Appendix

Template for Submission of Scientific Information to Describe Ecologically or Biologically Significant Marine Areas

*Note: Please **DO NOT** embed tables, graphs, figures, photos, or other artwork within the text manuscript, but please send these as separate files. Captions for figures should be included at the end of the text file, however.*

Title/Name of the area: Prince Edward Islands Area (including part of the Southwest Indian Ridge and Del Cano Rise)

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Abstract:

The proposed area covers a northern section of the South African EEZ around Prince Edward Islands and extends eastward to include the Del Cano Rise (towards the western margin of the EEZ around the French Crozet Archilpelago) and westward to include the southern flank of the NE-SW trending Southwest Indian Ridge. The Prince Edward Islands are considered to be pristine and have a high level of endemism. The region constitutes the foraging and breeding areas for many threatened bird species and is important in terms of terrestrial and oceanic connectivity and connectivity between bathymetric features. The area lies between the Subtropical Convergence to the north and the Antarctic Polar Front (APF) to the south and includes two major frontal areas and three water masses. There is considerable habitat heterogeneity with potentially sensitive habitats and vulnerable species including reef forming cold water corals. Habitats include seamounts, transform faults and fracture zones, deep trenches, hydrothermal vents, abyssal plain and several pelagic habitat types.

Introduction:

This area includes the submarine terrain where the western end of the relatively low relief east-west trending Del Cano Rise merges with the southern flank of the northeast-southwest trending Southwest Indian Ridge (SWIR), including the Prince Edward Islands. The Southwest Indian Ridge exhibits some of the most rugged underwater terrain in the world. Here, the generally north-south trending ridges and valleys of the Prince Edward and Marion transform fault and fracture zones, reach elevations of less than 500m and depths in excess of 5000m water depths respectively and provide a conduit for the northern movement of cold Antarctic bottom currents

across the barrier of the SWIR. This pristine area includes islands with a high level of endemism and constitutes breeding and foraging habitat and critical linkages for life history phases for albatrosses, penguins, other seabirds and marine mammals, some of which are globally threatened. The Del Cano Rise is linked to the features within the EEZ of South Africa surrounding the Prince Edward Islands, i.e the Africana Rise. Another important factor relating to migration of marine life is that the Southwest Indian Ridge forms a nearly continuous connection with the Central Indian Ocean Ridge which extends northwards up to the Red Sea, and southwards to ~60 degrees south, where it joins with the Mid-Atlantic Ridge which extends northward past the equator up to the Arctic Ocean. The junction of the Del Cano Rise with the SWIR is also linked northward via the Discovery II Fracture Ridge to the South Madagascar Plateau, which extends north up to the southern coast of Madagascar. The area lies between the Subtropical Convergence to the north and the Antarctic Polar Front (APF) to the south and includes two major frontal areas; the APF and the Sub-Antarctic Front (SAF) and three water masses. The SAF lies in close proximity to the Prince Edward Island, the only land masses above water within this area. There is high frontal interaction with shallow oceanic features. There is considerable habitat heterogeneity with potentially sensitive habitats and vulnerable species including reef forming cold water corals. Habitats include many seamounts; transform fault ridges and deep trenches, hydrothermal vents, shallow abyssal plain and several pelagic habitat types.

Location: This area is bounded by 43 - 48 degrees south and 32.7 3 - 45 degrees east. It covers a northern section of the South African EEZ around Prince Edward Islands and extends eastward to include the Del Cano Rise (towards the western margin of the EEZ around the French Crozet Archilpelago) and westward to include the southern flank of the NE-SW trending Southwest Indian Ridge. The area is within the EEZ of South Africa but extends outside to the east into the CCAMLR area. Some of this area is witin an extended continental shelf claim.

Feature description of the proposed area:

This area includes rugged underwater terrain (as a component of the SWIR). Here, the generally north-south trending ridges and valleys of the Prince Edward and Marion transform fault and fracture zones, reach elevations of less than 500 m and depths in excess of 5000 m water depths respectively and provide a conduit for the northern movement of cold Antarctic bottom currents across the barrier of the SWIR. This pristine area includes islands with a high level of endemism and constitutes breeding and foraging habitat and critical linkages for life history phases for albatrosses, penguins, other seabirds and marine mammals, some of which are globally threatened. Another important factor relating to migration of marine life is that the Southwest Indian Ridge forms a nearly continuous connection with the Central Indian Ocean Ridge which extends northwards up to the Red Sea, and southwards to ~60 degrees south, where it joins with the Mid-Atlantic Ridge which extends northward past the equator up to the Arctic Ocean. The junction of the Del Cano Rise with the SWIR is also linked northward via the Discovery II Fracture Ridge to the South Madagascar Plateau, which extends north up to the southern coast of Madagascar. The area lies between the Subtropical Convergence to the north and the Antarctic Polar Front (APF) to the south and includes two major frontal areas; the APF and the Sub-Antarctic Front (SAF) and three water masses. The SAF lies in close proximity to

the Prince Edward Island, the only land masses above water within this area. There is high frontal interaction with shallow oceanic features. See Lombard *et al*. 2007 for further details.

Feature condition and future outlook of the proposed area:

South Africa annexed the sub-Antarctic Prince Edward Islands (Marion and Prince Edward) in 1948, and from that time this island has had limited anthropogenic impacts on its ecosystems. Marion Island is home to a meteorological base and activities are limited to environmental and meteorological research, whilst Prince Edward is rarely visited and has no permanent structures on the island. Key pressures in the area include climate change, the Patagonian toothfishery and associated bycatch of seabirds (and interactions with orcas), shipping and associated risks linked to pollution and invasive species, increasing interest in minerals and hydrocarbons and eco-tourism. (Lombard et al. 2007). South Africa has gazette a notice of intention to declare an MPA within the EEZ in 2009 but this has not been proclaimed as yet. The toothfishery has altered fishing patterns from those reported in 2007 (Lombard).

Assessment of the area against CBD EBSA Criteria

(Discuss the area in relation to each of the CBD criteria and relate the best available science. Note that a candidate EBSA may qualify on the basis of one or more of the criteria, and that the boundaries of the EBSA need not be defined with exact precision. And modeling may be used to estimate the presence of EBSA attributes. Please note where there are significant information gaps)

CBD EBSA Criteria (Annex I to decision IX/20)	**Description** (Annex I to decision IX/20)	**Ranking of criterion relevance** (please mark one column with an X)			
		Don't Know	**Low**	**Some**	**High**
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.			**x**	
The Prince Edward Islands support globally significant populations of several seabird and seal species, including > 40% of the world's wandering albatrosses, 33% of Crozet shags and > 20% of Indian yellow-nosed albatrosses. It is one of only three localities (all of which are in the south-west Indian Ocean, the others being the Crozet and Kerguelen archipelagos) where both species of *Phoebetria* albatrosses breed (but only four pairs of sooty albatross breed at the Kerguelen archipelago). The Prince Edward Islands are at the northern limit of the breeding distribution of gentoo penguin. Seamounts and hydrothermal vents occur within the areas but are poorly researched. This area includes the only location of the pelagic region 19 in the CCAMLR region. The islands themselves have high endemism. (Lombard *et al.* 2007, Koubbi *et al.* 2012).					
Special importance	Areas that are required for a population to survive and thrive.				**x**

CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Some	High
for life-history stages of species					
This area constitutes breeding and foraging grounds for albatrosses, penguins, other seabirds and marine mammals. The area includes critical linkages between breeding and feeding areas for both inshore and offshore foragers including terrestrial and marine links and links between different marine habitats that represent important connectivity between life history stages for these species. Satellite tracking data and habitat predictions show the importance of the area to top predators. Another important factor relating to migration of marine life is that the Southwest Indian Ridge forms a nearly continuous connection with the Central Indian Ocean Ridge which extends northwards up to the Red Sea, and southwards to ~60 degrees south, where it joins with the Mid-Atlantic Ridge which extends northward past the equator up to the Arctic Ocean. The junction of the Del Can Rise with the SWIR is also linked northward via the Discovery II Fracture Ridge to the South Madagascar Plateau, which extends north up to the southern coast of Madagascar. (Lombard et al. 2007, Koubbi *et al.* 2012).					
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.				**x**
This area is important for globally threatened and near-threatened seabirds and seals (near-threatened species are not listed). Sooty albatross *Phoebetria fusca* EN (global), Indian yellow-nosed albatross *Thalassarche carteri* EN (global), Southern elephant seal *Mirounga leonina* EN (South Africa 2004, LT global 2008), Wandering albatross *Diomedea exulans* VU (global), Grey-headed albatross *Thalassarche chrysostoma* VU, White-chinned petrel *Procellaria aequinoctialia* VU (global), Southern rockhopper penguin *Eudyptes chrysocome* VU (global). (Lombard et al. 2007, Ryan et al. 2009).					
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.				**x**
This area includes a relatively high proportion of potentially sensitive habitats with steep shelves, seamounts, ridges and gullies and hydrothermal vents. Reef building cold water corals have been collected (iZiko museum) and observers in the Patagonian toothfishery report habitat forming sponges, black corals and cold water corals (Lombard et al. 2007 and references therein). Habitats and species are vulnerable to climate change impacts particularly those that are impacted by changes in the position of the SAF. Populations of long-lived seabirds, including albatrosses and petrels many of which have a late age at maturity, breed biennially and have a small clutch, may be rapidly depleted. Outbreaks of disease at subantarctic islands have caused high mortality of seabirds, including at the Prince Edward Islands. Introduced predators (including cats and mice) have also had major impacts at islands.					
Biological productivity	Area containing species, populations or communities with comparatively higher natural biological productivity.				**x**

CBD EBSA Criteria (Annex I to decision IX/20)	Description (Annex I to decision IX/20)	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Some	High
This area includes two major frontal systems: the Sub-Antarctic Front (SAF) and the Antarctic Polar Front (APF) and the southern SAF which lies between them. As such there are three major water masses: Sub-Anarctic surface waters (north of the SAF), Northern Polar Frontal waters (between the SAF and the SSAF), and Southern Polar Frontal waters (between the SSAF and the APF). Elevated plankton and fish biomass are associated with the two major frontal systems and the front areas constitute important foraging habitat for seabirds and marine mammals. There is high frontal interaction with shallow oceanic features in the area. Mesoscale eddies north of the islands also constitute important feeding grounds for top predators (Lombard et al. 2007 and references therein). The shelf around the Prince Edward Islands receives considerable nutrient input from the islands ensuring relatively high primary and secondary production. (Lombard *et al.* 2007, Koubbi *et al.* 2012)					
Biological diversity	Area contains comparatively higher diversity of ecosystems, habitats, communities, or species, or has higher genetic diversity.				**x**
This area has high habitat heterogeneity with islands, steep shelves, seamounts, transform ridges (extending up to 500 m in places) and trenches (as deep as 5000 m in places), hydrothermal vents, shallow abyssal plains and some of the warmest seabed habitat in the Southern Ocean. Higher fish species richness has been reported on the Del Cano Rise and around the PE Islands. The area includes several pelagic habitats (pelagic regions17, 19, 20 of CCAMLR). (Lombard *et al.* 2007, Koubbi *et al.* 2012)					
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.				**x**
There is limited anthropogenic influence. Much of the area is still pristine (Lombard et al. 2007, Chown and Froneman 2008).					

Sharing experiences and information applying other criteria (Optional)

Other Criteria	Description	Ranking of criterion relevance (please mark one column with an X)			
		Don't Know	Low	Some	High
Add relevant criteria					
Key pressures in the area include climate change, the Patagonian toothfishery and associated bycatch of seabirds (and interactions with orcas), shipping and associated risks linked to pollution and invasive species, increasing interest in minerals and hydrocarbons and eco-tourism. (Lombard et al. 2007).					

References

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Maps and Figures

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