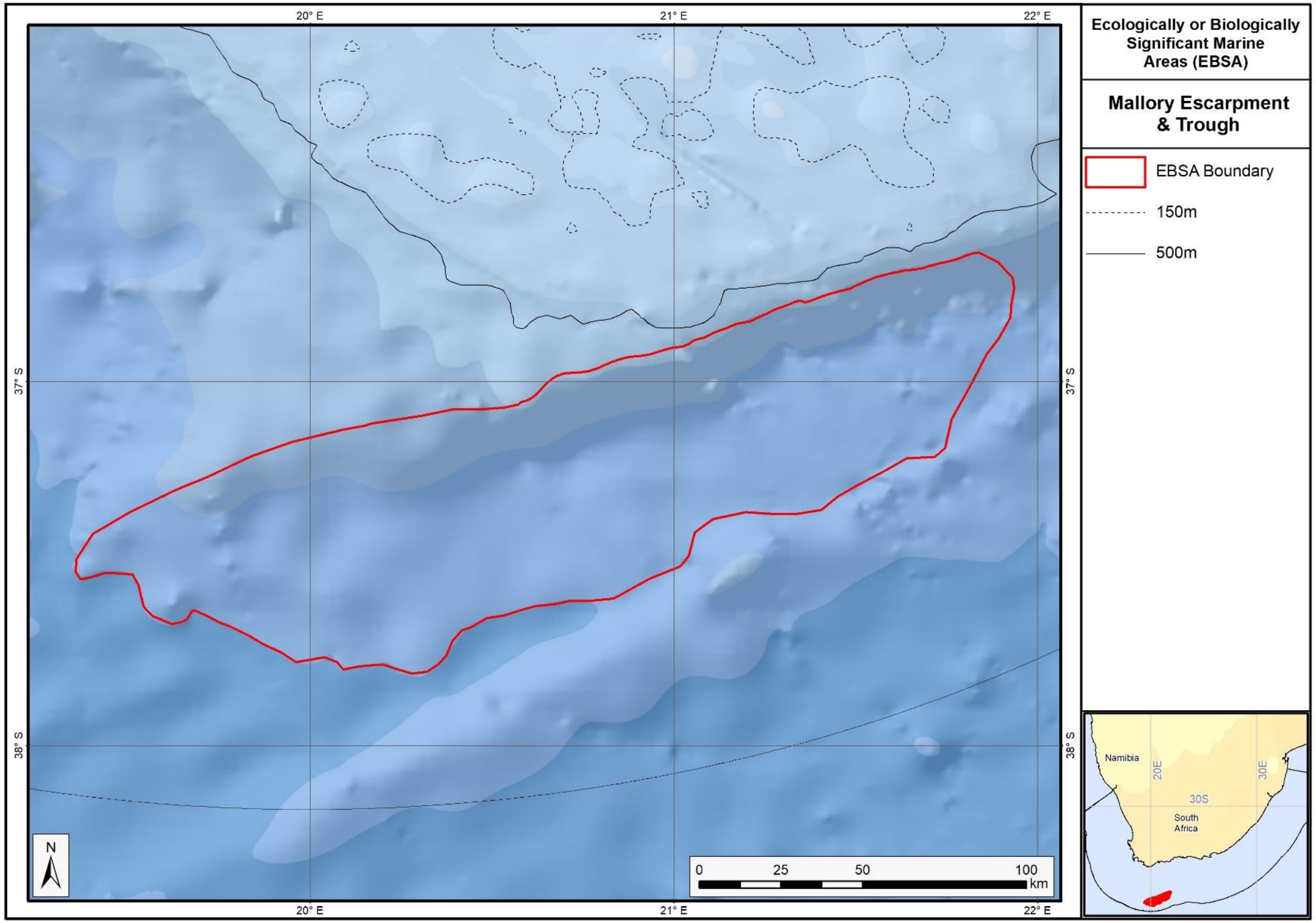
Description of the location

EBSA Region

Southern Indian Ocean

Description of location

The EBSA is at the apex of the Agulhas Bank at the southern tip of the continental shelf edge off southern Africa. It is directly south of Cape Infanta and Cape Agulhas in the Agulhas-Falkland Fracture Zone, and is entirely within South Africa's EEZ. It contains the Mallory escarpment and trough, and lies immediately west of the Shackleton Seamount Complex EBSA.



Proposed revised boundaries of the Mallory Escarpment and Trough EBSA.

Area Details

Feature description of the area

The area includes benthic and pelagic features, including: the shelf edge, a very steep slope and a trough as part of the Agulhas-Falkland Fracture Zone; shelf-edge driven upwelling; and fragile and sensitive habitat-forming species. Habitat diversity is thus particularly high for a location this far offshore. This dynamic area consequently supports numerous ecological processes, such as spawning and foraging, and comprises a rich diversity of both resident (e.g., benthic gorgonians) and transient (e.g., migrating leatherbacks) species.

The delineation of this EBSA was refined since its first description, based on the best available data (e.g., De Wet 2012; GEBCO Compilation Group 2019; Harris et al., 2014; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). It is now split into two EBSAs: one for the seamounts, and one for the escarpment and trough features. The revision was based on high selection frequency of sites in the two systematic biodiversity plans covering the area, tighter alignment to the benthic topography (from a new national dataset: De Wet 2012), presence of fragile and sensitive habitat-forming species, and new delineation of the constitutent ecosystem types (Sink et al., 2019). Effectively, these new data helped to improve the precision of the EBSA boundary so that it better reflects the underlying features. It is presented as a Type 2 EBSA because it contains "spatially stable features whose individual positions are known, but a number of individual cases are being grouped" (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

The shelf edge, slope and trough have not been sampled, although *in-situ* research is recommended in this area. Nevertheless, there are various fisheries operating in the area, but some of the hard grounds represented in the EBSA are outside of the trawl footprint. Broadly speaking, there is relatively little pressure in this area at present, and the ecosystem types are in good ecological condition.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Mallory Escarpment and Trough EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Least Concern	Agulhas Basin Abyss	7799.9	59.7
	Cape Basin Abyss	357.1	2.7
	Southeast Atlantic Lower Slope	527.7	4.0
	Southeast Atlantic Mid Slope	3.0	0.0
	Southwest Indian Lower Slope	3487.2	26.7
	Southwest Indian Mid Slope	898.0	6.9
Grand Total		**13072.9**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

The steep slope (20°) of Mallory Trough is the steepest portion of the entire South African continental shelf. It is also the only trough system in the Benguela region, and slopes as steep as 20° are globally very rare.

C2: Special importance for life-history stages of species **High**
Justification
The EBSA is recognized as a spawning area for small pelagic fish (sardine, anchovy, horse mackerel) and hake (Hutchings et al., 2002, Sink et al., 2011). This apex area of the Agulhas Bank is also recognized as a critical area for retention of spawning products. Eddies in this area help re-circulate water inshore and link important nursery areas with spawning habitat on the shelf edge. The shelf edge constitutes foraging area for offshore seabirds (Birdlife data, see references).

C3: Importance for threatened, endangered or declining species and/or habitats **Medium**
Justification
One of the pelagic ecosystem types in the area is characterised by elevated productivity and frequent fronts due to shelf edge upwelling (Lutjeharms et al., 2000, Lagabrielle 2009, Roberson et al., 2017). Consequently, regionally Critically Endangered leatherback turtles frequent this area (Petersen et al., 2009a; Harris et al., 2018), and the shelf edge is a feeding area for threatened seabirds such as albatross (Petersen et al., 2009b).

C4: Vulnerability, fragility, sensitivity, or slow recovery **High**
Justification
This area includes hard shelf edge and a very steep slope. These are likely to support fragile long-lived biota. Video images of the shelf edge show cold-water corals, gorgonians and large sponges (Sink et al., 2011). Vulnerable biota that use this area include long-lived seabirds, turtles and sharks, and the area has been identified by analyses aimed at identifying priority areas for reducing by-catch in the large pelagic fishery (Sink et al., 2011.)

C5: Biological productivity **High**
Justification
There is higher productivity here, which is related to the eastern limit of the Benguela upwelling on the outer shelf (Pelagic ecosystem type Ab3) and very frequent SST and chlorophyll fronts (Lutjeharms et al., 2000, Lagabrielle 2009, Sink et al., 2011, 2012, Roberson et al., 2017). Cool productive water is advected onto the shelf in this sheer zone through Agulhas Current–driven upwelling cells (Lutjeharms et al., 2000).

C6: Biological diversity **High**
Justification
This area has high pelagic and benthic habitat heterogeneity for an offshore site, comprising six ecosystem types at the confluence of the Indian and Atlantic Ocean basins. The very steep slope is also expected to host a rich diversity of species because it spans a very large depth range over a proportionately small area.

C7: Naturalness **High**
Justification
Rough grounds and strong currents already offer some protection from pressures to this area (Sink et al., 2011, 2012). Relatively lower levels of disturbance occur in this area (Sink et al., 2012), and most of the local hard areas fall outside of the hake trawl footprint (Sink et al., 2011). Across the EBSA, 55% is in good ecological condition, 45% fair, and <1% in poor ecological condition (Sink et al., 2019).

Status of submission

The Agulhas Slope and Seamounts EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised Mallory Escarpment and Trough EBSA name, description, and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

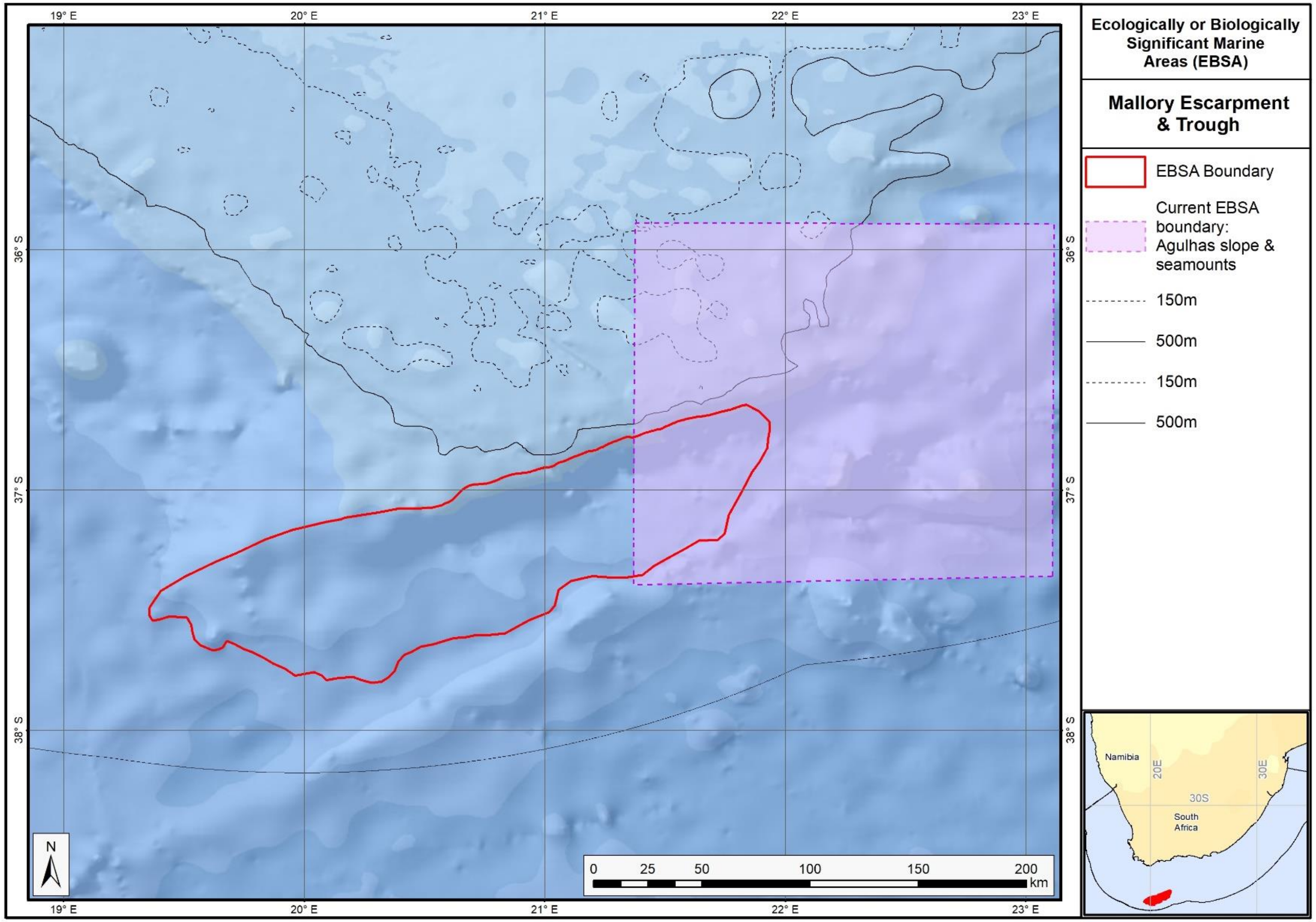
Motivation for Revisions

Significant changes have been made to the delineation of the original Agulhas Slope and Seamounts EBSA and to the description, such that it is necessary to split the original EBSA into two, and revise the name of this EBSA to Mallory Escarpment and Trough to accurately reflect the consistuent features. This also resulted in an upgrade in criterion 1 from medium to high because of the uniqueness of the geomorphic features. Additional references have been added and updates to the description were made. A supplementary table of the ecosystem types represented in the EBSA and their associated threat status was also included.

An important change has been the significant delineation change of this EBSA to focus the EBSA more closely on the key biodiversity features in this area that support its EBSA status. The delineation process included an initial stakeholder review which identified the need to update boundaries, a technical mapping process and then an expert review workshop where boundary delineation options were reviewed, revised and finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

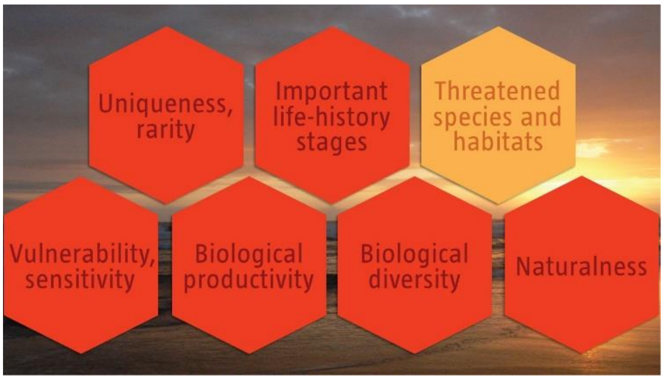
- Key physical features (i.e. the seamounts, escarpment and trough) identified from the latest GEBCO data (GEBCO Compilation Group 2019), global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014), new national bathymetric data (De Wet 2012), the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) and BCC spatial mapping project (Holness et al., 2014) were incorporated.
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the Systematic Conservation Plans undertaken for the West Coast by Majiedt et al. (2013), offshore areas (Sink et al., 2011) and by Holness et al. (2014) were incorporated.
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA.
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).

The multi-criteria analysis resulted a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Mallory Escarpment and Trough EBSA in relation to the original Agulhas Slope and Seamounts EBSA.

Status Assessment and Management Options

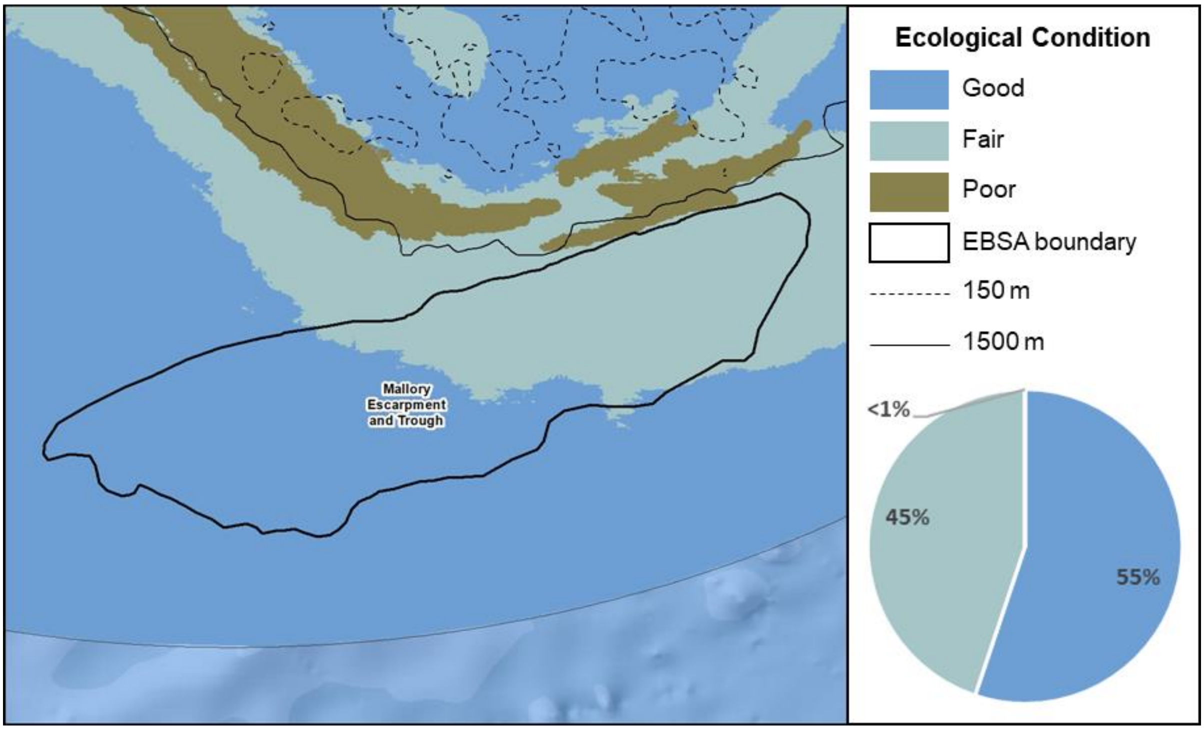


Mallory Escarpment and Trough *is a steeply sloping (20°) part of the Agulhas-Falkland Fracture Zone; a slope that steep is unique in the region, and rare globally. It's also at the meeting point of two biogeographical provinces, which with the large depth range, means high habitat heterogeneity. Sporadic shelf-edge upwelling enhances productivity. It is also a spawning and retention area for numerous commercially important fish.*

EBSA criteria coloured by rank for Mallory Escarpment and Trough: red=high, orange=medium.

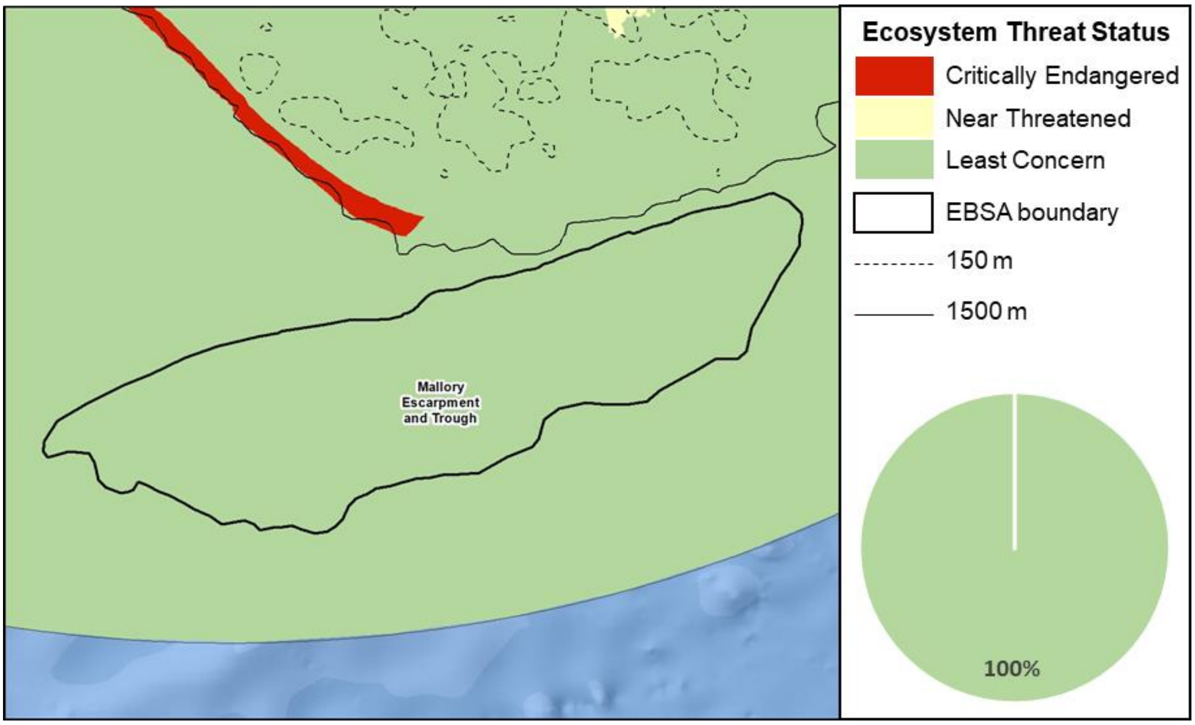
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Mallory Escarpment and Trough is not well explored, but is a unique and special geomorphic feature in the region that, at the meeting point of the Southeast Atlantic Deep Ocean and the Southwest Indian Deep Ocean biogeographical provinces, supports a highly diverse collection of ecosystem types for an area this far offshore. The criteria for which this EBSA ranks highly are: uniqueness and rarity, importance for life history stages, vulnerability and sensitivity, biological productivity, biological diversity and naturalness. There are six ecosystem types represented that likely contain diverse assemblages also including fragile species that are especially sensitive to damage. It's an important spawning area for small pelagic fish (sardine, anchovy, horse mackerel) and hake, with high productivity from upwelling attracting foraging turtles and seabirds.

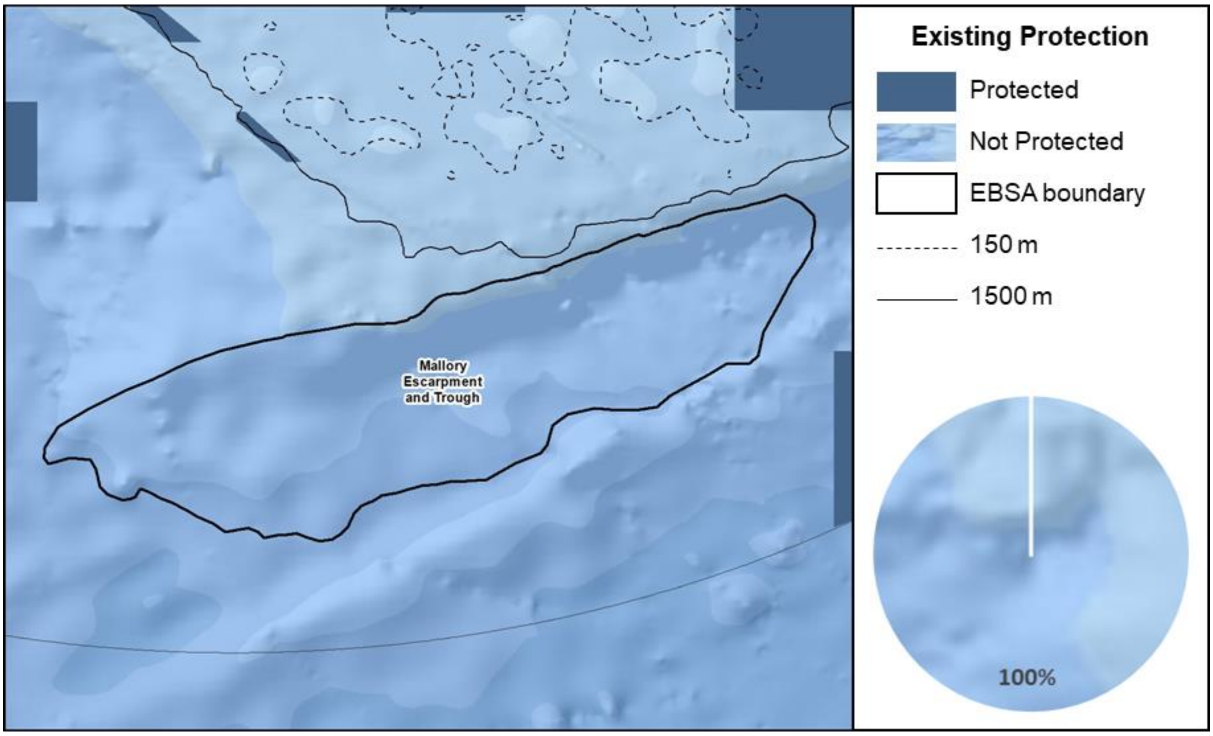


Mallory Escarpment and Trough proportion of area in each ecological condition category.

Mallory Escarpment and Trough is deeper than 1500 m and is thus largely in good ecological condition (55%), with the rest in fair ecological condition (45%); none of the EBSA extent is in poor ecological condition. Consequently, the full extent comprises ecosystem types that are Least Concern (100%), providing excellent opportunity to protect the biodiversity in this area in a pristine or near-pristine state.



Mallory Escarpment and Trough proportion of area in each ecosystem threat status category.



Mallory Escarpment and Trough proportion of area in a Marine Protected Area (MPA).

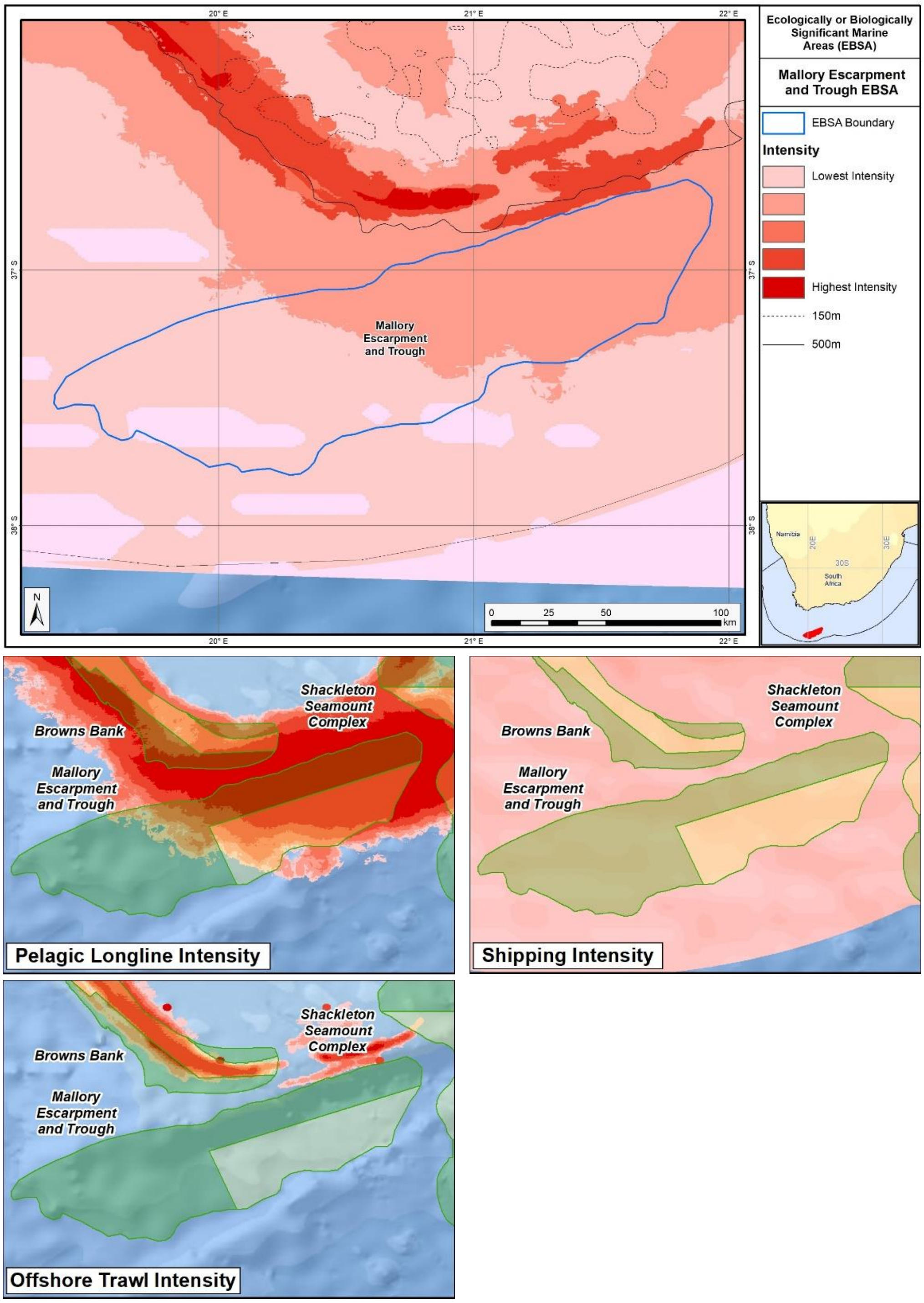
Protection of features in MPAs in the EBSAs adjacent to Mallory Escarpment and Trough have been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network. However, this particular EBSA is one of only two in the country with no protection afforded to its special features, and all the constituent ecosystem types are either Poorly Protected or Not Protected. It is thus highly recommended as a site for future protected area expansion, particularly over the unique slope.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

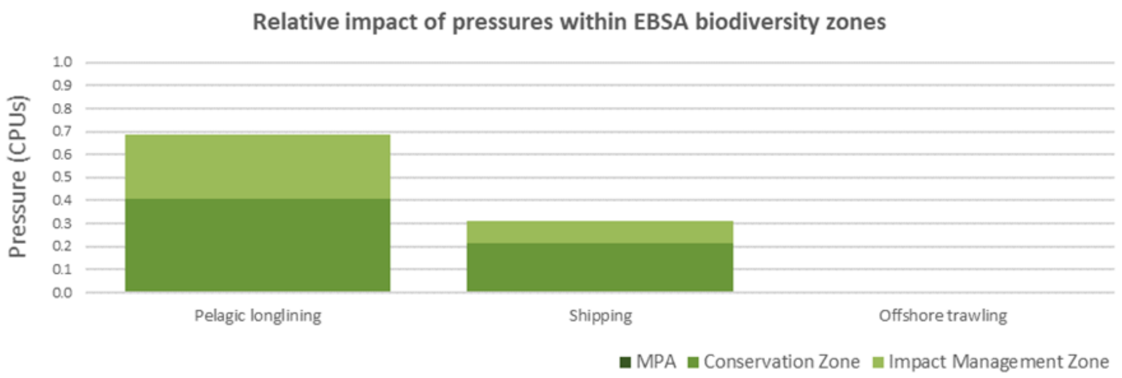
Feature	**Threat Status**	**Protection Level**	**Condition (%)**		
			Good	**Fair**	**Poor**
Ecosystem Types					
Agulhas Basin Abyss	LC	PP	64.4	35.6	0.0
Cape Basin Abyss	LC	PP	100.0	0.0	0.0
Southeast Atlantic Lower Slope	LC	NP	100.0	0.0	0.0
Southeast Atlantic Mid Slope	LC	PP	100.0	0.0	0.0
Southwest Indian Lower Slope	LC	NP	34.7	65.3	0.0
Southwest Indian Mid Slope	LC	PP	10.0	89.9	0.1
Other Features					
• Spawning area for small pelagic fish (sardine, anchovy, horse mackerel) and hake and areas of retention of the spawning products • Fragile species, e.g., gorgonians • Turtles, especially Critically Endangered leatherbacks • Foraging seabirds					

Relevant Pressures and Activities (impact, extent)

- There are three pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent. Pelagic longlining is also extensive in the EBSA, and has the highest cumulative pressure profile.
- The key pressure in this EBSA that most directly impacts the features for which the EBSA is described is pelagic longlining. This activity will need to be managed particularly well in order to protect many of the species that might be caught as bycatch, e.g., seabirds and turtles, which are important biodiversity features for which this EBSA is recognised. Although offshore trawling does overlap with the EBSA, it comprises 0.01% and thus effectively does not impact the EBSA.
- Activities in South Africa that are not present in this EBSA include: abalone harvesting, alien invasive species, beach seining, benthic (hake) longlining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, kelp harvesting, linefishing (commercial and recreational), mariculture, mean annual runoff reduction, midwater trawling, mining (prospecting and mining), naval dumping (ammunition), oil and gas (exploration and production), oyster harvesting, tuna pole fishing, ports and harbours, prawn trawling, recreational shore angling, shark netting, small pelagics fishing, south coast rock lobster harvesting, squid fishing, subsistence harvesting, inshore trawling, wastewater discharge, and west coast rock lobster harvesting; noting that some of these are coastal pressures that do not apply to offshore EBSAs.



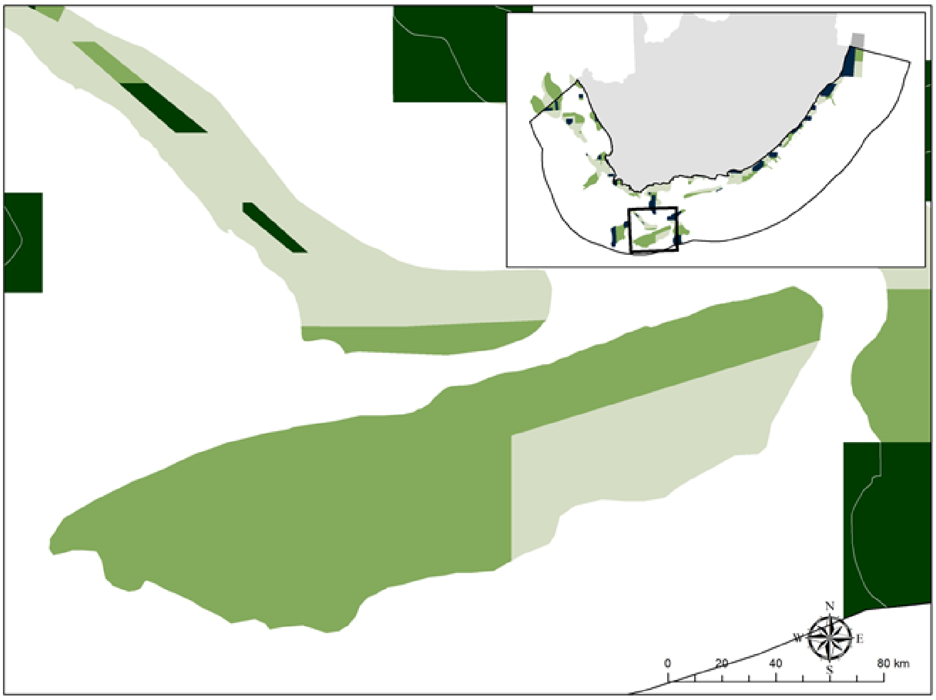
Map of cumulative pressure (top) and maps of the three pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that offshore trawling comprises 0.01% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced. As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. Note that this is one of only two EBSAs in South Africa that does not contain any marine protected areas.



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

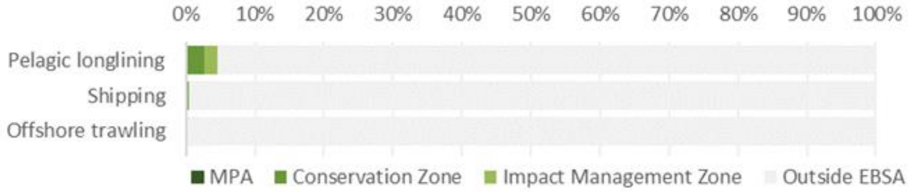
Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

Activity Evaluation Per Zone: Zoning Feasibility

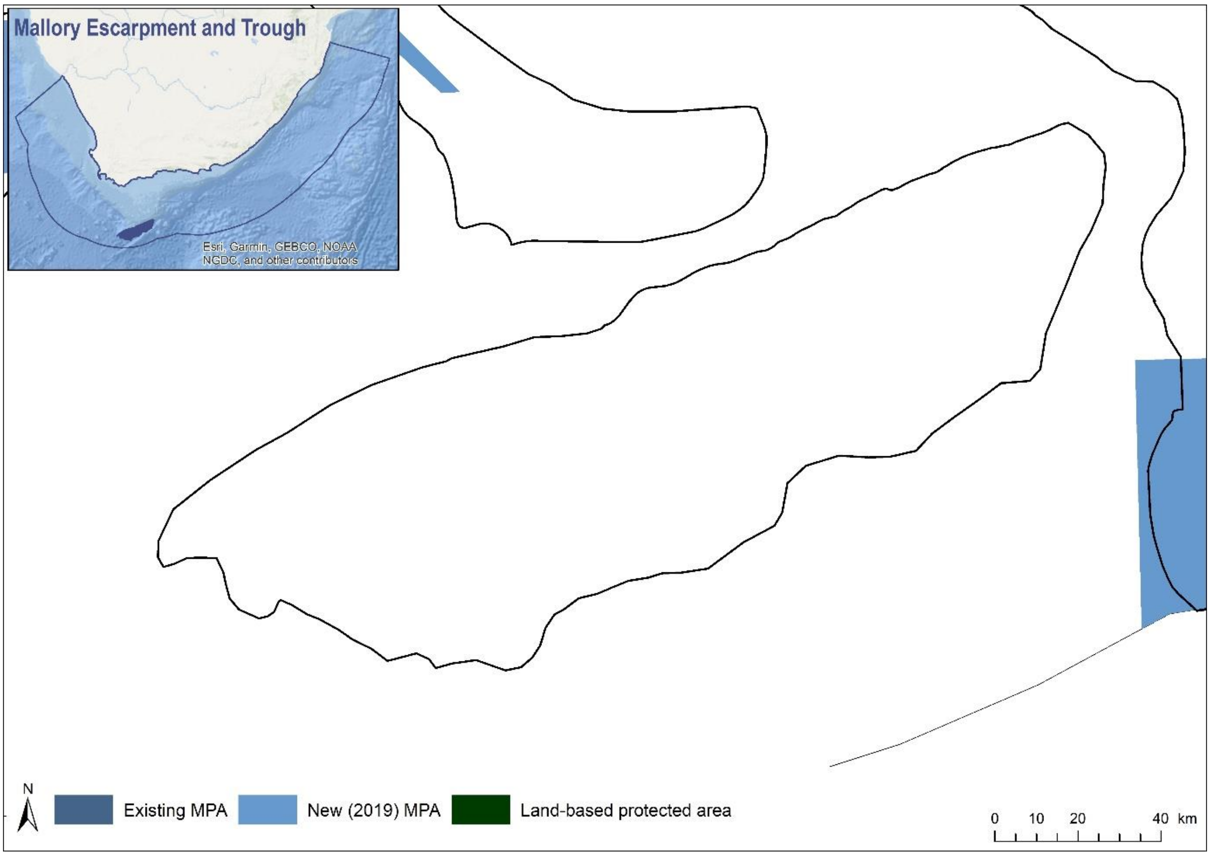


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Pelagic longlining is the most notable activity within this EBSA, although it comprises <10% of the national footprint of this activity. It is recommended to continue with appropriate controls and regulations as a Consent activity. Shipping is recommended to continue in both the Conservation and Impact Management Zones under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

Management Recommendations for Marine Protected Areas

There are no MPAs in this EBSA. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. It is also important to consider ways in which connectivity among MPAs in the Protea Seamount Cluster, Mallory Escaparment and Trough, Browns Bank, and Shackleton Seamount Complex can be enhanced to strengthen persistence of biodiversity and climate-change adaptation. See Future Process below for more details.

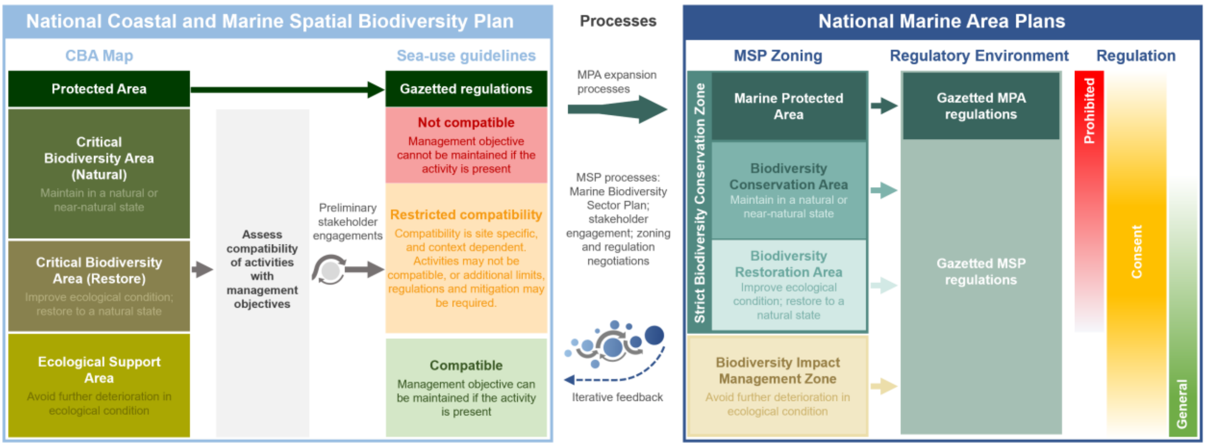


There are no marine protected areas (MPAs) in the Mallory Escarpment and Trough EBSA.

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Mallory Escarpment and Trough, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

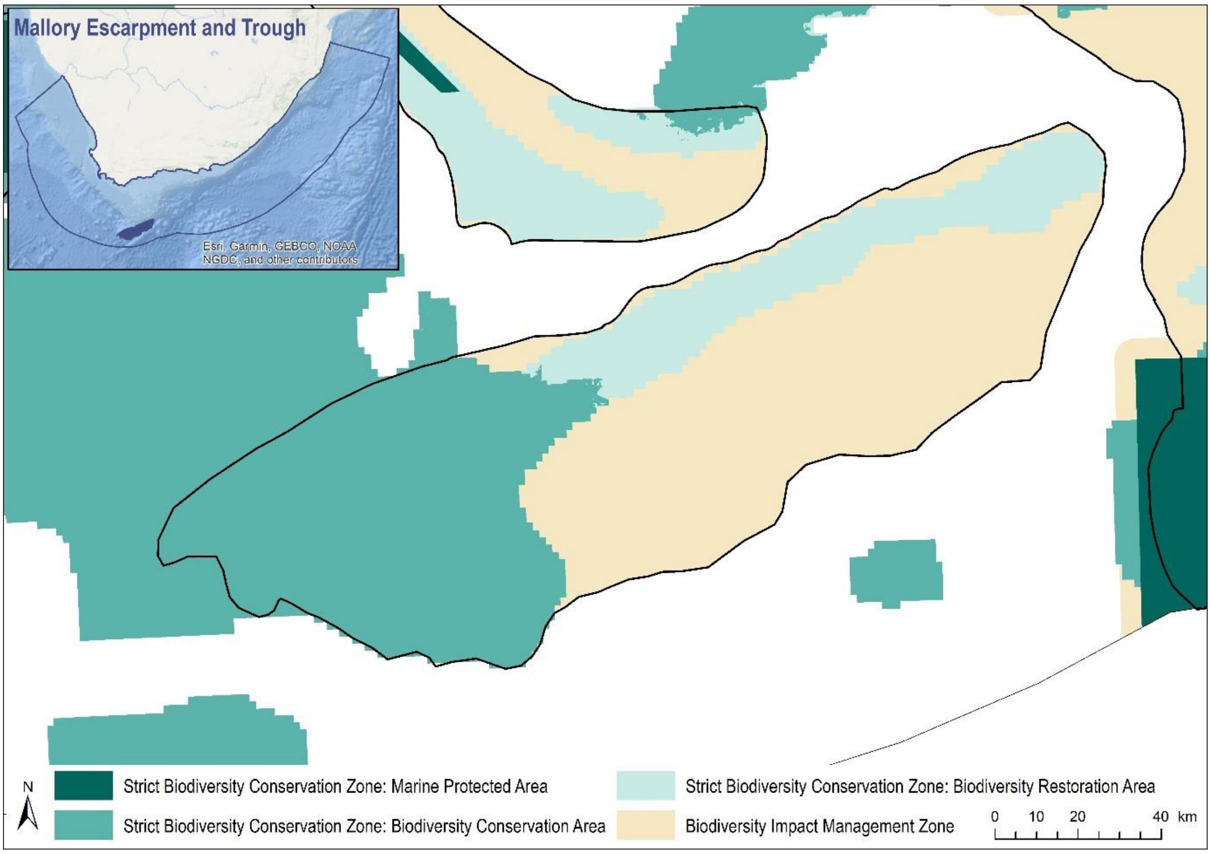


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Mallory Escarpment and Trough, except MPAs.

The Strict Biodiversity Conservation Zone is primarily a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. The rest of the Strict Biodiversity Conservation Zone comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Mallory Escarpment and Trough EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Mallory Escarpment and Trough. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, the importance of acquiring foundational biodiversity information is emphasised here, and surveys for sampling biodiversity and understanding the ecological significance of Mallory Slope, in particular, is strongly recommended.

Future Process

There needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. MPA declaration within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Options for MPA declaration also need to take strengthening connectivity among MPAs in Protea Seamount Cluster, Browns Banks, and Shackleton Seamount Complex.

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Shackleton Seamount Complex (Formerly Agulhas Slope and Seamounts)

Revised EBSA Description

General Information

Summary

The outer margin along the southern tip of the Agulhas Bank is a dynamic offshore area with high productivity and high pelagic and benthic habitat heterogeneity. The Agulhas and Southern Benguela ecoregions meet at this point, and sporadic shelf-edge upwelling enhances the productivity along the outer margin. The area is recognized as a spawning area for sardine, anchovy, horse mackerel and hake, and this apex area of the Agulhas Bank is recognized as a critical area for retention of spawning products. Here, eddies help recirculate water inshore and link important nursery areas with spawning habitat on the shelf edge. Notably, this EBSA also contains the Mallory, Shackleton and Natal Seamounts. This area was identified as a priority through a national spatial plan because of high habitat diversity. Since the original description, the boundary of this EBSA has been refined to better represent the underlying EBSA features, and split into two: Shackleton Seamount Complex, and Mallory Escarpment and Trough. Although a recent cruise surveyed two sites at the northern edge of Shackleton Seamount Complex, deteriorating weather conditions limited operations; further research and *in situ* surveys of the unexplored hard shelf edge and seamounts are recommended in this area.

Introduction of the area

Shackleton Seamount Complex includes the outer margin along the southern tip of the Agulhas Bank in South Africa. It is a dynamic offshore area with high pelagic and benthic habitat heterogeneity. The area includes outer shelf, shelf edge, slope and seamount habitats. The Agulhas and Southern Benguela ecoregions meet at this point (Sink et al., 2012), and sporadic shelf edge upwelling enhances the productivity along the outer margin (Lagabrielle, 2009, Roberson et al., 2017). The site is recognized as a spawning area for sardine, anchovy, horse mackerel and hake, and this apex of the Agulhas Bank is recognized as a critical area for retention of spawning products (Hutchings et al., 2002). Here, eddies help recirculate water inshore and link important nursery areas with spawning habitat on the shelf edge. Leatherback turtles also frequent these seamounts along their migrations (Harris et al., 2018). This area was identified as a priority through a national plan to identify focus areas for offshore protection (Sink et al., 2011) because it has relatively high habitat diversity and can meet multiple benthic and pelagic habitat conservation targets in a small area.

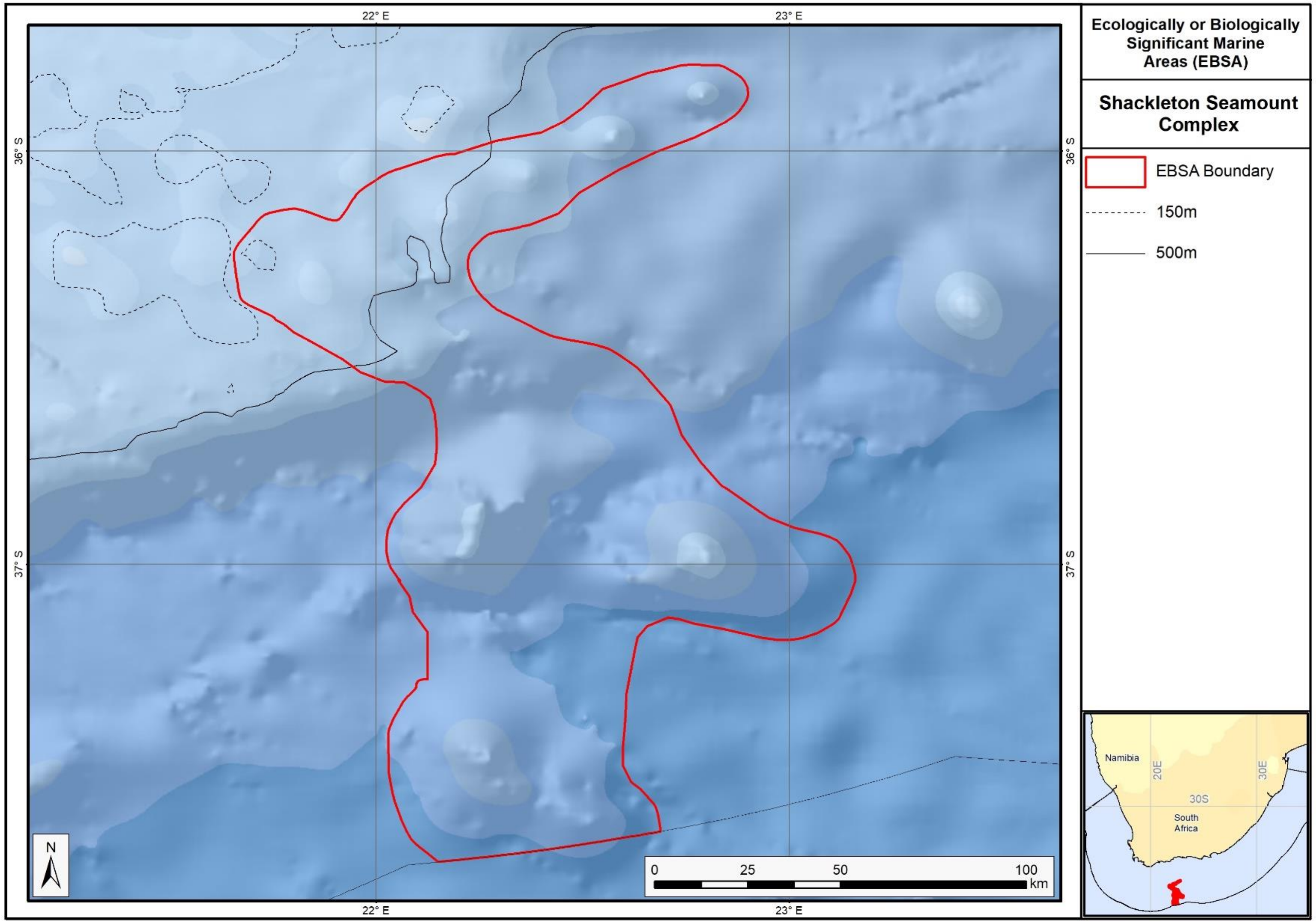
Description of the location

EBSA Region

Southern Indian Ocean

Description of location

The EBSA is at the apex of the Agulhas Bank at the southern tip of the continental shelf edge off southern Africa. It is directly south of Mossel Bay in the Agulhas-Falkland Fracture Zone, and is entirely within South Africa's EEZ. It contains the Mallory, Shackleton and Natal Seamounts, and lies immediately east of the Mallory Escarpment and Trough EBSA.



Proposed revised boundaries of the Shackleton Seamount Complex EBSA.

Area Details

Feature description of the area

The area includes benthic and pelagic features, including shelf edge, slope and seamounts, shelf-edge-driven upwelling, and fragile and sensitive habitat-forming species. Habitat diversity is thus particularly high, with eight ecosystem types occurring in this dynamic area. It consequently supports numerous ecological processes, such as spawning and foraging, and comprises a rich diversity of both resident (e.g., benthic gorgonians) and transient (e.g., migrating leatherbacks) species. Two sites at the northern edge of the EBSA were recently surveyed; however, deteriorating weather conditions limited research operations (Sink 2016). Nevertheless, the sites were reported to be less muddy than expected, and samples of yellow scleractinian coral, stylasterine corals and bryozoans were collected (Sink 2016).

The delineation of this EBSA was refined since its first description, based on the best available evidence (e.g., De Wet 2012; GEBCO Compilation Group 2019; Harris et al., 2014; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). It is now split into two EBSAs: one for the seamounts, and one for the escarpment and trough features. The revision was based on high selection frequency of sites in the two systematic biodiversity plans covering the area, tighter alignment to the benthic topography (from a new national dataset: De Wet 2012), MPA expansion in South Africa, presence of fragile and sensitive habitat-forming species, and presence of threatened benthic ecosystem types. Effectively, these new data helped to improve the precision of the EBSA boundary so that it better reflects the underlying features. It is presented as a Type 2 EBSA because it contains "spatially stable features whose individual positions are known, but a number of individual cases are being grouped" (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

The shelf edge and seamounts have not been sampled, although *in-situ* research is recommended in this area. Nevertheless, there are various fisheries operating in the area, but some of the hard grounds in the EBSA are outside of the trawl footprint. Broadly speaking, there is relatively little pressure in this area at present, and the ecosystem types are in good condition.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Shackleton Seamount Complex EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Least Concern	Agulhas Basin Abyss	3403.0	28.4
	Agulhas Outer Shelf Reef Coarse Sediment Mosaic	805.8	6.7
	Agulhas Rocky Shelf Edge	1003.6	8.4
	Southwest Indian Lower Slope	1765.0	14.7
	Southwest Indian Mid Slope	1260.7	10.5
	Southwest Indian Seamount	2072.4	17.3
	Southwest Indian Slope Seamount	888.7	7.4
	Southwest Indian Upper Slope	733.0	6.1
Grand Total		**11932.2**	**99.6**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **Medium**

Justification

This area includes 3 of 4 known seamounts within the Davie Seamount cluster (Sink et al., 2011, 2012). These seamounts are relatively isolated and are thus likely to host distinct communities.

C2: Special importance for life-history stages of species **High**
Justification
Shackleton Seamount Complex is recognized as a spawning area for small pelagic fish (sardine, anchovy, horse mackerel) and hake (Hutchings et al., 2002, Sink et al., 2011). This apex area of the Agulhas Bank is also recognized as a critical area for retention of spawning products. Eddies in this area help re-circulate water inshore and link important nursery areas with spawning habitat on the shelf edge. The shelf edge constitutes foraging area for offshore seabirds (Birdlife data, see references below), and the seamounts are a foraging area for leatherback turtles (Harris et al., 2018). It is also an important Mako shark nursery area.

C3: Importance for threatened, endangered or declining species and/or habitats **Medium**
Justification
One of the pelagic ecosystem types in the area is characterised by elevated productivity and frequent fronts due to shelf-edge upwelling (Lutjeharms et al., 2000, Lagabrielle 2009, Roberson et al., 2017). Consequently, regionally Critically Endangered leatherback turtles frequent this area (Petersen et al., 2009a; Harris et al., 2018), and the shelf edge is a feeding area for threatened seabirds such as albatross (Petersen et al., 2009b).

C4: Vulnerability, fragility, sensitivity, or slow recovery **High**
Justification
This area includes hard shelf edge and seamounts (some of the hard grounds are untrawled). These are likely to support fragile long-lived biota. Video images of the shelf edge show cold-water corals, gorgonians and large sponges (Sink et al., 2011). Vulnerable biota that use this area include long-lived seabirds, turtles and sharks, and the area has been identified by analyses aimed at identifying priority areas for reducing by-catch in the large pelagic fishery (Sink et al., 2011.)

C5: Biological productivity **High**
Justification
There is higher productivity here, which is related to the eastern limit of the Benguela upwelling on the outer shelf (Pelagic ecosystem type Ab3) and very frequent SST and chlorophyll fronts (Lutjeharms et al., 2000, Lagabrielle 2009, Sink et al., 2011, 2012, Roberson et al., 2017). Cool productive water is advected onto the shelf in this sheer zone through Agulhas Current-driven upwelling cells (Lutjeharms et al., 2000).

C6: Biological diversity **High**
Justification
This area has high pelagic and benthic habitat heterogeneity. Four pelagic ecosystem types (Ab3, Bc1, Cb3 and Cb4) and occur in this dynamic area (Sink et al., 2011, 2012), with eight ecosystem types present that include shelf, slope, seamount and abyssal types (Sink et al., 2019).

C7: Naturalness **High**
Justification
Rough grounds and strong currents already offer some protection from pressures to this area (Sink et al., 2011, 2012). Relatively lower levels of disturbance occur in this area (Sink et al., 2012), and most of the local hard areas fall outside of the hake trawl footprint (Sink et al., 2011).

Status of submission

The Agulhas Slope and Seamounts EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised Shackleton Seamount Complex EBSA name, description, and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

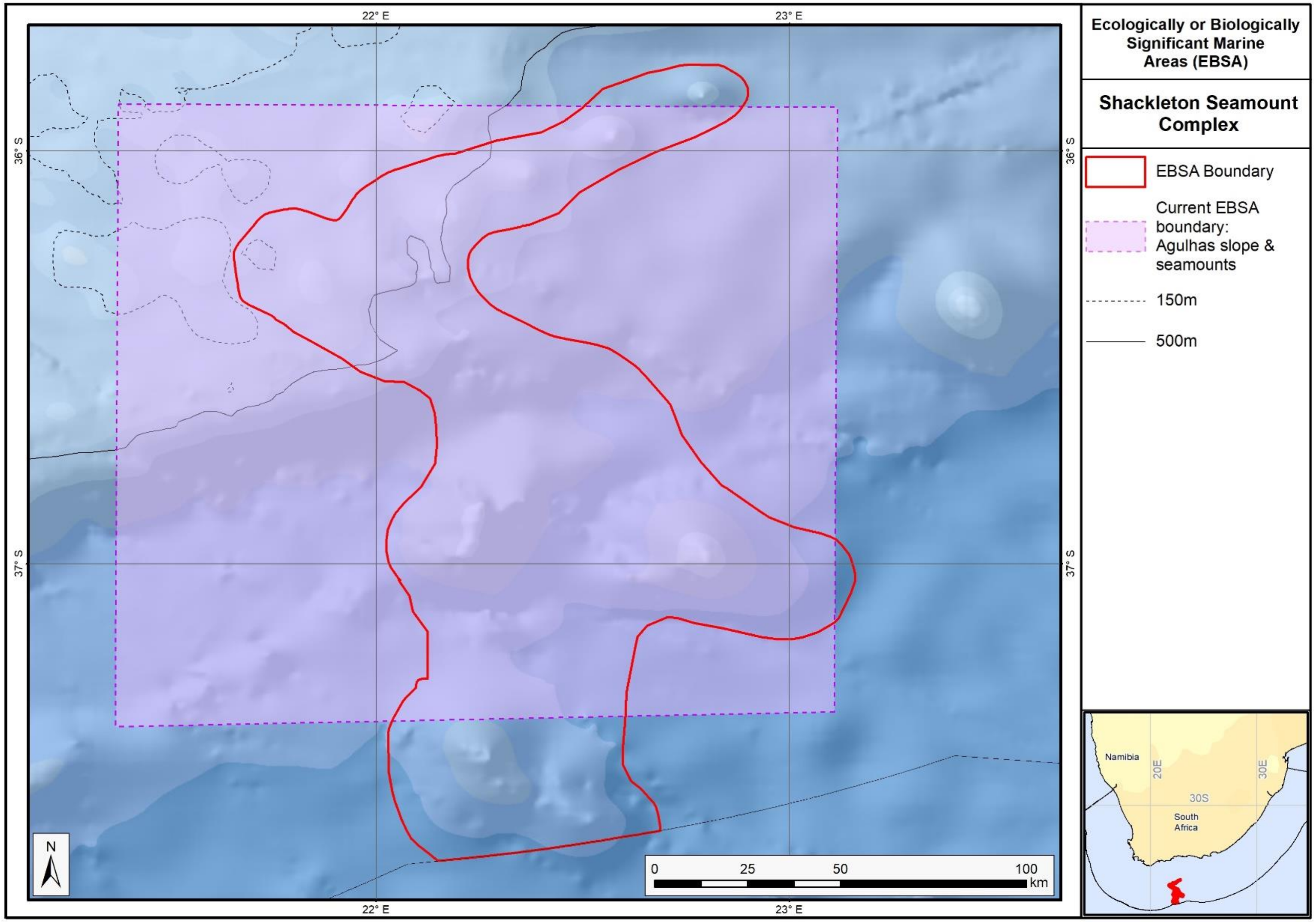
Motivation for Revisions

Significant changes have been made to the delineation of the original Agulhas Slope and Seamounts EBSA and to the description, such that it is necessary to split the original EBSA into two, and revise the name of this EBSA to Shackleton Seamount Complex to accurately reflect the features. Additional references have been added and updates to the description were made. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included.

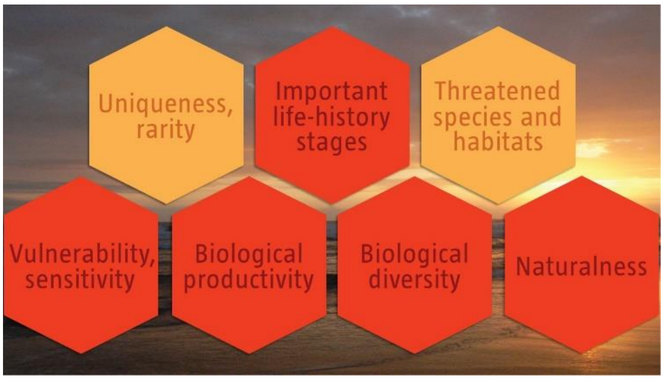
An important change has been the significant delineation change of this EBSA to focus the EBSA more closely on the key biodiversity features in this area that support its EBSA status. The delineation process included an initial stakeholder review which identified the need to update boundaries, a technical mapping process and then an expert review workshop where boundary delineation options were reviewed, revised again and then finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

- Key physical features (i.e. the seamounts, escarpment and trough) identified from the latest GEBCO data (GEBCO Compilation Group 2019), global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014), new national bathymetric data (De Wet 2012), the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) and BCC spatial mapping project (Holness et al., 2014) were incorporated.
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, and focus areas identified in the Systematic Conservation Plans undertaken for the West Coast by Majiedt et al. (2013), offshore areas (Sink et al., 2011) and by Holness et al. (2014) were incorporated.
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA.
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012a, 2019) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).

The multi-criteria analysis resulted a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Shackleton Seamount Complex EBSA in relation to the original Agulhas Slope and Seamounts EBSA.

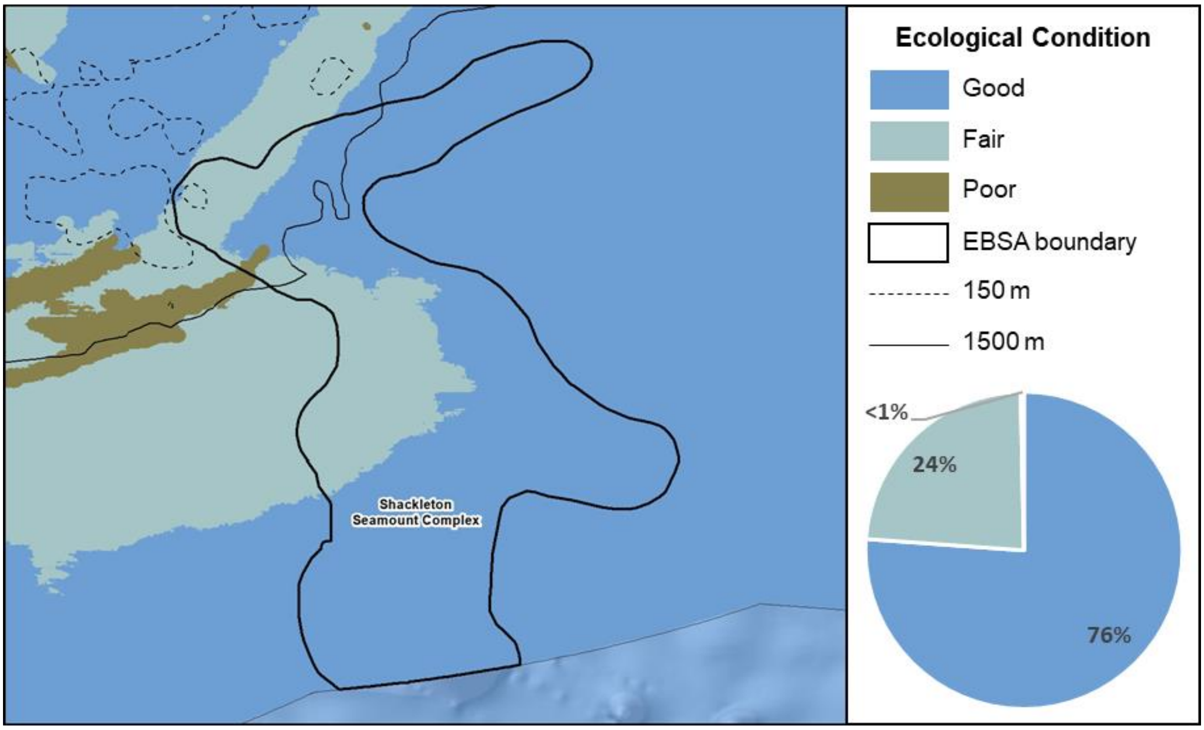


***Shackleton Seamount Complex** contains the Mallory, Shackleton and Natal Seamounts,* which support fragile, *sensitive species. The EBSA extends to the outer edge of South Africa's EEZ and so it's relatively remote and largely still in a natural condition. Productivity is high from sporadic shelf-edge upwelling, and it is also a spawning area for sardine, anchovy, horse mackerel and hake. Diversity is relatively high at this site too.*

EBSA criteria coloured by rank for Shackleton Seamount Complex: red=high, orange=medium.

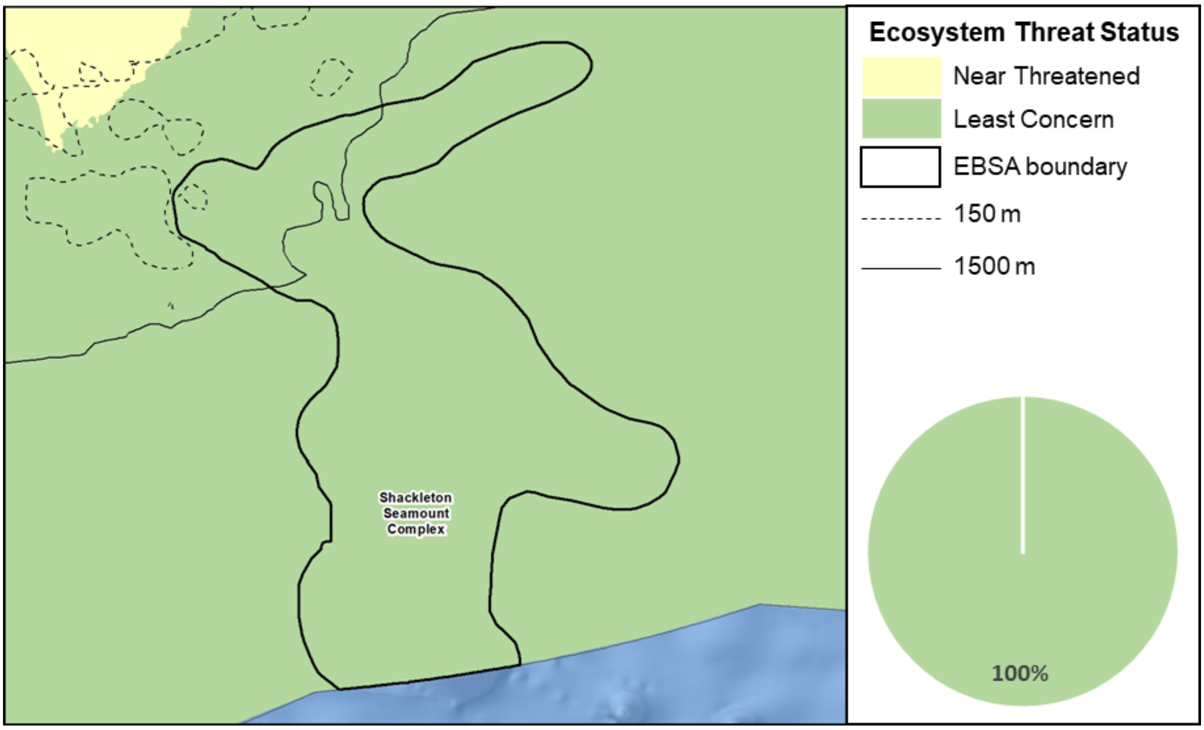
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Shackleton Seamount Complex has a several seamounts that need to be protected for the area to maintain the features and processes that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for life history stages, vulnerability and sensitivity, biological productivity, biological diversity, and naturalness. There are eight ecosystem types represented, which is relatively high for an area this far offshore. Many of these ecosystem types contain fragile species that are especially sensitive to damage, particularly the seamounts. The site is also recognised as a spawning area for sardine, anchovy, horse mackerel and hake.

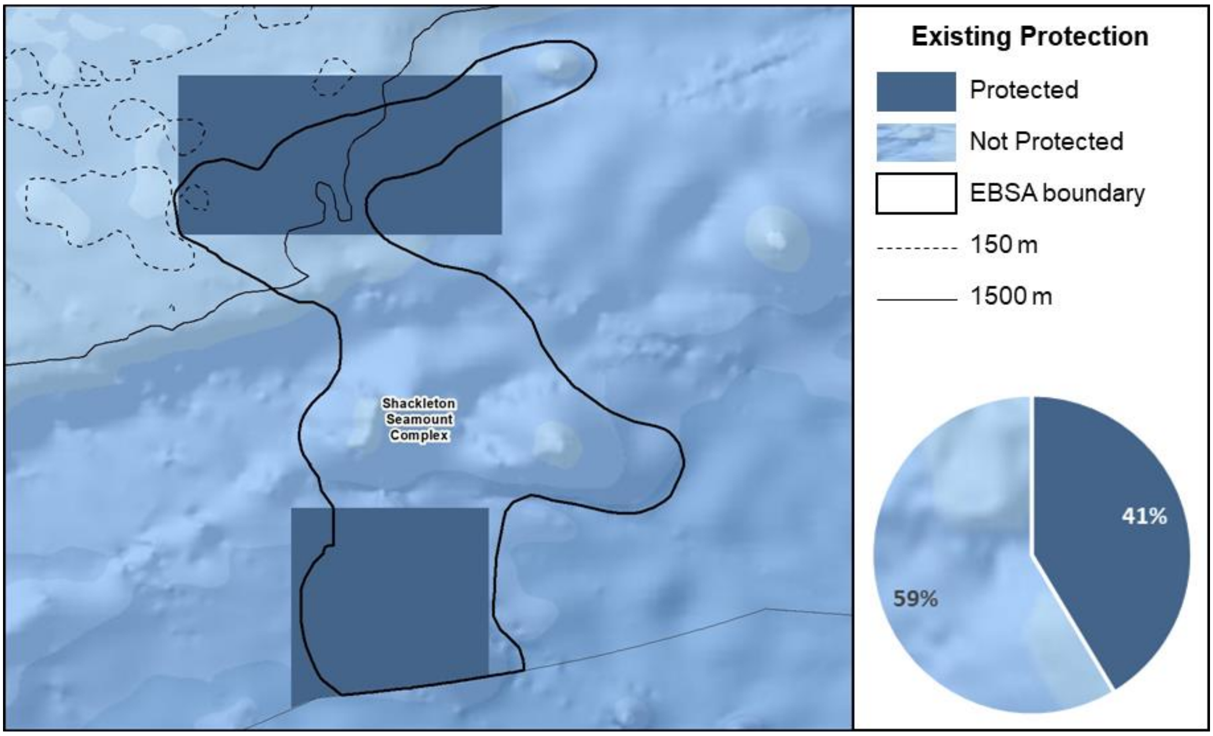


Shackleton Seamount Complex proportion of area in each ecological condition category.

Shackleton Seamount Complex is largely in good ecological condition (76%), with most of the remaining area in fair ecological condition (24%) and a fraction (<1%) that is in poor ecological condition. Consequently, whole EBSA is Least Concern (100%).



Shackleton Seamount Complex proportion of area in each ecosystem threat status category.



Shackleton Seamount Complex proportion of area in a Marine Protected Area (MPA).

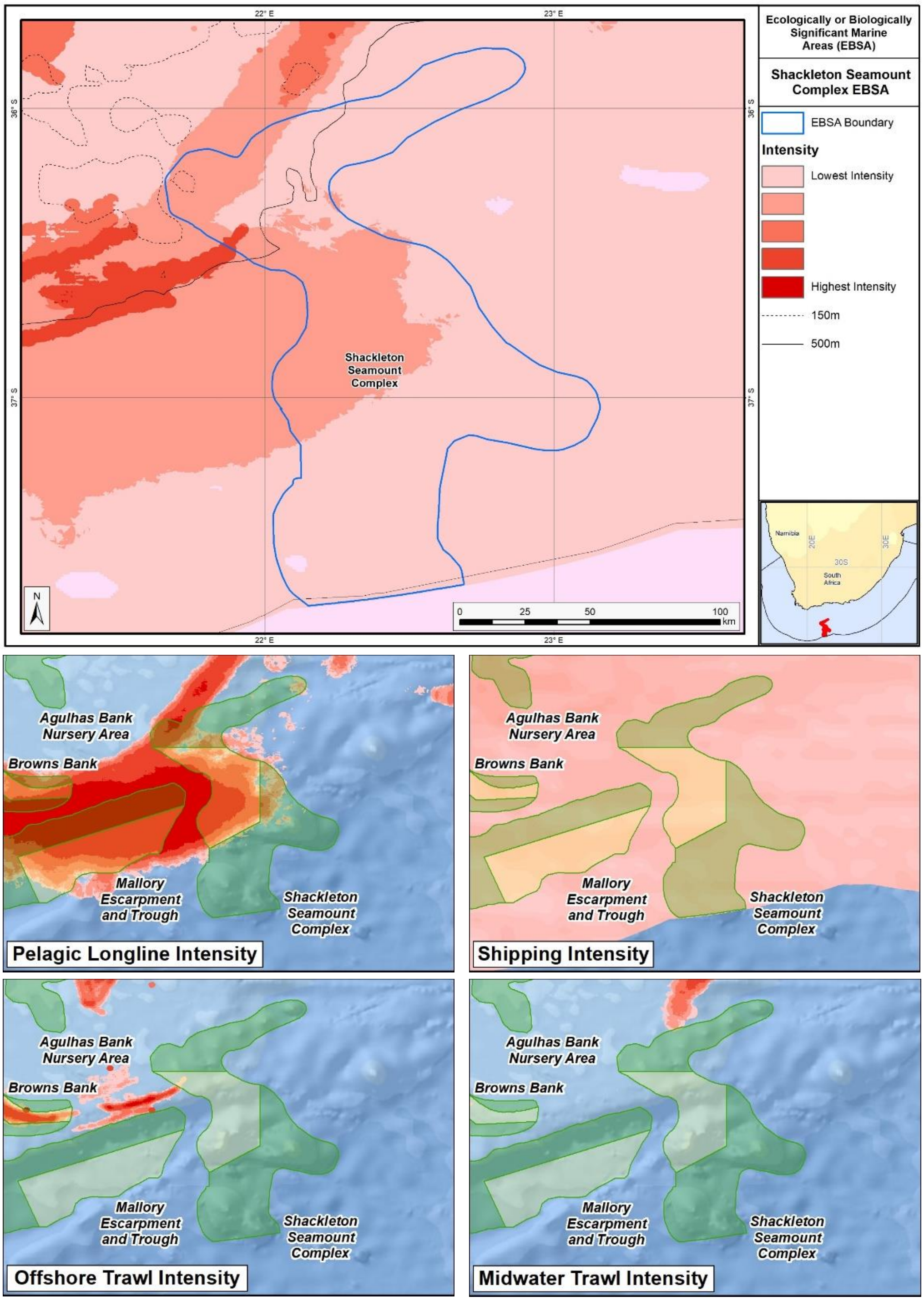
Protection of features in MPAs has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing from no protection to 41% protected. These new MPAs cover the Natal seamount, but not Mallory or Shackleton Seamounts in the middle of the EBSA. There are also still some ecosystem types within the EBSA that are poorly or not protected.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

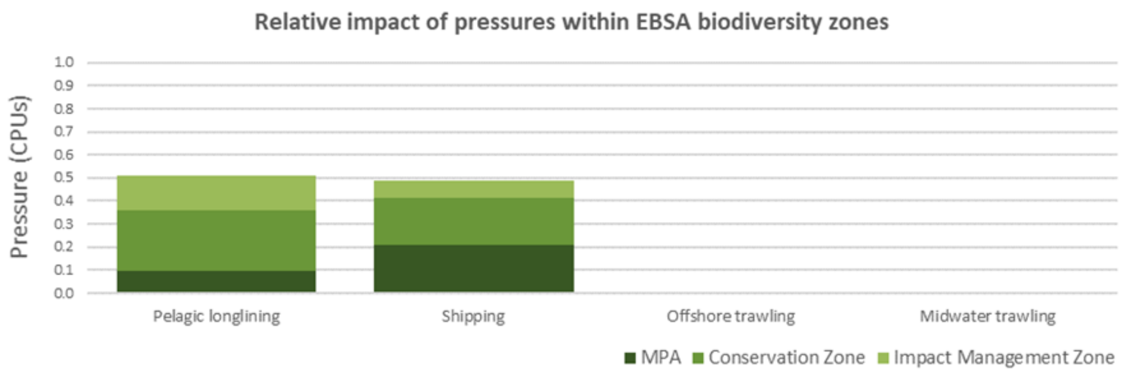
Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Agulhas Basin Abyss	LC	PP	97.5	2.5	0.0
Agulhas Plateau Mosaic	LC	MP	81.6	14.6	3.9
Eastern Agulhas Outer Shelf Mosaic	LC	PP	29.0	71.0	0.0
Southwest Indian Lower Slope	LC	NP	51.1	48.9	0.0
Southwest Indian Mid Slope	LC	PP	87.2	12.8	0.0
Southwest Indian Seamount	LC	WP	100.0	0.0	0.0
Southwest Indian Slope Seamount	LC	NP	1.6	98.4	0.0
Southwest Indian Upper Slope	LC	WP	85.9	14.1	0.0
Other Features					
• Fragile species, particularly associated with the seamounts • Spawning area for sardine, anchovy, horse mackerel and hake • Migratory species, e.g., leatherback turtles. • Upwelling					

Relevant Pressures and Activities (impact, extent)

- There are four pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent and has the highest cumulative pressure profile.
- The key pressure in this EBSA that most directly impacts the features for which the EBSA is described is pelagic longlining. Midwater trawling and offshore trawling are also present, but each comprise a fraction of a percent of the extent, thus having a limited impact on the key biodiversity features in the EBSA. These activities will need to be managed particularly well in order to protect the fragile benthic biodiversity, spawning areas and fish assemblages for which this EBSA is recognised. Bycatch mitigation of top predators and migratory species in pelagic longlining will also need careful attention given that this area is highly used by Critically Endangered leatherback turtles, and is recognised as one of the sites in South Africa with the greatest interaction between longlining and leatherbacks, especially in Autumn and Spring.
- Activities in South Africa that are not present in this EBSA include: abalone harvesting, alien invasive species, beach seining, benthic (hake) longlining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, kelp harvesting, linefishing (commercial and recreational), mariculture, mean annual runoff reduction, mining (prospecting and mining), naval dumping (ammunition), oil and gas (exploration and production), oyster harvesting, tuna pole fishing, ports and harbours, prawn trawling, recreational shore angling, shark netting, small pelagics fishing, south coast rock lobster harvesting, squid fishing, subsistence harvesting, inshore trawling, wastewater discharge, and west coast rock lobster harvesting; noting that some of these are coastal pressures that do not apply to offshore EBSAs.



Map of cumulative pressure (top) and maps of the four most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



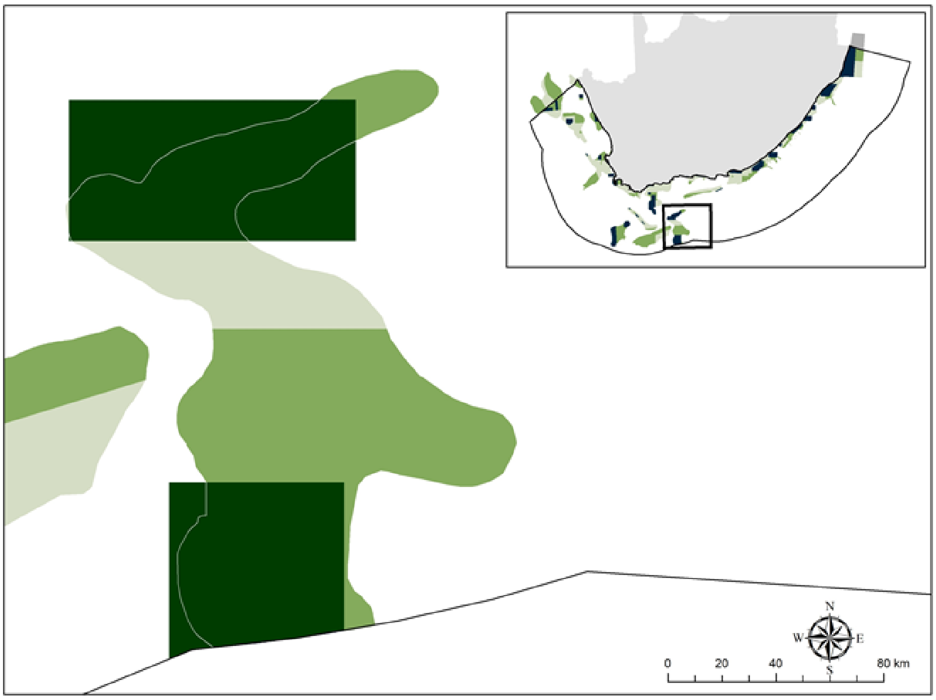
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that offshore and midwater trawling each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. Shackleton Seamount Complex also includes one MPA that is partially within the EBSA: South West Indian Seamounts MPA. The activities permitted within this MPA are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

South West Indian Seamounts MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_southwestindian_seamountmarine_regulations_g42479gn795.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

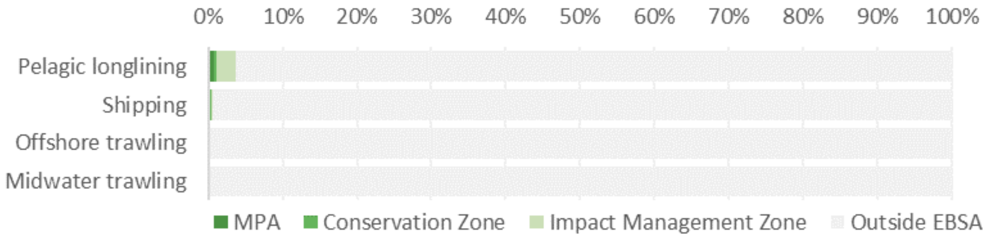
Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

Activity Evaluation Per Zone: Zoning Feasibility

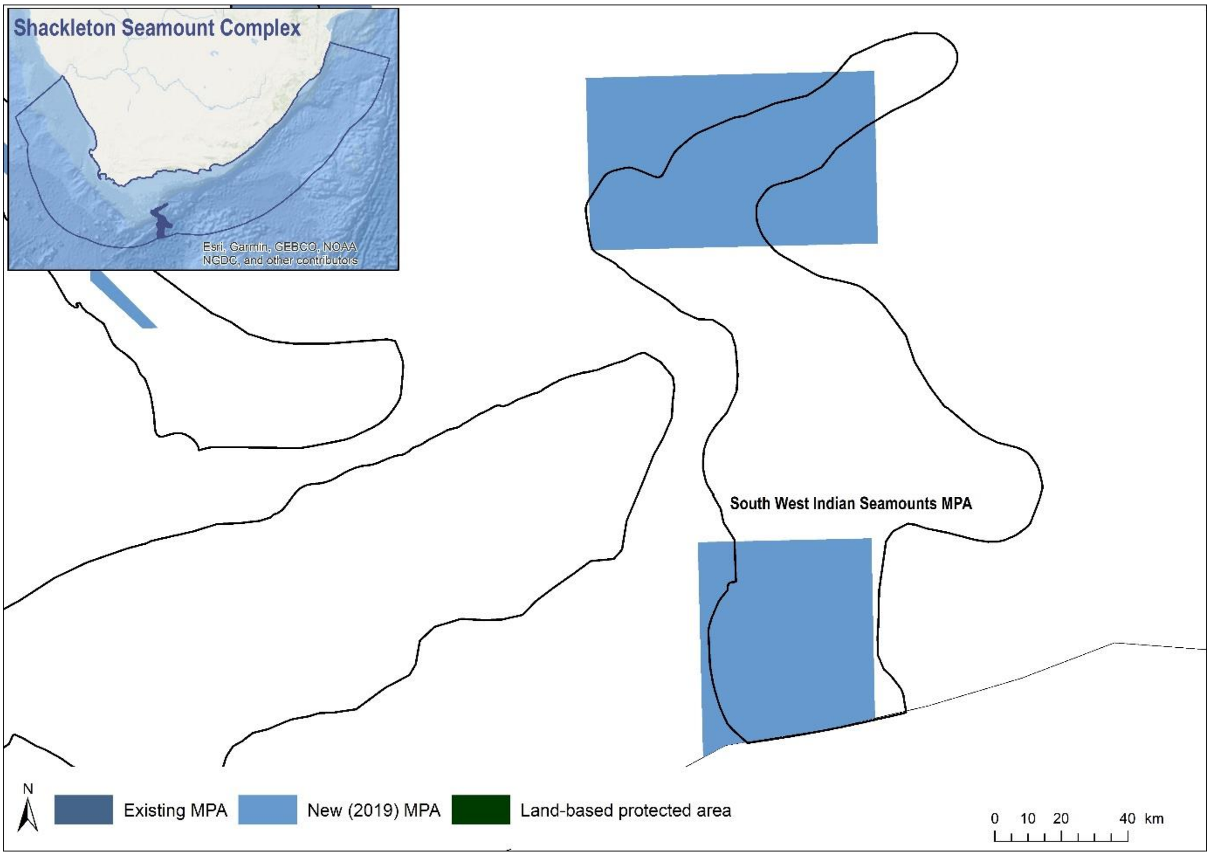


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

All activities present in the EBSA comprise <4% of their respective national footprints. Of these, pelagic longlining has the highest proportion of its national footprint in the EBSA, and midwater trawling, the lowest proportion. Both of these activities are recommended to continue as Consent activities in both EBSA zones. Offshore trawling is recommended to continue in the Impact Management Zone where it currently exists, but to be Prohibited from the Conservation Zone where it currently does not exist and where it conflicts with the management objectives of that zone. Shipping is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the South West Indian Seamounts MPA in 2019. It is recommended that full operationalisation of the new MPA is implemented, including a management plan, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. It is also important to consider ways in which connectivity among MPAs in the Protea Seamount Cluster, Mallory Escaparment and Trough, Browns Bank, and Shackleton Seamount Complex can be enhanced to strengthen persistence of biodiversity and climate-change adaptation. See Future Process below for more details.

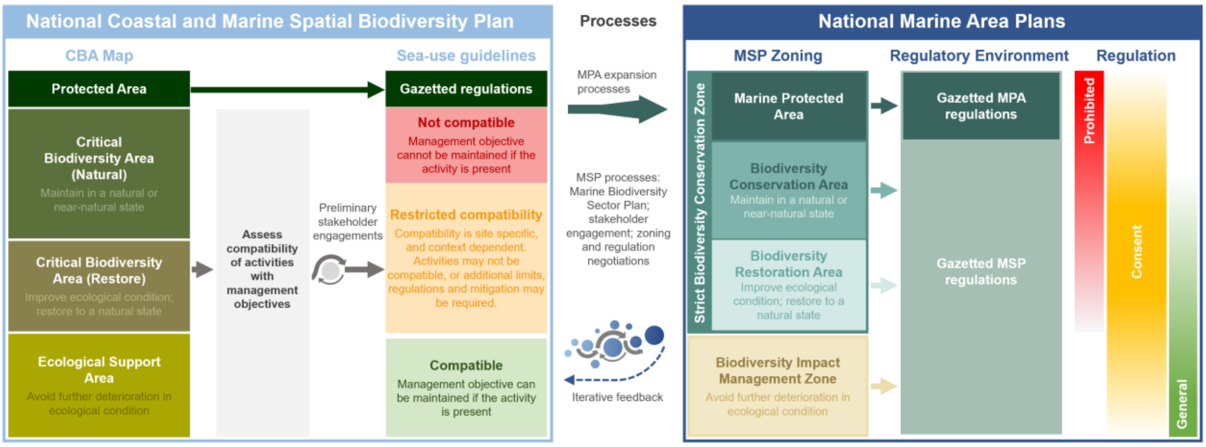


Marine protected areas (MPAs) in the Shackleton Seamount Complex EBSA. South West Indian Seamounts MPA comprises two areas that are both partly within the EBSA.

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Shackleton Seamount Complex, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

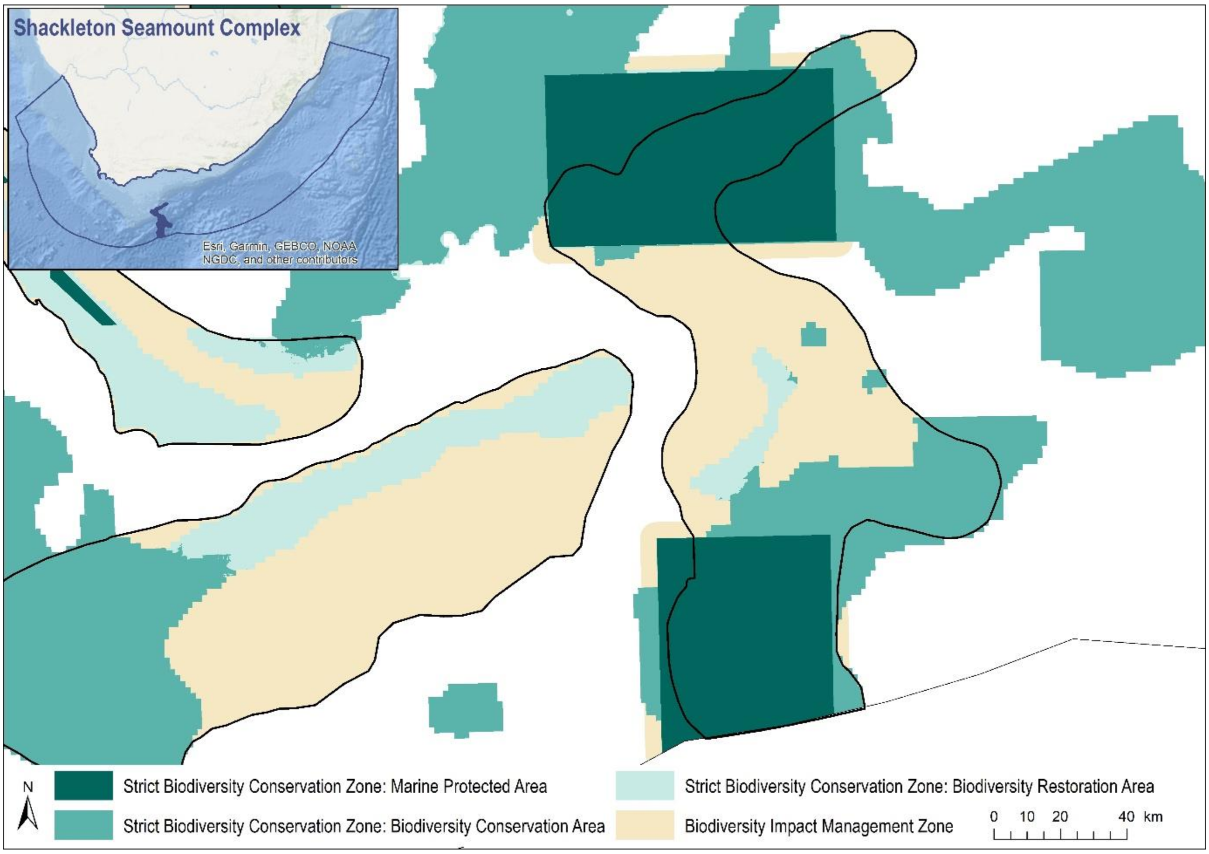


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Shackleton Seamount Complex.

South West Indian Seamounts MPA, comprising two parts, is the only MPA in this EBSA. It is managed according to the gazetted management regulations for this MPA. The rest of the Strict Biodiversity Conservation Zone is primarily a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. A much smaller portion comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Shackleton Seamount Complex EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Shackleton Seamount Complex. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, the need to collect foundational biodiversity information by sampling the seamounts and understanding their broader ecological role is especially highlighted for this site.

Future Process

There needs to be full operationalisation and practical implementation of the South West Indian Seamounts MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Options for MPA expansion also need to take strengthening connectivity among MPAs in Protea Seamount Cluster, Browns Banks, and Shackleton Seamount Complex.

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Agulhas Bank Nursery Area

Revised EBSA Description

General Information

Summary

The Agulhas Bank is a spawning ground and nursery area, and is the centre of abundance of numerous warm-temperate species, including several endemic sparids. The bank is an area of wider shelf along the otherwise relatively narrow shelf of South Africa. It is the only warm temperate nursery area for species that spawn on the narrow shelf in the north, and is important for retention, recruitment, and food provision. Dense benthic copepod communities provide a rich food source. The area includes Critically Endangered mud habitats and unique high-profile volcanic offshore reefs that support cold-water coral communities. There is a spawning aggregation area for the threatened endemic reef fish, *Petrus rupestris*, within this area. Agulhas Bank Nursery Area has been identified as important in two systematic planning initiatives, and contains two existing MPAs at De Hoop and Still Bay. The EBSA boundary has been refined since original delineation to better align with South Africa's expanding MPA network, and with the underlying biodiversity features, including fragile and sensitive habitat-forming species.

Introduction of the area

This area within the Agulhas Bank, on the south coast of South Africa, includes benthic and pelagic features that extend from the dune base to shallower than -150 m. Key benthic features include Critically Endangered mud habitats, high-profile volcanic deep reefs, low-profile deep reefs and rare gravels. The Agulhas Bank is important for numerous ecological processes, including spawning, larval retention, recruitment, connectivity and provision of nursery and foraging areas (Hutchings et al., 2002). This area is the centre of abundance of numerous warm temperate species, including several endemic sparids. Some of these species are threatened or overexploited (sparids and sciaenids), and the deep-reef habitats are considered important for the recovery of overexploited deep-reef fish species. However, two coastal MPAs at De Hoop and Still Bay provide some protection for some of the over-exploited species. A spawning area for the threatened endemic reef fish, *Petrus rupestris*, is located within this area, and aggregations of this species have recently been observed within this EBSA (Sink et al., 2010). The Agulhas Bank area has been identified as a priority using data provided through a national systematic planning initiative (Sink et al., 2011). Hutchings et al. (2002) emphasise the importance of this area as one of three key nursery areas in South Africa and the only one in the warm temperate ecoregion.

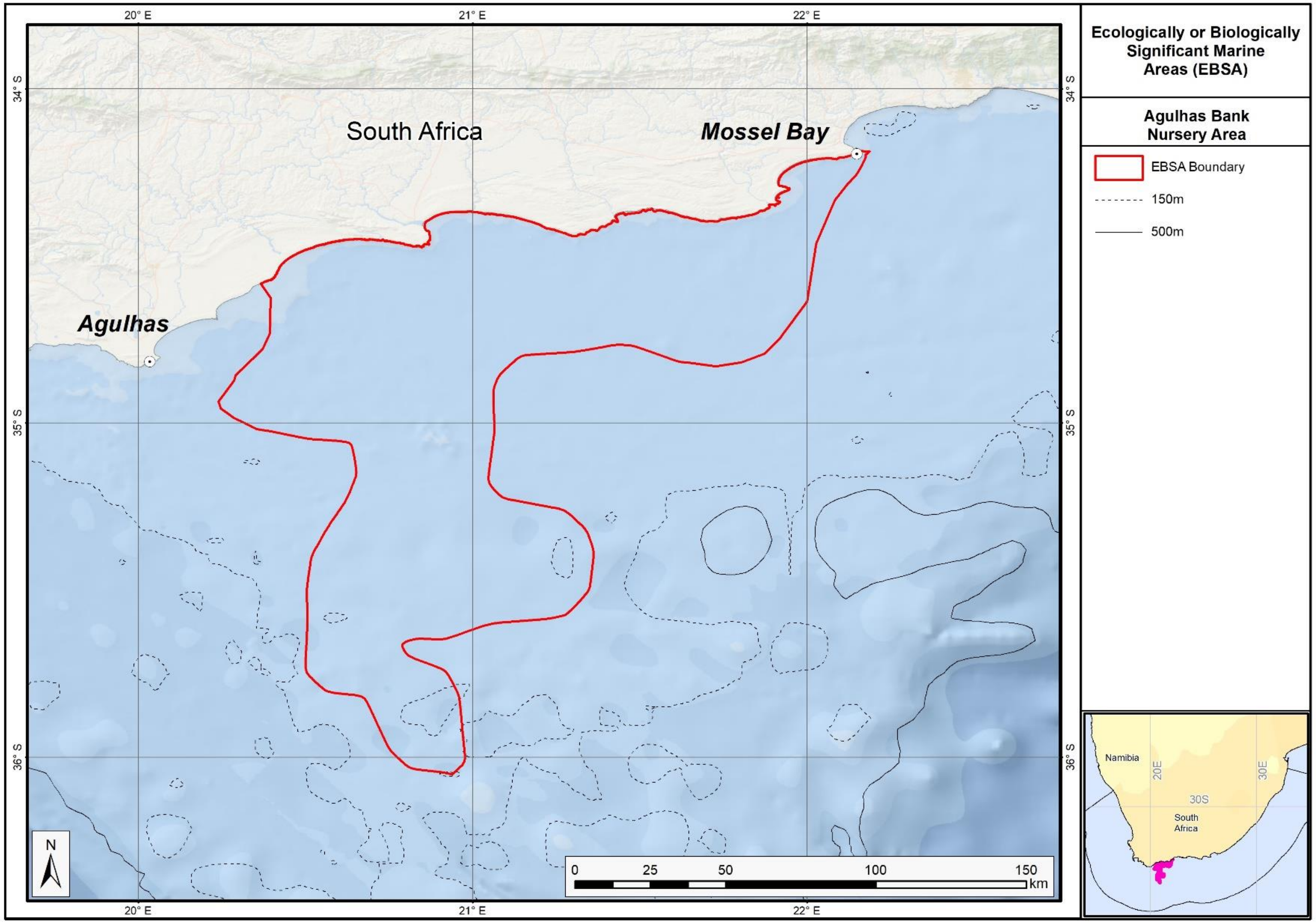
Description of the location

EBSA Region

Southern Indian Ocean

Description of location

This EBSA extends from the dune base across to the outer shelf, 175 km south of Cape Infanta in the Western Cape of South Africa, to almost as deep as -150 m. Along the shore it spans the De Hoop MPA in the west, to the headland that marks the start of Mossel Bay in the east. The area includes part of the Alphard and Agulhas Banks, and is entirely within South Africa's Exclusive Economic Zone (EEZ).



Proposed revised boundaries of the Agulhas Bank Nursery Area EBSA.

Area Details

Feature description of the area

Key benthic features include sandy and mud habitats, high-profile volcanic deep reefs, low-profile deep reefs and rare gravels. The Agulhas Bank is an important nursery area for species that spawn on the narrow shelf further north, including shad (*Pomatomus saltatrix*) and the sciaenid (*Attractoscion aequidens*). Squid also spawn in this area, and their paralarvae that hatch from the benthic eggs are dispersed across the bank, where they feed on a dense layer of copepods that occurs close to the seabed in this area (Hutchings et al., 2002). The Agulhas Bank area is moderately productive but has areas of relatively higher productivity within the broader area. There is a cold ridge of water on the central Agulhas Bank, which is a prominent subsurface feature during most summers (Swart and Largier 1987) and is associated with elevated phytoplankton concentrations (Probyn et al., 1994) and dense concentrations of copepods (Verheye et al.1994) and clupeoid fish eggs (Roel et al., 1994). The area is also frequented by migrating regionally Near Threatened loggerhead and regionally Critically Endangered leatherback turtles (Harris et al., 2018). Threatened ecosystem types in the area include: Critically Endangered Agulhas Muddy Mid Shelf; Endangered Agulhas Bays – West; and Vulnerable Agulhas Exposed Rocky Shore, Agulhas Inner Shelf Reef Sand Mosaic, Agulhas Kelp Forest, Agulhas Sandy Inner Shelf, Agulhas Sheltered Rocky Shore, and Agulhas Very Exposed Rocky Shore (Sink et al., 2019). The Agulhas Blues, Agulhas Mid Shelf Reef Sand Mosaic, Agulhas Mixed Shore, Agulhas Muddy Outer Shelf, Agulhas Sandy Mid Shelf and Warm Temperate Predominantly Open Estuary are Near Threatened (Sink et al., 2019). Overexploited and threatened linefish include the endemic red steenbras (*Petrus rupestris*, Endangered), Dageraad (*Chrysoblephus cristiceps*, Endangered) and black musselcracker (*Cymatoceps nasutus*, Vulnerable) (Sink et al., 2012; Sink et al., 2010). The area is also important for juvenile silver kob *(Argyrosomus inodorus*; Lombard et al., 2010, Attwood et al., 2011). The reef habitats range from low to very high profile, most have low rugosity, and support a variety of wall sponges, corals, red algae, kelp, gorgonians, fish and sharks (Gotz et al., 2014; Makwela et al., 2016). Some of these threatened and over-exploited species are protected in the De Hoop and Still Bay MPAs along the coast.

Since the original description, the boundary of this EBSA has been refined to improve precision so that it better represents the features comprising the EBSA, such as benthic ecosystem types and their condition, and fragile and sensitive habitat-forming species, using the best available data (e.g., Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). The new delineation reduces the size of the EBSA to about a third of its original extent, and also aligns better with the recently expanded MPA network in South Africa. The site is presented as a Type 1 EBSA because it contains "Spatially stable features whose positions are known and individually resolved on the maps" (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

South Africa's National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) indicated a range in ecological condition in this area based on an assessment of cumulatives pressures. The latest assessment (Sink et al., 2019) and EBSA boundary revision now indicates that 41% of the EBSA is in good ecological condition; the rest is in fair (19%) and poor (40%) ecological condition. There are deep reefs in the Agulhas Bank Nursery Area that are estimated to be in good ecological condition, even though pressures elsewhere have led to these habitats being considered threatened. Key activities in the area include commercial demersal trawl and longline fisheries, a midwater trawl fishery, trap fisheries for rock lobster, linefishing and expanding petroleum activities.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Agulhas Bank Nursery Area EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Critically Endangered	Agulhas Muddy Mid Shelf	1731.8	12.7
Endangered	Agulhas Bays - West	323.4	2.4
	Agulhas Sheltered Rocky Shore	0.2	0.0
Vulnerable	Agulhas Exposed Rocky Shore	19.5	0.1
	Agulhas Inner Shelf Reef Sand Mosaic	389.5	2.9
	Agulhas Kelp Forest	0.5	0.0
	Agulhas Sandy Inner Shelf	12.4	0.1
	Agulhas Very Exposed Rocky Shore	1.4	0.0
	Warm Temperate Predominantly Open Estuary	2.6	0.0
Near Threatened	Agulhas Blues	850.3	6.2
	Agulhas Mid Shelf Reef Sand Mosaic	723.0	5.3
	Agulhas Mixed Shore	41.6	0.3
	Agulhas Muddy Outer Shelf	358.0	2.6
	Agulhas Sandy Mid Shelf	7156.4	52.3
Least Concern	Agulhas Dissipative-Intermediate Sandy Shore	12.6	0.0
	Agulhas Intermediate Sandy Shore	2.7	0.0
	Agulhas Outer Shelf Gravel Sand Mosaic	773.1	5.7
	Agulhas Rocky Outer Shelf	1250.0	9.1
	Alphard Bank	31.9	0.2
	Warm Temperate Small Temporarily Closed Estuary	0.2	0.0
Grand Total		**13681.0**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

The volcanic offshore Alphard Bank is a unique feature that supports kelp, soft corals, stylasterine corals, and sponges (Sink et al., 2010; Makwela et al., 2016). Rare habitats within this area include some of the muddy and gravel ecosystem types (Sink et al., 2012a, 2019).

C2: Special importance for life-history stages of species **High**

Justification

The Agulhas Banks Nursery Area is of particular importance for the life-history stages of multiple fish species, including *inter alia* endemic, threatened, and commercially important species. Fish that use the area for spawning, are: Red steenbras (*Petrus rupestris*, Endangered) and other linefish species (Hutchings et al., 2002) including anchovy (Mhlongo et al., 2015). There have also been recent observations of spawning aggregations of the endemic reef fish *Petrus rupestris* within this area (Sink et al., 2010). It also serves as a nursery area for silver kob (*Argyrosomus inodorus*; Attwood et al., 2011), geelbek, shad, white stumpnose (Hutchings et al., 2002). This area also supports a relatively high proportion of juvenile hake (*Merluccius capensis*; Sink et al., 2011). Squid paralarvae (Downey-Breedt et al., 2016) and mussel larvae are also present, with mussel veligers found in high abundances up to 87 km from the shore (Weidberg et al., 2015).

C3: Importance for threatened, endangered or declining species and/or habitats **High**

Justification

Threatened ecosystem types in the area include: Critically Endangered Agulhas Muddy Mid Shelf; Endangered Agulhas Bays – West; and Vulnerable Agulhas Exposed Rocky Shore, Agulhas Inner Shelf Reef Sand Mosaic, Agulhas Kelp Forest, Agulhas Sandy Inner Shelf, Agulhas Very Exposed Rocky Shore (Sink et al., 2019). The Agulhas Blues, Agulhas Mid Shelf Reef Sand Mosaic, Agulhas Mixed Shore, Agulhas Muddy Outer Shelf, and Agulhas Sandy Mid Shelf are Near Threatened (Sink et al., 2019). This area has also been identified through systematic planning as containing habitat important for overexploited and threatened linefish. This includes the endemic overexploited sparids such as red steenbras (*Petrus rupestris*), Dageraad (*Chrysoblephus cristiceps*, Endangered) and black musselcracker (*Cymatoceps nasutus*, Vulnerable) (Sink et al., 2012). The area is also recognized as important for the recovery of the overexploited silver kob (*Argyrosomus inodorus*; Attwood et al., 2011), and the reefs serve as aggregating structures for some overexploited fish species, such as the carpenter (*Argyrozona argyrozona*; Gotz et al., 2014). The overexploitation of linefish species is reported by Griffiths (2000). Further, regionally Near Threatened loggerheads and regionally Critically Endangered leatherbacks frequent this area on their migrations, also using the Agulhas Banks as a foraging ground (Harris et al., 2018).

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**

Justification

High-profile deep reefs and hard grounds with stylasterine corals, black corals, gorgonians and wall sponges have been observed in this area through in-situ ROV surveys (Sink et al., 2010; Makwela et al., 2016). All of these are fragile species that are sensitive to disturbance, taking very long to recover from any impacts to the seabed.

C5: Biological productivity **Medium**
Justification
The Agulhas Bank area is moderately productive (Hutchings et al., 2002 and references therein) but has areas of relatively higher productivity within the broader area. There is a ridge of cold water, which is a prominent subsurface feature during most summers on the central Agulhas Bank (Swart and Largier 1987) and is associated with elevated phytoplankton concentrations (Probyn et al., 1994) and dense concentrations of copepods (Verheye et al.1994) and clupeoid fish eggs (Roel et al., 1994).

C6: Biological diversity **Medium**
Justification
There is high sparid and invertebrate biodiversity (core of the distribution of several endemic species) in the Agulhas Bank Nursey Area. The reef habitats range from low to very high profile, most have low rugosity, and support a variety of wall sponges, corals, red algae, kelp, gorgonians, fish and sharks (Gotz et al., 2014; Makwela et al., 2016). The site includes fish such as shad (*Pomatomus saltatrix*), geelbek (*Attractoscion aequidens*), red steenbras (*Petrus rupestris*), Dageraad (*Chrysoblephus cristiceps*), black musselcracker (*Cymatoceps nasutus*), and silver kob *(Argyrosomus inodorus*; Lombard et al., 2010; Sink et al., 2010; Attwood et al., 2011; Sink et al., 2012). Other well-known species include squid (Hutchings et al., 2002) and loggerhead and leatherback turtles (Harris et al., 2018). Further, this area was selected as a priority in systematic planning because of the relatively higher habitat diversity and thus opportunities to meet multiple biodiversity targets efficiently.

C7: Naturalness **Medium**
Justification
There is only one pelagic ecosystem type (Ab2) within this area, which is in good ecological condition (Sink et al., 2012). Benthic condition ranges from poor to good (Sink et al., 2012, 2019), but some deep reefs are apparently untrawled and in good ecological condition. The volcanic feature known as the Alphard Banks is in good ecological condition (Sink et al., 2010). The two MPAs in the EBSA also provide protection from many pressures and are in better ecological condition compared to that of the surrounding area. Overall, 41% of the EBSA is in good ecological condition; the rest is in fair (19%) and poor (40%) ecological condition (Sink et al., 2019).

Status of submission

The Agulhas Bank Nursery Area EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised description, criteria assessment and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

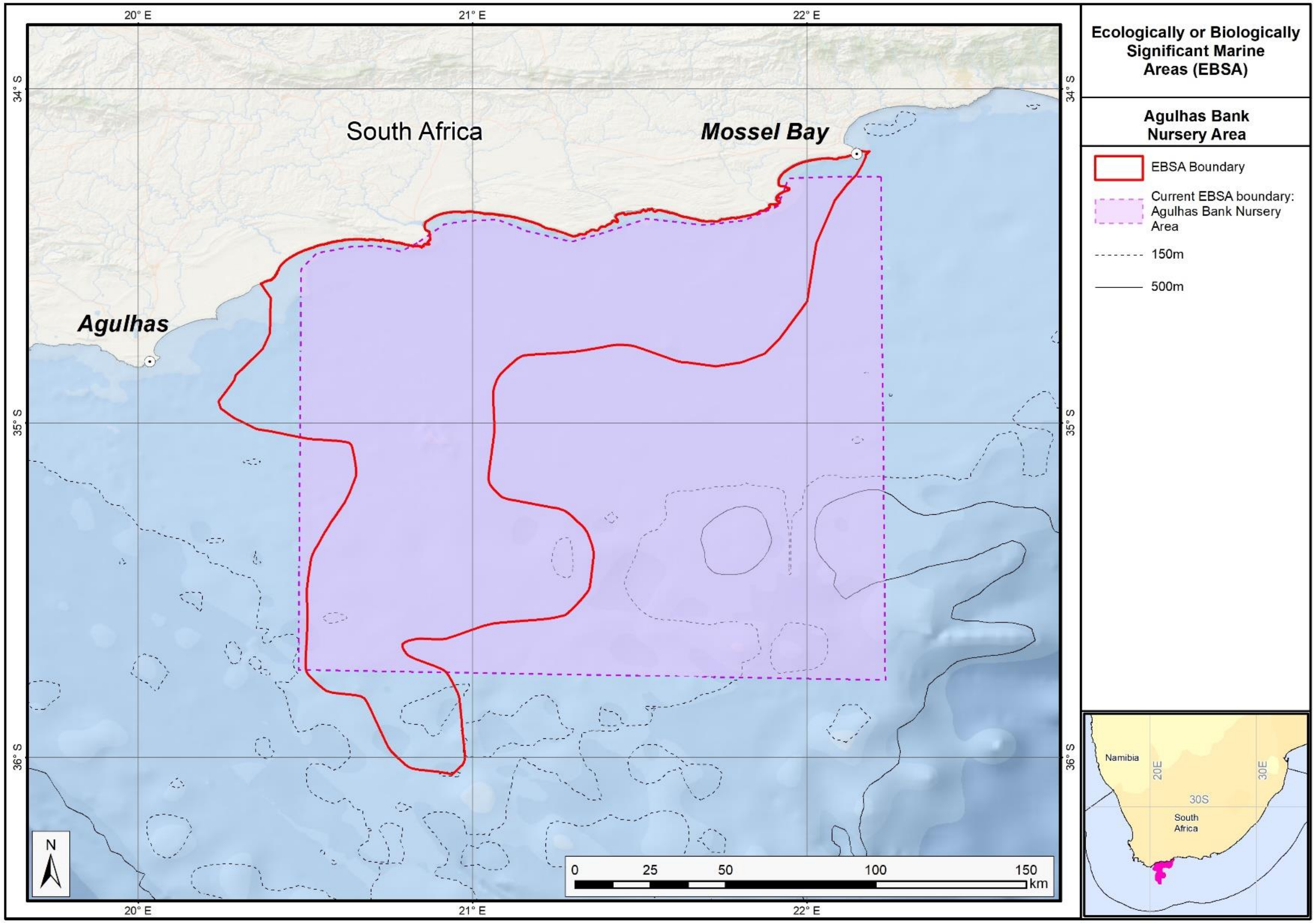
Motivation for Revisions

Significant changes have been made to the Agulhas Bank Nursery Area EBSA description. Additional data have resulted in further substantiated evaluations of two of the EBSA criteria, namely Criterion 2: importance for life-history stages, and Criterion 3: importance for threatened species. Additional references have been added and updates to the description were made. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included.

There has also been a significant delineation change of this EBSA to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status. The delineation process included an initial stakeholder review that identified the need to update boundaries, a technical mapping process and then an expert review workshop where boundary delineation options were discussed. The boundaries were revised a final time to accommodate the latest NBA 2018 assessment results and the review workshop discussion. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

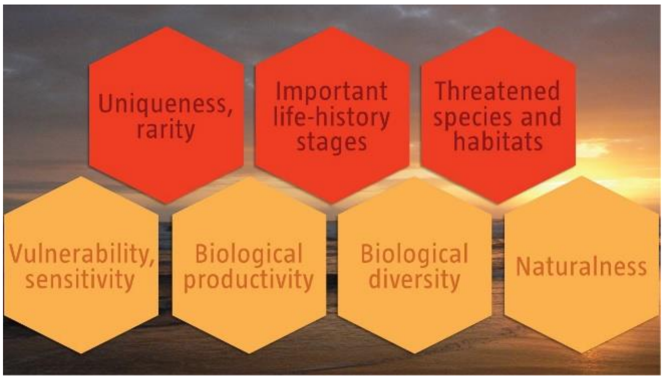
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the Systematic Conservation Plans undertaken for the West Coast by Majiedt et al. (2013), offshore areas (Sink et al., 2011) and by Holness et al. (2014) were incorporated.
- Delineations and threat status of consitituent ecosystem types (Sink et al., 2019) in the area were included in the analysis and used to refine the boundary of the EBSA.
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012a, 2019) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).
- The coastal boundary was refined to be more accurate based on new data (Harris et al., 2019).

The multi-criteria analysis resulted in a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Agulhas Bank Nursery Area EBSA in relation to its original boundaries.

Status Assessment and Management Options

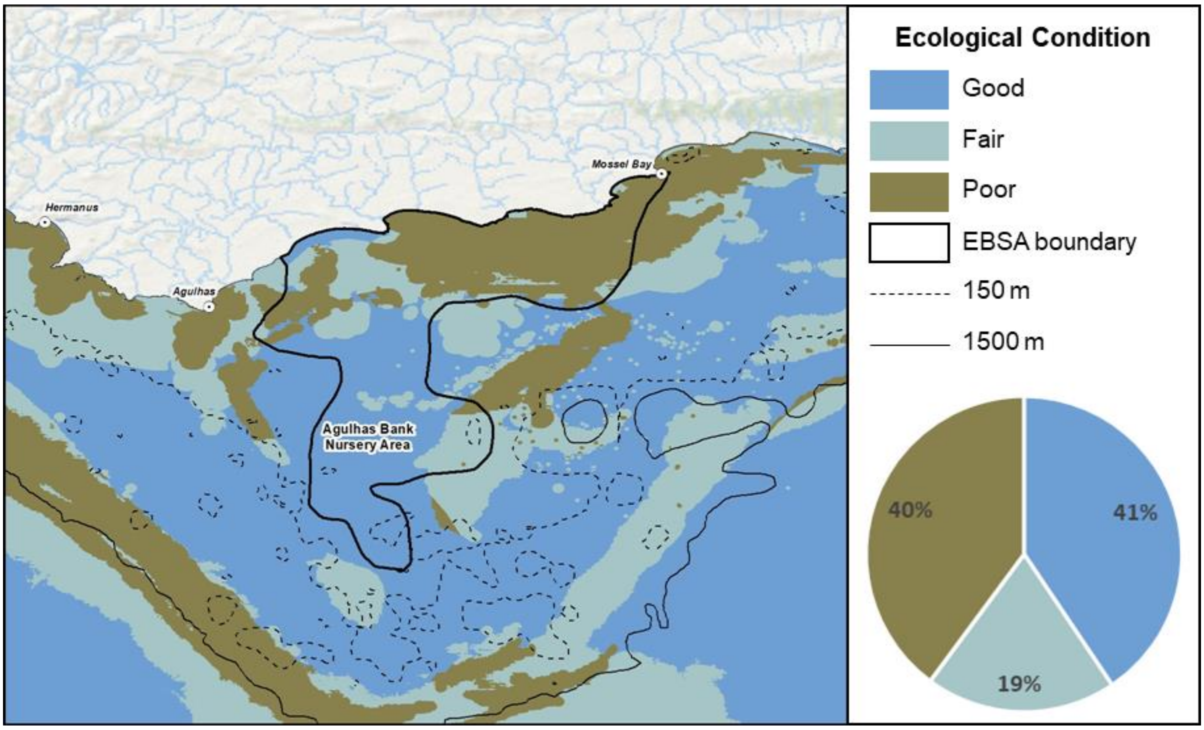


***Agulhas Bank Nursery Area** is a key spawning ground and nursery area, and is the centre of abundance for many warm-temperate species, including endemic sparids. It is important for retention of eggs and larvae, recruitment and food provision. This EBSA is recognised particularly for its uniqueness and rarity; importance for life-history stages; and importance for threatened species and habitats.*

EBSA criteria coloured by rank for Agulhas Bank Nursery Area: red=high, orange=medium.

Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

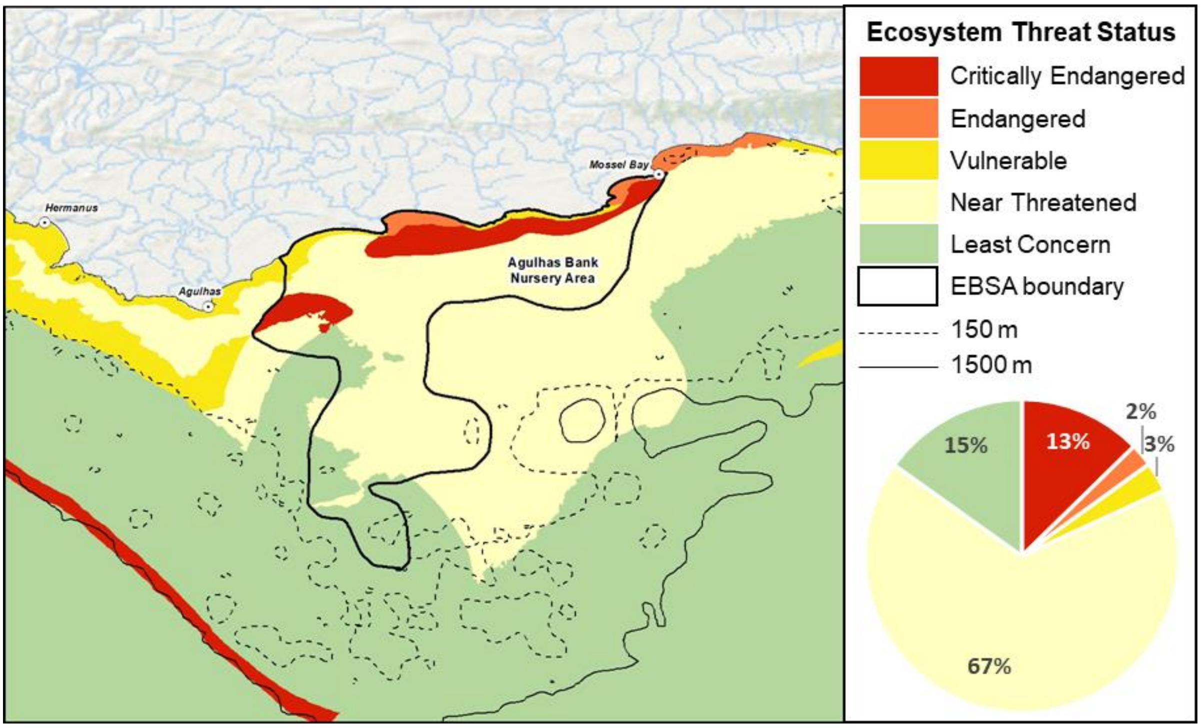
Agulhas Bank Nursery Area has a myriad of features and ecosystem types that need to be protected for the area to maintain the features and processes that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity; importance for life-history stages; and importance for threatened species and habitats. There are 20 ecosystem types represented, of which the inner and mid-shelf mosaics (matrix of reefs and soft sediments), rocky shores and rocky shelf ecosystem types contain fragile species that are especially sensitive to damage. Kelp forests also contribute to the nursery function of the EBSA and are sensitive to disturbance, although these can recover relatively quicker than some of the other more fragile and delicate species, such as corals.



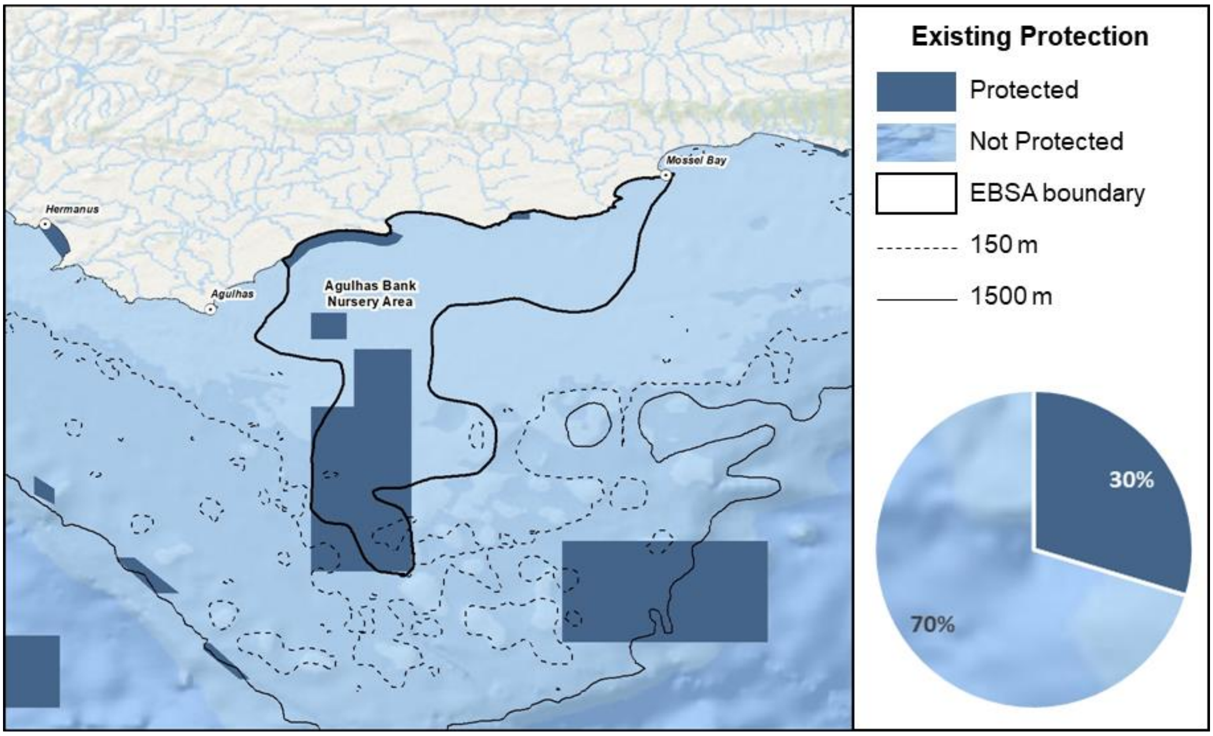
Agulhas Bank Nursery Area proportion of area in each ecological condition category.

Agulhas Bank Nursery Area is largely in good ecological condition (41%), with some portions that are fair (19%). Consequently, the bulk of the offshore extent is either Near Threatened (67%) or Least

Concern (15%). However, the inshore areas, especially in the north-eastern portion of the EBSA between Cape Infanta and Mossel Bay, are heavily utilised and in poor ecological condition. The result is that the bays, rocky shores, muddy mid-shelf, kelp forests, reef sand mosaics, sandy inner shelf and some of the estuarine shores in this area are all threatened. Consequently, 18% of the EBSA area comprises threatened ecosystem types that are mostly Critically Endangered (13% of the EBSA extent).



Agulhas Bank Nursery Area proportion of area in each ecosystem threat status category.



Agulhas Bank Nursery Area proportion of area in a Marine Protected Area (MPA).

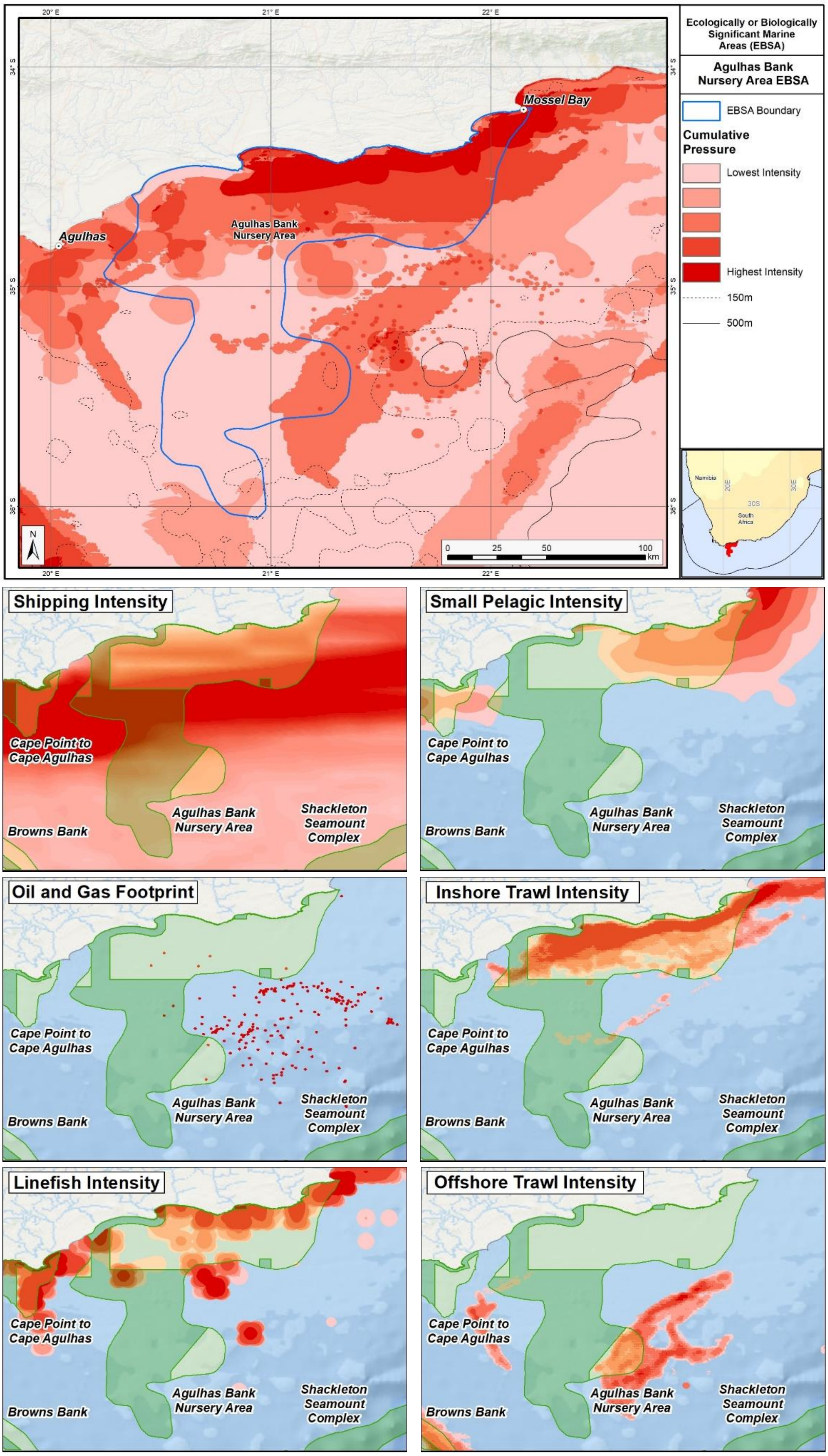
Protection of features in MPAs has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing by more than an order of magnitude from 2% to 30%. These new MPAs cover the southern extension of the EBSA, south of Cape Infanta where ecological condition is good and ecosystem threat status is Near Threatened or Least Concern, which will proactively avoid those ecosystem types degrading further and becoming threatened. However, many of the threatened features listed above have no protection in the EBSA.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Agulhas Blues	NT	NP	11.0	81.4	7.7
Agulhas Dissipative Intermediate Sandy Shore	LC	WP	69.8	14.6	15.6
Agulhas Exposed Rocky Shore	VU	MP	17.8	65.7	16.5
Agulhas Inner Shelf Mosaic	VU	MP	39.0	27.7	33.3
Agulhas Intermediate Sandy Shore	LC	MP	79.2	19.3	1.5
Agulhas Kelp Forest	VU	MP	38.4	46.7	14.9
Agulhas Mid Shelf Mosaic	NT	MP	74.1	7.3	18.6
Agulhas Mixed Shore	NT	MP	12.8	73.6	13.6
Agulhas Muddy Mid Shelf	CR	PP	0.4	7.8	91.8
Agulhas Muddy Outer Shelf	NT	PP	49.1	13.5	37.4
Agulhas Rocky Outer Shelf	LC	WP	100.0	0.0	0.0
Agulhas Sandy Inner Shelf	VU	MP	0.0	0.0	100.0
Agulhas Sandy Mid Shelf	NT	MP	35.8	21.1	43.0
Agulhas Sheltered Rocky Shore	EN	MP	1.3	50.6	48.1
Agulhas Very Exposed Rocky Shore	VU	MP	16.5	82.0	1.5
Alphard Bank	LC	WP	100.0	0.0	0.0
Central Agulhas Outer Shelf Mosaic	LC	MP	92.8	7.2	0.0
Warm Temperate Predominantly Open	VU	PP	39.8	8.3	52.0
Warm Temperate Small Temporarily Closed	LC	PP	18.7	79.7	1.6
Western Agulhas Bay	EN	PP	0.0	9.4	90.6
Other Features					
• Endemic, threatened, and commercially important fish species • Stylasterine corals, black corals, gorgonians, wall sponges, and kelp • Squid • Loggerhead turtles • Leatherback turtles					

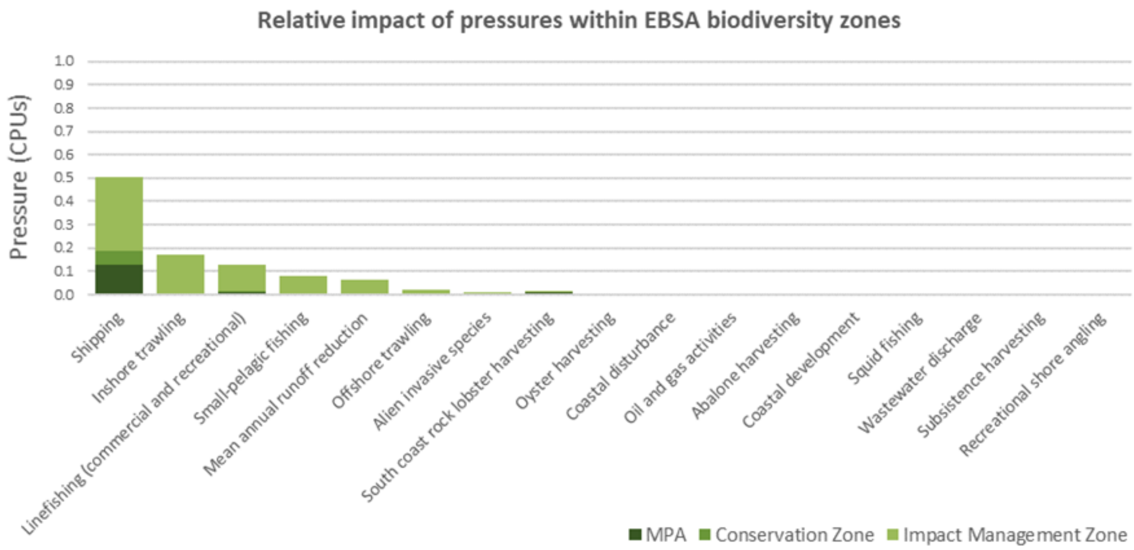
Relevant Pressures and Activities (impact, extent)

- There are 17 pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent and has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: inshore and offshore trawling, linefishing, small pelagic fishing, and squid fishing. These activities cover discrete portions of the EBSA, and are mostly concentrated in the shallower waters. These activities will need to be managed particularly well in order to protect the fragile benthic biodiversity, nursery habitats, and fish assemblages for which this EBSA is recognised. For most of these pressures, the larger portion of the activity is in the Impact Management Zone.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.

- Twelve of the 17 pressures each comprise <1% of the EBSA extent, including: south coast rock lobster harvesting; alien invasive species; oyster harvesting; oil and gas (exploration and production); coastal disturbance; coastal development; abalone harvesting; prawn trawling; squid fishing; wastewater discharge; subsistence harvesting; and recreational shore angling.
- Activities in South Africa that are not present in this EBSA include: mining (prospecting and mining); tuna pole fishing; beach seining; midwater trawling; ports and harbours; benthic (hake) longlining; naval dumping (ammunition); shark netting; mariculture; dredge spoil dumping; gillnetting; kelp harvesting; and west coast rock lobster harvesting.



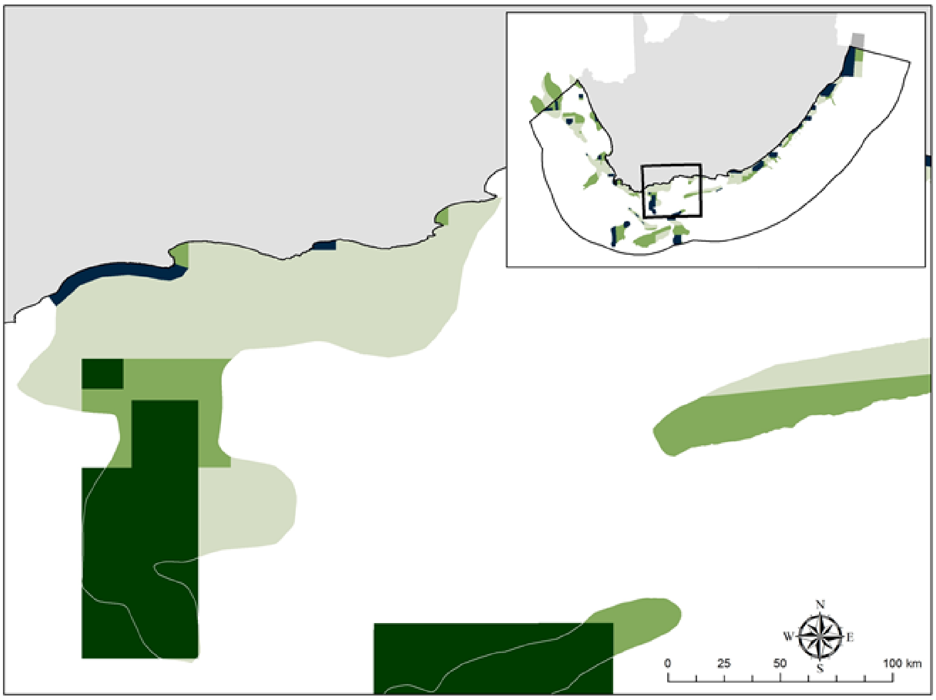
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from south coast rock lobster harvesting to recreational shore angling each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are also four MPAs that are wholly or partially within the EBSA: De Hoop MPA; Agulhas Mud MPA; Stilbaai MPA; and Agulhas Bank Complex MPA. Activities permitted within these MPAs are not considered as part of the EBSA management recommendations because these are given as per the respective gazetted regulations of the MPAs.

De Hoop MPA (proclaimed 1988, revised 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Stilbaai MPA (proclaimed 2008)	https://www.environment.gov.za/sites/default/files/legislations/mlra_stilbaaimarine_g31516rg8974gon1108_0.pdf
Agulhas Bank Complex MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_agulhasbankcomplexmarine_regulations_g42479gn780.pdf
Agulhas Mud MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_southwestindian_agulhasmudsmarine_regulations_g42479gn796.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

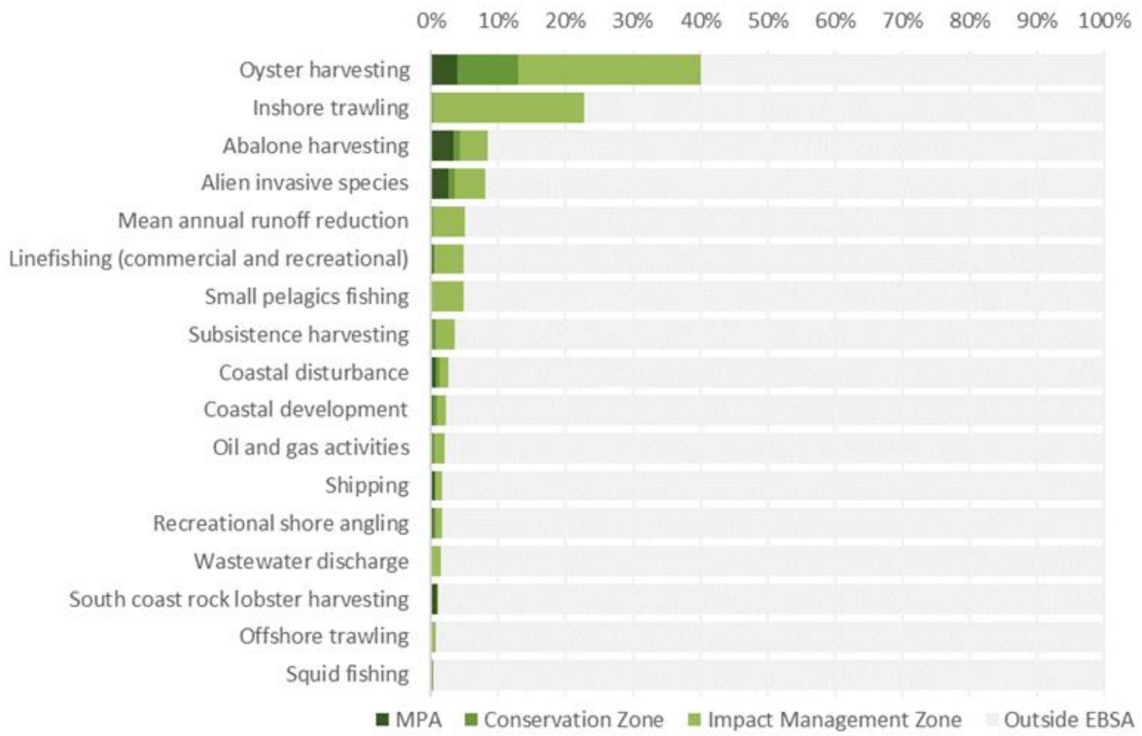
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Restricted zone			
	Marine Protected Area: Controlled zone			
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

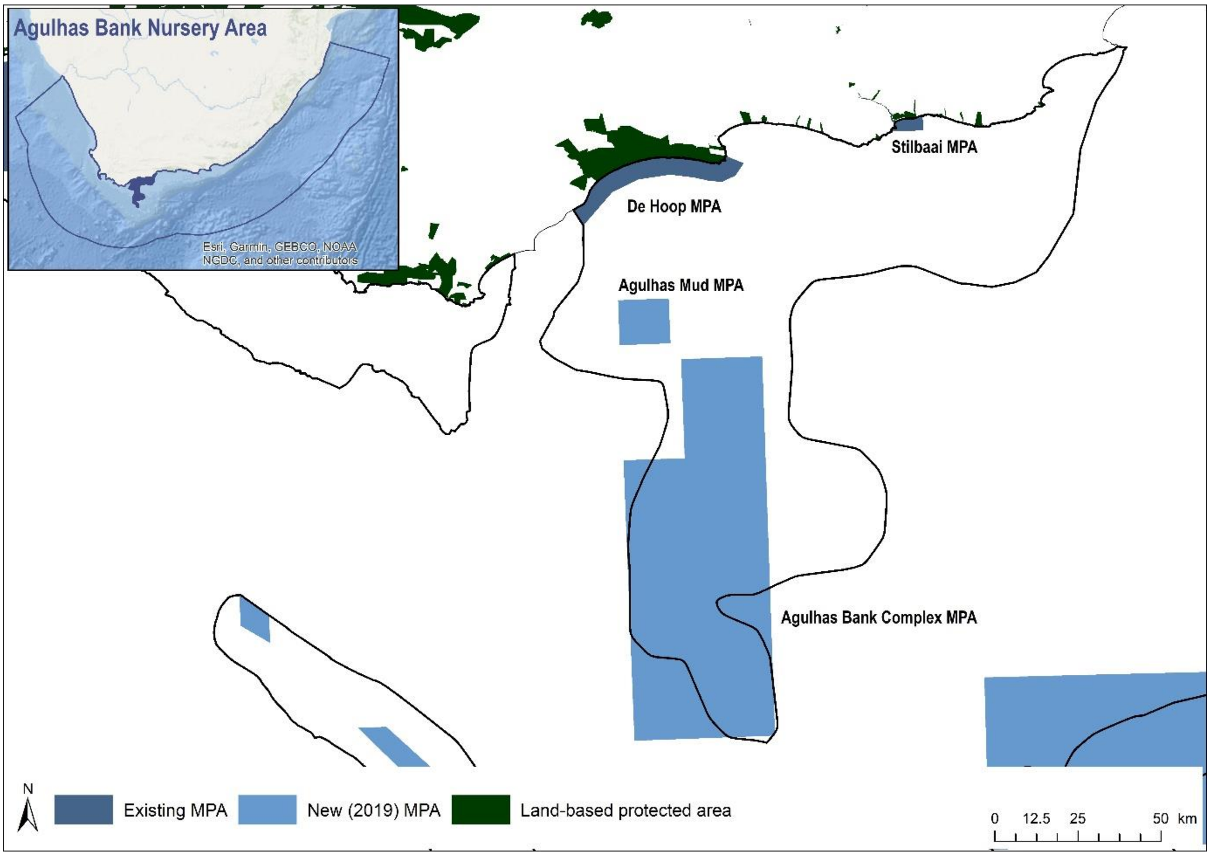
Even though more than half of the country's inshore trawling takes place within this EBSA, almost all of it falls within the Impact Management Zone where it is recommended to continue in the EBSA as a Consent activity. Offshore trawling is much more limited and is present in only the Impact Management Zone, where it is also recommended to be a Consent activity. Both inshore and offshore trawling are not compatible with the management objectives of the Conservation Zone, and thus are recommended to be Prohibited in this zone. Oyster and abalone harvesting take place in the EBSA, but these activities are not accurately mapped and the proportion of the national footprint within the EBSA is likely much lower than is presented. Notwithstanding, the proposed EBSA zoning does accommodate for both of these harvesting activities in the Conservation and Impact Management Zones, where they are recommended to be Consent activities. Other fishing activities, like commercial and recreational linefishing and small pelagic fishing are also recommended to be Consent activities within both EBSA zones. The same recommendation is given for subsistence harvesting, recreational shore angling and south coast rock lobster harvesting.

Oil and gas (exploration and production) are largely within the Impact Management Zone; this activity is recommended to continue as a Consent activity in both EBSA zones. The other activities that fall within this EBSA are a very small component of their respective national footprints, and are mostly within the Impact Management Zone. These activities are all recommended to continue as Consent activities, with relevant regulations and controls. Shipping is recommended to continue in both the Conservation and Impact Management Zone under current general rules and legislation. Thus, in all cases, the proposed EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, with the exception of wastewater discharge, which is recommended to continue within the Impact Management Zone as a Consent activity, but is recommended to be Prohibited in the Conservation Zone because it is currently not present in that zone. Although these activities originate beyond the EBSA, they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Agulhas Mud and Agulhas Bank Complex MPAs in 2019. This builds on existing protection already afforded by the De Hoop and Stilbaai MPAs and land-based protected areas in the area. It is recommended that existing management is strengthened in the older MPAs, and that full operationalisation of the new MPAs is implemented, including management plans, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

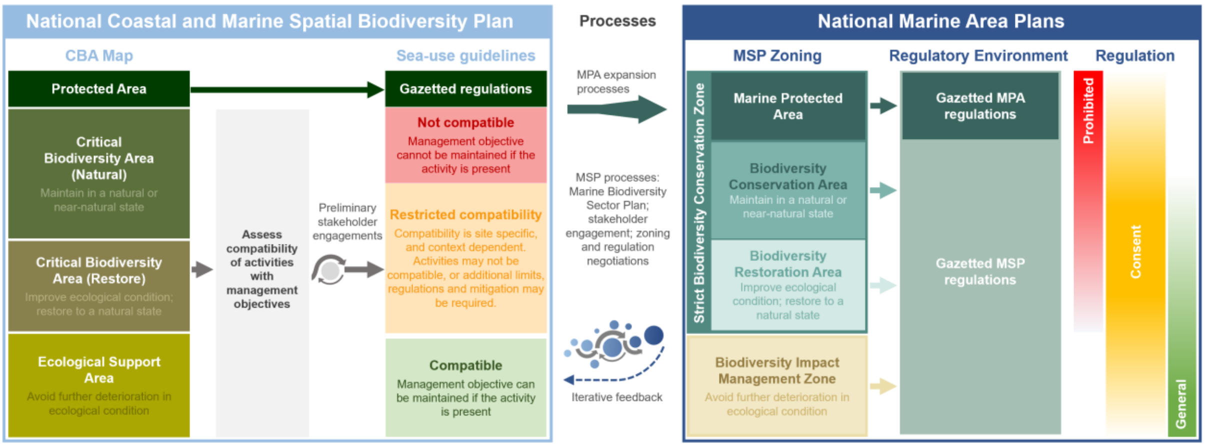


Existing and new marine protected areas (MPAs) in the Agulhas Bank Nursery Area EBSA. Land-based protected areas are also shown (from DFFE 2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Agulhas Bank Nursery Area, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

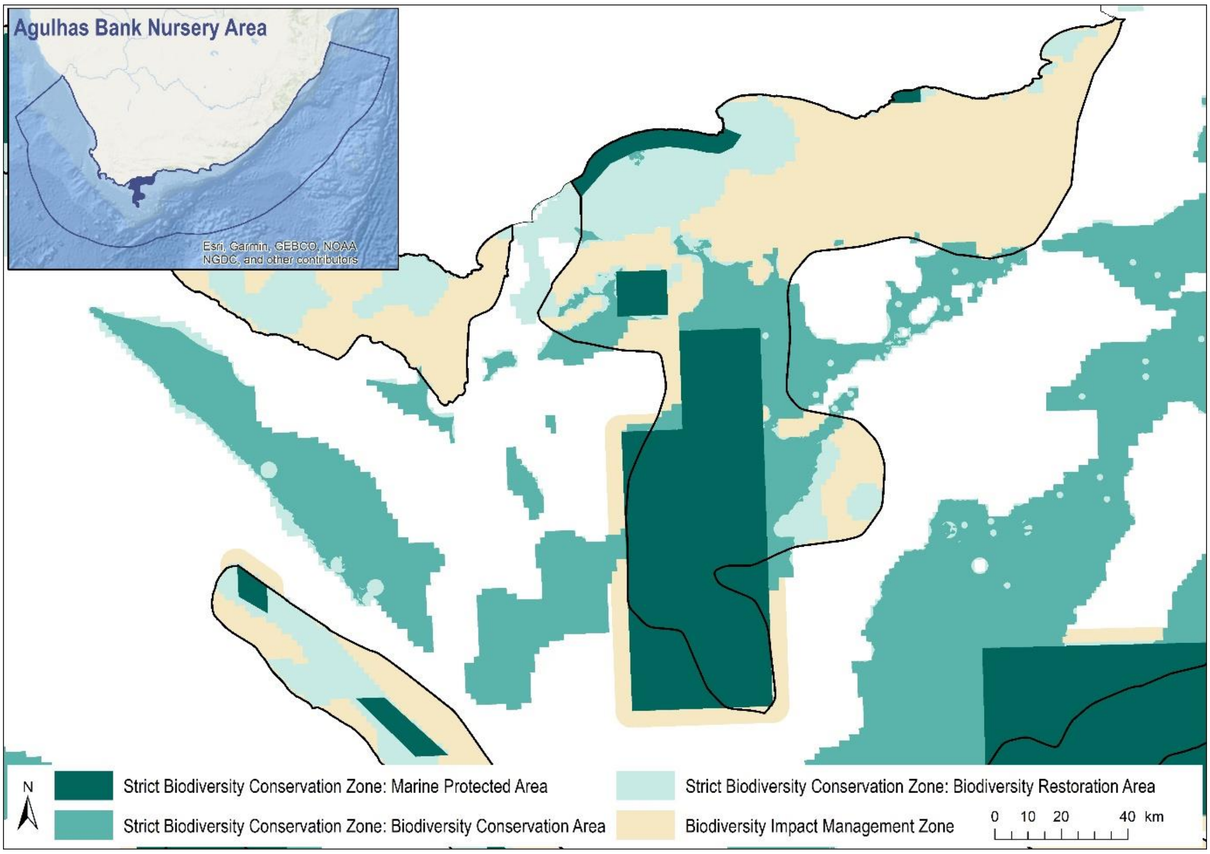


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Agulhas Bank Nursery Area.

There are four MPAs in this EBSA: Agulhas Mud, De Hoop, Stilbaai, and Agulhas Bank Complex. They are managed according to their respective gazetted management regulations. About half of the remaining Strict Biodiversity Conservation Zone is a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. The other remaining half of the Strict Biodiversity Conservation Zone comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Agulhas Bank Nursery Area EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Agulhas Bank Nursery Area. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below).

Future Process

There needs to be full operationalisation and practical implementation of the Agulhas Muds MPA and the Agulhas Bank Complex MPA, including management plans, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project. This EBSA is also part of a World Heritage Site proposal that is being developed.

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Kingklip Corals (Formerly Offshore of Port Elizabeth)

Proposed EBSA Description

Abstract

The recent discovery of important benthic features that were only partially represented in the Offshore of Port Elizabeth EBSA prompted that EBSA to be split into two, with Kingklip Corals EBSA better representing the new features. Secret Reef is a newly discovered biogenic coral reef structure that is outside of the trawl footprint on the shelf edge of the South African south coast. Notably, it contains dense communities of fragile and sensitive coral and bryozoan species. Such features are relatively rare in the area. Secret Reef links to the Kingklip Ridge and Kingklip Koppies, offshore of St Francis Bay. These are a newly discovered unique rocky ridge and undersea hills (*koppies* in Afrikaans) that support fragile corals and are covered by dense clouds of plankton and hake. Three of the five ecosystem types represented in the EBSA are threatened, including the Endangered Kingklip Ridge and Vulnerable Kingklip Koppies and Agulhas Coarse Sediment Shelf Edge ecosystem types. Further research is encouraged for this site.

Introduction

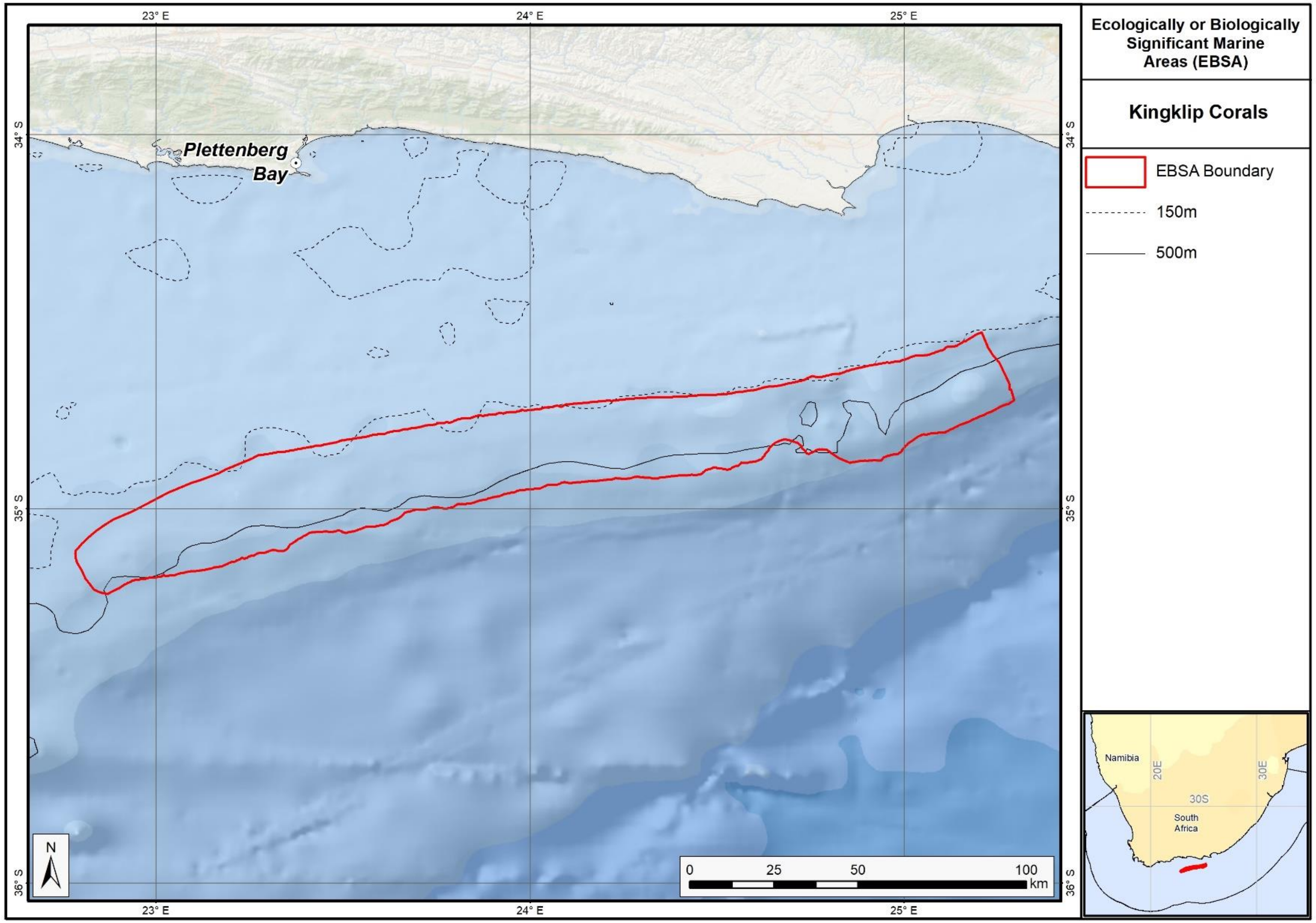
An interesting feature was recently discovered inside the Offshore of Port Elizabeth EBSA: a unique rocky ridge protruding out of the upper slope that supports corals and is covered by dense clouds of plankton and hake (Sink 2016). Adjacent to the ridge is a series of rocky koppies (Afrikaans for 'hills'). A little further west, also on the shelf edge and upper slope of the South African south coast, is Secret Reef. This is a newly discovered biogenic coral reef structure that supports fragile and sensitive corals and byrozoans. Given that these special benthic features appear to be connected along the shelf edge and upper slope, it prompted a split in the Offshore of Port Elizabeth EBSA into Algoa to Amathole, which comprises the bulk of the original EBSA, and this EBSA: Kingklip Corals. This allowed for a better delineation of an EBSA that more accurately reflected the underlying features, which in this case are largely benthic features.

Given its position on the shelf edge and upper slope, despite being a relatively small EBSA (approximately 23 km x 233 km), it spans a broad depth range of -150 to -1000 m. It comprises five ecosystem types, three of which are threatened, including an Endangered type. This area is also an important place in which to meet biodiversity targets because it had high selection frequency in a national systematic conservation plan (Sink et al., 2011; SANBI unpublished results in analysis for Madjiedt et al., 2013).

The reason this area was not fully included in the original Offshore of Port Elizabeth EBSA is because the constituent features were not yet discovered, and thus the information was not available at the Southern Indian Ocean Regional Workshop to Facilitate the Description of Ecologically or Biologically Significant Marine Areas (UNEP/CBD/RW/EBSA/SIO/1/4) in 2013. The revision is thus based on the best available information (e.g., Holness et al., 2014; Majiedt et al., 2013; Sink 2016, Sink et al., 2012, 2019). It is presented as a Type 2 EBSA because it contains "spatially stable features whose individual positions are known, but a number of individual cases are being grouped" (sensu Johnson et al., 2018).

EBSA Region

Southern Indian Ocean



Proposed boundaries of the Kingklip Corals EBSA.

Description of the location

Secret Reef lies on the Grue Bank, about 100 km offshore of Knysna, approximately halfway along the South African south coast in the Agulhas Current. The EBSA spans from here to offshore of the middle of St Francis Bay, along the shelf edge and a little down the slope. The EBSA falls entirely within South Africa's EEZ.

Feature description of the proposed area

Kingklip ridge rises like a wall on the upper slope, offshore of Cape St Francis. It has dimensions of 530 m wide and about 40 km long, running parallel to the shelf edge on the slope that goes from -200 m to -600 m and deeper (Sink 2016). At the crest and edges of the northern end of the ridge, at approximately -350 m, are reef-forming scleratinean corals (Sink 2016). Above the ridge are dense clouds of plankton and hake, and demersal trawlers reportedly use this feature against which they herd fish (Sink 2016). The Kingklip koppies, west of the ridge, are rocky hills that also support fragile benthic species. Even further west, Secret Reef is a newly discovered biogenic coral reef structure on the shelf edge and upper bathyal area (Sink 2016). It includes threatened benthic habitats and fragile, sensitive, vulnerable species, such as: scleractinian corals, stylasterine corals, bryozoans, molluscs, and crabs that have been sampled in this area (Sink 2016). Given the connections among these similar benthic features, they were delineated as a single EBSA. Thus, the EBSA is most important for benthic features, although the overlying water column is also relevant.

The ecosystem types represented in the EBSA include the Endangered Kingklip Ridge, Vulnerable Agulhas Coarse Sediment Shelf Edge and Kingklip Koppies, and Least Concern Agulhas Rocky Shelf Edge, and Southwest Indian Upper Slope (Sink et al., 2019). Because these features are so recently discovered, there is very little information available about them, other than the data that were collected on the cruise when they were found (Sink 2016). These data include single-beam echo sounder depth transects, in situ samples, and ROV footage (Sink 2016).

Feature condition and future outlook of the proposed area

Ecological condition is estimated in South Africa by assessing cumulative pressures to the marine environment (Sink et al., 2012, 2019). Ecological condition is poor in the northern and eastern portions of the EBSA (over Kingklip Ridge and the easternmost Kingklip Koppies), and moderate to mostly good in the south west corner (over Secret Reef; Sink et al., 2019). The primary pressures in the area are from fishing for large pelagic fish, and demersal and pelagic sharks, with some influence from shipping and other fishing industries to a lesser degree. Secret Reef itself is outside of the trawl footprint so the site is high in live coral cover (Sink 2016). However, all of the reef-building coral observed on the Kingklip Ridge was broken, with evidence of both recent and older damage. This is presumed to be the result of trawling damage to the reef (Sink 2016). Research was recently conducted in the area as part of a larger programme to survey South Africa's marine environment (Sink 2016). No future research is currently planned, although it has been strongly recommended (Sink 2016).

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Kingklip Corals EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Endangered	Kingklip Ridge	103.6	1.9
Vulnerable	Agulhas Coarse Sediment Shelf Edge	2440.1	44.8
	Kingklip Koppies	642.9	11.8
Least Concern	Agulhas Rocky Shelf Edge	1673.4	30.7
	Southwest Indian Upper Slope	582.5	10.7
Grand Total		**5442.5**	**100.0**

Assessment of the area against CBD EBSA Criteria

C1: Uniqueness or rarity **High**

Justification

The coral mound comprising Secret Reef is a relatively rare feature in the broader area. It also contains the only known portions of the Kingklip Ridge and Kingklip Koppies ecosystem types, both of which are unique in South Africa (Sink et al., 2019).

C2: Special importance for life-history stages of species **Medium**

Justification

Further research is required to determine if this area supports important life-history stages of species. However, given the uniqueness of the ecosystem types and the dense clouds of plankton and hake above the Kingklip Ridge and Kingklip Koppies (Sink 2016), it is presumed that this area is important for species' life-histories.

C3: Importance for threatened, endangered or declining species and/or habitats **High**
Justification
The area includes three threatened ecosystem types, two of which are found exclusively in the EBSA: Endangered Kingklip Ridge and Vulnerable Kingklip Koppies (Sink et al., 2019). It is not yet known whether this site is important for threatened or declining species, and this would require more research in the area. However, it is presumed that the two unique ecosystem types (Kingklip Ridge and Kingklip Koppies) both support threatened species given that the ecosystem types are threatened.

C4: Vulnerability, fragility, sensitivity, or slow recovery **High**
Justification
Secret Reef is a biogenic coral mound that has fragile scleractinian corals, stylasterine corals, and bryozoans (Sink 2016). Similarly, Kingklip Ridge was observed to contain reef-building scleratinian corals, and Kingklip Koppies contained *Thouarella* (a primnoid coral), bamboo coral, and many mobile invertebrates (Sink 2016). All of these are fragile, sensitive species that are vulnerable to damage, and that take long to recover from impacts.

C5: Biological productivity **Medium**
Justification
There are dense clouds of plankton and hake over Kingklip Ridge (Sink 2016), suggesting high localised productivity at the site. However, time-averaged MODIS Aqua data on chlorophyll concentration (NASA Giovanni Portal: https://giovanni.gsfc.nasa.gov) shows that productivity inside Secret Reef is not higher compared to that of the surrounding area.

C6: Biological diversity **Medium**
Justification
Because Secret Reef is outside of the trawl footprint, reef diversity inside the EBSA is relatively higher than that in the surrounding area (Sink 2016). Further, the relatively small EBSA comprises five ecosystem types that span a depth range of 850 m.

C7: Naturalness **Medium**
Justification
Secret Reef itself is outside of the trawl footprint, so this feature is close to pristine and high in live coral cover (Sink 2016). Based on a national assessment of cumulative pressures on the marine environment, the broader EBSA has portions in good (28%) and poor (53%) ecological condition, with one fifth (19%) that is moderately modified and in fair ecological condition (Sink et al., 2019).

Status of submission

The Offshore of Port Elizabeth EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised Kingklip Corals EBSA name, description, and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision
dec-COP-12-DEC-22

End of proposed EBSA revised description

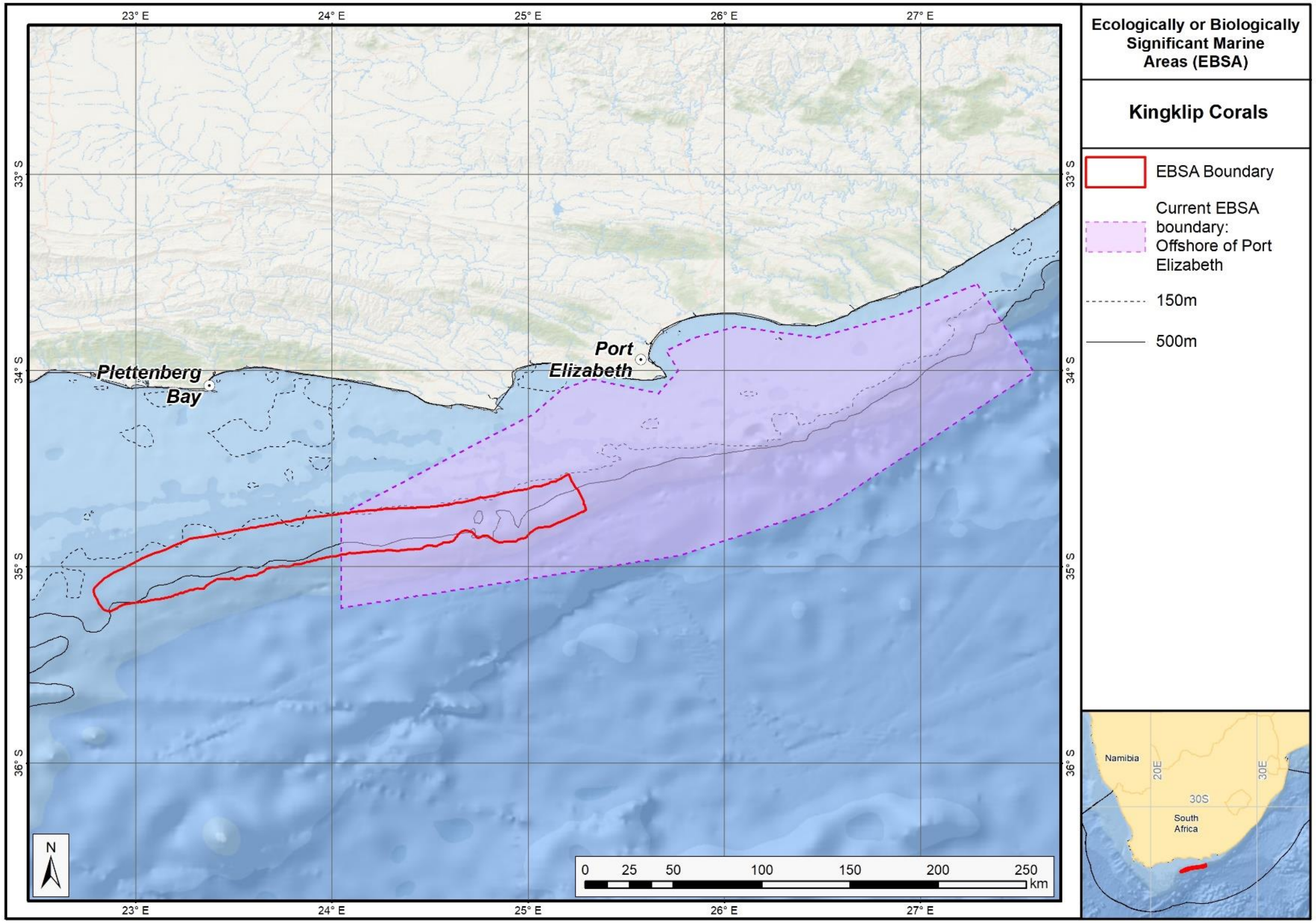
Motivation for Revisions

Recent survey data indicated that Kingklip Corals are small but rare and very vulnerable features justifying conservation attention, which were only partly represented in the original Offshore of Port Elizabeth EBSA. Significant changes have been made to the delineation of the Offshore of Port Elizabeth EBSA, such that it was necessary to split the EBSA into two, and revise the name of this one to Kingklip Corals EBSA to accurately reflect the features comprising the EBSA. This then also required a substantial revision to the description and criteria ranks. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included. Given the new extent and inclusion of additional features, changes were made to almost all criteria ranks. Criterion 1 and 4 were upgraded from Medium to High; Criteria 2, 5 and 6 were downgraded from High to Medium; Criterion 7 was upgraded from Low to Medium; and Criterion 3 remained the same.

The delineation process included an initial stakeholder review, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

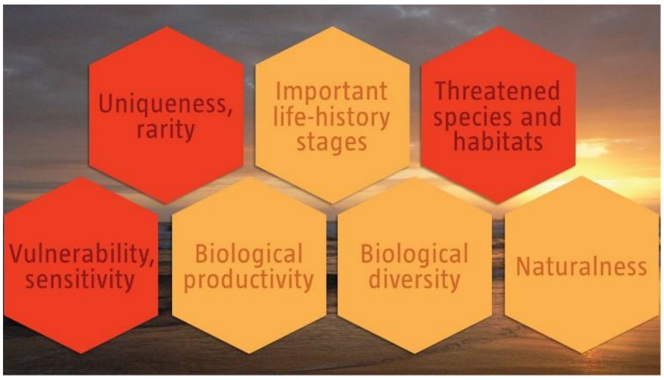
- Key physical features (i.e. the coral mound, ridge, koppies and surrounds) from recent survey work (Sink, 2016).
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA.
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites which relate closely to the EBSA criteria of “Uniqueness and rarity” from the Systematic Conservation Planning process undertaken for Majiedt et al. (2013) and the broader analysis for the BCLME by Holness et al. (2014).
- Areas of high relative naturalness identified in the National Biodiversity Assessment 2011 (Sink et al., 2012), the West Coast (Majiedt et al., 2013) and the BCLME spatial assessments (Holness et al., 2014) were included in the analysis. Both pelagic and benthic and coastal condition were incorporated.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).

The multi-criteria analysis resulted a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



Proposed revised boundaries of the Kingklip Corals EBSA.

Status Assessment and Management Options

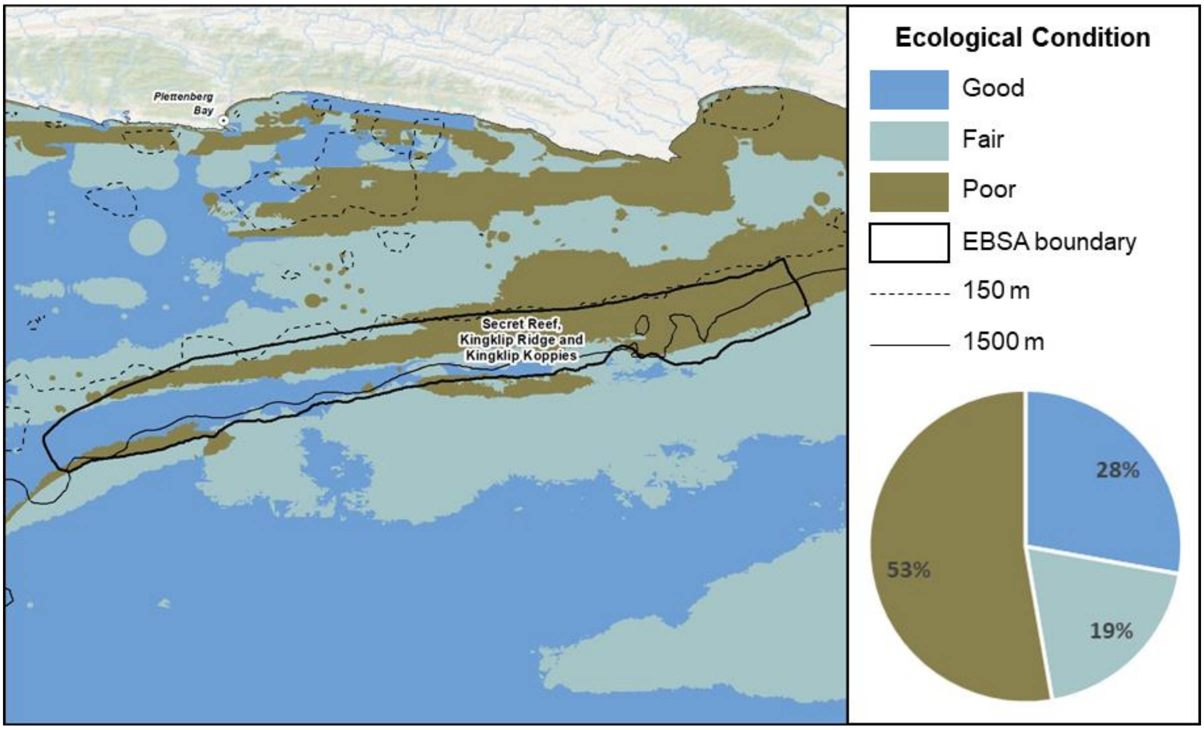


Kingklip Corals *is collection of several newly discovered benthic features that seem to be connected: Secret Reef is an untrawled biogenic coral reef structure, linked to a unique rocky ridge and undersea hills; all of which support fragile species. Above the ridge are dense clouds of plankton and hake. The unique Kingklip Ridge and Kingklip Koppies ecosystem types are both threatened.*

EBSA criteria coloured by rank for Kingklip Corals: red=high, orange=medium.

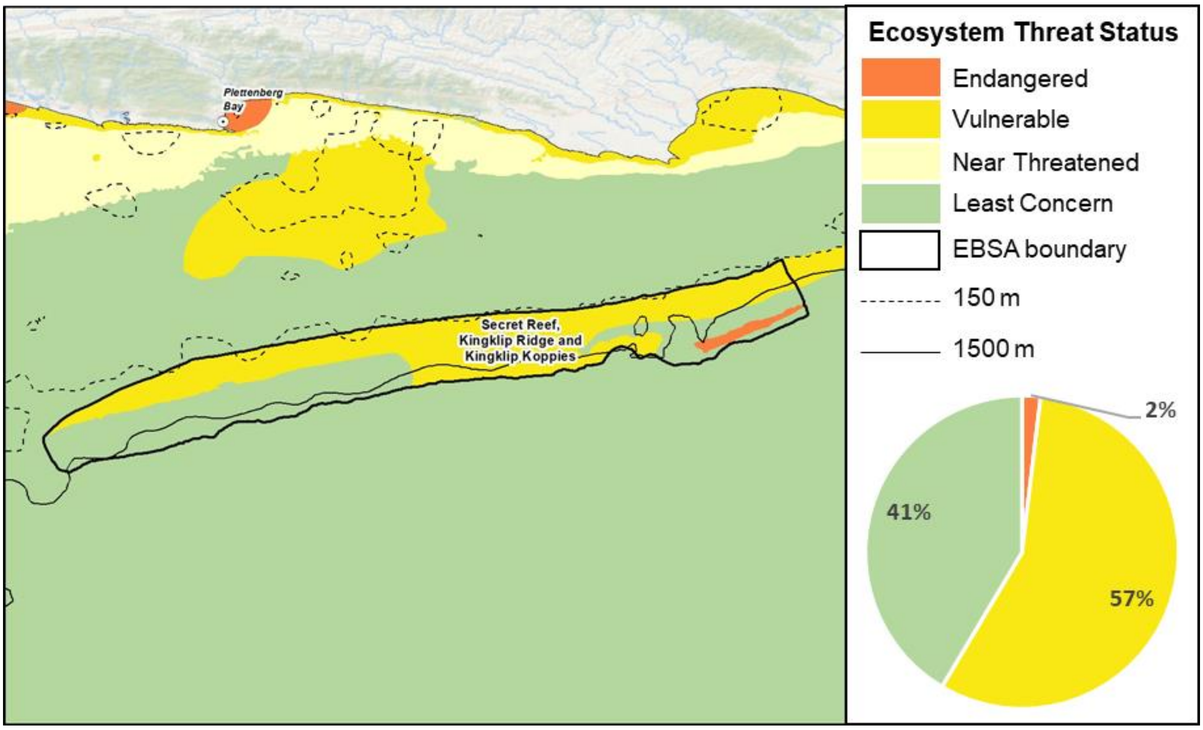
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Kingklip Corals comprises interesting and unique features and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity, importance for threatened species and habitats, and vulnerability and sensitivity. There are five ecosystem types represented that contain fragile species, like corals, that are especially sensitive to damage. Two of the ecosystem types are unique to the area, and are threatened. The features and diversity within EBSA are not well known because they are so newly discovered, but it's likely that these unique ecosystem types also support similarly unique and threatened communities.

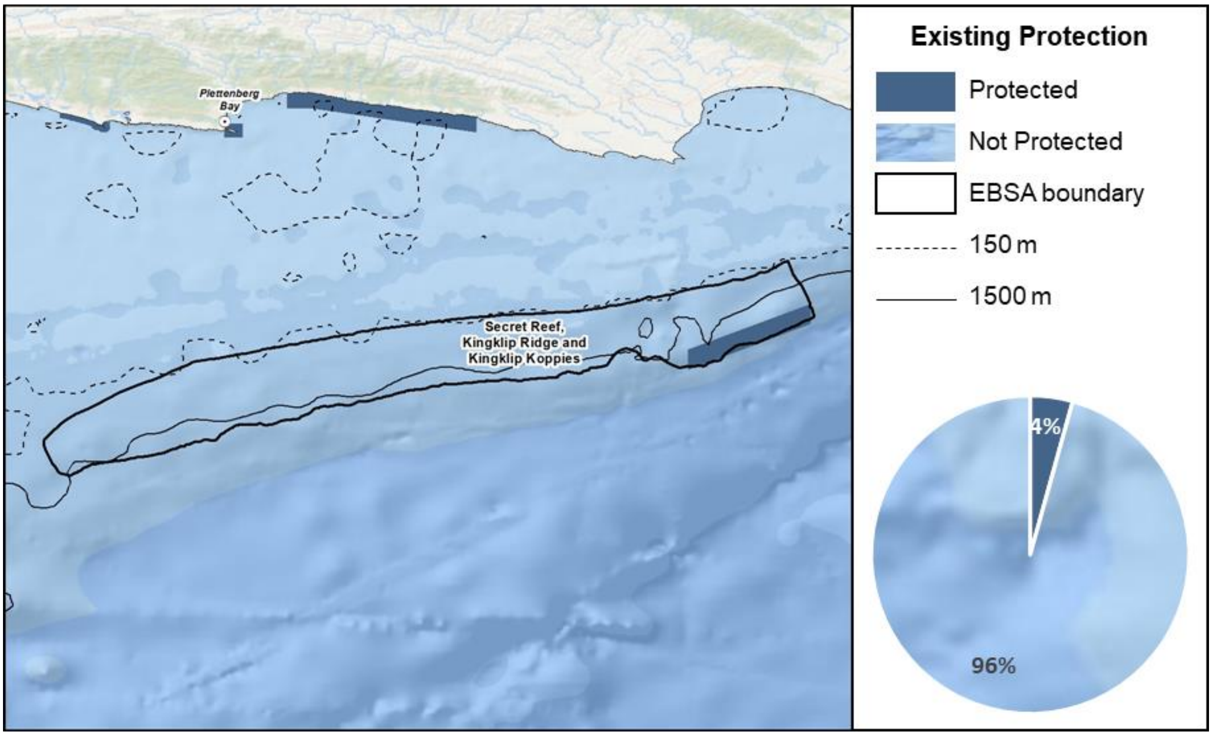


Kingklip Corals proportion of area in each ecological condition category.

Kingklip Corals is mostly in poor ecological condition (53%), with some portions that are still in good (28%) or fair (19%) ecological condition. Consequently, the bulk of EBSA is threatened, comprising Endangered (2%) and Vulnerable (57%) ecosystem types; the remaining 41% is Least Concern.



Kingklip Corals proportion of area in each ecosystem threat status category.



Kingklip Corals proportion of area in a Marine Protected Area (MPA).

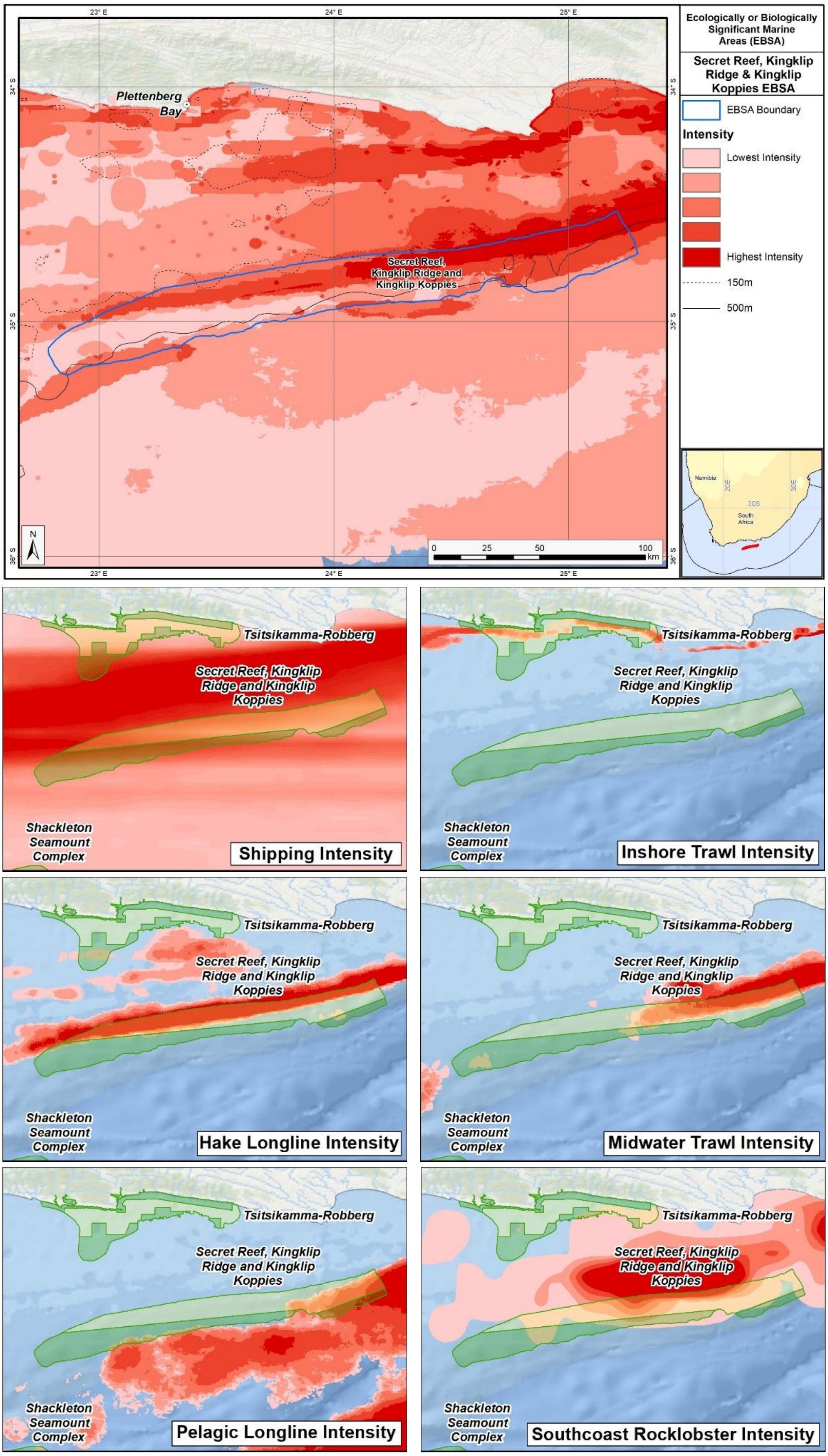
Protection of features in MPAs has been improved following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing from no protection to 4% protection. The new MPA covers the Kingklip Ridge. This has improved the protection levels of some ecosystem types, but there are still some in the EBSA that are poorly or not protected.

Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

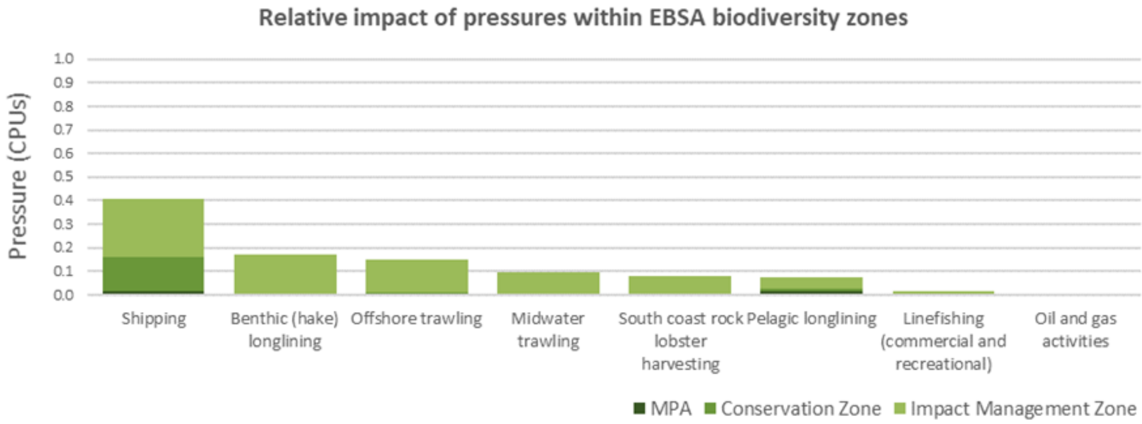
Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Agulhas Coarse Sediment Shelf Edge	VU	PP	7.1	15.8	77.1
Agulhas Plateau Mosaic	LC	MP	69.4	11.9	18.7
Kingklip Koppies	VU	NP	27.8	45.9	26.3
Kingklip Ridge	EN	MP	0.0	28.5	71.5
Southwest Indian Upper Slope	LC	WP	0.2	25.4	74.4
Other Features					
• Fragile scleractinian corals, stylasterine corals, bamboo corals and bryozoans • Clouds of plankton and hake					

Relevant Pressures and Activities (impact, extent)

- There are eight pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent and has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: offshore trawling, benthic (hake) longlining, midwater trawling, pelagic longlining, south coast rock lobster harvesting, linefishing (commercial and recreational), and oil and gas (exploration and production). These activities will need to be managed particularly well in order to protect the fragile benthic biodiversity, and hake stocks for which this EBSA is recognised.
- For almost all pressures, the substantially larger portion of the activity (sometimes the entire footprint) is in the Impact Management Zone, and the Conservation Zone includes only two activities (shipping and offshore trawling) where the contribution to the EBSA's pressure profile is more than 1%.
- Only oil and gas (exploration and production) comprise <1% of the EBSA pressure profile
- Activities in South Africa that are not present in this EBSA include: abalone harvesting, alien invasive species, beach seining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, kelp harvesting, mariculture, mean annual runoff reduction, mining (prospecting and mining), naval dumping (ammunition), oyster harvesting, tuna pole fishing, ports and harbours, prawn trawling, recreational shore angling, shark netting, small pelagics fishing, squid fishing, subsistence harvesting, inshore trawling, wastewater discharge, and west coast rock lobster harvesting; noting that some of these are coastal pressures that do not apply to offshore EBSAs.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



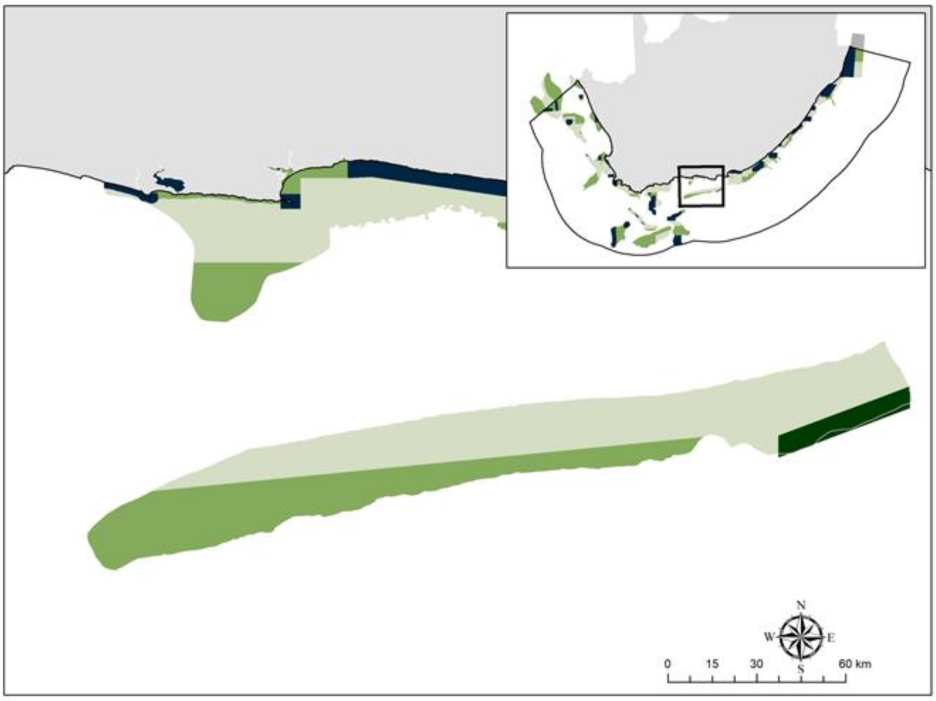
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that linefishing (commercial and recreational) and oil and gas (exploration and production) each comprise <1.2% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. There is also one MPA that is wholly within the EBSA: Port Elizabeth Corals MPA. The activities permitted within this MPA are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

Port Elizabeth Corals MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_portelizabeth_coralsmarine_regulations_g42479gn789.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

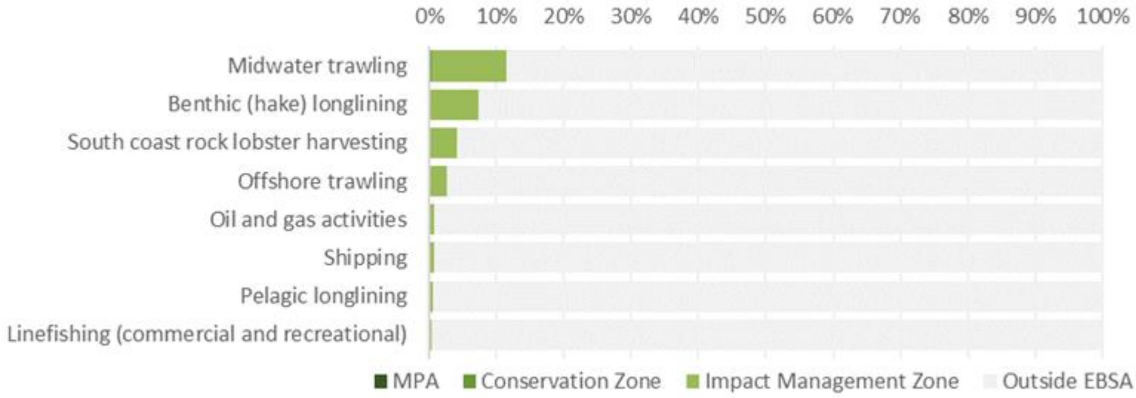
Protection of features in the rest of the Conservation Zone may require additional Marine Protected
Protection of features in the rest of the Conservation Zone may require additional Marine Protected
Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

Activity Evaluation Per Zone: Zoning Feasibility

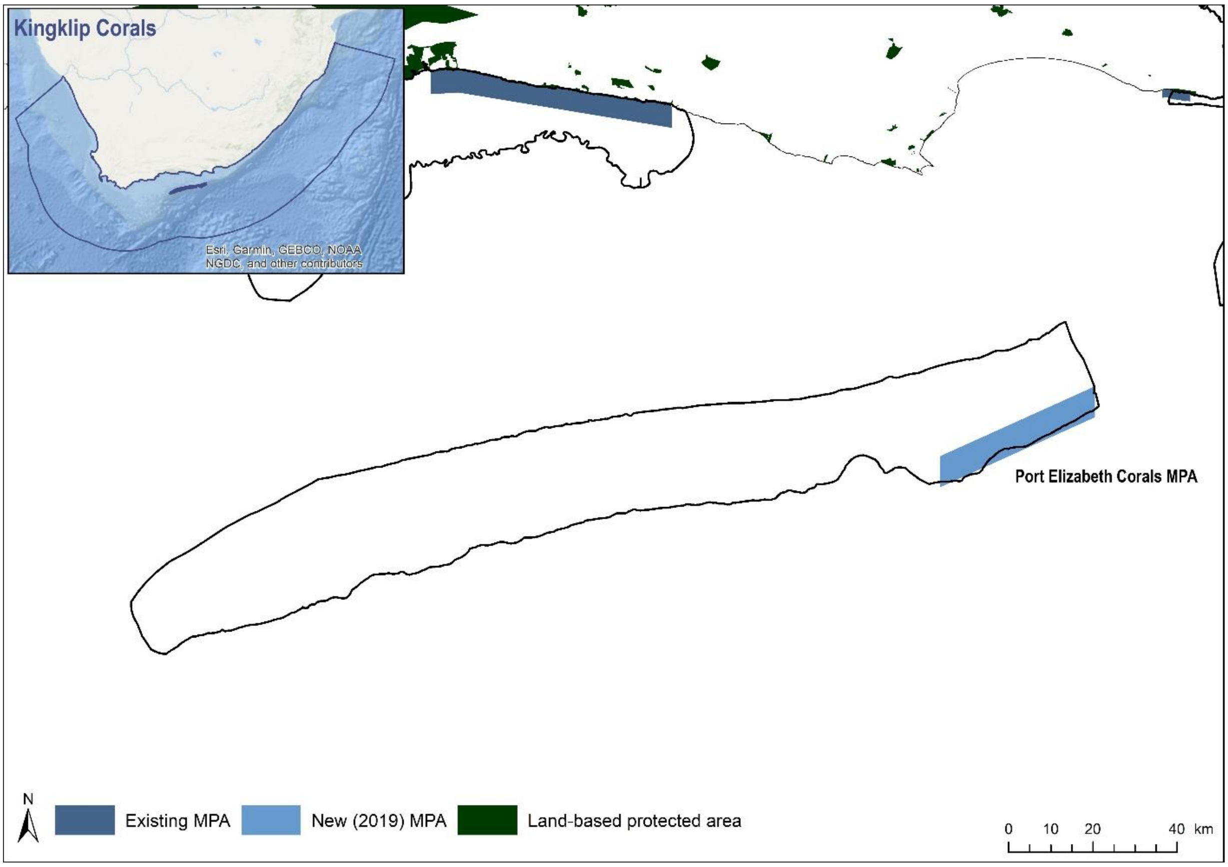


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Almost a fifth of the country's midwater trawling is within the EBSA, almost exclusively within the Impact Management Zone. It is recommended to continue as a Consent activity in both EBSA zones. The linefisheries in the EBSA include benthic (hake) longlining, pelagic longlining and linefishing (commercial and recreational); these too are present almost entirely in the Impact Management Zone and are recommended to continue as Consent activities in both EBSA zones. Offshore trawling is recommended to continue in the Impact Management Zone as a Consent activity, but it is incompatible with the management objectives of the Conservation Zone and is therefore recommended to be Prohibited in that zone where, after revision of the zone, it currently does not occur. Oil and gas (exploration and production) occur to a very small degree in the EBSA, and is exclusively in the Impact Management Zone, where is may continue subject to appropriate regulation. Shipping is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities. Note that the footprints of these activities are given based on their footprint prior to proclamation of the new Port Elizabeth Corals MPA.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Port Elizabeth Corals MPA in 2019. It is recommended that full operationalisation of the new MPA is implemented, including a management plan, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. Other tools could also be explored as interim measures towards formal protection in MPAs, e.g., a fisheries management area at Secret Reef. See Future Process below for more details.

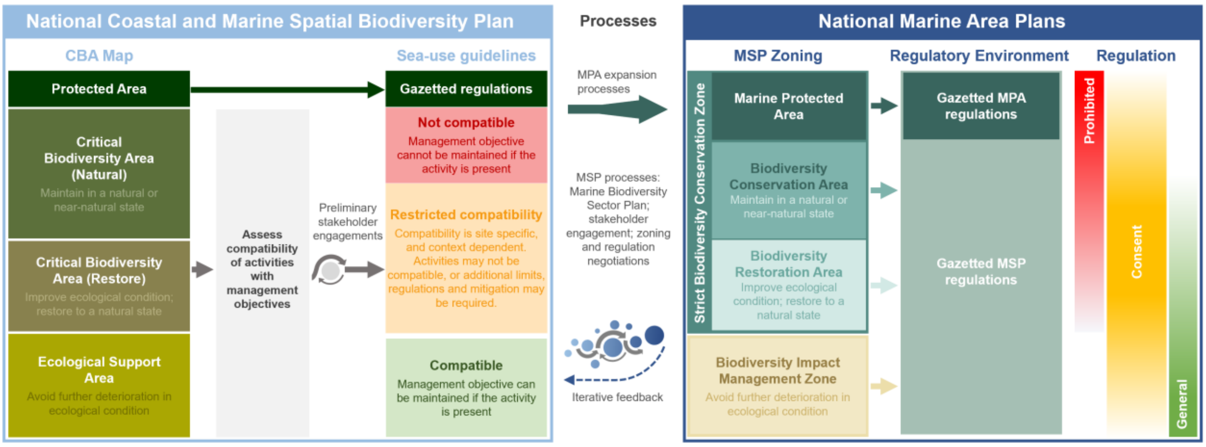


Marine protected areas (MPAs) in the Kingklip Corals EBSA. Land-based protected areas are from DFFE (2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Kingklip Corals, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

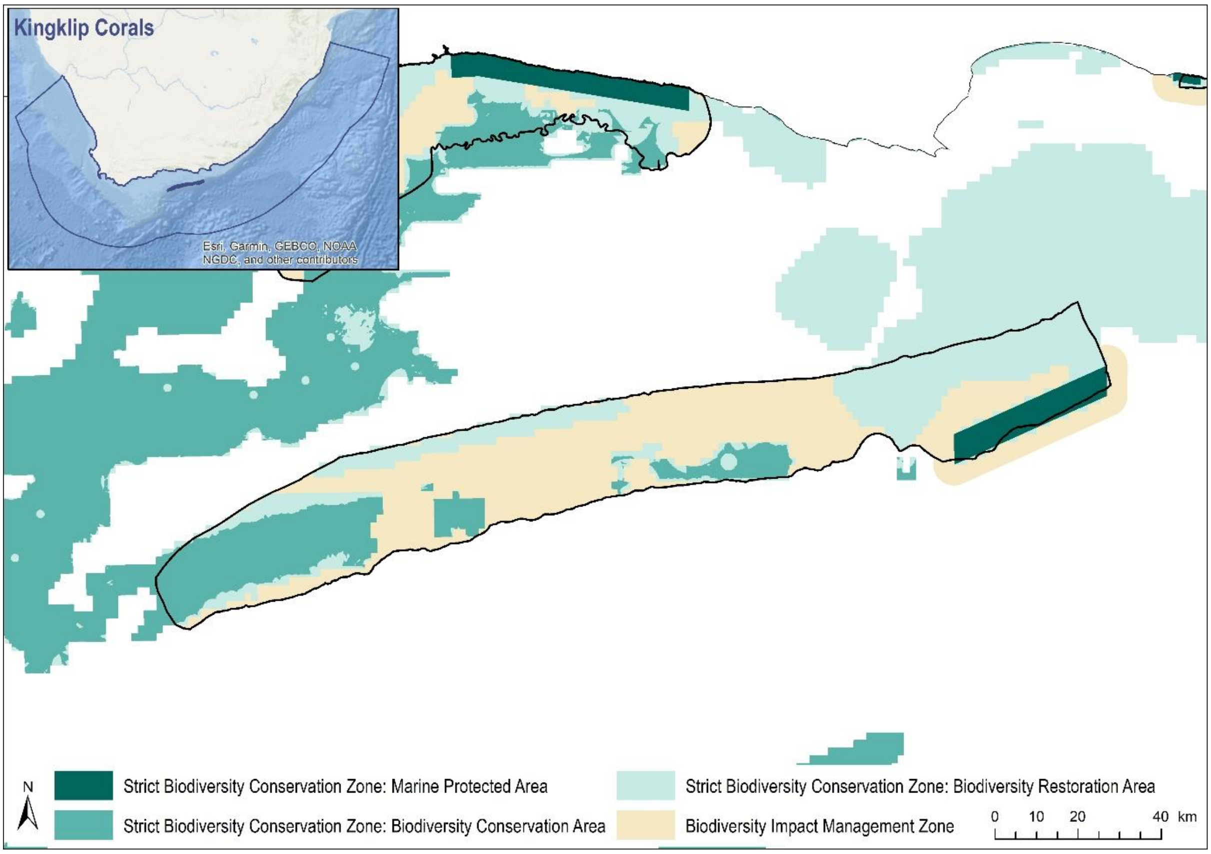


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Kingklip Corals.

Port Elizabeth Corals MPA is the only MPA in this EBSA. It is managed according to the gazetted management regulations for this MPA. About half of the rest of the Strict Biodiversity Conservation Zone is a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. The remaining half of the Strict Biodiversity Conservation Zone comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Kingklip Corals EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Kingklip Corals. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, it is highlighted here that biological sampling and surveys are especially recommended to improve the foundational knowledge of this site. Future research is also needed to determine the extent of connectivity among the three key benthic features (Secret Reef, Kingklip Koppies, and Kingklip Ridge).

Future Process

There needs to be full operationalisation and practical implementation of the Port Elizabeth Corals MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Other tools could also be explored as interim measures towards formal protection in MPAs, e.g., a fisheries management area at Secret Reef.

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Algoa to Amathole (Formerly Offshore of Port Elizabeth)

Revised EBSA Description

General Information

Summary

This EBSA encompasses the likely biggest single collection of significant and special marine features in all of South Africa that also jointly support key ecological processes, including important land-sea connections. Complex ocean circulation occurs here, where the Agulhas Current leaves the coast, following the shelf break. This results in the formation of cold-water eddies, intrusions of Agulhas water onto the shelf and large offshore meanders of the Agulhas Current. Consequently, this EBSA includes spawning areas, nursery areas and key transport pathways for demersal and pelagic fish. In turn this supports a myriad of top predators, including shark and seabird breeding and foraging areas. Notably, the islands in Algoa Bay support the easternmost colony of Endangered African penguins and the largest colony of Cape Gannets in southern Africa. Given the regional oceanography, regionally Critically Endangered leatherback and regionally Near Threatened loggerhead turtles migrate through the EBSA between their nesting and foraging grounds, with hatchlings of both species also passing through during their dispersal from the nesting beaches. Green turtles have also been sighted in the area. Further, the EBSA includes 36 ecosystem types, 18 of which are threatened and a further seven that are Near Threatened. Sensitive features and species include submarine canyons, steep shelf edge, deep reefs, outer shelf and shelf edge gravels, and reef-building cold-water corals ranging in depth between 100 and 1000 m. It also contains several key biodiversity features, including: stromatolites; sites where coelocanths are present; a Critically Endangered localised endemic estuarine pipefish; several priority estuaries; rare ecosystem types of limited spatial extent; and a few existing coastal marine protected areas.

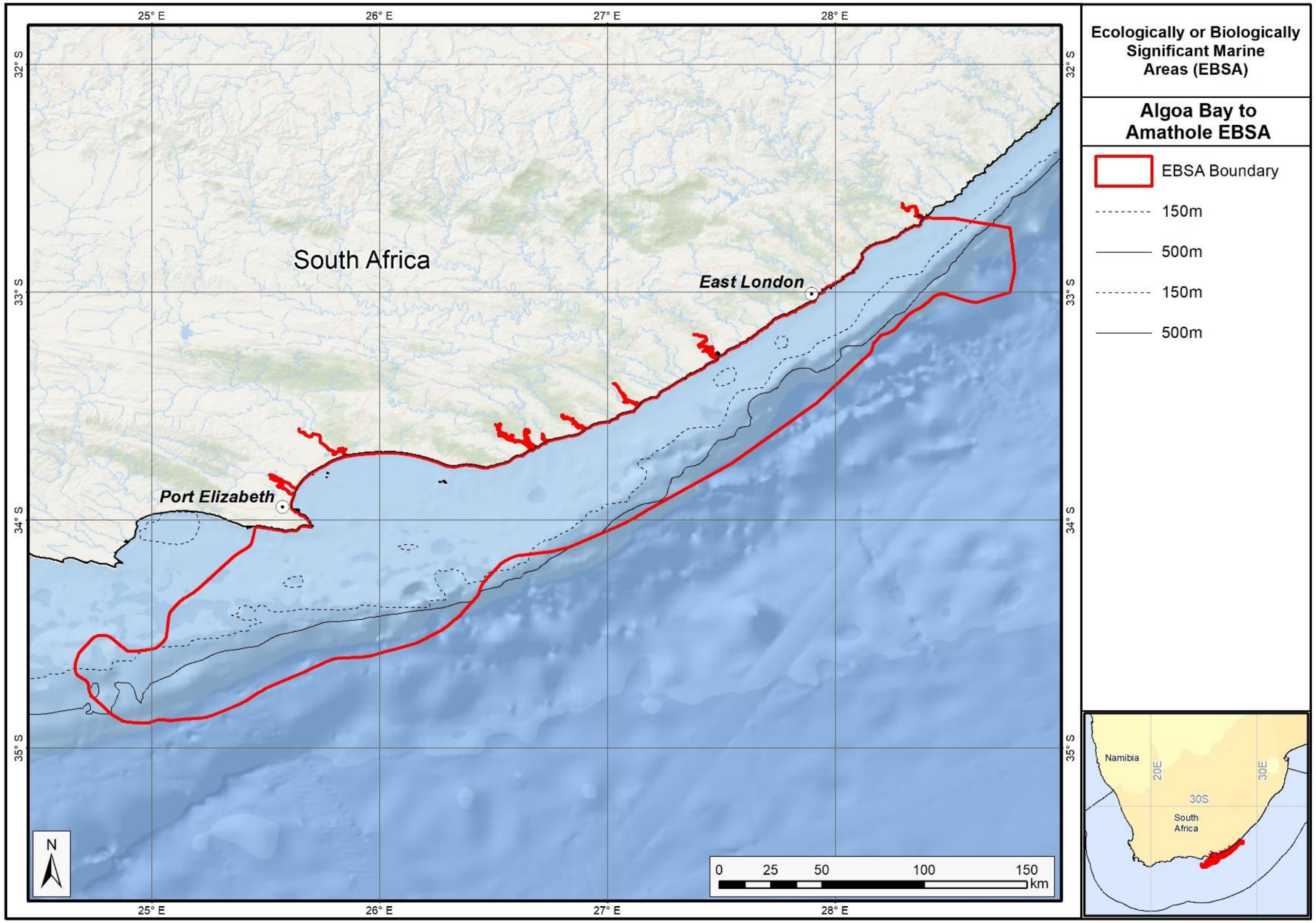
Introduction of the area

This EBSA spans the Eastern Cape shoreline in South Africa between Sardinia Bay MPA and Amathole MPA/Kei River mouth. It extends from the dune base to approximately the continental shelf break/slope, thus spanning a depth range of approximately 0-2000 m. It is important for both benthic and pelagic features, comprising an offshore area of high habitat complexity, and containing a myriad of unique and interesting biodiversity features. Benthic features include a large shelf-intersecting canyon (Sink et al., 2011), and rare seabed ecosystem types (Sink et al., 2012). The pelagic environment is characterised by complex ocean circulation patterns because the EBSA includes the point where the Agulhas Current leaves the coast, following the shelf break. This results in the formation of cold-water eddies, intrusions of Agulhas water onto the shelf, large offshore meanders of the Agulhas Current, and upwelling. This oceanography supports key ecological processes. Given the close proximity of the Eastern Cape universities, there is substantial ecological research and data available for this coastal area, and an extensive array of in-water devices for long-term ecological research within Algoa Bay.

Description of the location

EBSA Region

Southern Indian Ocean



Proposed revised boundaries of the Algoa to Amathole EBSA.

Description of location

This EBSA spans the Eastern Cape shoreline between Sardinia Bay MPA and Amathole MPA / Kei River mouth in South Africa. It extends from the dune base to approximately the continental shelf break, as far west as south of Cape St Francis, and also encompasses the functional zone of several priority estuaries. It lies entirely within South Africa's national jurisdiction.

Area Details

Feature description of the area

Algoa to Amathole EBSA is one of the most ecologically and biologically significant areas in South Africa. This area contains a myriad of rare, unique and diverse physical and biological features that are found on the seabed and in the overlying water column, that in turn support many key processes, including critical land-sea connections. The EBSA centres approximately around Algoa Bay, which also aligns with where the Agulhas Current leaves the coast, following the shelf break. This results in complex ocean circulation, including the formation of cold-water eddies, intrusions of Agulhas water onto the shelf, and large offshore meanders of the Agulhas Current; and productivity is enhanced by coastal upwelling (Goschen et al., 2015) and relatively rare surf diatom accumulations in the surf zone (Campbell & Bate 1988, Campbell 1996). Consequently, the area serves as spawning and/or nursery grounds for certain commercially-important demersal and pelagic fish species (Pattrick et al., 2016; Rishworth et al., 2015), squid (Downey-Breedt et al., 2016; Lipiński et al., 2016) sharks (Smale et al., 2015) and whales (Melly et al., in press); as transiting/foraging areas for seabirds, sharks, cetaceans (e.g., Koper et al., 2016; Melly et al., in press), and turtles; and forms part of the migration routes of loggerhead and leatherback turtles (Harris et al., 2018), with hatchlings of both species passing through the area during their dispersal. Green turtles, killer whales and coelocanths have also been sighted in the area. Notably, Algoa Bay hosts the largest groups of bottlenose dolphins (Bouveroux et al., 2018), largest colony of Endangered African penguins (Pichegru et al., 2010), and largest colony of Cape gannets (Crawford et al., 2007) in the world.

The new delineation of this EBSA to include priority estuaries, now includes breeding sites of the Critically Endangered, and locally endemic pipefish: *Syngnathus watermeyeri* (Vorwerk et al., 2007). These estuaries, together with the extension to include the coastal areas, also better represents some critical ecological processes that support the important offshore features. For example, these include key linkages among spawning, post-hatch and nursery areas commercially important fish species that span the surf zone to nearshore and the shelf (Pattrick et al., 2016). Many of the fish in the area also use the estuaries for part of their life-histories. The EBSA thus contains the following Important Bird Areas: 1. Algoa Bay Islands: Addo Elephant National Park; 2. Swartkops Estuary - Redhouse and Chatty Saltpans; and is adjacent to the Woody Cape Section: Addo Elephant National Park IBA.

Habitat diversity is also high within the EBSA. There are 36 ecosystem types represented (Sink et al., 2019), with benthic features including stromatolites, canyons, steep shelf edge, deep reefs, outer shelf and shelf edge gravels, and reef-building cold-water corals ranging in depth between -100 and -1000 m. There is also growing research (with interesting results) into marine biochemistry, microbiology, and potential pharmaceuticals and natural products from the biota in Algoa Bay and surrounds (e.g., Matobole et al., 2017; Ntozonke et al., 2017; Waterworth et al., 2017), as well as research into the recently discovered stromatolites on the shore (Perissinotto et al., 2014).

There has been substantial research in the area since the EBSA was first proposed, which has contributed significantly to identifying the features that are present, their extent and importance. The boundary of this EBSA was refined to align with initiatives to expand South Africa's MPA network, and better represent the underlying features comprising the EBSA to improve precision in the delineation, including: the canyons, rocky ridge, fragile and sensitive habitat-forming species, other key species, and key (threatened) habitats. This was based on the best available data (e.g., GEBCO Compilation Group 2019; Harris et al., 2014; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). New fine-scale mapping of the coast (Harris et al., 2019) also allowed a more accuracte coastal boundary to be delineated. Further, the new boundary includes more of the existing coastal MPAs in the region. It is presented as a Type 2 EBSA because it contains "spatially stable features whose individual positions are known, but a number of individual cases are being grouped" (sensu Johnson et al., 2018).

Feature conditions and future outlook of the proposed area

The South African National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) indicated declining conditions overall in this area (based on pressure data and an ecosystem-pressure matrix) with conditions ranging from fair to poor across this broad area. Key pressures include commercial demersal trawl and longline fisheries, a midwater trawl fishery, linefishing, trap fisheries for rock lobster, shark fisheries and mining (prospecting and mining) activities. Red tides have also become more common in recent years, some of which have been toxic (Pitcher et al., 2014). However, a large portion of Algoa Bay has been proclaimed as a marine protected area, which will serve as a marine extension to the existing terrestrial Greater Addo Elephant National Park. The Amathole Offshore MPA has also come into effect, in addition to the several small existing coastal MPAs included in the new boundary. Research is ongoing in this area.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Algoa to Amathole EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Endangered	Kei Fluvial Fan	40.8	0.2
	Kei Reef Complex	93.0	0.5
Vulnerable	Agulhas Bays - East	1003.0	5.1
	Agulhas Coarse Sediment Shelf Edge	1221.5	6.2
	Agulhas Exposed Rocky Shore	6.2	0.0
	Agulhas Exposed-Stromatolite Rocky Shore	3.6	0.0
	Agulhas Inner Shelf Reef Sand Mosaic	373.3	1.9
	Agulhas Island Shore	3.0	0.0
	Agulhas Mid Shelf Reef Complex	35.1	0.2
	Agulhas Sandy Inner Shelf	411.4	2.1
	Agulhas Sandy Outer Shelf	4525.8	23.0
	Agulhas Stromatolite Mixed Shore	4.0	0.0
	Agulhas Upper Canyons	102.0	0.5
	Agulhas Very Exposed Rocky Shore	0.4	0.0
	Amathole Hard Shelf Edge	468.7	2.4
	Warm Temperate Large Fluvially Dominated Estuary	5.7	0.0
	Warm Temperate Large Temporarily Closed Estuary	9.0	0.0
	Warm Temperate Predominantly Open Estuary	76.5	0.4
Near Threatened	Agulhas Boulder Shore	0.6	0.0
	Agulhas Dissipative Sandy Shore	1.5	0.0
	Agulhas Mid Shelf Reef Sand Mosaic	396.0	2.0
	Agulhas Mixed Shore	60.4	0.3
	Agulhas Sandy Mid Shelf	3615.3	18.4
	Agulhas Very Exposed-Stromatolite Rocky Shore	0.2	0.0
	Amathole Lace Corals	131.7	0.7
Least Concern	Agulhas Dissipative-Intermediate Sandy Shore	50.5	0.3
	Agulhas Intermediate Sandy Shore	0.8	0.0
	Agulhas Lower Canyons	1152.5	5.9
	Natal Deep Shelf Edge	370.7	1.9
	Natal Pondoland Lower Canyons	612.7	3.1
	Pondoland Mid Shelf Coarse Sediment Reef Mosaic(B)	1316.4	6.7
	Pondoland Shelf Edge Gravel Reef Mosaic	261.8	1.3
	Southwest Indian Mid Slope	2128.7	10.8
	Southwest Indian Upper Slope	1172.7	6.0
	Warm Temperate Small Temporarily Closed Estuary	3.6	0.0
N/A	Warm Temperate Micro-estuary	0.5	0.0
Grand Total		**19659.6**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

Rare ecosystem types in this region include outer shelf mixed sediments, canyons and stromatolites (Sink et al., 2019), and relatively rare – nationally and globally – surf diatom accumulations (Campbell

1996, Campbell & Bate 1988). This site includes a large canyon that intersects with the shelf (Sink et al., 2011). It also contains a Critically Endangered localised endemic estuarine pipefish, and sites where coelocanths are present.

C2: Special importance for life-history stages of species **High**
Justification
This area includes breeding and foraging areas for African penguins and Cape gannets (Sink et al., 2011). BirdLife International data also indicate importance for damara terns, kelp gulls and roseate terns, with three IBAs within or adjacent to the EBSA. Species that have shown spawning activity in this area include (among others) kingklip, squid, sparids, sardine, anchovy, kob and hake (Hutchings et al., 2002, Sink et al., 2011; Mhlongo et al., 2015, Downey-Breedt et al., 2016; Lipiński et al., 2016; Pattrick et al., 2016). This is considered an area of crucial importance for the eggs and larvae spawned upstream to enter the Agulhas Bank nursery area (Hutchings et al., 2002). Algoa to Amathole is also particularly important for mussel larvae (Weidberg et al., 2015) and spiny lobsters (Santos et al., 2014). This area is also important as a nursery area for sharks (Smale et al., 2015) and whales (Melly et al., in press), and as transiting/foraging areas for seabirds, sharks, cetaceans (e.g., Koper et al., 2016; Melly et al., in press), and turtles (Harris et al., 2018).

C3: Importance for threatened, endangered or declining species and/or habitats **High**
Justification
This EBSA includes areas important for the survival of several IUCN Red-listed species, including the African penguin *Spheniscus demersus* (Endangered on the IUCN Red List) and the Cape Gannet *Morus capensis* (Vulnerable on the IUCN Red List). This area is also used by green, loggerhead, and leatherback turtles (respectively listed as Endangered, Near Threatened and Critically Endangered on the IUCN global redlist for the South West Indian Ocean region; Petersen et al., 2009, Harris et al., 2018).

There are 18 threatened ecosystem types, and a further seven Near Threatened ecosystem types. The threatened types include the Endangered Kei Fluvial Fan and Kei Reef Complex ecosystem types, and the Vulnerable Agulhas Bays - East, Agulhas Coarse Sediment Shelf Edge, Agulhas Exposed Rocky Shore, Agulhas Exposed-Stromatolite Rocky Shore, Agulhas Inner Shelf Reef Sand Mosaic, Agulhas Island Shore, Agulhas Mid Shelf Reef Complex, Agulhas Sandy Inner Shelf, Agulhas Sandy Outer Shelf, Agulhas Stromatolite Mixed Shore, Agulhas Upper Canyons, Agulhas Very Exposed Rocky Shore, Amathole Hard Shelf Edge, Warm Temperate Large Fluvially Dominated Estuary, Warm Temperate Large Temporarily Closed Estuary and Warm Temperate Predominantly Open Estuary ecosystem types.

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**
Justification
This area includes submarine canyons, steep shelf edge, deep reefs and outer shelf and shelf edge gravels. These habitats may support fragile habitat-forming species. Cold-water corals (*Goniocorella dumosa, Solenosmilia variabilis*) have been recorded in the area (Sink et al., 2011) and are in the Iziko South African museum invertebrate collection.

C5: Biological productivity **High**

Justification

Productivity offshore of Port Elizabeth is medium to high, and very variable. Chlorophyll-a concentrations are also highly variable, associated with frequent SST and chlorophyll fronts on the steep outer shelf (Lagabrielle 2009, Sink et al., 2011, Roberson et al., 2017). Coastal upwelling may be driven, or at least enhanced, by the formation of Natal pulses (Goschen et al., 2015).

C6: Biological diversity **High**

Justification

There are 36 ecosystem types comprising this EBSA, including rocky, mixed and boulder shores, stromatolites, estuaries, beaches, bays, shelf, shelf edge, and canyons (Sink et al., 2019). The associated communities supported by these habitats are thus also diverse.

C7: Naturalness **Medium**

Justification

Although some areas are assessed as in poor condition (based on pressure data, see South Africa's National Biodiversity Assessment 2011, 2018; Sink et al., 2012, 2019), there are many examples of ecosystem types in good condition and include examples of features that may support fragile and vulnerable habitat forming species (Sink et al., 2012). Overall, 32% of the EBSA is in good ecological condition, 44% fair and 24% poor (Sink et al., 2019).

Status of submission

The Offshore of Port Elizabeth EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised Algoa to Amathole EBSA name, description, and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

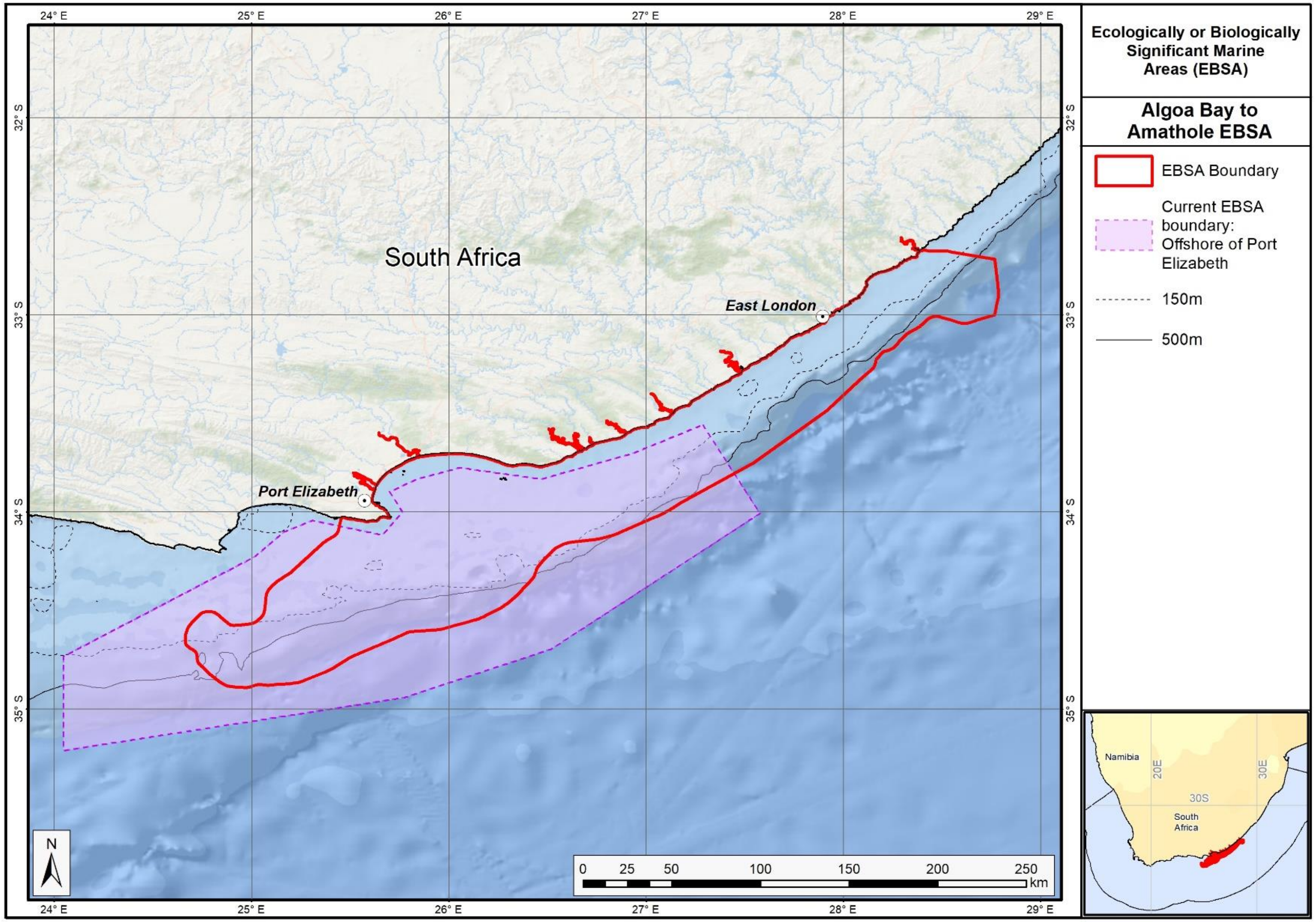
Motivation for Revisions

Significant changes have been made to the delineation of the original Offshore of Port Elizabeth EBSA and to the description, such that it was necessary to split the EBSA into two, and revise the name of this one to Algoa to Amathole EBSA to accurately reflect the geographical location of the EBSA. Additional references have been added and significant updates to the description were made. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included. Given the new extent and inclusion of additional features, criteria level changes were made to Criterion 1: Uniqueness or rarity and Criterion 7: Naturalness, respectively upgraded from medium to high, and low to medium.

An important change has been the significant revision of the EBSA boundaries to reflect the key biodiversity features in this area. The delineation process included an initial stakeholder review which identified the need to update boundaries, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

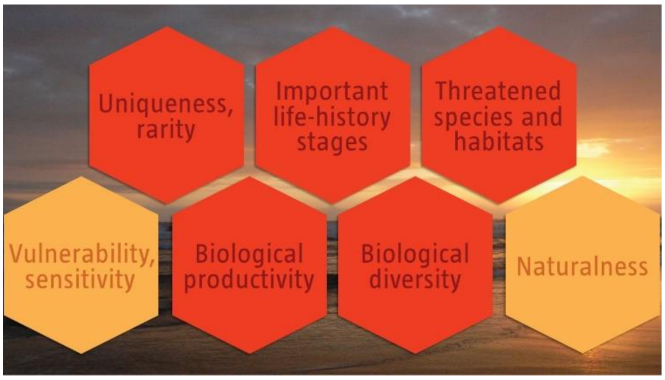
- Key physical features (especially canyons) identified from the latest GEBCO data (GEBCO Compilation Group 2019), global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014), the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) and BCC spatial mapping project (Holness et al., 2014) were incorporated. In addition, island-linked ecosystem types were included (Harris et al., 2019; Sink et al., 2019).
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the Systematic Conservation Plans undertaken for the West Coast by Majiedt et al. (2013), offshore areas (Sink et al., 2011) and by Holness et al. (2014) were incorporated.
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA.
- Areas important for threatened and special species were included. The priority areas and buffer distances around colonies were from Holness et al. (2014). Note that the full extent of the buffer was not necessarily included in the EBSA. Features included in the analysis were:
    - African Penguin colonies and a 20 km buffer.
    - Cape Cormorant and White Breasted Cormorant colonies and a 40 km buffer.
    - Gannet colonies with a 40 km buffer.
    - Seal Colonies and a 20 km buffer.
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011 (Sink et al., 2012a) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).
- The coastal boundary was refined to be more accurate based on new data (Harris et al., 2019).

The multi-criteria analysis resulted in a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Algoa to Amathole EBSA in relation to the original Offshore of Port Elizabeth EBSA.

Status Assessment and Management Options

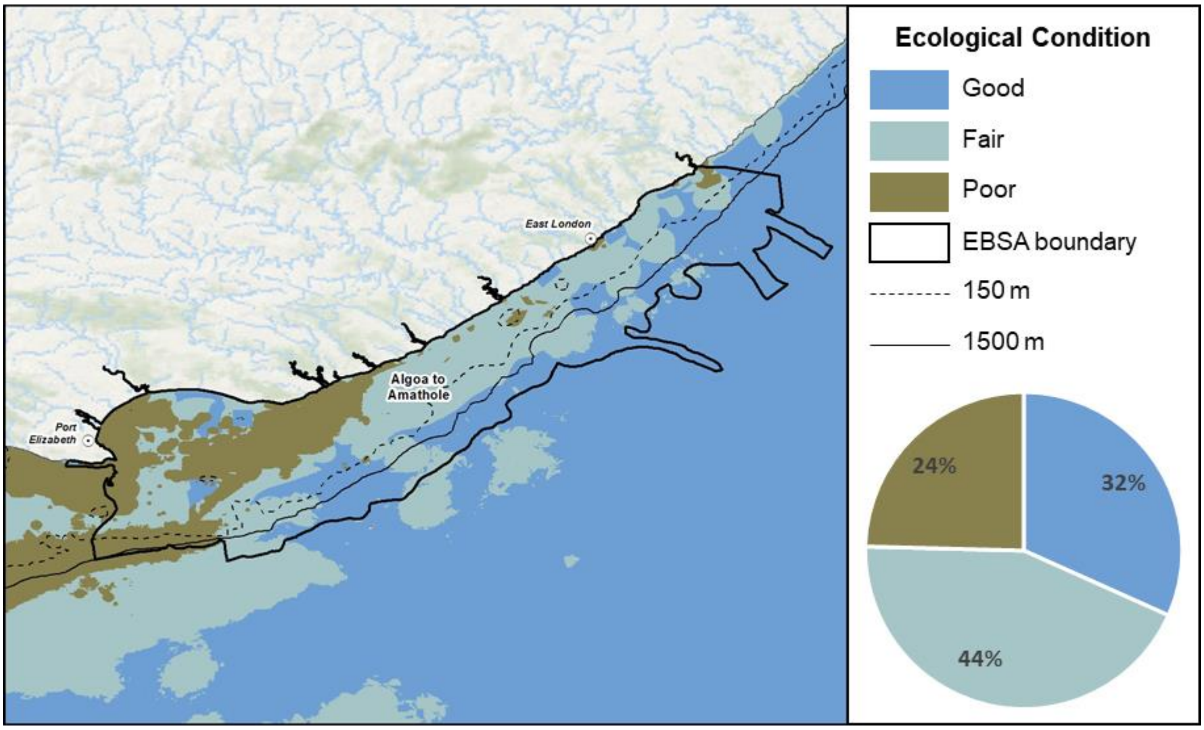


***Algoa to Amathole** encompasses the likely biggest single collection of significant and special marine features in all of South Africa that also jointly support key ecological processes, including important land-sea connections. It is a productive, diverse area that contains rare and unique features and species, and is especially important for several threatened species, notably seabirds, that breed, rest and forage within the EBSA.*

EBSA criteria coloured by rank for Algoa to Amathole: red=high, orange=medium.

Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

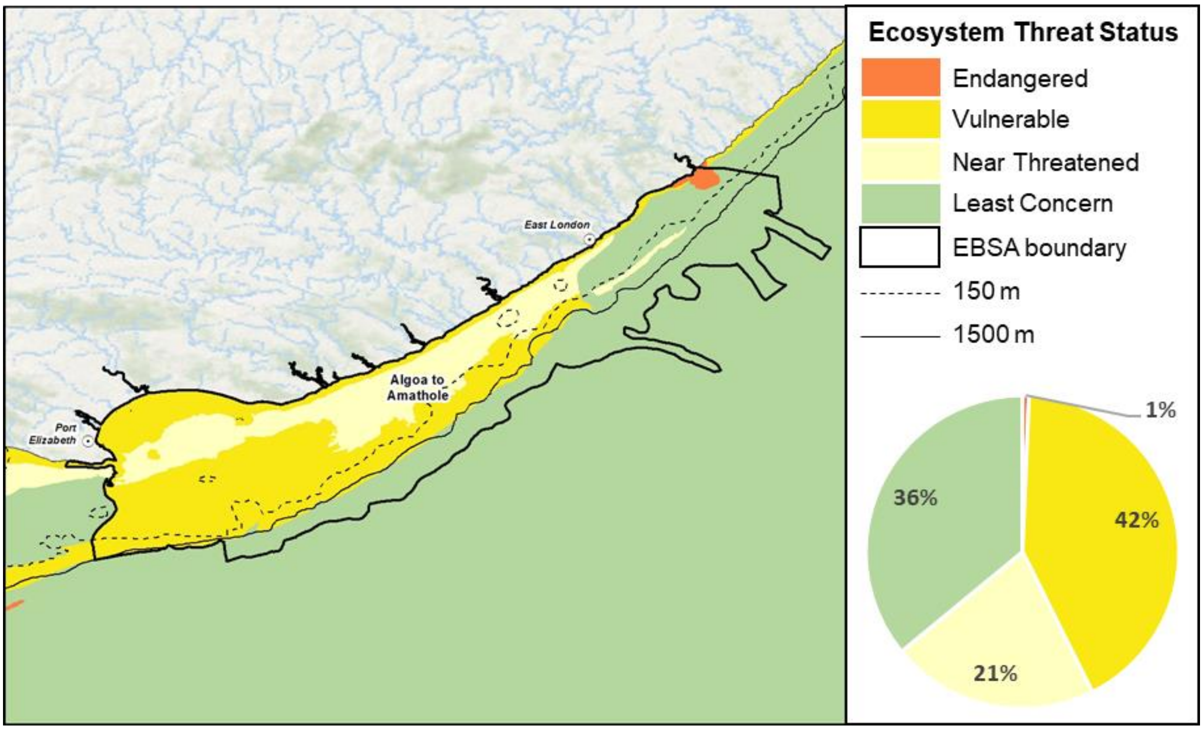
Algoa to Amathole has a particularly rich collection of features and ecosystem types that need to be protected for the area to maintain the features and processes that give it its EBSA status. There are 36 ecosystem types represented, of which the mosaics, rocky shores, rocky shelf and shelf edge, canyons and Amathole Lace Coral ecosystem types and contain fragile species that are especially sensitive to damage. The EBSA also includes Algoa Bay, four islands and several rocky islets, stromatolites, and several priority estuaries also include some sensitive species, contribute to numerous ecological functions, and contribute to a particularly rich diversity in this EBSA.



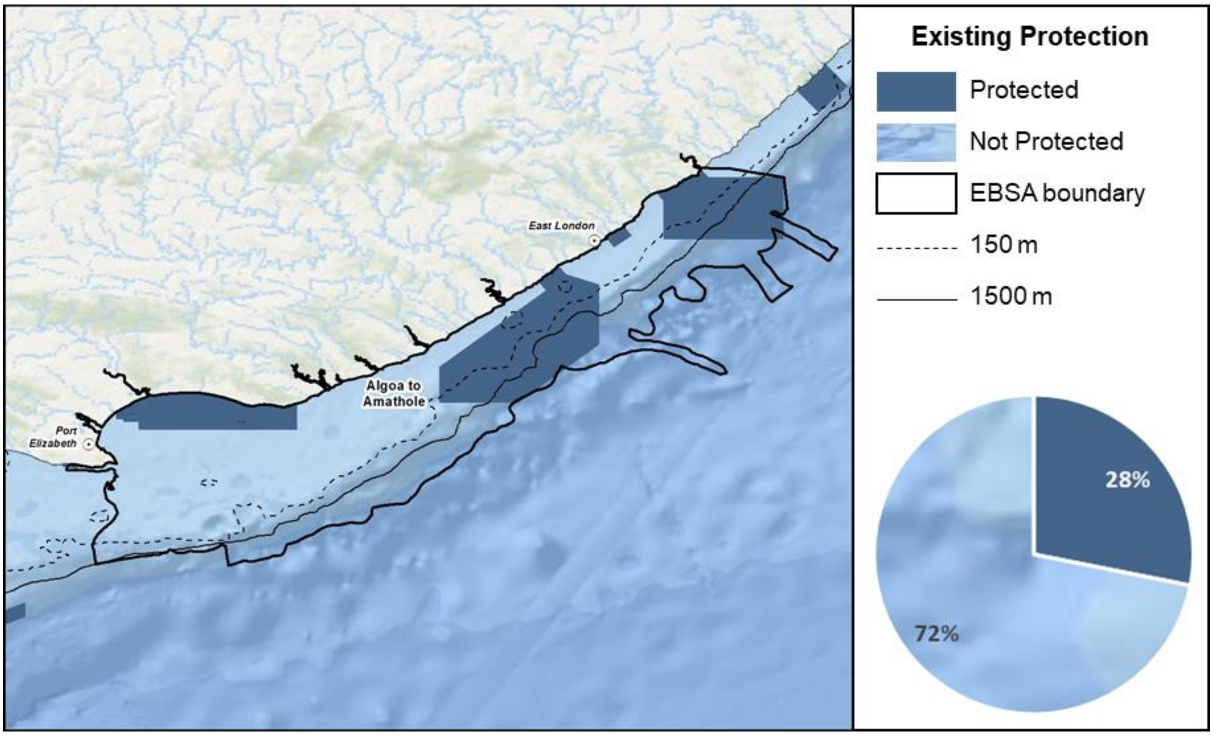
Algoa to Amathole proportion of area in each ecological condition category.

Algoa to Amathole is largely in good (32%) to fair (44%) ecological condition, with a quarter (24%) in poor ecological condition, mainly linked to the development and economic nodes at Port Elizabeth and Port Alfred. Consequently, the bulk of the offshore extent is either Vulnerable (42%) or Near Threatened (21%), with only a fraction (1%) that is Endangered, and the rest, Least Concern (36%).

The Endangered ecosystem types cluster at the Kei mouth, and/or contain fragile species: Kei Fluvial Fan; Kei Reef Mosaic and Agulhas Sheltered Rocky Shore.



Algoa to Amathole proportion of area in each ecosystem threat status category.



Algoa to Amathole proportion of area in a Marine Protected Area (MPA).

Protection of features in MPAs has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing by more than an order of magnitude from <2% to 28%. These new MPAs cover the eastern end of

Algoa Bay, and offshore areas in Amathole, protecting key (fragile and/or threatened) species, important life-history stages and many ecosystem types.

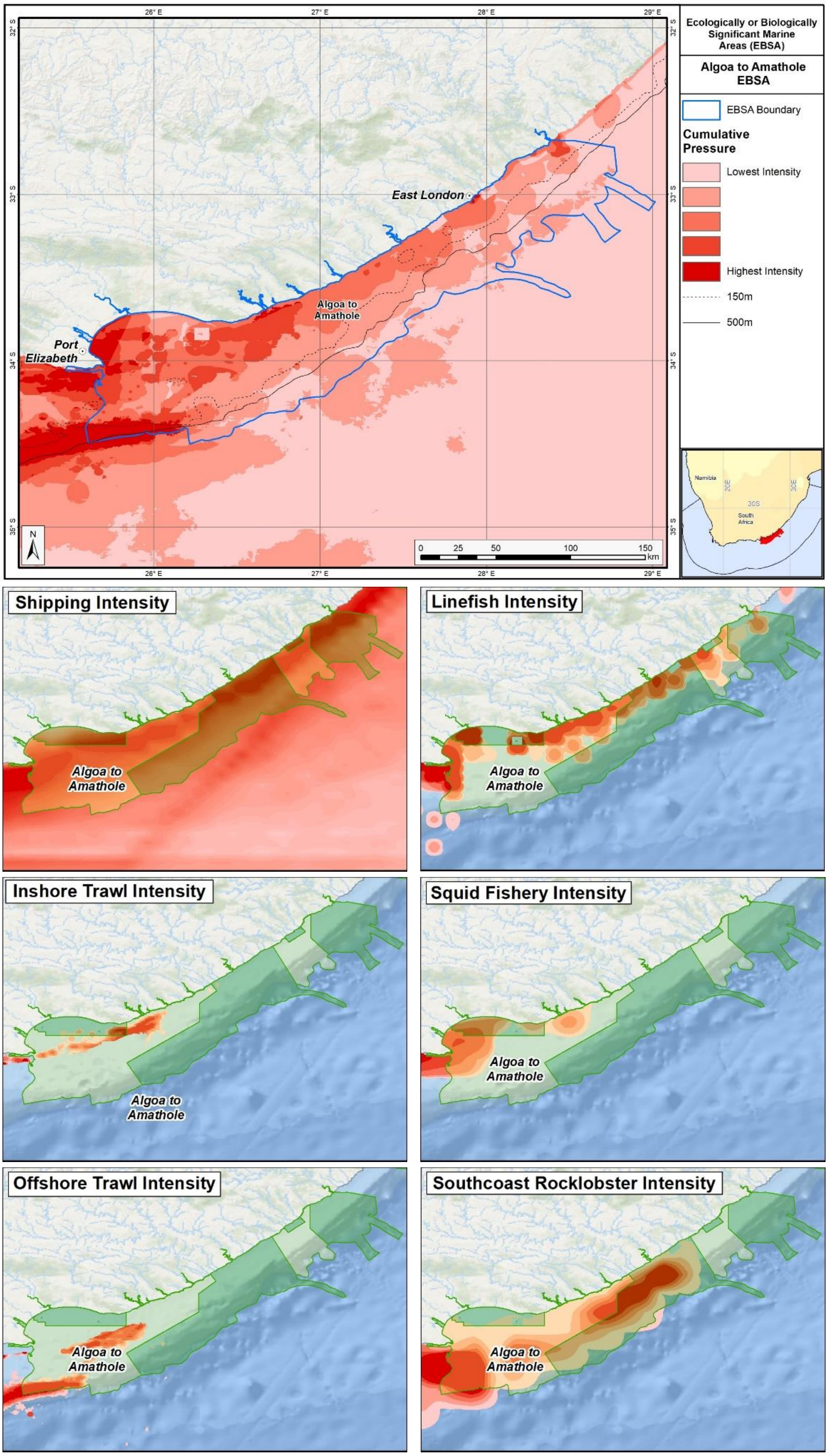
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Agulhas Boulder Shore	NT	WP	56.9	20.3	22.8
Agulhas Coarse Sediment Shelf Edge	VU	PP	36.0	31.0	33.0
Agulhas Dissipative Intermediate Sandy Shore	LC	WP	72.0	13.6	14.4
Agulhas Dissipative Sandy Shore	NT	WP	46.0	26.2	27.8
Agulhas Exposed Rocky Shore	VU	MP	23.5	19.1	57.4
Agulhas Exposed Stromatolite Rocky Shore	VU	PP	11.9	58.4	29.7
Agulhas Inner Shelf Mosaic	VU	MP	10.7	26.0	63.3
Agulhas Intermediate Sandy Shore	LC	MP	42.9	29.8	27.4
Agulhas Island	VU	WP	91.4	0.4	8.2
Agulhas Lower Canyon	LC	MP	57.8	42.2	0.0
Agulhas Mid Shelf Mosaic	NT	MP	11.0	81.4	7.7
Agulhas Mid Shelf Reef	VU	MP	0.0	15.8	84.2
Agulhas Mixed Shore	NT	MP	22.1	45.3	32.6
Agulhas Sandy Inner Shelf	VU	MP	16.4	67.3	16.2
Agulhas Sandy Mid Shelf	NT	MP	2.5	58.0	39.5
Agulhas Sandy Outer Shelf	VU	PP	12.4	46.7	41.0
Agulhas Stromatolite Mixed Shore	VU	MP	12.4	61.7	25.9
Agulhas Upper Canyon	VU	WP	20.7	79.3	0.0
Agulhas Very Exposed Rocky Shore	VU	MP	18.9	77.8	3.3
Agulhas Very Exposed Stromatolite Rocky Shore	NT	MP	98.1	1.9	0.0
Amathole Hard Shelf Edge	VU	WP	21.9	75.6	2.5
Amathole Lace Corals	NT	MP	30.8	69.2	0.0
Eastern Agulhas Bay	VU	MP	10.8	29.0	60.2
Kei Fluvial Fan	EN	MP	0.1	65.7	34.2
Kei Reef Mosaic	EN	MP	0.0	21.7	78.3
Natal Deep Shelf Edge	LC	MP	70.0	30.0	0.0
Natal Lower Canyon	LC	WP	99.9	0.1	0.0
Southwest Indian Mid Slope	LC	PP	78.6	21.4	0.0
Southwest Indian Upper Slope	LC	WP	79.8	20.2	0.0
Warm Temperate Large Fluvially Dominated	VU	PP	1.5	59.4	39.1
Warm Temperate Large Temporarily Closed	VU	PP	23.7	40.8	35.6
Warm Temperate Micro-estuary	NA	NA	61.1	30.2	8.7
Warm Temperate Predominantly Open	VU	PP	3.9	43.5	52.6
Other Features					
• Numerous cetacean species, including mother-calf pairs of whales during particular seasons and the largest pods of bottlenose dolphins in the world					

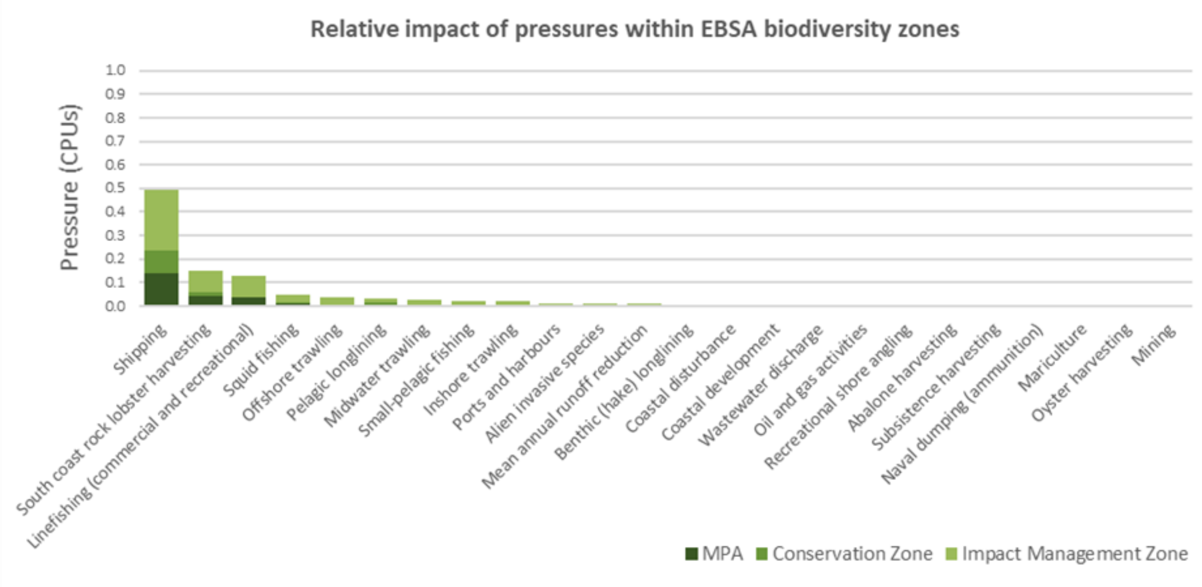
- Numerous seabird species, many of which are threatened, notably the African penguin colony at St Croix Island and the Cape gannet colony at Bird Island
- Seals, sharks and turtles
- Fragile reef-associated species, e.g., corals and sponges
- Stromatolites
- Accumulations of surf diatoms
- Sites where coelacanths are present
- Critically Endangered localised endemic estuarine pipefish
- Several priority estuaries

Relevant Pressures and Activities (impact, extent)

- There are 23 pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent and has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: linefishing, harvesting south coast rock lobster harvesting, inshore and offshore trawling, squid fishing. There are also several other fisheries operating in the area, but these are less intensive and have a smaller footprint within the EBSA. The key pressures cover discrete portions of the EBSA, and are mostly concentrated in the shallower waters. These activities will need to be managed particularly well in order to protect the fragile benthic biodiversity, nursery habitats, and fish assemblages for which this EBSA is recognised. The larger portion of these activities is in the Impact Management Zone.
- Coastal development, ports and harbours comprise small portions of the EBSA, but they are notable drivers of many of the other pressures that are present in the EBSA.
- Thirteen of the 23 pressures each comprise <1% of the EBSA pressure profile, including: alien invasive species; mean annual runoff reduction; benthic (hake) longlining; coastal disturbance; coastal development; wastewater discharge; oil and gas (exploration and production); recreational shore angling; abalone harvesting; subsistence harvesting; mariculture; naval dumping (ammunition); and oyster harvesting.
- Activities in South Africa that are not present in this EBSA include: mining (prospecting and mining); kelp harvesting; tuna pole fishing; gillnetting; west coast rock lobster harvesting; prawn trawling; shark netting; dredge spoil dumping; and beach seining.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



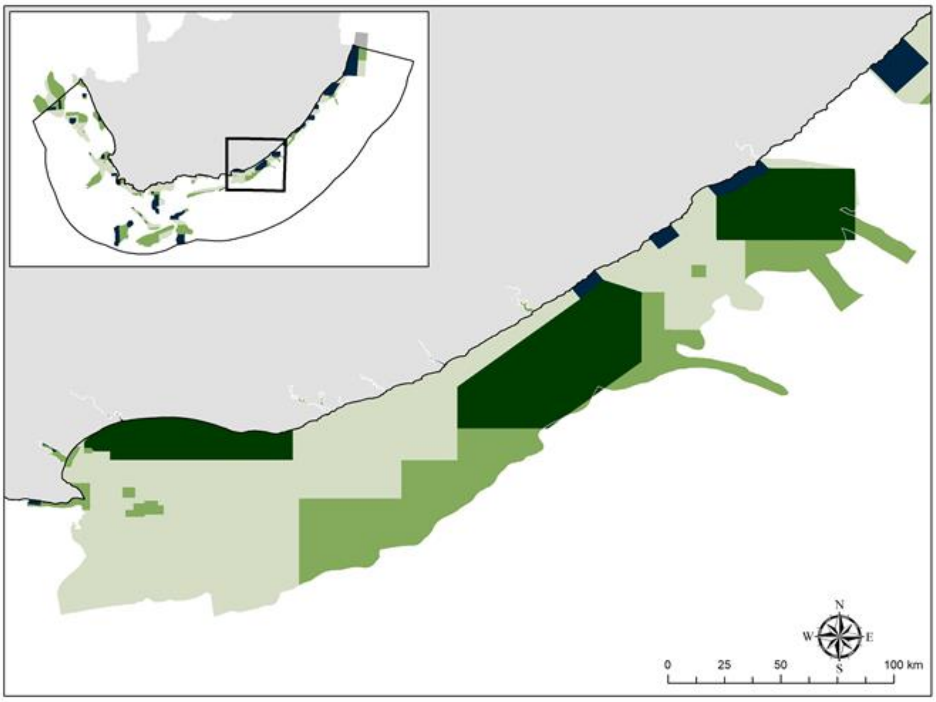
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from alien invasive species to oyster harvesting each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. It also includes four MPAs that are wholly or partially within the EBSA: Sardinia Bay MPA; Addo Elephant National Park MPA; Amathole MPA; and Amathole Offshore MPA. Activities permitted within these MPAs are not considered as part of the EBSA management recommendations because these are given as per the respective gazetted regulations of the MPAs.

Sardinia Bay (proclaimed 1990 and revised 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Addo Elephant National Park (proclaimed 2019):	https://www.environment.gov.za/sites/default/files/legislations/nempaa_adoelephantpark_regulations_g42479gn777.pdf
Amathole (proclaimed 2011)	https://www.gov.za/sites/default/files/gcis_document/201409/34596rg9587gon730.pdf
Amathole Offshore (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_amatholeoffshoremarine_regulations_g42479gn778.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

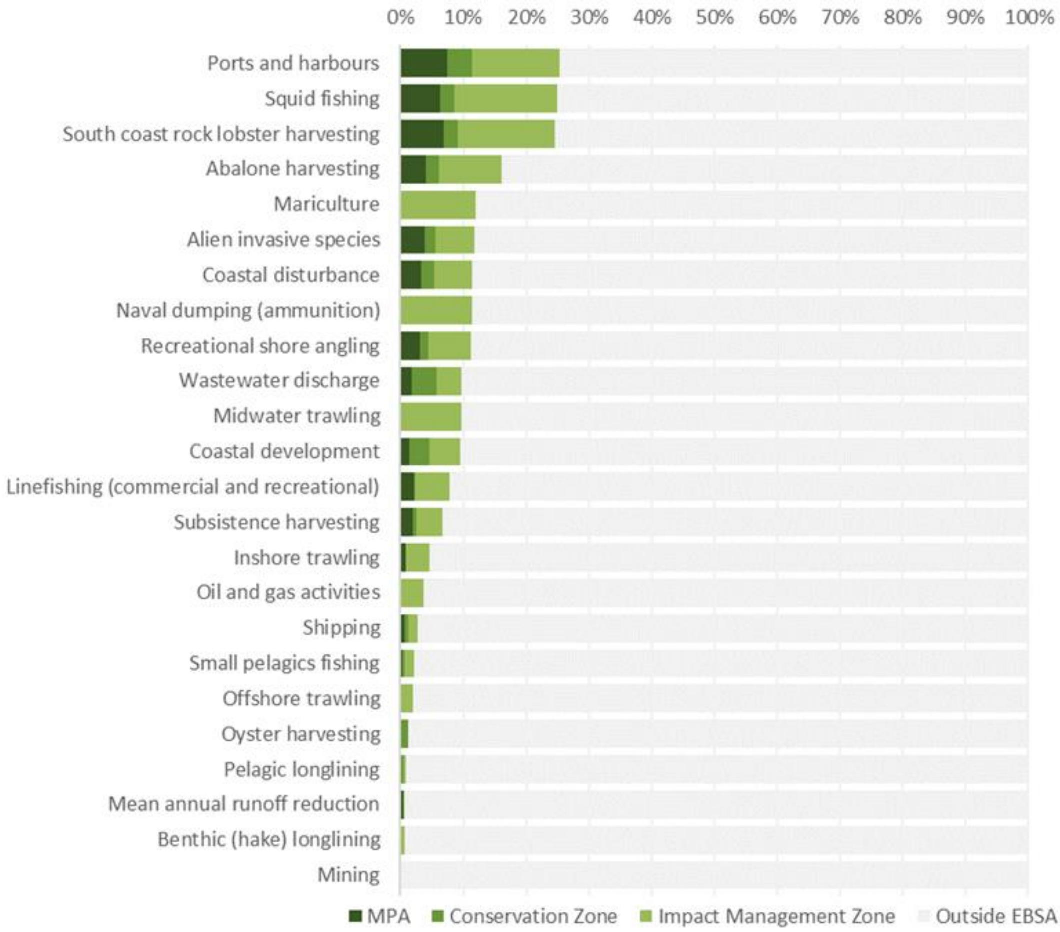
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Restricted zone			
	Marine Protected Area: Controlled zone			
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Oil spill contingency plan Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Several of the country's ports and harbours are located within this EBSA; however, all port infrastructure is within the Impact Management Zone. It is only the East London Port Control area that extends partly into the Conservation Zone. Port and harbour activities should be carefully managed to avoid unacceptable impacts on adjacent Conservation Zones. Particularly, careful management of ports and harbours and mariculture operations are necessary to avoid the introduction of additional alien invasive species. Mariculture in the EBSA is entirely within the Impact Management Zone and comprises a fifth of the national footprint of this activity; it is recommended to continue as a Consent activity, but is recommended to be Prohibited in the Conservation Zone because it does not currently occur within that EBSA zone.

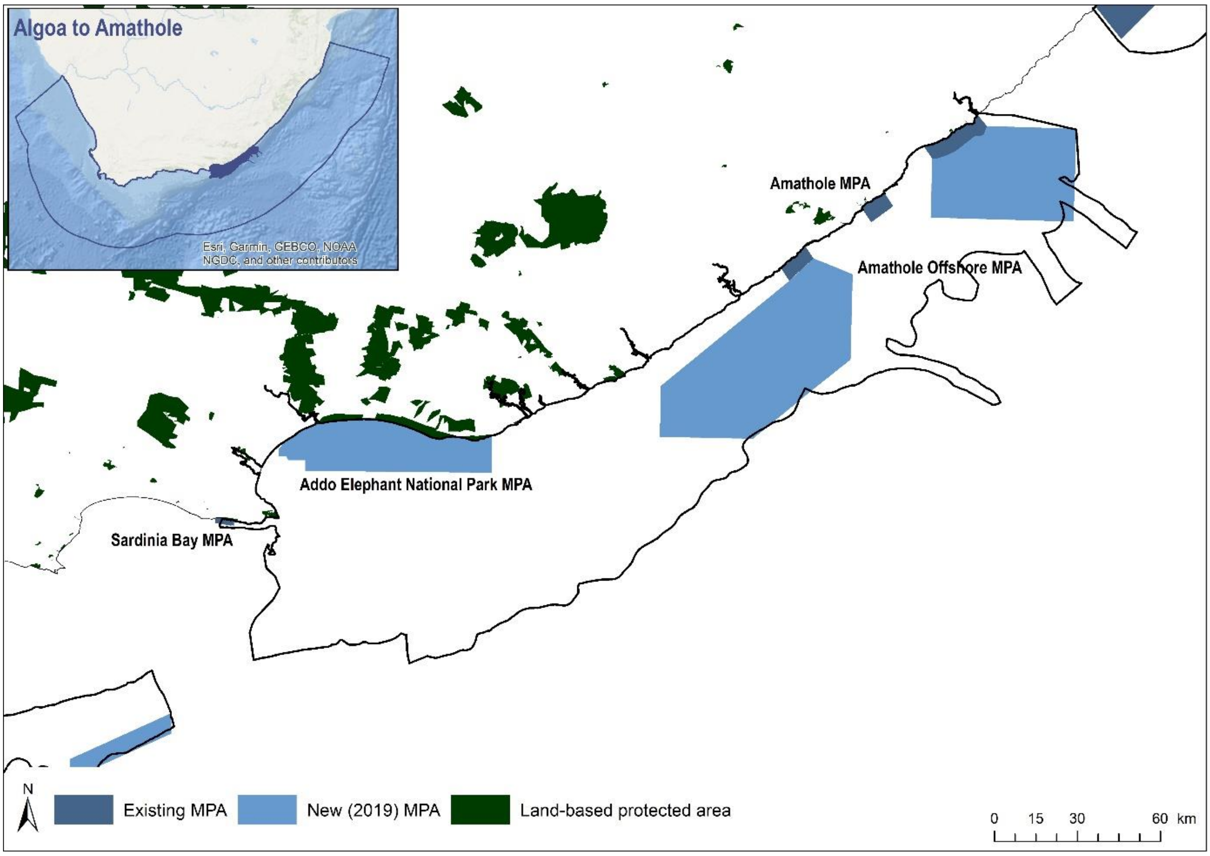
Harvesting south coast rock lobster and abalone within this EBSA are important economic activities that comprises roughly a third to a fifth of the national footprint of those activities, the bulk of which is in the Impact Management Zone. Provision would be made for legal harvesting, with these recommended to be Consent activities. Commercial squid fishing is also an important activity within the EBSA, comprising of a third of the national footprint. It is similarly recommended to be accommodated as a Consent activity. Further, because the south coast rock lobster harvesting, abalone and squid fisheries are selective, these are recommended to continue as Consent activities within the Conservation Zone as well. Less than a fifth of the country's midwater trawling occurs within the EBSA Impact Management Zone and is recommended to continue as a Consent activity. Other important commercial fisheries include inshore, midwater and offshore trawling, as well as small pelagics fishing and linefishing. Trawling fisheries are recommended to take place in the Impact Management Zone only because they are incompatible with the management objectives of the Conservation Zone, but small pelagics fishing and linefishing (commercial and recreational) are recommended to continue in both EBSA zones as Consent activities. The same is proposed for recreational shore angling and subsistence fishing: both are recommended to be Consent activities in the Conservation and Impact Management Zones.

Dumping of ammunition at sea historically occurred within the EBSA, and these sites fall exclusively within the Impact Management Zone; however, this activity no longer occurs in South Africa. Commercial oil and gas (exploration and production) also occur exclusively in the Impact Management Zone, where it is recommended to be a Consent activity; because it does not currently occur in the Conservation Zone, it is recommended to be Prohibited in that zone. The other activities that fall within this EBSA are very small component of the national footprint, and fall mostly within the Impact Management Zone where the activities could continue with relevant regulations and controls as Consent activities in both EBSA zones. Shipping is recommended to continue in both the Conservation and Impact Management Zones under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint of the listed marine activities.

The EBSA is further impacted by a range of other activities, like mean annual runoff reduction, wastewater discharge, coastal development and coastal disturbance, which largely originate from outside the EBSA. These impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting, and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements and estuarine management plans can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation and mariculture.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Addo Elephant National Park and Amathole Offshore MPAs in 2019. This builds on existing protection already afforded by the Sardinia Bay and Amathole MPAs and land-based protected areas in the area. Addo Elephant National Park MPA is also an expansion of the previous Bird Island MPA. It is recommended that existing management is strengthened in the older MPAs, and that full operationalisation of the new MPAs is implemented, including management plans, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

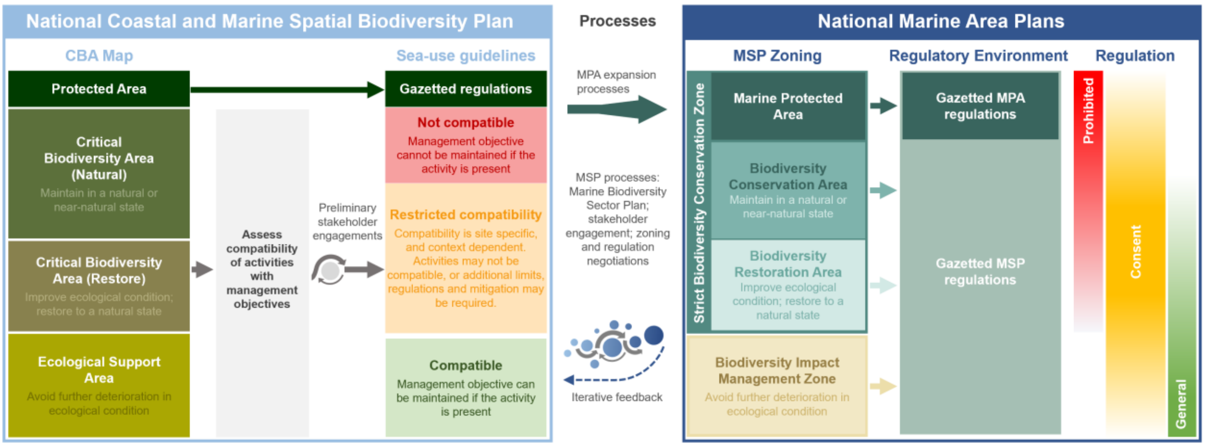


Existing and new marine protected areas (MPAs) in the Algoa to Amathole EBSA. Amathole MPA comprises three parts along the coast, and Amathole Offshore MPA comprises two parts that extend from the northern and southern parts of the Amathole MPA. Land-based protected areas are also shown (from DFFE 2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Algoa to Amathole, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

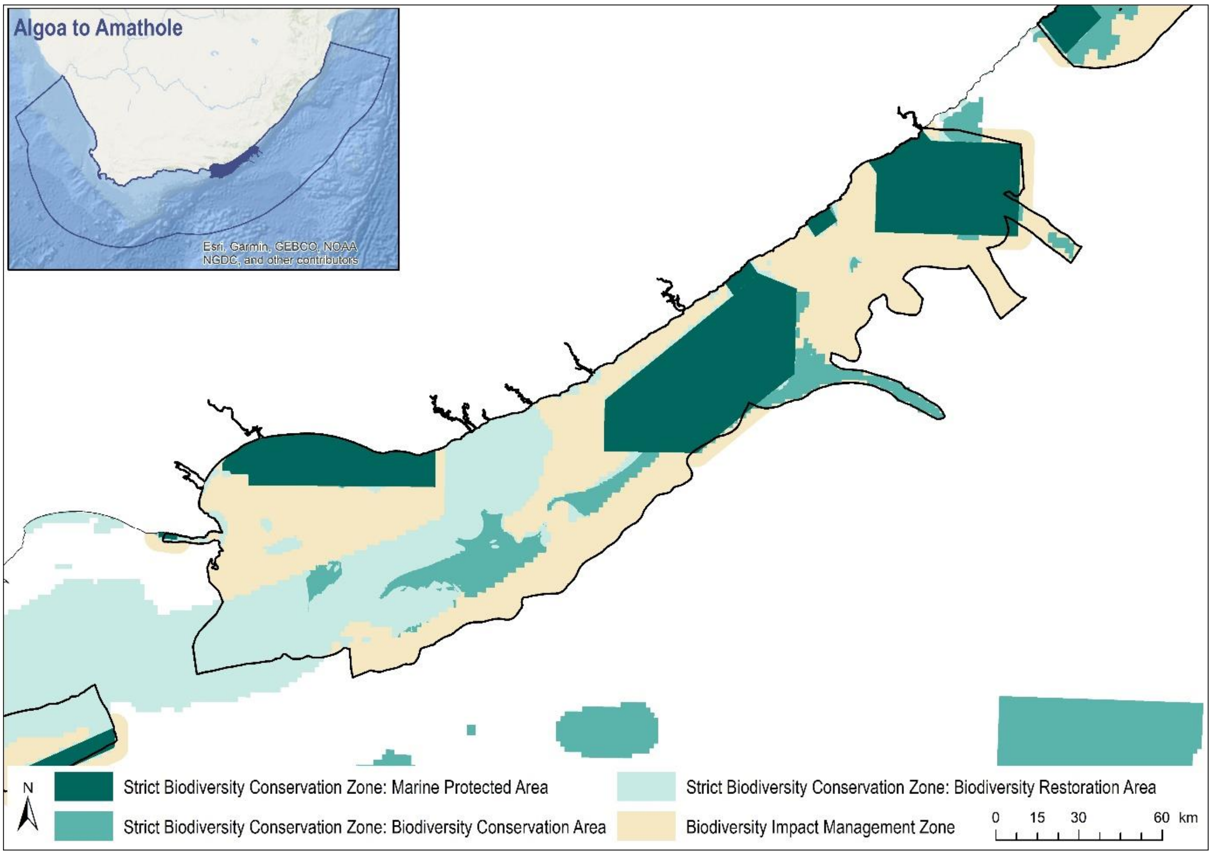


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Algoa to Amathole.

There are four MPAs in this EBSA: Sardinia Bay; Addo Elephant National Park MPA; Amathole, and Amathole Offshore. They are managed according to their respective gazetted management regulations. The rest of the Strict Biodiversity Conservation Zone includes a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. There is also a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Algoa to Amathole EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Algoa to Amathole. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There is substantial research and ongoing monitoring within Algoa to Amathole already, especially in Algoa Bay. There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below).

Future Process

There needs to be full operationalisation and practical implementation of the Addo Elephant National Park MPA and the Amathole Offshore MPA, including management plans, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. In particular, there needs to be enhanced spatial management measures in the canyons offshore of Gqeberha (Port Elizabeth). Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project. This EBSA is also part of a World Heritage Site proposal that is being developed.

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Protea Banks and Sardine Route

Revised EBSA Description

General Information

Summary

Protea Banks and Sardine Route is a coastal EBSA that includes a key component of the migration path for several fish (known as the sardine run) and an offshore area of high habitat complexity. Benthic features include a unique deep-reef system known as Protea Banks, steep shelf edge and slope, and several submarine canyons. The sardine run is a temporary feature associated with foraging top predators, including seabirds, mammals, sharks and gamefish. Protea Banks is also an aggregating area, with spawning of sciaenids and sparids reported. Some of these species are in decline and are considered threatened. This area has moderate productivity, and the sardine run represents an important ecological process that facilitates the transfer of nutrients from the more productive Agulhas Bank into the more oligotrophic environment further north. This EBSA includes five existing coastal MPAs, two of which were expanded to improve protection of key marine biodiversity assets.

Introduction of the area

The Protea Banks and Sardine Route includes a key component of the migration path for several fish (known as the sardine run) and an offshore area of high habitat complexity. Benthic features include a unique deep reef system known as Protea Banks, steep shelf edge and slope, and several canyons. Protea Banks comprises a relatively shallow “seamount” that drops to extensive rocky flats that extend towards the shelf edge (the full extent of which is currently uncertain). Diversity is high in this area, with 40 ecosystem types represented in the EBSA, 20 of which are threatened and a further seven are Near Threatened. It constitutes a site of fish spawning aggregations and is home to an abundance of soft corals, algae and molluscs, many of which are endemic. The area includes benthic and pelagic features, with further details on habitats, processes and species detailed in Mann (2000), Freon et al. (2010), Sink et al. (2011), Harris et al. (2011) and Ezemvelo KZN Wildlife (2012). The sardine run is an annual, temporary feature usually associated with foraging top predators, including seabirds, mammals (O’Donoghue et al., 2010a, 2010b), sharks and gamefish (Dudley and Cliff 2010, Fennessy et al., 2010).

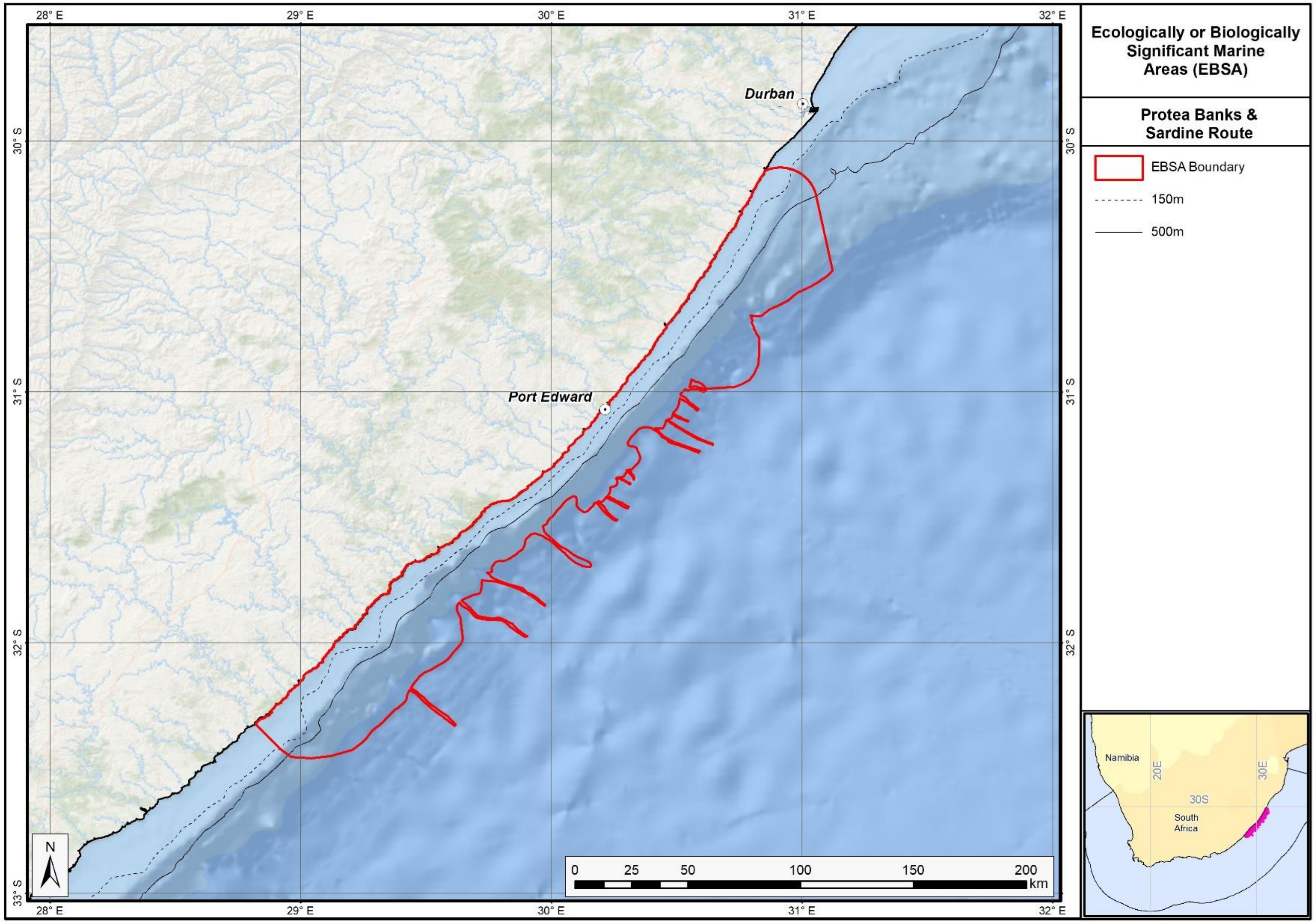
Description of the location

EBSA Region

Southern Indian Ocean

Description of location

Protea Banks and Sardine Route is a coastal EBSA, entirely with the South African EEZ. Alongshore, it extends from the Aliwal Shoal MPA in the north, to the Dwesa-Cwebe MPA in the south. Although it extends only 25-35 km offshore from the dune base across most of the EBSA, it covers a vast depth range because the continental shelf is so narrow in this area. Most of Protea Banks and Sardine Route extends from 0 m to -1800 m or deeper.



Proposed revised boundaries of the Protea Banks and Sardine Route EBSA.

Area Details

Feature description of the area

This area includes benthic and pelagic features, with details on habitats, processes and species in Mann (2000), Freon et al., (2010), Sink et al., (2011), Harris et al., (2011) and Ezemvelo KZN Wildlife (2012). The EBSA includes 40 ecosystem types, seven of which are Endangered, 13 are Vulnerable and a further seven are Near Threatened (Sink et al., 2019). This spans a rich diversity of types, including a variety of shore types (including estuarine shores), reefs, unconsolidated-sediment benthic types, slope types and canyons (Sink et al., 2019). The area includes part of a key migration pathway (known as the sardine run) that is an important ecological process believed to play a role in the transfer of productivity from the productive Agulhas Bank into the less productive area in southern KwaZulu-Natal. Some research has been conducted on the sardine migration (see Freon et al., 2010, Van der Lingen et al., 2010) but the heterogeneous benthic habitats in deep water are poorly studied. Key habitats include a unique deep-reef feature, submarine canyons (with seven reef-building cold-water coral records, representing three different species, in the national invertebrate museum collection), hard shelf edge and unconsolidated shelf and shelf edge sediments. In situ research is needed in the deeper areas of this EBSA.

There has been new research in the area since the EBSA was first proposed, which has contributed significantly to identifying the features that are present, their extent and importance. The boundary of this EBSA was also refined to align with initiatives to expand South Africa's MPA network, and better represent the underlying features comprising the EBSA to improve precision in the delineation. This was based on the best available data (e.g., GEBCO Compilation Group 2019; Harris et al., 2014; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). New fine-scale mapping of the coast (Harris et al., 2019) also allowed a more accurate coastal boundary to be delineated. It is presented as a Type 2/4 EBSA (sensu Johnson et al., 2018) for containing "spatially stable features whose individual positions are known, but a number of individual cases are being grouped" and "features that are inherently not spatially fixed. The position of this feature moves seasonally and among years.". The benthic features (e.g., reefs and canyons) are spatially fixed and grouped, and the sardine run is a seasonal phenomenon that occurs in the same area, but the exact position is variable across years.

Feature conditions and future outlook of the proposed area

South Africa's National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) indicated declining conditions in the original delineation (based on pressure data and an ecosystem-pressure matrix), with conditions ranging from fair to poor. In an updated assessment, and in the new delineation, cumulative pressure was moderate across the EBSA overall; however, cumulative pressure in the northern portion and along the coast is high (Sink et al., 2019). There are five existing MPAs in this EBSA, some of which have moderate to high cumulative pressure within them. Protection of biodiversity assets in this EBSA will be strengthened since the recent, notable expansion of two of the existing reserves. Fish species in the area include threatened or depleted species. There is planned research in the Protea Banks area through the African Coelacanth Ecosystem Program Phase III.

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www.seabirdtracking.org – tracking contributors who provided data presented at this workshop are: Maria Ana Dias, Paulo Catry, Teresa Catry, Robert Crawford, Richard Cuthbert, Karine Delord, Jacob Gonzalez-Solis, Jano Hennicke, Matthieu Le Corre, Deon Nel, Malcolm Nicoll, Jose Pedro Granadeiro, Samantha Petersen, Richard Phillips, Patrick Pinet, Jaime Ramos, Jean-Baptiste Thiebot, Ross Wanless, Henri Weimerskirch, Vikash Tatayah.

Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Protea Banks and Sardine Route EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Endangered	Natal Inner Shelf Reef Sand Mosaic	215.5	2.3
	Natal Mid Shelf Reef Gravel Mosaic	841.1	9.0
	Protea Mid Shelf Reef Complex	15.5	0.2
	Subtropical Large Fluvially Dominated Estuary	1.7	0.0
	Subtropical Large Temporarily Closed Estuary	7.5	0.1
	Subtropical Predominantly Open Estuary	4.2	0.0
	Trafalgar Reef Complex	58.7	0.6
Vulnerable	Agulhas Exposed Rocky Shore	0.7	0.0
	Agulhas Very Exposed Rocky Shore	0.3	0.0
	Aliwal Shoal Reef Complex	5.2	0.1
	Natal Boulder Shore	0.3	0.0
	Natal Mixed Shore	40.5	0.4
	Natal-Delagoa Reflective Sandy Shore	0.8	0.0
	Pondoland Inner Shelf Reef Sand Mosaic (C)	249.3	2.7
	Port St Johns Inner Shelf Reef Mosaic (A)	48.5	0.5
	Port St Johns Muddy Mid Shelf	124.8	1.3
	Port St Johns Muddy Shelf Edge	129.4	1.4
	Subtropical Small Temporarily Closed Estuary	7.7	0.1
	Warm Temperate Large Temporarily Closed Estuary	0.5	0.0
	Warm Temperate Predominantly Open Estuary	0.2	0.0
Near Threatened	Agulhas Dissipative Sandy Shore	0.2	0.0
	Agulhas Mixed Shore	2.4	0.0
	Natal Exposed Rocky Shore	28.7	0.3
	Natal Pondoland Shelf Edge Coarse Sand Reef Mosaic	593.9	6.4
	Natal Very Exposed Rocky Shore	1.0	0.0
	Natal-Delagoa Dissipative Sandy Shore	0.7	0.0
	Natal-Delagoa Intermediate Sandy Shore	10.1	0.1
Least Concern	Agulhas Dissipative-Intermediate Sandy Shore	0.1	0.0
	Natal Deep Shelf Edge	695.6	7.4
	Natal Pondoland Lower Canyons	868.7	9.3
	Natal Pondoland Upper Canyons	83.1	0.9
	Natal-Delagoa Dissipative-Intermediate Sandy Shore	9.2	0.1
	Pondoland Mid Shelf Coarse Sediment Reef Mosaic(B)	676.2	7.2
	Pondoland Shelf Edge Gravel Reef Mosaic	859.1	9.2
	Southwest Indian Lower Slope	384.5	4.1
	Southwest Indian Mid Slope	2234.1	23.9
	Southwest Indian Upper Slope	1146.3	12.3
	Warm Temperate Small Temporarily Closed	0.5	<0.1
N/A	Subtropical Micro-estuary	1.6	<0.1
	Warm Temperate Micro-estuary	<0.1	<0.1
Grand Total		**9344.7**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

This area includes two unique features: a large component of the migratory route of a migratory population of sardines and a unique deep-reef feature that hosts species known only from this location. It is noted that this could be perceived as unique because deep reefs are poorly studied in this region, but no similar bathymetric features have been noted in this depth range in the province (Sink et al., 2011). The migratory route component is a key part of the migration path for several species and is part of a globally unique phenomenon referred to as the "sardine run" (Freon et al., 2010). The term "sardine run" is part of the cultural heritage of the South African nation and refers to a natural phenomenon that involves the coastal, alongshore movement during early austral winter of a small and variable fraction of the South African population of sardine (*Sardinops sagax*) from the eastern Agulhas Bank to the KwaZulu-Natal (KZN) coast. The sardine run is associated with foraging top predators such as seabirds, mammals (O'Donoghue et al., 2010a, 2010b), sharks and gamefish (Dudley and Cliff 2010, Fennessy et al., 2010) that facilitate its visual detection. This site also contains some endemic seaweed species (De Clerck et al., 2005).

C2: Special importance for life-history stages of species **High**

Justification

This area includes the Protea Banks, a known spawning aggregation site for several species (Mann 2000) and an area that is part of an important migration path for several species, most notably the "sardine run". A genetically distinct portion of the South African population of sardine *Sardinops sagax* migrates through this area as part of a well-known phenomenon that is less well understood from a process perspective (Van der Lingen et al., 2010). The sardines are followed by large numbers of sharks, cetaceans and seabirds. Key species in this migration event include Geelbek (*Atractoscion aequidens*) and Garrick (*Lichia amia*), and the area is also important for the endemic and threatened sparid Seventy-four (*Polysteganus undulosus*) (Mann et al., 2000, Fennessey et al., 2010). This area is considered a nursing ground for the sparid *Chrysoblephus puniceus* (Ezemvelo KZN Wildlife 2012). BirdLife data indicate that this area is important for foraging white chinned petrels, and the sardine run is a key ecological event providing forage fish for Cape gannets (Freon et al., 2010, O'Donoghue et al., 2010).

C3: Importance for threatened, endangered or declining species and/or habitats **High**

Justification

This area has some importance for overexploited sparids and sciaenids (Mann 2000) and Vulnerable (IUCN global redlist) seabirds. Overexploited sparid and scienids include *Chrysoblephus puniceus* (Mann 2000). Cape gannets and white chinned petrels utilise this area (Freon et al., 2010, Birdlife tracking data). The Protea Banks and Sardine Route is also a key component of the regionally Critically Endangered leatherback turtles' migration route (Harris et al., 2018), with hatchlings of both leatherbacks and (regionally Near Threatened) loggerheads also dispersing through the area. Green turtles and hawksbills are also present on reefs in the area as well, both of which species are also threatened. The 20 threatened ecosystem types within this EBSA include the Endangered: Natal Inner Shelf Reef Sand Mosaic, Natal Mid Shelf Reef Gravel Mosaic, Protea Mid Shelf Reef Complex, Subtropical Large Fluvially Dominated Estuary, Subtropical Large Temporarily Closed Estuary, Subtropical Predominantly Open Estuary, Trafalgar Reef Complex; and the Vulnerable: Agulhas

Exposed Rocky Shore, Agulhas Very Exposed Rocky Shore, Aliwal Shoal Reef Complex, Natal Boulder Shore, Natal Mixed Shore, Natal-Delagoa Reflective Sandy Shore, Pondoland Inner Shelf Reef Sand Mosaic (C), Port St Johns Inner Shelf Reef Mosaic (A), Port St Johns Muddy Mid Shelf, Port St Johns Muddy Shelf Edge, Subtropical Small Temporarily Closed Estuary, Warm Temperate Large Temporarily Closed Estuary, and Warm Temperate Predominantly Open Estuary. A further seven ecosystem types are Near Threatened (Sink et al., 2019).

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**
Justification
This area includes submarine canyons, an area of steep shelf edge and a unique deep-reef system. These habitats may support fragile habitat-forming species. Seven records of two species of reef-building coldwater corals (*Goniocorella dumosa, Solenosmilia variabilis*) have been recorded in the area (Sink et al., 2011) and are in the Iziko South African museum invertebrate collection. In-situ surveys have not been undertaken in this area, and further research is needed to provide more information on habitat sensitivity.

C5: Biological productivity **Medium**
Justification
This steep area has a relatively high frequency of chlorophyll-a and SST fronts (Lagabrielle 2009, Sink et al., 2012, Roberson et al., 2017). Further, the sardine run phenomenon provides a huge, albeit temporary, increase in productivity.

C6: Biological diversity **High**
Justification
Sink et al. (2011, 2019) showed high benthic habitat diversity in this area, with 40 ecosystem types represented in a relatively small area. The dynamic pelagic environment and the sardine run also contribute to the high diversity in the pelagic ecosystems (Freon et al., 2010, Van der Lingen et al., 2010).

C7: Naturalness **Medium**
Justification
Cumulative pressure overall is moderate, with some coastal areas under much higher cumulative pressure (Sink et al., 2019). Consequently, the bulk of the EBSA is in either good (62%) or fair (33%) ecological condition with only 5% in poor ecological condition (Sink et al., 2019). There is no pelagic longlining inshore of 20 nm in this area (Sink et al., 2011).

Status of submission

The Protea banks and Sardine Route EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

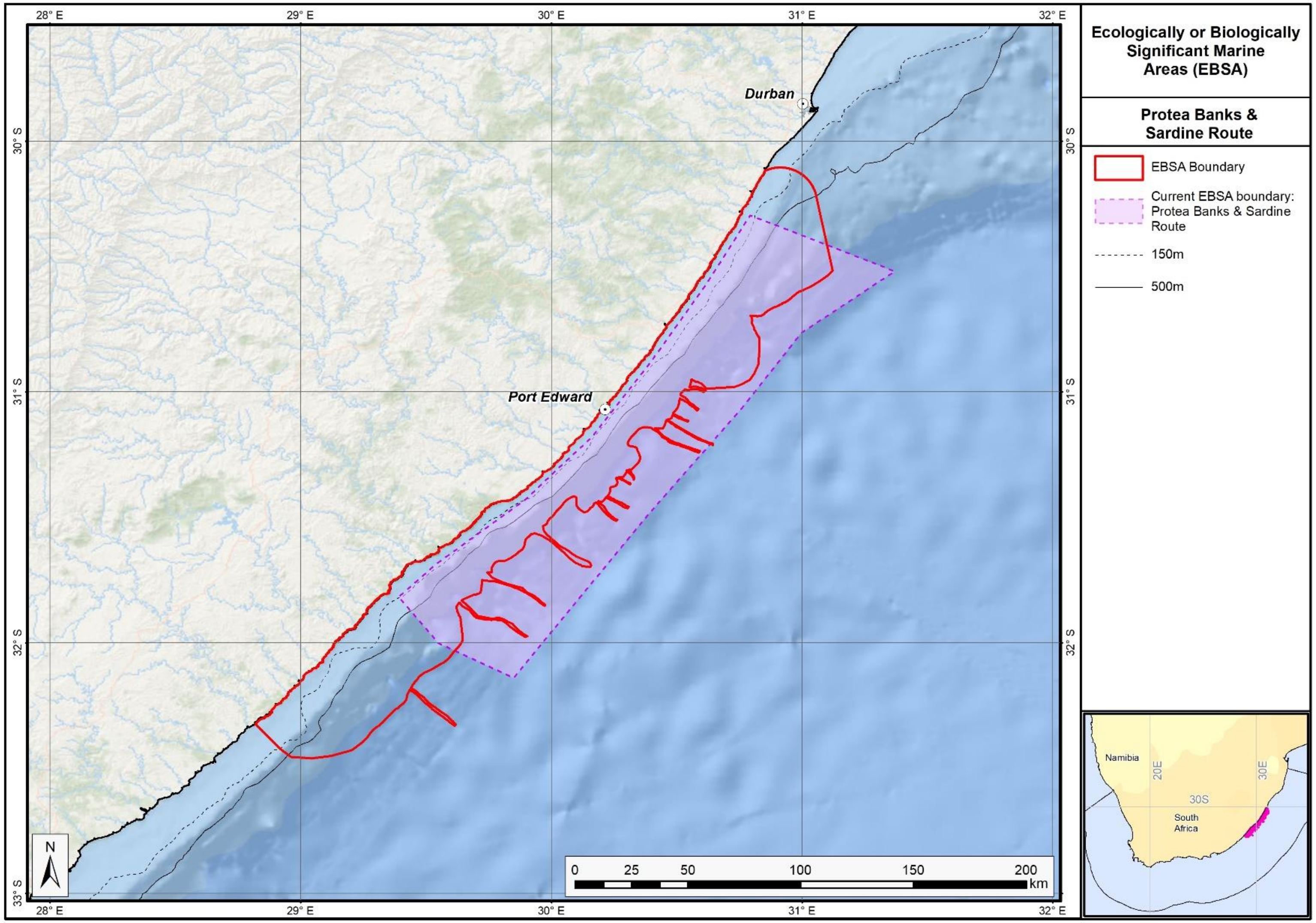
Motivation for Revisions

Some technical revisions and updates to the description were made, even though little additional information was available. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included. Criterion 3: importance for threatened species was particularly much better substantiated, but this did not result in a change in the rank evaluation.

The main change is that the boundary of this EBSA has been slightly adjusted to focus the EBSA more closely on the key biodiversity features that underlie its EBSA status. The delineation process included an initial stakeholder review which identified the need to update boundaries, a technical mapping process and then an expert review workshop where boundary delineation options were discussed. The boundaries were revised a final time to accommodate the latest NBA 2018 assessment results and the review workshop discussion. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

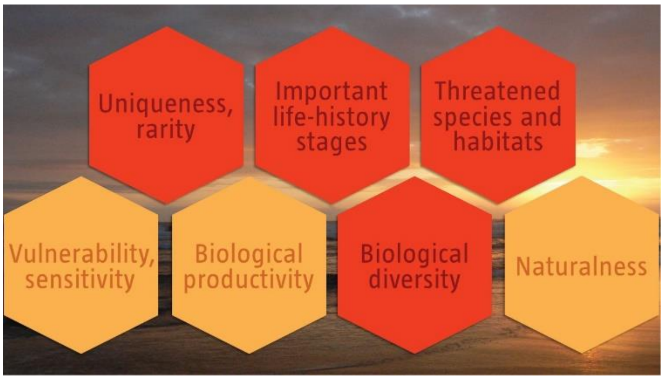
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the national SCP analysis undertaken for the West Coast by Majiedt et al. (2013), offshore areas (Sink et al., 2011) and by Holness et al. (2014) were incorporated.
- Key physical features (especially canyons) identified from the latest GEBCO data (GEBCO Compilation Group 2019), global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014) and the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) were incorporated.
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA (Sink et al., 2019).
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).
- The coastal boundary was refined to be more accurate based on new data (Harris et al., 2019).

The multi-criteria analysis resulted a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Protea Banks and Sardine Route EBSA in relation to its original boundaries.

Status Assessment and Management Options

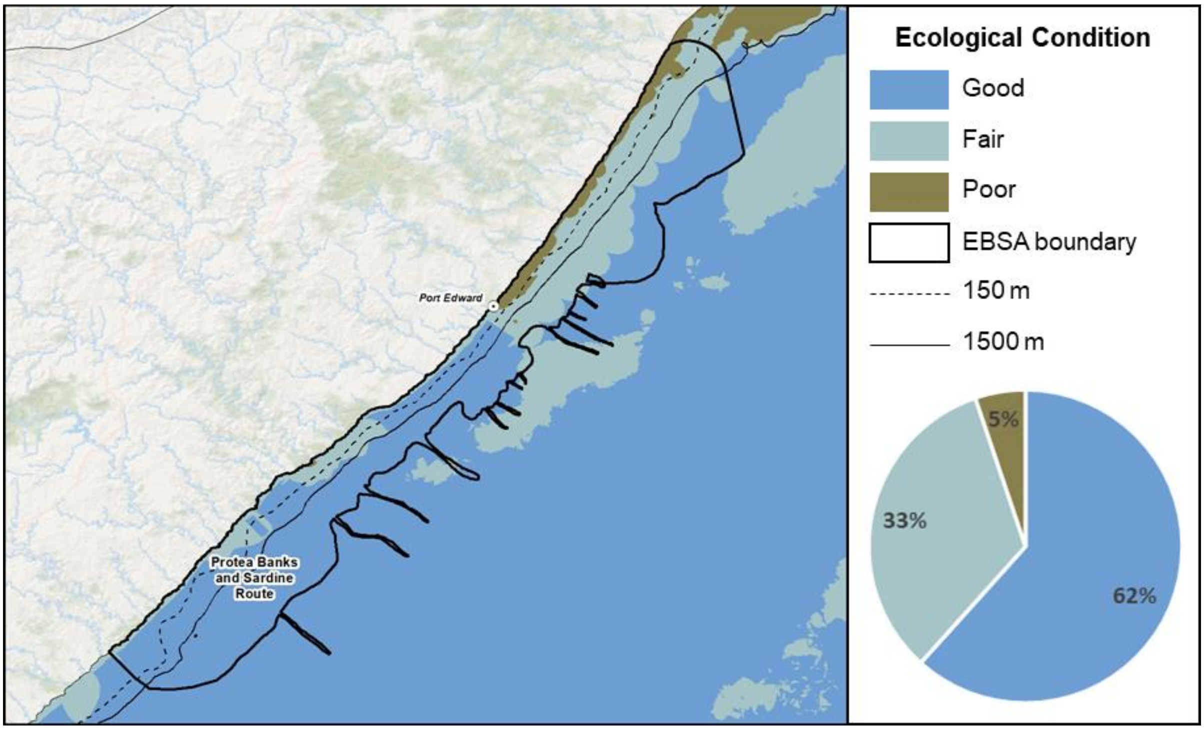


Protea Banks and Sardine Route *encompasses a culturally and ecologically significant annual phenomenon: the sardine run, which provides a seasonal foraging extravaganza for a plethora of top predators, many of which are threatened species. Protea Banks itself is a unique deep-reef system that supports aggregations and spawning of fish. Diversity is exceptional, with 40 ecosystem types: the most of all South African EBSAs.*

EBSA criteria coloured by rank for Protea Banks and Sardine Route: red=high, orange=medium.

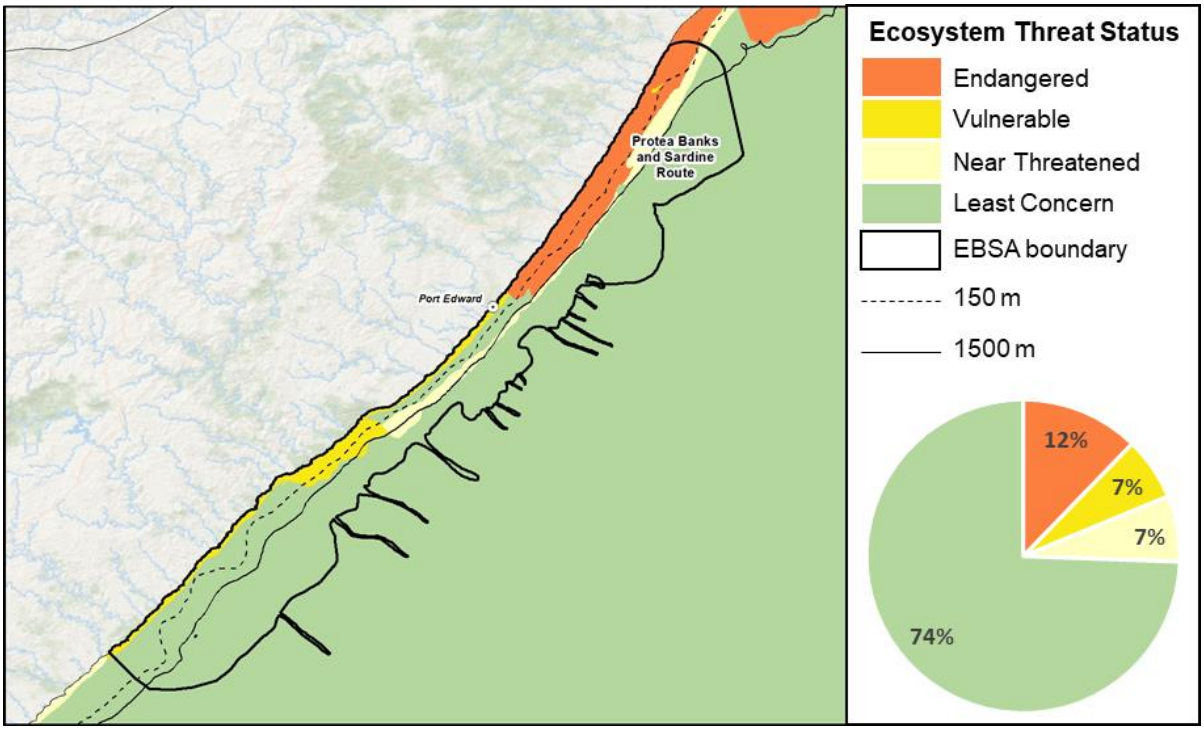
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Protea Banks and Sardine Route has a myriad of features, processes and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity, importance for life history stages, importance for threatened species and habitats, and biological diversity. There are 40 ecosystem types represented, which is the most habitat diversity in all of South Africa's EBSAs; half of these ecosystem types (2) are threatened. The reefs, rocky shores, rocky shelf, steep shelf edge and canyon ecosystem types all support fragile species that are sensitive to damage. Further, the area is an important part of the annual sardine run, where sardines migrate from west to east, followed by a plethora of top predators that forage on the fish.

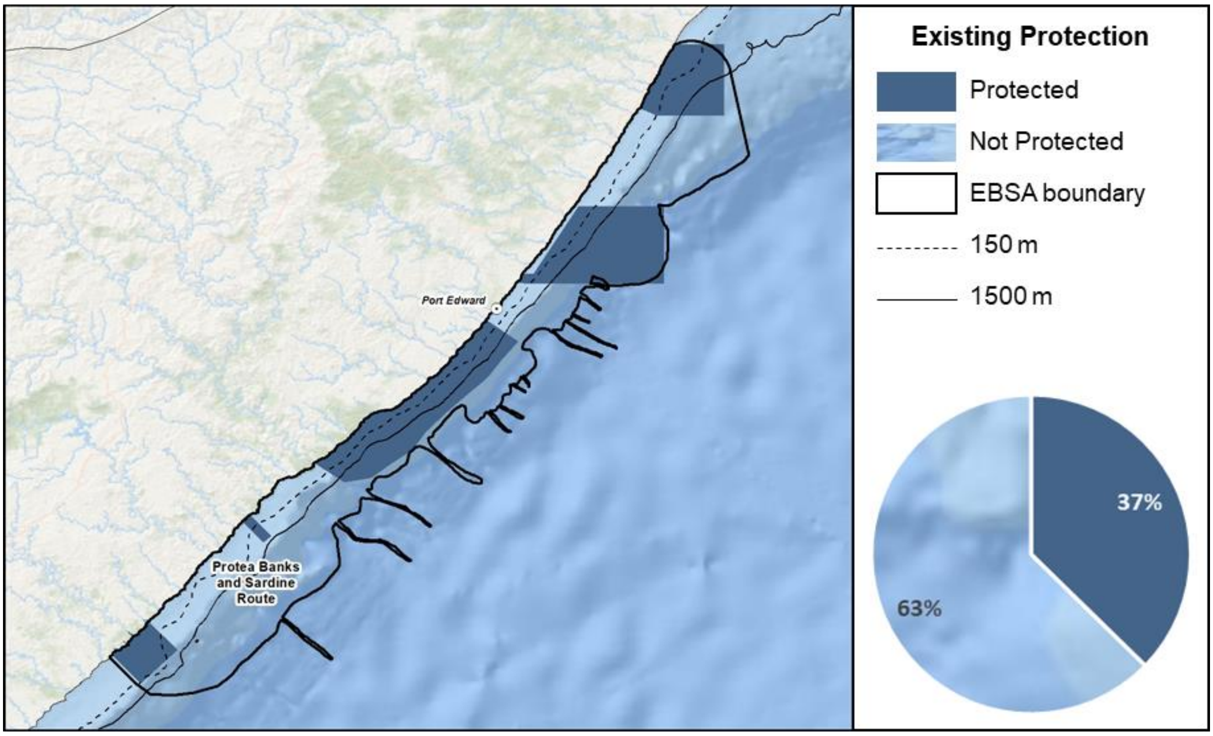


Protea Banks and Sardine Route proportion of area in each ecological condition category.

Protea Banks and Sardine Route is largely in good ecological condition (62%), with a third that is in fair ecological condition (33%), and a fraction (5%) that is in poor ecological condition. Consequently, the bulk of the EBSA is Near Threatened (74%). The remaining quarter is split among Endangered (12%), Vulnerable (7%) and Near Threatened (7%) types that are all coastal.



Protea Banks and Sardine Route proportion of area in each ecosystem threat status category.



Protea Banks and Sardine Route proportion of area in a Marine Protected Area (MPA).

Although some areas within the EBSA have been protected in MPAs for a long time, this has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves more than doubling from 17% to 37%. Although most of the ecosystem types in this area are now well or moderately protected, there are still some that are poorly or not protected.

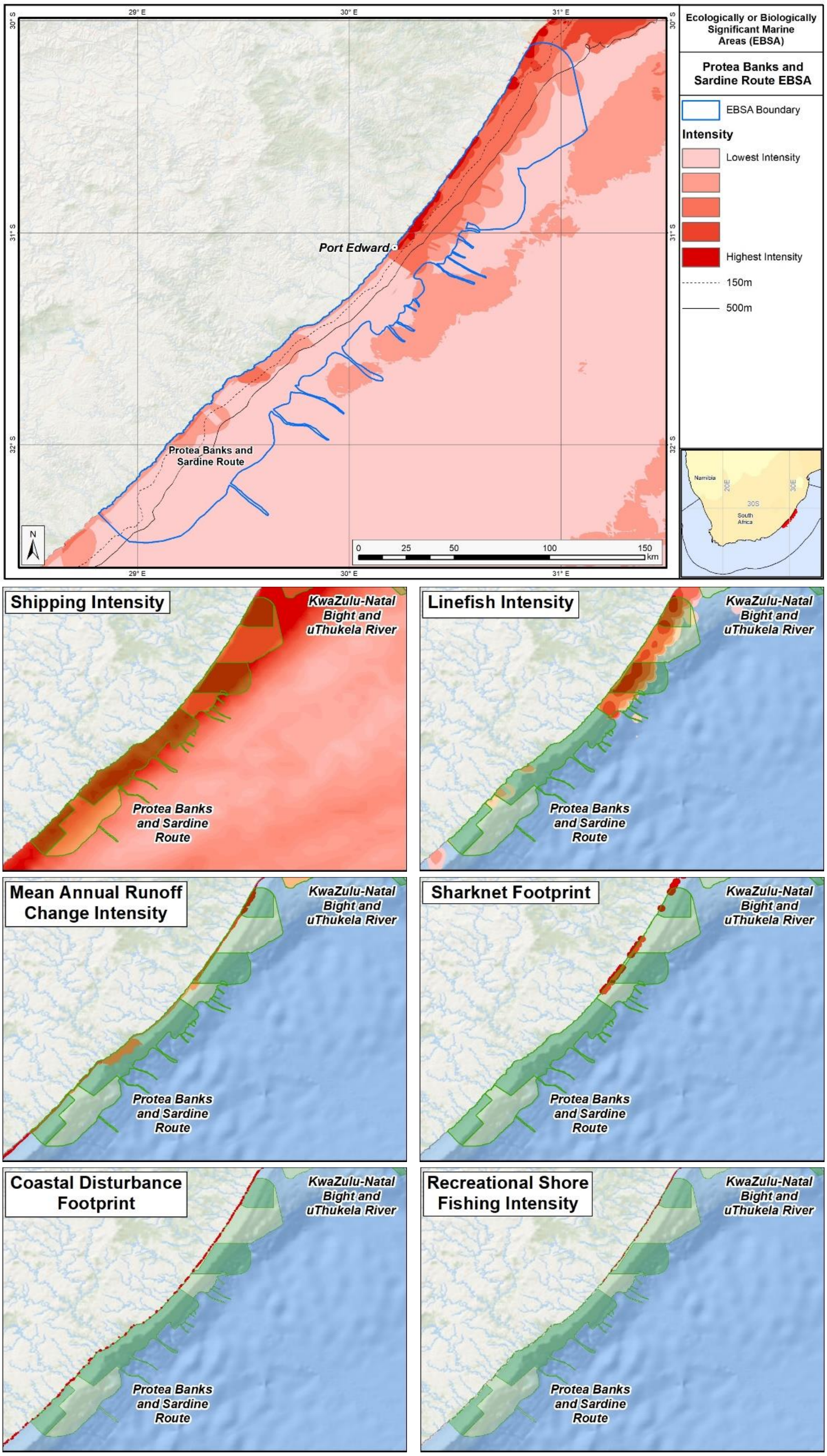
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Agulhas Dissipative Intermediate Sandy Shore	LC	WP	0.0	100.0	0.0
Agulhas Dissipative Sandy Shore	NT	WP	57.9	35.0	7.1
Agulhas Exposed Rocky Shore	VU	MP	66.9	32.9	0.2
Agulhas Mixed Shore	NT	MP	66.9	32.6	0.5
Agulhas Very Exposed Rocky Shore	VU	MP	98.4	1.6	0.0
Aliwal Shoal Reef Complex	VU	MP	0.0	70.7	29.3
Natal Boulder Shore	VU	WP	38.1	14.6	47.3
Natal Deep Shelf Edge	LC	MP	49.2	50.7	0.1
Natal Delagoa Dissipative Intermediate Sandy Shore	LC	WP	34.1	32.2	33.7
Natal Delagoa Dissipative Sandy Shore	NT	NP	46.4	45.1	8.5
Natal Delagoa Intermediate Sandy Shore	NT	WP	10.9	13.9	75.2
Natal Delagoa Reflective Sandy Shore	VU	WP	0.0	3.1	96.9
Natal Exposed Rocky Shore	NT	WP	52.7	19.8	27.5
Natal Lower Canyon	LC	WP	83.3	16.7	0.0
Natal Mixed Shore	VU	WP	25.4	20.7	53.9
Natal Upper Canyon	LC	WP	79.7	20.3	0.0
Natal Very Exposed Rocky Shore	NT	WP	48.4	43.4	8.2
Port St Johns Inner Shelf Mosaic	VU	MP	0.2	89.1	10.8
Port St Johns Muddy Mid Shelf	VU	MP	0.0	100.0	0.0
Port St Johns Muddy Shelf Edge	VU	MP	0.1	99.9	0.0
Protea Mid Shelf Reef Complex	EN	MP	0.0	100.0	0.0
Southern KZN Shelf Edge Mosaic	NT	WP	37.3	62.5	0.2
Southern KZN Inner Shelf Mosaic	EN	MP	0.0	0.9	99.1
Southern KZN Mid Shelf Mosaic	EN	MP	0.0	84.2	15.8
Southwest Indian Lower Slope	LC	NP	85.4	14.6	0.0
Southwest Indian Mid Slope	LC	PP	81.8	18.2	0.0
Southwest Indian Upper Slope	LC	WP	79.2	20.8	0.0
Subtropical Large Fluvially Dominated	EN	PP	57.6	32.6	9.9
Subtropical Large Temporarily Closed	EN	PP	12.5	29.6	58.0
Subtropical Micro-estuary	NA	NA	45.1	31.5	23.4
Subtropical Predominantly Open	EN	MP	30.7	48.0	21.3
Subtropical Small Temporarily Closed	VU	MP	25.7	35.3	39.0
Trafalgar Reef Complex	EN	MP	0.0	0.1	99.9
Warm Temperate Large Temporarily Closed	VU	PP	99.4	0.6	0.0
Warm Temperate Micro-estuary	NA	NA	99.5	0.5	0.0
Warm Temperate Predominantly Open	VU	PP	0.0	100.0	0.0
Warm Temperate Small Temporarily Closed	LC	PP	1.9	98.1	0.0
Wild Coast Inner Shelf Mosaic	VU	MP	0.8	92.6	6.6
Wild Coast Mid Shelf Mosaic	LC	WP	71.8	26.5	1.8
Wild Coast Shelf Edge Mosaic	LC	WP	94.8	5.2	0.0
Other Features					
• Sardine run, and associated following by top predators • Unique deep-reef system that supports aggregations and spawning of fish, and fragile species					

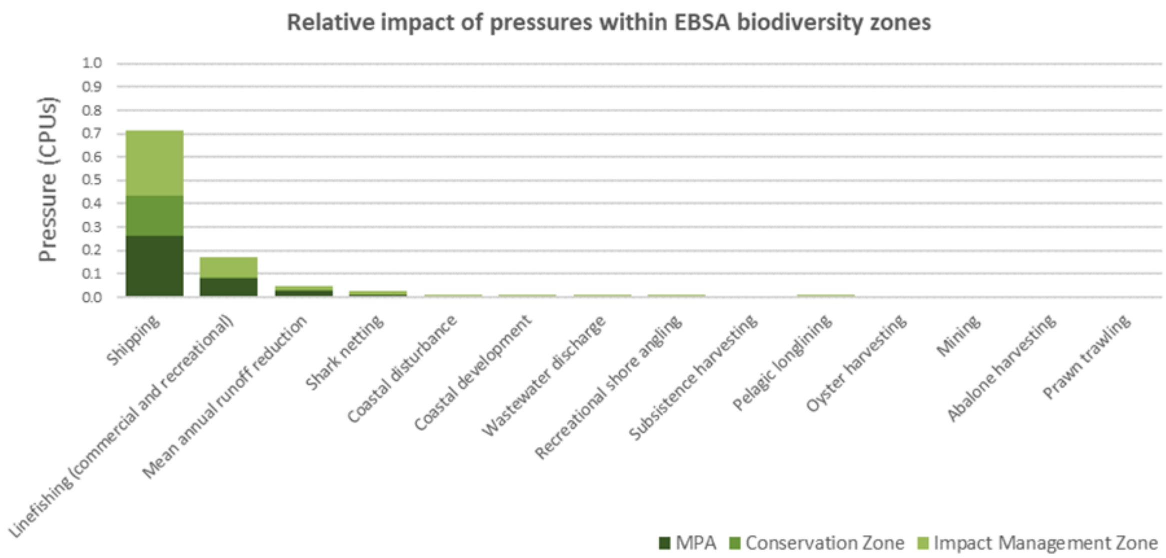
- Canyons

Relevant Pressures and Activities (impact, extent)

- There are 13 pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent and has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: linefishing (commercial and recreational), mean annual runoff reduction, shark netting, coastal disturbance, coastal development, wastewater discharge, recreational shore angling, subsistence harvesting, pelagic longlining, oyster harvesting and abalone harvesting. These activities cover discrete portions of the EBSA, and are mostly concentrated in the shallower waters, particularly along the shore. These activities will need to be managed particularly well in order to protect the coastal (especially shore) ecosystem types, and fish and top predator assemblages (especially during the sardine run) for which this EBSA is recognised. In some cases, this is already true, e.g., the shark nets are lifted during the sardine run.
- Nine of the 13 pressures each comprise <1% of the EBSA pressure profile, including: coastal disturbance, coastal development, wastewater discharge, recreational shore angling, subsistence harvesting, pelagic longlining, oyster harvesting, mining (prospecting and mining) and abalone harvesting. This is expected because most of these are coastal pressures that have a very small footprint relative to the size of the EBSA, but that can substantially overlap with and impact the small extent of the ecosystem types in which they occur (e.g., rocky shores).
- Activities in South Africa that are not present in this EBSA include: alien invasive species, beach seining, benthic (hake) longlining, dredge spoil dumping, gillnetting, kelp harvesting, mariculture, midwater trawling, naval dumping (ammunition), oil and gas (exploration and production), ports and harbours, prawn trawling, small pelagics fishing, south coast rock lobster harvesting, squid fishing, tuna pole fishing, inshore trawling, offshore trawling, and west coast rock lobster harvesting.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



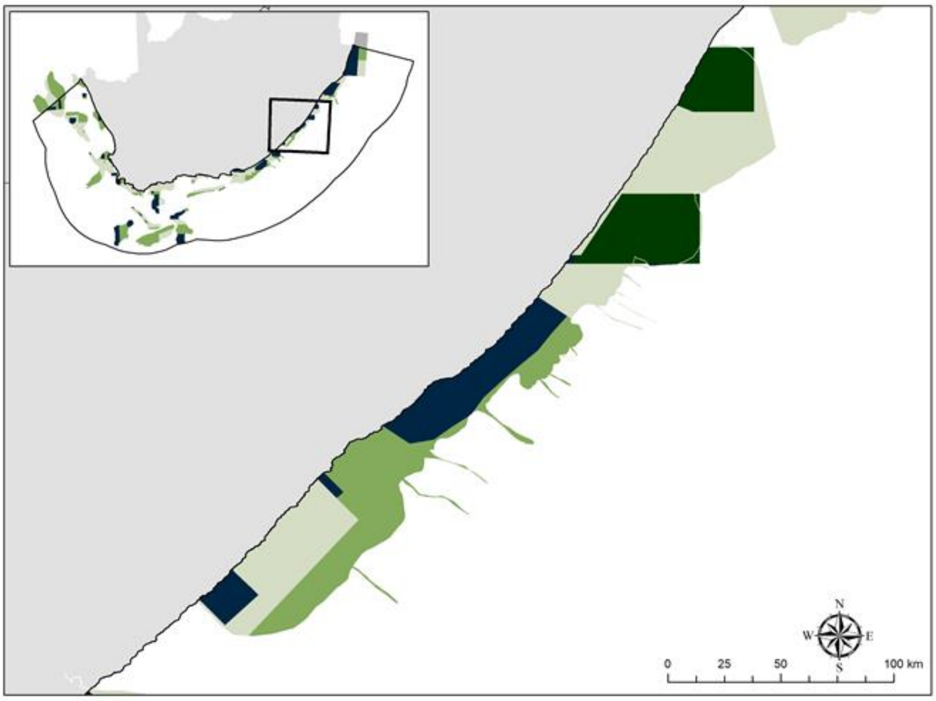
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from coastal disturbance to prawn trawling each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are also six MPAs that are wholly or partially within the EBSA: Dwesa-Cwebe MPA; Hluleka MPA; Trafalgar MPA; Pondoland MPA; Protea Banks MPA; and Aliwal Shoal MPA. The activities permitted within these MPAs are not considered as part of the EBSA management recommendations because these are as per their respective gazetted regulations.

Dwesa-Cwebe MPA (proclaimed 1991, revised 2000, 2015)	https://www.environment.gov.za/sites/default/files/gazetted_notices/nempaa57of2003_dwesacwebe_g39379.pdf
Hluleka MPA (proclaimed 1991 revised 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Trafalgar MPA (proclaimed 1979, revised 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Pondoland MPA (proclaimed 1991, revised 2004)	https://www.gov.za/sites/default/files/gcis_document/201409/264300.pdf
Protea Banks MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_proteamarine_regulations_g42479gn793.pdf
Aliwal Shoal MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_aliwalshoalmarine_regulations_g42479gn781.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

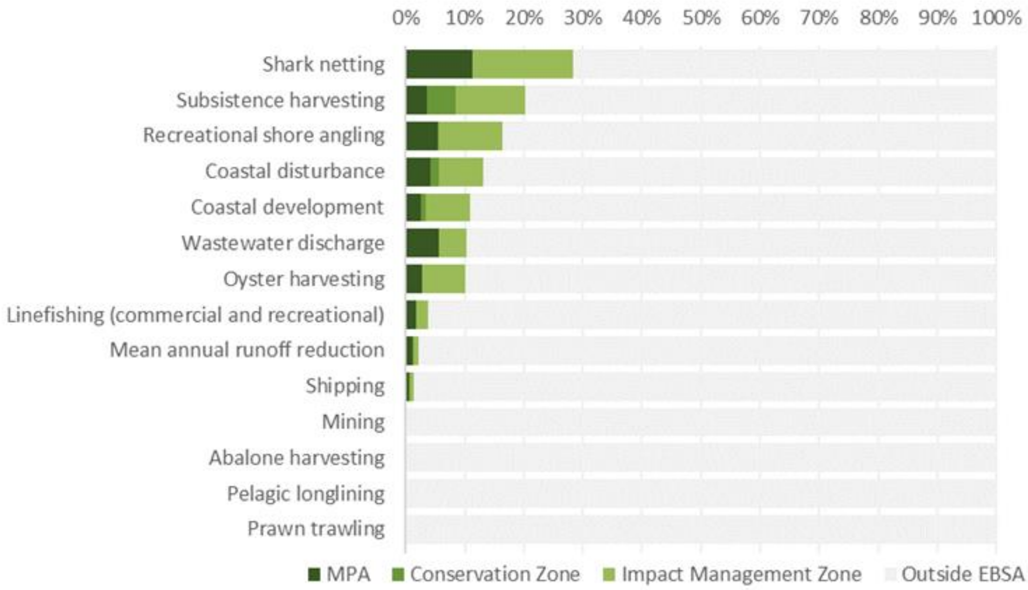
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Restricted zone			
	Marine Protected Area: Controlled zone			
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



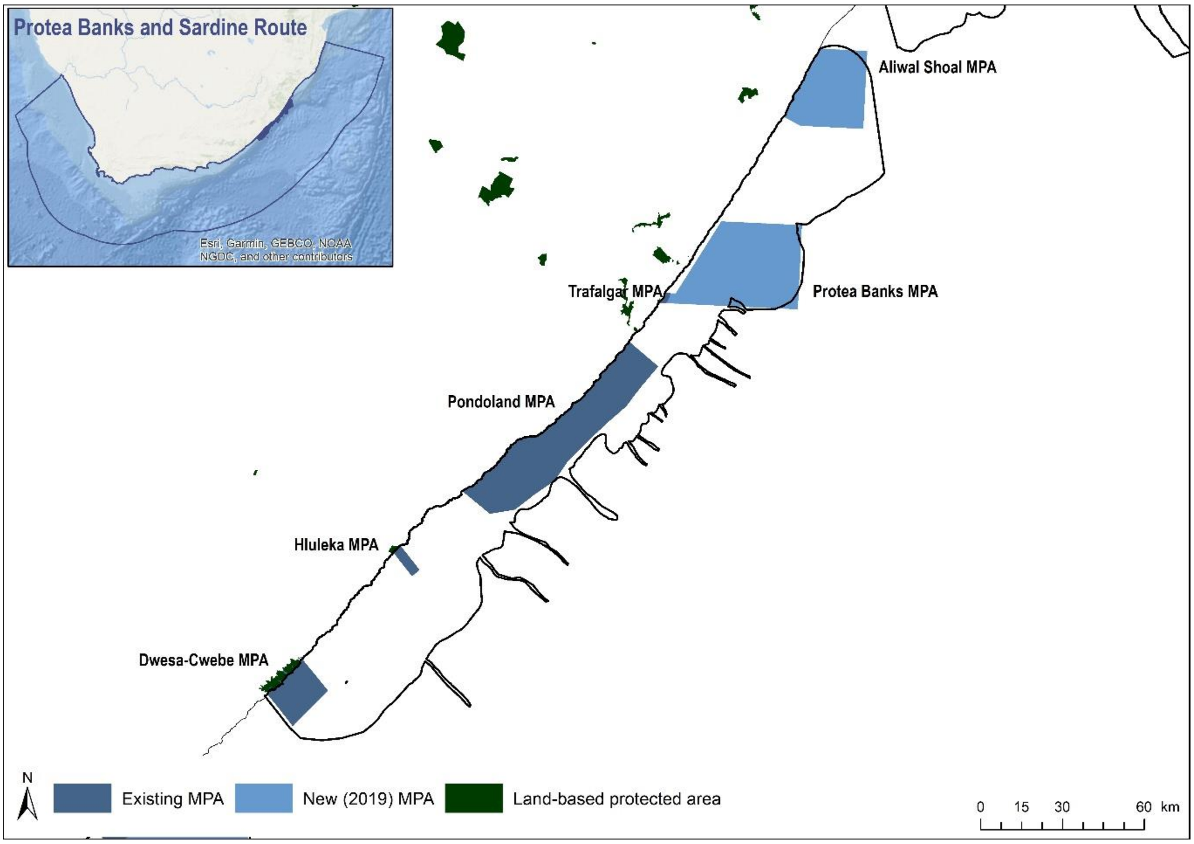
Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Even though almost half of the country's bather protection (shark netting) takes place within this EBSA, it is very well managed (particularly during the sardine run). Most shark netting is within the Impact Management Zone and the newly proclaimed/expanded MPAs, with a very small portion in the Conservation Zone. This activity is compatible or conditionally compatible with the EBSA zones and is recommended to continue. Most of the other activities that take place within the EBSA are coastal and primarily affect the shores and adjacent inner shelf in some cases. Coastal harvesting and fishing activities include subsistence harvesting, recreational shore angling, oyster harvesting, linefishing (commercial and recreational) and abalone harvesting. These activities are compatible or conditionally compatible with the EBSA zones and are recommended to continue with appropriate management. It is aso noted that some of these activities fall in the newly proclaimed/expanded MPAs and will be managed according to the respective MPA regulations in those areas. Mining also takes place within the EBSA, with all currently mined sites either wholly or partially in the MPAs; it is present in only one site in the Conservation Zone, spanning the estuary and beach in this area and the adjacent Hluleka MPA. It is recommended that this activity is not permitted because mining is not compatible with the Conservation Zone. Shipping is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Protea Banks MPA and expanded Aliwal Shoal MPA in 2019. This builds on existing protection already afforded by the Dwesa-Cwebe, Hluleka, Pondoland and Trafalgar MPAs and land-based protected areas in the area. It is recommended that existing management is strengthened in the older MPAs, and that full operationalisation of the new MPAs is implemented, including management plans, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

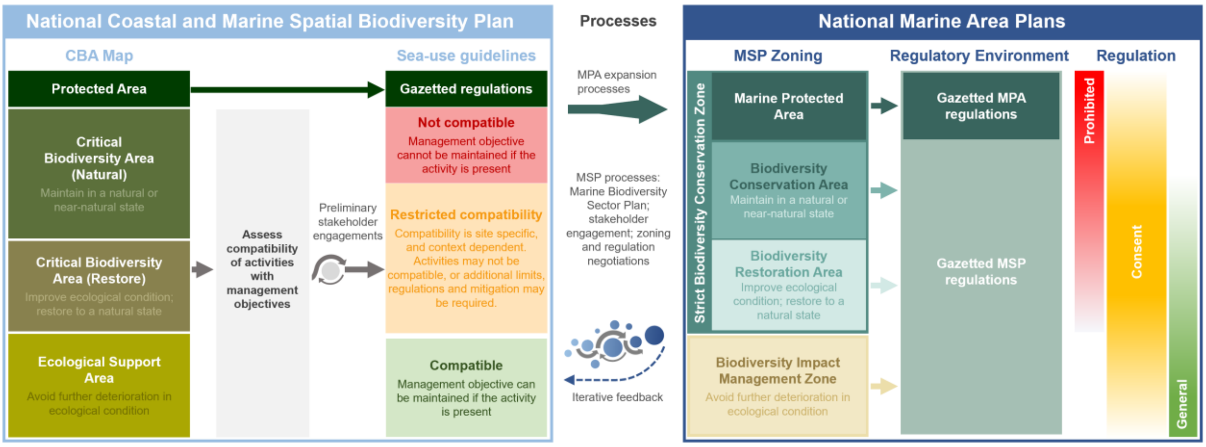


Existing and new marine protected areas (MPAs) in the Protea Banks and Sardine Route EBSA. Land-based protected areas are also shown (from DFFE, 2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Protea Banks and Sardine Route, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

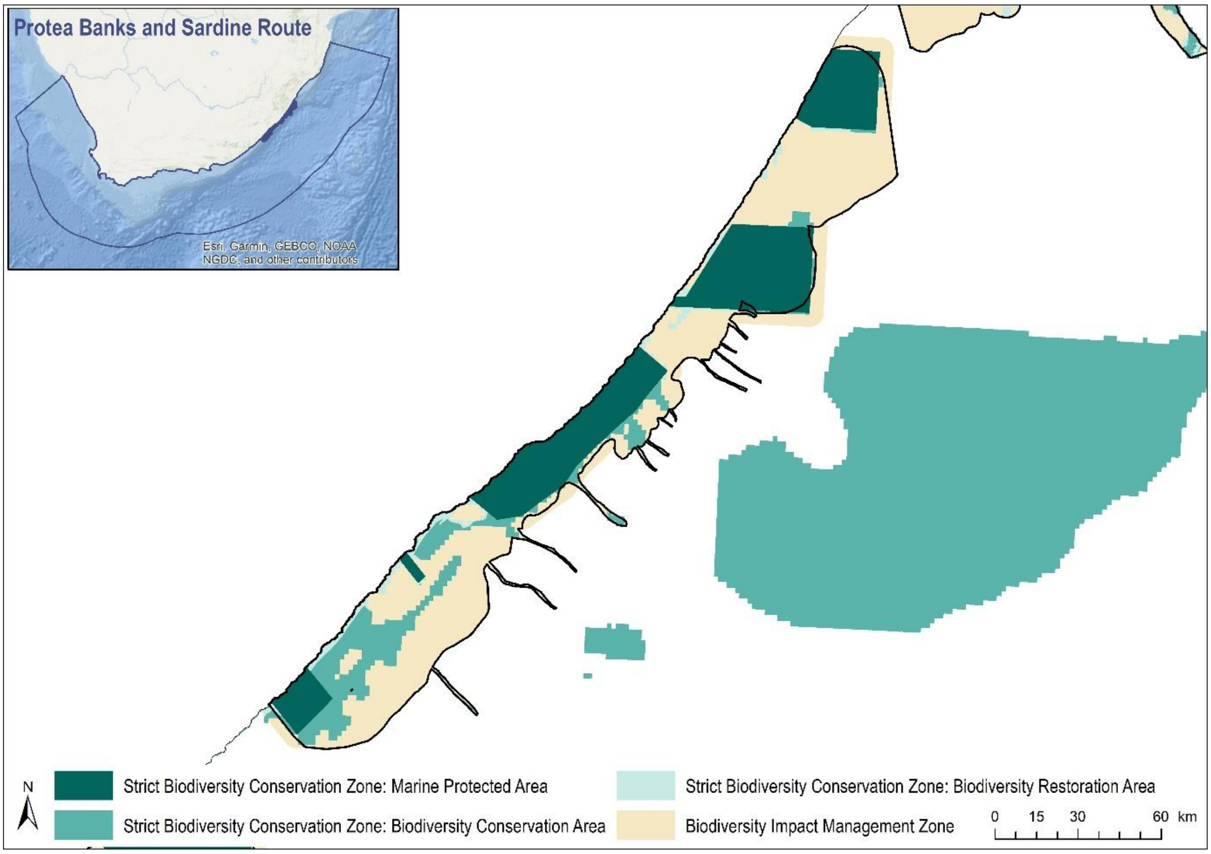


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Protea Banks and Sardine Route.

There are six MPAs in this EBSA: Dewsa-Cwebe, Hluleka, Pondoland, Trafalgar, Protea Banks, and Aliwal Shoal. They are managed according to their respective gazetted management regulations. The rest of the Strict Biodiversity Conservation Zone is primarily a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. A much smaller portion comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Protea Banks and Sardine Route EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Protea Banks and Sardine Route. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, it is noted that there is planned research in the Protea Banks area through the African Coelacanth Ecosystem Program Phase III. Biodiversity sampling in the deeper portions of the EBSA and improved understanding of habitat sensitivity and vulnerability are emphasised as particular research priorities for this site.

Future Process

There needs to be full operationalisation and practical implementation of the Protea Banks MPA and the Aliwal Shoal MPA, including management plans, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project. This EBSA is also part of a World Heritage Site proposal that is being developed.

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KwaZulu-Natal Bight and uThukela River (Formerly Natal Bight)

Revised EBSA Description

General Information

Summary

The KwaZulu-Natal Bight and uThukela River is important for numerous ecological processes, including terrestrial-marine connectivity, larval retention, recruitment and provision of nursery and foraging areas. The area includes rare ecosystem types and supports some species known to exist in few localities. Cool productive water is advected onto the shelf through Agulhas-driven and wind-driven upwelling cells, and continental runoff from the large uThukela River is important for the delivery of detritus to the bight (which drives food webs), and maintenance of mud and other unconsolidated-sediment habitats. The turbid, nutrient-rich conditions are important for life-history phases (breeding, nursery and feeding) for crustaceans, demersal fish, migratory fish, turtles and sharks, some of which are threatened. Particularly vulnerable and fragile ecosystems and species include submarine canyons, cold-water corals and slow-growing sparids. This EBSA is particularly important for threatened ecosystem types. Of the 28 ecosystem types represented, 21 (75%) are threatened including one Critically Endangered, nine Endangered and 11 Vulnerable types, with a further three types that are Near Threatened.

Introduction of the area

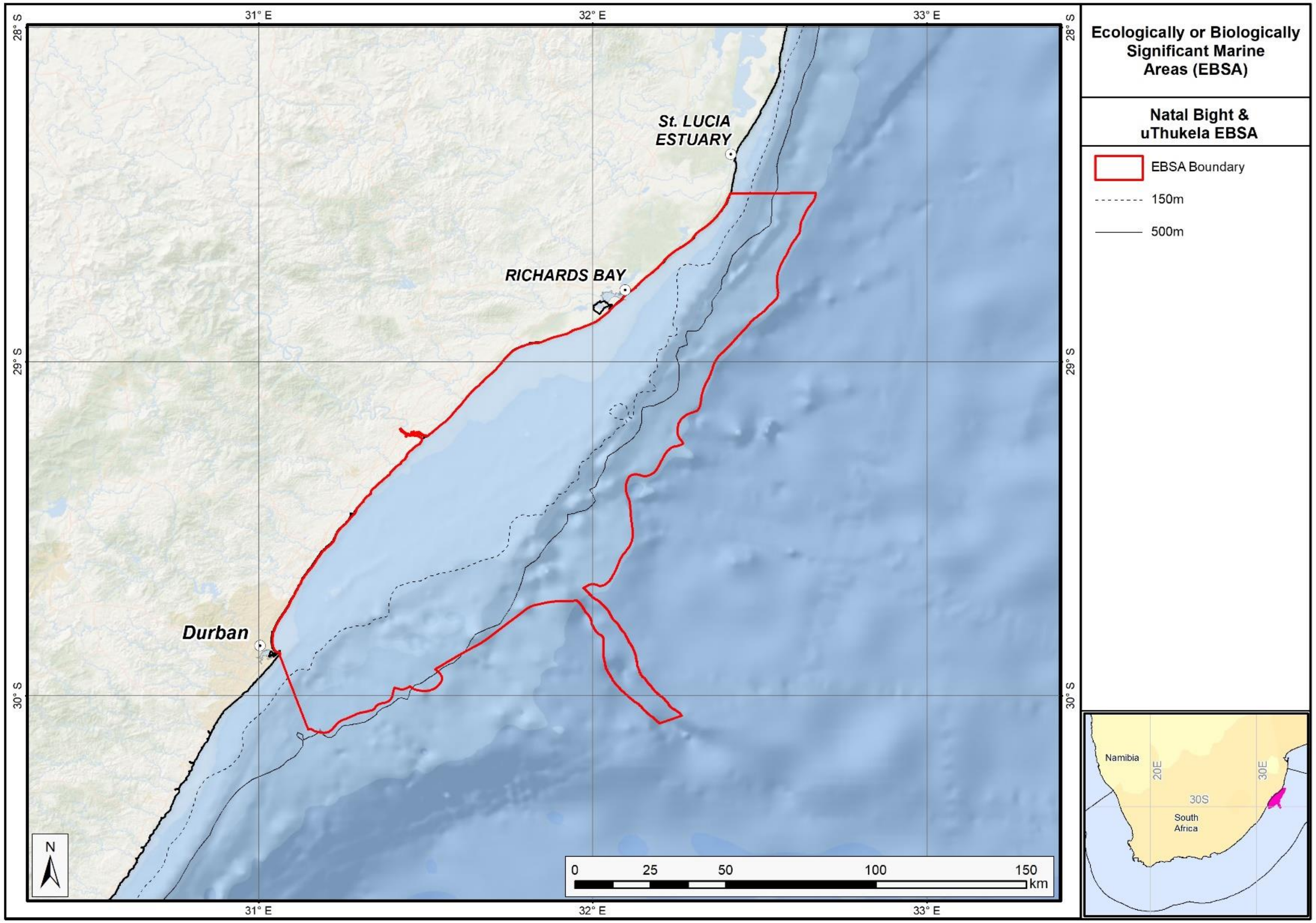
The KwaZulu-Natal Bight and uThukela River is important for numerous ecological processes, including terrestrial-marine connectivity, larval retention, recruitment and provision of nursery and foraging areas. The area incorporates rare ecosystem types and supports some species known to exist in only a few localities. The terrigenous sediments underpin many of the river-influenced marine ecosystem types, and associated, productive communities. The turbid, nutrient-rich conditions are important for life-history phases (breeding, nursery and feeding) for crustaceans, demersal fish, migratory fish, turtles and sharks. The EBSA also includes a canyon, and numerous threatened ecosystem types.

Since the original description and delineation, the boundary of the EBSA has been revised to improve accuracy and better represent the underlying features based on the best available data (e.g., GEBCO Compilation Group 2019; Harris et al., 2014; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). Importantly, the lower reaches of the uThukela River are now included because it is the key driver of the system, particularly for the river-influenced marine ecosystem types. It is the conduit for sediment delivery to the near- and offshore ecosystems of the KwaZulu-Natal Bight, and provides the critical link between land and sea that underpins this EBSA. In fact, it was considered such an important addition that it prompted a name change for this EBSA, from Natal Bight to KwaZulu-Natal Bight and uThukela River. Further, recent research in the area has, *inter alia,* improved knowledge of the seabed composition, and thus the extent of the mud habitats and the bight itself is now better understood and mapped, allowing a more accurate delineation of the EBSA. New fine-scale mapping of the coast (Harris et al., 2019) also allowed a more accuracte coastal boundary to be delineated. It is presented as a Type 2 EBSA because it contains “spatially stable features whose individual positions are known, but a number of individual cases are being grouped” (sensu Johnson et al., 2018).

Description of the location

EBSA Region

Southern Indian Ocean



Proposed revised boundaries of the KwaZulu-Natal Bight and uThukela River EBSA.

Description of location

East coast of South Africa, extending from Maphelane to Durban, from the shore to -2000 m, including the Thukela Banks, the KwaZulu-Natal Bight nursery area, the shelf edge and upper bathyal zone. The area is entirely within South Africa's EEZ.

Area Details

Feature description of the area

The area is characterized by extensive alluvial deposits forming banks, primarily off the uThukela River but also off the Mgeni River to a lesser degree (see Sink et al., 2011). The seafloor is thus sedimentary in nature but varies in the degree to which it is consolidated. The banks are productive in terms of benthic and deposit feeeders, an attribute typical of such features. Cool, productive water is advected onto the shelf through Agulhas-driven and wind-driven upwelling cells, and continental runoff from the large uThukela River is important for the delivery of detritus to the bight (which drives food webs), and maintenance of mud and other unconsolidated-sediment habitats. The turbid, nutrient-rich conditions are important for life-history phases (breeding, nursery and feeding) for crustaceans, demersal fish, migratory fish, turtles and sharks. Some of these species are threatened (turtles, scalloped hammerhead) or overexploited (sparids and sciaenids), and the deep reef and palaeo-shoreline habitats are considered important for the recovery of overexploited deep-reef fish species. Other particularly vulnerable and fragile ecosystems and species include submarine canyons, cold-water corals and slow-growing sparids. One Critically Endangered and nine Endangered ecosystem types occur in this area and a further 11 are Vulnerable (Sink et al., 2019). The Thukela Banks have been identified as a priority area by two different systematic biodiversity plans, a national plan to identify focus areas for offshore protection (Sink et al., 2011) and a fine-scale provincial plan for the province of KwaZulu-Natal (Harris et al., 2011).

Feature conditions and future outlook of the proposed area

The National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) indicated declining condition overall in the original EBSA (based on pressure data and an ecosystem-pressure matrix) with conditions ranging from fair to poor across the overall area. An updated assessment (Sink et al., 2019) on the new delineation shows ecological condition ranges from good to poor across the EBSA, with condition generally worse closer to the shore. Key pressures include the crustacean trawl fishery, a line fishery targeting sparids and sciaenids, and there are emerging mining and petroleum applications. A submarine cable has recently been laid in the area. Research on a number of the aforementioned aspects has been undertaken (but not all published) by the Oceanographic Research Institute in Durban. There is planned research in the area through the African Coelacanth Ecosystem Program Phase III.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the KwaZulu-Natal Bight and uThukela River EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Critically Endangered	Subtropical Estuarine Bay	0.1	0.0
Endangered	Durnford Inner Shelf Reef Complex	460.5	4.3
	Natal Bight Deep Shelf Edge	1654.6	15.6
	Natal Bight Mid Shelf Reef Complex	23.0	0.2
	Natal Bight Mid Shelf Reef Sand Mosaic	534.7	5.0
	Natal Bight Sandy Inner Shelf	145.9	1.4
	Subtropical Estuarine Lake	1.7	0.0
	Subtropical Large Fluvially Dominated Estuary	13.0	0.1
	Subtropical Large Temporarily Closed Estuary	1.0	0.0
	Subtropical Predominantly Open Estuary	2.7	0.0
Vulnerable	Durnford Mid Shelf Reef Complex	431.8	4.1
	Natal Bight Muddy Inner Shelf	328.7	3.1
	Natal Bight Muddy Shelf Edge	400.6	3.8
	Natal Bight Outer Shelf Coarse Sediment Reef Mosaic	647.8	6.1
	Natal Mixed Shore	13.9	0.1
	Natal-Delagoa Reflective Sandy Shore	5.7	0.1
	St Lucia Sandy Mid Shelf	496.0	4.7
	Subtropical Small Temporarily Closed Estuary	0.5	0.0
	uThukela Mid Shelf Coarse Sediment Reef Mosaic	789.4	7.4
	uThukela Mid Shelf Mud Coarse Sediment Mosaic	1348.7	12.7
	uThukela Outer Shelf Muddy Reef Mosaic	531.8	5.0
Near Threatened	Natal Exposed Rocky Shore	0.7	0.0
	Natal-Delagoa Intermediate Sandy Shore	23.3	0.2
	uThukela Canyon	417.8	3.9
Least Concern	Natal-Delagoa Dissipative-Intermediate Sandy Shore	12.2	0.1
	Southwest Indian Mid Slope	0.8	0.0
	Southwest Indian Upper Slope	2281.4	21.5
	St Lucia Sandy Inner Shelf	31.6	0.3
Grand Total		**10599.8**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **Medium**

Justification

Endemic and rare species include: Spotted legskate (*Anacanthobatis marmoratus*), Porcupine stingray (*Urogymnus asperrimus*); the Bearded Goby (*Taenioides jacksoni*) is also endemic (Haupt 2010, Livingston et al., 2012). There are rare gravel and mud ecosystem types in the area, as well as a submarine canyon of limited extent (Sink et al., 2012). There is also a unique demersal fish community near the Thukela Banks (Fennesey 2016), and it is the only portion of the South African east coast that has a relatively wide shelf area.

C2: Special importance for life-history stages of species **High**

Justification

The KwaZulu-Natal Bight and uThukela River supports important life-history stages for a myriad of species. These functions include serving as a migration corridor for fish (e.g., Geelbek – *Atractoscion aequidens*, White stumpnose – *Rhabdosargus holubi*, Shad - *Pomatomus saltatrix*, Dusky kob - *Argynosomus japonicas* (Vulnerable), and Garrick – *Lichia amia*). It is also part of the migration route and spawning area for sardine – *Sardinops sagax*; many shark and fish species also spawn in the KwaZulu-Natal Bight (e.g., Bull shark – *Carcharhinus leucas*, Sand tiger shark – *Carcharias taurus*, Black musselcracker – *Cymatoceps nasutus*, and King mackerel – *Scomber japonicas*). The KwaZulu-Natal Bight and uThukela River is also an important nursery area for sharks and fish (e.g., Scalloped hammerhead – *Sphyrna lewini* (EN), Slinger – *Chrysoblephus puniceus*, Black musselcracker – *Cymatoceps nasutus*), and an important feeding and migration area for Critically Endangered leatherback turtles (*Dermochelys coriacea*; Haupt 2010, Harris et al., 2011, Vogt 2011, Sink et al., 2011, Ezemvelo KZN Wildlife 2012; Harris et al., 2018). There are also critical linkages between the Thukela Bank prawn-trawling ground and the estuarine nursery areas, emphasising the area's role in ecosystem connectivity and supporting recruitment of many commercially important species (Scharler et al., 2016).

C3: Importance for threatened, endangered or declining species and/or habitats **High**

Justification

The KwaZulu-Natal Bight and uThukela River contains many threatened species, including: the Critically Endangered Seventy-four (*Polysteganus undulosus*), leatherbacks (*Dermochelys coriacea*) and hawksbills (*Eretmochelys imbricata*); Endangered Scalloped hammerhead (*Sphyrna lewini*), great hammerhead (*Sphyrna mokarran*), dageraad (*Chrysoblephus christiceps*), red stumpnose (*Chrysoblephus gibbiceps*), and green turtles (*Chelonia mydas*); and Vulnerable Flapnose houndshark (*Scylliogaleus quecketti*), porcupine stingray (*Urogymnus asperrimus*), dusky kob (*Argynosomus japonicas*), bearded goby (*Taenioides jacksoni*), and Natal shyshark (*Haploblepharus kistnasamyi*). There are also endemic sparids of conservation concern: *Polysteganus coeruleopunctatus*, as well as Near Threatened loggerheads (*Caretta caretta*). There are 20 threatened ecosystem types, including nine Endangered types, and 11 Vulnerable types (Sink et al., 2019).

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**

Justification

The KwaZulu-Natal Bight and uThukela River contains features and species that are slow growing, fragile, and sensitive to disturbance, e.g., submarine canyons, shelf edge, deep reefs and cold-water corals (Sink et al., 2011, 2012).

C5: Biological productivity **High**

Justification

The KwaZulu-Natal Bight and uThukela River contains Indian Ocean water, with high but variable chlorophyll-a levels associated with very frequent SST and chlorophyll-a fronts (Lagabrielle 2009, Roberson et al., 2017). This pelagic habitat (Cb3) is characterised by cool productive water that has been advected onto the shelf in this sheer-zone through Agulhas Current-driven upwelling cells (Lutjeharms et al., 2000, Lutjeharms et al., 2000). Upwelling in the KwaZulu-Natal Bight is largely wind-driven (Roberts & Nieuwenhuys, 2016). Further, it has recently been discovered that substantial inputs of (mainly terrigenous) detritus from the uThukela River drive food webs in the KwaZulu-Natal Bight and uThukela River, particularly of the benthic communities which dominate the local food webs (Scharler et al., 2016).

C6: Biological diversity **High**

Justification

There is high habitat heterogeneity in the KwaZulu-Natal Bight and uThukela River EBSA, with 27 ecosystem types represented (Sink et al., 2019) and new evidence of diverse demersal fish communities in the area (Fennessey 2016).

C7: Naturalness **Medium**

Justification

Half (52%) of the area is in poor ecological condition, however, there is still 48% of the EBSA that is in good (15%) or fair (33%) ecological condition (Sink et al., 2019).

Status of submission

The Natal Bight EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised name, description and boundaries have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

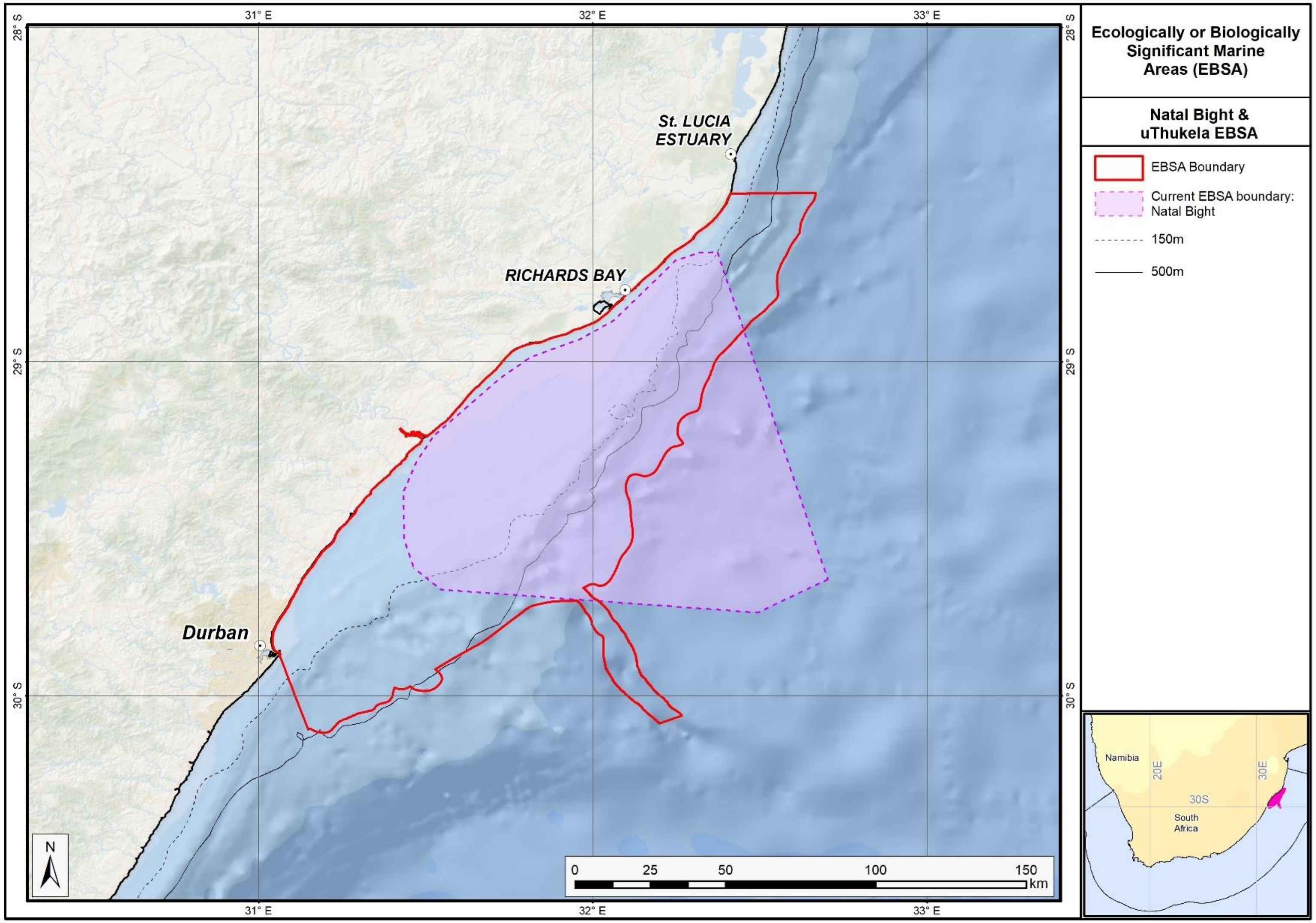
Motivation for Revisions

Some technical revisions and updates to the description were made based on recent research. A supplementary table of the habitats represented in the EBSA and their associated threat status was also included. A criteria level change was made on Criterion 5: Biological productivity and Criterion 6: Biological diversity, with ranks respectively upgraded from Medium to High, and Low to Medium. This was based on new research for productivity (Scharler et al., 2016) and demersal fish diversity (Fennessey 2016). Further, empirical evidence from the National Biodiversity Assessment (Sink et al., 2012, 2019) showed that a rank of Low for Criterion 7: Naturalness was not justified for this EBSA, and thus the rank was upgraded to Medium.

The main change is that the boundary of this EBSA has been slightly adjusted to focus the EBSA more closely on the key biodiversity features that underly its EBSA status. In particular, this includes adding the lower reaches of the uThukela River, which provides the critical link between land and sea in delivering sediment to the near- and offshore ecosystems comprising the Natal Bight. The delineation process included an initial stakeholder review which identified the need to update boundaries, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

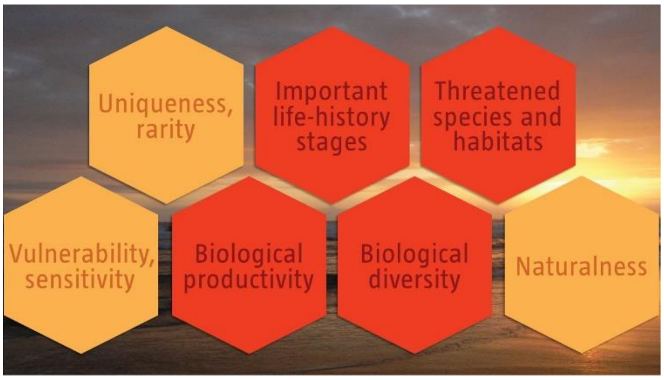
- The key KwaZulu-Natal Bight ecosystems (i.e. those shelf and inshore types dominated by sediment inputs) were focussed on (Sink et al., 2019).
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as focus areas identified in the national SCP analysis undertaken as part of Majiedt et al. (2013) and focus areas for offshore protection (Sink et al., 2011) were included.
- Key physical features (especially canyons) identified from the latest GEBCO data (GEBCO Compilation Group 2019), global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014) and the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) were incorporated.
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA (Sink et al., 2019).
- Areas of high relative naturalness of benthic and coastal systems and pelagic systems identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) were included in the analysis.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).
- The coastal boundary was refined to be more accurate based on new data (Harris et al., 2019).

The multi-criteria analysis resulted in a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.



The proposed revised boundaries for the Natal Bight and uThukela River EBSA in relation to the original boundaries of the Natal Bight EBSA.

Status Assessment and Management Options

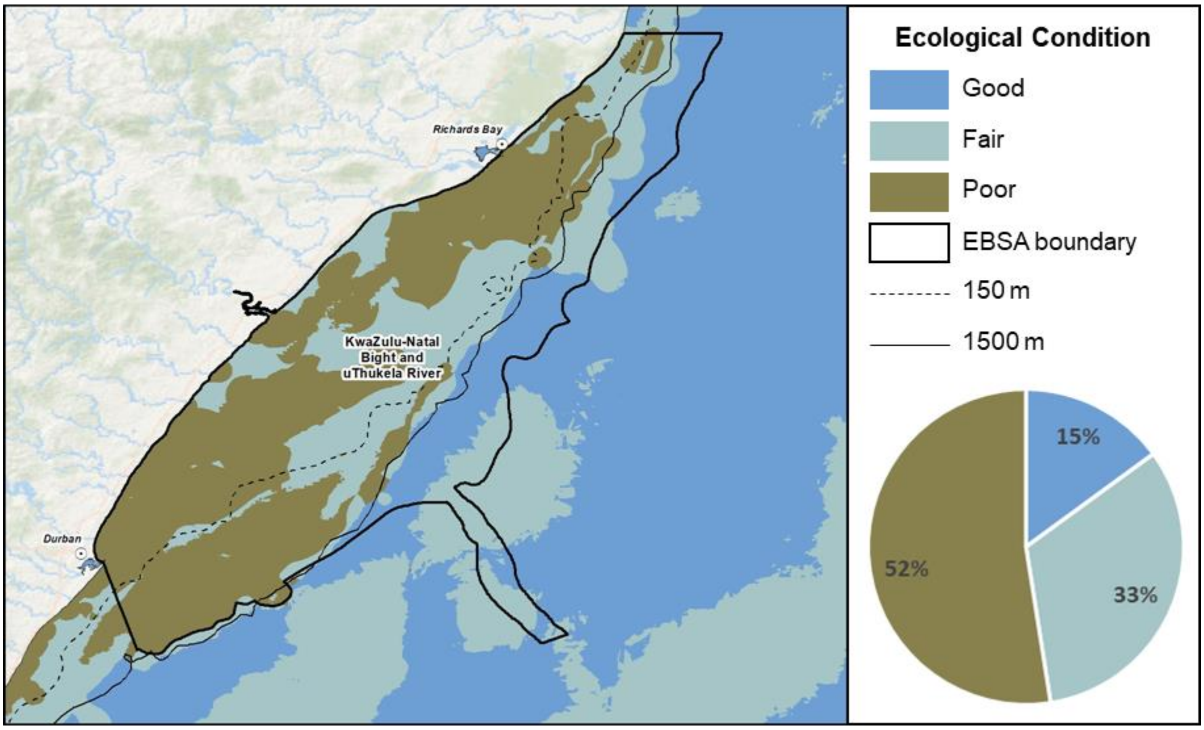


***KwaZulu-Natal Bight and uThukela River** is a critical land-sea connection between the uThukela River and the adjacent coastal and marine systems that is important for numerous ecological processes such as: supporting habitat formation (e.g., sand and mud habitats); important life-history stages for recruitment, development and foraging. Numerous threatened species are present, as well as sensitive ecosystems like canyons.*

EBSA criteria coloured by rank for KwaZulu-Natal Bight and uThukela River: red=high, orange=medium.

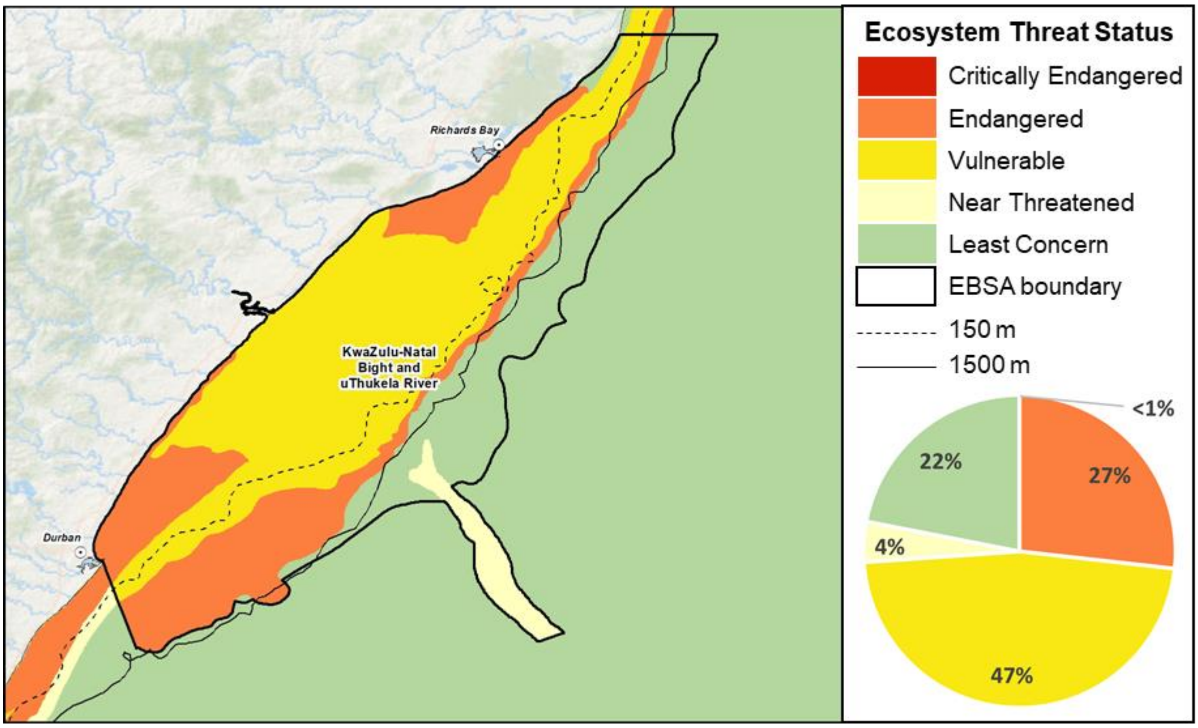
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

KwaZulu-Natal Bight and uThukela River is a critical land-sea connection that underpins the formation of the KwaZulu-Natal Bight and its associated processes, features and communities that thus needs to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for life history stages, importance for threatened species and habitats, biological productivity and biological diversity. There are 28 ecosystem types represented, including reefs and canyons that contain fragile species that are especially sensitive to damage. The productive site supports many important life-history stages for a variety of vertebrates and invertebrates, e.g., crustaceans, demersal fish, migratory fish, turtles and sharks, some of which are threatened and/or slow growing.

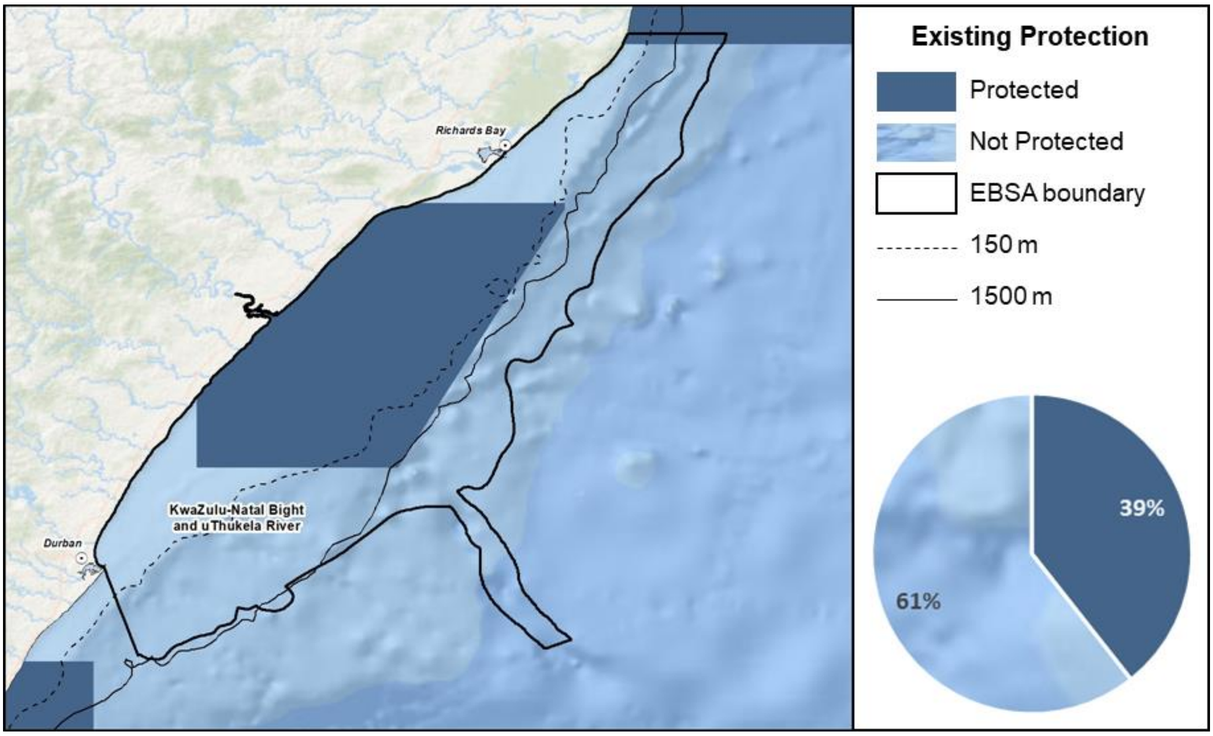


KwaZulu-Natal Bight and uThukela River proportion of area in each ecological condition category.

KwaZulu-Natal Bight and uThukela River is quite heavily impacted given its proximity to the intensively developed area around the Durban and Richards Bay ports, with only 15% of the EBSA in good ecological condition. A third (3%) is in fair ecological condition, but most of it (55%) is in poor ecological condition. Consequently, the bulk of the offshore extent is either Endangered (27%) or Vulnerable (47%), with 4% Near Threatened and a fraction (<1%) Critically Endangered, leaving a fifth (22%) as Least Concern. The most impacted, poorest condition and thus most threatened areas are on the shelf, which is widest in this area along the east coast because of the fluvial inputs from the uThukela River that in turn form the bight.



KwaZulu-Natal Bight and uThukela River proportion of area in each ecosystem threat status category.



KwaZulu-Natal Bight and uThukela River proportion of area in a Marine Protected Area (MPA).

Protection of features in MPAs has improved substantially following the proclamation of the Operation Phakisa MPA network. Where previously there was no protection in the area, this has now increased to 39.4%. The new MPA covers the main portion of the bight where there are some portions of the Vulnerable and Endangered ecosystem types that are still in fair ecological condition, which will contribute to protecting these ecosystem types from further degradation. However, there are still features (e.g., the canyon) that have no protection in the EBSA. There is also a small sliver of overlap with the newly extended iSimangaliso Wetland Park.

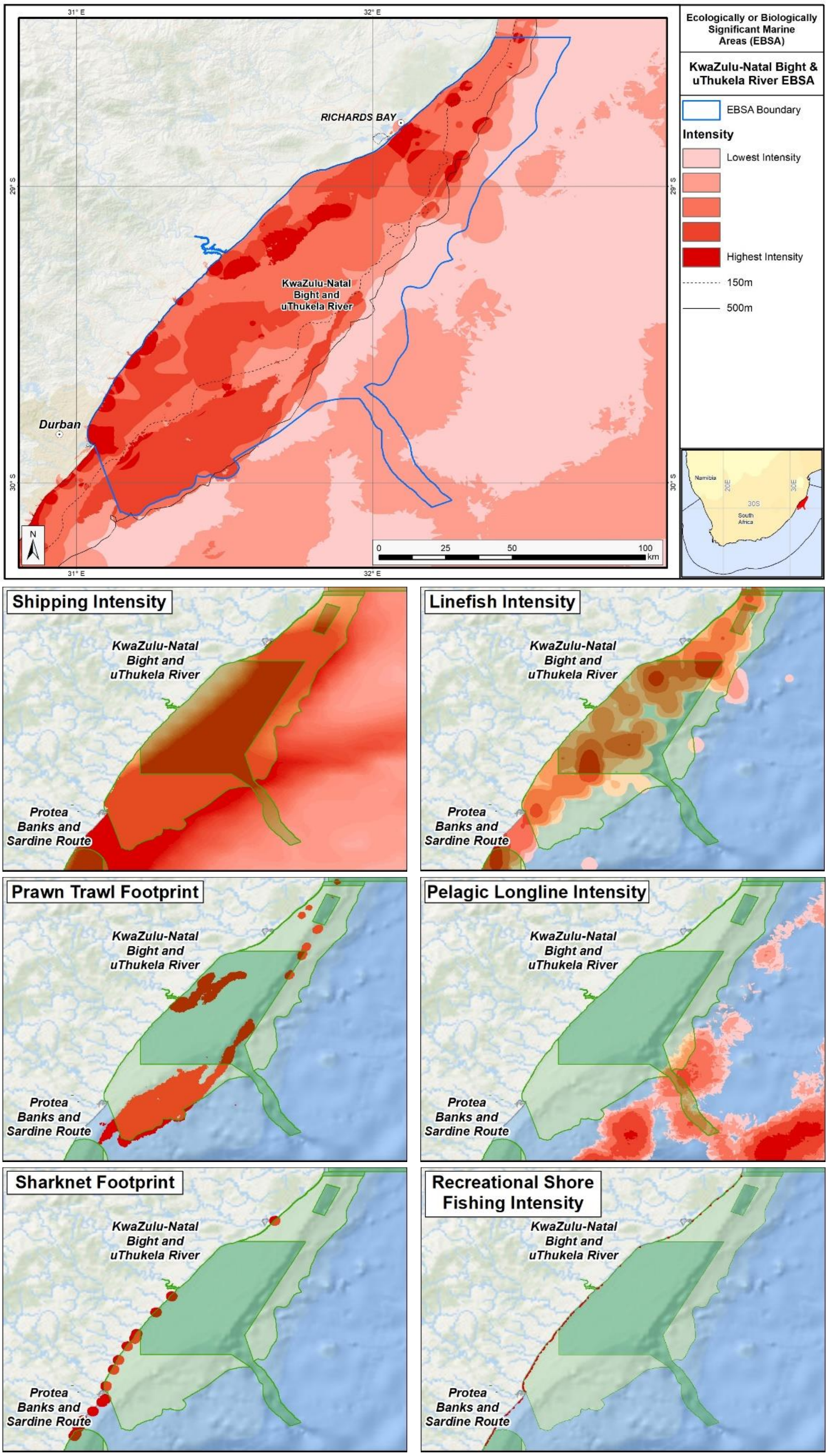
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Durnford Inner Shelf Reef Complex	EN	MP	0.0	5.6	94.4
Durnford Mid Shelf Reef Complex	VU	MP	0.0	72.3	27.7
KZN Bight Muddy Shelf Edge	VU	MP	0.0	58.3	41.7
KZN Bight Deep Shelf Edge	EN	MP	0.0	14.2	85.8
KZN Bight Mid Shelf Mosaic	EN	PP	0.0	0.8	99.2
KZN Bight Mid Shelf Reef Complex	EN	NP	0.0	0.0	100.0
KZN Bight Muddy Inner Shelf	VU	MP	0.0	51.7	48.3
KZN Bight Outer Shelf Mosaic	VU	MP	0.0	22.3	77.7
KZN Bight Sandy Inner Shelf	EN	MP	0.0	10.0	90.0
Natal Delagoa Dissipative Intermediate Sandy Shore	LC	WP	53.5	26.9	19.6
Natal Delagoa Intermediate Sandy Shore	NT	WP	60.7	21.1	18.2
Natal Delagoa Reflective Sandy Shore	VU	WP	19.2	16.1	64.7
Natal Exposed Rocky Shore	NT	WP	0.2	0.9	98.9
Natal Mixed Shore	VU	WP	29.7	22.9	47.4
Southwest Indian Mid Slope	LC	PP	0.0	100.0	0.0
Southwest Indian Upper Slope	LC	WP	59.8	36.1	4.2
St Lucia Sandy Inner Shelf	LC	WP	0.2	99.7	0.2
St Lucia Sandy Mid Shelf	VU	MP	0.0	26.7	73.3
Subtropical Estuarine Bay	CR	NP	2.3	0.0	97.7
Subtropical Estuarine Lake	EN	PP	0.5	61.8	37.7
Subtropical Large Fluvially Dominated	EN	PP	15.6	13.5	70.9
Subtropical Large Temporarily Closed	EN	PP	0.0	9.3	90.7
Subtropical Predominantly Open	EN	MP	60.8	22.3	16.9
Subtropical Small Temporarily Closed	VU	MP	1.1	93.4	5.6
uThukela Canyon	NT	NP	35.3	64.7	0.0
uThukela Mid Shelf Mosaic	VU	MP	0.0	11.6	88.4
uThukela Mid Shelf Mud Coarse Sediment Mosaic	VU	MP	0.0	35.1	64.9
uThukela Outer Shelf Muddy Reef Mosaic	VU	MP	0.0	99.0	1.0

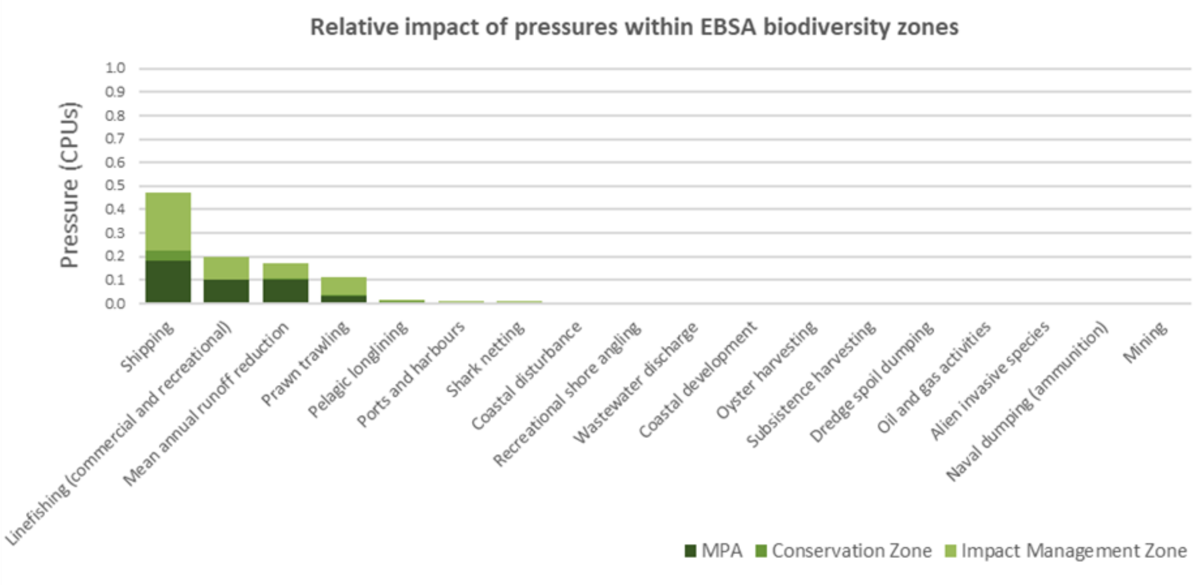
Other Features
• Endemic, threatened, and commercially important fish species, including sparids and unique demersal fish communities • Cold-water corals, black corals, gorgonians • Areas for recruitment and nurseries for sharks, fish and crustaceans • Foraging areas for numerous taxa including threatened turtles and sharks • Upwelling cells • Paleo-shorelines

Relevant Pressures and Activities (impact, extent)

- There are 18 pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent and has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: linefishing (commercial and recreational), mean annual runoff reduction, prawn trawling and pelagic longlining. These activities will need to be managed particularly well in order to protect the nursery and spawning habitats, fish and shark assemblages, turtles (caught as bycatch), and delivery of sediments and freshwater to the marine environment that underpins formation of the KwaZulu-Natal Bight, all which are key characteristics of this EBSA. For most of these pressures, the larger portion of the activity is in the Impact Management Zone.
- Fourteen of the 18 pressures each comprise <1.3% of the EBSA pressure profile, including: pelagic longlining, shark netting, ports and harbours, coastal disturbance, wastewater discharge, recreational shore angling, coastal development, oyster harvesting, dredge spoil dumping, subsistence harvesting, oil and gas (exploration and production), alien invasive species, mining (prospecting and mining), and naval dumping (ammunition).
- Activities in South Africa that are not present in this EBSA include: abalone harvesting, beach seining, benthic (hake) longlining, gillnetting, kelp harvesting, mariculture, midwater trawling, tuna pole fishing, small pelagics fishing, south coast rock lobster harvesting, squid fishing, inshore trawling, offshore trawling, and west coast rock lobster harvesting.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from shark netting to mining each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are also two MPAs that are wholly or partially within the EBSA: the uThukela Banks MPA and a small sliver of the iSimangaliso MPA (see also Delagoa Shelf Edge, Canyons and Slope EBSA). The activities permitted within these MPAs are not considered as part of the EBSA management recommendations because these are as per their respective gazetted regulations.

uThukela Banks MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_uthukelamarine_regulations_g42479gn790.pdf
iSimangaliso MPA (proclaimed 2019):	https://www.gov.za/sites/default/files/gcis_document/201905/42478gon772.pdf

Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

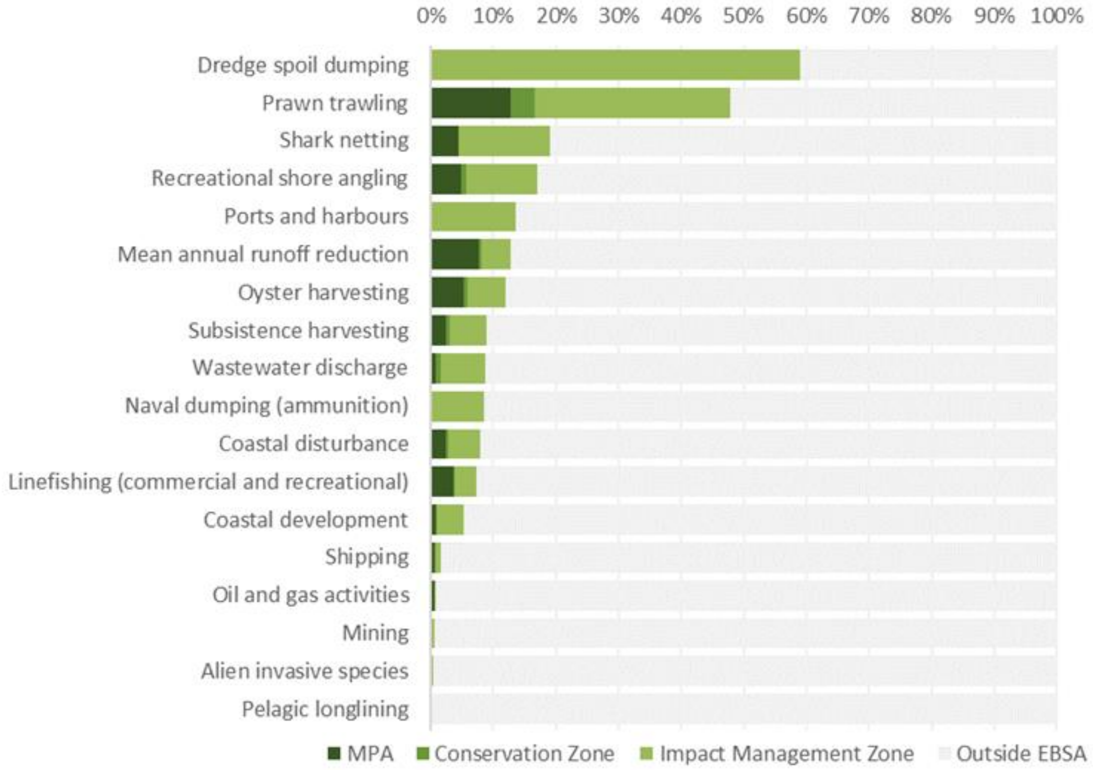
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

A significant proportion of the country's dredge spoil dumping takes place within the EBSA, exclusively in the Impact Management Zone where it is considered conditionally compatible. It is recommended to continue in this zone subject to appropriate management measures. The dredge spoil is generated as part of maintaining the two ports in the EBSA: Durban and Richards Bay. Note that although the ports and harbours footprint overlaps with the Conservation Zone, this is only for the shores adjacent to the Richards Bay Port; the port infrastructure itself is in the Impact Management Zone, and the entire of the Durban Port control area is in the Impact Management Zone. Port and harbour activities should be carefully managed to avoid unacceptable impacts on adjacent Conservation Zones, and in particular, to ensure that no new alien invasive species establish in these areas. Shipping is compatible with both EBSA zones and is recommended to continue under current general rules and legislation.

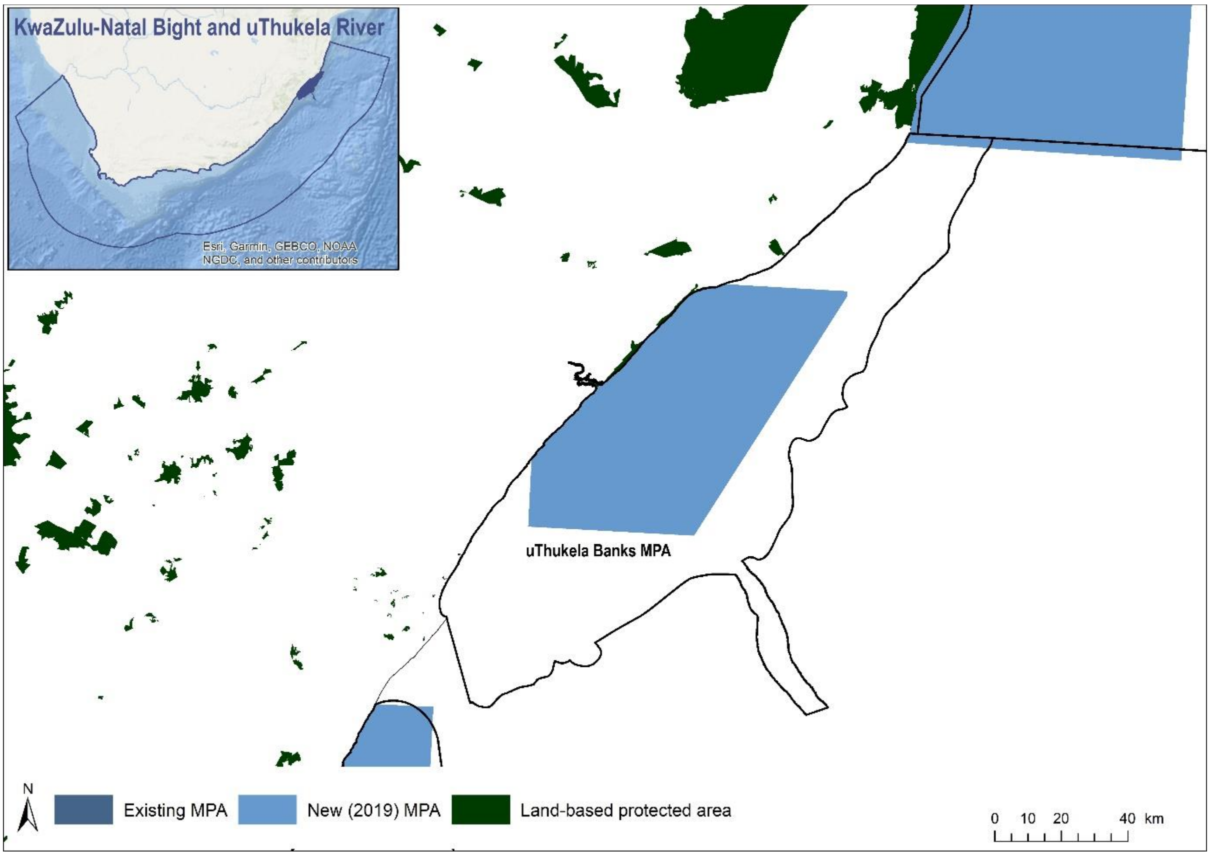
Another key economic activity in the EBSA is prawn trawling, with 90% of the national footprint of this activity falling within the EBSA. Most of this is within the Impact Management Zone, where it is conditionally compatible, and the newly declared MPA (prior to the MPA came into effect), and a much smaller portion in the Conservation Zone, where it is considered not compatible. It is recommended to continue in the Impact Management Zone with appropriate management measures, and to be not permitted in the Conservation Zone. Other accommodated activities relating to biological resource use include linefishing (commercial and recreational), oyster harvesting, subsistence harvesting, and recreational shore angling; all of which are considered compatible or conditionally compatible and are proposed to continue in both EBSA zones subject to appropriate management measures. Recreational activities (e.g., beach visting and water sports) are important along the shores of this EBSA – also considered as part of coastal disturbance – playing a key economic role in the tourism sector; these are compatible with the EBSA and are recommended and encouraged to continue. Consequently, shark nets have been put in place to protect bathers. Shark nets are located mostly along the KZN coast, with a third of the national footprint in this EBSA. These are considered compatible or conditionally compatible and are recommended to continue subject to appropriate management measures.

Other extractive activities in the EBSA include oil and gas activities and mining (prospecting and mining), both of which comprise a very small proportion of their respective national footprints. Oil and gas exploration are considered compatible or conditionally compatible with the EBSA zones and are recommended to continue; however, production is conditionally compatible within the Impact Management zone and not compatible with the Conservation Zone. Similarly, mining prospecting is considered compatible or conditionally compatible with the EBSA zones and is recommended to continue subject to appropriate management. However, mining construction and operations are conditionally compatible with the Impact Management Zone and not compatible with the Conservation Zone. Dumping ammunition at sea historically occurred within the EBSA, but is no longer practiced in South Africa. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

Management Recommendations for Marine Protected Areas

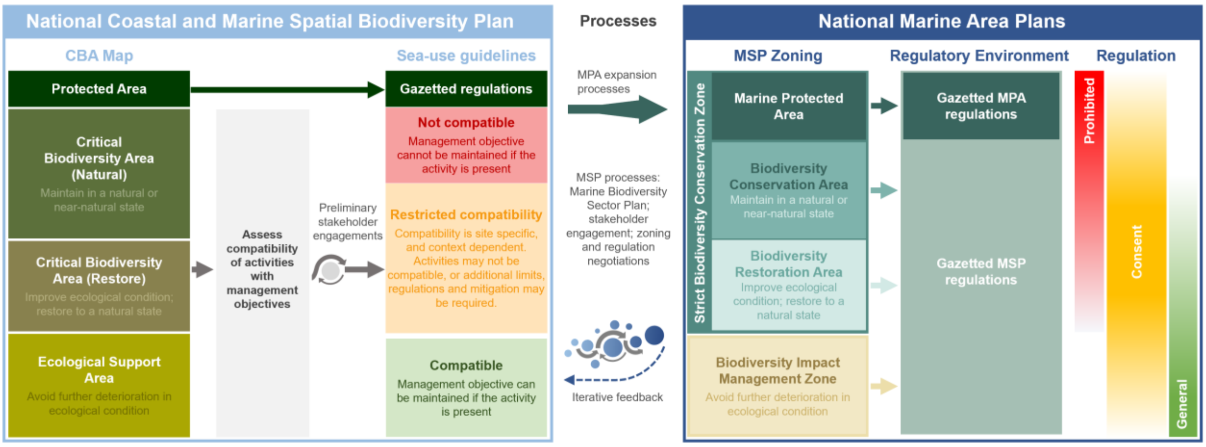
Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the uThukela Banks MPA and iSimangaliso MPA in 2019. This builds on existing protection afforded by adjacent land-based protected areas in the area. It is recommended that full operationalisation of the new MPAs is implemented, including management plans, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.



Marine protected areas (MPAs) in the KwaZulu-Natal Bight and uThukela River EBSA. Land-based protected areas are also shown (from DFFE, 2021).

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for KwaZulu-Natal Bight and uThukela River, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

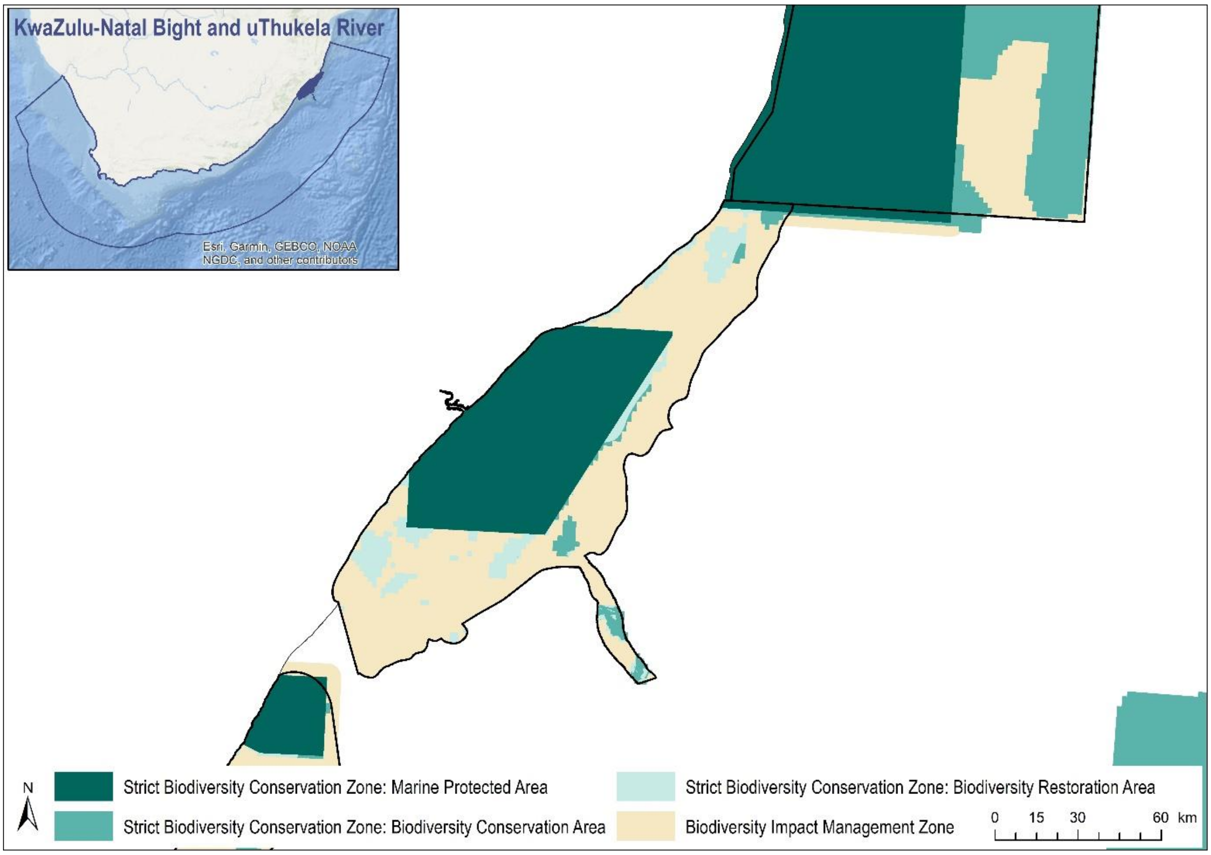


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in KwaZulu-Natal Bight and uThukela River.

uThukela Banks is the main MPA in this EBSA, with a small sliver of iSimangaliso MPA included in the north. These MPAs are managed according to their respective gazetted management regulations. The rest of the Strict Biodiversity Conservation Zone contains some patches of Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. The Strict Biodiversity Conservation Zone also includes patches of Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the KwaZulu-Natal Bight and uThukela River EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for KwaZulu-Natal Bight and uThukela River. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, it is noted that there is planned research in this area through the African Coelacanth Ecosystem Program Phase III, and that there needs to be fine-scale mapping of the canyon in the EBSA.

Future Process

There needs to be full operationalisation and practical implementation of the uThukela Banks MPA and the iSimangaliso MPA, including management plans, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible offshore MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project.

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New EBSAs

Protea Seamount Cluster

Proposed EBSA Description

Abstract

The Protea Seamount Cluster is in the south Atlantic abyss off the SSW flank of the Agulhas continental shelf, within the South African EEZ. It is a unique feature in that it is the only seamount cluster in the south Atlantic abyss in South Africa's EEZ. The seamounts support more productivity and diversity compared to adjacent sites, and offer a site for migratory species to aggregate around. Notably, the Protea Seamount Cluster contains vulnerable and sensitive ecosystems and species, some of which are threatened, e.g. the site is visited by regionally Critically Endangered leatherback turtles. It is in good condition given the currently low anthropogenic pressure in the area, promoting the importance of its protection. This EBSA is particularly relevant for its: Uniqueness and rarity; Importance for threatened or declining species and habitats; Vulnerability and sensitivity; and Naturalness.

Introduction

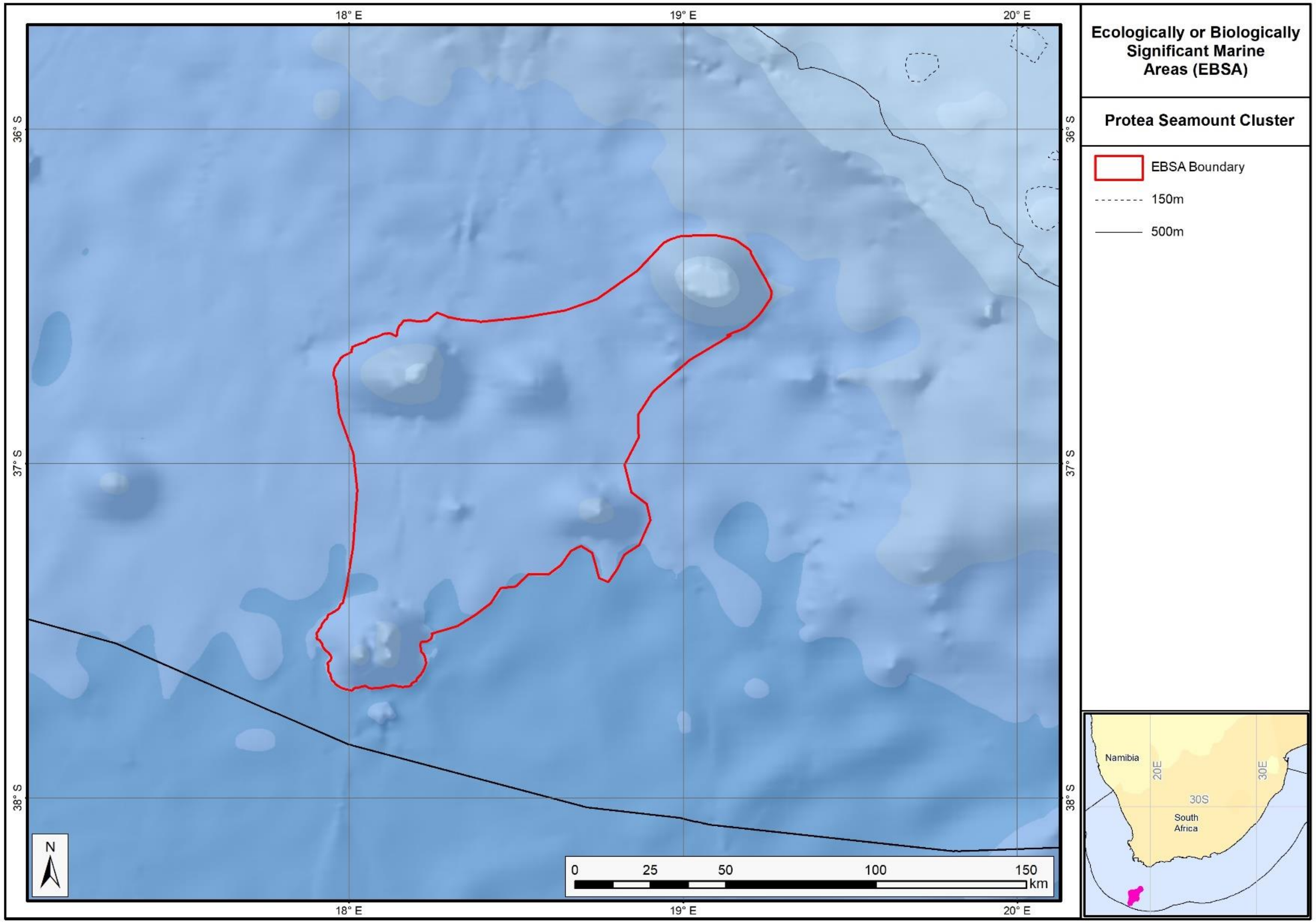
The Protea Seamount Cluster focus area lies on the SSW flank of the Agulhas continental shelf: an oceanic plateau that extends several hundreds of kilometres south of South Africa. The focus area is south west of the Browns Bank EBSA, entirely within the South African EEZ. The site includes the base of the lower slope, but falls mainly within the south Atlantic abyss. Late Eocene volcanism created the seamount cluster in this focus area, including Protea and Argentina Seamounts (among others). The Agulhas Current, which flows south-westward along the eastern coast of South Africa, has its retroflection in this area. Given this position, and its location relative to the Agulhas basin and Agulhas continental shelf, the seamount cluster is an important aggregation site for several migratory species, such as sharks, tuna, and turtles. These animals are also likely attracted to the site for the higher local productivity that is usually associated with seamounts. The Protea Seamount Cluster also contains vulnerable, fragile and sensitive ecosystems and species, and thus the EBSA includes and is important for both benthic and pelagic features. It is highly relevant in terms of these EBSA criteria: "Uniqueness and rarity", "Importance for threatened or declining ecosystems and species", and "Naturalness".

This site was recognised as important at the original South Eastern Atlantic Workshop for EBSA Identification in 2013, but that there was not enough information available to score it against the EBSA criteria at the time (see UNEP/CBD/RW/EBSA/SEA/1/4 Annex 6, Area 5). However, some new data and information have now made description and delineation of the EBSA possible (e.g., GEBCO Compilation Group 2019; Harris et al., 2014; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019), although criterion rankings still rely heavily on inferred information in many cases. Therefore, the criteria were benchmarked against those ranks given to other EBSAs described for seamounts specifically (see the section: Other relevant website address or attached documents). The seamounts are the underpinning feature of this EBSA, but it also comprises additional features and ecosystems that are connected by seamount-related ecological processes. Consequently, it is proposed as a Type 2 EBSA (sensu Johnson et al., 2018).

Description of the location

EBSA Region

South-Eastern Atlantic



Proposed boundaries of the Protea Seamount Cluster EBSA.

Location

The Protea Seamount Cluster focus area occurs within the national jurisdiction of South Africa. It is found in the south Atlantic abyss off the SSW flank of the Agulhas continental shelf: an oceanic plateau that extends several hundreds of kilometres south of South Africa. It lies south west of the Browns Bank EBSA, and extends almost to the boundary of South Africa's EEZ.

Feature description of the proposed area

The Protea Seamount Cluster area is important for both its benthic and pelagic features, notably for supporting threatened habitats and species, and vulnerable, fragile and sensitive ecosystems and species. It comprises a seamount cluster that includes the Protea Seamount, and a few others, that rise from the southeast Atlantic abyss. The Agulhas Current, which flows south-westward along the eastern coast of South Africa, has its retroflection in this area. Given this position, and its location relative to the Agulhas basin and Agulhas continental shelf, local productivity is high at the site. Consequently, it serves as an important aggregation site for migratory species, such as sharks, seabirds (Halpin et al., 2009), and tuna. Further, adult female leatherback turtles have been satellite tracked to these seamounts and surrounds following nesting (Luschi et al., 2003, 2006, Robinson 2014, Harris et al., 2018), with the site likely used by juvenile turtles as well. There has been one previous scientific expedition to Protea Seamount (in 2001), which was focused on deep-sea pelagic birds.

The Protea Seamount Cluster had a high selection frequency in two systematic conservation plans to represent biodiversity efficiently (Majiedt et al., 2013; Sink et al., 2011). The EBSA was delineated based on this selection frequency, key features (seamounts, fragile and sensitive habitat-forming species, and portions of threatened habitat in good condition), and to align with a national initiative to expand MPAs in South Africa. Protecting this site is important because of its vulnerability to both pelagic fishing and benthic trawling. Although no research is currently planned for this area, it is recommended for this EBSA, particularly towards informing appropriate spatial management of this site.

Note that there are other seamounts in the surrounding area that are not included in the delineation of the EBSA because they are much smaller, unnamed, or there are no records of fragile, habitat-forming species for these sites and they are considered data deficient. There is a matrix of abyssal and and bathyal habitat in between the seamouts that is included in the delineation because it represents the broader area where the top predators aggregate in the water column in response to the elevated productivity of the site, likely also encompassing the full extent of seamount-related ecological processes. In addition, it is an efficient way to include a natural, near-pristine portion of these ecosystem types in the EBSA network that is likely to be taken up in spatial management processes for the seamounts themselves, especially because these areas were identified as a priority in the two systematic conservation plans mentioned above.

Feature condition and future outlook of the proposed area

Sink et al. (2012, 2019) estimated the threat status of marine ecosystem types in South Africa by assessing the cumulative impacts of various pressures (e.g. extractive resource use, pollution and others) on each ecosystem type. The latest assessment (Sink et al., 2019) shows the whole area to be in natural ecological condition, with a portion of the EBSA recently proclaimed as a marine protected area. The EBSA is in a good condition, largely because it has been subjected to relatively little extractive resource use (e.g. fishing, mining) pressure, and is relatively remote and often subjected to high seas with winds of around 50 knots.

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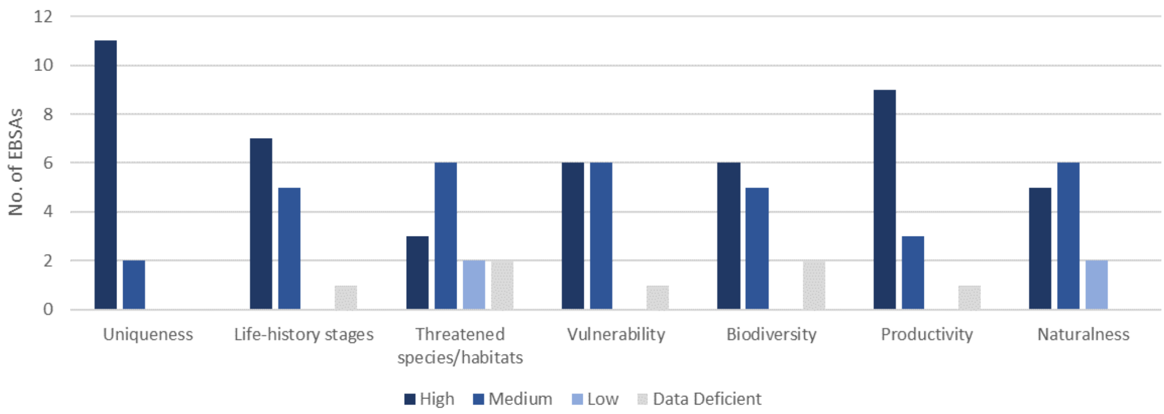
Other relevant website address or attached documents

Summary of ecosystem types and threat status for Protea Seamount Cluster. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Least Concern	Cape Basin Abyss	1241.9	13.8
	Cape Basin Complex Abyss	5318.4	59.0
	Southeast Atlantic Lower Slope	0.2	0.0
	Southeast Atlantic Seamount	1576.3	17.5
	Southeast Atlantic Slope Seamount	882.7	9.8
Grand Total		**9019.5**	**100.0**

To benchmark the criteria ranking for this proposed EBSA, the frequency of all criteria ranks were plotted for seamount-related EBSAs in the global network (figure below).



Frequency of the criteria ranks for EBSAs in the global network that are described specifically for seamounts (n=13): Juan Fernández Ridge Seamounts; Emperor Seamount Chain and Northern Hawaiian Ridge; North-east Pacific Ocean Seamounts; New England and Corner Rise Seamounts; Tabou Canyon and Seamount; Cayar Seamount; Atlantis Seamount; Coral Seamount and Fracture Zone Feature; Agulhas Slope and Seamounts; Central Louisville Seamount Chain; Monowai Seamount; Seamounts of West Norfolk Ridge; and Sagami Trough and Island and Seamount Chain of Izu-Ogasawara.

Assessment of the area against CBD EBSA Criteria

CBD EBSA Criteria (Annex I to decision IX/20)	**Description** (Annex I to decision IX/20)	**Ranking of criterion relevance**
Uniqueness or rarity	Area contains either (i) unique ("the only one of its kind"), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.	Medium
Explanation for ranking This is the only seamount cluster in the Atlantic Ocean portion of the South African EEZ, although there are other seamount clusters in the surrounding area beyond national jurisdiction.		
Special importance for life-history stages of species	Areas that is required for a population to survive and thrive.	Medium
Explanation for ranking Data are relatively limited for assessing this criterion. However, given the locally high productivity in the focus area, it is expected that the Protea Seamount Cluster is a key foraging site for migratory species in particular. Further, all other EBSAs globally that include seamounts rank the site at medium or high importance for this criterion, indicative of the ecological role that the feature plays in offshore systems that can be inferred here too. OBIS-SEAMAP (Halpin et al., 2009) shows 1-10 records of megavertebrate (marine mammal, seabird, sea turtle and ray and shark) observations for most of the area around these seamounts in the southeast Atlantic, and a 10-100 records within the EBSA region.		
Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.	Medium
Explanation for ranking This is a site where regionally Critically Endangered leatherback turtles have been recorded based on satellite tracking data (Harris et al., 2018), and a site where other threatened species (e.g., tuna, sharks and seabirds) are expected or known to occur. Global rankings for seamount-specific EBSAs are either High or Medium for this criterion; data are limited for this site specifically, thus it is scored as Medium.		
Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.	High
Explanation for ranking Almost all other seamount-specific EBSAs rank this criterion as Medium or High. This is because seamounts are habitats for many indicator species of vulnerable marine ecosystems (Watling & Auster 2017). Therefore, within Protea Seamount Cluster, it is likely that there are fragile, sensitive species, such as corals and sponges, that are vulnerable to impacts on the seabed and that would		

take a long time to recover if impacted. This is supported by known presence localities of fragile, vulnerable and sensitive habitat-forming species (Unpublished SANBI and SAEON data) within the EBSA area. Further, the top predators that frequent this site (e.g., Harris et al., 2018) are also slow to recover from population impacts, particularly leatherback turtles given how long they take to reach sexual maturity, and the low survivorship from hatchling to adult (approximately 1 in 1000 survive).		
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	Medium
Explanation for ranking Seamounts are considered to be relatively productive systems, with most other EBSAs for seamounts ranking this criterion as High. No data are available for the Protea Seamount Cluster; however, Chlorophyll-a concentrations (MODIS-Aqua data on the NASA Giovanni Portal: https://giovanni.gsfc.nasa.gov/giovanni) show marginally higher values within this area compared to the surrounding abyss.		
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	Medium
Explanation for ranking No are data available, however, given the habitat heterogeneity as a result of the seamount cluster, local biodiversity is expected to be higher than adjacent sites, which is confirmed by the global rankings of seamount-specific EBSAs that score this criterion either High or Medium. Further, given the productivity and physical location that makes aggregation of migratory species likely, biodiversity is expected to be higher than the surrounding area. This is supported by the relatively greater abundances (likely representing a greater diversity of species) of megavertebrates in the EBSA region compared to that of the surrounding area (Halpin et al., 2009), and records of up to 100 species of animals in the OBIS database (http://www.iobis.org) within this EBSA. There are three main ecosystem types that make up this EBSA, with a very small portion of a fourth ecosystem type (Sink et al., 2019).		
Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.	High
Explanation for ranking The area is all assessed to be in natural/good ecological condition (Sink et al., 2012, 2019), largely because the area has been subjected to relatively low levels of anthropogenic pressures because it is relatively remote and often subjected to rough seas with winds of around 50 knots. This contrasts with many seamounts further north in the Benguela system that are not in good ecological condition because they have high fishing pressure.		

Status of submission

The description of Protea Seamount Cluster has been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

Not yet submitted.

End of proposed EBSA revised description

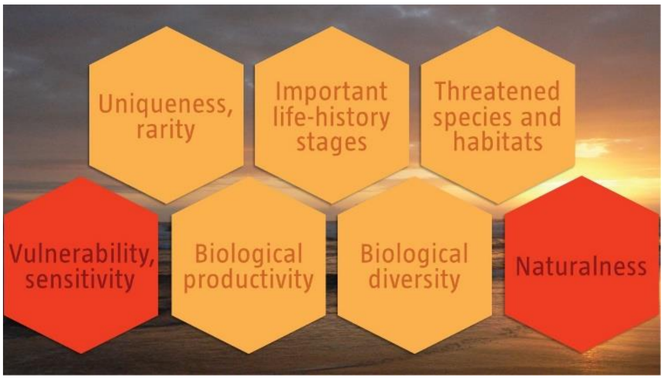
Motivation for Submission

A previous tentative description for a Protea Seamount EBSA was previously compiled, but was not submitted to CBD due to data limitations. Subsequent expert and systematic review of gaps in the EBSA network highlighted the requirements for the Protea Seamount Cluster EBSA, and delineation and description became possible due to improved spatial datasets. Initial draft EBSA boundaries were determined, and these were then evaluated against the EBSA criteria. Once it was determined that the area would meet EBSA criteria a formal boundary delineation and evaluation process was undertaken. The delineation process included an initial stakeholder review, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

- Key physical features (i.e. the seamounts and seamount linked ecosystems) from the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) and BCC spatial mapping project (Holness et al., 2014) were incorporated. These data were refined using the latest GEBCO data (GEBCO Compilation Group 2019) and global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014).
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites which relate closely to the EBSA criteria of "Uniqueness and rarity", as well as focus areas identified in the SCP undertaken for the BCLME by Holness et al. (2014) and Majiedt et al. (2013) were incorporated. In addition, focus areas for marine protection identified by Sink et al. (2011) were included.
- Threatened and under-protected ecosystem types. The analysis attempted to focus on the inclusion of the most threatened and under-protected ecosystem types found in the area (Sink et al., 2012, 2019; Holness et al., 2014). However, as all types in the broader area were Least Concern and not protected, this aspect was not informative. (Although, since delineated, a new marine protected area has been proclaimed in the EBSA).
- Areas of high relative naturalness identified in the National Biodiversity Assessment 2011 (Sink et al., 2012), the West Coast (Majiedt et al., 2013) and the BCLME spatial assessments (Holness et al., 2014) were included in the analysis. Both pelagic and benthic and coastal condition were incorporated.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).

The multi-criteria analysis resulted a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.

Status Assessment and Management Options

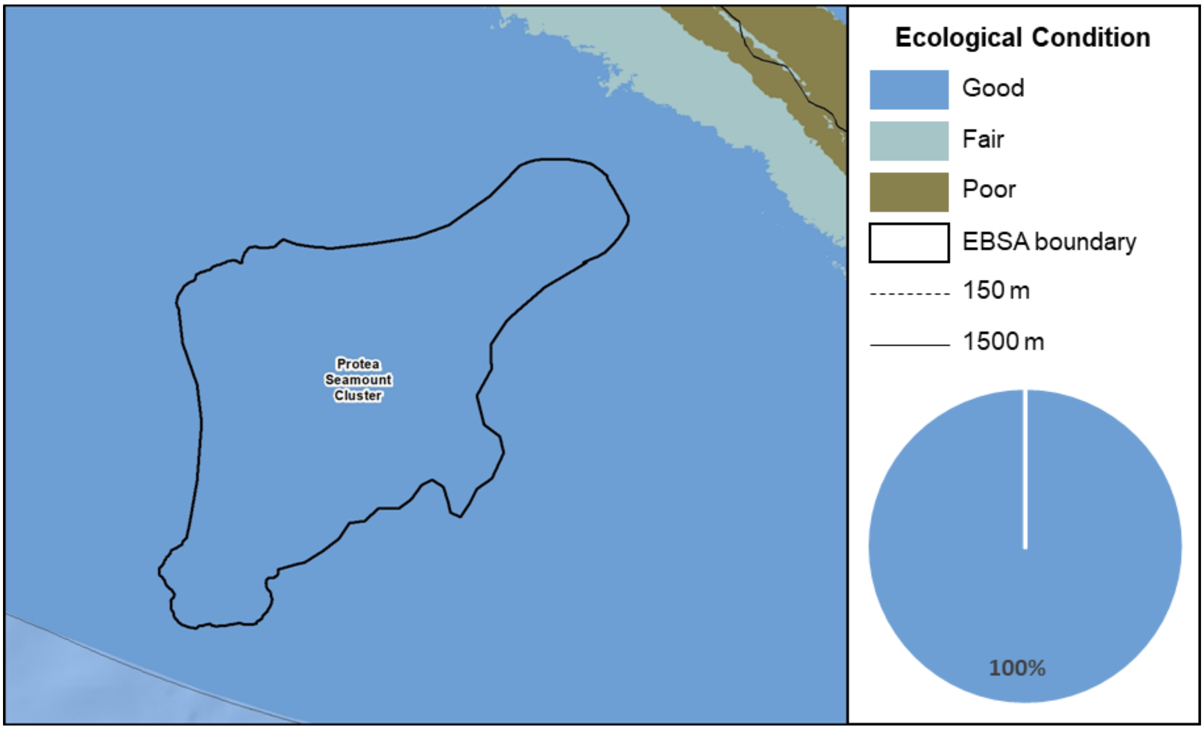


***Protea Seamount Cluster** is a group of seamounts in the south Atlantic abyss off the SSW flank of the Agulhas continental shelf. It is a relatively rare feature in the area that has higher productivity than the adjacent abyssal habitats, and is thus an attractive site for foraging migratory species. The seamounts also support fragile, sensitive ecosystems and species. The area is in a natural state because it has been exposed to very few pressures.*

EBSA criteria coloured by rank for Protea Seamount Cluster: red=high, orange=medium.

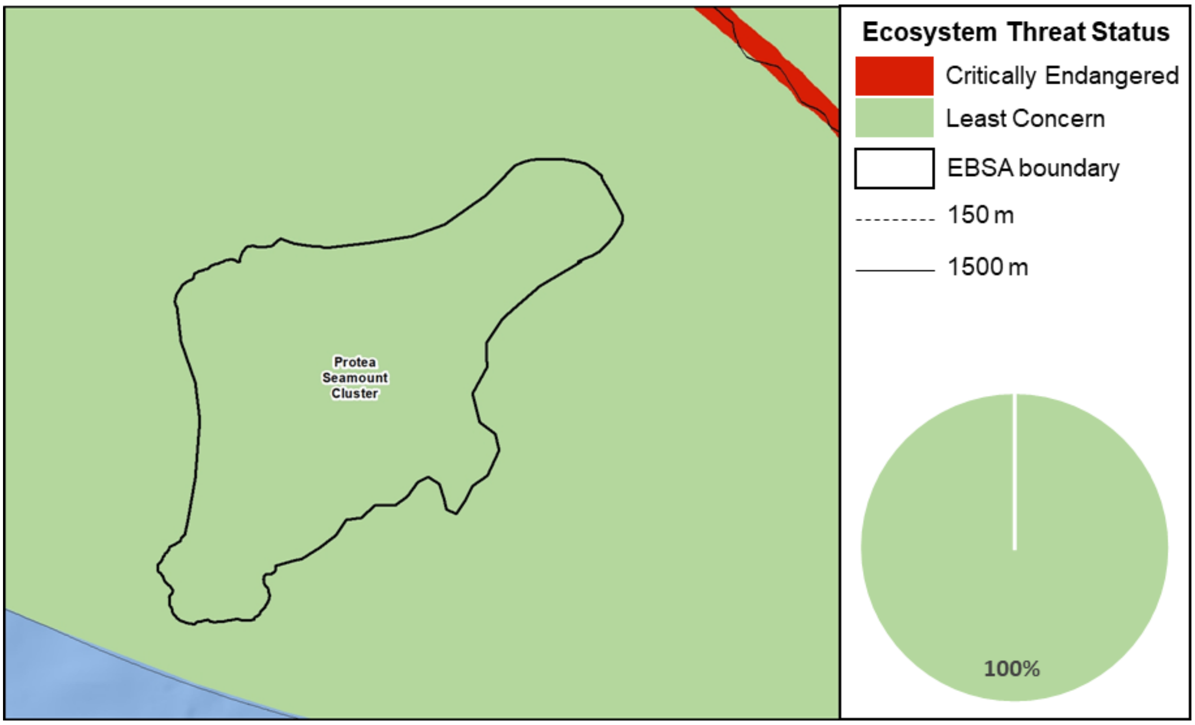
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Protea Seamount Cluster contains key seamounts that need to be protected for the area to maintain characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: vulnerability and sensitivity, and naturalness. There are five ecosystem types represented, some of

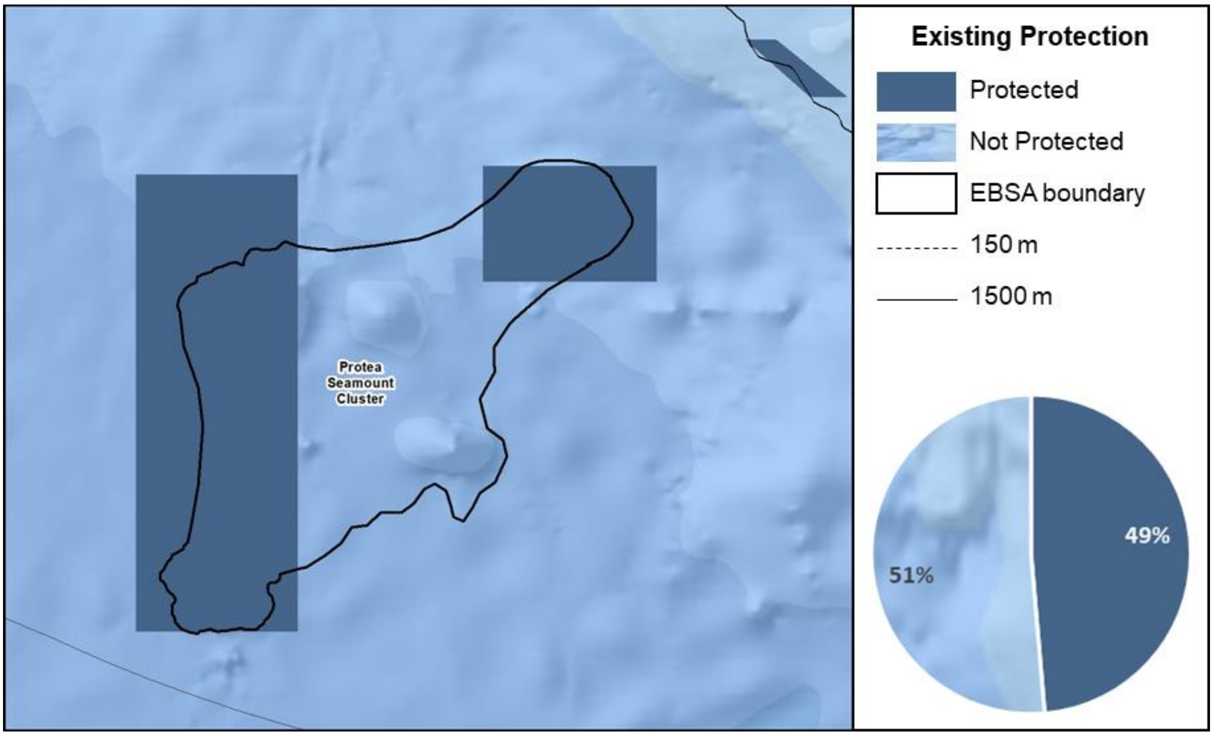


Protea Seamount Cluster proportion of area in each ecological condition category.

which contain fragile species that are especially sensitive to damage. The area is more productive than the surrounding abyss, making it an attractive foraging site for migratory species, such as turtles and sharks. The area is relatively remote and often subjected to high seas with winds of around 50 knots, which means that it has been subjected to few pressures in the past, so it is still in a natural state. Agulhas Bank Nursery Area is entirely in good ecological condition (100%); as noted above, it is a highly natural site. Consequently, the whole EBSA comprises ecosystem types that are all Least Concern (100%).



Protea Seamount Cluster proportion of area in each ecosystem threat status category.



Protea Seamount Cluster proportion of area in a Marine Protected Area (MPA).

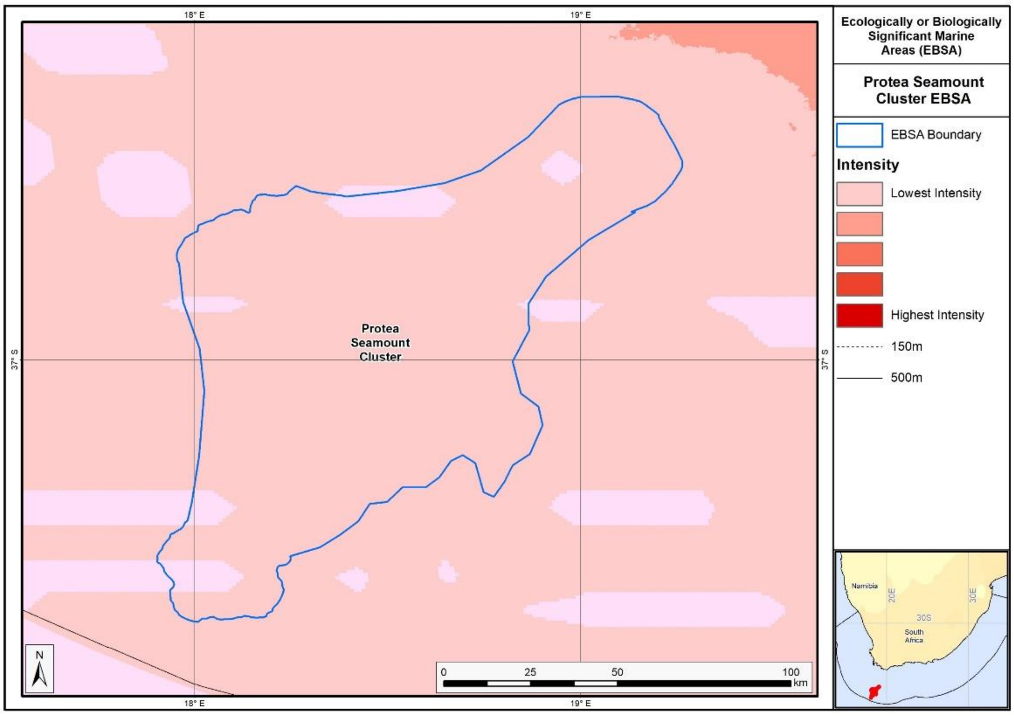
Protection of features in MPAs has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing from no protection to 49%. These new MPAs cover important named seamounts within the cluster, including Protea Seamount itself. However, there are still ecosystem types within the EBSA that are poorly or not protected.

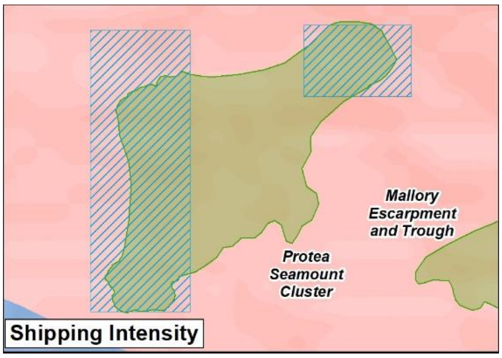
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Cape Basin Abyss	LC	PP	100.0	0.0	0.0
Cape Basin Complex Abyss	LC	PP	100.0	0.0	0.0
Southeast Atlantic Lower Slope	LC	NP	100.0	0.0	0.0
Southeast Atlantic Seamount	LC	WP	100.0	0.0	0.0
Southeast Atlantic Slope Seamount	LC	WP	100.0	0.0	0.0
Other Features					
• Fragile species associated with the seamounts • Foraging migratory species, such as turtles (leatherbacks in particular) and sharks					

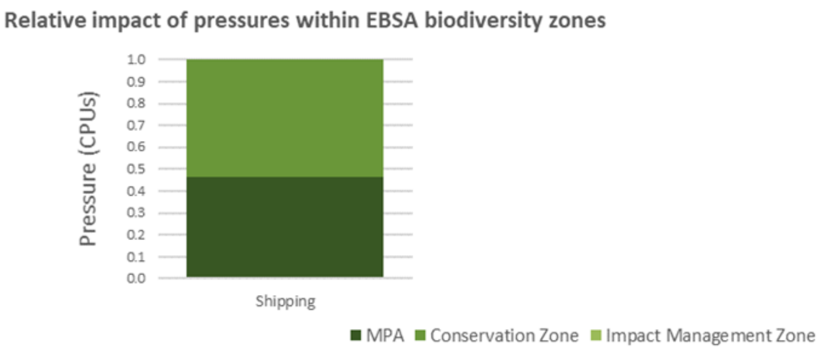
Relevant Pressures and Activities (impact, extent)

- Given the remote location of the EBSA and often challenging conditions (heavy seas and strong winds) in the area, shipping is the only activity that is currently present in this EBSA.
- Pressures that don't occur in the EBSA that are present in South Africa include: abalone harvesting, alien invasive species, beach seining, benthic (hake) longlining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, inshore trawling, kelp harvesting, linefishing (commercial and recreational), mariculture, mean annual runoff reduction, midwater trawling, mining (prospecting and mining), naval dumping (ammunition), offshore trawling, oil and gas (exploration and production), oyster harvesting, pelagic longlining, ports and harbours, prawn trawling, recreational shore angling, shark netting, small pelagics fishing, south coast rock lobster harvesting, squid fishing, subsistence harvesting, tuna pole fishing, wastewater discharge, west coast rock lobster harvesting; noting that some of these are coastal pressures that do not apply to offshore EBSAs.





Map of cumulative pressure (top) and of the only pressure (activity) in the EBSA and surrounds (left), which is shipping. Darker reds indicate higher pressure intensity.



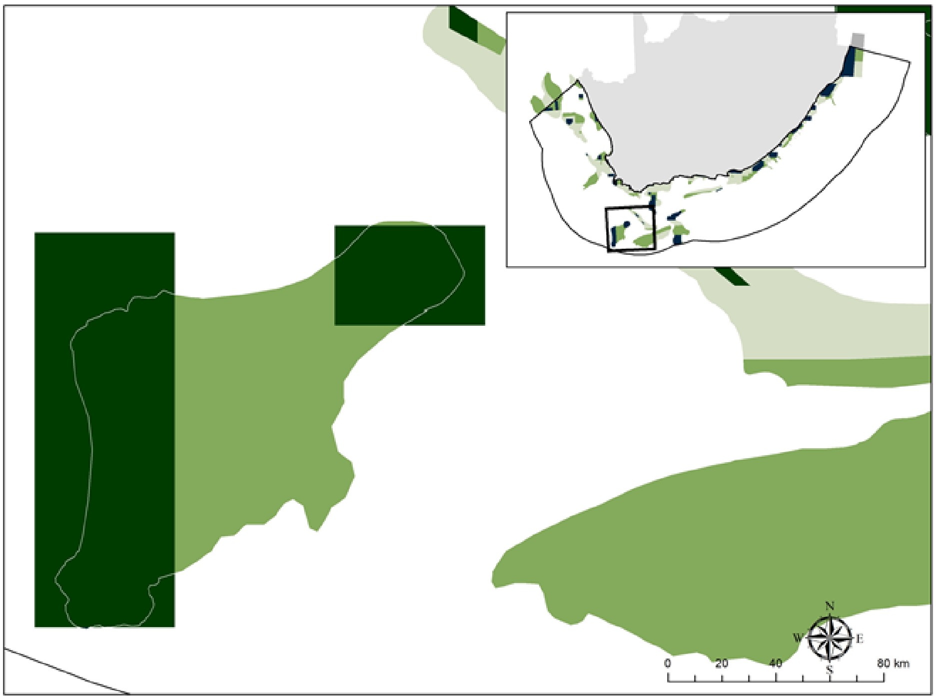
Pressure (in arbitrary cumulative pressure units, CPUs) summed for the only pressure in the EBSA.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

The full EBSA extent is a Biodiversity Conservation Zone given the relative importance of the biodiversity and features within the area, and because there are so few competing uses by other stakeholders. It also has one MPA that is partially within the EBSA: South East Atlantic Seamounts MPA. The activities permitted within this MPA are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

South East Atlantic Seamounts MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_southeastatlantic_seamountsmarine_regulations_g42479gn792.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

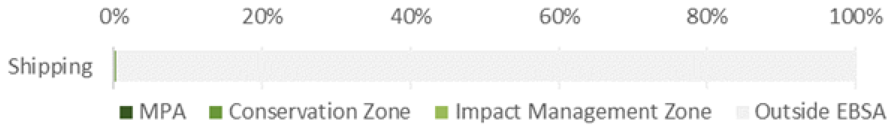
Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A
Heritage	Heritage Protection Zone	Shipwrecks	Y
		Sites of historic importance	Y
		Sites of land- or seascape value	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y
		SCUBA diving	Y
		Shark cage diving	Y
		Whale watching	Y
		Motorised water sports (e.g., jet skis)	C
		Recreational boat-based linefishing	C
		Recreational shore-based linefishing	C
		Spearfishing	C
		Shark control	C
Fisheries	Commercial Fishing Zone	Crustacean trawling	N
		Demersal inshore trawling	N
		Demersal offshore trawling	N
		Abalone harvesting	C
		Beach seining	C
		Commercial linefishing	C
		Demersal hake longlining	C
		Gillnetting	C
		Kelp harvesting	C
		Midwater trawling	C
		Oyster harvesting	C
		Pelagic longlining	C
		Small pelagics fishing	C
		South coast rock lobster harvesting	C
		Squid fishing	C
		Tuna pole fishing	C
		West coast rock lobster harvesting	C
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C
	Fisheries Resource Protection Zone	Resource protection	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C
Mining	Mining Zone	Mining: prospecting (non-destructive)	C
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C
		Mining: mining construction and operations	N
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C
		Petroleum: production	N
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C
Military	Military Zone	Missile testing grounds	C
		Training areas	Y
Transport	Maritime Transport Zone	Shipping lanes	Y
		Ports and harbours	N
		Anchorage areas	C
		Bunkering	C
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C
		Seawater inlets	C
		Pipelines	C
	Land-based Infrastructure Zone	Coastal development	N
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*
		Wastewater discharge	C
		Dumping of dredged material	N

Activity Evaluation Per Zone: Zoning Feasibility

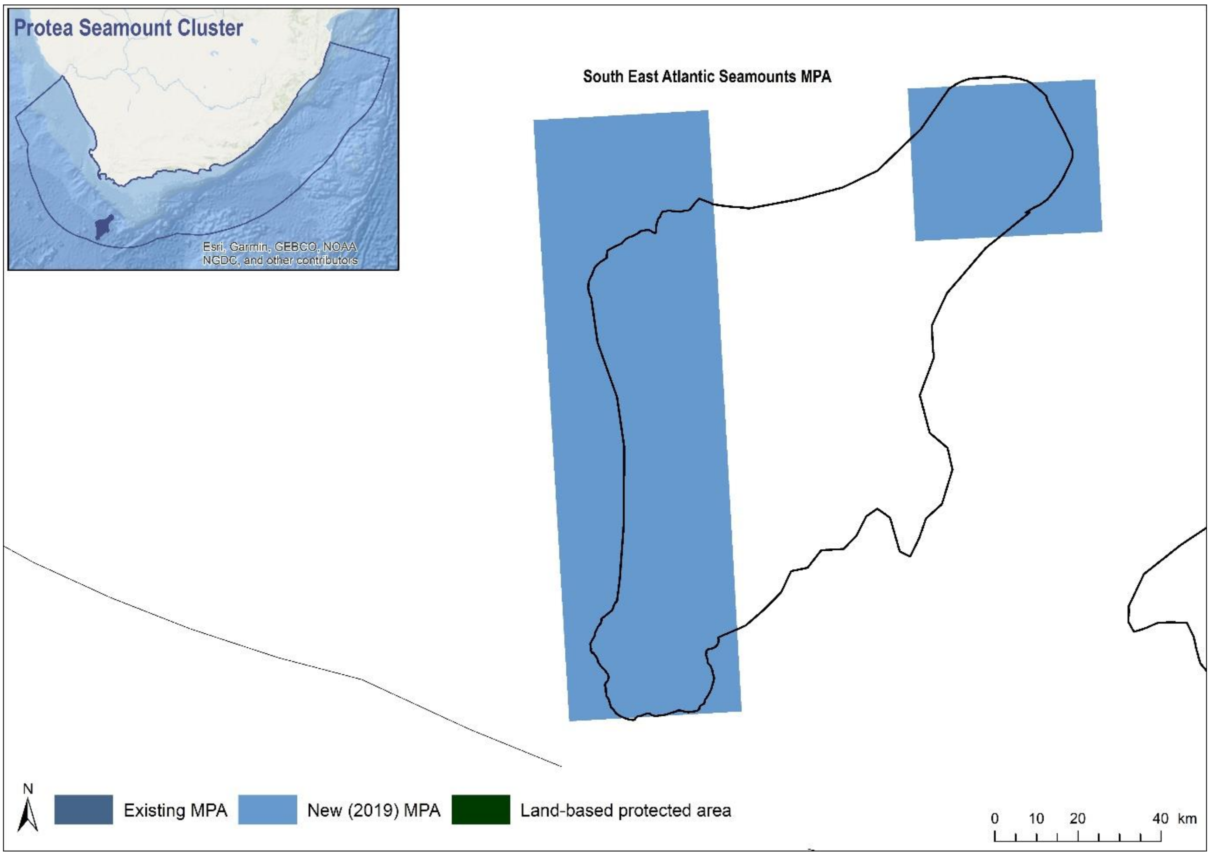


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Shipping is the only activity that takes place within this EBSA, the extent of which comprises a fraction of the national footprint of shipping. It is considered compatible with the EBSA and in thus recommended to continue under current general rules and legislation. Thus, the EBSA zonation has no impact on the national footprint for the listed marine activities.

Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the South East Alantic Seamounts MPA in 2019. It is recommended that full operationalisation of the new MPA is implemented, including a management plan, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. It is also important to consider ways in which connectivity among MPAs in the Protea Seamount Cluster, Mallory Escaparment and Trough, Browns Bank, and Shackleton Seamount Complex can be enhanced to strengthen persistence of biodiversity and climate-change adaptation. See Future Process below for more details.

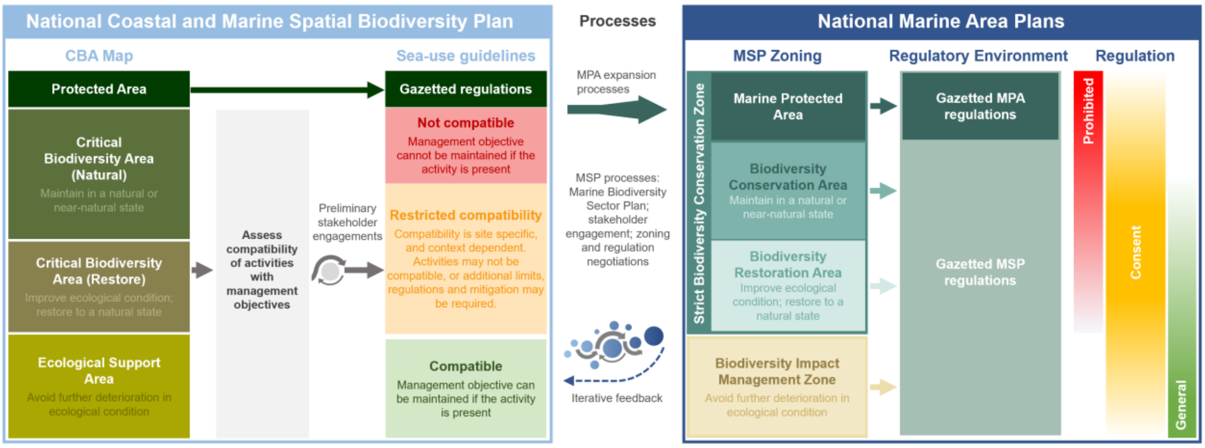


Marine protected areas (MPAs) in the Protea Seamount Cluster EBSA. South East Atlantic Seamounts MPA comprises two areas, both of which are partly in the EBSA.

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Protea Seamount Cluster, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

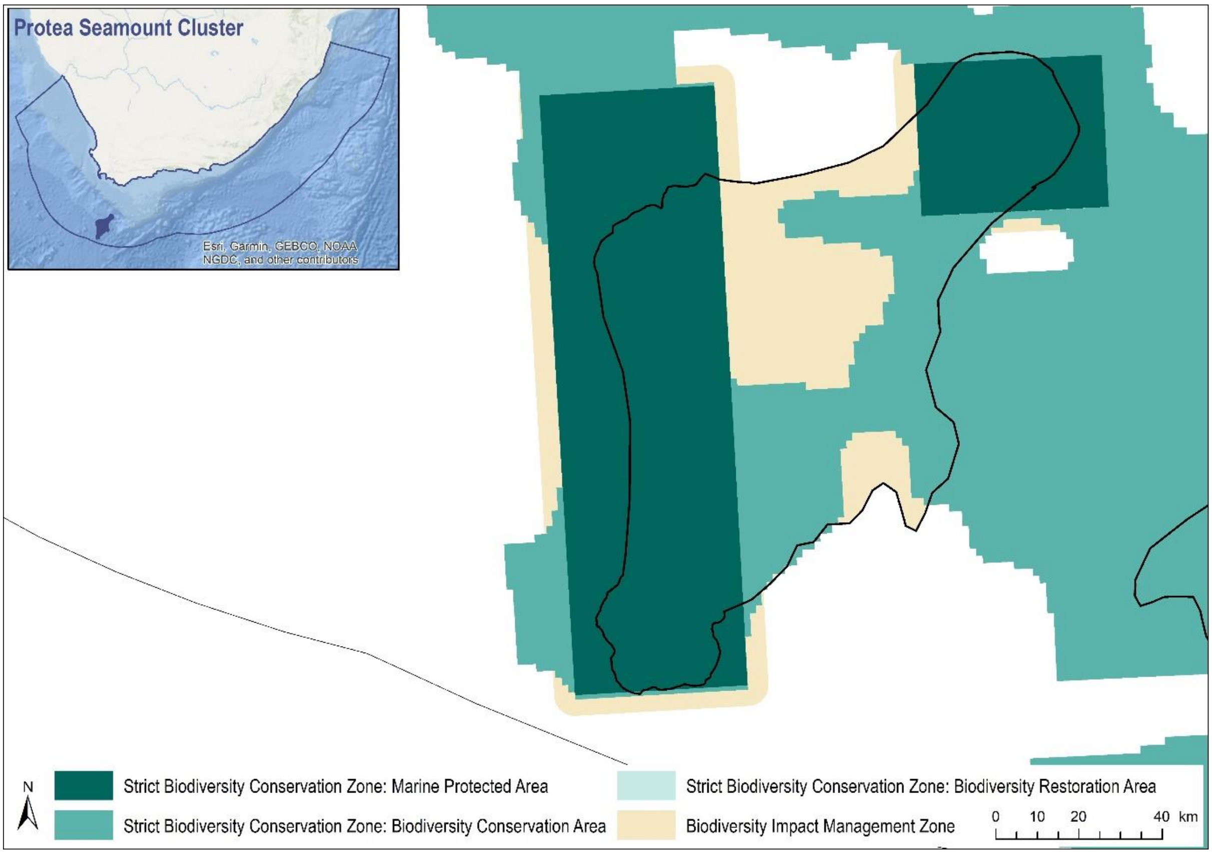


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Protea Seamount Cluster, except the Strict Biodiversity Conservation Zone: Biodiversity Restoration Area.

South East Atlantic Seamounts MPA, comprising two parts, is the only MPA in this EBSA. It is managed according to the gazetted management regulations for this MPA. The rest of the Strict Biodiversity Conservation Zone is a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. The remainder of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Protea Seamount Cluster EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Protea Seamount Cluster. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, given that so little is known about the site from in-situ sampling, the need to address the general research needs is emphasised. This is especially important for informing appropriate management of the site.

Future Process

There needs to be full operationalisation and practical implementation of the South East Atlantic Seamounts MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Options for MPA expansion also need to take strengthening connectivity among MPAs in Protea Seamount Cluster, Browns Banks, and Shackleton Seamount Complex.

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Seas of Good Hope

Proposed EBSA Description

Abstract

The proposed Seas of Good Hope EBSA is located at the coastal tip of Africa, wrapping around Cape Point and Cape Agulhas, within South Africa's EEZ. It extends from the coast to the inner shelf, and includes key islands, two major bays (False Bay and Walker Bay). This EBSA is of key importance for threatened species and habitats, and for supporting life-history stages, notably for some of the threatened species, with Dyer and Geyser Islands being a Ramsar site. The threatened habitats include coastal, inshore and inner shelf ecosystem types. The important life-history stages supported by the area are breeding and/or foraging grounds for a myriad of top predators, including sharks, whales, and seabirds, some of which are threatened species, such as the Endangered African penguin. The EBSA also includes some relatively rare features. For example, it contains one of a few locations where surf diatom accumulations occur in South Africa, which in turn fuel sandy shores with heightened productivity. This EBSA is also the place where the Benguela and Agulhas Currents meet, and thus where the Indian and Atlantic Oceans meet.

Introduction

Seas of Good Hope is a coastal EBSA at the southernmost tip of Africa that includes both benthic and pelagic features, and key links between the terrestrial and marine realms. The proposed EBSA extends from the shore to depths that are mostly shallower than 150 m. The Agulhas and Benguela Currents meet offshore of this EBSA, with the sea surface temperature between Cape Point and Cape Agulhas being generally cooler than that further offshore where the warmer Agulhas Current has a greater influence. The area is important for many commercially important fish species (e.g., Watermeyer et al., 2016), and forms part of their spawning grounds. Consequently, it provides key foraging habitat for numerous top predators, including sharks, whales, seals and seabirds (e.g., Crawford et al., 2008; Pichegru et al., 2010; Best et al., 2015). The EBSA also contains important breeding and resting sites for these top predators, both on the mainland, in bays and on several islands that are contained within the EBSA (e.g., Best 2000; Underhill et al., 2006; Kirkman et al., 2013). Seas of Good Hope also includes areas of high productivity formed by relatively rare surf diatom accumulations. Given the close proximity of the EBSA to key research institutions, and the rich diversity of key marine species and features in the area, there are many datasets available for the site.

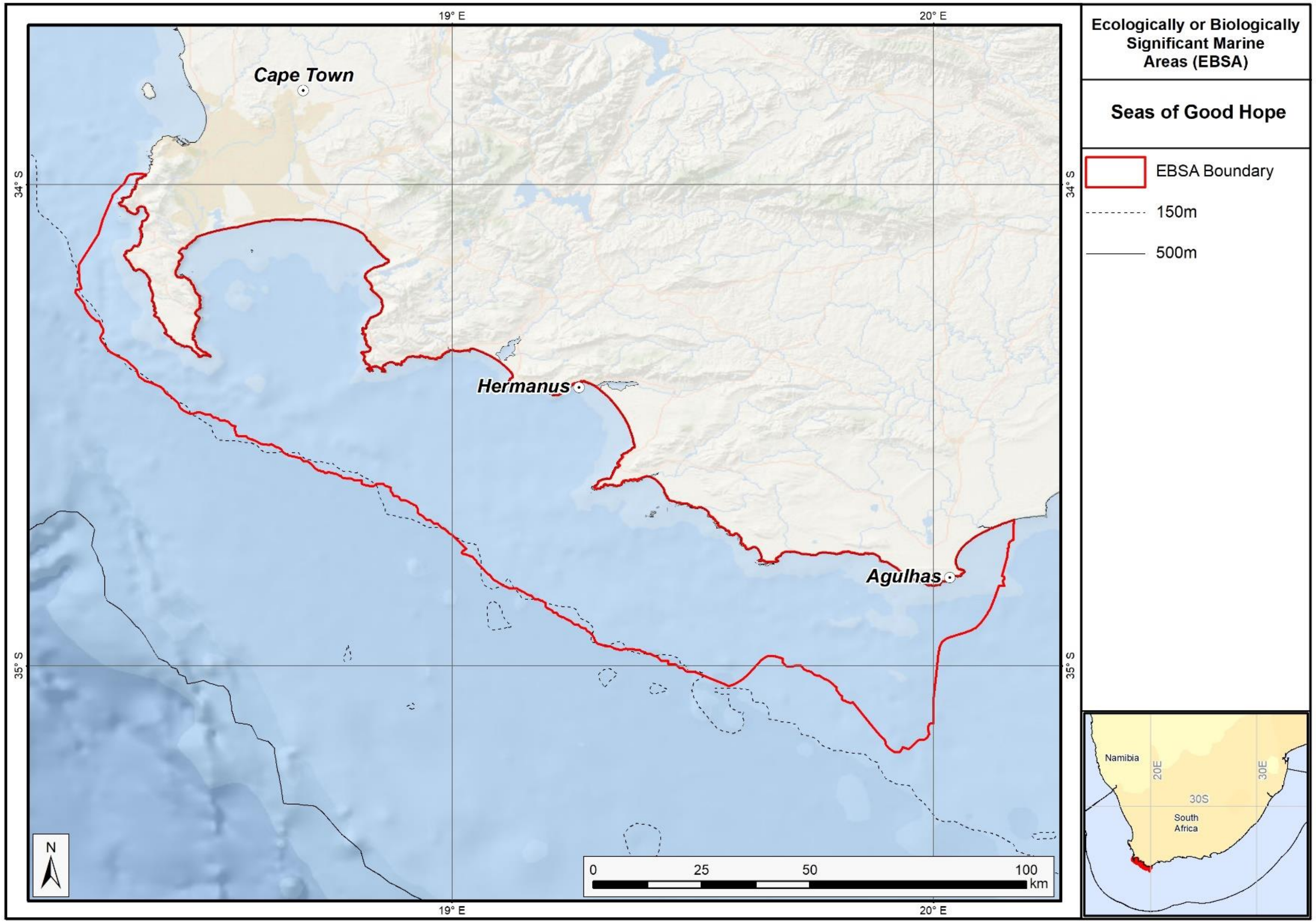
The reason this site was not part of the original list of EBSAs first proposed in the South Eastern Atlantic EBSA Identification Workshop in 2013 (UNEP/CBD/RW/EBSA/SEA/1/4) is because the value of the area was recognised only afterwards in a gap analysis. The delineation was based on the best available data (e.g., Harris et al., 2019; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019). It is presented as a Type 2 EBSA because it contains "spatially stable features whose individual positions are known, but a number of individual cases are being grouped" (sensu Johnson et al., 2018).

EBSA Region

South-Eastern Atlantic

Location

The proposed Seas of Good Hope EBSA is located at the coastal tip of Africa, within South Africa's EEZ. It starts just south of Camps Bay, wraps around the tip of Cape Point, extends along the shore to the



Proposed boundaries of the Seas of Good Hope EBSA.

western end of the terrestrial De Mond Nature Reserve in Struisbaai, just past Cape Agulhas. It extends from the dune base to the inner shelf, mostly following the -150m isobath.

Feature description of the proposed area

Seas of Good Hope is important for both benthic and pelagic features. The benthic features include ecosystem types comprising mosaics of sand and reef, kelp beds, and several islands (Seal Island, Dyer Island, Geyser Rock, Quoin Rock; (Sink et al., 2019), and shore habitats including rocky, sandy, mixed and estuarine shores (Harris et al., 2019); the pelagic features include important spawning and foraging grounds for a variety of fish and top predators, and areas of high primary productivity. Benthic-pelagic coupling is also a key feature of this EBSA, particularly important in the two important bay systems that are in the EBSA, and for land-sea connectivity among ecosystem types. Overall, the EBSA's most key attributes are that it includes many threatened species and 23 threatened ecosystem types, and supports important life-history stages of many species, including some of the threatened taxa. The site also include the Dyer Island Provincial Nature Reserve and Geyser Island Provincial Nature Reserve (https://rsis.ramsar.org/ris/2384).

Of the 32 ecosystem types represented in Seas of Good Hope, two thirds (n=23) are threatened, including one Critically Endangered and eight Endangered and 14 Vulnerable types (Sink et al., 2019). By implication, these support biological communities that are also threatened. The EBSA forms part of the spawning grounds for many commercially important fish species (e.g., Watermeyer et al., 2016). Consequently, it provides key foraging habitat for numerous top predators, including sharks, whales, seals and seabirds (e.g., Crawford et al., 2008; Pichegru et al., 2010; Best et al., 2013, Kock et al., 2018), many of which species are also threatened. It also contains important breeding and resting sites for top predators in bays, on the islands and the mainland. For example, it contains island-based (Seal Island, Dyer Island, Geyser Rock) and the only mainland-based (Boulders Beach, Stony Point) colonies of breeding Endangered African penguins (Underhill et al., 2006), and Seal Island, Geyser Rock and Quoin Rock support breeding colonies of Cape fur seals (Kirkman et al., 2013). The EBSA may also include areas where southern right whales give birth to and nurse their calves, and possibly mate (Best 2000).

Secondary attributes of Seas of Good Hope support all other EBSA criteria except for Naturalness. The EBSA includes relatively rare surf diatom accumulations that are present at a few sites along the South African south coast, and only several other places, globally (Campbell & Bate., 1988, Campbell 1996). These surf diatom accumulations fuel sandy beach food webs with particularly high productivity. The kelp beds in the adjacent habitat also provide beach-cast kelp wrack, which also creates particularly productive sandy shore systems (e.g., Dugan et al., 2003; Rodil et al., 2018). Cape Point is a biogeographic break between the warm and cold temperate coastal systems (Sink et al., 2012, 2019), and thus diversity at this site is comparatively higher than adjacent sites because it includes representatives from both bioregions. And finally, the reef and hard ground habitats all support fragile species, that are slow growing and sensitive to disturbance.

Feature condition and future outlook of the proposed area

Although the Cape peninsula is protected in a marine protected area, there are numerous threats to the marine environment in this EBSA, particularly within False Bay and Walker Bay. There are several fisheries operating in the area, including those for west coast rock lobster, squid, linefish, and sharks, as well as subsistence and recreational shore and boat-based fishing, kelp harvesting, and bait collecting (Sink et al., 2012). Given the close proximity to the Cape Town harbour, and the numerous smaller ports within the EBSA, shipping is a relatively high pressure here. The coast is under particular pressure from coastal development (outside the many terrestrial nature reserves in the western half of the EBSA), with associated pressures such as wastewater discharge. There are also several invasive invertebrates that are primarily associated with rocky shores that have affected native populations (Sink et al., 2012, 2019). Global change pressures are affecting the distribution of local fish stocks, which in turn are affecting some of the top predators, including Endangered African penguins, and Endangered Cape gannets (Crawford et al., 2008; Pichegru et al., 2010). A recent assessment of the ecological condition of the marine realm shows that this EBSA is in fair to poor ecological condition (Sink et al., 2019).

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for Seas of Good Hope. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Critically Endangered	Cool Temperate Large Temporarily Closed Estuary	4.4	0.1
Endangered	Agulhas Sheltered Rocky Shore	0.6	0.0
	Cape Island Shore	0.1	0.0
	Cape Sheltered Rocky Shore	0.1	0.0
	Cool Temperate Estuarine Lake	5.0	0.1
	Cool Temperate Predominantly Open Estuary	0.4	0.0
	Cool Temperate Small Temporarily Closed Estuary	2.4	0.0
	Southern Benguela Reflective Sandy Shore	0.1	0.0
	Warm Temperate Estuarine Lake	0.9	0.0
Vulnerable	Agulhas Exposed Rocky Shore	22.6	0.3
	Agulhas Inner Shelf Reef Sand Mosaic	520.8	7.7
	Agulhas Island Shore	3.4	0.1
	Agulhas Kelp Forest	11.7	0.2
	Agulhas Outer Shelf Reef Sand Mosaic	1899.6	28.2
	Agulhas Reflective Sandy Shore	0.8	0.0
	Agulhas Very Exposed Rocky Shore	2.5	0.0
	Cape Boulder Shore	1.0	0.0
	Cape Exposed Rocky Shore	7.7	0.1
	Cape Kelp Forest	3.6	0.1
	Cape Mixed Shore	7.7	0.1
	Cape Rocky Inner Shelf	188.6	2.8
	Cape Rocky Mid Shelf Mosaic	335.1	5.0
	False and Walker Bays	1681.2	24.9
Near Threatened	Agulhas Boulder Shore	0.9	0.0
	Agulhas Dissipative Sandy Shore	21.9	0.3
	Agulhas Mid Shelf Reef Sand Mosaic	1970.5	29.2
	Agulhas Mixed Shore	35.1	0.5
	Cape Very Exposed Rocky Shore	0.3	0.0
	Southern Benguela Intermediate Sandy Shore	0.2	0.0
Least Concern	Agulhas Dissipative-Intermediate Sandy Shore	12.3	0.2
	Agulhas Intermediate Sandy Shore	2.2	0.0
	Southern Benguela Dissipative Sandy Shore	0.3	0.0
	Southern Benguela Dissipative-Intermediate Sandy Shore	0.4	0.0
N/A	Cool Temperate Micro-estuary	0.8	0.0
Grand Total		**6745.5**	**100.0**

Assessment of the area against CBD EBSA Criteria

<table>
<tr><td>CBD EBSA Criteria
(Annex I to decision IX/20)</td><td>Description
(Annex I to decision IX/20)</td><td>Ranking of criterion relevance</td></tr>
<tr><td>Uniqueness or rarity</td><td>Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.</td><td>Medium</td></tr>
<tr><td colspan="3">Explanation for ranking
The EBSA contains three of 14 sites in South Africa where surf diatom accumulations are present (Campbell 1996), and the only mainland colonies of Endangered African penguins (Underhill et al., 2006). False Bay and Walker Bay are also relatively rare geomorphic features in the BCLME. It also encompasses the only coastal area where the Indian and Atlantic Oceans meet.</td></tr>
<tr><td>Special importance for life-history stages of species</td><td>Areas that is required for a population to survive and thrive.</td><td>High</td></tr>
<tr><td colspan="3">Explanation for ranking
Seas of Good Hope is an important spawning ground for commercially important fish species (e.g., Watermeyer et al., 2016). Consequently, it provides key foraging habitat for numerous top predators, including sharks, whales, seals and seabirds (e.g., Crawford et al., 2008; Pichegru et al., 2010; Best et al., 2013). It also contains important breeding and resting sites for top predators, in bays, on the islands and the mainland. For example, it contains island-based and the only mainland-based colonies of breeding Endangered African penguins (Underhill et al., 2006), and Seal Island, Geyser Rock and Quoin Rock support breeding colonies of Cape fur seals (Kirkman et al., 2013), with Dyer Island and Geyser Island (Rock) being a Ramsar site (https://rsis.ramsar.org/ris/2384). The EBSA may also include areas where southern right whales give birth to and nurse their calves, and possibly mate (Best 2000).</td></tr>
<tr><td>Importance for threatened, endangered or declining species and/or habitats</td><td>Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.</td><td>High</td></tr>
<tr><td colspan="3">Explanation for ranking
There are a number of threatened species that depend on this EBSA for foraging and/or breeding, including Vulnerable white sharks, Endangered Indian Ocean humpback dolphins, Endangered Cape gannets, Endangered African penguins, Endangered Cape cormorants, Endangered bank cormorants, white-breasted cormorants, and Near Threatened crowned cormorants. Importantly, some of these species have high residency within the EBSA, e.g., white sharks have specific locations within False Bay where they have high levels of occurrence (Kock et al., 2018), and are especially resident in inshore areas between Walker Bay and around Cape Agulhas (A. Kock, Unpublished tracking data).

The area includes a very high diversity of threatened ecosystem types. Of the 34 ecosystem types in the EBSA, 23 are threatened, including one Critically Endangered, eight Endangered and 14 Vulnerable ecosystem types (Sink et al., 2019). By implication, the biological communities associated with these</td></tr>
</table>

ecosystems are also likely to be threatened. There are also a further six ecosystem types in the EBSA that are considered Near Threatened (Sink et al., 2019).		
Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.	Medium
Explanation for ranking The top predators represented in this EBSA have a slow recovery time following impacts to their respective populations. Further, the reefs and hard grounds contain fragile species that are slow growing, and sensitive to disturbance.		
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	Medium
Explanation for ranking The kelp beds and surf diatom accumulations contribute to elevated productivity for coastal ecosystems, notably the sandy shores (Campbell and Bate, 1988, Rodil et al., 2018). As a spawning area for commercially important fish species, productivity across the shelf is also relatively high.		
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	High
Explanation for ranking The Agulhas and Benguela Currents also meet in the broader area surrounding the EBSA. Consequently, Cape Point is a biogeographic break between the warm and cold temperate bioregions, and thus biodiversity in the area is expected to relatively higher here compared to that of surrounding areas. This is additionally true because the conditions range from fully sheltered within the bays, to fully exposed on the open coast, and because it contains 34 different ecosystem types, each likely supporting their own biological communities (Sink et al., 2019). The EBSA is also known to support diverse assemblages of key species (e.g., Best et al., 2013).		
Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.	Low
Explanation for ranking Although there are some areas that are protected or under relatively low pressure within this EBSA, the bays in particular are under high pressure from human activities, and the condition of the ecosystem types across the EBSA as a whole is generally quite poor (Sink et al., 2012, 2019). Global change pressures are also strongly felt in this area, with the knock-on effects observed at the top-predator level (Crawford et al., 2008; Pichegru et al., 2010). Only 1% of the area is in good ecological condition; 46% is fair and 53% is in poor ecological condition (Sink et al., 2019).		

Status of submission

The description of Seas of Good Hope has been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision
Not yet submitted.

End of proposed EBSA revised description

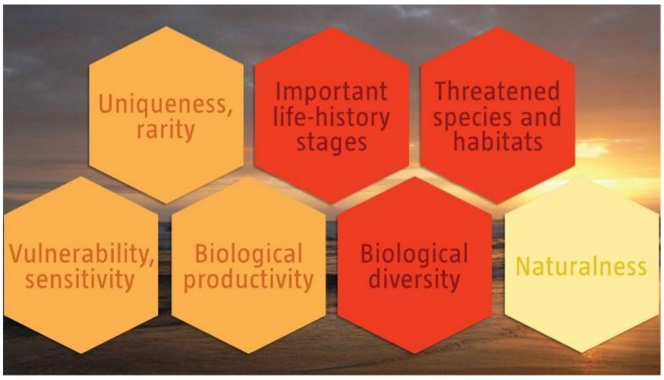
Motivation for Submission

Expert and systematic review of gaps in the EBSA network highlighted the requirements for the Seas of Good Hope EBSA. The area had high selection frequency in spatial assessments (Majiedt et al., 2013; Holness et al., 2014) and contained a number of threatened ecosystem types identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019). Initial draft EBSA boundaries were determined, and these were then evaluated against the EBSA criteria. Once it was determined that the area would meet EBSA criteria, a formal boundary delineation and evaluation process was undertaken. The delineation process included an initial stakeholder review, a technical mapping process and then an expert review workshop where boundary delineation options were discussed. The boundaries were revised a final time to accommodate the latest NBA 2018 assessment results (Sink et al., 2019) and the review workshop discussion. The delineation process used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

- Key physical features (i.e. islands) from the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019) and BCC spatial mapping project (Holness et al., 2014) were incorporated. In addition, bays were mapped and included as these have been identified as important features in the new National Biodiversity Assessment 2018 (Sink et al., 2019). Fine-scale coastal mapping was also included (Harris et al., 2019).
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA (Sink et al., 2019).
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites that relate closely to the EBSA criteria of "Uniqueness and rarity" from the Systematic Conservation Planning process undertaken for Majiedt et al. (2013) and the BCLME by Holness et al. (2014).
- Areas of high relative naturalness identified in the National Biodiversity Assessment 2011 (Sink et al., 2012), the West Coast (Majiedt et al., 2013) and the BCLME spatial assessments (Holness et al., 2014) were included in the analysis. Both pelagic and benthic and coastal condition were incorporated.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).
- Areas important for threatened and special species were included. The priority areas and buffer distances around colonies were from Holness et al. (2014). Note that the full extent of the buffer was not necessarily included in the EBSA. Features included in the analysis were:
  - African Penguin colonies and a 20 km buffer.
  - Bank Cormorant, Cape Cormorant, White Breasted Cormorant and Crowned Cormorant colonies and a 40 km buffer.
  - Seal Colonies and a 20 km buffer.

The multi-criteria analysis resulted in a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.

Status Assessment and Management Options

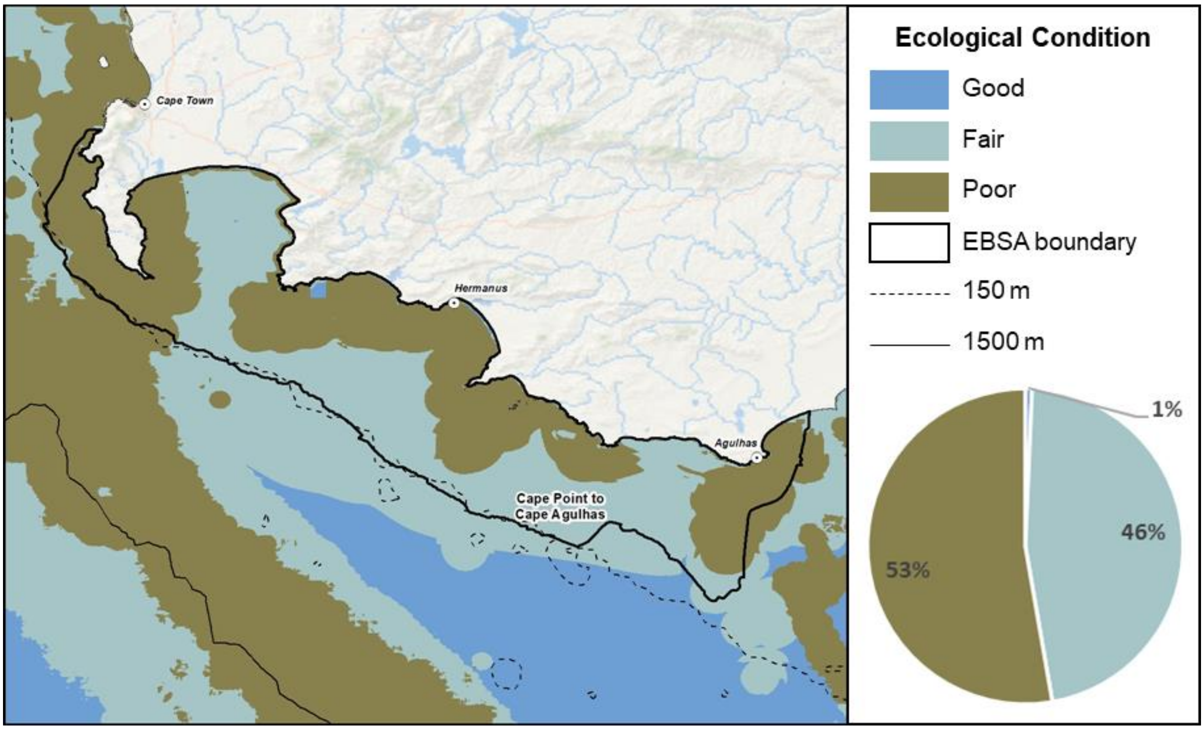


***Seas of Good Hope** contains a rich diversity and is of special importance for threatened species and habitats. It also supports key life-history stages, notably for some of the threatened species and numerous species of top predators and marine mammals. The EBSA wraps around Cape Point to the southernmost tip of Africa, and thus includes the meeting point of the Agulhas and Benguela Currents.*

EBSA criteria coloured by rank for Seas of Good Hope: red=high, orange=medium, yellow=low.

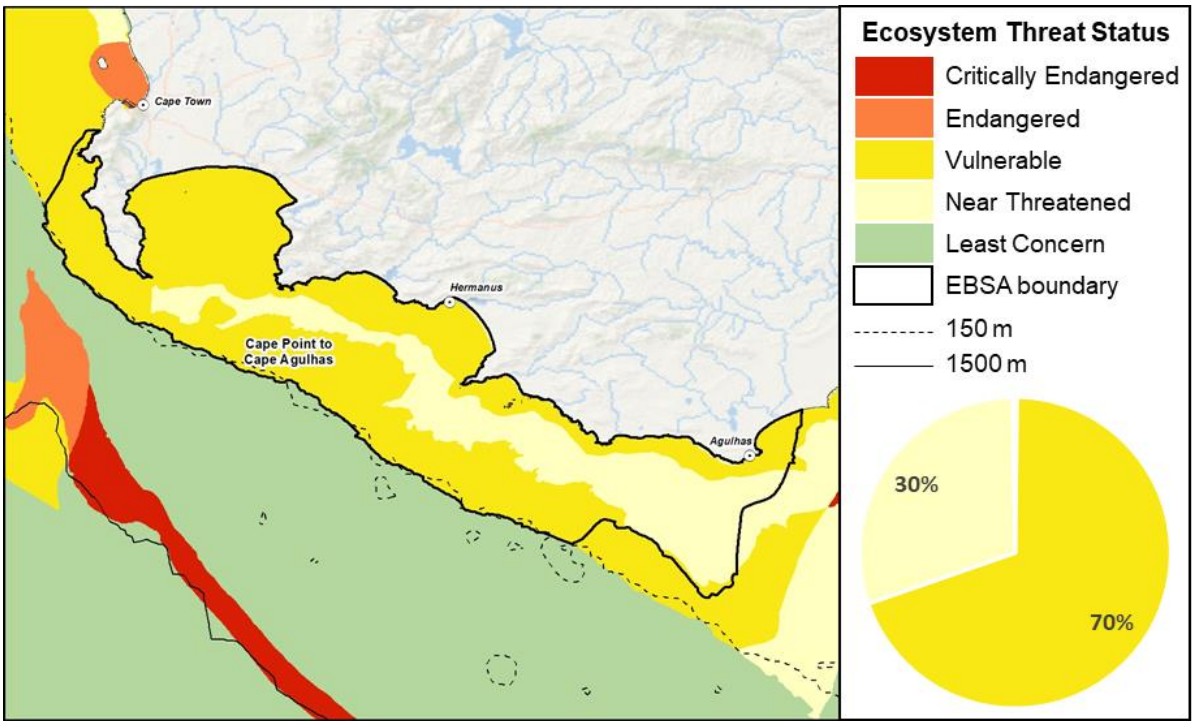
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Seas of Good Hope is one of the most diverse EBSAs in South Africa, with 34 ecosystem types represented. Consequently, there are many features and ecosystem types that need to be protected for the area to maintain the features and processes that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for life history stages, importance for threatened species and habitats, and biological diversity. There are many rocky or hard-ground ecosystem types that support

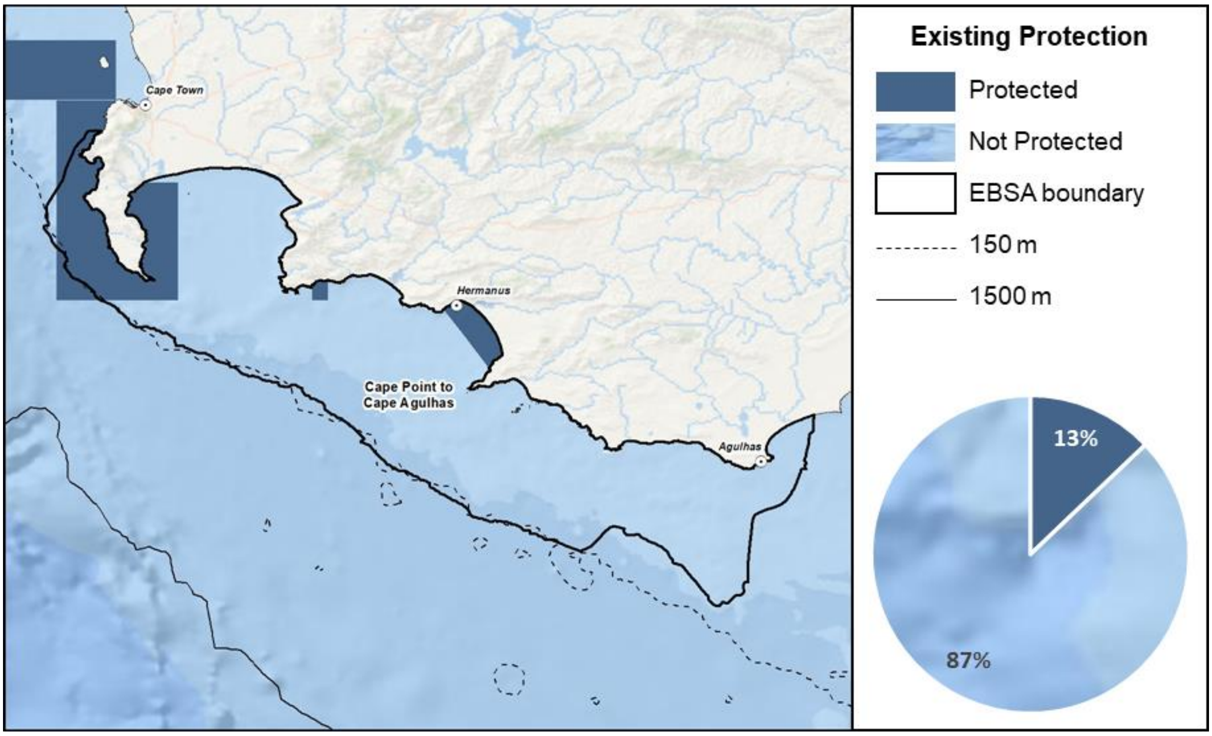


Seas of Good Hope proportion of area in each ecological condition category.

fragile habitat-forming species, kelp forests that contribute to the nursery function of the EBSA, islands and bays that support rich communities of top predators, including seabirds, sharks and seals, as well as numerous cetaceans. The EBSA is especially important in providing foraging and breeding sites for these (often threatened) top predators. Seas of Good Hope is heavily utilized, and as a result, is in poor (53%) or fair (46%) ecological condition, with a fraction (1%) still in good ecological condition as a result of the Betty's Bay MPA. Consequently, the ecosystem types represented here are either Vulnerable (70%) or Near Threatened (30%).



Seas of Good Hope proportion of area in each ecosystem threat status category.



Seas of Good Hope proportion of area in a Marine Protected Area (MPA).

Proclamation of the Operation Phakisa MPA network did not affect this area because no new MPAs were declared inside the EBSA footprint, and thus it remains at 13% protection. The existing MPAs include Table Mountain National Park that wraps around the False Bay peninsula; Betty's Bay and Walker Bay MPAs. Most of the ecosystem types represented in this EBSA are either Moderately or Well Protected.

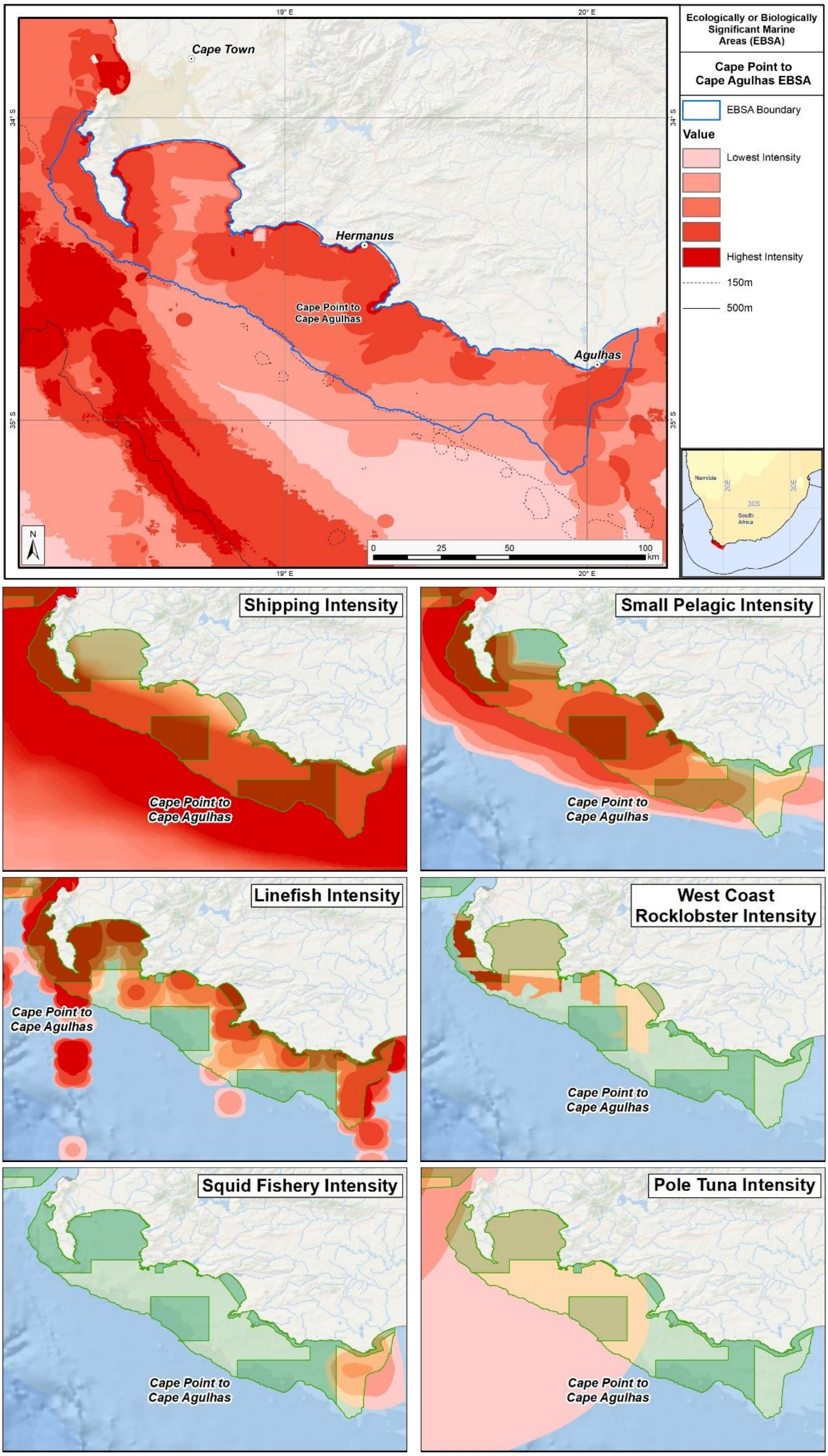
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Agulhas Boulder Shore	NT	WP	5.3	64.5	30.2
Agulhas Dissipative Intermediate Sandy Shore	LC	WP	49.3	26.7	24.0
Agulhas Dissipative Sandy Shore	NT	WP	38.1	37.7	24.2
Agulhas Exposed Rocky Shore	VU	MP	7.2	29.5	63.3
Agulhas Inner Shelf Mosaic	VU	MP	0.0	23.5	76.5
Agulhas Intermediate Sandy Shore	LC	MP	69.2	23.9	6.9
Agulhas Island	VU	WP	0.0	1.8	98.2
Agulhas Kelp Forest	VU	MP	4.3	22.1	73.7
Agulhas Mid Shelf Mosaic	NT	MP	0.0	36.2	63.7
Agulhas Mixed Shore	NT	MP	5.0	38.0	57.0
Agulhas Reflective Sandy Shore	VU	PP	4.8	54.4	40.8
Agulhas Sheltered Rocky Shore	EN	MP	0.7	5.8	93.6
Agulhas Very Exposed Rocky Shore	VU	MP	12.8	60.7	26.5
Cape Boulder Shore	VU	MP	8.5	56.0	35.5
Cape Exposed Rocky Shore	VU	MP	15.5	61.4	23.1
Cape Island	EN	MP	0.0	0.0	100.0
Cape Kelp Forest	VU	MP	3.8	9.6	86.6
Cape Mixed Shore	VU	MP	15.6	50.1	34.3
Cape Rocky Inner Shelf	VU	MP	0.0	0.8	99.2
Cape Rocky Mid Shelf Mosaic	VU	MP	0.0	2.5	97.5
Cape Sheltered Rocky Shore	EN	PP	0.0	0.0	100.0
Cape Very Exposed Rocky Shore	NT	WP	31.1	66.3	2.5
Cool Temperate Estuarine Lake	EN	PP	69.7	4.9	25.4
Cool Temperate Large Temporarily Closed	CR	PP	12.7	29.0	58.3
Cool Temperate Micro-estuary	NA	NA	60.3	2.9	36.8
Cool Temperate Predominantly Open	EN	NP	0.0	3.7	96.3
Cool Temperate Small Temporarily Closed	EN	WP	41.5	5.1	53.4
False and Walker Bay	VU	MP	0.9	38.8	60.2
Southern Benguela Dissipative Intermediate Sandy Shore	LC	WP	42.2	11.3	46.5
Southern Benguela Dissipative Sandy Shore	LC	WP	84.5	1.8	13.7

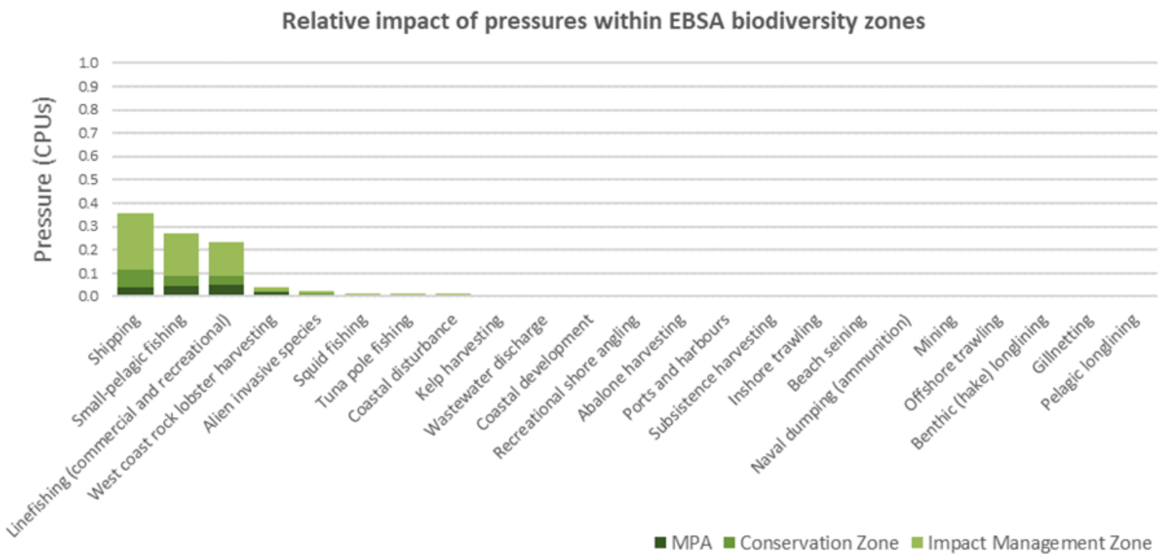
Southern Benguela Intermediate Sandy Shore	NT	PP	31.9	66.8	1.3
Southern Benguela Reflective Sandy Shore	EN	MP	41.3	52.8	6.0
Warm Temperate Estuarine Lake	EN	MP	0.0	100.0	0.0
Western Agulhas Outer Shelf Mosaic	VU	NP	0.1	81.8	18.1
Other Features					
• Breeding and foraging grounds for seals, seabirds, sharks and cetaceans • Surf diatom accumulations • Colonies of African penguins and seals • Spawning area for commercially important fish species					

Relevant Pressures and Activities (impact, extent)

- There are 19 pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent and has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: linefishing and small pelagic fishing. These activities cover most of the EBSA, and will need to be well managed in order to protect the foraging resources that support the top predators, the latter of which is fundamental to the area being recognised as an EBSA. For both fishing activities, the footprint is split approximately equally between the Conservation and Impact Management Zones, with a slightly larger portion in the Impact Management Zone.
- Twelve of the 19 pressures each comprise <1% of the EBSA pressure profile, and a further four comprise <4%, including: west coast rock lobster harvesting, alien invasive species, squid fishing, tuna pole fishing, coastal disturbance, wastewater discharge, kelp harvesting, coastal development, recreational shore angling, abalone harvesting, ports and harbours, inshore trawling, subsistence harvesting, beach seining, naval dumping (ammunition), and mining (prospecting and mining).
- Activities in South Africa that are not present in this EBSA include: benthic (hake) longlining, dredge spoil dumping, gillnetting, mariculture, mean annual runoff reduction, midwater trawling, oil and gas (exploration and production), oyster harvesting, pelagic longlining, prawn trawling, shark netting, south coast rock lobster harvesting, and offshore trawling.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



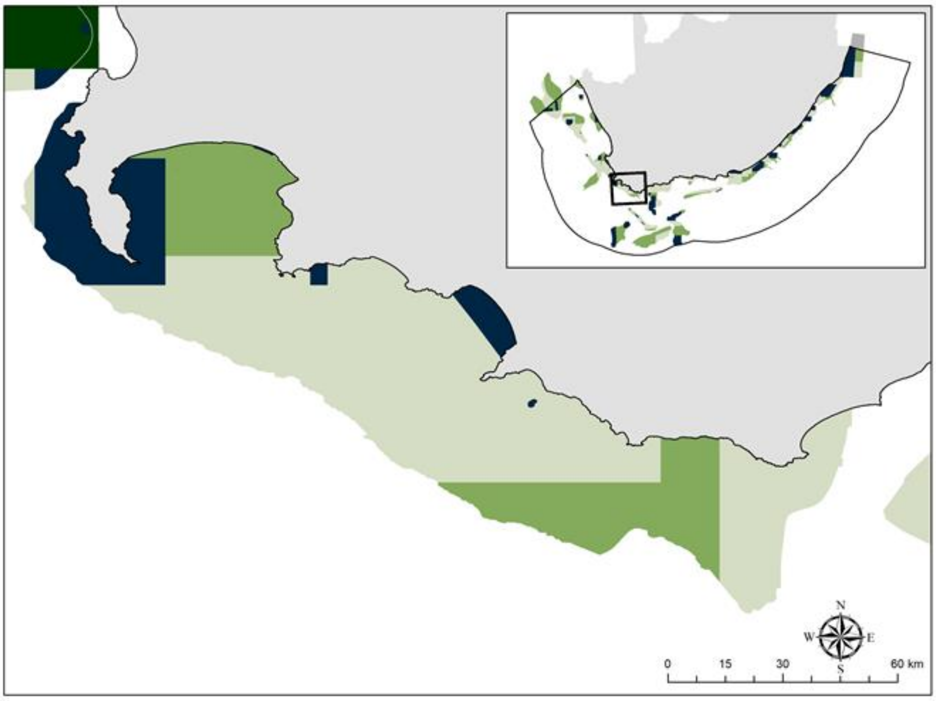
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from coastal disturbance to mining (prospecting and mining) each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are also four MPAs that are wholly or partially within the EBSA: Table Mountain MPA; Helderberg MPA; Betty's Bay MPA; and Walker Bay Whale Sanctuary MPA. The activities permitted within these MPAs are not considered as part of the EBSA management recommendations because these are as per their respective gazetted regulations.

Table Mountain National Park MPA (proclaimed 2004)	https://www.gov.za/sites/default/files/gcis_document/201409/264310.pdf
Helderberg (proclaimed 1991, revised 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Betty's Bay (proclaimed 1981, revised 2000)	https://www.environment.gov.za/sites/default/files/gazetted_notices/mlra_marineprotected_areasdeclaration_g21948rg6978gen1429.pdf
Walker Bay Whale Sanctuary MPA (proclaimed 2001)	https://cer.org.za/wp-content/uploads/2014/02/MPA-Walker-Bay-Whale-Sanctuary.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

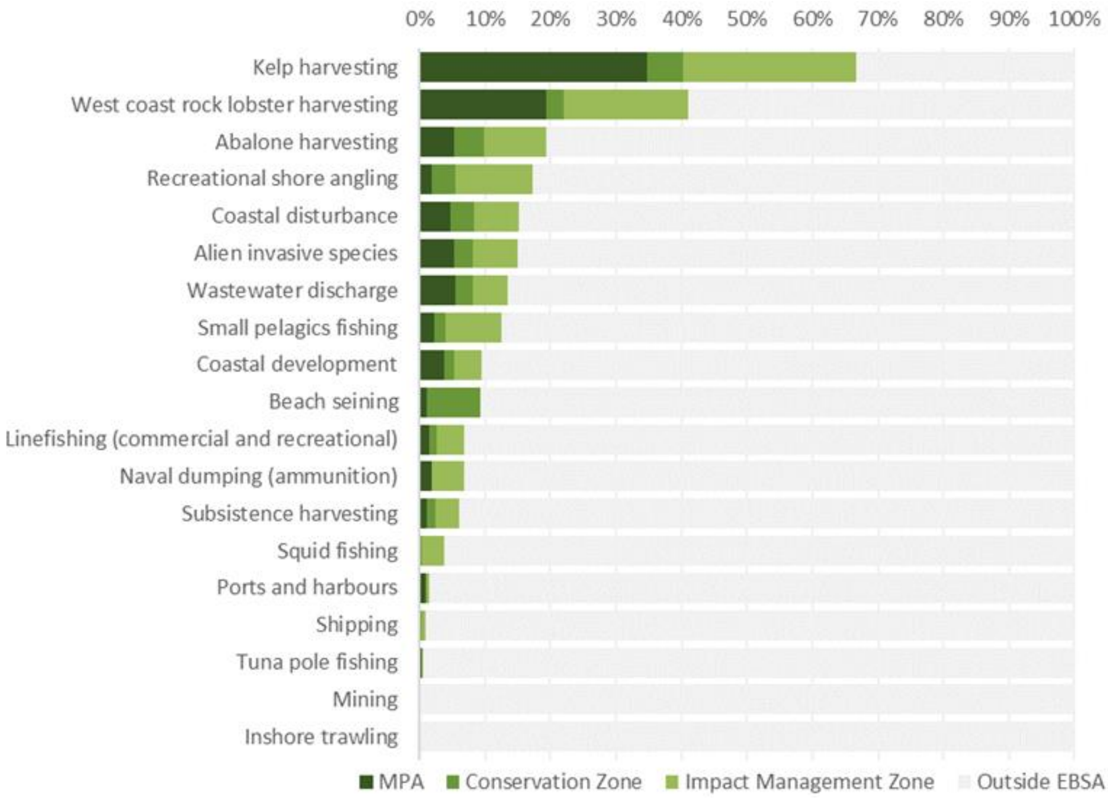
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

There are numerous coastal activities in this EBSA that each comprise a notable proportion of their respective national footprints because the area has a high coastal population density and the coast is heavily utilised relative to its use in many other parts of the country. These activities contribute very little to the overall impact on the EBSA because they are generally confined to discrete areas along the shore or in shallow waters. Nevertheless, they still need careful management given their cumulative impacts on coastal biodiversity, which is important in this area.

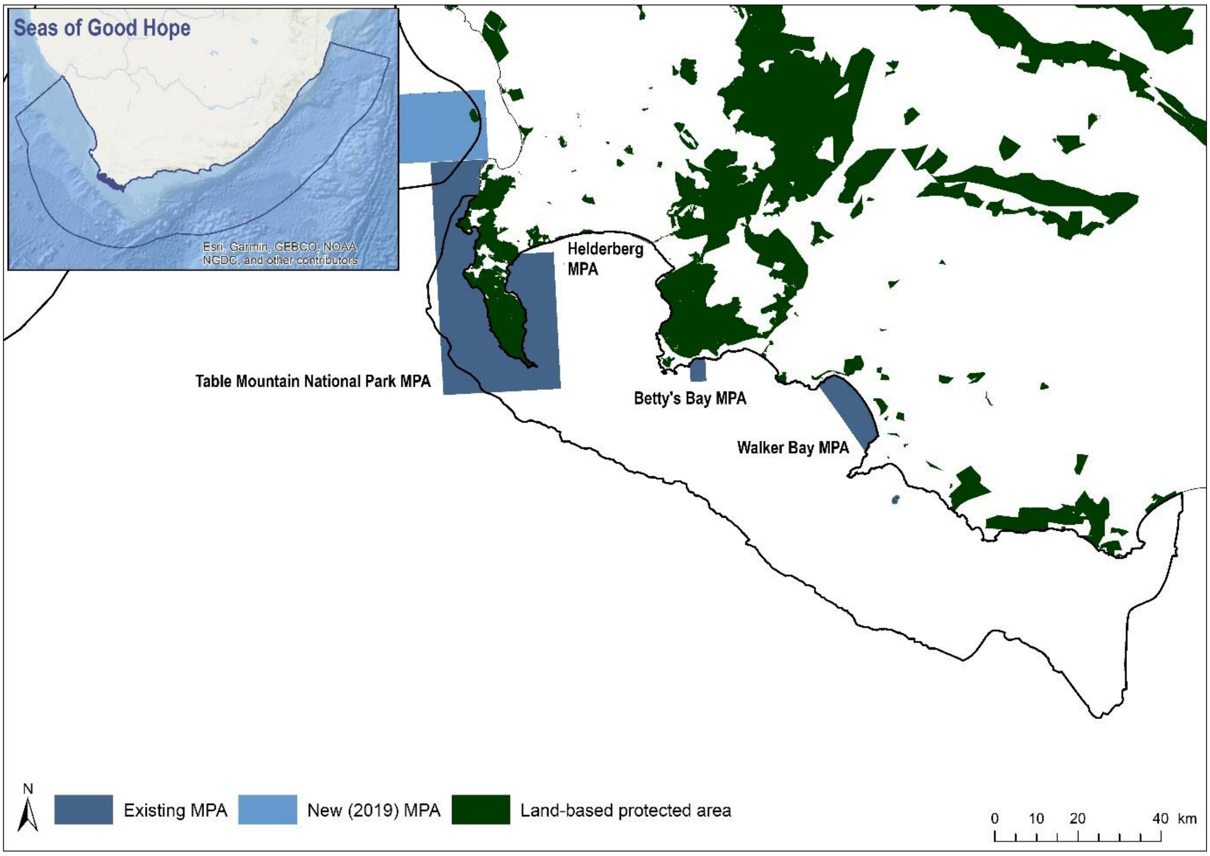
Key activities taking place in this EBSA include kelp harvesting and west coast lobster harvesting, with more than 50% of the national footprint of these activities inside the EBSA. Abalone harvesting and recreational shore angling are also important activities, with more than 20% of the national footprint of these activities inside the EBSA. All four activities are compatible or conditionally compatible with the EBSA zones and are therefore recommended to continue subject to appropriate management measures. Other activities relating to marine-living-resource extraction include small pelagics fishing, linefishing (commercial and recreational), beach seining and, to a lesser extent (<10% of the national footprint of the respective activities), subsistence harvesting, squid fishing and tuna pole fishing. All these activities are compatible or conditionally compatible with the EBSA zones and are therefore recommended to continue subject to appropriate management measures. Inshore trawling is also present, but comprises <0.2% of the national footprint and is present as only a small patch inside Table Mountain National Park MPA, where it is managed in accordance with the MPA regulations.

Dumping ammunition at sea historically occurred within the EBSA, but is no longer practiced in South Africa; therefore, this activity is not compatible with the EBSA zones. The EBSA includes the major Cape Town Port and several minor harbours within the Conservation and Impact Management Zone, but in all cases, the actual port or harbour infrastructure is not within the Conservation Zone. Port and harbour activities are not compatible with the Conservation Zone and are conditionally compatible with the Impact Management Zone. Particularly, careful management of mariculture operations and ports and harbours are necessary to avoid the introduction of additional alien invasive species. Shipping is compatible with both EBSA zones and is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

Management Recommendations for Marine Protected Areas

It is recommended that management is strengthened in the existing MPAs in Seas of Good Hope: Table Mountain National Park, Helderberg, Betty's Bay, and Walker Bay MPas. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

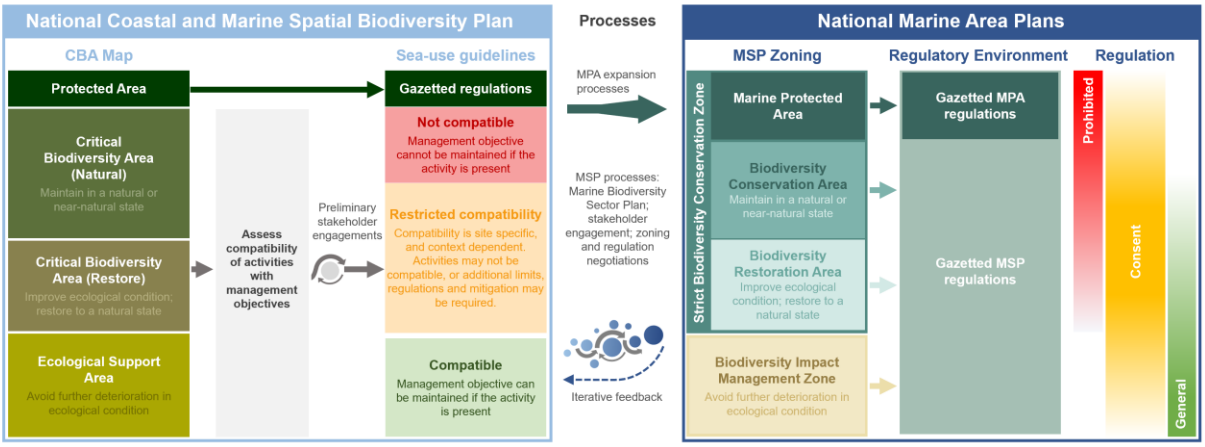


Marine protected areas (MPAs) in the Seas of Good Hope EBSA. Land-based protected areas are also shown (from DFFE, 2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Seas of Good Hope, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

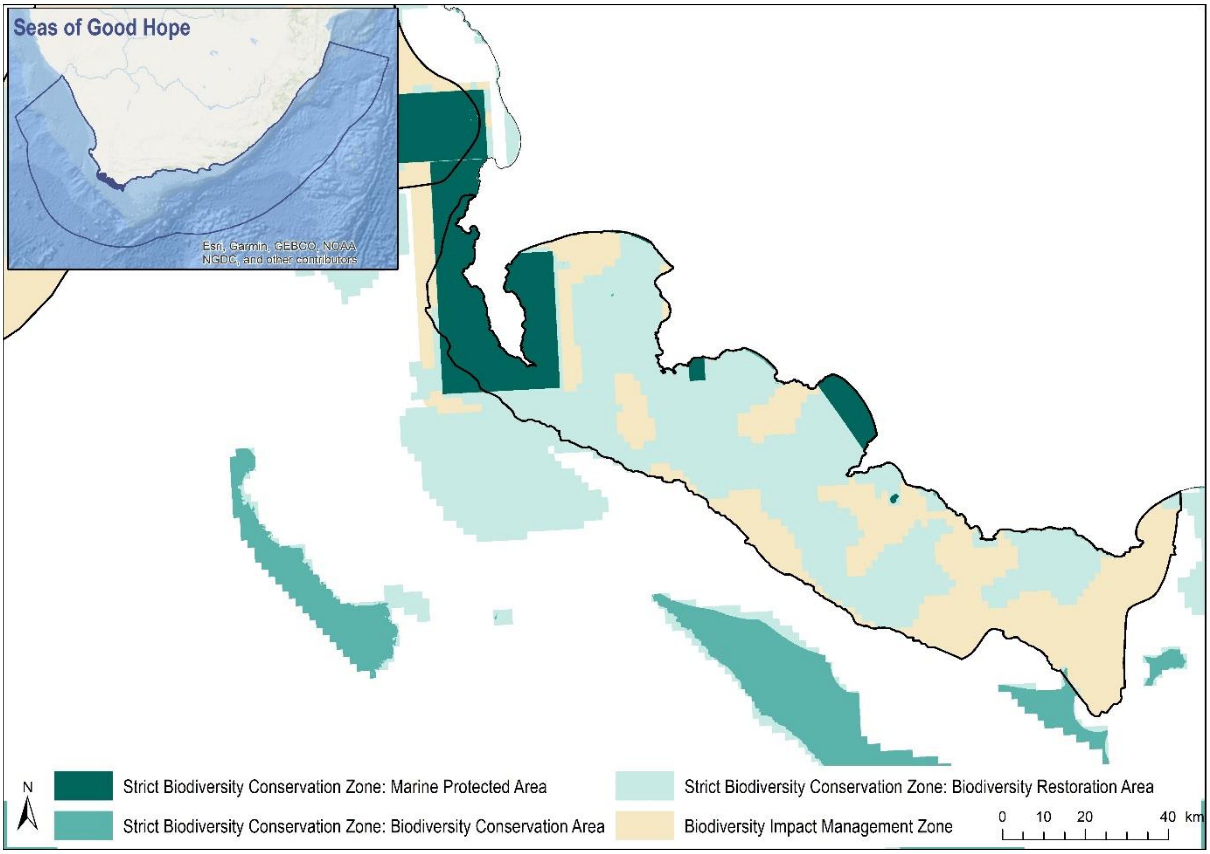


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Seas of Good Hope.

There are four MPAs in this EBSA: Table Mountain National Park MPA, Helderberg, Betty's Bay and Walker Bay. It is managed according to the gazetted management regulations for this MPA. A very small part of the Strict Biodiversity Conservation Zone is a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. A much larger portion of the Strict Biodiversity Conservation Zone comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Seas of Good Hope EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Seas of Good Hope. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.

[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).

[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below).

Future Process

There needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project. This EBSA is also part of a World Heritage Site proposal that is being developed.

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Tsitsikamma-Robberg

Proposed EBSA Description

Abstract

Tsitsikamma-Robberg is a coastal EBSA on the South African south coast. It includes Tsitsikamma MPA (South Africa's oldest MPA), Robberg MPA, Goukamma MPA, and part of the Garden Route Biosphere Reserve. It extends from the shore largely to the back of the middle shelf (-100 m isobath), with some extension onto the shallow outer shelf, and includes the extent of five estuaries, including Knysna. The protection afforded to the inshore reefs from these MPAs has contributed to a high diversity and abundance of species, including fragile, vulnerable, sensitive and slow-growing species, that in turn support many top predators. Numerous threatened species occur within this EBSA, including an Endangered endemic seahorse species and several Critically Endangered fish species, with the area also supporting important life-history stages of these threatened and other species. Several Critically Endangered and Endangered ecosystem types are also represented in the EBSA, which by implication support threatened biological communities. The area is mostly in good or fair ecological condition. However, Tsitsikamma MPA has recently been opened to recreational fishing in certain areas.

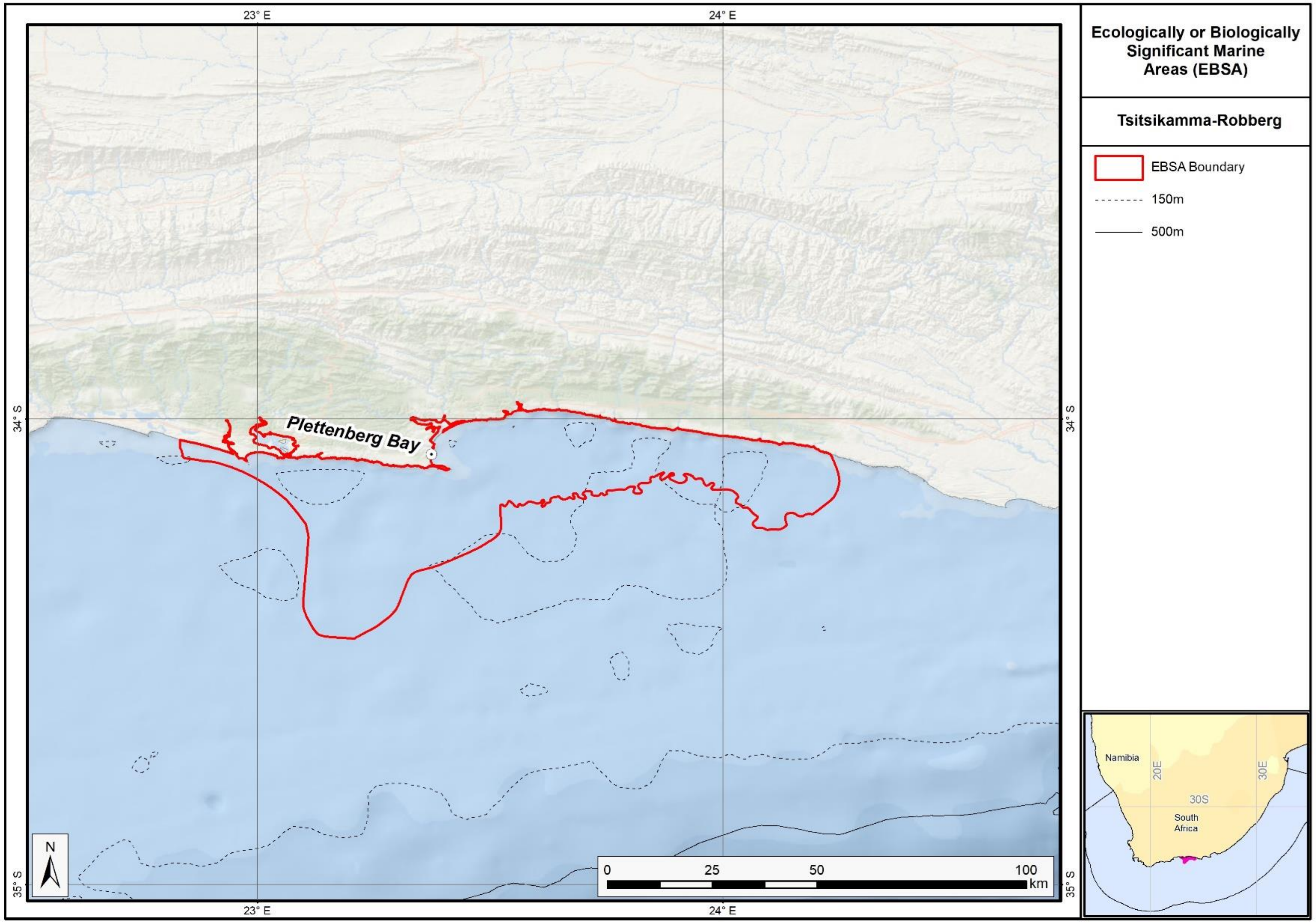
Introduction

Tsitsikamma-Robberg is a coastal EBSA that includes the Tsitsikamma, Robberg and Goukamma MPAs, and is bordered along most of its shore length by the Garden Route National Park. The EBSA also forms part of the Garden Route Biosphere Reserve. Fourteen estuaries open into this EBSA, with the Keurbooms, Groot, Sout, Knysna and Goukamma Estuaries included in the EBSA boundary. As a coastal EBSA, the depth range is relatively shallow, with most of the area covering the middle shelf. Depths are generally shallower than -100 m, although slightly deeper waters are contained in the western offshore extension. The EBSA contains important inshore reefs, vulnerable, fragile and sensitive species, and is also rich in top predators (sharks, cetaceans and marine mammals), some of which are threatened species. Inclusion of the Keurbooms and Knysna Estuaries in the EBSA means that it also contains two of only three estuaries in South Africa where the Knysna seahorse (*Hippocampus capensis*) is found: one of the two Endangered seahorse species globally. Given the diversity contained within the EBSA, there are many ecotourism operators (whale watching, fishing charters) and marine researchers working in this area. Notably, Tsitsikamma MPA is Africa's oldest marine reserve, and therefore, there is a lot of research on the reef and fish communities contained within it. The EBSA had a high selection frequency in a national systematic conservation plan, and was also identified as a key site in South Africa's protected area expansion strategy.

The reason this site was not part of the original list of EBSAs first proposed in the South Eastern Atlantic EBSA Identification Workshop in 2013 (UNEP/CBD/RW/EBSA/SEA/1/4) is because the value of the area was recognised only afterwards in a gap analysis.The significance of this site is largely underpinned by the inshore reefs. However, it also includes several other biodiversity features, such as critical linkages between land and sea via the five key estuaries, and important shore habitats that support critical life history stages of animals such as seals. Consequently, this site is proposed as a Type 2 EBSA (sensu Johnson et al., 2018).

EBSA Region

Southern Indian Ocean



Proposed boundary of the Tsitsikamma-Robberg EBSA.

Location

The Tsitsikamma-Robberg EBSA extends along the South African south coast from the eastern boundary of the Goukamma MPA, to about 8 km west of the Robberg Peninsula, and offshore by approximately 15-18 km, largely following the -100 m isobath. The western half of the EBSA has an offshore extension, roughly opposite the Knysna Estuary. It also includes the five largest estuaries in the EBSA: Keurbooms, Groot, Sout, Knysna and Goukamma. Tsitsikamma-Robberg is entirely within South Africa's national jurisdiction.

Feature description of the proposed area

The features contained within the EBSA are largely benthic, but several of the top predators are associated more with the pelagic environment. The EBSA status of this site is largely underpinned by the inshore reefs, and those in Tsitsikamma MPA have been protected since the 1964, making it the oldest marine reserve in Africa. These reefs comprise numerous fragile and sensitive species that are slow growing, including both habitat-forming reef species, as well as animals such as sparids. Echo-sounder and stereo-BRUV data show that reefs within the EBSA have high structural complexity (which tends to be associated with higher diversity and abundance of fish and), and in some places include boulder reefs that appear to be a unique ecosystem type in South Africa, supporting abundant carpenter, panga and giant octopus communities (Anthony Bernard, SAIAB, pers. comm.). As a result of the large, old, no-take reserves, species abundance and diversity in this EBSA's MPAs are much higher compared to that of the surrounding area. In turn, the area supports key populations of top predators, including Cape fur seals, sharks, seabirds and cetaceans by providing breeding and foraging habitat for them. There are several threatened species in this area, including top predators and species of commercial importance. There are also 19 ecosystem types in the EBSA (Harris et al., 2019; Sink et al., 2019), including 10 threatened ecosystem types (Sink et al., 2019), which by implication support biological communities that are also threatened.

Given the abundant marine life in the area, and the large no-take reserve that serves as a pristine reference site, there is a long history of marine research in this area, and a thriving ecotourism industry, including Blue Flag boats and beaches. The EBSA had a high selection frequency in a national systematic conservation plan indicative that this is a key area in which biodiversity targets need to be met (Sink et al., 2011, 2012, SANBI unpublished results), and it is also recognised as a focus area for protected area expansion in South Africa. The broader area, including the terrestrial side, is similarly recognised for its key ecological value. Most of the EBSA is backed by the terrestrial Garden Route National Park, and it forms part of the much larger Garden Route Biosphere Reserve that was declared by UNESCO in 2017. It also includes the Tsitsikamma-Plettenberg Bay Important Bird and Biodiversity Area, within which at least 300 species of birds have been recorded (Marnewick et al., 2015). The EBSA boundary was delineated based on all the best available data (e.g., Harris et al., 2019; Holness et al., 2014; Majiedt et al., 2013; Sink et al., 2012, 2019).

Feature condition and future outlook of the proposed area

The EBSA is in good (37%) to fair (35%) ecological condition, with the remaining 28% in poor condition based on a national analysis of cumulative threats to the marine realm (Sink et al., 2012, 2019). Notably, the South African government recently opened sections of the previously no-take Tsitsikamma MPA for recreational fishing.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Tsitsikamma-Robberg EBSA. Data from Sink et al. (2019).

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Endangered	Agulhas Bays - West	118.8	4.5
	Agulhas Sheltered Rocky Shore	0.3	0.0
Vulnerable	Agulhas Exposed Rocky Shore	26.0	1.0
	Agulhas Inner Shelf Reef Sand Mosaic	178.2	6.7
	Agulhas Mid Shelf Reef Complex	12.1	0.5
	Agulhas Sandy Outer Shelf	14.8	0.6
	Agulhas Very Exposed Rocky Shore	0.8	0.0
	Warm Temperate Estuarine Bay	30.1	1.1
	Warm Temperate Large Temporarily Closed Estuary	3.1	0.1
	Warm Temperate Predominantly Open Estuary	16.6	0.6
Near Threatened	Agulhas Boulder Shore	0.1	0.0
	Agulhas Mixed Shore	9.2	0.3
	Agulhas Sandy Mid Shelf	1636.0	61.9
Least Concern	Agulhas Dissipative-Intermediate Sandy Shore	8.5	0.3
	Agulhas Inner Shelf Reef Complex	17.7	0.7
	Agulhas Intermediate Sandy Shore	2.6	0.1
	Agulhas Outer Shelf Reef Coarse Sediment Mosaic	566.6	21.4
	Warm Temperate Small Fluvially Dominated Estuary	0.7	0.0
	Warm Temperate Small Temporarily Closed Estuary	1.5	0.1
Grand Total		**2643.6**	**100.0**

Assessment of the area against CBD EBSA Criteria

CBD EBSA Criteria (Annex I to decision IX/20)	**Description** (Annex I to decision IX/20)	**Ranking of criterion relevance**
Uniqueness or rarity	Area contains either (i) unique (“the only one of its kind”), rare (occurs only in few locations) or endemic species, populations or communities, and/or (ii) unique, rare or distinct, habitats or ecosystems; and/or (iii) unique or unusual geomorphological or oceanographic features.	Medium

Explanation for ranking

The uniqueness of the area is largely driven by the effect of Africa’s oldest MPA, providing a reference site for ecological research. Other rare features include presence of Endangered humpback dolphins, the tombolo at Robberg Peninsula, and some endemic species, such as the Knysna seahorse (Lockyear et al., 2006) and African Black Osytercatcher (Marnewick et al., 2015). There is a boulder reef present in the EBSA that appears to be a unique ecosystem type in South Africa (Anthony Bernard, SAIAB, pers. comm.). The site also had a high selection frequency, meaning that the area is important for meeting biodiversity feature targets.

Special importance for life-history stages of species	Areas that is required for a population to survive and thrive.	High

Explanation for ranking

As an IBA, the site supports many breeding bird species, e.g., White-breasted Cormorants, Caspian Terns and White-fronted Plovers, and is also a notably important breeding site (1% or more of the congregatory population threshold) for Kelp Gulls, (Endangered) Cape Cormorants, and (endemic) African Black Oystercatchers (Marnewick et al., 2015). In fact, the Keurbooms Estuary mouth is the largest breeding colony of Kelp gulls on the South African south coast, and one of the largest in the country (Whittington et al., 2015). The EBSA supports a Southern right whale breeding area, and a breeding colony of Cape fur seals at Robberg (Huisamen et al., 2011). During the latter pupping season, white sharks are known to be drawn to the area to forage on the young seals. The EBSA also includes the Keurbooms and Knysna Estuaries, which are two of only three estuaries in which Endangered, endemic Knysna seahorses live (Lockyear et al., 2006).

Importance for threatened, endangered or declining species and/or habitats	Area containing habitat for the survival and recovery of endangered, threatened, declining species or area with significant assemblages of such species.	High

Explanation for ranking

One of the key attributes of this EBSA is its importance for threatened species. These include (among others): Critically Endangered Seventy-four Seabream, Critically Endangered Dageraad, Endangered Knysna seahorses, Endangered humpback dolphins, Endangered White Steenbras, Endangered Cape Cormorants, Vulnerable white sharks. Near Threatened Roman Seabream and Near Threatened African Clawless Otters are also present. These species are top predators, iconic species, or commercially important species that have been overexploited outside of the MPAs in this area.

Given that ecosystem types are frequently used as a surrogate for biodiversity, South Africa places key importance on its national ecosystem type map for biodiversity planning and assessment (Sink et al., 2012). Tsitsikamma-Robberg includes two Endangered and eight Vulnerable ecosystem types (Sink et al., 2019). By implication, these habitats each support biological communities that are likely threatened as well.

Vulnerability, fragility, sensitivity, or slow recovery	Areas that contain a relatively high proportion of sensitive habitats, biotopes or species that are functionally fragile (highly susceptible to degradation or depletion by human activity or by natural events) or with slow recovery.	High

Explanation for ranking

The area contains vulnerable inshore reefs that include sensitive, fragile and vulnerable habitat-forming species. Further, some of the top predator and some sparid populations are also vulnerable to population impacts because the species are slow growing and late maturing.

Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.	Medium
Explanation for ranking Time-averaged MODIS Aqua data on chlorophyll concentration (NASA Giovanni Portal: https://giovanni.gsfc.nasa.gov) shows that productivity inside Tsitiskamma-Robberg is higher compared to that of the surrounding area, particularly close to the shore. Local productivity is also higher because of the no-take MPAs supporting high abundances of biota, especially fish (Edgar et al., 2014), and thus contributing to more productive biological communities.		
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.	High
Explanation for ranking The focus area includes representation of 19 different ecosystem types, each likely supporting their own biological communities. There is also high diversity of fish and sharks (Wood et al., 2000) in the EBSA, and it includes the Tsitsikamma-Plettenberg Bay Important Bird and Biodiversity Area, within which at least 300 species of birds have been recorded (Marnewick et al., 2015).		
Naturalness	Area with a comparatively higher degree of naturalness as a result of the lack of or low level of human-induced disturbance or degradation.	Medium
Explanation for ranking The EBSA is predominantly in good (37%) or fair (35%) ecological condition as per a national cumulative threat assessment of pressures on South Africa's marine environment (Sink et al., 2019). This is partly because the area includes three MPAs, the largest of which is an old (proclaimed in 1964) no-take reserve, and the adjacent hinterland (although not part of the EBSA) mostly comprises the Garden Route National Park, and more recently (2017), the Garden Route Biosphere Reserve.		

Status of submission

The description of Tsitsikamma-Robberg has been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity.

COP Decision

Not yet submitted.

End of proposed EBSA revised description

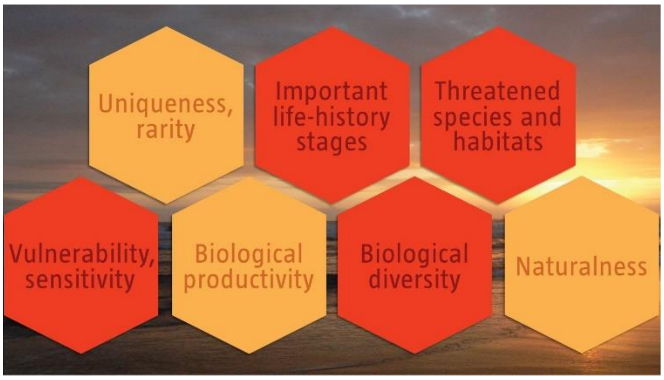
Motivation for Submission

The Robberg-Tsitsikamma area was highlighted in a recent expert and systematic review of gaps in the EBSA network. The area also has high selection frequency in spatial assessments (Sink et al., 2011; Unpublished data linked to Majiedt et al., 2013; Holness et al., 2014) and contains threatened ecosystem types identified in the National Biodiversity Assessment 2011 (Sink et al., 2012). Initial draft EBSA boundaries were determined, and these were then evaluated against the EBSA criteria. Once it was determined that the area would meet EBSA criteria a formal boundary delineation and evaluation process was undertaken. The delineation process included an initial stakeholder review, a technical mapping process and then an expert review workshop where boundary delineation options were discussed. The boundaries were revised a final time to accommodate the latest NBA 2018 assessment results and the review workshop discussion. The delineation processe used a combination of Systematic Conservation Planning and Multi-Criteria Analysis methods. The features used in the analysis were:

- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites which relate closely to the EBSA criteria of "Uniqueness and rarity" from the offshore prioritisation process (Sink et al., 2011), the Systematic Conservation Planning process undertaken for Majiedt et al. (2013) and the additional unpublished analysis for the broader BCLME region by Holness et al. (2014).
- Delineations and threat status of consitituent ecosystem types in the area were included in the analysis and used to refine the boundary of the EBSA (Sink et al., 2019). Fine-scale coastal mapping was also included (Harris et al., 2019).
- Areas of high relative naturalness identified in the National Biodiversity Assessment 2011, 2018 (Sink et al., 2012, 2019), the West Coast (Majiedt et al., 2013) and the BCLME spatial assessments (Holness et al., 2014) were included in the analysis. Both pelagic and benthic and coastal condition were incorporated.
- Distributions of known fragile, vulnerable and sensitive habitat-forming species were included (Unpublished SANBI and SAEON data).

The multi-criteria analysis resulted a value surface. The cut-off value used to determine the extent of the EBSA was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach, whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map were validated in a national workshop.

Status Assessment and Management Options

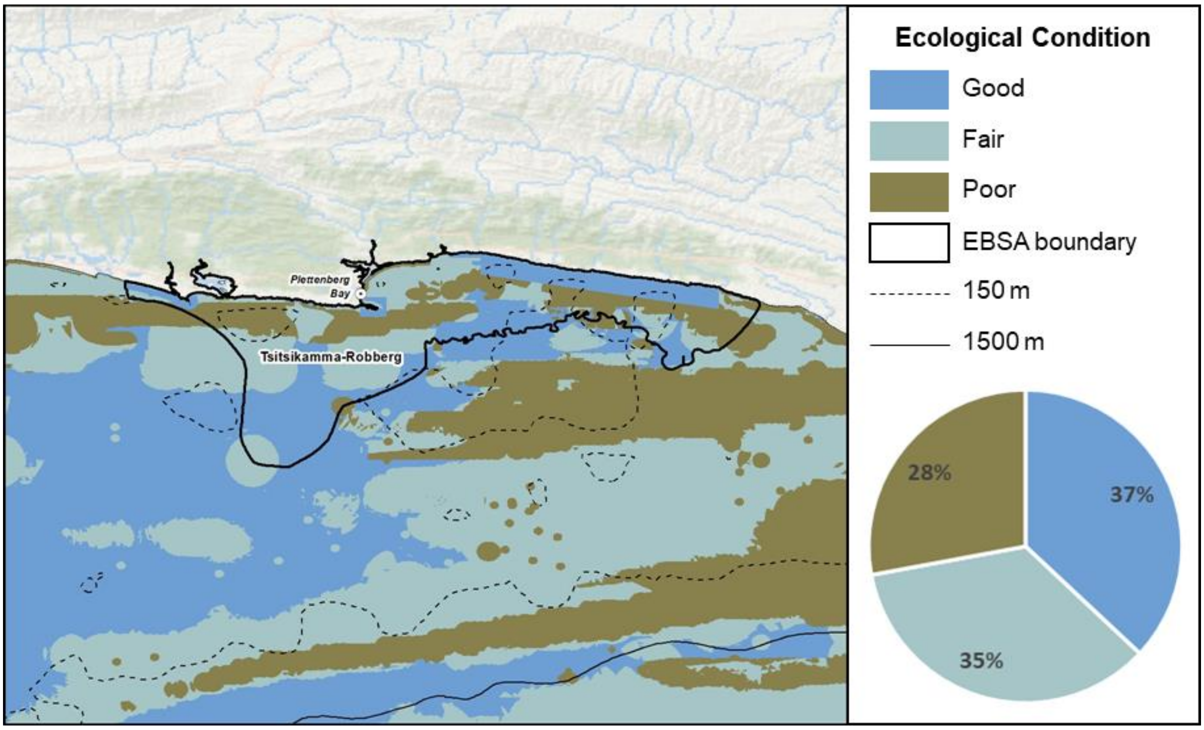


__Tsitsikamma-Robberg__ is significant coastal area because it includes South Africa's oldest MPA, with the conferred protection securing a particularly rich diversity including fragile (corals) and slow-growing (sparids) species. The EBSA also includes several priority estuaries, which enhances its nursery function, and supports numerous bird species. Many threatened species occur here, including an Endangered endemic seahorse.

EBSA criteria coloured by rank for Tsitsikamma-Robberg: red=high, orange=medium.

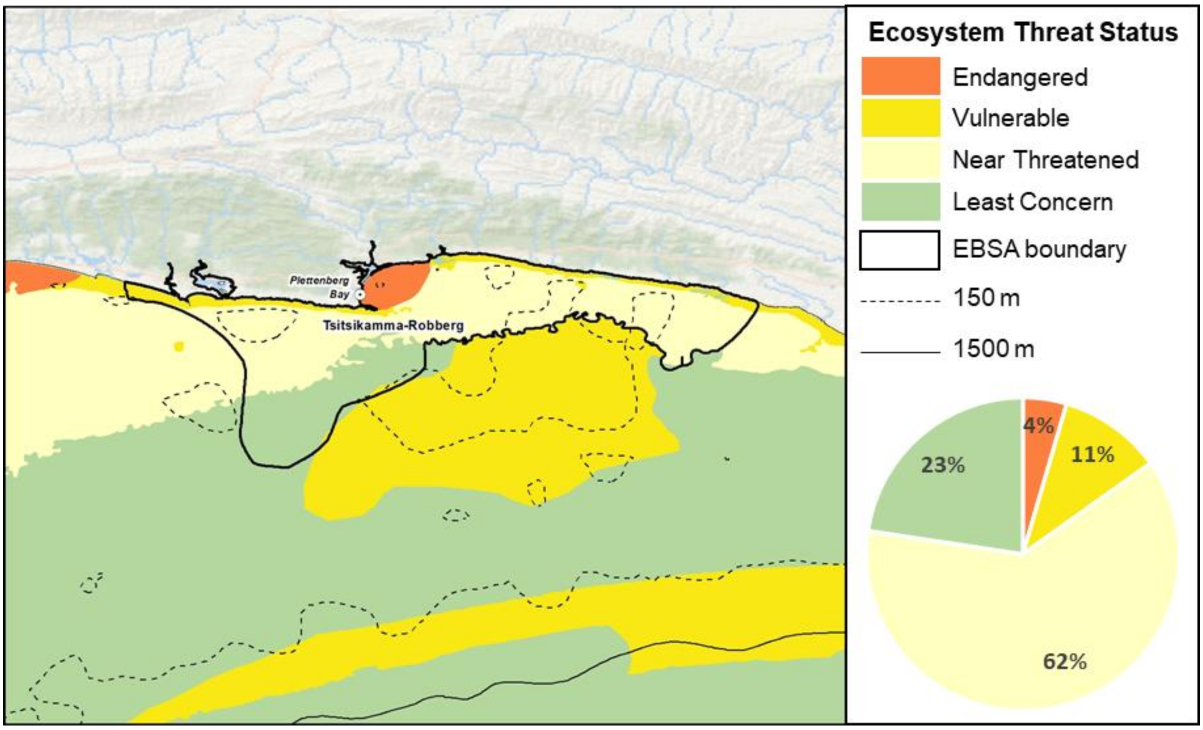
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Tsitsikamma-Robberg has a myriad of features and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for life history stages, importance for threatened species and habitats, vulnerability and sensitivity, and biological diversity. There are 19 ecosystem types represented, many of which contain fragile, habitat-forming species that are especially sensitive to damage, as well as slow-growing species, like sparids. There are also many threatened species and some threatened ecosystem types in the EBSA, from the Endangered endemic seahorse to some of the abundant top predators (sharks, cetaceans and marine mammals). The five largest estuaries in the EBSA support important life-history stages of many species.

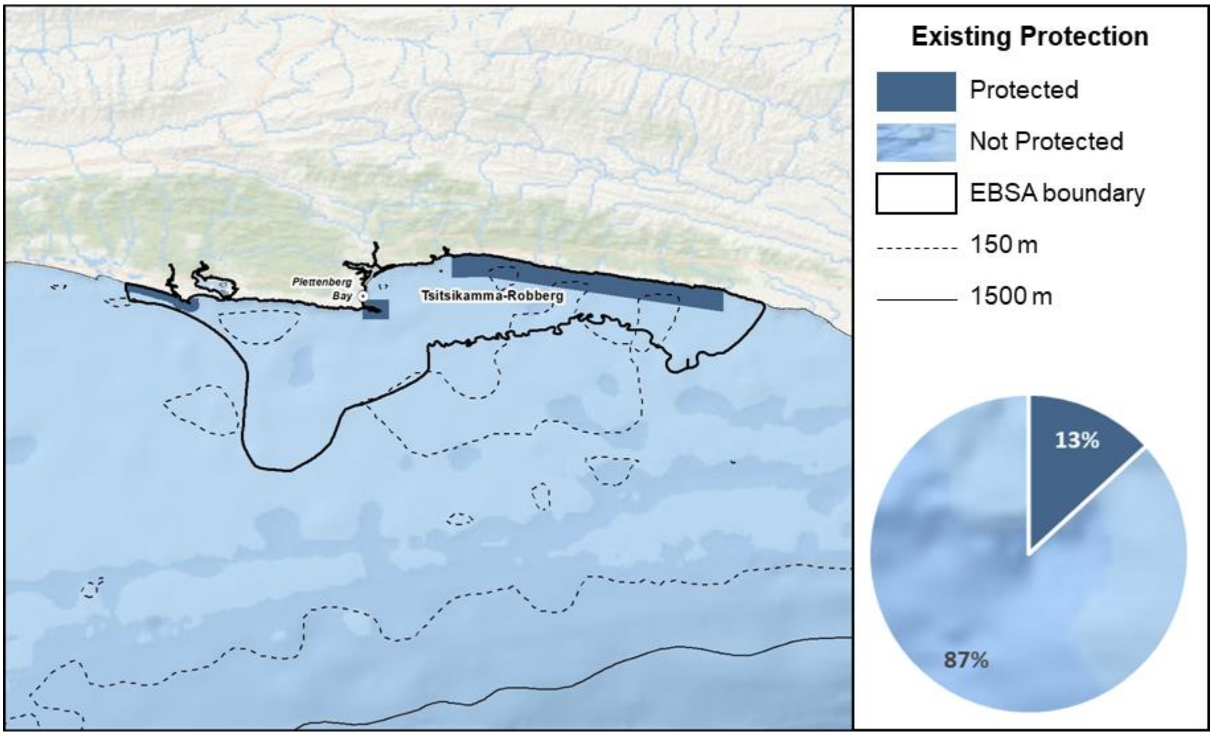


Tsitsikamma-Robberg proportion of area in each ecological condition category.

Ecological condition in Tsitsikamma-Robberg is split roughly equally among the three categories: 37% good, 35% fair and 28% poor ecological condition. Consequently, the bulk of the EBSA is Near Threatened (62%) or Least Concern (23%). However, the inshore areas, are more threatened; with 11% of the EBSA comprising Vulnerable ecosystem types, and 4%, Endangered ecosystem types.



Tsitsikamma-Robberg proportion of area in each ecosystem threat status category.



Tsitsikamma-Robberg proportion of area in a Marine Protected Area (MPA).

Protection of features in MPAs has not changed since the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves remaining at 13%. However, parts of Tsitsikamma MPA have been opened to recreational fishing, such that protection in some ways has declined in this area. Although many of the ecosystem types are well or moderately protected, there are still some that are poorly protected.

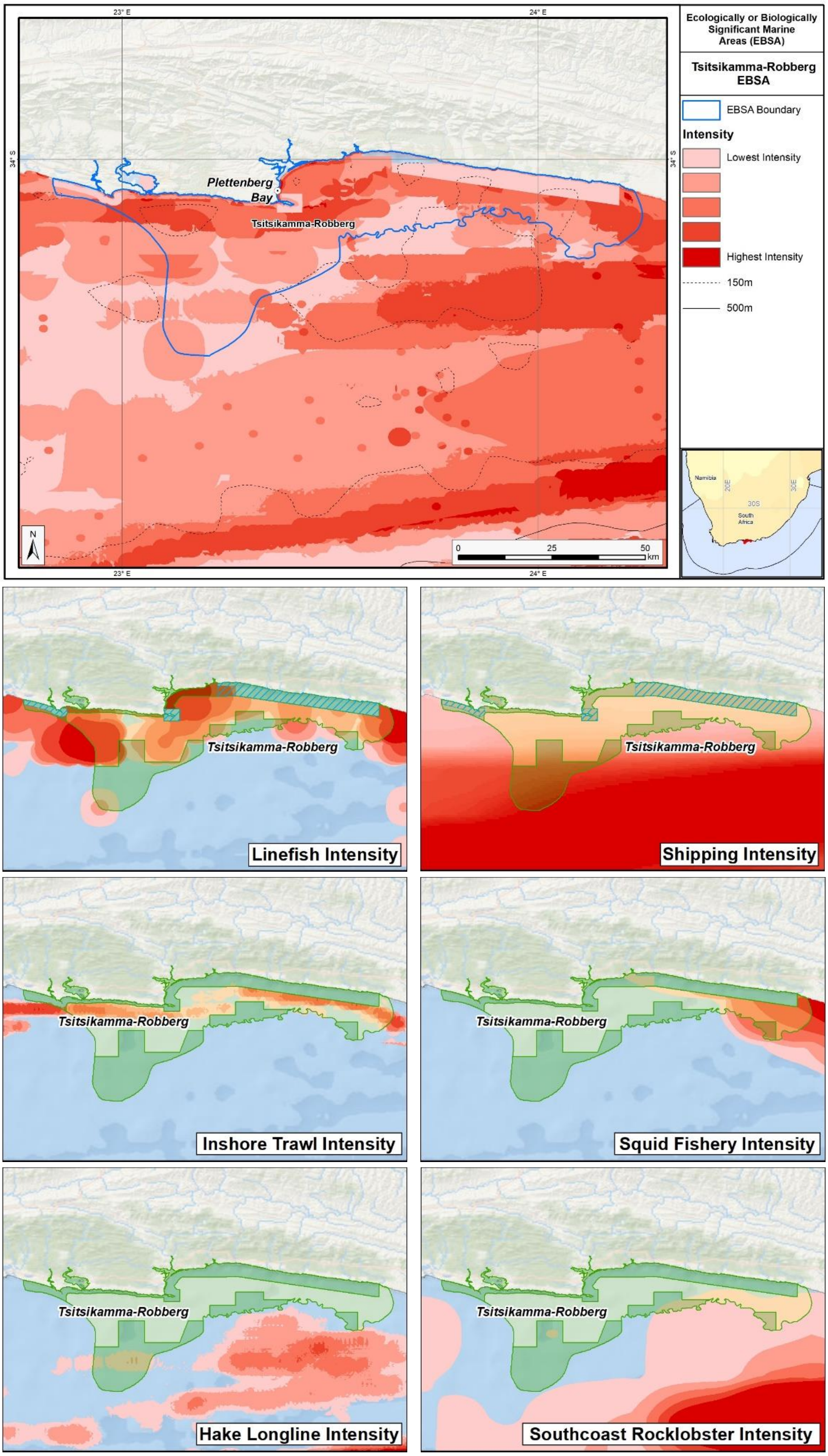
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Agulhas Boulder Shore	NT	WP	26.0	74.0	0.0
Agulhas Dissipative Intermediate Sandy Shore	LC	WP	53.3	5.3	41.4
Agulhas Exposed Rocky Shore	VU	MP	25.1	63.3	11.6
Agulhas Inner Shelf Mosaic	VU	MP	46.4	31.6	22.0
Agulhas Inner Shelf Reef	LC	WP	52.4	40.7	6.9
Agulhas Intermediate Sandy Shore	LC	MP	83.4	1.3	15.3
Agulhas Mid Shelf Reef	VU	MP	47.5	52.5	0.0
Agulhas Mixed Shore	NT	MP	18.4	54.8	26.7
Agulhas Sandy Mid Shelf	NT	MP	29.6	31.3	39.0
Agulhas Sandy Outer Shelf	VU	PP	85.9	14.1	0.0
Agulhas Sheltered Rocky Shore	EN	MP	0.0	75.2	24.8
Agulhas Very Exposed Rocky Shore	VU	MP	11.4	81.0	7.6
Eastern Agulhas Outer Shelf Mosaic	LC	PP	59.7	37.9	2.5
Warm Temperate Estuarine Bay	VU	MP	15.3	10.0	74.7
Warm Temperate Large Temporarily Closed	VU	PP	90.0	0.0	10.0
Warm Temperate Predominantly Open	VU	PP	66.5	5.4	28.2
Warm Temperate Small Fluvially Dominated	LC	WP	86.7	13.0	0.2
Warm Temperate Small Temporarily Closed	LC	PP	8.1	78.1	13.8
Western Agulhas Bay	EN	PP	6.7	75.7	17.6
Other Features					

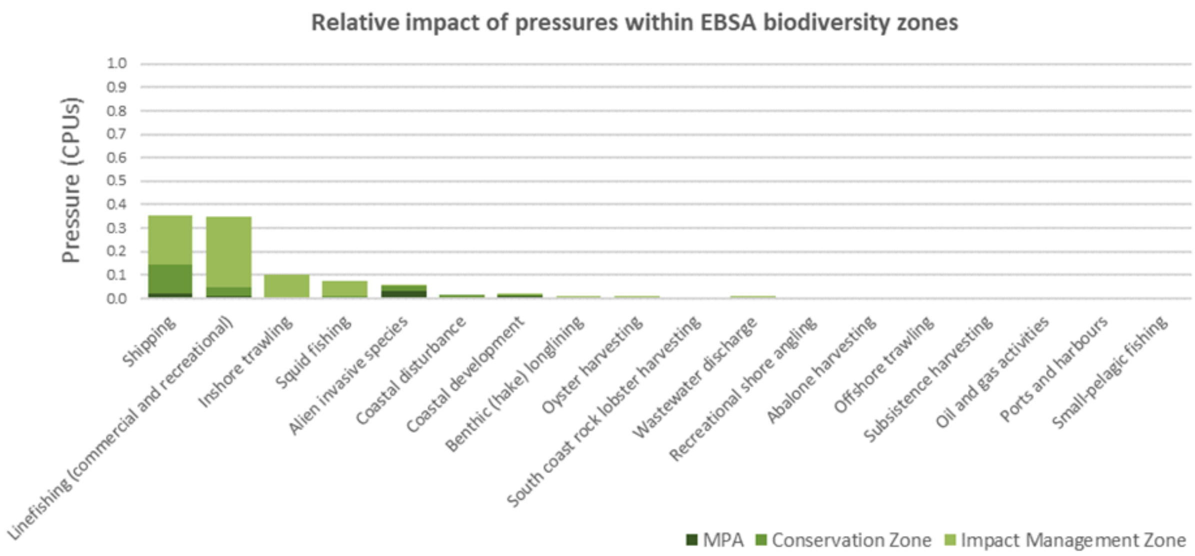
- Fragile and sensitive species that are slow growing, including both habitat-forming reef species, as well as animals such as sparids.
- Boulder reefs that appear to be a unique ecosystem type in South Africa, supporting abundant carpenter, panga and giant octopus communities
- Key populations of top predators, including Cape fur seals, sharks, seabirds and cetaceans, including sites for feeding and breeding (e.g., Southern right whale breeding area, and a breeding colony of Cape fur seals at Robberg)
- Most of the EBSA is backed by the terrestrial Garden Route National Park, and it forms part of the much larger Garden Route Biosphere Reserve
- Tsitsikamma-Plettenberg Bay Important Bird and Biodiversity Area, within which at least 300 species of birds have been recorded
- Endemic Endangered seahorse

Relevant Pressures and Activities (impact, extent)

- There are 18 pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent; however, linefishing has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: oyster harvesting, alien invasive species, coastal development, inshore trawling, coastal disturbance, squid fishing, linefishing (commercial and recreational), abalone harvesting, wastewater discharge, subsistence harvesting, recreational shore angling, oil and gas (exploration and production), shipping, ports and harbours, benthic (hake) longlining, south coast rock lobster harvesting, offshore trawling, small pelagics fishing. These activities cover discrete portions of the EBSA, and are mostly concentrated in the shallower waters. These activities will need to be managed particularly well in order to protect the fragile benthic biodiversity and reefs, fish assemblages and top predators for which this EBSA is recognised. For most of these pressures, the larger portion of the activity is located in the Impact Management Zone.
- Eleven of the 17 pressures each comprise <1% of the EBSA pressure profile, including: benthic (hake) longlining, south coast rock lobster harvesting, oyster harvesting, wastewater discharge, offshore trawling, abalone harvesting, recreational shore angling, subsistence harvesting, oil and gas (exploration and production), ports and harbours, and small pelagics fishing. Note that some of these are coastal pressures, and despite comprising a small extent of the EBSA, can overlap with and impact substantial portions of the small-extent ecosystem types in which they occur, e.g., shore-based recreational fishing.
- Activities in South Africa that are not present in this EBSA include: beach seining, dredge spoil dumping, gillnetting, kelp harvesting, mariculture, mean annual runoff reduction, midwater trawling, mining (prospecting and mining), naval dumping (ammunition), pelagic longlining, tuna pole fishing, prawn trawling, shark netting, west coast rock lobster harvesting.



Map of cumulative pressure (top) and maps of the six most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



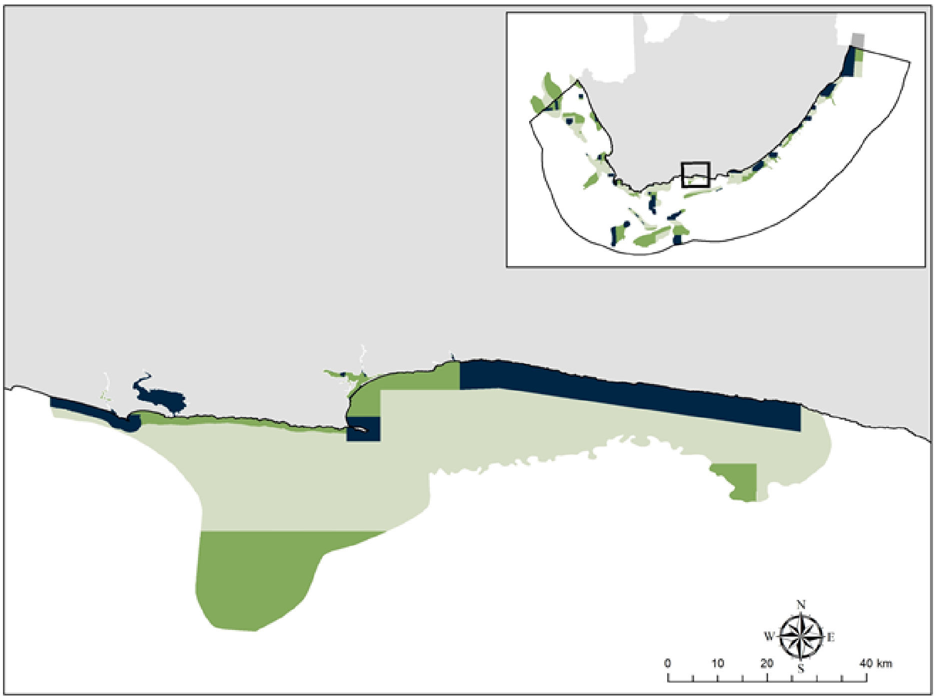
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that pressures from coastal development to small pelagics fishing each comprise <1.2% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are also four MPAs that are wholly or partially within the EBSA: Goukamma MPA; Robberg MPA; and Tsitiskamma MPA. The activities permitted within these MPAs are not considered as part of the EBSA management recommendations because these are as per their respective gazetted regulations. Note that there are also several terrestrial Nature Reserves (including several privately-owned Nature Reserves) and the Garden Route National Park that are adjacent to the EBSA, and in some places, overlap with the estuarine area of the EBSA.

Goukamma MPA (proclaimed 1990 and revised 2000)	https://gazettes.africa/archive/za/2000/za-government-gazette-regulation-gazette-dated-2000-12-29-no-21948.pdf
Robberg MPA (proclaimed 1998 and revised 2000)	https://gazettes.africa/archive/za/2000/za-government-gazette-regulation-gazette-dated-2000-12-29-no-21948.pdf
Tsitiskamma MPA (proclaimed 1964 and revised 1974, 2000, 2016)	https://www.environment.gov.za/sites/default/files/gazetted_notices/protectedareasaact57of2003_noticedeclaring_tsitsikammanationalpark_mpa_gg40510.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

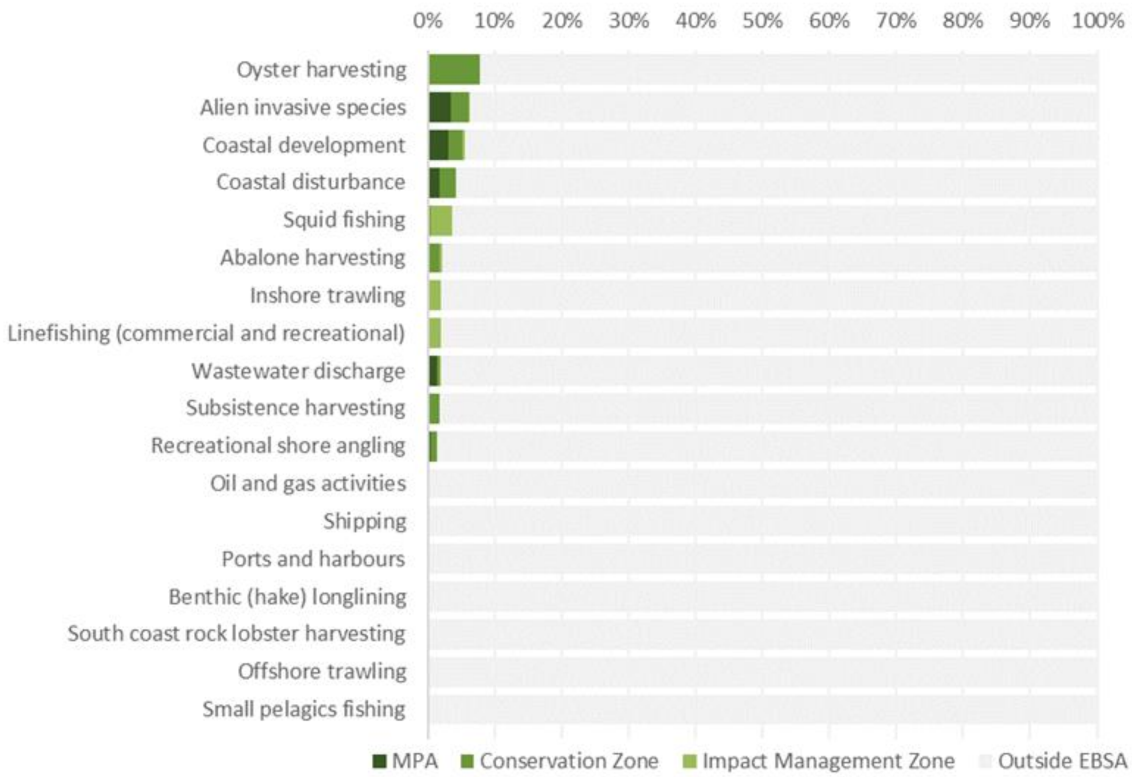
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



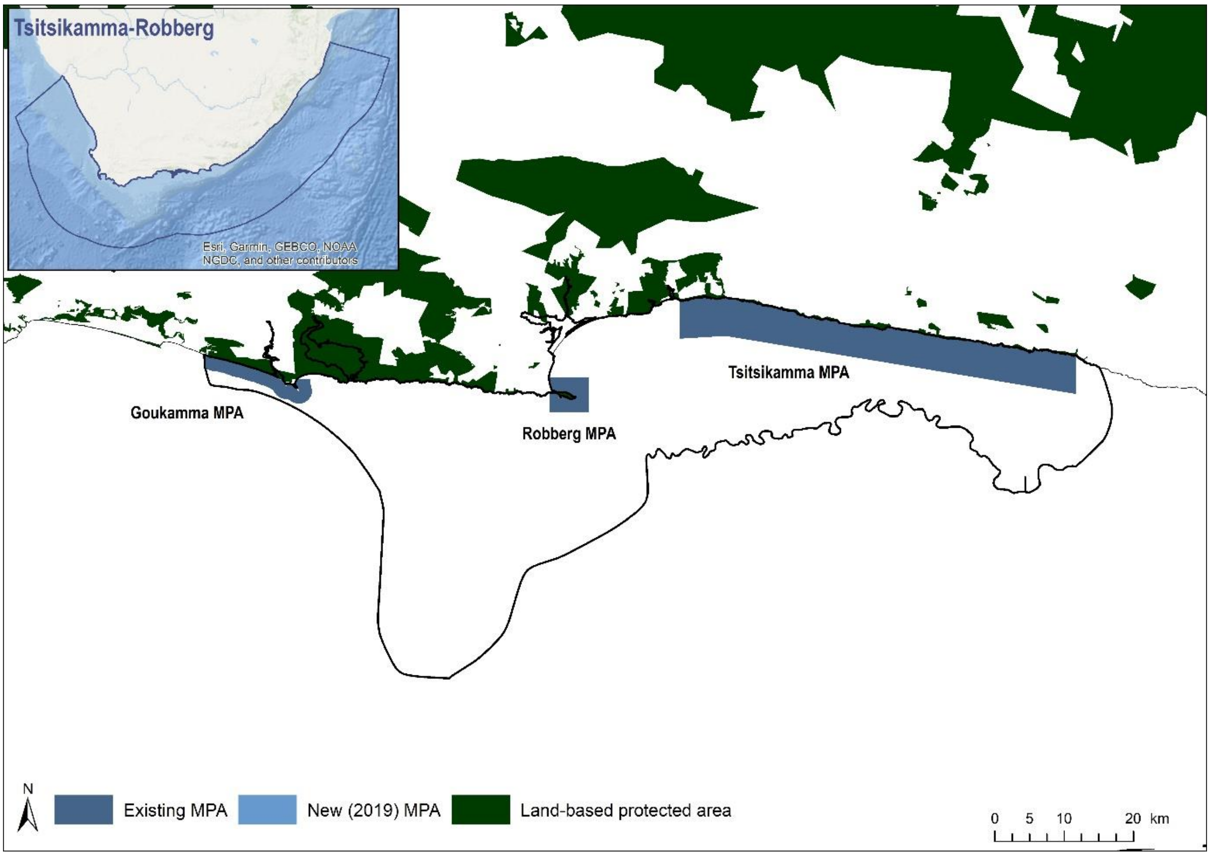
Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

Most of the activities in the EBSA relate to coastal (generally shore-based) biological resource use, including: oyster harvesting, abalone harvesting, subsistence harvesting, recreational shore angling, linefishing (commercial and recreational); south coast rock lobster harvesting and squid fishing. All of these activities are compatible or conditionally compatible with the EBSA zones and thus are recommended to continue subject to appropriate regulations and management. Inshore trawling and, to a lesser extent, offshore trawling are present in the EBSA Impact Management Zone where they are conditionally compatible. Therefore, they are recommended to continue in the Impact Management Zone subject to appropriate management measures. Oil and gas activities are also present in the EBSA, exclusively in the Impact Management Zone. Exploration activities are compatible or conditionally compatible, and are recommended to continue with appropriate regulations and management measures. Production is also considered conditionally compatible with the Impact Management Zone, and this activity could take place in future with very careful controls and management. Some of the country's ports and harbours also occur in the area but these are exclusively within the MPAs and thus are beyond the management recommendations of the EBSA zones. Shipping is compatible with both EBSA zones and is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

Management Recommendations for Marine Protected Areas

It is recommended that management is strengthened in the three existing MPAs (Tsitsikamma, Robberg and Goukamma MPAs) and adjacent land-based protected areas that cover some of the estuarine parts of Tsitskamma-Robberg. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.

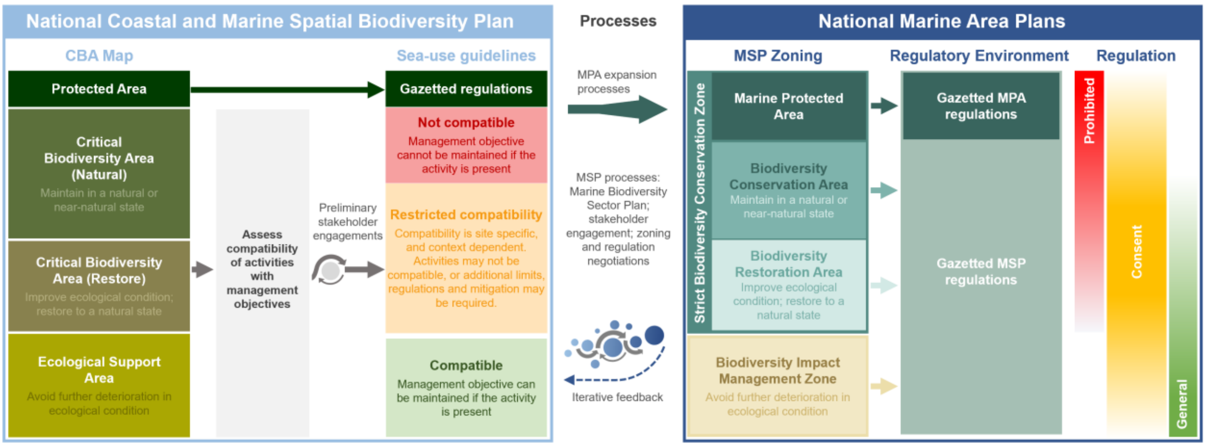


Marine protected areas (MPAs) in the Tsitsikamma-Robberg EBSA. Land-based protected areas are also shown (from DFFE, 2021).

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Tsitsikamma-Robberg, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

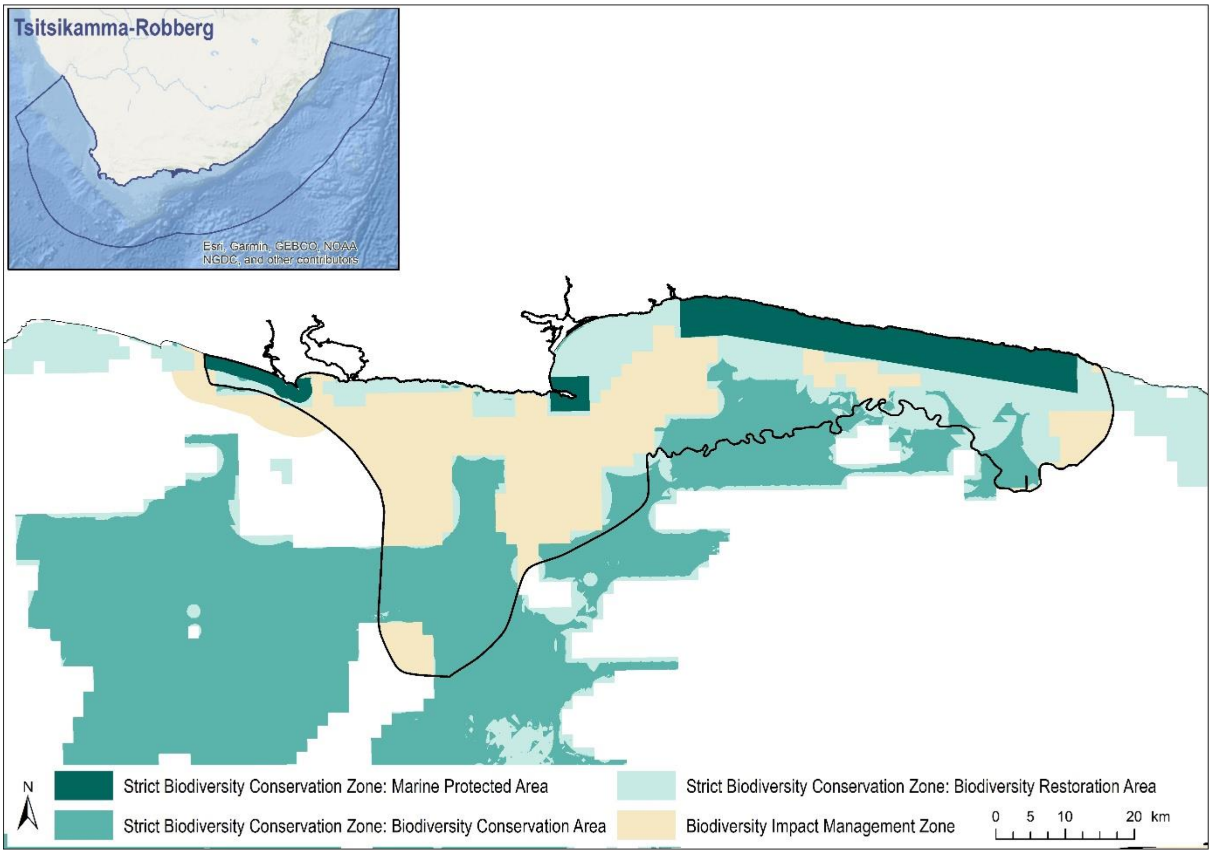


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Tsitsikamma-Robberg.

Tsitsikamma, Robberg and Goukamma are the three MPAs in this EBSA. They are managed according to their respective gazetted management regulations. The rest of the Strict Biodiversity Conservation Zone is primarily a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. A slightly smaller portion comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Tsitsikamma-Robberg EBSA for South Africa's Marine Area Plans. Land-based protected areas are not shown but do extend into some of the estuarine habitat (see previous section).

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Tsitsikamma-Robberg. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below).

Future Process

There needs to be full operationalisation and practical implementation of the proposed zoning in the national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project. This EBSA is also part of a World Heritage Site proposal that is being developed.

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Transboundary EBSAs

Revised EBSAs

Orange Seamount and Canyon Complex (formerly Orange Shelf Edge)

Revised EBSA Description

General Information

Summary

The Orange Seamount and Canyon Complex occurs at the western continental margin of South Africa and Namibia, spanning the border between the two countries. On the Namibian side, it includes Tripp Seamount and a shelf-indenting canyon. The EBSA comprises shelf and shelf-edge habitat with hard and unconsolidated substrates, including at least eleven ecosystem types. According to recent threat status assessments of coastal and marine habitat in South Africa and Namibia, three ecosystem types represented in the EBSA are threatened, one of which is Endangered and another two that are Vulnerable. However, the area is one of few places where these threatened ecosystem types are in relatively natural/pristine condition. Based on an analysis of long-term trawl-survey data, the Orange Seamount and Canyon Complex is a persistent hotspot of demersal fish biodiversity, which may be a result of the local habitat heterogeneity. In summary, this area is highly relevant in terms of the following EBSA criteria: 'Importance for threatened, endangered or declining species and/or habitats', 'Biological diversity' and 'Naturalness'.

Introduction of the area

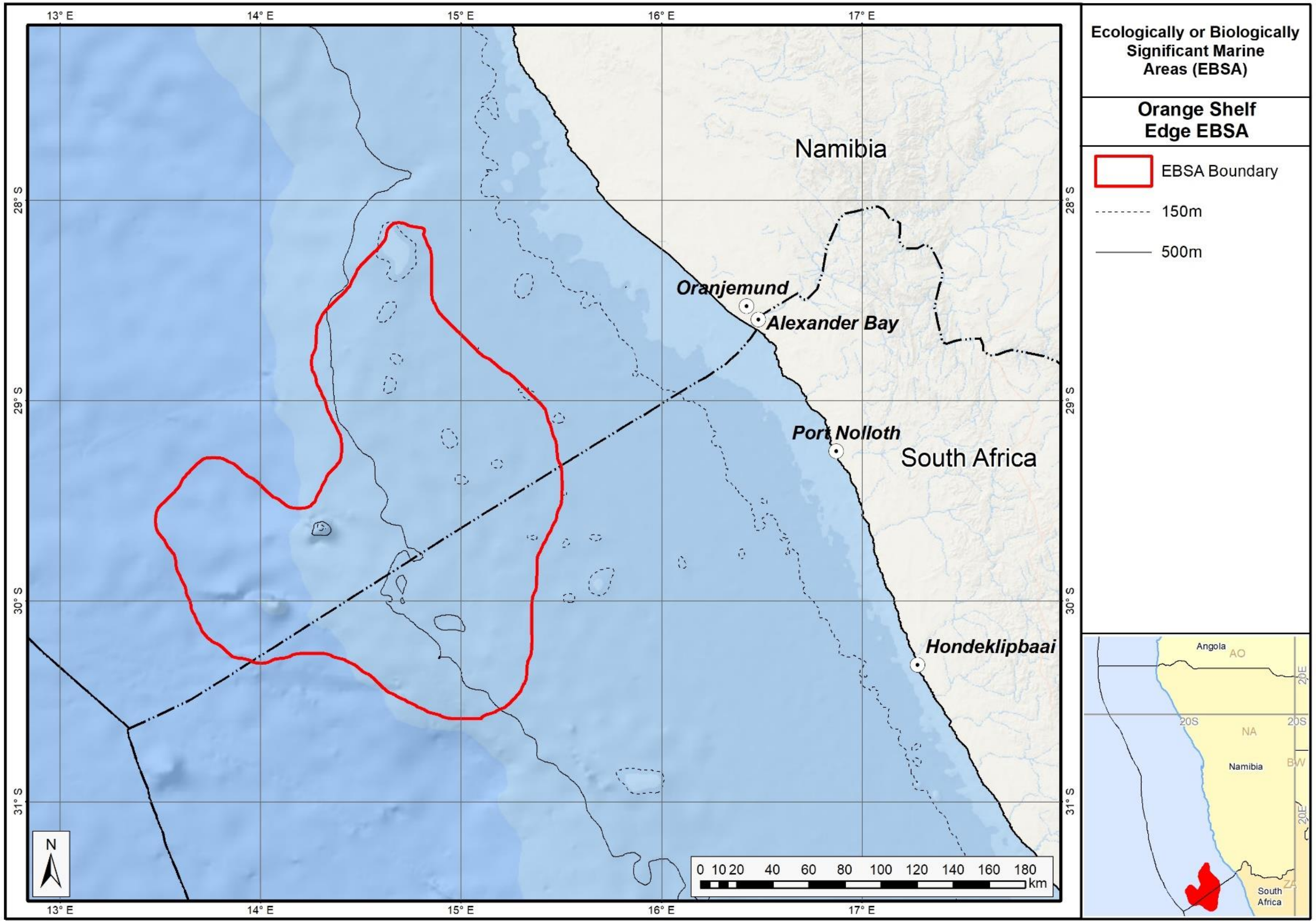
The area occurs at the outer shelf and shelf edge of the western continental margin of South Africa and Namibia, spanning the border between the two countries. It includes hard and unconsolidated (sand) shelf and shelf edge benthic habitat at depths of approximately 350-1200 m on the South African side (Sink et al., 2012, 2019). On the Namibian side, it includes Tripp seamount and a shelf-indenting submarine canyon, providing a heterogeneous habitat (Holness et al., 2014). The pelagic environment in the area is characterized by medium productivity, cold to moderate Atlantic temperatures (SST mean = 18.3 °C) and moderate chlorophyll levels related to the eastern limit of the Benguela upwelling on the outer shelf (Lagabrielle 2009).

Since the original description and delineation, the boundary of this EBSA has been revised largely because of new evidence that has emerged after South Eastern Atlantic Workshop to identify EBSAs in 2013 (UNEP/CBD/RW/EBSA/SEA/1/4). A new map of Namibian Ecosystem Types has been generated, and the new boundary builds on existing (SA) and new (Namibia) spatial assessment and prioritisation (Holness et al., 2014; Sink et al., 2012, 2019). These new datasets, and others (e.g., GEBCO Compilation Group 2019; Harris et al., 2014; Kirkman et al., 2013) have facilitated more accuracy in the boundary definition such that the EBSA now better represents the underlying features that make this site regionally significant for threatened species and habitats and diverse assesmblages, in a highly natural area. Orange Seamount and Canyon Complex is thus proposed as a Type 2 EBSA (sensu Johnson et al., 2018) because it comprises a collection of features and ecosystems that are connected by the same ecological processes.

Description of the location

EBSA Region

South-Eastern Atlantic



Revised delineation of the Orange Seamount and Canyon Complex EBSA.

Description of location

The area occurs at the outer shelf and shelf edge of the western continental margin of South Africa and Namibia, spanning the border between the two countries. It is entirely within the national jurisdiction of the two countries.

Area Details

Feature description of the area

The area includes a high diversity of shelf and shelf-edge habitats with hard or unconsolidated (sand) substrates (Sink et al., 2012, 2019; Holness et al., 2014). It includes eleven ecosystem types that have been identified for South Africa and Namibia (Sink et al., 2019; Holness et al., 2014). On the Namibian side, it includes Tripp seamount and a shelf-indenting canyon. The pelagic environment of the area is characterized by medium productivity, cold to moderate temperatures, and moderate chlorophyll levels related to the limit of the Benguela upwelling on the outer shelf (Lagabrielle 2009).

The area has been subjected to annual demersal fish trawl surveys conducted by the Department of Agriculture, Forestry and Fisheries (now Department of Environment, Forestry and Fisheries) of South Africa (see Atkinson et al., 2011 for details), and under the Nansen Programme in Namibia (see Jonsen and Kathena 2012 for details). Based on spatial modeling of nearly 30 years of distribution and abundance data from these surveys, Kirkman et al., (2013) identified a persistent hotspot of species richness for demersal fish species that coincides with part of the area. This may be related to the local habitat heterogeneity, including the presence of a shelf-indenting submarine canyon and the close proximity of a seamount. Generally, however, seamounts and canyons in the region have been poorly studied (Sink et al., 2011).

Feature conditions and future outlook of the proposed area

Sink et al., (2012, 2019) estimated the threat status of coastal and marine habitats in South Africa by assessing the cumulative impacts of various pressures (e.g., extractive resource use, pollution and others) on each ecosystem type. This analysis was extended to Namibia by Holness et al. (2014). The EBSA has a lot of natural habitat, although there are some portions that have been moderately modified, largely because this area has been subjected to relatively little extractive resource use (e.g., fishing, mining) pressure, and is relatively remote from sources of pollution. Overall, the assessments of Sink et al. (2019) and Holness et al. (2014) classified 73% of the Orange Seamount and Canyon Complex area as being in good condition, with an additional 18% being in fair condition.

Previously, the Orange Seamount and Canyon Complex area was identified by Majiedt et al. (2013) as one of six marine ‘primary focus areas’ for spatial protection in South Africa, with the good condition of threatened habitats and the relative absence of anthropogenic pressures as the major drivers of this selection. This has resulted in two portions of the EBSA being proclaimed as marine protected areas. On the Namibian side, the assessment of Holness et al. (2014) identified the Namibian portions of the EBSA as being of high priority for place-based conservation measures. Tripp seamount on the Namibian side of the border is the location of a productive pelagic pole-and-line tuna fishery (FAO 2007). Although no research is currently planned for this area, it is recommended for this EBSA, particularly towards informing appropriate spatial management of this site.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Orange Seamount and Canyon Complex. Data from Sink et al., 2019 and Holness et al., 2014.

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Endangered	Namaqua Shelf Edge	3065.9	10.5
Vulnerable	Southern Benguela Rocky Shelf Edge	751.7	2.6
	Southern Benguela Sandy Shelf Edge	1780.6	6.1
Least Concern	Southeast Atlantic Lower Slope	139.9	0.5
	Southeast Atlantic Mid Slope	993.1	3.4
	Southeast Atlantic Upper Slope	2133.3	7.3
	Southern Benguela Sandy Outer Shelf	3003.1	10.3
	Namaqua Outer Shelf	8702.9	29.7
	Namib Lower Slope	4315.1	14.7
	Namib Seamount	393.1	1.3
	Namib Upper Slope	3988.7	13.6
Grand Total		**29267.4**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **Low**

Justification

Neither the benthic nor pelagic ecosystem types that are known to occur in the area are unique to the area (Sink et al., 2011).

C2: Special importance for life-history stages of species **Medium**

Justification

Elsewhere it has been shown that seamounts, shelf breaks and submarine canyons (all of which occur in the EBSA) constitute important foraging habitats for pelagic-feeding vertebrates such as seabirds, cetaceans and large fish species, including migratory species, which exploit elevated primary production and high standing stocks of zooplankton, fish, and other organisms at these features (Dearden and Topelko 2005, Sydeman et al., 2006, Morato et al., 2008). Generally, however, seamounts and canyons in the region have been poorly studied (Sink et al., 2011).

C3: Importance for threatened, endangered or declining species and/or habitats **High**

Justification

Threat status assessments of ecosystem types by Sink et al. (2012, 2019) and Holness et al., (2014) highlighted several threatened ecosystem types that are represented in the EBSA. Threatened ecosystem types include the Endangered Namaqua Shelf Edge and Vulnerable Southern Benguela Rocky Shelf Edge and Southern Benguela Sandy Shelf Edge. This implies that, although there are sufficient areas of intact biodiversity of these habitats to meet the conservation targets, there has been habitat degradation and some loss of ecosystem processes. The importance of the area for the conserving the threatened ecosystem types represented in the Orange Seamount and Canyon Complex was emphasized by Majiedt et al. (2013) and Holness et al. (2014).

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**

Justification

The threatened status of three ecosystem types (Sink et al., 2012, 2019) implies that degradation and some loss of ecosystem processes has been associated with these ecosystem types in other areas, and therefore that they are vulnerable to the effects of human activities. Seamounts, submarine canyons and the shelf break, all of which occur in the area, are all vulnerable and sensitive ecosystems (FAO 2009). Seamount communities are particularly vulnerable to human activities (e.g. trawling) due to intrinsic biological factors that are characteristic of seamount-associated species (e.g. slow growth rate, late maturation), with the likelihood of very long time scales of recovery if damaged (Gjerde & Breide, 2003, Clark et al., 2006).

C5: Biological productivity **Medium**

Justification

The area is at the eastern limit of the Benguela upwelling region (Hutchings et al., 2009), where the pelagic environment is characterized by medium productivity, and moderate chlorophyll levels (Lagabrielle 2009). However, shelf edge environments (e.g. Springer et al., 1996, Piatt et al., 2006, Coleman et al., 2011), seamounts (e.g. Moore et al., 2002, Pitcher et al., 2011) and submarine canyons (e.g. de Leo et al., 2010, McClain and Barry 2010), all of which occur in the proposed area, are associated with elevated productivity and biomass levels, spanning several trophic levels. Tripp seamount on the Namibian side of the border supports a productive pole-and-line tuna fishery (FAO 2007).

C6: Biological diversity **High**
Justification
Based on spatial modelling of 20-30 years of distribution and abundance data from demersal trawl surveys in Namibian and South African waters, Kirkman et al. (2013) identified the area as a persistent hotspot of species richness for demersal fish species. This may be linked to the habitat heterogeneity of the area, including the shelf edge, the presence of a shelf-indenting submarine canyon and the close proximity of a seamount. Further, 487 species have been recorded in the area (OBIS 2017). Diversity of ecosystem types is also high, with 11 ecosystem types occurring in the area (Sink et al., 2012; Holness et al., 2014).

C7: Naturalness **High**
Justification
The area on the South African side is one of the few areas where the threatened ecosystem types are in good condition (relatively natural/pristine), largely because it has been subjected to relatively low levels of anthropogenic pressures (Sink et al., 2011, 2019). The importance of the area for the conservation of the threatened ecosystem types represented there has therefore been emphasized by Majiedt et al., (2013). Although there are impacted areas, much of the Namibian portion of the area is also in good condition (Holness et al., 2014). Overall, 73% is in good ecological condition, 18% is fair and 9% is poor.

Status of submission

The Orange Shelf Edge EBSA (now Orange Seamount and Canyon Complex) was recognized as meeting EBSA criteria by the Conference of the Parties. The revised boundaries and description have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description.

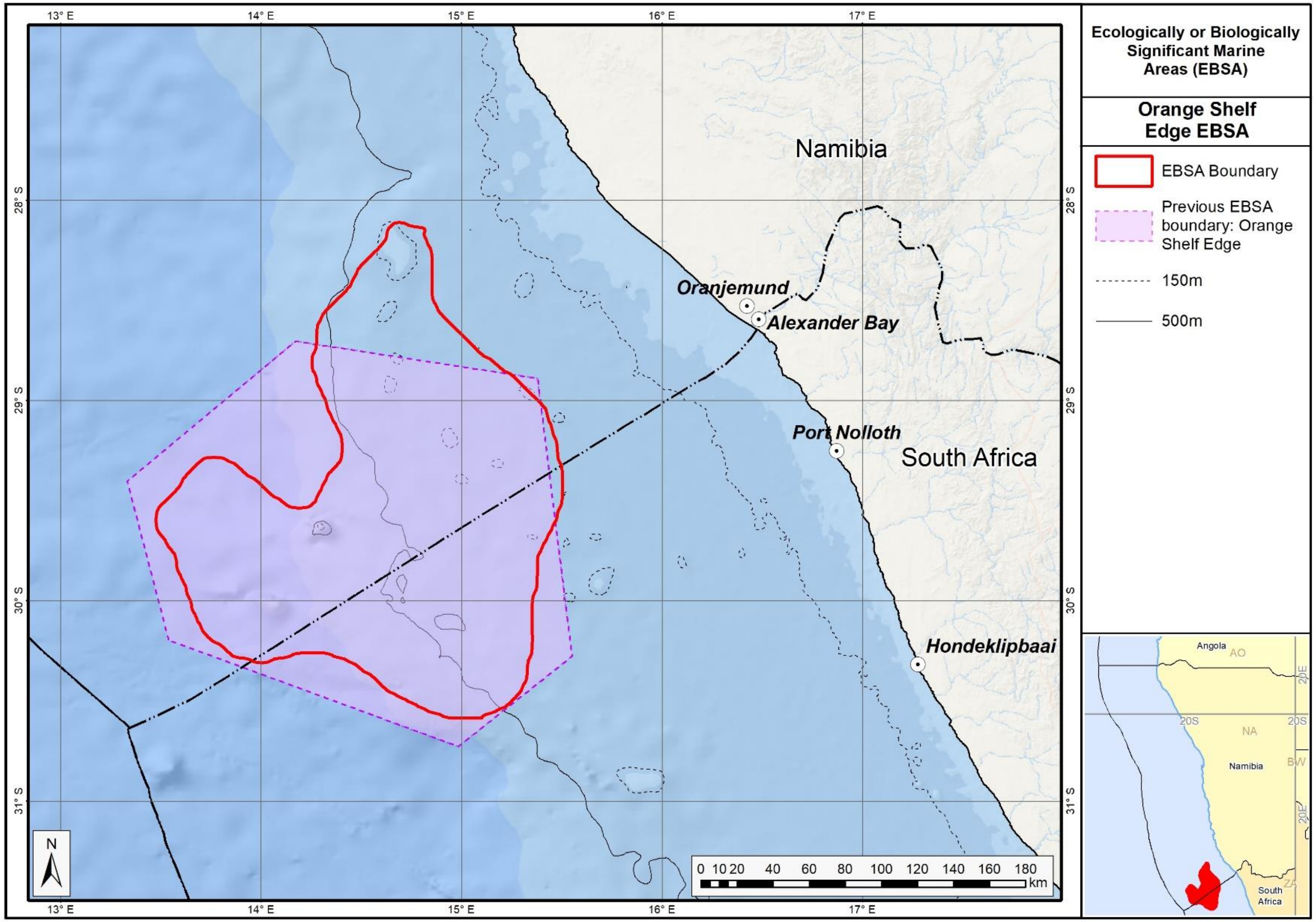
Motivation for Revisions

Only slight revision of the EBSA description was done since no new research has been carried on this area since its original adoption in 2014. Small additions, such as biodiversity information from OBIS and updated South African assessments were made, but none of these edits were significant enough to drive a change in the EBSA criteria rankings. A supplementary table of the ecosystem types represented in the EBSA and their associated threat status was also included.

The biggest change to the EBSA was a significant refinement of the EBSA delineation. This was done to focus more closely the EBSA on the key biodiversity features that underpin its EBSA status. The delineation process included an initial stakeholder workshop, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning (SCP) and Multi-Criteria Analysis methods. The features used in the analysis were:

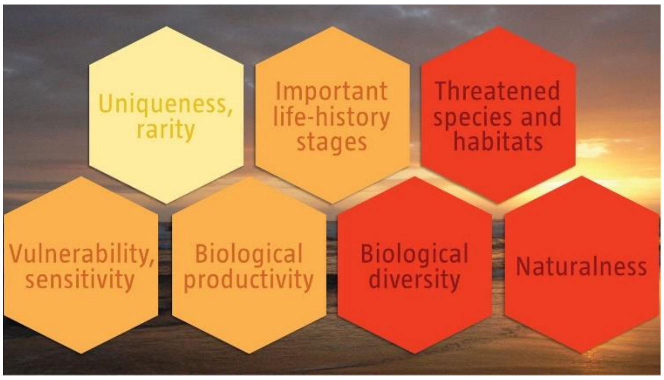
- Threatened Benthic and Coastal Ecosystems (Holness et al., 2014; Sink et al., 2012, 2019). The analysis focussed on the inclusion of the most threatened ecosystem types found in the area. These types are highlighted in the table in the Other relevant website address or attached documents section. Additional weight was given to the priority shelf edge habitats which are core to the EBSA description.
- Areas of highest fish diversity from Kirkman et al. (2013) were included.
- Areas of high relative naturalness identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- Key physical features such as seamounts and canyons from the BCC spatial mapping project (Holness et al., 2014), GEBCO data (GEBCO Compilation Group 2019), and global benthic geomorphology mapping (www.bluehabitats.org, Harris et al., 2014).
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as primary and secondary focus areas identified in the SCP undertaken for the BCLME by Holness et al. (2014).

The multi-criteria analysis resulted in a value surface. The cut-off value (used to determine the extent of the EBSA) was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map below were validated in a series of national (in both South African and Namibia) and regional (BCC) meetings.



The revised Orange Shelf Edge EBSA in relation to its original boundary.

Status Assessment and Management Options

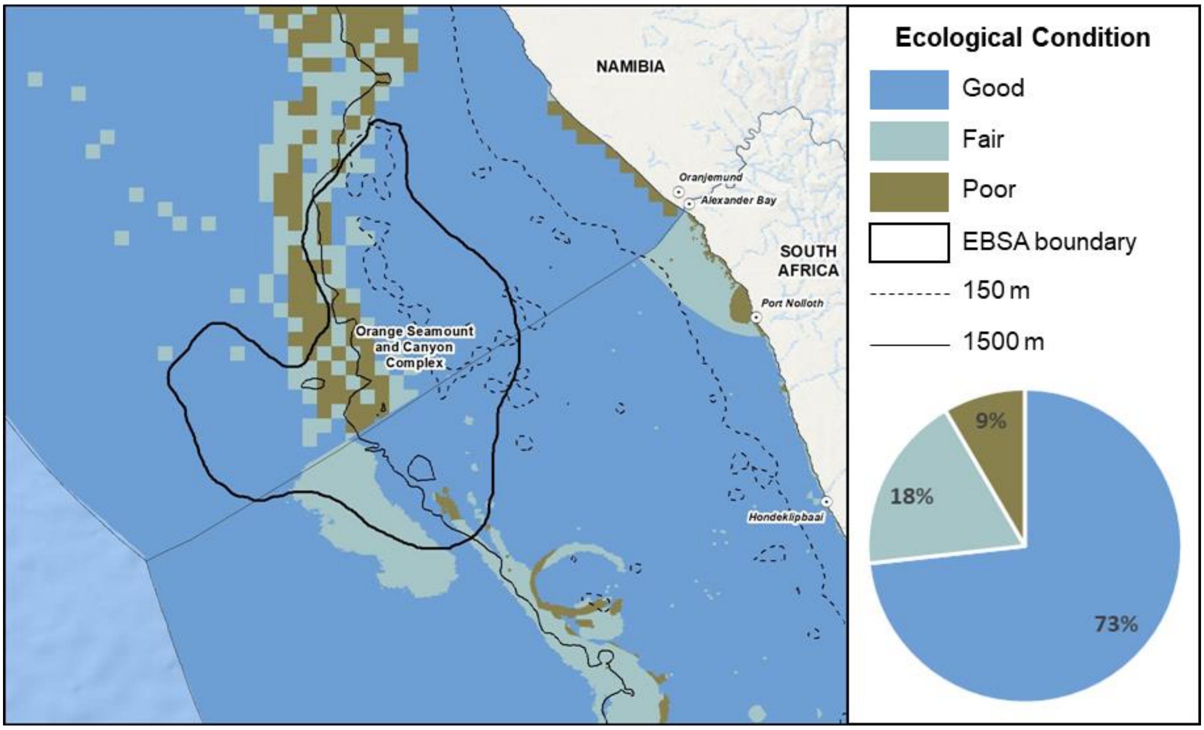


***Orange Seamount and Canyon Complex** is an area of high habitat heterogeneity that includes Tripp Seamount and a shelf-indenting canyon. Consequently, it's a persistent hotspot of demersal fish biodiversity. It's at the eastern limit of the Benguela upwelling on the outer shelf, so productivity is moderate. There are three threatened ecosystem types in this area, with vast portions that are still in a natural state.*

EBSA criteria coloured by rank for Orange Seamount and Canyon Complex: red=high, orange=medium, yellow=low.

Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

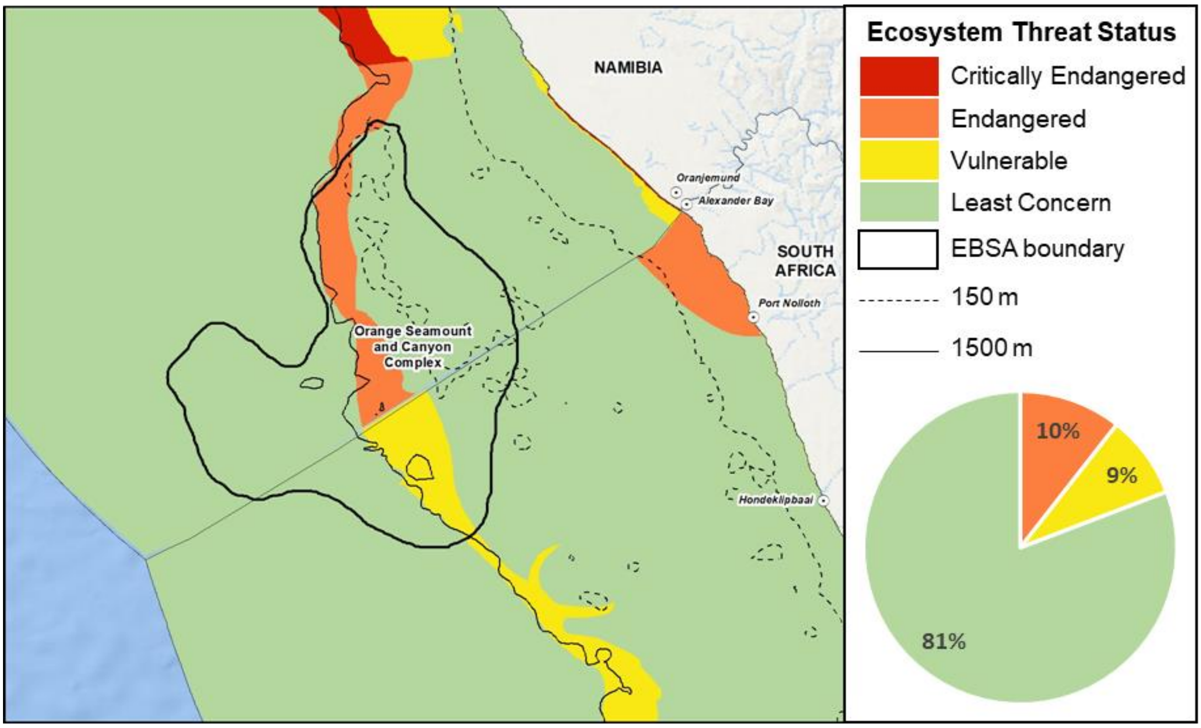
Orange Seamount and Canyon Complex has a myriad of features and ecosystem types that need to be protected for the area to maintain the characteristics that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for threatened species and habitats, biological diversity, and naturalness. There are 11 ecosystem types represented, of which the seamount, canyon and rocky shelf ecosystem types contain fragile species that are sensitive to damage. Given the high habitat heterogeneity, from the seamount to canyon, and spanning the shelf edge and slope, the site supports diverse communities and is a persistent hotspot for demersal fish. In South Africa, it's one of the only places where two threatened ecosystem types are in a natural or near-natural state.



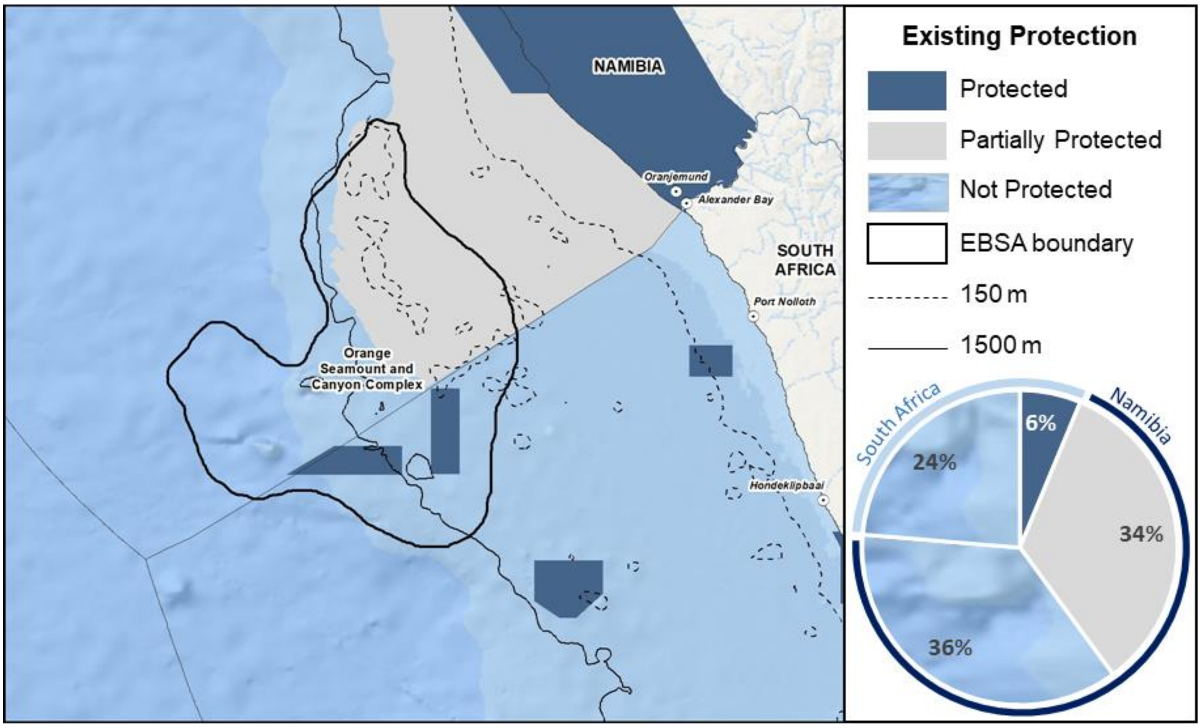
Orange Seamount and Canyon Complex proportion of area in each ecological condition category.

Orange Seamount and Canyon Complex is largely in good ecological condition (73%), with some portions that are in fair (18%) and poor (11%) ecological condition. Consequently, most of the area is

Least Concern (81%), with some areas along the shelf edge being Endangered (10%) and Vulnerable (9%).



Orange Seamount and Canyon Complex proportion of area in each ecosystem threat status category.



Orange Seamount and Canyon Complex proportion of area in a Marine Protected Area (MPA).

Protection of features in MPAs on the South African side has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area within reserves increasing by an order of magnitude from no protection to 6% of the overall EBSA extent (which is 20% of the South African portion of the EBSA extent). In Namibia, the EBSA extent is split between no protection (36%) and partial protection (34%). Thus overall, 40% of the EBSA has some form of protection, and 60% is not protected. Strengthening protection in the EBSA is critical because most ecosystem types are either poorly or not protected.

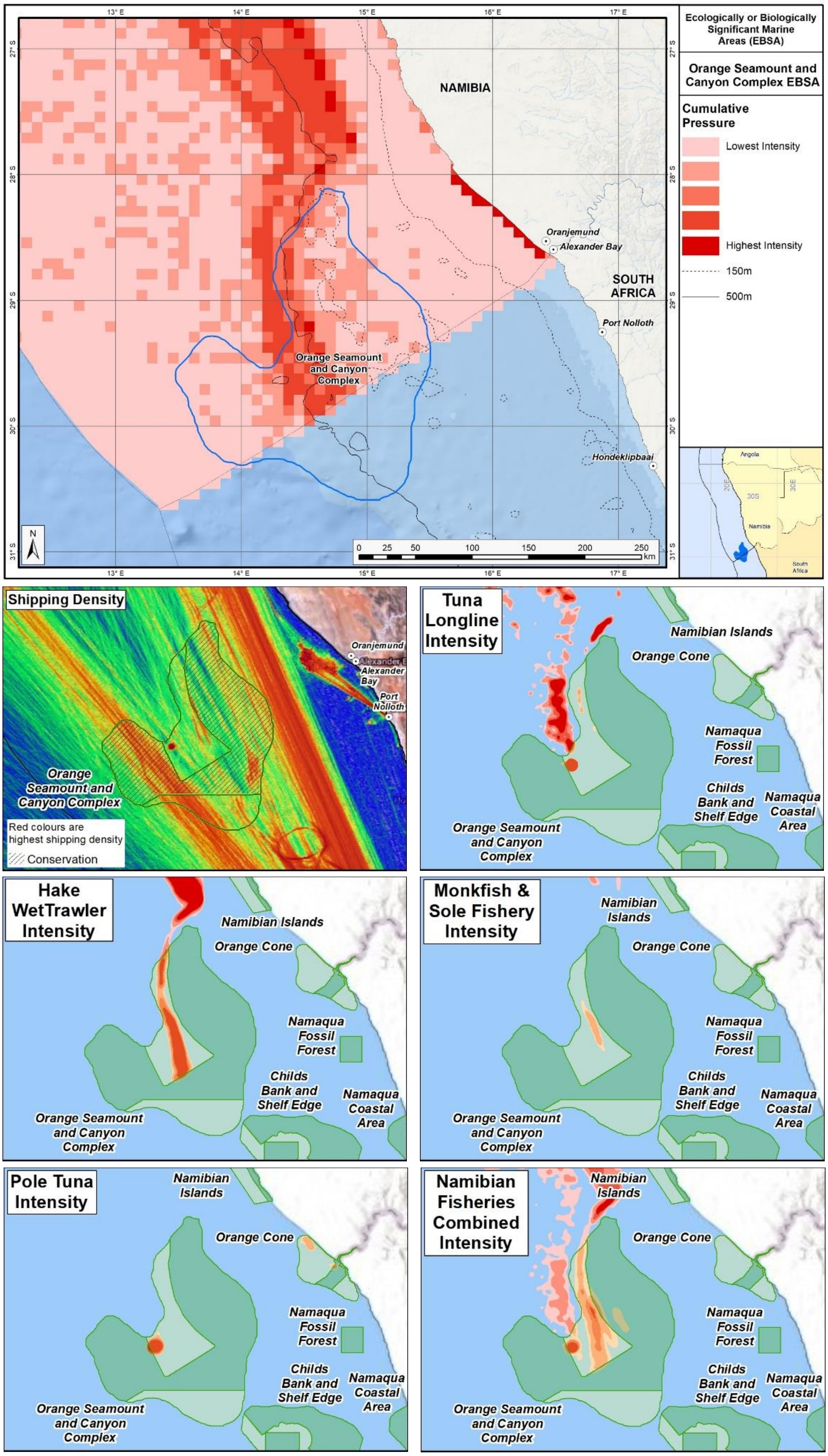
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Namaqua Outer Shelf	LC	MP	93.8	6.1	0.1
Namaqua Shelf Edge	EN	MP	26.9	36.4	36.7
Namib Lower Slope	LC	NP	98.3	1.7	0.0
Namib Seamount	LC	NP	62.2	27.2	10.6
Namib Upper Slope	LC	NP	39.3	32.0	28.8
Southeast Atlantic Lower Slope	LC	NP	97.1	2.9	0.0
Southeast Atlantic Mid Slope	LC	PP	8.4	91.6	0.0
Southeast Atlantic Upper Slope	LC	PP	46.4	53.6	0.0
Southern Benguela Rocky Shelf Edge	VU	MP	81.1	0.0	18.9
Southern Benguela Sandy Outer Shelf	LC	PP	96.5	3.5	0.0
Southern Benguela Sandy Shelf Edge	VU	PP	95.1	4.9	0.0
Other Features					
• Persistent hotspot of demersal fish biodiversity • Canyon • Fragile species associated with rocky shelf edge, canyon and seamount					

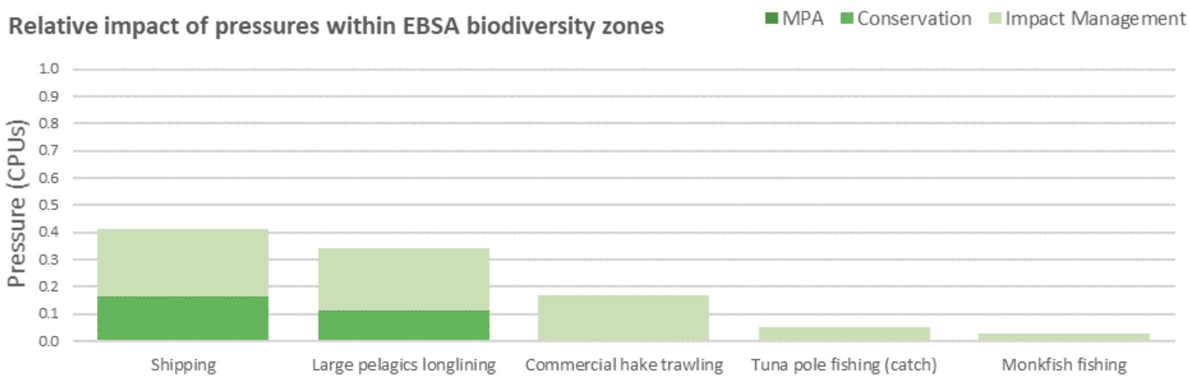
Given that this is a transboundary EBSA shared between Namibia and South Africa, the analysis of pressures and EBSA management is done separately per country to account for the differences in types of pressures and national management options. The following sections are thus repeated, first for Namibia and then South Africa.

Relevant Pressures and Activities (impact, extent): Namibia

- Both countries have five key activities operating in this EBSA that target similar resources and/or have the same impact on the EBSA features. Shipping is the only activity that covers the entire EBSA extent and has the highest cumulative pressure profile in both countries.
- In Namibia, key pressures that most directly impact the features for which the EBSA is described include: commercial hake trawling (general, wet and freezer), pelagic longlining, tuna pole fishing, monkfish fishing, and shipping. These various fisheries will need to be managed particularly well in order to protect the fragile benthic biodiversity and fish assemblages for which this EBSA is recognised. In almost all cases, the greater portion of each fishery is located in the Impact Management Zone.
- Pressures that don't occur in the EBSA but are present in Namibia include: ammunition and other dumping, benthic longlining, boat-based linefishing, boat-based recreational fishing, channel dredging, crab harvesting, dredge-spoil dumping, mariculture and guano harvesting, midwater trawling (horse mackerel), ports, port anchorage areas, rock lobster harvesting, salt pans, shipping refuge (disabled ships), shore-based fishing, and wastewater discharge.



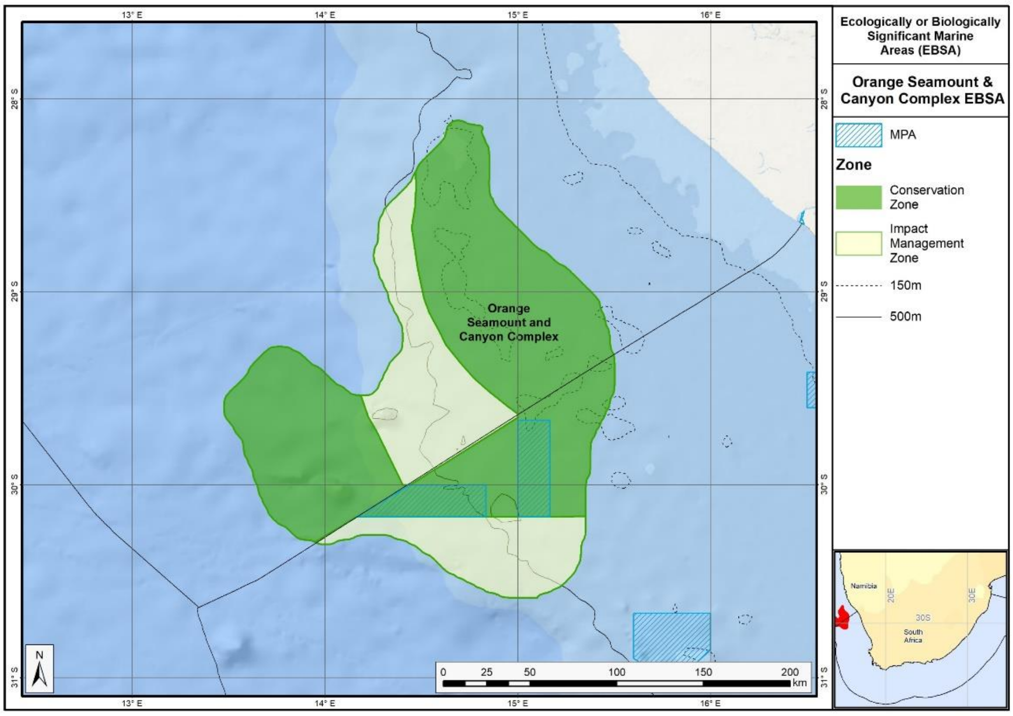
Map of cumulative pressure (top) and maps of the most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced. As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are no MPAs in the Namibian portion of the EBSA.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones. MPAs are overlaid in blue hatching.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent[1] or prohibited[2]) of activities currently present in the EBSA[3] in the Conservation and Impact Management Zones

Uses (including activities and pressures)	**Conservation Zone: EBSA areas requiring strictest protection**	**Impact Management Zone: Other EBSA Areas requiring some protection or place-specific management**
Bottom trawling (freezer trawlers)	**Prohibited**	**Consent**
Bottom trawling (general)	**Prohibited**	**Consent**
Ecotourism (regulated nature based and strictly controlled)	**Primary**	**Primary**
Military exercises and testing	**Prohibited**	**Consent**
Mining	**Consent**	**Consent**

Non-consumptive tourism and recreation	Consent	General
Pelagic longlining	Consent	Consent
Petroleum extraction	Consent	Consent
Renewable energy installations	Prohibited	Consent
Seismic surveys and mining exploration	Consent	Consent
Shipping lane	Consent	General
Small pelagics fishing	Prohibited	Consent
Undersea cables and pipelines	Consent	Consent

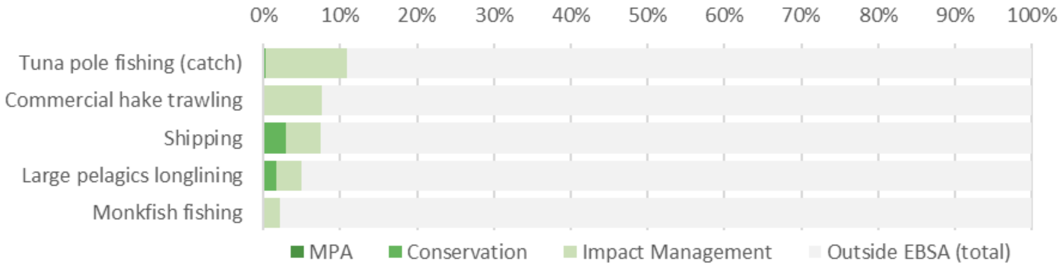
[1]*Consent: An activity which can continue in this zone subject to specific regulation and control.*
[2]*Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.*
[3]*Note that activities present in South Africa that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).*

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping Benthic longlining Boat-based linefishing Boat-based recreational fishing Channel dredging Crab harvesting	Dredge-spoil dumping Mariculture Midwater trawling (horse mackerel) Ports Port anchorage areas	Rock lobster harvesting Salt pans Shipping refuge (disabled ships) Shore-based fishing Wastewater discharge
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under the other appropriate legislation.		
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)		

Activity Evaluation Per Zone: Zoning Feasibility

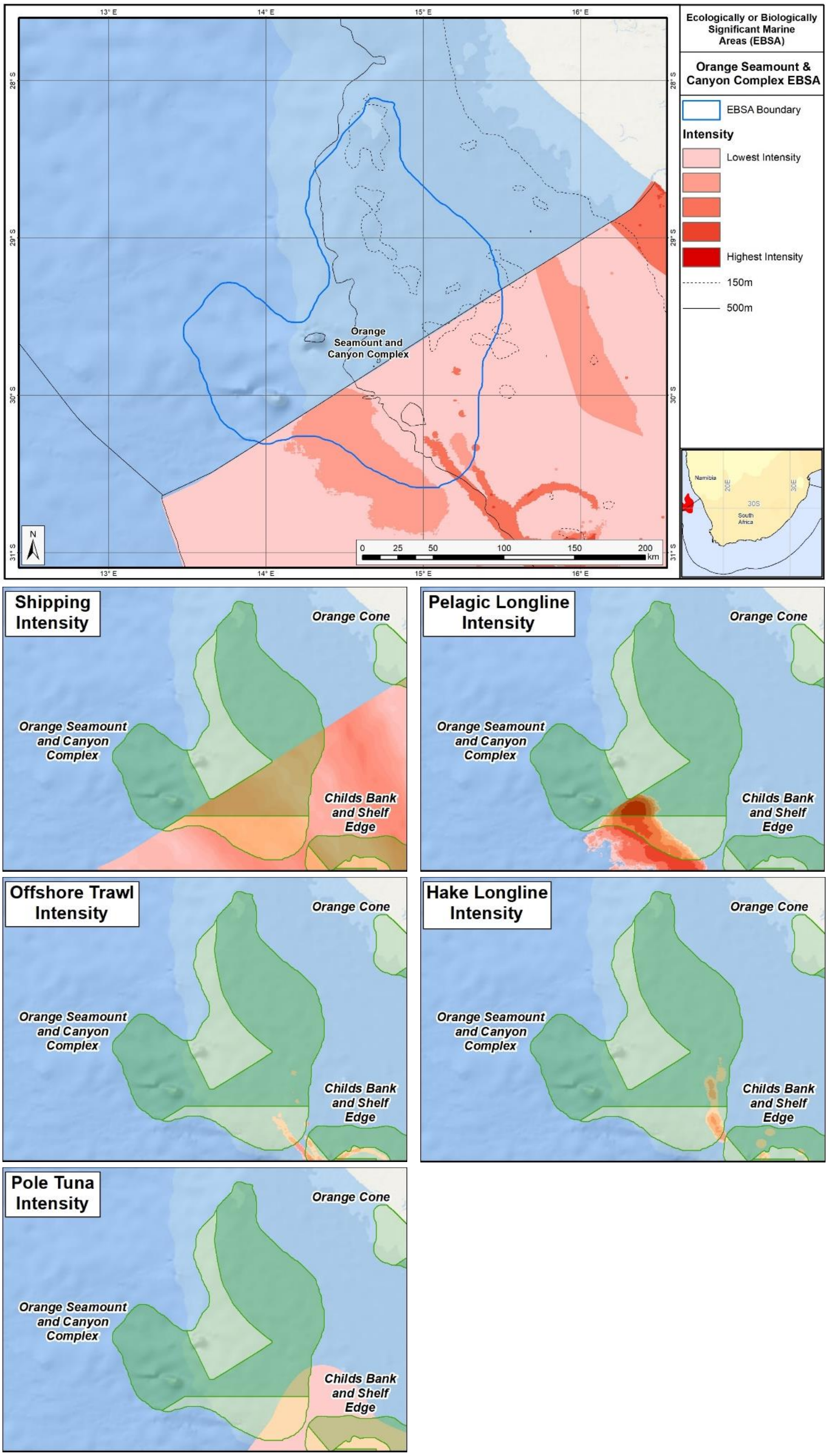


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

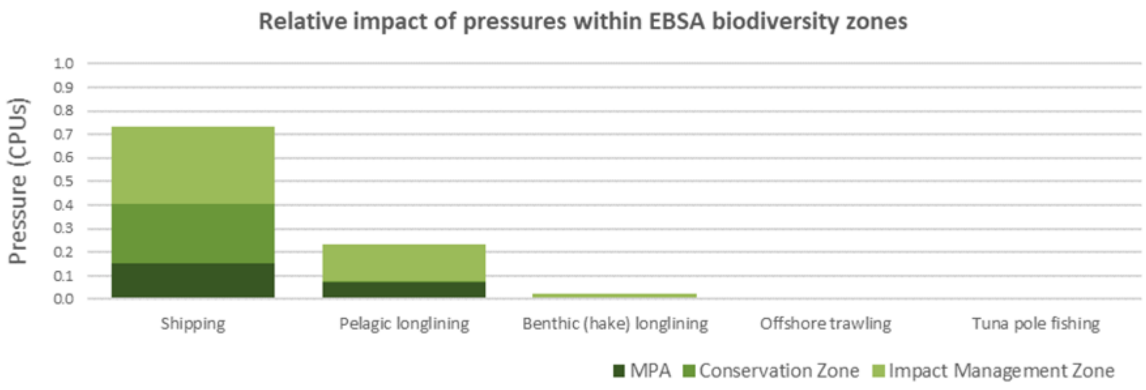
Tuna pole fishing in this EBSA comprises more than 10% of the national footprint of this activity, and is almost exclusively in the Impact Management Zone. This is a non-destructive and selective fishery and is recommended to continue in both zones as a Consent activity. Commercial bottom trawling for hake (wet, freezer, general) and monkfish is conversely a destructive activity and is incompatible with the management objectives with the Conservation Zone. It is therefore recommended to be Prohibited in that zone, but could be accommodated as a Consent activity in the Impact Management Zone. Pelagic longlining for species such as tuna is not a destructive fishery and is therefore recommended to continue as a Consent activity in both EBSA zones. Note, though, that this fishery often has high bycatch rates, and mitigation measure to limit impacts are recommended to be included as part of the regulations and controls for this activity, especially in the Conservation Zone. Shipping can continue in both the Conservation and Impact Management Zones under current general rules and legislation, however, there might need to be some control and regulation for shipping lanes in the Conservation Zone, where it is recommended to be a Consent activity. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones. Thus, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

Relevant Pressures and Activities (impact, extent): South Africa

- Five pressures are present in the South African portion of the EBSA, including: shipping, pelagic longlining, offshore trawling, benthic (hake) longlining, and tuna pole fishing. These four fisheries will need to be managed particularly well in order to protect the fragile benthic biodiversity and fish assemblages for which this EBSA is recognised. In all cases, the greater portion of each fishery is in the Impact Management Zone.
- Pressures that don't occur in the EBSA but are present in South Africa include: abalone harvesting, alien invasive species, beach seining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, inshore trawling, kelp harvesting, linefishing (commercial and recreational), mariculture, mean annual runoff reduction, midwater trawling, mining (prospecting and mining), naval dumping (ammunition), oil and gas (exploration and production), oyster harvesting, ports and harbours, prawn trawling, recreational shore angling, shark netting, small-pelagic fishing, south coast rock lobster harvesting, squid fishing, subsistence harvesting, wastewater discharge, west coast rock lobster harvesting; noting that some of these are coastal pressures that do not apply to offshore EBSAs.



Map of cumulative pressure (top) and maps of the five most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



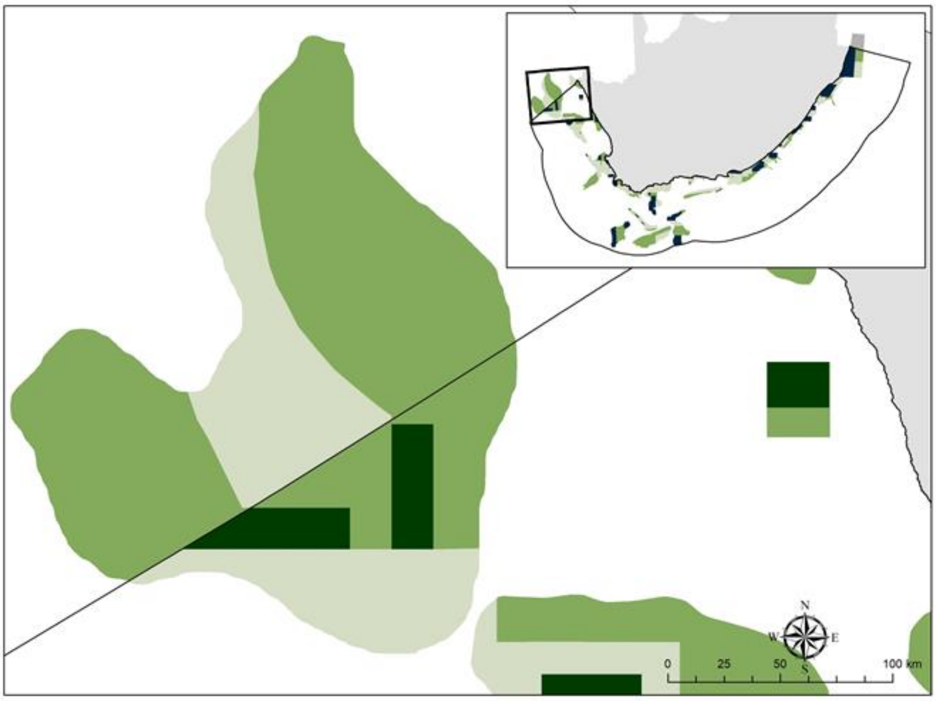
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that tuna pole fishing comprises <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. It also includes one MPA that is wholly within the EBSA: Orange Shelf Edge MPA. The activities permitted within this MPA are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

Orange Shelf Edge MPA (proclaimed 2019)	https://www.environment.gov.za/sites/default/files/legislations/nempaa_orangeshelfedgemarine_regulations_g42479gn791.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green.

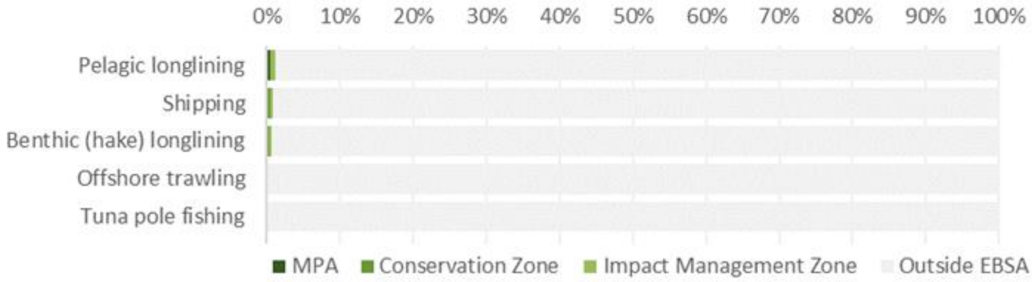
Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Restricted zone			
	Marine Protected Area: Controlled zone			
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

Activity Evaluation Per Zone: Zoning Feasibility

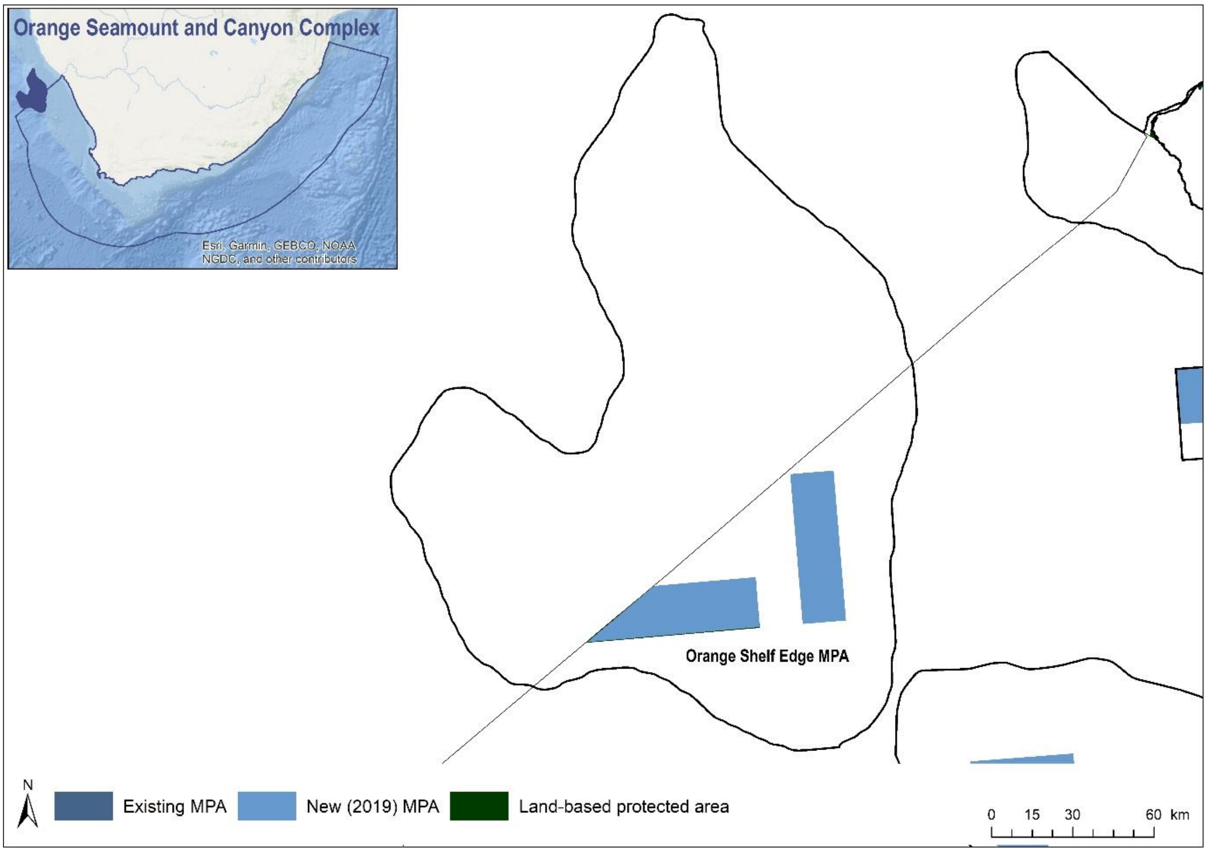


Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

The EBSA includes a very small fraction of the respective national footprints of the linefisheries that are present, namely pelagic longlining, benthic (hake) longlining and tuna pole fishing, and the greater proportion of these activities is within the Impact Management Zone. These fisheries are conditionally compatible with the Biodiversity Conservation Zone and compatible with the Environmental Impact Management Zone and therefore it is recommended that these fisheries continue in both zones provided stricter controls are put in place in the Conservation Zone. Offshore trawling is also present in a very small portion of the EBSA. This activity is not compatible with the Biodiversity Conservation Zone but is conditionally compatible in the Environmental Impact Management Zone. It is therefore recommended to continue in the Environmental Impact Management Zone provided stricter controls are put in place, and to be not permitted in the Biodiversity Conservation Zone (current zonation needs to be revised to exclude a very small area of trawling if it is truly present and the overlap is not an artefact of data resolution). Shipping is not managed by EBSA zones and thus is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the activities that are present in this EBSA.

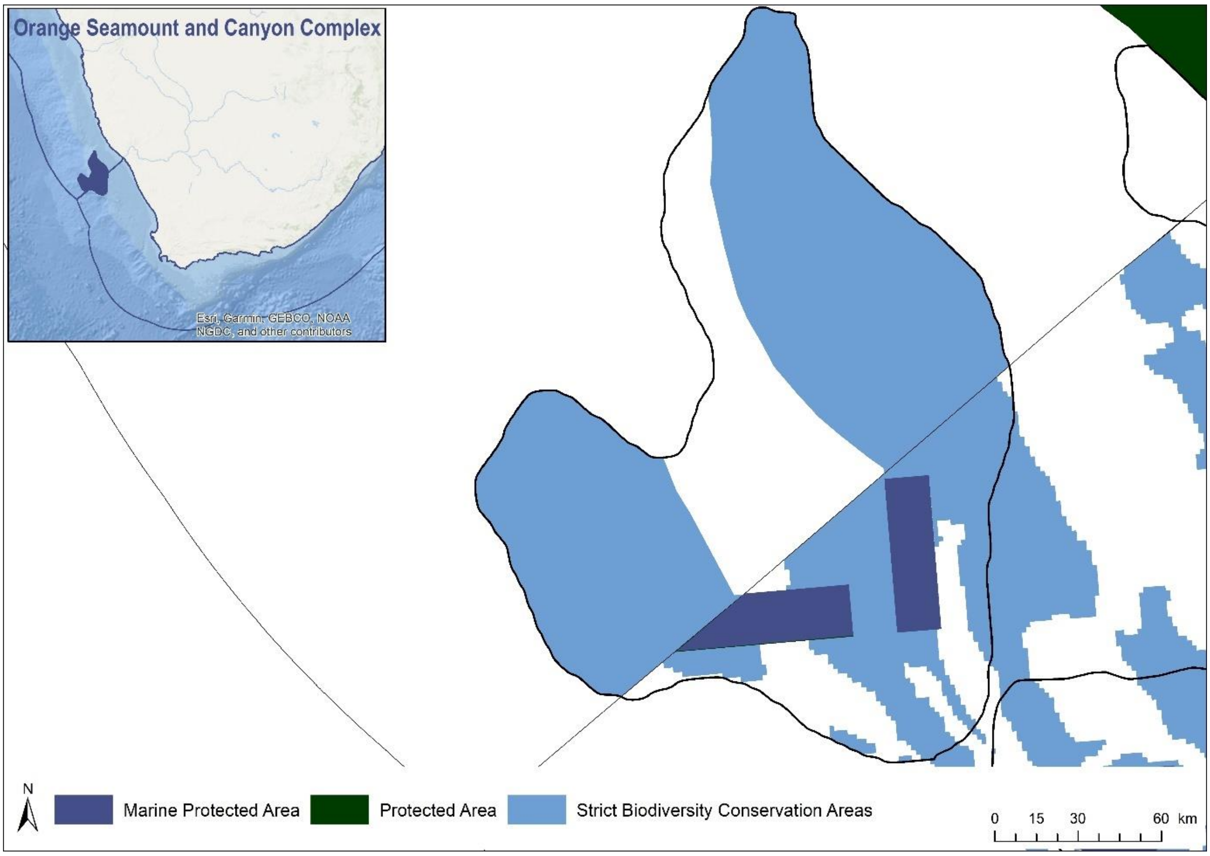
Management Recommendations for Marine Protected Areas

Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the Orange Shelf MPA in 2019 in South Africa. It is recommended that full operationalisation of the new MPA is implemented, including a management plan, resourcing, and adequate staffing and law enforcement.



Marine protected areas (MPAs) in the Orange Seamount and Canyon Complex EBSA. Orange Shelf Edge MPA comprises two parts, both of which are within the EBSA.

Consolidation and further potential MPA expansion within the EBSA should be explored, particularly in the Strict Biodiversity Conservation Areas, to ensure that the features for which the EBSA was described receive adequate protection. Ideally, transboundary MPAs that span the international border should be implemented to secure the features that are not restricted to the individual countries. See Future Process below for more details.



Marine and land-based protected areas in the area surrounding Orange Seamount and Canyon Complex (from DFFE 2021, UNEP-WCMC & IUCN, 2022), and the EBSA Strict Biodiversity Conservation Areas where potential MPA expansion within the EBSA should be focused.

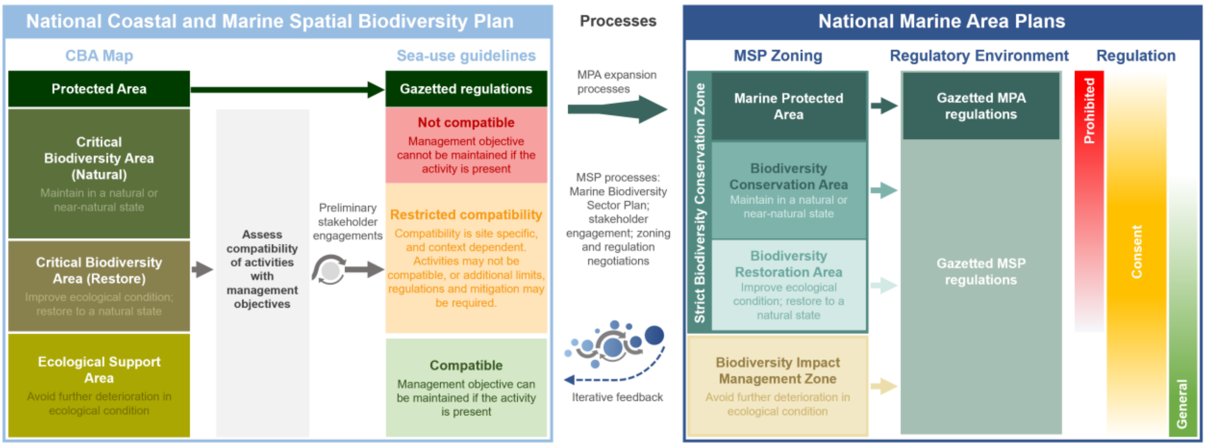
Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Although Marine Area Plans are being developed in each country separately, regional alignment through the BCC is underway to ensure that the management recommendations within the transboundary EBSAs are congruent across the border. In Namibia, the management recommendations proposed for Orange Seamount and Canyon Complex, outlined above, are the basis for the biodiversity sector's input into the southern Marine Area Plan. The current MSP focus in Namibia regards the central Marine Area Plan, and although some progress has been made for MSP within Orange Seamount and Canyon Complex in terms of regional alignment (particularly for the sea-use guidelines), the southern plan will be developed in due course.

Following the initial management recommendations proposed for Orange Seamount and Canyon Complex, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector

Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

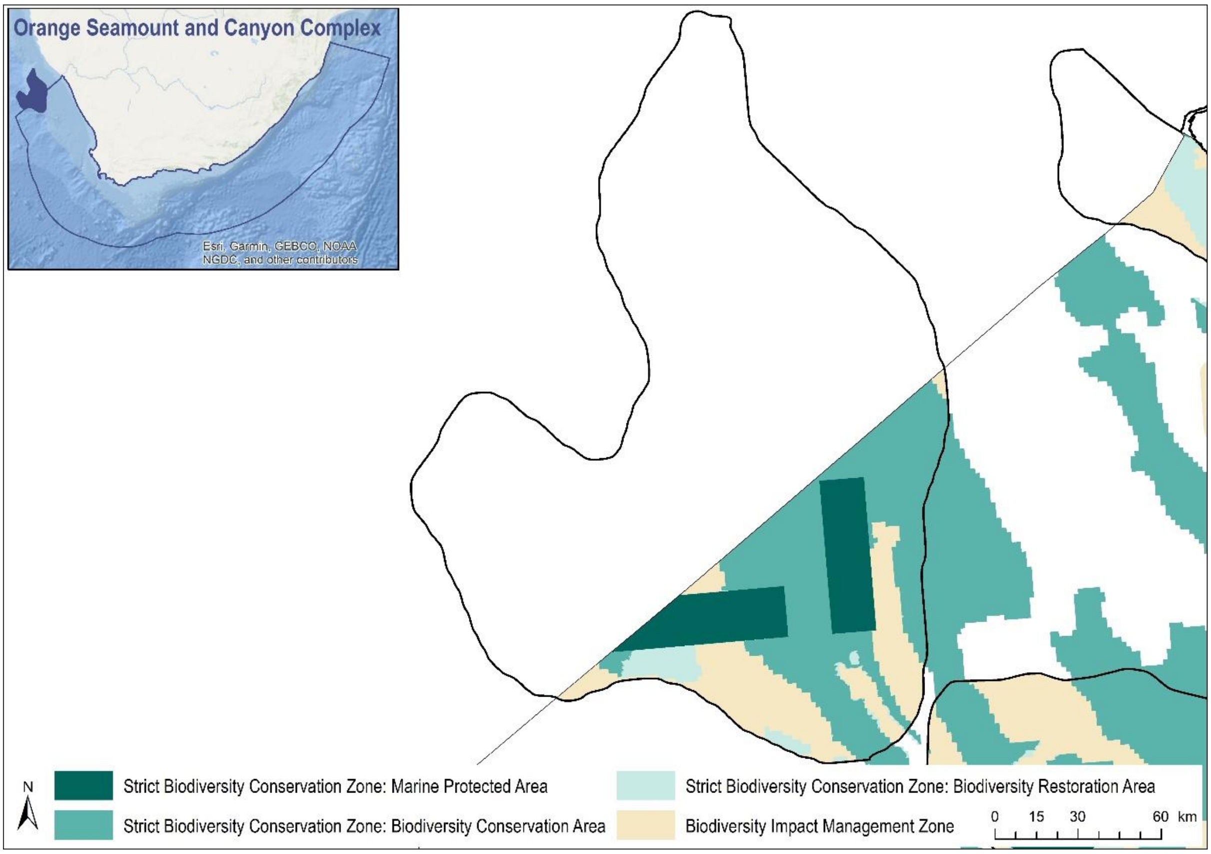


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Management Zone. It is recommended that there is full implementation and operationalisation of these zones as part of MSP. Sub-categories are yet to be developed in Namibia as part of the southern Marine Area Plan, but are likely to follow a similar approach to that for Namib Flyway and Namibian Islands in the central Marine Area Plan. Until then, the proposed zones are as indicated above in the Management Interventions Needed for the EBSA.

In South Africa, the Strict Biodiversity Conservation Zone has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Orange Seamount and Canyon Complex, and present more refined management recommendations than those that were initially proposed. Orange Shelf Edge MPA, comprising two parts, is the only MPA in this EBSA. It is managed according to the gazetted management regulations for this MPA. The rest of the Strict Biodiversity Conservation Zone is primarily a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. A much smaller portion comprises a Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Updated proposed biodiversity zones for the Orange Seamount and Canyon Complex EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the activities with the management objective of each of the proposed biodiversity zones. As part of the regional alignment and development of the NCMSBP, the sea-use gudelines for both countries have advanced the initial recommendations proposed above.

For example, where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility in South Africa was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). This also helped to inform the assessment of activity compatibility in Namibia. Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification broadly followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process and regional alignment processes. It is recommended that the sea-use guidelines, as proposed below, are implemented as part of the respective Marine Area Plans in Namibia and South Africa.

Sea-use guidelines for Orange Seamount and Canyon Complex in Namibia. List of all sea-use activities, grouped by their broad Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of the Strict Biodiversity Conservation Area and Biodiversity Impact Management Area. Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad MSP Zone	Activities	MPA	Strict Biodiversity Conservation Area	Biodiversity Management Area
Biodiversity	Conservation activities (including MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y
Marine Tourism	Non-consumptive tourism and recreation		R	Y
	Ecotourism (regulated nature based and strictly controlled)		R	Y
	Recreational fishing (includes shore and recreational skiboat based)		R	Y
Heritage Conservation	Heritage sites		Y	Y
Commercial Fishing	Commercial Linefishing (e.g., snoek 20-m vessels)		R	Y
	Benthic longlining (e.g., hake, kingklip) (Not current activity)		R	Y
	Midwater trawling (Horse Mackerel)		R	Y
	Pelagic longlining		R	Y
	Commercial Pelagic Purse-seine (small pelagics) fishing		R	Y
	Crustacean trap-based harvesting (crabs)		R	Y
	Crustacean trap-based harvesting (rock lobster)		R	Y
	Bottom trawling (non-freezer)		N	R
	Bottom trawling (freezer trawlers)		N	R
Small-scale Fishing	Shore-based fishing (subsistance, artisanal)		R	Y
Mariculture	Mariculture		N	R
Mining	Mineral resource extraction (mining)		N	R
	Salt extraction (existing - man made)		R	R
	Salt extraction (new - man made)		N	R
Petroleum	Seismic surveys and mining exploration		R	R
	Petroleum extraction		N	R
Renewable Energy	Renewables (e.g. offshore wind, wave, solar)		N	R
Military	Military exercises and testing		N	R
Ammunition Dumping	Ammunition and other dumping		N	N
Maritime Transport	Shipping lane (designated lanes in and around ports)		N	Y
	Shipping (General ship movements)		Y	Y
	Shipping refuge (temporarily disabled ships)		N	R
	Bunkering at Sea		N	R
	Ports (existing, anchorage and new infrastructure in port zone)		N	Y
	Ports (new)		N	R
	Channel dredging		N	R
	Dredge-spoil dumping (port channel dredging)		N	R
Underwater Infrastructure	Cables and pipelines (undersea)		R	Y
Land-based Infrastructure	Coastal Development - NEW (jetty, sea walls, breakwater etc.)		N	R
Disposal	Wastewater and treated effluent discharge - existing (including desalination)		R	R
	Wastewater and treated effluent discharge - new (including desalination)		N	R

Sea-use guidelines for Orange Seamount and Canyon Complex in South Africa. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, it is noted that much more baseline research and ongoing monitoring is needed to ensure that the key features of the EBSA are well managed. This is particularly important because the EBSA is adjacent to Namibia's Kudu gas field, and the area is subject to ongoing oil and gas exploration.

Future Process

There needs to be full operationalisation and practical implementation of the Orange Shelf MPA, including a management plan, staffing, and resources. There also needs to be full operationalisation and practical implementation of the proposed zoning in South Africa and Namibia's marine spatial plans, with gazetted management regulations following the proposed management recommendations outlined above. MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. Regional alignment through the BCC should continue, which could also facilitate exploration of transboundary MPAs.

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Orange Cone

Revised EBSA Description

General Information

Summary

The Orange Cone is a transboundary area between Namibia and South Africa that spans the mouth of the Orange River (South Africa and Namibia's major river in terms of run-off to the marine environment). The estuary is biodiversity-rich but modified, and the coastal area includes 10 threatened ecosystem types: two Critically Endangered, four Endangered and four Vulnerable types. The marine environment experiences slow, but variable currents and weaker winds, making it potentially favourable for reproduction of pelagic species. Furthermore, given the proven importance of river outflow for fish recruitment at the Thukela Banks (a comparable shallow, fine-sediment environment on the South African east coast), a similar ecological dependence for the inshore Orange Cone is likely. Evidence supporting this hypothesis is growing but has not yet been consolidated. Comparable estuarine/inshore habitats are not encountered for 300 km south (Olifants River) and over 1300 km north (Kunene) of this system. The Orange River Mouth is a transboundary Ramsar site between Namibia and South Africa. The river mouth also falls within the Tsau//Khaeb (Sperrgebiet) National Park in Namibia, is under consideration as a protected area by South Africa, and is also an Important Bird and Biodiversity Area. Although there are substantially impacted areas especially on the coast and in the estuary, much of the area remains in a natural state. In summary, this area is highly relevant in terms of: 'Uniqueness or rarity', 'Importance for threatened, endangered or declining species and/or habitats' and 'Special importance for life history stages of species'.

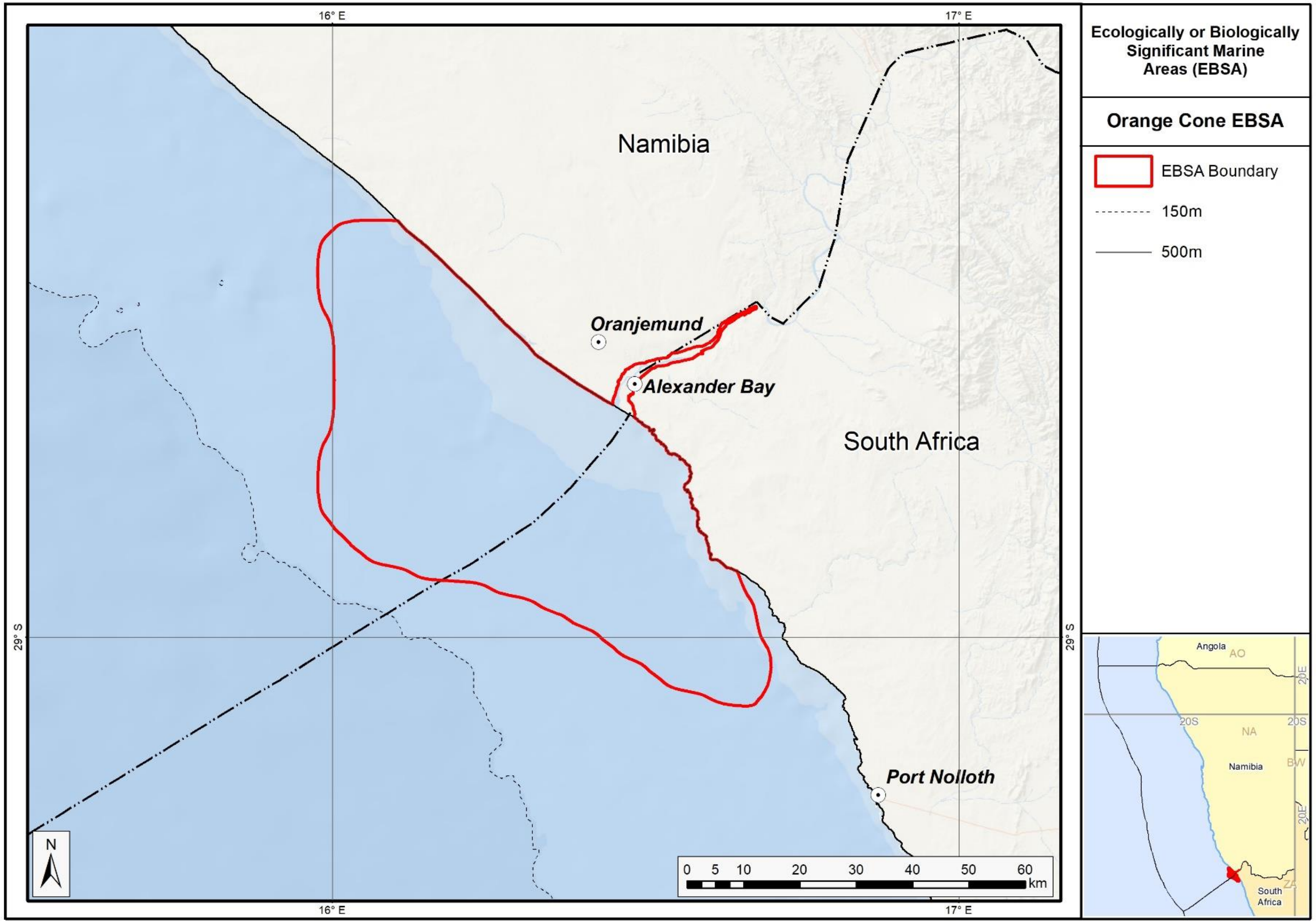
Introduction of the area

The Orange Cone spans the coastal boundary between South Africa and Namibia. The Orange River estuary extends approximately 10 km inland of the sea in a hydrological sense, although estuarine-dependent species migrate much further upstream. The estuary is substantially modified but under rehabilitation. Boundaries of the marine area that is ecologically coupled to the estuary are not accurately known, but could be extensive: seasonally and inter-annually, the marine habitat affected by freshwater outflow varies from a few kilometres to hundreds of kilometres in the longshore direction during floods, particularly southwards (Shillington et al., 1990). This area is located 50 km north and south of the Orange River, extending 30 - 45 km offshore, and includes the full extent of the estuary. There are 16 marine and coastal ecosystem types represented in the area (Sink et al., 2012, 2019; Holness et al., 2014). The associated pelagic environment is characterized by upwelling, giving rise to cold waters with high productivity/chlorophyll levels (Lagabrielle 2009). However, the winds in the area are weaker compared to that to the north or south of the river mouth, leading to less local upwelling (Boyd, 1988). The site is presented as a Type 1 EBSA because it contains "Spatially stable features whose positions are known and individually resolved on the maps" (sensu Johnson et al., 2018).

Description of the location

EBSA Region

South-Eastern Atlantic



Revised delineation of the Orange Cone EBSA.

Description of location

The Orange River estuary is located at 29°S and forms the boundary between South Africa and Namibia. The northern and southern boundaries of the Orange Cone EBSA are located 50 km north and south of the Orange River, respectively, with the eastern boundary extending 30 – 45 km offshore, and includes the full extent of the estuary. However, the broader area has characteristics of the Orange Cone marine environment as far as 100 km offshore. This EBSA straddles coastal and marine areas within the national jurisdictions of South Africa and Namibia.

Area Details

Feature description of the area

There are 16 ecosystem types represented in this EBSA (Sink et el., 2012, 2019; Holness et al., 2014). The associated pelagic environment is characterized by upwelling, giving rise to cold waters with high productivity (Lagabrielle 2009). However, the winds in the Orange Cone are weaker than those north or south of the area, leading to some stratification (Boyd 1988). Moreover, currents in the inshore region, and indeed over much of the Orange Cone area, have slower speeds than those occurring further north or south, and movements in both upper and lower layers are dominated by diurnal and/or inertial motions (Iita et al., 2001, Largier and Boyd, 2001).

The river and estuary have received substantial research attention over the last decade; the adjacent marine environment much less so, apart from some research during the Large Marine Ecosystem (LME) project from 1995-2000. However, given the proven role of the Thukela River outflow for the recruitment of fish stocks in the adjacent marine area on the South African east coast (Turpie and Lamberth 2010), it is hypothesized that the Orange River plays a similar role on the South African west coast. Although not formally described, evidence is mounting to support this hypothesis, because there are seemingly many relationships between Orange River flow volumes and demersal, pelagic and nearshore fish biomass (S.J. Lamberth, pers.com, unpublished). For example, the sole fishery collapse was associated with a change in local sediment particle size, because it altered burying difficulty and exposure to predators. Also, anchovy (mostly juveniles) appear to be positively correlated with the size of the plume, because the plume probably serves as a turbidity refuge. Furthermore, the conditions in the area are consistent with the criteria proposed for supporting pelagic species' reproduction (Parrish et al., 1983).

Because of a previous lack of research, the boundaries of the marine zone that is ecologically coupled to the estuary were not accurately known, but were thought to be extensive. For example, geological research suggests that the sediment from the Orange River travels as far north as southern Angola (1750 km north of the mouth), and makes up >80% of the dune sand along the Skeleton Coast in Namibia (Garzanti et al., 2014); according to these authors, "this is the longest cell of littoral sand transport documented so far". A particular challenge to determining the river's extent of influence is that the marine habitat affected by freshwater outflow varies greatly both seasonally and inter-annually, from a few to hundreds of kilometres in the longshore direction (mainly southwards) during floods (Shillington et al., 1990). Submarine delta deposits off the mouth of the Orange River extend 26 km offshore, and 112 km alongshore (Rodgers & Rau 2006). The terrigenous material exiting the Orange River has a heterogeneously integrated catchment signal (Hermann et al., 2016) that is generally confined to about 50 km from the shore (Rodgers & Rau 2006). Since the original description of this EBSA, recent work on marine sediments and delineation of muddy sediment associated habitats have allowed a far more accurate delineation of the Orange Cone (Karenyi, 2014; Karenyi et al., 2016). It is largely these new data that were used to refine the Orange Cone EBSA boundary, which was noted in the original description as being an approximation that needed further research so it could be properly delineated. New, fine-scale coastal mapping (Harris et al., 2019) also allowed a more accurate coastal boundary to be delineated, with other recent data also included (e.g., Holness et al., 2014; Sink et al., 2012, 2019).

In terms of uniqueness of habitat (i.e., refuge for estuarine-dependent or partially dependent fish, and birds), approximately similar estuarine and adjacent inshore habitats are not encountered for over 300 km further south to the Olifants River and over 1300 km further north, until the Kunene River (Lamberth et al., 2008, van Niekerk et al., 2008). The fact that the estuary is a declared Ramsar site (Ramsar 2013; note that the adjacent Namibian and South African Ramsar sites were joined into a transboundary site) and an Important Bird and Biodiversity Area (IBA; BirdLife International 2013) is an important recognition of its importance to birds as well as other species. Altogether, 206 species have been recorded in the EBSA, including 4 threatened fish and condricthian species (OBIS 2017).

Feature conditions and future outlook of the proposed area

The impact of reduced and altered flow at the estuary mouth and into the marine environment has had a negative impact on the estuarine habitat, including the salt marsh, which was exacerbated by inappropriate developments associated with mining at the site (van Niekerk and Turpie 2012). The impact of these changes on the marine offshore environment is not yet known. Both the flow regime (as it will reach the mouth and the marine area) and rehabilitation of the estuary and salt marsh area need to be addressed. However, an estuary management plan is in an advanced stage, and protected area status for the estuary is well advanced as well (van Niekerk and Turpie 2012). Regarding the marine and coastal habitats and biodiversity of the area, the coastline and inshore area to 30 m depth is under considerable threat from mining impacts and is currently unprotected (Sink et al., 2012).

Ecosystem threat status has been estimated in South Africa (Sink et al., 2012, 2019) and Namibia (Holness et al., 2014; Table in the Other relevant website address or attached documents section) by assessing the weighted cumulative impacts of various pressures (e.g., extractive resource use, pollution, development and others) on each ecosystem type. These include two Critically Endangered, four Endangered and four Vulnerable ecosystem types, and another one ecosystem type that is Vulnerable. The Critically Endangered status implies that very little (<= 20%) of the total area of the habitats assessed are in natural/pristine condition, and it is expected that important components of biodiversity pattern have been lost and that ecological processes heavily modified. However, within the area, much of the EBSA was assessed to be in good ecological condition (56%), some fair (33%), and a lesser extent (11%) in poor ecological condition.

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Other relevant website address or attached documents

Summary of ecosystem types and threat status for the Orange Cone [data sources: Sink et al. (2019) and Holness et al. (2014)].

Threat Status	Ecosystem Type	Area (km^2)	Area (%)
Critically Endangered	Namaqua Intermediate Sandy Beach	29.7	0.9
	Namaqua Reflective Sandy Beach	3.1	0.1
Endangered	Cool Temperate Large Fluvially Dominated Estuary	30.2	1.0
	Orange Cone Inner Shelf Mud Reef Mosaic	338.8	10.7
	Orange Cone Muddy Mid Shelf	858.0	27.2
	Southern Benguela Reflective Sandy Shore	0.2	0.0
Vulnerable	Namaqua Exposed Rocky Shore	4.9	0.2
	Namaqua Kelp Forest	0.3	0.0
	Namaqua Mixed Shore	2.7	0.1
	Namaqua Inshore	322.9	10.2
Near Threatened	Southern Benguela Intermediate Sandy Shore	0.6	0.0
Least Concern	Namaqua Sandy Mid Shelf	0.5	0.0
	Southern Benguela Dissipative Sandy Shore	1.8	0.1
	Southern Benguela Dissipative-Intermediate Sandy Shore	0.1	0.0
	Namaqua Estuarine Shore	4.3	0.1
	Namaqua Inner Shelf	1560.1	49.4
Grand Total		**3158.3**	**100.0**

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity **High**

Justification

In terms of habitat uniqueness (i.e., refugia for estuarine-dependent or partially estuarine-dependent fish and birds, and freshwater outflow to the marine environment), approximately similar estuarine and adjacent inshore habitat are not encountered for over 300 km further south to the Olifants River, and over 1300 km further north, until the Kunene River (van Niekerk et al., 2008, Lamberth et al., 2008). The marine area is fed by the estuarine outflow, and also has its own oceanographic characteristics in terms of inertial currents and stratification, thus being largely "sheltered" from Benguela System forcing (Boyd 1988, Largier and Boyd 2001) that influences the whole Benguela region. This system is also the longest cell of littoral sand transport that has been recorded to date, with sediment moving as much as 1750 km north to southern Angola, and providing 80% of the sand that comprises the dunes along the Namibian Skeleton Coast (Garzanti et al., 2014).

C2: Special importance for life-history stages of species **High**

Justification

A total of 33 fish species from 17 families have been captured from the Orange River estuary (van Niekerk et al., 2008). Out of these species, 34% showed some degree of estuarine (i.e., euryhaline) dependence, 24% were marine and the remaining 42% were freshwater species. The high diversity and abundance of estuarine-dependant and marine species suggests that this is an extremely important estuarine nursery area, especially for Kob species (van Niekerk and Turpie 2012), and not just a freshwater conduit as previously thought (van Niekerk et al., 2008). Certainly, oceanographic conditions in the area are consistent with the criteria proposed by Parrish et al. (1983) for the reproduction of pelagic species, and the system is also hypothesised to play a similar role to that of the comparable Thukela River/Thukela Banks (on the South African east coast) where the freshwater outflow is proven to support recruitment of fish stocks (Turpie and Lamberth 2010). Evidence is continually mounting to confirm the role of the Orange Cone in supporting key life-history stages. For example, the area is the northern margin of the important west coast nursery ground for pelagic fish species with periodic spawning (Hutchings et al., 2002). The Orange Cone is also an important recruitment/nursery area and one of three primary population components for shallow water hake (Jansen et al., 2016). Furthermore, northern sections of the Orange Cone, particularly a coastal reef called “Mittag”, are important for the Namibian commercial rock lobster fishery (Currie et al., 2008).

The estuary and wetland area are also an important stopover site for migrating shorebirds and other waterbirds, and provides breeding habitat for birds such as White-breasted Cormorants (Crawford et al., 2013) and Cape Cormorants. However, due to the destruction of breeding islands by the 1988 flood, the latter have not bred there since (H. Kolberg pers. obs). The value of the site is recognised internationally with both Ramsar and IBA status. In fact, the Orange River Mouth Wetlands are said to be the sixth most important coastal wetlands for birds, supporting as many as 26000 individuals of 56 species (BirdLife International, 2018).

South of the Kunene River (over 1300 km to the north of the Orange River), the only permanently open estuaries on the west coast of the sub-region include the Orange, Olifants and Berg Rivers (Lamberth et al., 2008). Migration up and down the west coast of southern Africa by marine and estuarine species, e.g., Angolan dusky kob, and west coast steenbras, may be dependent on the availability of warm water refugia offered by these estuary mouths and their plumes, especially during upwelling months (Lamberth et al., 2008).

C3: Importance for threatened, endangered or declining species and/or habitats **High**
Justification
The area is also an important nursery for coastal fish species, such as kob (van Niekerk and Turpie 2012), which are overexploited (Mann 2000). The estuary includes important breeding habitat for Endangered Cape Cormorants (Crawford et al., 2016), and also contains Endangered Ludwig’s bustard and Vulnerable Damara Terns (Birdlife International, 2018). Four fish and condricthian species recorded in the EBSA are threatened, including the Endangered *Rostroraja albai* and *Mustelus mustelus*, and Vulnerable *Galeorhinus galeus* and *Squalus acanthias* (OBIS 2017).

Ten of the 16 ecosystem types represented in this EBSA are threatened, including two Critically Endangered, four Endangered and four Vulnerable ecosystem types (Holness et al., 2014; Sink et al., 2019). Because ecosystem types are generally a very good surrogate for species-level biodiversity patterns, the implication, therefore, is that the species and biological communities that are associated with and unique to these habitats are similarly declining and threatened.

C4: Vulnerability, fragility, sensitivity, or slow recovery **Medium**
Justification
The estuarine salt marsh area is vulnerable and has been slow to show recovery despite rehabilitation efforts (van Niekerk and Turpie 2012). There has also been a marked decline in certain fish stocks that

were previously exploited in the region (Lamberth et al., 2008). Mining and habitat modification are thought to have had an impact with respect to these changes.

C5: Biological productivity **Medium**
Justification
Winds in the Orange Cone are weaker than those that occur to the north or south of the area, leading to some stratification (Boyd 1988). This, and the effect of the freshwater inflow, may serve to concentrate productivity within the area.

C6: Biological diversity **Medium**
Justification
Altogether, 206 species have been recorded in the Orange Cone EBSA (OBIS 2017). A high diversity of fish species (33 species from 17 families) has been captured from the Orange River estuary (van Niekerk et al., 2008), including freshwater, marine and estuarine-dependent species. The marine area served as the conduit supporting the estuary's biodiversity for migratory marine and estuarine-dependent species, as well as marine pelagic and demersal species, including their juvenile stages. Furthermore, the fact that the estuary is a declared Ramsar site (Ramsar 2013) and an IBA (BirdLife International 2013) are important recognitions of its importance to birds and other species. There are 16 ecosystem types represented in this EBSA (Holness et al., 2014; Sink et al., 2019).

C7: Naturalness **Medium**
Justification
The estuary and nearshore are impacted, including notable infestation by alien plants around the estuary that persist in spite of rehabilitation efforts. Nevertheless, the estuary still provides many ecological services such as recruitment. There are significant impacts from coastal diamond mining in Namibia and, to a lesser extent, in South Africa (Sink et al., 2012; Holness et al., 2014). Although data are sparse, the area has been shown to be largely in fair condition (Sink et al., 2012; Holness et al., 2014), but there have been long-term declines in fish catch.

Status of submission

The Orange Cone EBSA was recognized as meeting EBSA criteria by the Conference of the Parties. The revised boundaries and description have been submitted to the Subsidiary Body on Scientific, Technical and Technological Advice (SBSTTA) for consideration by the Conference of the Parties to the Convention on Biological Diversity

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description.

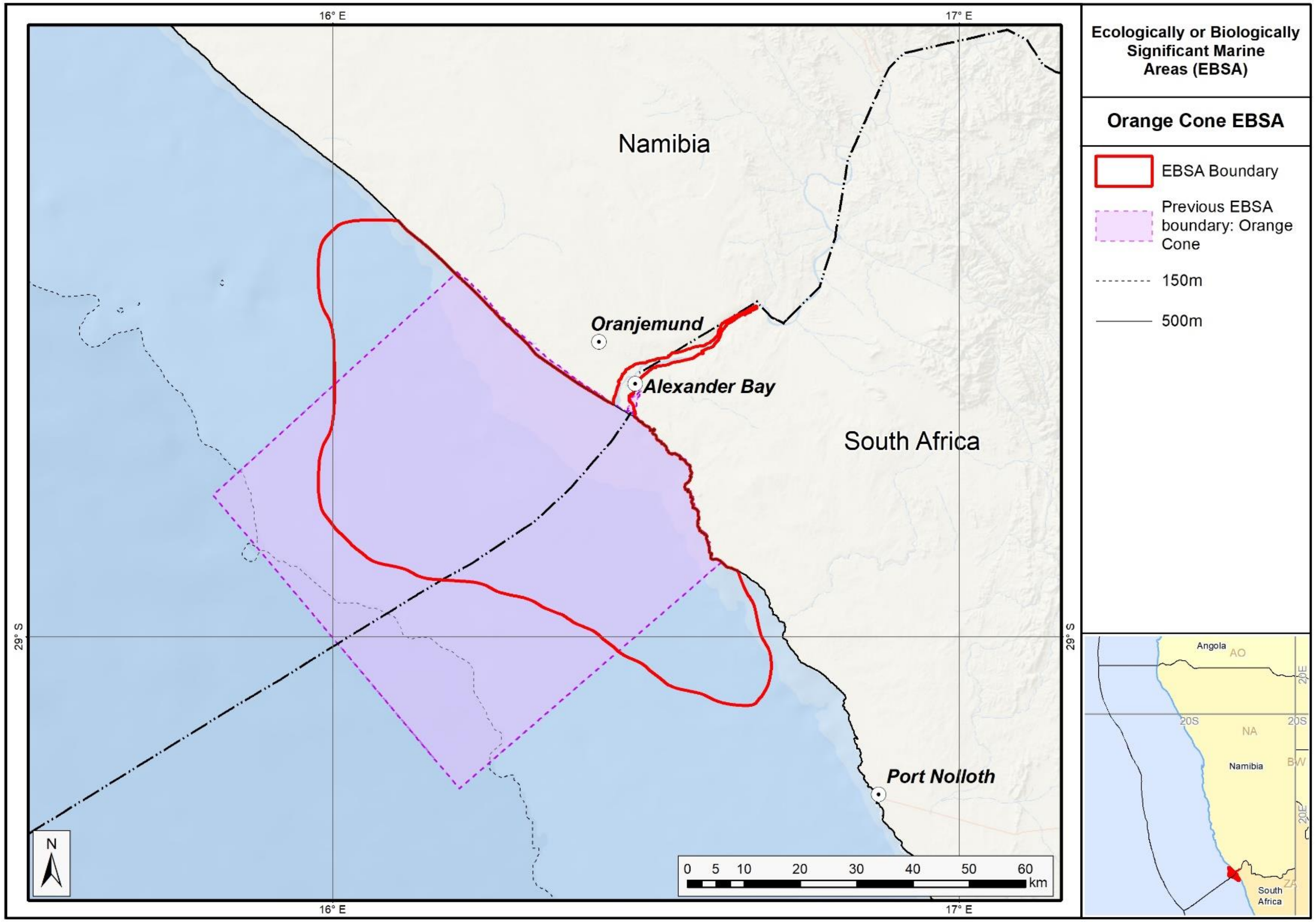
Motivation for Revisions

Some updates were made to the description and references. One criterion rank, Importance for threatened species and habitats, was upgraded from Medium to High based on additional data and extension of the EBSA to include the Orange River Estuary, which is an important Ramsar site. Small additions, such as biodiversity information from OBIS were also made. A supplementary table of the habitats represented in the EBSA and their associated threat status were also included (in Other relevant website address or attached documents section).

The biggest change to the EBSA was a significant refinement of the EBSA delineation. This was done to focus the EBSA more closely on the key biodiversity features that underpin its EBSA status. The delineation process included an initial stakeholder workshop, a technical mapping process and then an expert review workshop where boundary delineation options were finalised. The delineation process used a combination of Systematic Conservation Planning (SCP) and Multi-Criteria Analysis methods. The features used in the analysis were:

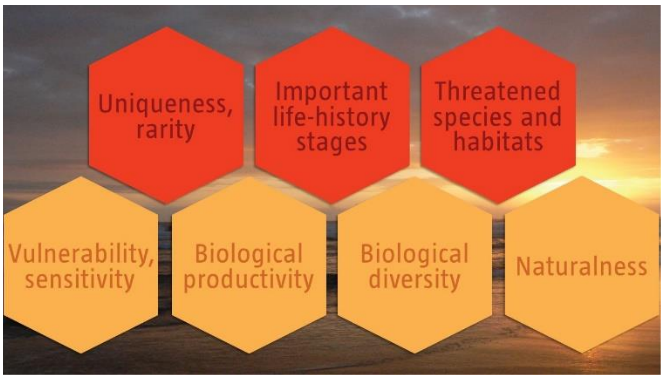
- Threatened Benthic and Coastal Ecosystems (Holness et al., 2014; Sink et al., 2012, 2019). The analysis focussed on the inclusion of the most threatened ecosystem types found in the area. These types are highlighted in the table in the Other relevant website address or attached documents section.
- The key muddy ecosystem types associated with the Orange Cone were identified based on data from new studies by Karenyi (2014) and Karenyi et al. (2016).
- Irreplaceable and near irreplaceable (i.e. very high selection frequency) sites, as well as primary and secondary focus areas identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- Areas of high relative naturalness identified in the SCP undertaken for the BCLME by Holness et al. (2014).
- The Orange River Mouth Ramsar site was included (https://rsis.ramsar.org/ris/526).
- The coastal boundary was refined to be more accurate based on new data (Harris et al., 2019).

The multi-criteria analysis resulted in a value surface. The cut-off value (used to determine the extent of the EBSA) was based on expert input and quantitative analysis of effective inclusion of the above features. This entailed taking an iterative parameter calibration-based approach whereby the spatial efficiency of the inclusion of the targeted features was evaluated. The approach aimed to identify a cut-off that most efficiently included prioritised features while minimizing the inclusion of impacted areas. The final boundaries shown in the map below were validated in a series of national (in both South African and Namibia) and regional (BCC) meetings.



The revised Orange Cone EBSA boundary in relation to its original delineation.

Status Assessment and Management Options

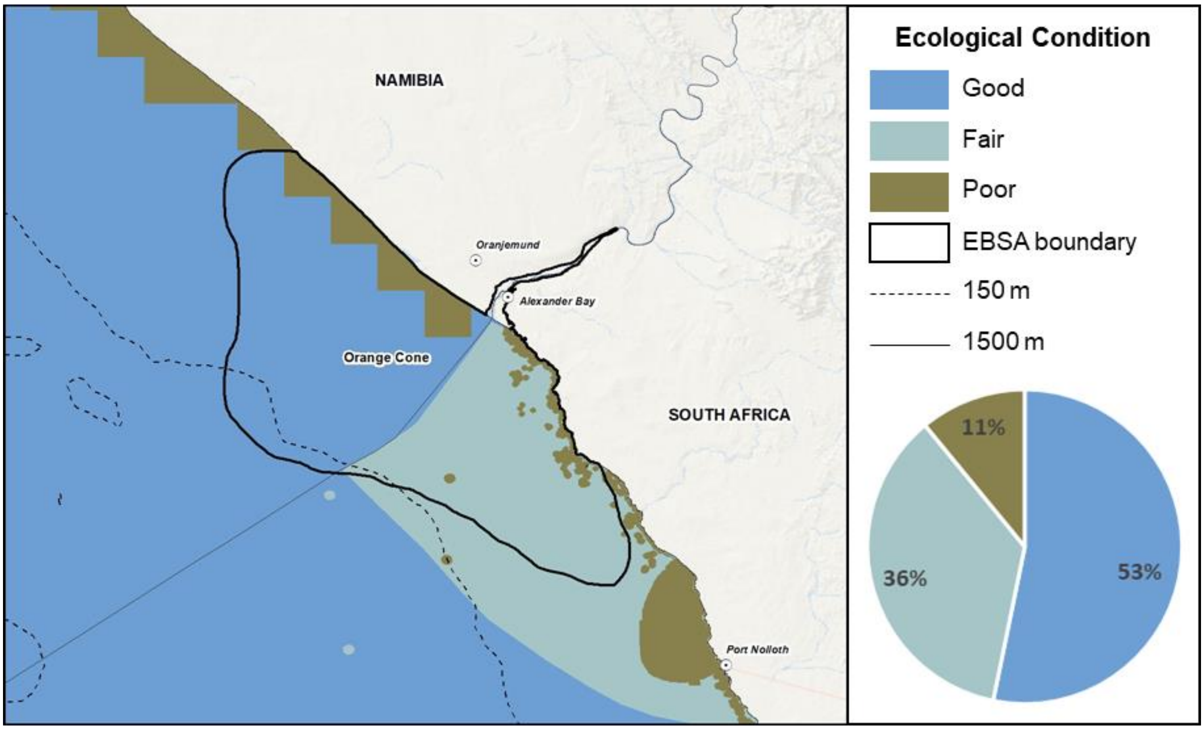


Orange Cone *is underpinned by land-sea connectivity through the Orange River. Huge volumes of sediment and freshwater are exported offshore, driving muddy ecosystem and associated communities, with conditions supporting important life-history stages of fish, as well as threatened top predators and ecosystems. The estuary supports a rich diversity and is a Ramsar site and Important Bird and Biodiversity Area for birds.*

EBSA criteria coloured by rank for Orange Cone: red=high, orange=medium.

Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

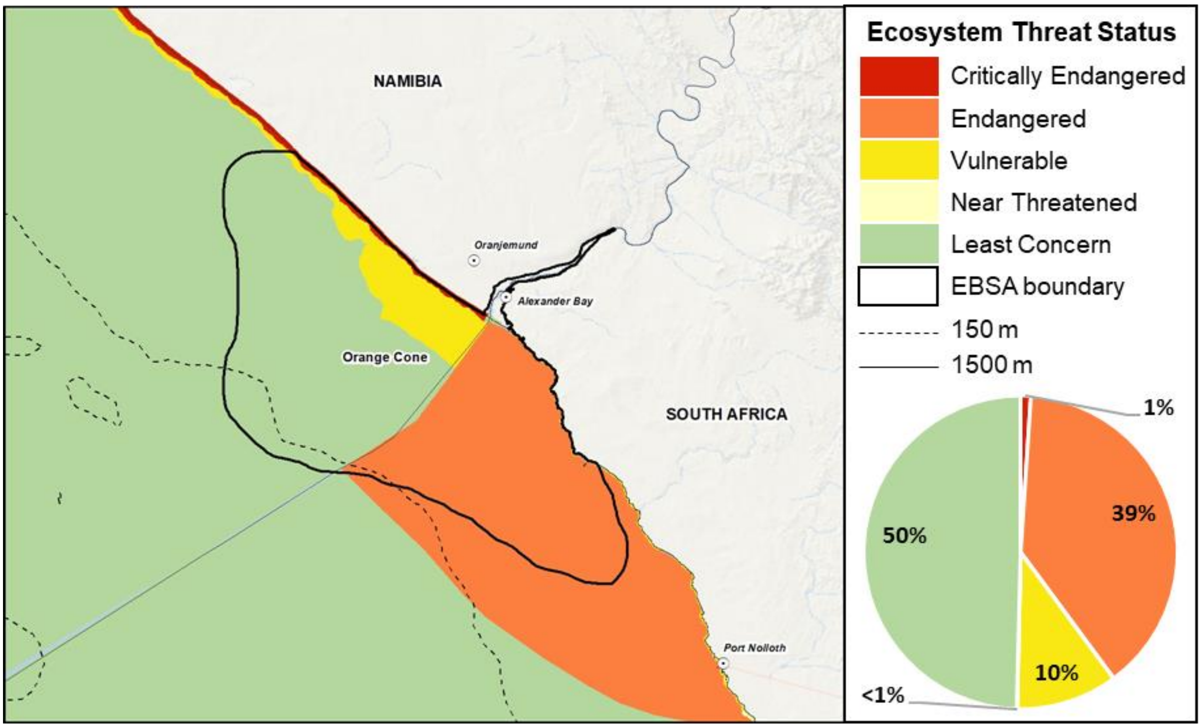
Orange Cone is underpinned by a critical connection between land and sea via the Orange River that needs to be protected for the area to maintain the features and processes that give it its EBSA status. The criteria for which this EBSA ranks highly are: uniqueness and rarity, importance for life history stages, and importance for threatened species and habitats. There are 16 ecosystem types represented, most of which are muddy or sandy, and 10 of which are threatened. This area, including the estuary, is important for supporting key life-history stages of fish, and is also an important site for threatened fish, sharks and birds. In fact, the estuary area is an Important Bird and Biodiversity Area and a Ramsar Site. Kelp forests also contribute to the nursery function of the EBSA and are sensitive to disturbance.



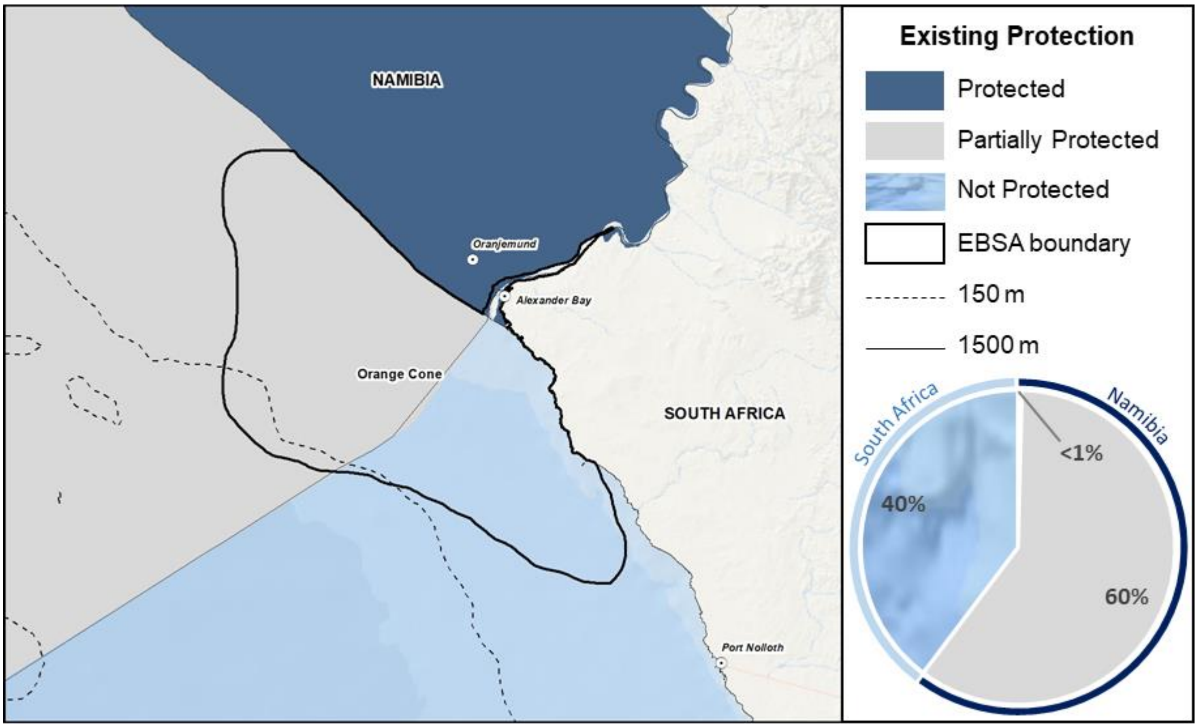
Orange Cone proportion of area in each ecological condition category.

Orange Cone is mostly in good ecological condition (53%), with notable portion that is fair (36%), and a smaller area that is in poor ecological condition (11%) generally along the shore. Consequently, half of the EBSA (50%) is Least Concern. However, the inshore areas and full offshore extent of the South

African portion of the EBSA are threatened, mostly comprising Endangered (39%) and Vulnerable (10%) ecosystem types, with Critically Endangered (1%) and Near Threatened (<1%) types as well.



Orange Cone proportion of area in each ecosystem threat status category.



Orange Cone proportion of area in a Marine Protected Area (MPA).

The patterns in ecological condition and ecosystem threat status between the two countries are explained clearly by the stark contrast in protection and management between the two countries. On the Namibian side, there is land-sea protection, with the adjacent land being a protected area, and the coastal area falling within a reserve offering partial protection. In South Africa, there is no protection within the EBSA; this is one of only two EBSAs in South Africa where this is the case. Importantly, the South African portion of Orange Cone includes three high-risk ecosystem types, assessed as Endangered and not protected that are priorities for protection. Note that adjacent to the EBSA, there are also two terrestrial ecosystem types that are high risk, calling for land-sea coastal protection in this area if these ecosystem types and associated biodiversity are to be protected into the future. This cluster of five high-risk types comprises more than a third of the 13 high-risk coastal (terrestrial, estuarine and marine) ecosystem types in South Africa, as assessed in the National Biodiversity Assessment 2018.

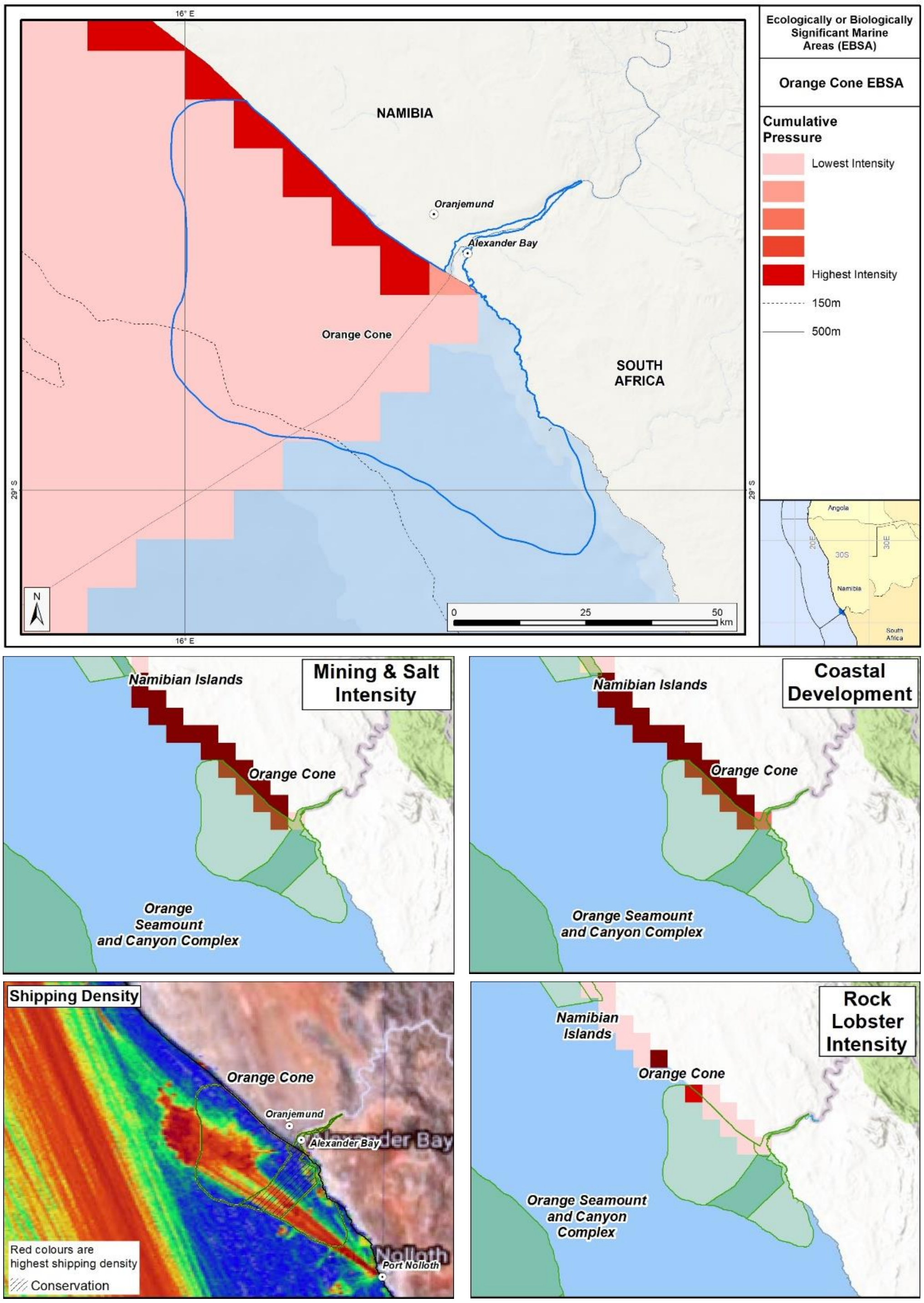
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Namaqua Estuarine Shore	LC	MP	100.0	0.0	0.0
Namaqua Inner Shelf	LC	MP	97.0	0.0	3.0
Namaqua Inshore	VU	WP	45.6	0.0	54.4
Namaqua Intermediate Sandy Beach	CR	WP	9.5	0.0	90.5
Namaqua Reflective Sandy Beach	CR	WP	0.0	0.0	100.0
Cool Temperate Large Fluvially Dominated Estuary	EN	NP	95.4	1.8	2.8
Namaqua Exposed Rocky Shore	VU	MP	0.4	15.6	84.0
Namaqua Kelp Forest	VU	MP	0.1	33.8	66.1
Namaqua Mixed Shore	VU	MP	3.9	10.0	86.2
Namaqua Sandy Mid Shelf	LC	PP	99.8	0.2	0.0
Orange Cone Inner Shelf Mud Reef Mosaic	EN	NP	0.0	77.9	22.1
Orange Cone Muddy Mid Shelf	EN	NP	0.5	98.7	0.8
Southern Benguela Dissipative Intermediate Sandy Shore	LC	WP	3.1	86.0	10.8
Southern Benguela Dissipative Sandy Shore	LC	WP	1.6	97.1	1.3
Southern Benguela Intermediate Sandy Shore	NT	PP	2.5	91.4	6.1
Southern Benguela Reflective Sandy Shore	EN	MP	0.0	95.4	4.6
Other Features					
• Important Bird and Biodiversity Area • Ramsar site • Threatened fish (such as kob), sharks (such as *Rostroraja albai* and *Mustelus mustelus*) and birds (e.g., Damara Terns, Ludwig's bustard, and breeding Cape Cormorants)					

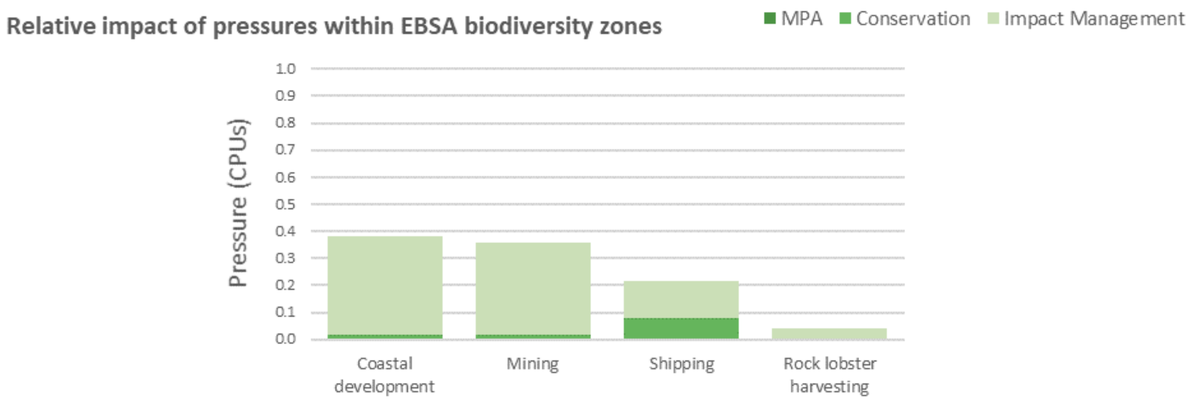
Given that this is a transboundary EBSA shared between Namibia and South Africa, the analysis of pressures and EBSA management is done separately per country to account for the differences in types of pressures and national management options. The following sections are thus repeated, first for Namibia and then South Africa.

Relevant Pressures and Activities (impact, extent): Namibia

- Between the two countries, there are eight pressures present in this EBSA, of which shipping and mining (largely for diamonds) are the only ones that occur on both sides of the border.
- Pressures on the Namibian side include: coastal development, mining, shipping and lobster harvesting. Note that mean annual runoff reduction is included in the South African assessment and would also be an issue in the Namibian portion of the EBSA, but it was not included in that analysis given limited data availability at the time of assessment.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: mean annual runoff reduction, mining, and coastal development. These activities, and activities upstream of the estuary (to limit impacts of flow reduction caused by, e.g., damming and abstraction), will need to be managed particularly well in order to protect the estuarine habitat for associated birds, and offshore ecosystem types, nursery habitats, and fish assemblages for which this EBSA is recognised.
- Activities that are present in Namibia but do not take place in the EBSA include: ammunition and other dumping, benthic longlining, boat-based linefishing, boat-based recreational fishing, bottom trawling (general, freezer, wet), channel dredging, crab harvesting, dredge-spoil dumping, midwater trawling (horse mackerel), pelagic longlining, ports, port anchorage areas, salt pans, shipping refuge (disabled ships), shore-based fishing, and small pelagics fishing.



Map of cumulative pressure (top) and maps of the four most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.

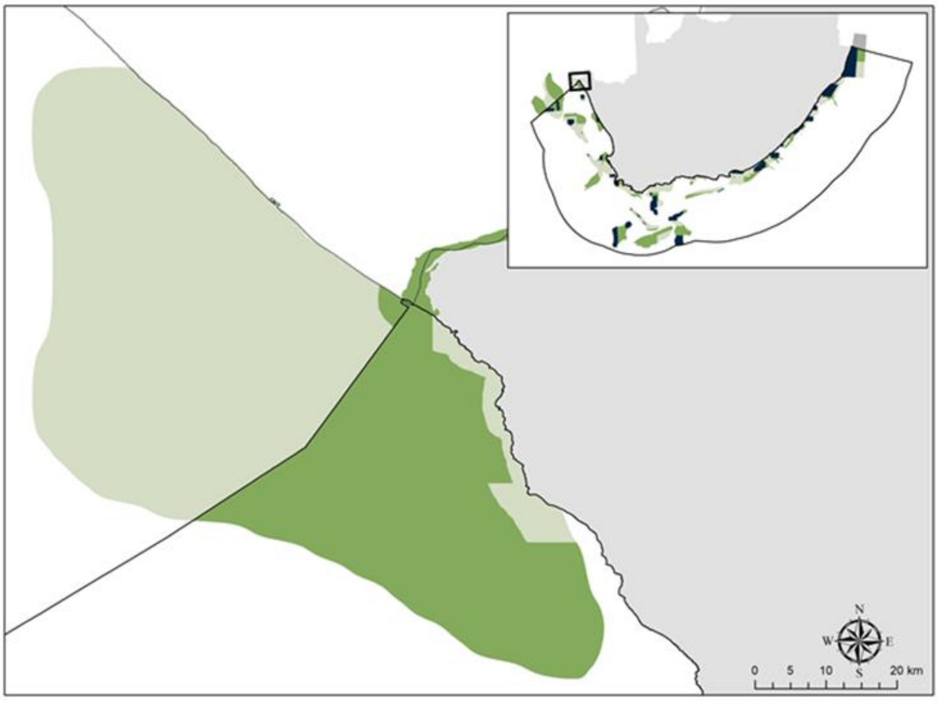


Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA.

Management Interventions Needed for the EBSA in Namibia

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Conservation Zone was designed deliberately to avoid conflicts with existing activities. On the Namibian side of Orange Cone, the adjacent land (outside the EBSA extent) is protected in the Sperrgebiet National Park (https://laws.parliament.na/cms_documents/sperrgebiet-delimitation-c2f73655a5.pdf). Shallow water areas adjacent to this reserve are partially protected by 'shallow water trawling exclusion area' regulations (Paterson and Kainge, 2014). However, no MPAs exist within this EBSA.



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Conservation and Impact Management Zones. Further, no new pressures should be extended into the Conservation Zone, even if they currently occur in the Impact Management Zone of the EBSA.

Recommended compatibility (consent[1] or prohibited[2]) of activities currently present in the EBSA[3] in the Conservation and Impact Management Zones

Uses (including activities and pressures)	**Conservation Zone: EBSA areas requiring strictest protection**	**Impact Management Zone: Other EBSA Areas requiring some protection or place-specific management**
Ecotourism (regulated nature based and strictly controlled)	**Primary**	**Primary**
Mariculture	**Prohibited**	**Consent**
Military exercises and testing	**Prohibited**	**Consent**
Mining	**Prohibited**	**Consent**
Non-consumptive tourism and recreation	**Consent**	**General**
Petroleum extraction	**Prohibited**	**Consent**
Renewable energy installations	**Prohibited**	**Consent**

Rock lobster harvesting	**Prohibited**	**Consent**
Seismic surveys and mining exploration	**Prohibited**	**Consent**
Shipping lane	**Prohibited**	**General**
Undersea cables and pipelines	**Consent**	**Consent**
Wastewater discharge	**Prohibited**	**Consent**

[1]Consent: An activity which can continue in this zone subject to specific regulation and control.

[2]Prohibited: An activity which is not allowed or should not be allowed because it is incompatible with maintaining the biodiversity objectives of the zone.

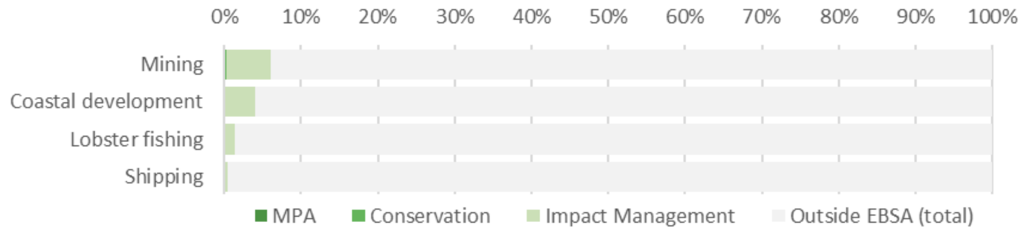
[3]Note that activities present in South Africa that are not relevant to the EBSA have been excluded from the table (e.g., the harvested species does not occur in the area; or the industry operates at a depth outside the depth range of the EBSA).

Furthermore, no new activities that can negatively impact the environment should be allowed in the EBSA, and some activities present in the EBSA do not need to be managed by EBSA zoning and can continue as per the current regulations. There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities outside the EBSA or the MSP management jurisdiction.

Activities that are present but not managed by EBSA zones that can continue as per current regulations		
Shipping		
Activities that are currently not present in the EBSA and should be Prohibited in the future		
Ammunition and other dumping Benthic longlining Boat-based linefishing Boat-based recreational fishing Bottom trawling (general, freezer, wet) Channel dredging	Crab harvesting Dredge-spoil dumping Midwater trawling (horse mackerel) Pelagic longlining Ports	Port anchorage areas Salt pans Shipping refuge (disabled ships) Shore-based fishing Small pelagics fishing
Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under other appropriate legislation.		
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; appropriate zoning of bathing and watercraft activities, etc) Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)		

Activity Evaluation Per Zone: Zoning Feasibility for Namibia



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

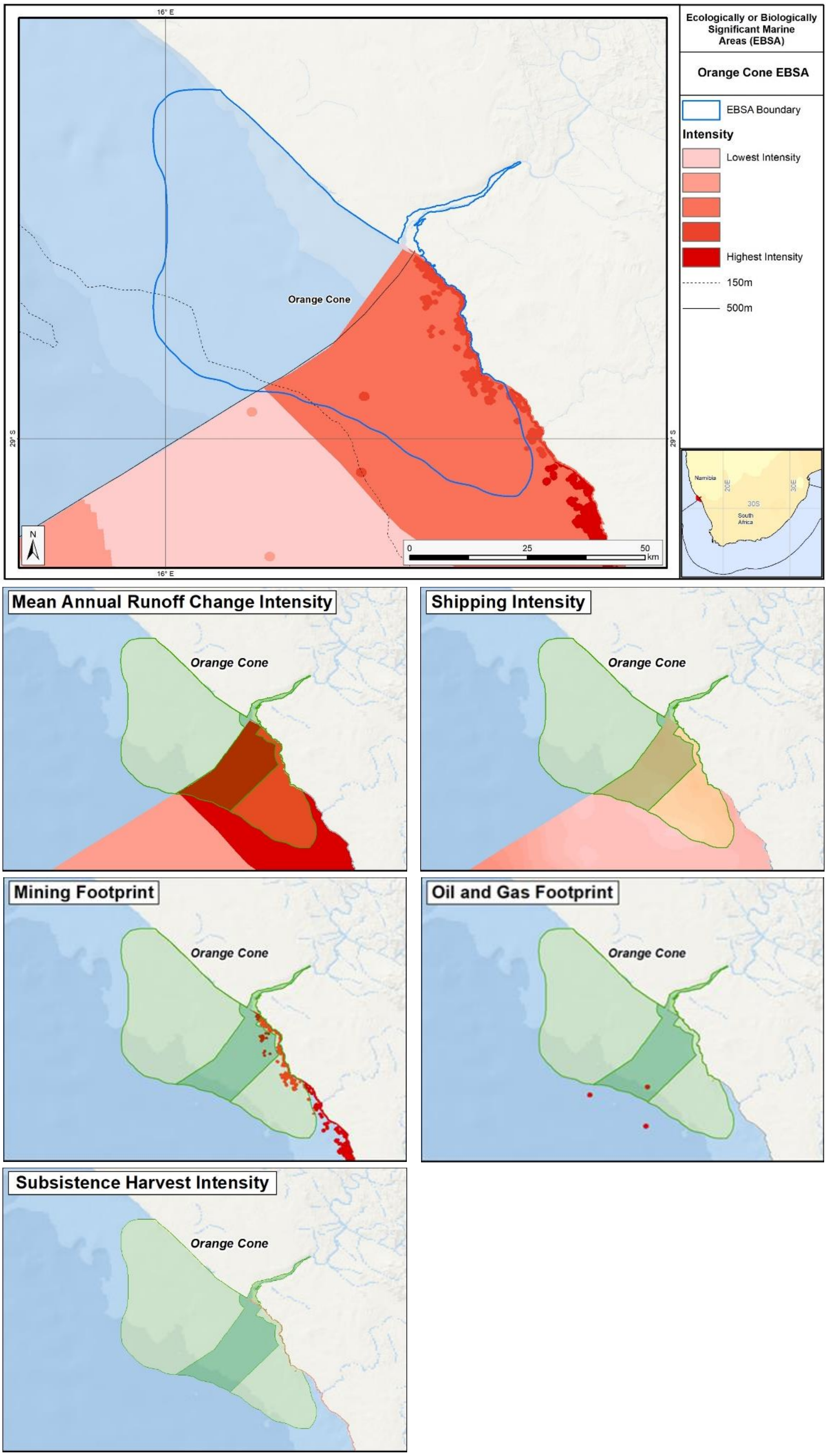
The three most important pressures in this EBSA are mining (prospecting and mining), and lobster harvesting; all of which comprise only a small percentage of the national footprint of these activities. All three are present almost exclusively in the Impact Management Zone, and are listed as Consent activities, where they are recommended to continue as Consent activities. Other activities noted in the table of management recommendations above are either not currently present in the EBSA or are emerging activities; as far as possible, these are accommodated in the EBSA, depending on their compatibility with the management objectives of the two zones.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal development, coastal disturbance, and wastewater discharge. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA. These existing activities are proposed as Consent activities for both EBSA zones, recognising that they should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements, estuarine management plans and wastewater management regulations can improve the ecological condition of the surrounding marine environment, in turn, improving water quality and safe conditions for human recreation.

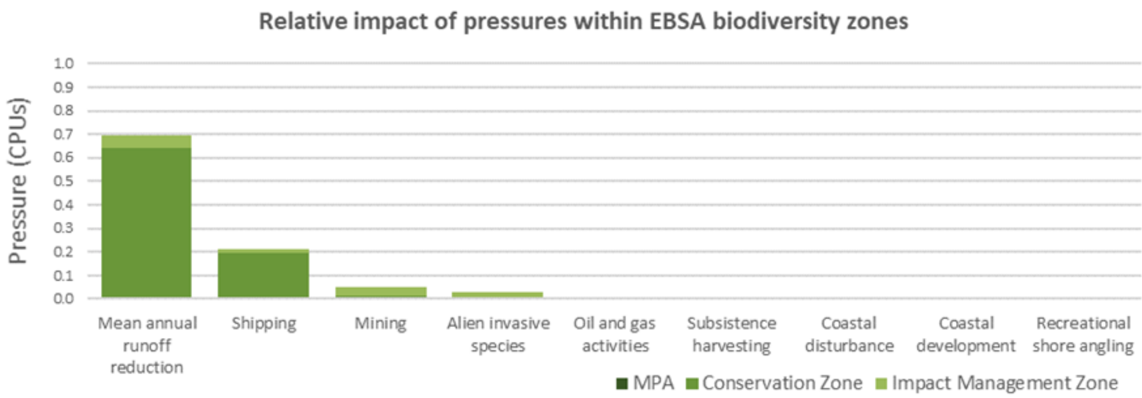
Relevant Pressures and Activities (impact, extent): South Africa

- In the South African portion of the EBSA, the key pressures include: mean annual runoff reduction, shipping, mining (prospecting and mining), alien invasive species, oil and gas (exploration and production), and subsistence harvesting.
- Mining (prospecting and mining), and activities upstream of the estuary (to limit impacts of flow reduction caused by, e.g., damming and abstraction), will need to be managed particularly well in order to protect the estuarine habitat for associated birds, and offshore ecosystem types, nursery habitats, and fish assemblages for which this EBSA is recognised.
- Note that oil and gas (exploration and production) and subsistence harvesting each comprise only 1% of the EBSA pressure profile.

SOUTH AFRICA



Map of cumulative pressure (top) and maps of the five most important pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



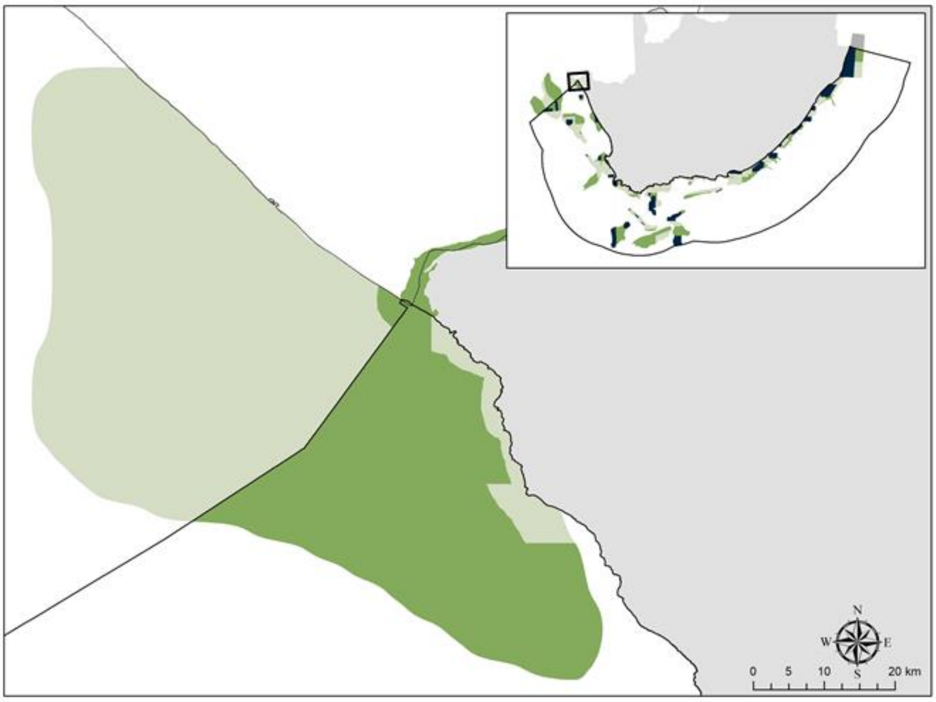
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that oil and gas (exploration and production) and subsistence harvesting each comprise <1% of the EBSA pressure profile.

Management Interventions Needed for the EBSA for South Africa

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Biodiversity Conservation Zone and an Environmental Impact Management Zone, both comprising several areas within the EBSA. The aim of the Biodiversity Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts are incompatible with the management objective of this zone. If the activity is permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited. Where possible and appropriate, the Biodiversity Conservation Zones should be considered for formal protection e.g., Marine Protected Areas or Other Effective Area-Based Conservation Measures (OECM). The aim of the Environmental Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses that have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, ideally there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. There are no MPAs in Orange Cone. However, there is a recently proclaimed Nature Reserve on the South African side of the Orange River mouth that is mostly within the EBSA, with intentions to proclaim an adjacent MPA in and around the mouth of the estuary that approximately follows the Ramsar boundary (but this is still to be determined). The activities permitted within the Nature Reserve are as per the gazetted regulations.

Orange River Mouth Nature Reserve (proclaimed 2018)	No link available



Proposed zonation of the EBSA into Conservation (dark green) and Impact Management (light green) Zones.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

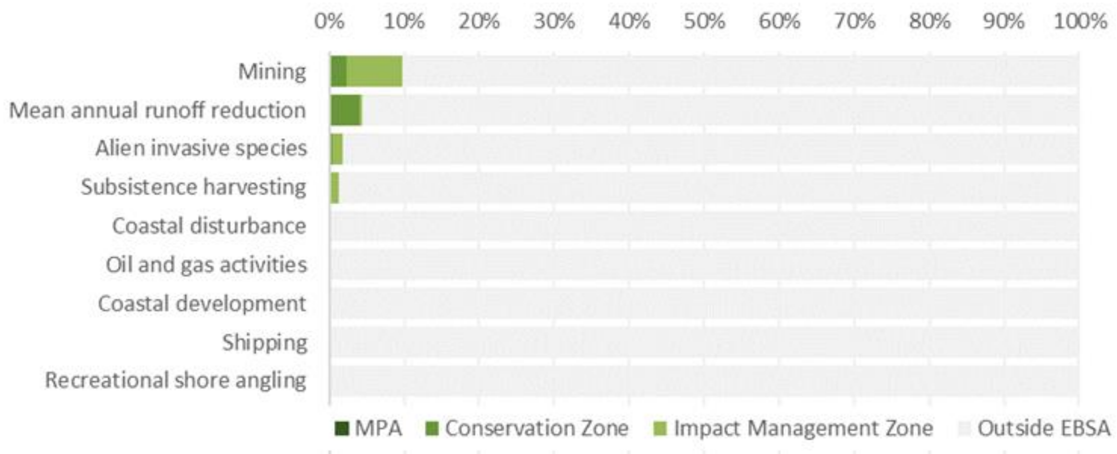
Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP (above the high-water mark) that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Coastal development (e.g., implementation of appropriate setback lines) Coastal disturbance (e.g., formalising access points; rehabilitating degraded dunes; etc) Prevent new marine species invasions through response planning, ring-fenced resources and rapid action Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

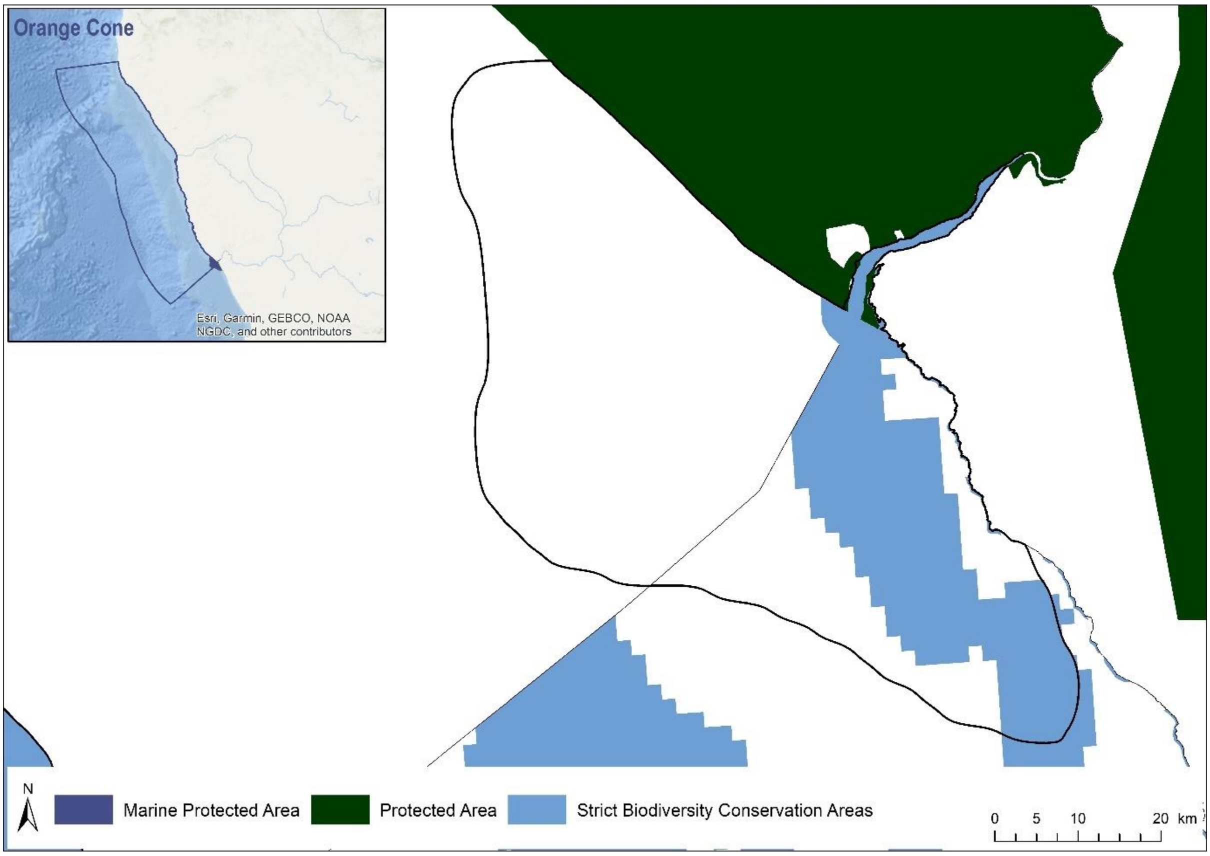
Nearly a fifth of the country's marine mining footprint is in the EBSA, most of which is in the Impact Management Zone. Prospecting is considered to be compatible or conditionally compatible with the EBSA zones and is recommended to continue with relevant regulations and management. Mining construction and operations are considered conditionally compatible in the Impact Management Zone, where they could continue subject to appropriate management, but are not compatible with the EBSA Conservation Zone, where it is recommended that these activities are not permitted. Subsistence harvesting occurs along the shores of the EBSA at a relatively low intensity, exclusively in the Impact Management Zone where it is considered to be compatible with that zone and is therefore recommended to continue. Oil and gas exploration and production activities occur in the EBSA. Exploration is considered compatible or conditionally compatible with the EBSA zones and is recommended to continue. Production is conditionally compatible with the Impact Management

Zone, but is not compatible with the Conservation Zone and is thus recommended to be not permitted. Shipping is compatible with both EBSA zones and is recommended to continue under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction. The impacts should be managed, but principally fall outside the direct management and zoning of the EBSA and should ideally be dealt with in complementary integrated coastal zone management in support of the EBSA. For example, investment in eradicating the alien invasive species could aid in improving the ecological condition of rocky and mixed shores, improving benefits for subsistence and recreational harvesting; and rehabilitation of degraded dunes and formalising access points could support improved habitat for nesting shorebirds, and enhanced benefits for coastal protection during storm surges. Similarly, improved estuary management through development of appropriate freshwater flow requirements and estuarine management plans can improve the ecological condition of the surrounding marine environment, in turn, improving the ecological condition of the adjacent marine environment. Rehabilitation of related estuarine habitats is also recommended as a priority. These can partly be addressed in the management plan of the newly proclaimed Nature Reserve at the Orange River mouth.

Management Recommendations for Marine Protected Areas

There are no MPAs within the EBSA, however, there is some land-based protection covering parts of the estuarine habitat. It is recommended that existing land-based management is strengthened, and that formal protection within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.



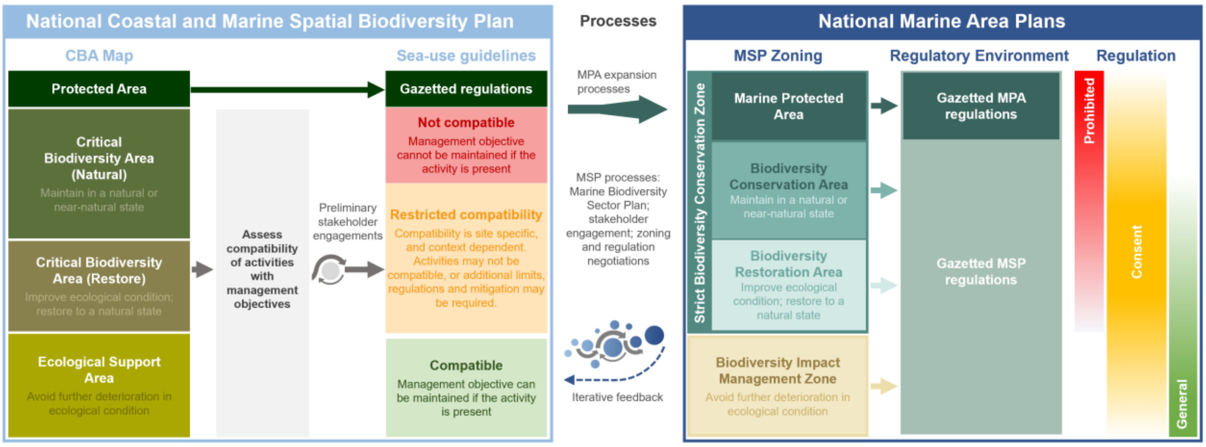
There are no MPAs in the Orange Cone EBSA. Land-based protected areas are shown (from DFFE, 2021, UNEP-WCMC & IUCN, 2022), which cover parts of the estuarine habitat.

Management Recommendations for Marine Spatial Planning

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Although Marine Area Plans are being developed in each country separately, regional alignment through the BCC is underway to ensure that the management recommendations within the transboundary EBSAs are congruent across the border. In Namibia, the management recommendations proposed for Orange Cone, outlined above, are the basis for the biodiversity sector's input into the southern Marine Area Plan. The current MSP focus in Namibia regards the central Marine Area Plan, and although some progress has been made for MSP within Orange Cone in terms of regional alignment (particularly for the sea-use guidelines), the southern plan will be developed in due course.

Following the initial management recommendations proposed for Orange Cone, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

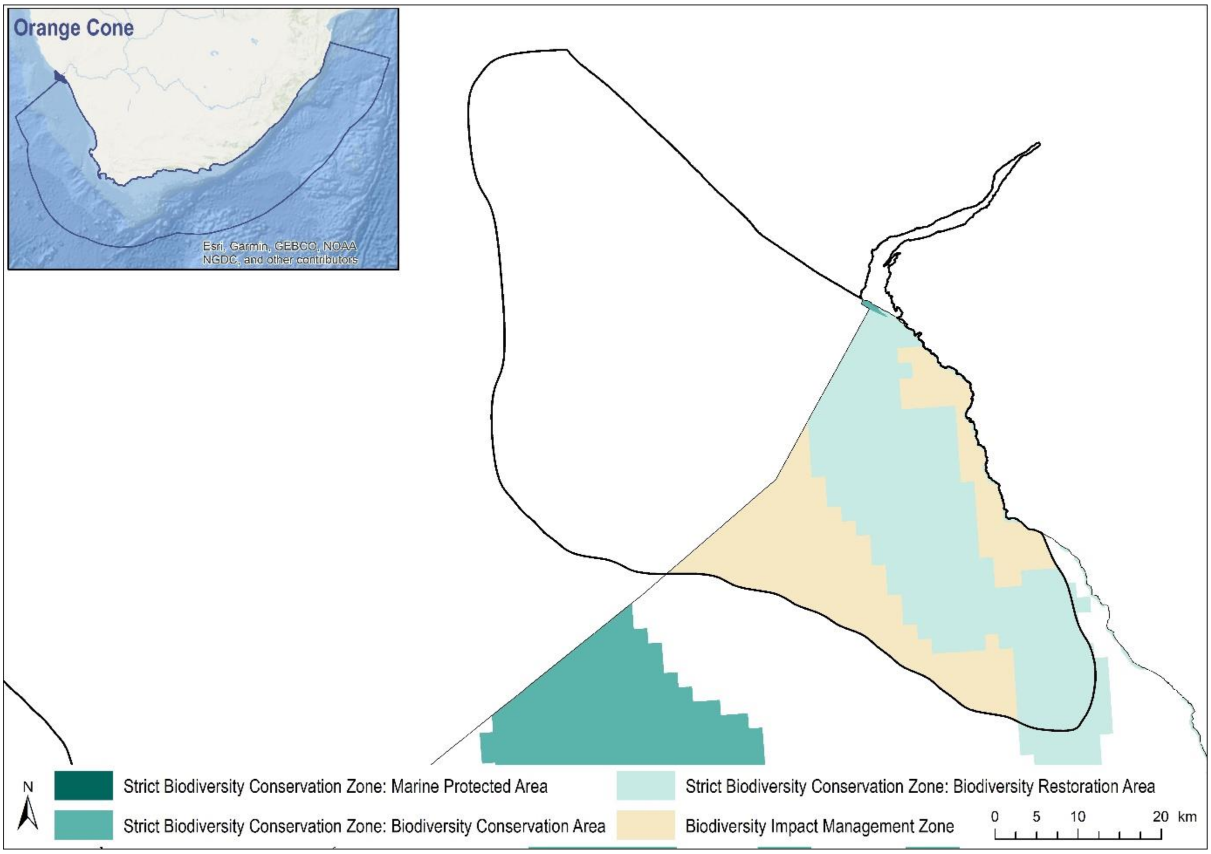


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Management Zone. It is recommended that there is full implementation and operationalisation of these zones as part of MSP. Sub-categories are yet to be developed in Namibia as part of the southern Marine Area Plan, but are likely to follow a similar approach to that for Namib Flyway and Namibian Islands in the central Marine Area Plan. Until then, the proposed zones are as indicated above in the Management Interventions Needed for the EBSA.

In South Africa, the Strict Biodiversity Conservation Zone has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. Only two of these zones and sub-categories are found in Orange Cone, and no MPAs are present. Approximately half the EBSA comprises a Strict Biodiversity Conservation Zone: Biodiversity Restoration Area, where the management objective of the zone is to improve the ecological condition of the sites and, in the long term, restore them to a natural / near-natural state, or as near to that state as possible. As a minimum, avoid further deterioration in ecological condition and maintain options for future restoration. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Orange Cone EBSA for South Africa's Marine Area Plans. Land-based protected areas are not shown but do extend into some of the estuarine habitat (see previous section).

Proposed Sea-Use Guidelines

As explained in the Management Interventions Needed for the EBSA above, all sea-use activities were listed and recommendations for management were provided according to the compatibility of the activities with the management objective of each of the proposed biodiversity zones. As part of the regional alignment and development of the NCMSBP, the sea-use gudelines for both countries have advanced the initial recommendations proposed above. For example, where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility in South Africa was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). This also helped to inform the assessment of activity compatibility in Namibia. Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification broadly followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process and regional alignment processes. It is recommended that the sea-use guidelines, as proposed below, are implemented as part of the respective Marine Area Plans in Namibia and South Africa.

Sea-use guidelines for Orange Cone in Namibia. List of all sea-use activities, grouped by their broad Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of the Strict Biodiversity Conservation Area and Biodiversity Impact Management Area. Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad MSP Zone	Activities	MPA	Strict Biodiversity Conservation Area	Biodiversity Management Area
Biodiversity	Conservation activities (including MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y
Marine Tourism	Non-consumptive tourism and recreation		R	Y
	Ecotourism (regulated nature based and strictly controlled)		R	Y
	Recreational fishing (includes shore and recreational skiboat based)		R	Y
Heritage Conservation	Heritage sites		Y	Y
Commercial Fishing	Commercial Linefishing (e.g., snoek 20-m vessels)		R	Y
	Benthic longlining (e.g., hake, kingklip) (Not current activity)		R	Y
	Midwater trawling (Horse Mackerel)		R	Y
	Pelagic longlining		R	Y
	Commercial Pelagic Purse-seine (small pelagics) fishing		R	Y
	Crustacean trap-based harvesting (crabs)		R	Y
	Crustacean trap-based harvesting (rock lobster)		R	Y
	Bottom trawling (non-freezer)		N	R
	Bottom trawling (freezer trawlers)		N	R
Small-scale Fishing	Shore-based fishing (subsistance, artisanal)		R	Y
Mariculture	Mariculture		N	R
Mining	Mineral resource extraction (mining)		N	R
	Salt extraction (existing - man made)		R	R
	Salt extraction (new - man made)		N	R
Petroleum	Seismic surveys and mining exploration		R	R
	Petroleum extraction		N	R
Renewable Energy	Renewables (e.g. offshore wind, wave, solar)		N	R
Military	Military exercises and testing		N	R
Ammunition Dumping	Ammunition and other dumping		N	N
Maritime Transport	Shipping lane (designated lanes in and around ports)		N	Y
	Shipping (General ship movements)		Y	Y
	Shipping refuge (temporarily disabled ships)		N	R
	Bunkering at Sea		N	R
	Ports (existing, anchorage and new infrastructure in port zone)		N	Y
	Ports (new)		N	R
	Channel dredging		N	R
	Dredge-spoil dumping (port channel dredging)		N	R
Underwater Infrastructure	Cables and pipelines (undersea)		R	Y
Land-based Infrastructure	Coastal Development - NEW (jetty, sea walls, breakwater etc.)		N	R
Disposal	Wastewater and treated effluent discharge - existing (including desalination)		R	R
	Wastewater and treated effluent discharge - new (including desalination)		N	R

Sea-use guidelines for Orange Cone in South Africa. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below). However, it is noted that much more baseline research and ongoing monitoring is needed to ensure that the key features of the EBSA are well managed. Many issues link to the management of the Orange River Mouth, as well as diamond mining along the coast and in marine areas of both countries. Other research into the fluvial fan and plume is also recommended to better understand land-sea connectivity processes, and the effect that freshwater flow reduction could have on marine systems.

Future Process

There needs to be full operationalisation and practical implementation of the proposed zoning in South Africa and Namibia's national marine spatial plans, with gazetted management regulations following the proposed management recommendations outlined above. MPA declaration within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. If MPA declaration is not possible, then other formal protection measures should be considered, e.g., OECMs, to ensure that the features for which the EBSA was described are adequately protected. Further alignment between land-based and marine biodiversity priorities should also be strengthened, e.g., through the cross-realm planning in the CoastWise project. Regional alignment through the BCC should continue, which could also facilitate exploration of transboundary MPAs.

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EBSAs Not Revised

Delagoa Shelf Edge, Canyons and Slope

Given that Delagoa Shelf Edge, Canyons and Slope is a transboundary EBSA with Mozambique, and revising it would have required an international collaboration beyond the scope of the project, this EBSA and associated description was not revised, but is included here for completeness. Note, however, that the status of the South African portion of this EBSA was still assessed and management actions were recommended. The text below is thus of the original EBSA adopted by CBD in 2014.

Original EBSA Description

General Information

Summary

This area extends south, north and offshore of the existing Maputaland and St Lucia marine protected areas in the iSimangaliso Wetland Park, a World Heritage Site, and also encompasses the Ponta do Ouro Partial Marine Reserve, to capture the full extent of offshore benthic and pelagic habitat types, providing for coastal and offshore connectivity and covering the important offshore habitats of endangered Leatherback Turtles. The area includes a key migratory route for humpback whales, a nursery area for bull sharks, spawning areas for fish (endemic sparids) and sharks and includes habitat of other threatened species including coelacanths, marine mammals and sharks. Potential vulnerable marine ecosystems include numerous submarine canyons, paleo shorelines, deep reefs and hard shelf edge with reef-building cold-water corals also recovered at depths of more than 900 m. Whale sharks feed in this area in summer.

Introduction of the area

This area extends south, north and offshore of the existing Maputaland and St Lucia marine protected areas in the iSimangaliso Wetland Park, a World Heritage Site, and also encompasses the Ponta do Ouro Partial Marine Reserve, to capture the full extent of offshore benthic and pelagic ecosystem types, providing for coastal and offshore connectivity and covering the important offshore habitats of endangered Leatherback Turtles. The area includes a key migratory route for Humpback Whales, a nursery area for Bull Sharks, spawning areas for fish (especially endemic sparids) and sharks and includes habitat of other threatened species, including coelacanths, marine mammals and sharks. Potential vulnerable marine ecosystems include numerous submarine canyons, palaeo-shorelines and deep reefs, and hard shelf edge with reef-building cold-water corals in depths of more than 900 m. Whale sharks feed in this area in summer. This area has been identified as a priority area by two different systematic biodiversity plans, a national plan to identify focus areas for offshore protection (Sink et al., 2011) and a fine-scale provincial plan for the province of KwaZulu-Natal (Harris et al., 2011).

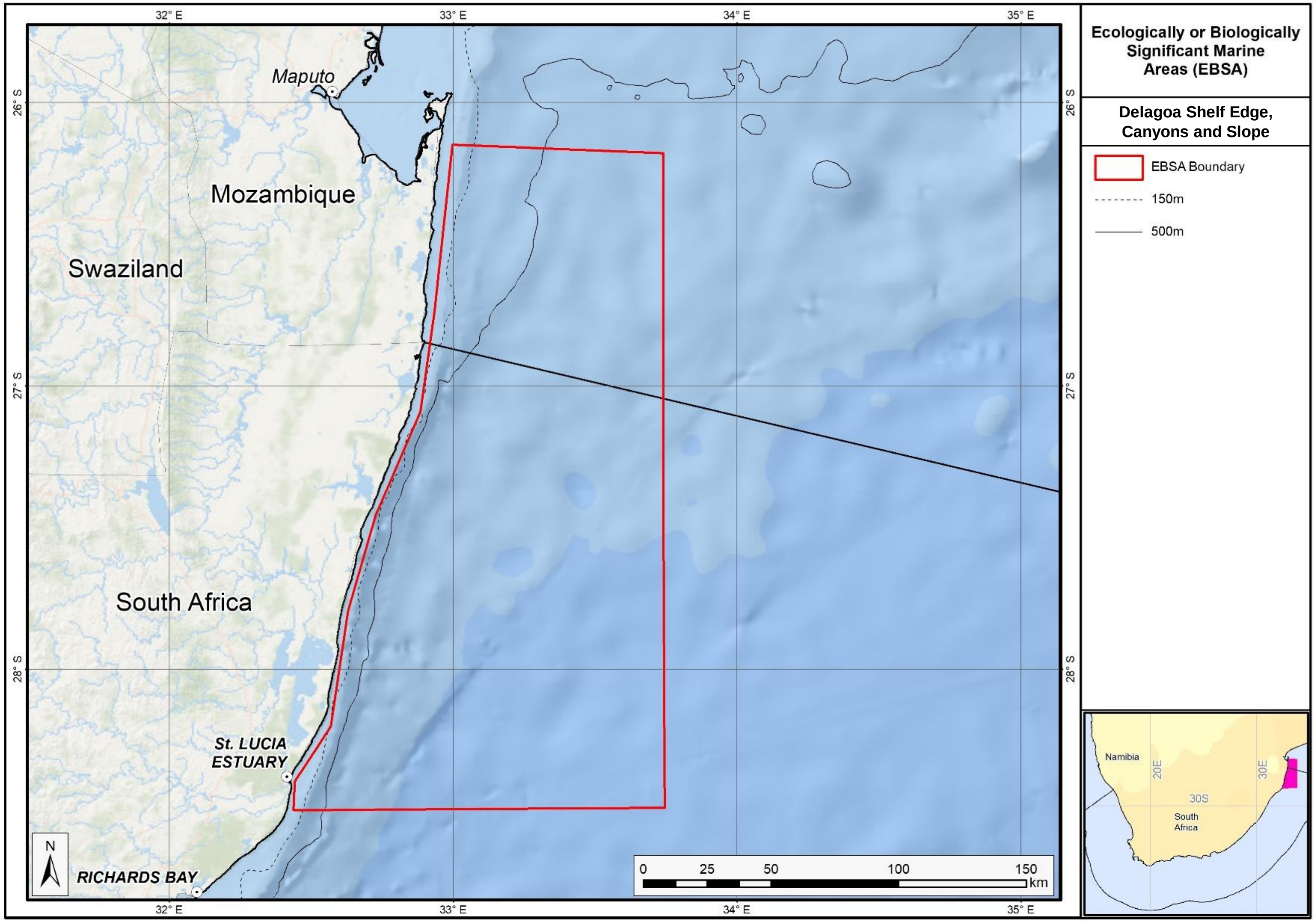
Description of the location

EBSA Region

Southern Indian Ocean

Description of location

Approximately 26°S to 29°S and 32°E and 34°. This area extends south, north and offshore of the existing Maputaland and St. Lucia marine protected areas in the iSimangaliso Wetland Park.



Original delineation of the Delagoa Shelf Edge, Canyons and Slope EBSA.

Area Details

Feature description of the area

The area meeting EBSA criteria is bounded by the highwater mark of a coastline characterized by the highest vegetated dunes in the world, with minimal terrigenous riverine input (see Sink et al., 2011 and Harris et al., 2011), making the area relatively natural and pristine. The deeper reaches are characterized by bioclastic and siliceous sediments intersected by Pleistocene sandstone reefs formed during changes in sea level. The continental shelf is intersected by canyons and is steep, falling to fine, unconsolidated sediment and is bathed by the warm Agulhas Current, the largest of the western boundary currents.

Feature conditions and future outlook of the area

South Africa's National Biodiversity Assessment 2011 (Sink et al., 2012) indicated that most of this area was in good condition, but these analyses were confined to South Africa. The area is relatively pristine but emerging pressures include new mining and petroleum applications and a port development in Mozambique. The inshore reaches are subjected to limited fishing and regulated recreational activities.

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Status of submission

Areas described as meeting EBSA criteria that were considered by the Conference of the Parties.

COP Decision

dec-COP-12-DEC-22

Assessment of the area against CBD EBSA criteria

C1: Uniqueness or rarity Medium

Justification

The submarine canyons support a population of coelacanths (*Latimeria chalumnae*). The spotted legskate (*Anacanthobatis marmoratus*) is a rare species found in this area (Haupt 2010).

C2: Special importance for life-history stages of species High

Justification

Breeding and feeding areas for leatherback turtles (particularly in the south). Migratory corridor for humpback whales. Nursery area for bull shark (*Carcharhinus leucas*). Spawning area for dusky shark (*Carcharhinus obscurus*) and King Mackerel (*Scomber japonicas*). Spawning and nursery area for sand tiger shark (*Carcharias taurus*) (Sink et al., 2011, Vogt 2011, Ezemvelo KZNW Wildlife 2012).

C3: Importance for threatened, endangered or declining species and/or habitats Medium

Justification

IUCN listed species: CR: Ceolacanth – *Latimeria chalumnae* EN: Scalloped hammerhead – *Sphyrna lewini* (EN), great hammerhead - *S. mokarran* VU: Sperm whales – *Physeter macrocephalus* , smooth hammerhead – *Sphyrna zygaena* Overexploited linefish species (sarids, sciaenids).

C4: Vulnerability, fragility, sensitivity, or slow recovery Medium

Justification

Two species of reef-forming cold-water corals. Numerous submarine canyons. Important for vulnerable shark species with low fecundity.

C5: Biological productivity Medium

Justification

Chlorophyll a and sea temperature fronts contribute to variable and elevated productivity in this area (Ezemvelo KZN Wildlife 2012).

C6: Biological diversity High

Justification

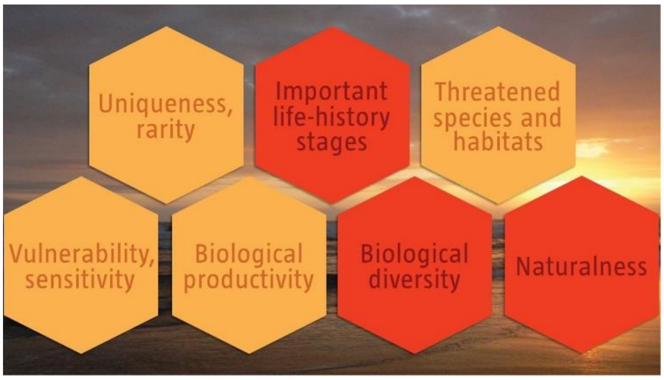
This area includes the overlap between the Delagoa and Natal ecoregions and is considered an important transition zone (Sink et al., 2011, 2012, Ezemvelo KZN Wildlife 2012. High habitat heterogeneity and high species diversity are reported.

C7: Naturalness High

Justification
This area is relatively pristine with almost no industrial fishing (pelagic long lining not permitted within 20nm of the coast).

End of original EBSA description.

Status Assessment and Management Options

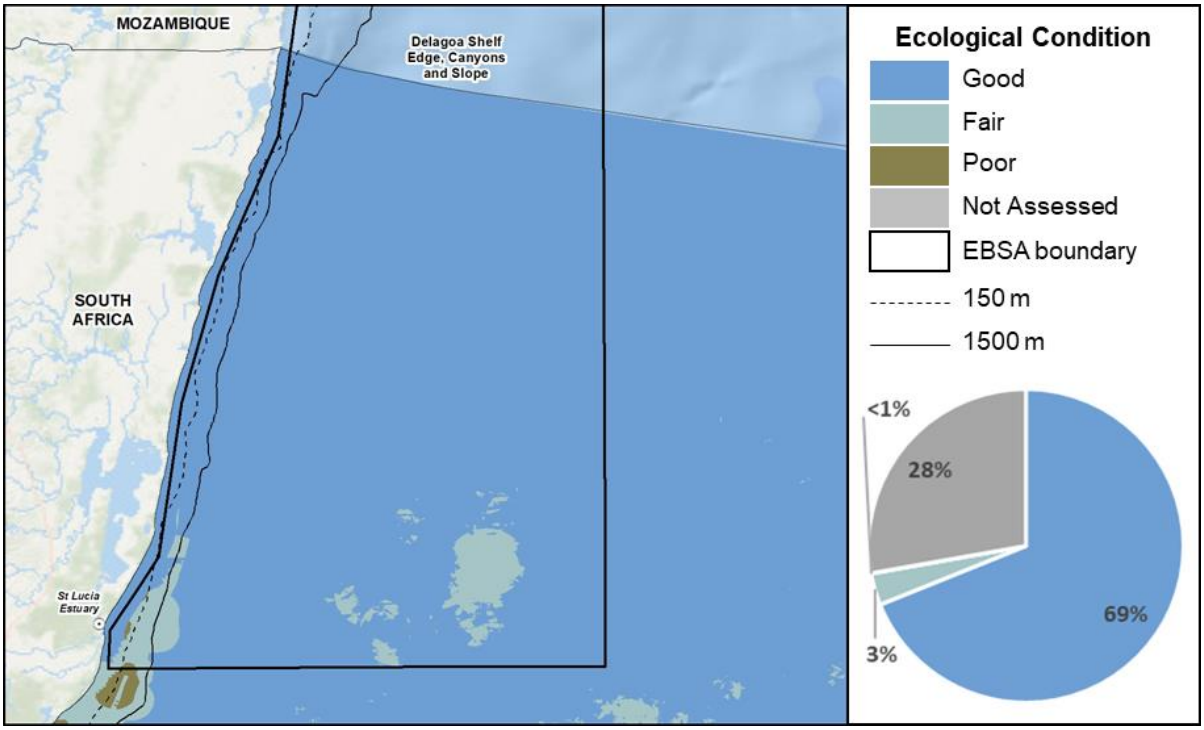


Delagoa Shelf Edge, Canyons and Slope *is in iSimangaliso Wetland Park, a Ramsar and World Heritage Site, with a recently extended MPA (South Africa), and the Ponta do Ouro Partial Marine Reserve (Mozambique). It includes numerous pristine ecosystems and a rich diversity of species, including coelacanths. It also supports key life-history stages of a plethora of threatened species, and encompasses fragile corals and sponges.*

EBSA criteria coloured by rank for Delagoa Shelf Edge, Canyons and Slope: red=high, orange=medium.

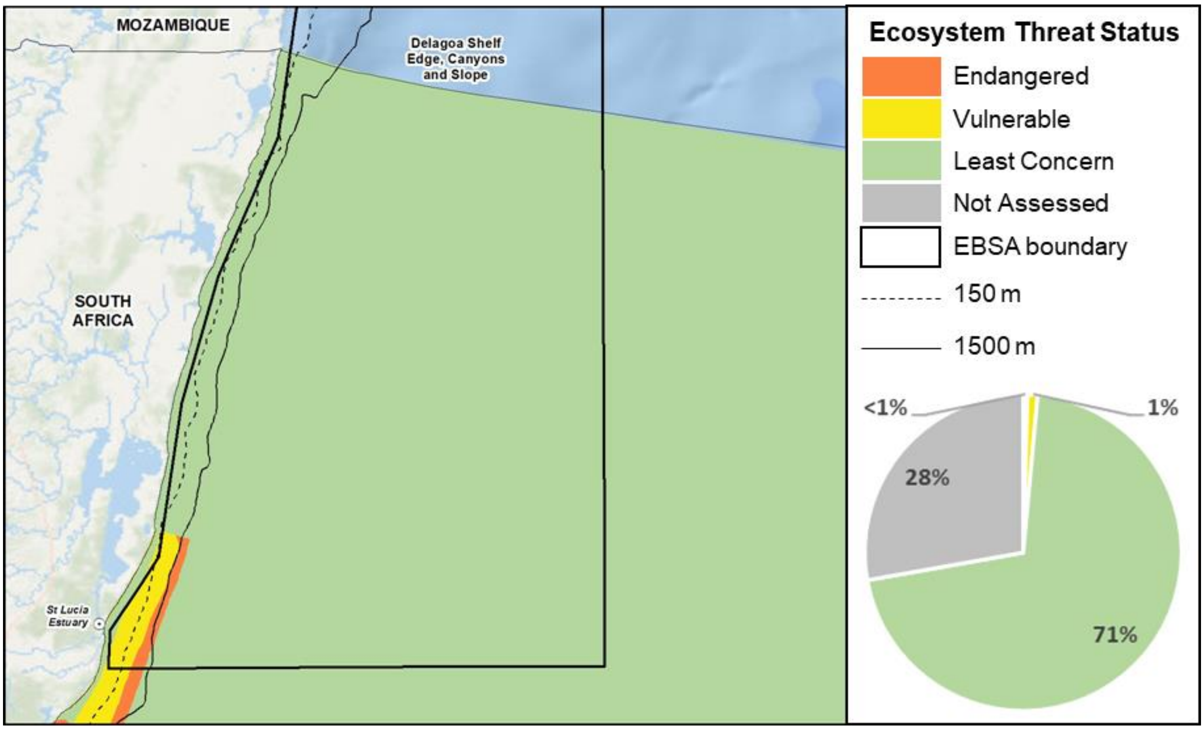
Ecological Condition, Threat Status, Current Protection and Key Features in the EBSA

Delagoa Shelf Edge, Canyons and Slope is a transboundary EBSA, shared with Mozambique, that has a myriad of features and ecosystem types that need to be protected for the area to maintain the features and processes that give it its EBSA status. The criteria for which this EBSA ranks highly are: importance for life history stages, importance for threatened species and habitats, and naturalness. There are 17 ecosystem types represented in the South African portion of the EBSA, including ecosystem types like coral reefs and canyons that contain fragile, habitat-forming species. The EBSA is also critical for turtle nesting and foraging, and supports important life-history stages for numerous linefish, coelacanths, cetaceans and sharks, many of which species are also threatened.

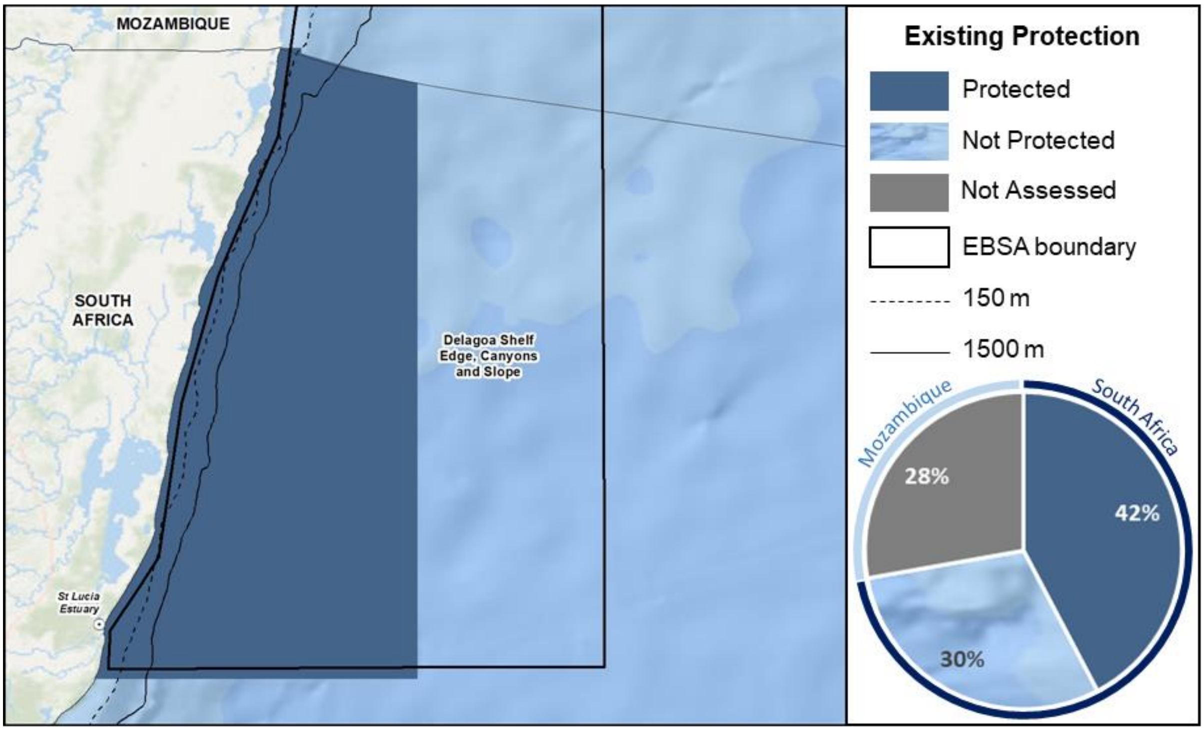


Delagoa Shelf Edge, Canyons and Slope proportion of area in each ecological condition category.

Delagoa Shelf Edge, Canyons and Slope is mostly in good ecological condition (69%), with a small portion that is fair (3%), and <1% in poor ecological condition (noting that 28% of the EBSA extent is in Mozambique and thus was not assessed here). Consequently, the bulk of the EBSA is Least Concern (71%), with 1% and <1% that is Vulnerable and Endangered respectively.



Delagoa Shelf Edge, Canyons and Slope proportion of area in each ecosystem threat status category.



Delagoa Shelf Edge, Canyons and Slope proportion of area in a Marine Protected Area (MPA).

Protection of features in MPAs in South Africa has been considerably expanded and strengthened following the proclamation of the Operation Phakisa MPA network, with the EBSA area in South Africa within reserves increasing dramatically from 3% to 58% (42% of the full EBSA extent). The new protection is as a result of offshore expansion of the iSimangaliso MPA. Although most ecosystem types in the EBSA are Well Protected, and almost all the rest are Moderately Protected, there are two ecosystem types that are either Poorly Protected or Not Protected.

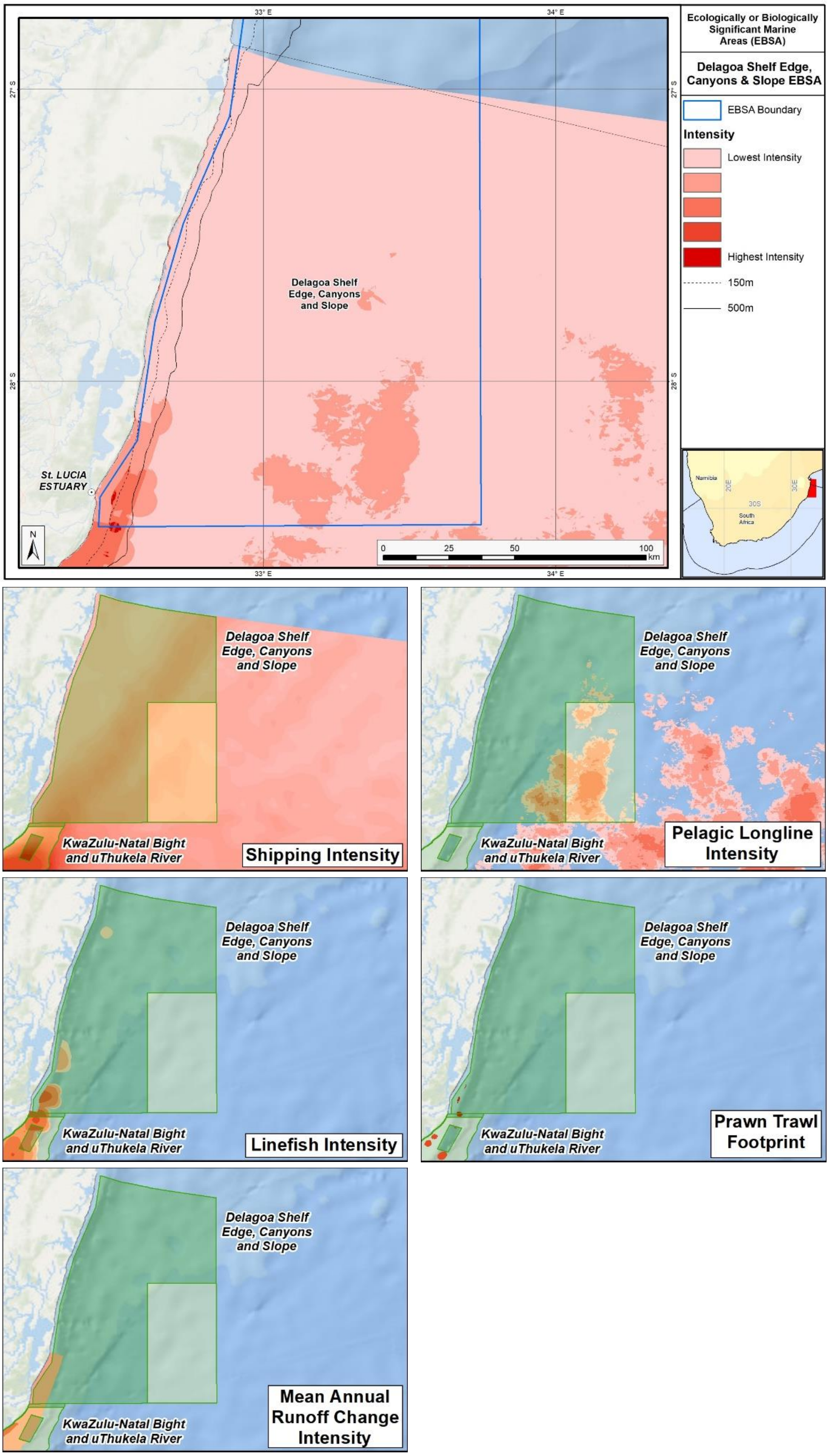
Threat status, protection level and ecological condition of ecosystem types in the EBSA. Other key features are also listed.

Feature	Threat Status	Protection Level	Condition (%)		
			Good	Fair	Poor
Ecosystem Types					
Delagoa Deep Shelf Edge	LC	WP	100.0	0.0	0.0
Delagoa Lower Canyon	LC	WP	100.0	0.0	0.0
Delagoa Rocky Mid Shelf	LC	WP	100.0	0.0	0.0
Delagoa Sandy Inner Shelf	LC	WP	100.0	0.0	0.0
Delagoa Sandy Mid Shelf	LC	WP	100.0	0.0	0.0
Delagoa Shelf Edge	LC	WP	98.7	1.3	0.0
Delagoa Upper Canyon	LC	WP	100.0	0.0	0.0
KZN Bight Muddy Shelf Edge	VU	MP	35.2	63.6	1.2
KZN Bight Deep Shelf Edge	EN	MP	3.4	95.5	1.0
KZN Bight Outer Shelf Mosaic	VU	MP	0.0	68.5	31.5
Leadsman Coral Community	LC	WP	100.0	0.0	0.0
Southwest Indian Lower Slope	LC	NP	89.8	10.2	0.0
Southwest Indian Mid Slope	LC	PP	96.3	3.7	0.0
Southwest Indian Upper Slope	LC	WP	97.9	2.1	0.0
St Lucia Mid Shelf Mosaic	LC	WP	100.0	0.0	0.0

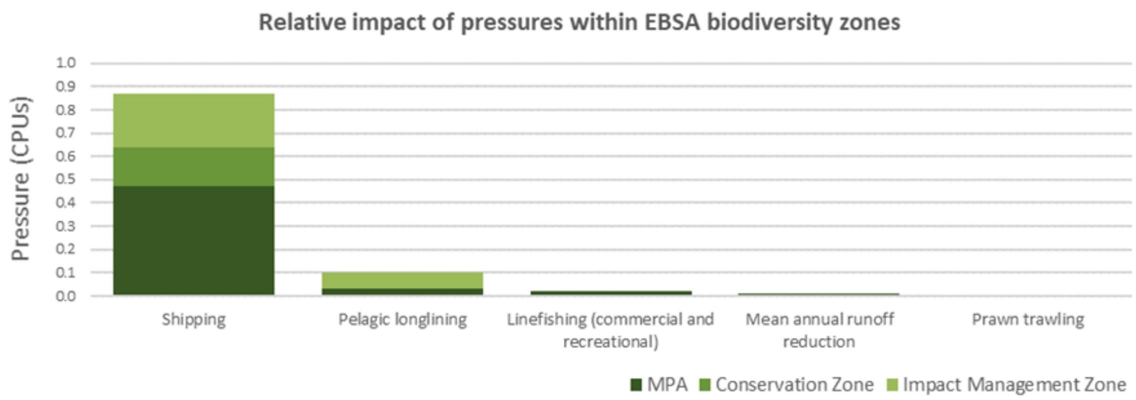
St Lucia Sandy Inner Shelf	LC	WP	100.0	0.0	0.0
St Lucia Sandy Mid Shelf	VU	MP	60.2	35.0	4.8
Other Features					
• Four species of turtles, two resident foraging species (juveniles) and two migratory nesting species (adults); all species are threatened • Coelacanths • Breeding, foraging and/or transiting areas for numerous species of sharks, dolphins and whales • Many important linefish species (e.g., sparids) • Fragile and/or habitat-forming species, e.g., reef-forming corals, sponges, starfish • Sites that support important life history stages of fish and crustaceans					

Relevant Pressures and Activities (impact, extent)

- There are five pressures present in this EBSA, of which shipping is the only one that covers the entire EBSA extent and has the highest cumulative pressure profile.
- Key pressures in this EBSA that most directly impact the features for which the EBSA is described include: pelagic longlining, recreational and commercial linefishing, prawn trawling and mean annual runoff reduction. These activities will need to be managed particularly well in order to protect the nursery habitats, fish assemblages and focal species, such as turtles (caught as bycatch), for which this EBSA is recognised. Ship strikes by passing vessels are also a risk to animals like turtles and whales. The commercial fishing pressures are in the Impact Management Zone, however, recreational linefishing is permitted in certain parts of iSimangaliso Wetland Park MPA.
- Prawn trawling and mean annual runoff reduction both comprise <1.5% of the EBSA pressure profile, and are largely linked to the health and functioning of the adjacent St Lucia estuary.
- Activities in South Africa that are not present in this EBSA include: abalone harvesting, alien invasive species, beach seining, benthic (hake) longlining, coastal development, coastal disturbance, dredge spoil dumping, gillnetting, kelp harvesting, mariculture, midwater trawling, mining (prospecting and mining), naval dumping (ammunition), oil and gas (exploration and production), oyster harvesting, tuna pole fishing, ports and harbours, recreational shore angling, shark netting, small pelagics fishing, south coast rock lobster harvesting, squid fishing, subsistence harvesting, inshore trawling, offshore trawling, wastewater discharge, and west coast rock lobster harvesting.



Map of cumulative pressure (top) and maps of the five pressures (activities) in the EBSA and surrounds. Darker reds indicate higher pressure intensity.



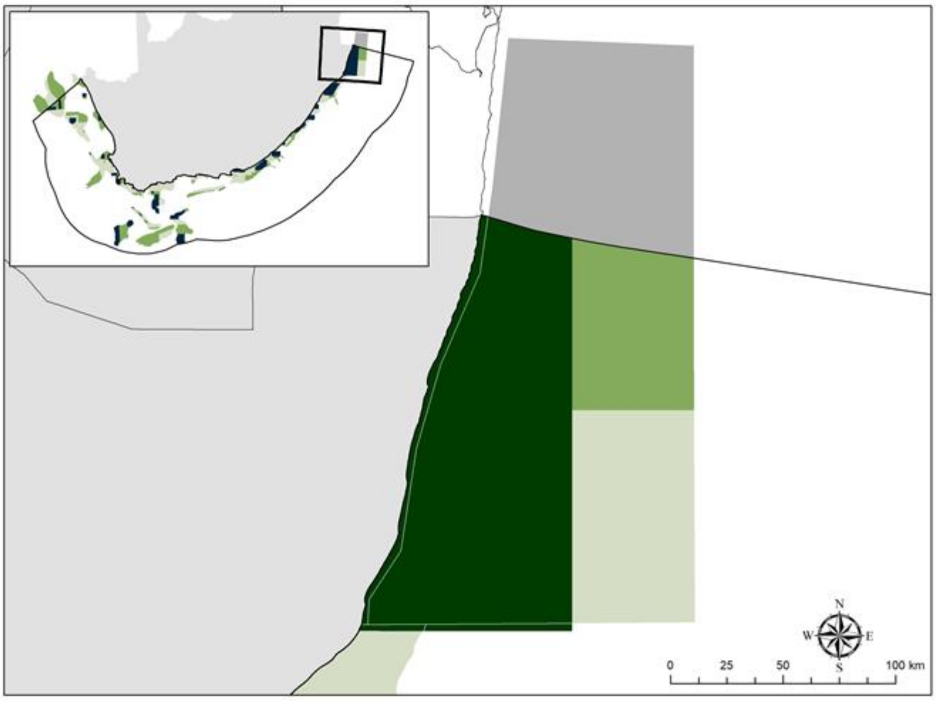
Pressure (in arbitrary cumulative pressure units, CPUs) summed for each pressure in the EBSA, per proposed EBSA biodiversity zone, ranked left (highest) to right (lowest) by the overall relative importance of pressures in this EBSA. Note that mean annual runoff reduction and prawn trawling each comprise <1.5% of the EBSA pressure profile.

Management Interventions Needed for the EBSA

Improved place-based protection of EBSA features should be pursued. In support of this, the EBSA is divided into a Conservation Zone and an Impact Management Zone, both comprising several areas within the EBSA. The aim of the Conservation Zone is to secure core areas of key biodiversity features in natural / near-natural ecological condition. Strict place-based biodiversity conservation is thus directed at securing key biodiversity features in a natural or semi-natural state, or as near to this state as possible. Activities or uses that have significant biodiversity impacts should be prohibited. Where possible and appropriate these areas should be considered for formal protection e.g., Marine Protected Areas or other effective area-based conservation measures (OECM). The aim of the Impact Management Zone is to manage negative impacts on key biodiversity features where strict place-based measures are not practical or not essential. In this zone, the focus is management of impacts on key biodiversity features in a mixed-use area, with the objective to keep biodiversity features in at least a functional state. Activities or uses which have significant biodiversity impacts should be strictly controlled and/or regulated. Within this zone, there should be no increase in the intensity of use or the extent of the footprint of activities that have significant biodiversity impacts. Where possible, biodiversity impacts should be reduced.

As far as possible, the Biodiversity Conservation Zone was designed deliberately to avoid conflicts with existing activities. It also includes one MPA that is partially within the EBSA (a small portion in the south is included in the KwaZulu-Natal Bight and uThukela River EBSA): iSimangaliso MPA, the proclamation of which in 2019 replaces and significantly expands the previous Maputaland (proclaimed in 1986) and St Lucia (proclaimed in 1979) MPAs. The activities permitted within this MPAs are not considered as part of the EBSA management recommendations because these are as per the gazetted regulations.

iSimangaliso MPA (proclaimed 2019)	https://www.gov.za/sites/default/files/gcis_document/201905/42478gon772.pdf



Proposed zonation of the EBSA into Conservation (bright green) and Impact Management (light green) Zones. MPAs are overlaid in dark green. Grey portions of the EBSA are beyond South Africa's jurisdiction.

Protection of features in the rest of the Conservation Zone may require additional Marine Protected Area declaration/expansion. Other effective conservation measures should also be applied via Marine Spatial Planning (MSP) to ensure that the existing activities/uses are appropriately controlled to ensure compatibility of activities with the environmental requirements for achieving the management objectives of the EBSA Biodiversity Conservation and Environmental Impact Management Zones.

Based on the compatibility of sea-use activities with the management objective of each EBSA zone (see table below, from the sea-use guidelines of the National Coastal and Marine Spatial Biodiversity Plan), it is recommended for MSP that compatible activities are managed as General activities, which are those that are permitted and regulated by current general rules and legislation. Activities that are conditional are recommended to be managed as Consent activities, which are those that can continue in the zone subject to specific regulations and controls, e.g., to avoid unacceptable impacts on biodiversity features, or to avoid intensification or expansion of impact footprints of uses that are already occurring and where there are no realistic prospects of excluding these activities. Activities that are not compatible are recommended to be Prohibited, where such activities are not allowed or should not be allowed (which may be through industry-specific regulations) because they are incompatible with maintaining the biodiversity objectives of the zone. These recommendations are subject to stakeholder negotiation through the MSP process, recognizing that there will likely need to be significant compromises among sectors. It is emphasized, as noted above, that if activities that are not compatible with the respective EBSA zones are permitted, it would require alternative Biodiversity Conservation Zones or offsets to be identified. If this is not possible, it is recommended that the activity is Prohibited.

List of all sea-use activities, grouped by their Marine Spatial Planning (MSP) zones, and scored according to their compatibility with the management objective of the EBSA's Biodiversity Conservation Zone (i.e., Critical Biodiversity Area, CBA) and Environmental Impact Management Zone (i.e., Ecological Support Area, ESA). Activity compatibility is given as Y = yes, compatible, C = conditional or N = not compatible, with major activities that are present in the EBSA shaded in grey.

Broad sea use	Associated MSP Zones	Associated sea-use activities	Biodiversity Conservation Zone (i.e. CBA)	Environmental Impact Management Zone (i.e. ESA)
Conservation	Marine Protected Area: Sanctuary zone Marine Protected Area: Restricted zone Marine Protected Area: Controlled zone	Sea-use activities as per gazetted MPA regulations	N/A	N/A
	Marine Protected Area: Proposed	Sea-use activities as per existing CBA/ESA categories until MPA declaration	Y	Y
	Biodiversity Conservation Zone	Critical Biodiversity Area (CBA)	Y	N/A
	Environmental Impact Management Zone	Ecological Support Area (ESA)	N/A	Y
Heritage	Heritage Protection Zone	Shipwrecks	Y	Y
		Sites of historic importance	Y	Y
		Sites of land- or seascape value	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach visiting, recreation, non-motorised water sports	Y	Y
		SCUBA diving	Y	Y
		Shark cage diving	Y	Y
		Whale watching	Y	Y
		Motorised water sports (e.g., jet skis)	C	Y
		Recreational boat-based linefishing	C	Y
		Recreational shore-based linefishing	C	Y
		Spearfishing	C	Y
		Shark control	C	Y
Fisheries	Commercial Fishing Zone	Crustacean trawling	N	C
		Demersal inshore trawling	N	C
		Demersal offshore trawling	N	C
		Abalone harvesting	C	Y
		Beach seining	C	Y
		Commercial linefishing	C	Y
		Demersal hake longlining	C	Y
		Gillnetting	C	Y
		Kelp harvesting	C	Y
		Midwater trawling	C	Y
		Oyster harvesting	C	Y
		Pelagic longlining	C	Y
		Small pelagics fishing	C	Y
		South coast rock lobster harvesting	C	Y
		Squid fishing	C	Y
		Tuna pole fishing	C	Y
		West coast rock lobster harvesting	C	Y
	Small Scale/Subsistence Fishing Zone	Subsistence fishing	C	Y
	Fisheries Resource Protection Zone	Resource protection	Y	Y
Aquaculture	Aquaculture Development Zone	Sea-based aquaculture	C	Y
Mining	Mining Zone	Mining: prospecting (non-destructive)	C	Y
		Mining: prospecting (destructive, localised impact, e.g., bulk sampling)	C	C
		Mining: mining construction and operations	N	C
Petroleum	Petroleum Zone	Petroleum: exploration (non-destructive)	C	Y
		Petroleum: exploration (destructive, localised impact, e.g., exploration wells)	C	C
		Petroleum: production	N	C
Renewable Energy	Renewable Energy Zone	Renewable energy installations	C	Y
Military	Military Zone	Missile testing grounds	C	Y
		Training areas	Y	Y
Transport	Maritime Transport Zone	Shipping lanes	Y	Y
		Ports and harbours	N	C
		Anchorage areas	C	Y
		Bunkering	C	Y
Infrastructure	Underwater Infrastructure Zone	Undersea cables	C	Y
		Seawater inlets	C	Y
		Pipelines	C	Y
	Land-based Infrastructure Zone	Coastal development	N	C
Disposal	Disposal Zone	Ammunition dumping site (*disused)	N*	N*
		Wastewater discharge	C	Y
		Dumping of dredged material	N	C

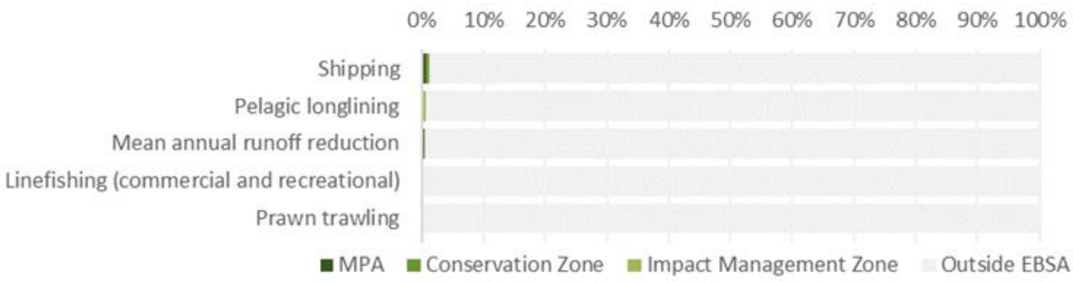
There are also some pressures on biodiversity features within the EBSA that originate from activities outside of these EBSA or beyond the jurisdiction of MSP. In support of maintaining the ecological integrity of and benefits delivered by the key biodiversity features, these other activities need to be appropriately managed by complementary initiatives.

Note also that the boundary of this EBSA was not revised given that it would have involved international engagement with Mozambique, which was beyond the scope of the current project. However, it ideally should be extended to match the extent of the iSimangaliso MPA and thus include the adjacent inshore and shore ecosystem types. Consequently, many of the shore-based activities (e.g., coastal development, coastal disturbance, recreational fishing, subsistence harvesting) that are not present and not relevant to the current EBSA boundary, are still important to regulate in support of the EBSA. Given that these activities fall within the iSimangaliso Wetland Park World Heritage Site and MPA, they should be adequately managed through the Park regulations.

Recommendations for other activities beyond the jurisdiction of MSP management to support securing key biodiversity features within the EBSA.

Other activities beyond the jurisdiction of MSP that directly influence the ecological condition of the EBSA that should be managed appropriately under the ICM Act and other appropriate legislation.
Mean annual runoff reduction (e.g., determining and implementing freshwater flow requirements and estuarine management plans)

Activity Evaluation Per Zone: Zoning Feasibility



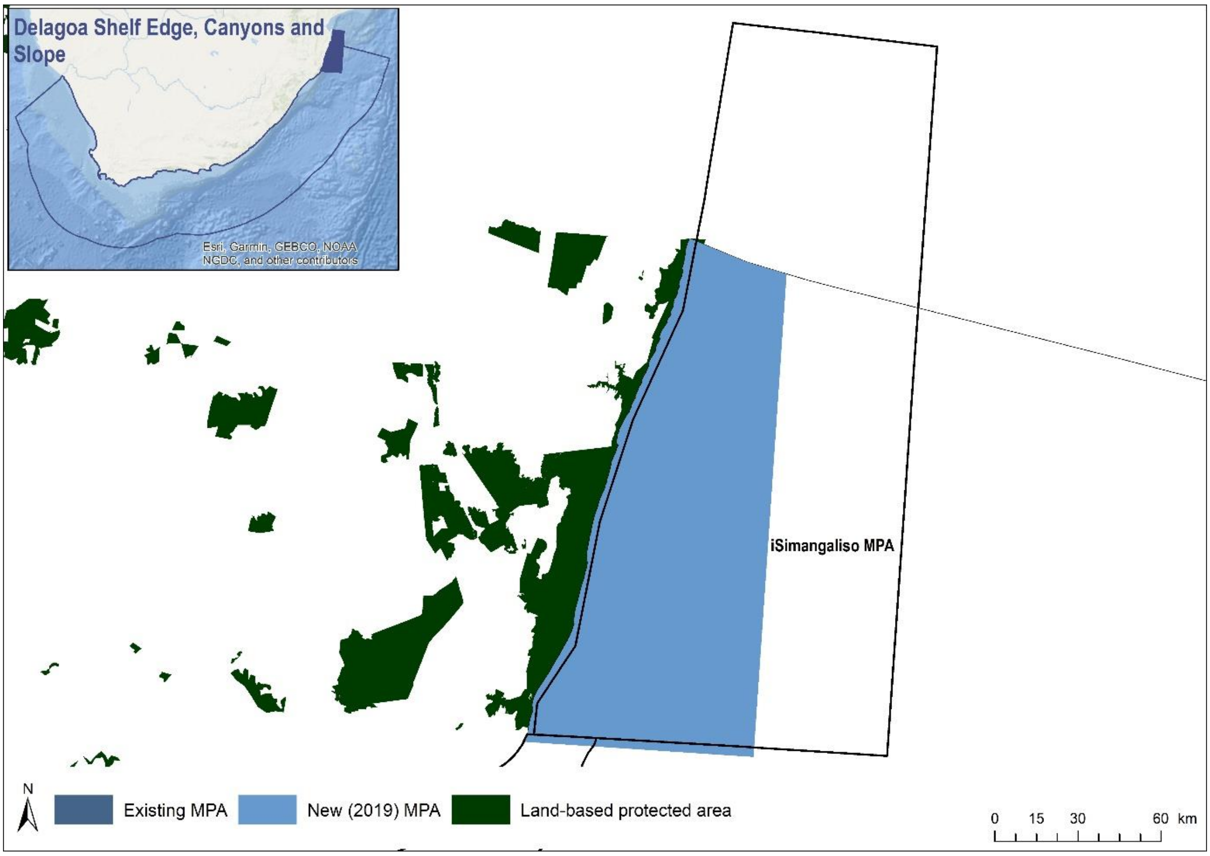
Proposed zonation of the EBSA, with the cumulative intensity footprint of activities within the EBSA (sorted highest to lowest) given relative to the national footprint of those activities to illustrate feasibility of management interventions.

All activities that occur within this EBSA comprise a small fraction of their respective national footprints. These activities are compatible or conditionally compatible with the EBSA zones and are recommended to continue, subject to appropriate regulations and management where necessary, especially in the Conservation Zone. It is also recognised that most of the activities are within the iSimangaliso MPA, where they are managed according to the MPA regulations. For example, linefishing (commercial and recreational) and prawn trawling occur only within the MPA. Pelagic longlining and shipping are the only activities that occur within the EBSA zones as well as the MPA. Pelagic longlining will require careful management during the summer because it is one of the most important pressures to Critically Endangered leatherback turtles that come to nest on the beaches in iSimangaliso Wetland Park immediately adjacent to the EBSA between October and March. Shipping is considered compatible with the EBSA and is recommended to continue in both the Conservation and Impact Management Zones under current general rules and legislation. Thus, in all cases, the EBSA zonation has no or minimal impact on the national footprint for the listed marine activities.

There are also several activities that are largely outside the EBSA but have downstream impacts to the biodiversity within the EBSA, e.g., from mean annual runoff reduction, coastal disturbance, and wastewater discharge. These impacts should be managed as well, but principally fall outside the direct management and zoning of the EBSA. These activities ideally should be and largely already are dealt with in the management plan of the adjacent iSimangaliso Wetland Park.

Management Recommendations for Marine Protected Areas

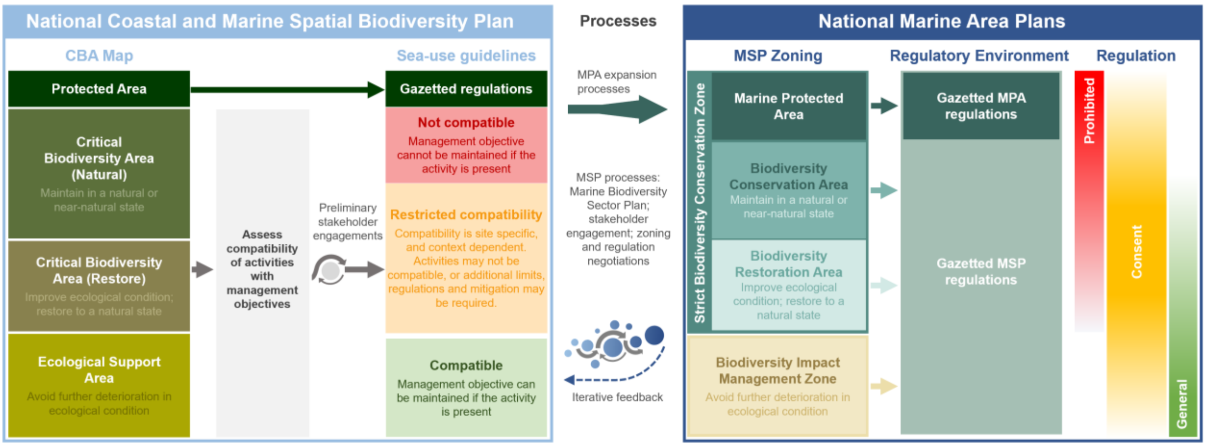
Since the inception of the MARIMSA Project, protection has increased in the EBSA with the declaration of the iSimangaliso MPA in 2019, which is an expansion and replacement of the previous St Lucia and Maputaland MPAs. This also builds on the adjacent land-based protected areas as part of iSimangaliso World Heritage Site and beyond. It is recommended that existing management is strengthened, and that full operationalisation of the expanded MPA is implemented, including revisions to the management plan, resourcing, and adequate staffing and law enforcement. Potential MPA expansion within the EBSA should be explored to ensure that the features for which the EBSA was described receive adequate protection. See Future Process below for more details.



Marine protected areas (MPAs) in the Delagoa Shelf Edge, Canyons and Slope EBSA. Land-based protected areas are also shown (from DFFE, 2021).

Developing the biodiversity sector's input to the national Marine Spatial Planning process

Following the initial management recommendations proposed for Delagoa Shelf Edge, Canyons and Slope, outlined above, South Africa iteratively developed a National Coastal and Marine Spatial Biodiversity Plan (NCMSBP; Harris et al. 2022a,b) that underpinned the Marine Biodiversity Sector Plan (DFFE 2022). The latter constitutes the biodiversity sector's input into the national Marine Spatial Planning (MSP) process. The NCMSBP comprises a Map of Critical Biodiversity Areas and Ecological Support Areas (abbreviated to CBA Map), and a set of sea-use guidelines that indicate activity compatibility with the management objectives of each of the CBA Map categories. These two components form the basis for the proposed biodiversity zones and management recommendations for the Marine Area Plans. EBSAs are an integral part of the NCMSBP, and thus the Biodiversity Sector Plan. Therefore, these products informed the proposed zoning and sea-use guidelines for EBSAs in the MSP process.

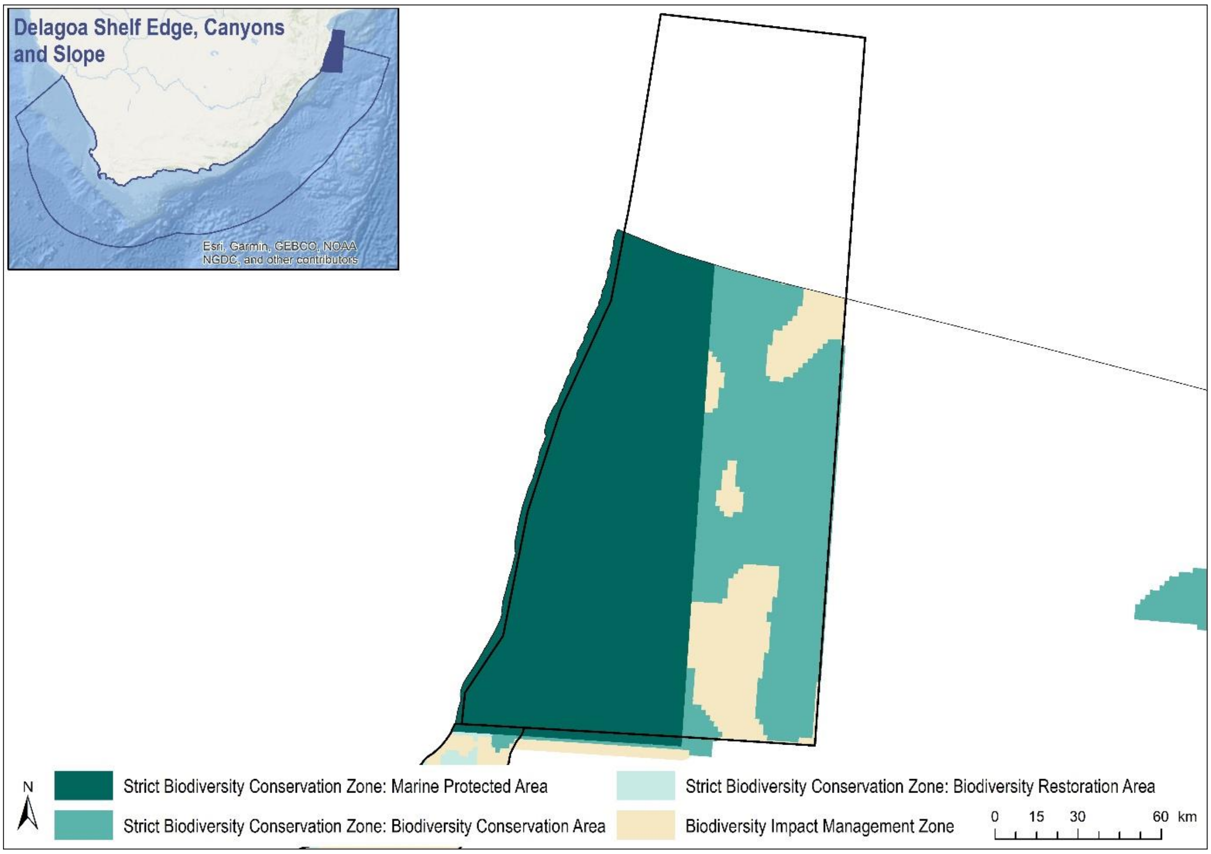


Schematic diagram illustrating that the National Coastal and Marine Spatial Biodiversity Plan will inform the Marine Area Plans through the Marine Biodiversity Sector Plan (DFFE 2022), and will be iteratively updated and refined based on feedback. The process for deriving the sea-use guidelines is also shown, indicating that it is based on an assessment of activity compatibility with the management objective of Critical Biodiversity Area (CBA) Natural, CBA Restore and Ecological Support Areas (ESAs). Marine Protected Area (MPA) expansion, focussing on CBAs, will also take place in a separate but related process. The outcomes of the Marine Spatial Planning and MPA expansion processes will be incorporated into the Marine Area Plans and will be fed back into future updates of the National Coastal and Marine Spatial Biodiversity Plan.

Proposed Zones

The proposed biodiversity zones for the EBSA in MSP comprises two types: a Strict Biodiversity Conservation Zone; and a Biodiversity Impact Management Zone. The former has three sub-categories: Marine Protected Area; Biodiversity Conservation Area; and Biodiversity Restoration Area. All of these zones and sub-categories are found in Delagoa Shelf Edge, Canyons and Slope, except the Strict Biodiverty Conservation Zone: Biodiversity Restoration Area.

iSimangaliso MPA is the only MPA in this EBSA, but comprises the biggest zone. It is managed according to the gazetted management regulations for this MPA. The rest of the Strict Biodiversity Conservation Zone is a Biodiversity Conservation Area, where the management objective of this zone is to maintain the sites in natural or near-natural ecological condition. The rest of the EBSA is a Biodiversity Impact Management Zone. This is a multi-use area that may already be heavily impacted, but needs to be kept ecologically functional because it is still important for marine biodiversity patterns, ecological processes, and ecosystem services. Therefore, the management objective is to avoid further deterioration in ecological condition.



Proposed biodiversity zones for the Delagoa Shelf Edge, Canyons and Slope EBSA for South Africa's Marine Area Plans.

Proposed Sea-Use Guidelines

All sea-use activities were listed and evaluated according to their compatibility with the management objective of each of the proposed biodiversity zones. Where various aspects of an activity have a different impact on the environment, these were reflected separately, e.g., impacts from petroleum exploration are different to those from production. Activity compatibility was based largely on the ecosystem-pressure matrix from the NBA 2018 (Sink et al. 2019), which is a matrix of expert-based scores of the functional impact and recovery time for each activity on marine ecosystems (adapted from Halpern et al. 2007). Activities were then classified into those that are Compatible, Not Compatible or have Restricted Compatibility with the management objectives of each proposed biodiversity zone. This classification followed a set of predefined principles that account for the severity and extent of impact, similar to the IUCN Red List of Ecosystems criterion C3 (Keith et al. 2013). Some exceptions and adjustments were made based on initial discussions as part of the MSP process.

Sea-use guidelines for Delagoa Shelf Edge, Canyons and Slope. List of all sea-use activities, grouped by their broad sea use and Marine Spatial Planning (MSP) Zones, and categorised according to their compatibility with the management objective of Strict Biodiversity Conservation Zone: Biodiversity Conservation Area (SBCZ: BCA); Strict Biodiversity Conservation Zone: Biodiversity Restoration Area (SBCZ: BRA); and the Biodiversity Impact Management Zone (BIMZ). Activity compatibility is given as Y = yes, compatible, R = restricted compatibility, or N = not compatible. Strict Biodiversity Conservation Zone: Marine Protected Areas (SBCZ: MPA) are managed according to their gazetted regulations.

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
Conservation	Biodiversity Zones	Expansion of place-based conservation measures (e.g., MPA expansion)	Sea-use activities as per gazetted MPA regulations	Y	Y	Y
Recreation and tourism	Marine Tourism Zone	Beach recreation, non-motorised water sports		Y	Y	Y
		Ecotourism (e.g., shark cage diving, whale watching)		Y	Y	Y
		SCUBA diving		Y	Y	Y
		Motorised water sports (e.g., jet skis)		R	R	Y
		Recreational fishing (e.g., shore-based, boat-based and spearfishing)		N	R	Y
		Shark control: exclusion nets		Y	Y	Y
		Shark control: drumlines and gillnets		N	R	Y
Heritage	Heritage Conservation Zone	Protection of sites of heritage importance, including historical shipwrecks		Y	Y	Y
		Protection of sites of seascape value		Y	Y	Y
Fisheries	Commercial and Small-Scale Fishing Zones	Abalone harvesting		R	R	Y
		Linefishing		N	R	R
		Demersal shark longlining		N	R	Y
		Demersal hake longlining		N	R	R
		Midwater trawling		N	R	Y
		Pelagic longlining		R	R	Y
		Small pelagics fishing		N	R	Y
		South coast rock lobster harvesting		R	R	Y
		Squid harvesting		R	R	Y
		Tuna pole fishing		R	R	Y
		West coast rock lobster harvesting		R	R	Y
		Crustacean trawling		N	N	R
		Demersal hake trawling (inshore and offshore)		N	R	R
		Hake handlining		R	R	Y
		Seaweed harvesting		R	R	Y
		Commercial white mussel harvesting		R	R	Y
		Beach seining		R	R	Y
		Gillnetting		R	R	Y
		Kelp harvesting		R	R	Y
		Oyster harvesting		R	R	Y
		Small-scale fishing		R	R	Y
	Fisheries Resource Protection Zone	Resource protection		Y	Y	Y
Aquaculture	Aquaculture Zone	Sea-based aquaculture		N	R	R
Mining	Mining Zone	Mining: prospecting (non-destructive)		R	R	R
		Mining: prospecting (destructive, e.g., bulk sampling)		N	N	R
		Mining: mining construction and operations[1]		N	N	R
Petroleum	Petroleum Zone	Petroleum: exploration (non-invasive)		R	R	R
		Petroleum: exploration (invasive, e.g., exploration wells)		R	R	R
		Petroleum: production[1,2]		N	N	R
		Petroleum: oil and gas pipelines		N	N	R
Renewable Energy	Renewable Energy Zone	Renewable energy installations		N	R	R
Defence	Military Zone	Military training and practice areas		R	R	Y
		Missile testing grounds		R	R	Y
Transport	Maritime Transport Zone	Designated shipping lanes (including port approach zones)		R	R	Y
		Anchorage areas		R	R	Y
		Bunkering		N	N	R
		Ports and harbours (new)		N	N	R

Broad sea use	Associated MSP Zones	Associated sea-use activities	SBCZ: MPA	SBCZ: BCA	SCBZ: BRA	BIMZ
		Dumping of dredged material		N	N	R
Infrastructure	Underwater Infrastructure Zone	Pipelines (excluding oil and gas)		N	R	Y
		Undersea cables (new installations)		N	R	Y
	Land-based Infrastructure Zone	Coastal development (new installations, including piers, breakwaters, and seawalls)[3]		N	N	R
Abstraction and Disposal	Disposal Zone	Waste-water (new installations)		N	R	Y
	Sea-water abstraction and disposal	Sea-water abstraction and disposal (e.g., desalination)		R	R	Y
		Sea-water abstraction and disposal (e.g., aquaculture disposal)		N	R	Y

[1] The activity should not be permitted to occur in CBAs because it is not compatible with the respective management objectives. However, if significant mineral or petroleum resources are identified during prospecting/exploration, then the selection of the site as a CBA could be re-evaluated as part of compromises negotiations in current or future MSP processes. This would require alternative CBAs and/or biodiversity offsets to be identified. However, if it is not possible to identify alternative CBAs to meet targets for the same biodiversity features that are found at the site, it is recommended that the activity remains prohibited.
[2] The recommended prohibition of the activity in CBAs (because it is not compatible with the management objective) refers to the location of the biodiversity disturbance rather than the location of the petroleum resource. If petroleum production is possible using lateral drilling or other techniques that do not result in any impacts on biodiversity within the CBAs, then production may be treated as an activity with restricted compatibility (i.e., recommended to be a consent activity).
[3] New coastal development should not be permitted in CBA Restore sites unless it is part of rehabilitation and restoration activities to improve ecological condition.

Proposed management recommendations for activities with each of the different compatibility ratings:

- **Compatible**: Activities should be allowed and regulated by current general rules. Notwithstanding, there should still be duty of care, possibly requiring monitoring and evaluation programmes, to avoid unintended cumulative impacts to the biodiversity features for which this area is recognised.
- **Restricted compatibility**: A robust site-specific, context-specific assessment is required to determine the activity compatibility depending on the biodiversity features for which the site was selected. Particularly careful attention would need to be paid in areas containing irreplaceable to near-irreplaceable features where the activity may be more appropriately evaluated as not permitted. The ecosystem types in which the activities take place may also be a consideration as to whether or not the activity should be permitted, for example. Where it is permitted to take place, strict regulations and controls over and above the current general rules and legislation would be required to be put in place to avoid unacceptable impacts on biodiversity features. Examples of such regulations and controls include: exclusions of activities in portions of the zone; avoiding intensification or expansion of current impact footprints; additional gear restrictions; and temporal closures of activities during sensitive periods for biodiversity features.
- **Not compatible:** The activity should not be permitted to occur in this area because it is not compatible with the management objective. If it is considered to be permitted as part of compromises in MSP negotiations, it would require alternative Strict Biodiversity Conservation Zones and/or offsets to be identified. However, if this is not possible, it is recommended that the activity remains prohibited within the Strict Biodiversity Conservation Zone.

Research Needs

There are no specific research needs for this EBSA in addition to those for all EBSAs (see EBSA Research Needs below).

Future Process

It is recommended that there is engagement with Mozambique to review this EBSA to match the update for the rest of South Africa's EBSAs. The revision would need to include addressing the inconsistency in the western boundary stated in the description (high water mark) and the mapped boundary in the EBSA delineation (2-3 km from the shore on the inner shelf), likely resulting from the scale at which the EBSA boundary was drawn. Notably, refining the delineation to match what is recorded in the description would ensure that key biodiversity features are captured in the EBSA extent, such as critical breeding habitat for threatened species (loggerhead and leatherback nesting beaches) and reefs containing fragile species and serving as foraging areas for numerous species including juvenile turtles. Note also that these beaches comprise the full extent of the only nesting beaches for the Western Indian Ocean populations (discrete Regional Management Unit) of loggerheads and leatherbacks.

There also needs to be full operationalisation and practical implementation of the proposed zoning in South Africa's national marine spatial plan, with gazetted management regulations following the proposed management recommendations outlined above. Possible offshore MPA expansion within the EBSA should be explored, with relevant areas included into focus areas that can be considered further in a dedicated MPA expansion process with adequate and meaningful stakeholder engagement. There is already excellent alignment between land-based and marine biodiversity priorities through the iSimangaliso World Heritage Site. It should be explored to see if there are any ways in which this could be strengthened further, e.g., through the cross-realm planning in the CoastWise project.

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EBSA Research Needs

Research needs are generally the same across all EBSAs, and are presented here as a list that is applicable to all EBSAs. If there are specific needs that are unique to a particular EBSA, these are given after the Movitation for Revisions section per EBSA, above.

Data, foundational knowledge and understanding

- **Improved mapping of ecosystem types within and around EBSAs** as part of national and regional mapping processes is required. Although significant improvements have been made, there still needs to be effort to refine classification, improve mapping, groundtruth the boundaries and monitor changes in ecosystem types. This is particularly important for offshore types which are poorly known and poorly delineated. In addition, special benthic features like canyons and seamounts remain poorly mapped. Improved bathymetry data and targeted surveys are needed.
- **Improved species information is required** for EBSAs, particularly where threatened or fragile, sensitive or vulnerable species underpin (or could strengthen) the EBSA status. This is also important for informing whether conservation actions (MPAs, zoning, other place-based controls and general controls) are effective in achieving biodiversity targets (especially for resource species) and managing impacts.
- **Species assessments within EBSAs to comprehensively list threatened species** and ensure they are being adequately catered for in the EBSA networks. This is important to ensure that management of EBSAs fully meets requirements for threatened and sensitive/vulnerable species. Clearly, if if relevant species are present in an EBSA but are not known, there is no guarantee that management activities (e.g. zoning) would meet their requirements. This includes both resident and migratory species.
- **More ecological studies are required to better understand many of the offshore ecosystem types** that are currently mapped, but poorly known. This includes their constituent biodiversity and ecology, ecological processes and ecosystem services. Field based survey data are often lacking or outdated. EBSA provide a logical focus area for survey cruises, repeat sampling and long-term monitoring.
- **Systematic research on actual ecological condition of EBSA is required**. Currently ecological condition is inferred from mapping cumulative pressures, but direct evidence is required. EBSA zones can also provide useful controls for studies on impacts of individual pressures (which may be excluded from some zones and allowed in adjacent areas).
- **Research on human-impact mitigation** is also recognised as a research priority. In this regard, establishing and strengthening protection in EBSAs provides a notable research opportunity. As management regimes change within EBSAs, it is important to track recovery of sites following exclusion of key pressures in well-designed experiments (e.g., before-after, control-impact designs) to quantitatively determine the efficacy of improved management for coastal and marine biodiversity.
- **Improved sharing of data** (especially spatial data) will improve overall understanding of EBSAs. Currently, even if data exist, these are hard to identify and access. Organized sharing of (spatial) data is critical for rational evidence-based management of EBSAs.

Monitoring, management, and conservation

- **Long-term monitoring programmes** need to be established to facilitate **early detection of degradation of EBSA biodiversity features and ecosystems**. This includes early warning of invasive species and to track changes from global change (both climate change and other pressures as economic activities in the ocean intensify and diversify). EBSAs could serve as reference sites given that they are largely in good ecological condition (or at least better condition compared to surrounding areas) and where negotiations are underway to control activities in EBSAs.
- **Improved monitoring of actual levels of human activity within and around EBSA** is required. Short term improvements are possible through minor adjustments to existing fisheries monitoring protocols. For example, moving towards a point specific summary of activity rather than broad grid-based integration of data would provide a much-improved view of actual activities.
- Potential for the **expansion of Marine Protected Areas** should be explored in EBSA conservation zones. In particular, EBSA biodiversity features (e.g. ecosystems, species and ecological process areas) that are under-represented in national and regional protected area networks, should be investigated in terms of their potential for inclusion in MPA networks.