

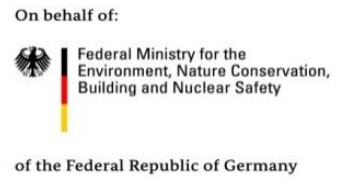
ECOLOGICALLY OR BIOLOGICALLY SIGNIFICANT MARINE AREAS

in the Benguela Current Large Marine Ecosystem



Cape Canyon and Surrounding Islands, Bays and Lagoon

REVISED DESCRIPTION



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

CAPE CANYON AND SURROUNDING ISLANDS, BAYS AND LAGOON

Revised Description



Front cover image credits: ACEP, Linda Harris, Steve Benjamin, Geoff Spiby, Melanie Wells

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.

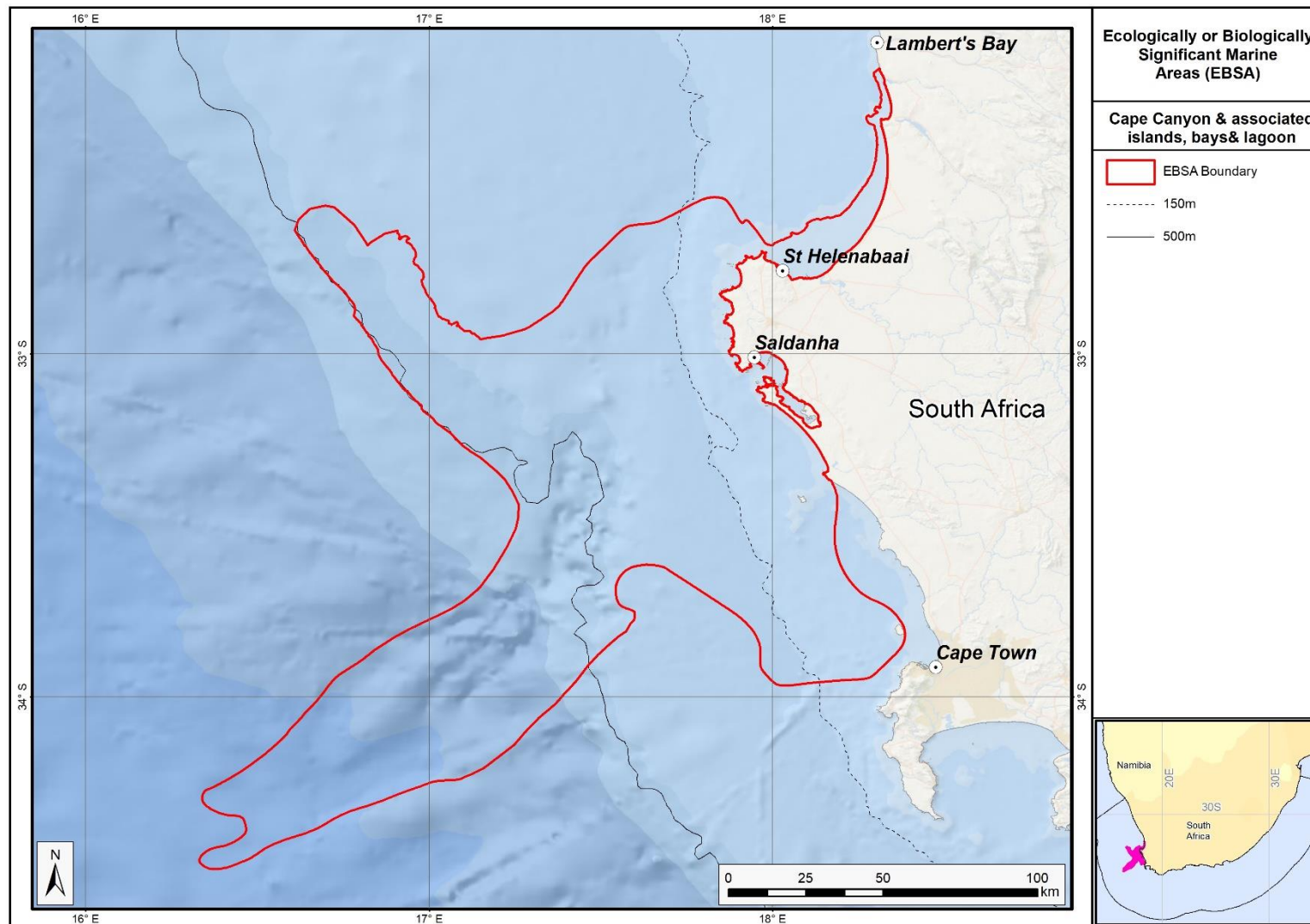
Description of the location

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 (Karenzi 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 Velerenvlei 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 comprehensive 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 Helena Bay to encompass those sensitive communities (Karenzi 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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Other relevant website address or attached documents

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
	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 Saldanha, covering

an estimated 567 km², 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 still need to be submitted to COP for approval.

COP Decision

dec-COP-12-DEC-22

End of proposed EBSA revised description

Motivation for Revisions

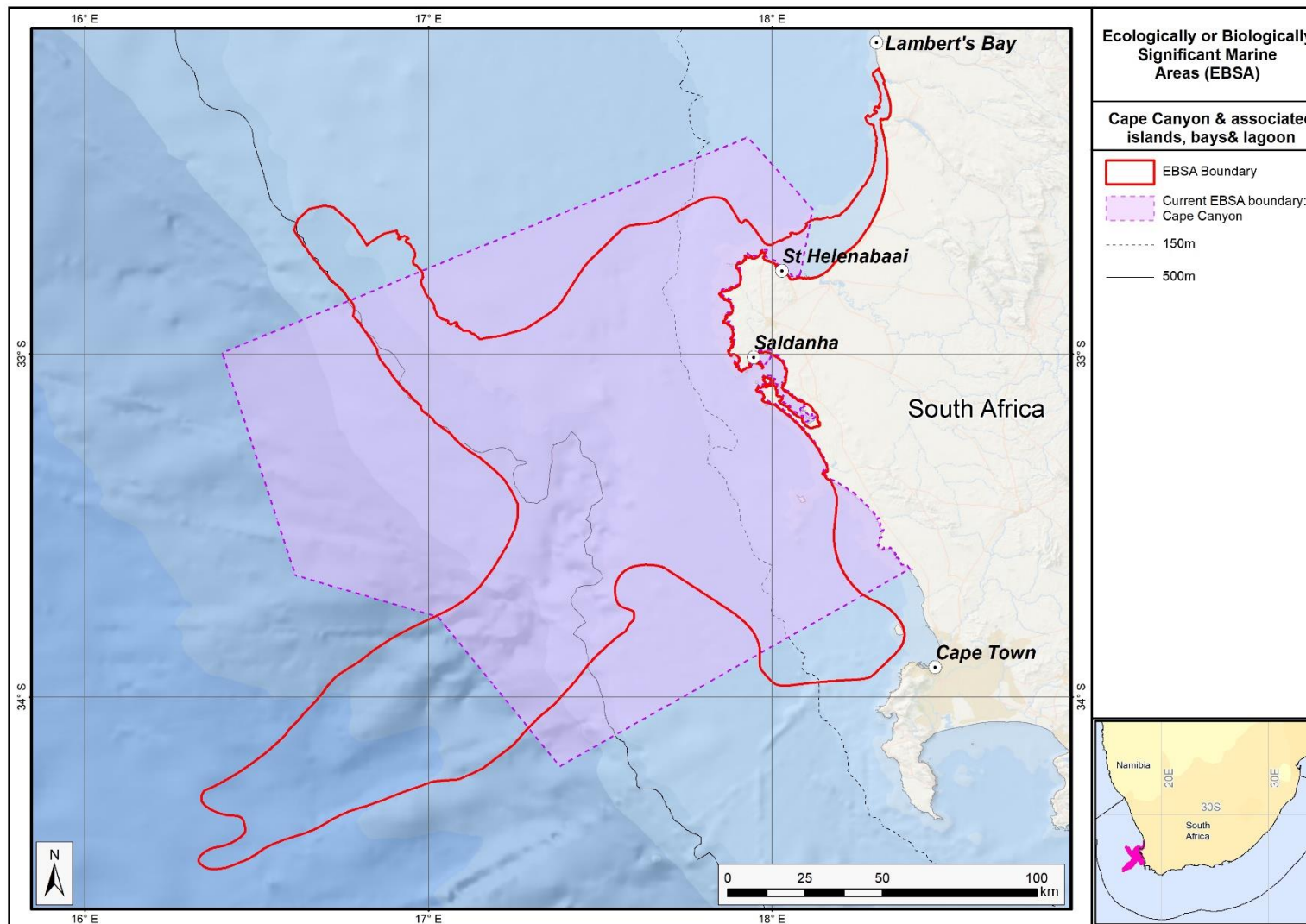
Some technical revisions and updates to the description were made, with two of the criteria being upgraded from medium to high (criterion 1 and criterion 6) given the more substantiated evidence. A supplementary table of the habitats represented in the EBSA and their associated threat status was also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