

Management Plan for Antarctic Specially Protected Area No. 132

POTTER PENINSULA

Introduction

This area was originally designated as Site of Special Scientific Interest No. 13 in ATCM Recommendation XIII-8, following a proposal by Argentina, given its diverse and extensive vegetation and fauna, which constitutes a representative sample of the Antarctic ecosystem.

In 1997, the Management Plan was adapted to the requirements of Annex V of the Protocol on Environmental Protection to the Antarctic Treaty, and approved through Measure 3 (1997). This version consists of the revision to the Management Plan approved pursuant to Measure 2 (2005), and this is the second revision since entry into force of Annex V.

The original goals for designating this Area are still relevant. Potter Peninsula is designated as an Antarctic Specially Protected Area to protect its outstanding environmental values and to facilitate ongoing and planned scientific research. The anthropic disturbance could jeopardise the long-term studies conducted in the Area, especially during the breeding season.

The main reason for the ASPA designation is that Potter Peninsula constitutes a representative sample of assemblages of species of the Antarctic ecosystem. The coastal areas host important bird colonies, marine mammal breeding areas and diverse vegetal species. It has a great scientific value since several studies about the impacts of the climate change in the biotic and abiotic factors as well as its consequences in the food web can be conducted in the area (e.g. Carlini *et al.* 2009, Carlini *et al.* 2010, Casaux *et al.* 2006, Daneri and Carlini 1999, Rombolá *et al.* 2010, Torres *et al.* 2012). It is crucial to keep these scientific activities, like the monitoring program that is being conducted since 1982, including the CCAMLR Ecosystem Monitoring Programme, as it can produce invaluable scientific data to this purpose.

There are several features that make this area particularly susceptible to human interference, like the configuration of the zone, that is, a relatively narrow coastal area, enclosed between the sea and a cliff, where there is no area for movement that do not interfere with the breeding colonies. The high concentration of activities, scientific stations and the easy land and marine accessibility to the area, even if it is through small vessels, represent a potential threat to the biological values and the research activities.

The environmental situation in the South Shetland Islands, according to recent studies, shows that the portion of the Southern Ocean near Potter Peninsula has been severely altered, first by almost complete extraction of once unimaginably abundant fish- and krill-eating fur seals (*Arctocephalus* spp.) followed by baleen whales. More recently, fur seals have largely recovered and baleen whales are beginning to do so (Ainley *et al.* 2010), but climate change is increasingly altering ecological processes through physical changes in temperature, water circulation and sea ice extension among others. As a result of reduced prey, not only to climate change and recovering competitors, but also others factors currently unknown, penguin populations are decreasing (Ducklow *et al.* 2007, Ainley and Blight 2009, Ainley *et al.* 2010, Trivelpiece *et al.* 2010). In this sense, currently, the ASPA 132 has acquired special relevance, given that the study of Adelie penguin colonies present in the Area offers responses to environmental changes observed in the Antarctic Peninsula, especially the lower frequency of cold years associated to the reduction of sea ice extensions, and its effects in the

abundance of krill.

Potter Peninsula also provides exceptional opportunities for other scientific studies of terrestrial and marine biological communities.

Among the researches that are currently being conducted at ASPA 132 are:

- Coastal Biomonitoring: effect of global climate change and xenobiotics on Antarctic food webs key species.
- Persistent organic pollutants and trace elements in biotic and abiotic matrices of the Antarctic environment.
- Energy Acquisition, prey type and potential responses of Pinnipeds to climate anomalies and sea ice extent in the Antarctic Peninsula Region and the Scotia Arc
- Response of Antarctic bird populations to the interannual variability of their prey in areas with obvious global warming effects
- *Deschampsia Antarctica* phylogeography based on molecular, morphological and karyological studies
- Distribution and nutritional status of Brown Skuas and South Polar Skuas.

1. Description of values to be protected

The coastal areas host important bird colonies, marine mammal breeding colonies and profuse vegetation (vast moss carpets in coastal areas and lichen forests in rocky areas). Scientific research programmes on the breeding ecology of elephant seals (*Mirounga leonina*), the Adelie penguin (*Pygoscelis adeliae*) and the gentoo (*Pygoscelis papua*), including the CCAMLR Ecosystem Monitoring Programme, among others, have been developed in the area since 1982. The breeding colonies are sited at a particular coastal location. The area mainly comprises raised beaches, largely covered with mid-sized pebbles, basaltic structures and lateral and terminal moraines. The shoreline is very irregular and it has a number of small bays shaped among rocky headlands. The above reasons, gives the area an exceptional scientific and aesthetic value.

According to Morgan *et al.* (2007) ASPA 132 represents “Antarctic Peninsula offshore islands” Environmental Domain. Also, according to Terauds *et al.* (2012), the area represents the region "North-west Antarctic Peninsula" from the "Antarctic Conservation Biogeographic Regions classification.

For more detailed characteristics please see section 6

2. Aims and Objectives

- Preserve the natural ecosystem and prevent unnecessary human disturbance;
- Permit the development of any scientific research provided it does not compromise the values awarding protection to the Area;
- Avoid major changes in the structure and composition of the flora and fauna communities;
- Prevent or minimise the introduction to the Area of alien plants, animals and microbes;
- Minimise the possibility of introduction of pathogens which may bring disease to fauna populations within the Area.

3. Management Activities

- The staff to be posted at Carlini Base (former Jubany Base, Argentine base adjacent to the ASPA), in particular, staff authorised to enter the ASPA, will be specifically trained on the conditions of the Management Plan;
- Copies of this Management Plan shall be available at the Carlini Base.
- Approach distances to fauna should be respected, except when scientific projects may require otherwise, and provided that the relevant permits have been issued.
- Collection of samples will be limited to the minimum required for the development of authorised scientific research plans.
- All markers and structures erected within the ASPA for scientific or management purposes shall be properly secured and maintained in good conditions.
- In accordance with the requirements of Annex III of the Protocol on Environmental Protection to the Antarctic Treaty, abandoned equipment or materials shall be removed to the maximum extent possible provided doing so does not adversely impact on the environment and the values of the Area.
- The Management Plan shall be reviewed no less than once every five years and updated as required.
- All pilots operating in the region shall be informed of the location, boundaries and restrictions applying to entry and over-flight in the Area.

4. Period of designation

Designated for an indefinite period.

5. Maps

Map 1, included at the end of this Management Plan, shows the location of ASPA 132 (in diagonal lines) in relation to the Potter Peninsula (King George Island).

6. Description of the Area

6(i) Geographical coordinates and boundaries and natural features

Geographical coordinates and boundaries

This Area is located on the east coast of Maxwell Bay, southwest of King George Island, between the southern tip of Mirounga Point (Northwest of Potter Peninsula) and the outcrop known as "Spur 7", on the north-eastern border of Stranger Point. The area stretches along the coastal strip up at low tide water levels up to the cliff edge, which reaches heights of 15-50 metres. The front of the cliff edge is included within the ASPA. This coastal strip has a variable width, stretching up to 500 metres from the shore at low tide water levels. The Area mainly comprises raised beaches, largely covered with mid-sized pebbles, basaltic structures and lateral and terminal moraines. The shoreline is very irregular and it has a number of small bays shaped among rocky headlands.

This topography constitutes a natural boundary for the settlement of the breeding colonies of marine mammal and penguin, justifying the ASPA extension.

6(ii) Natural features

The area encompasses important scientific values due to the presence of breeding colonies of elephant seals (*Mirounga leonina*), and non-breeding groups of Antarctic fur seals (*Arctocephalus gazella*) and occasionally of Weddell seals (*Leptonychotes weddelli*), crabeater seals (*Lobodon*

carcinophagus) and leopard seals (*Hydrurga leptonyx*). The breeding season brings together around 400 elephant seals, and between 200 and 600 during the fledging season. The non-breeding groups of Antarctic fur seals can add up to 300 individuals, although that figure may vary considerably from one year to the next.

Also present are significant colonies of gentoo penguins (*Pygoscelis papua*) and Adelie penguins (*Pygoscelis adeliae*), with 3800 and 3000 pairs, respectively. The population of storm petrels (mostly *Oceanites oceanicus* and, to a much lesser extent, the *Fregetta tropica*) reaches some 200 pairs. Kelp gulls (*Larus dominicanus*), Sheathbills (*Chionis alba*), Antarctic terns (*Sterna vittata*), southern giant petrels (*Macronectes giganteus*) and skuas (*Catharacta sp.*) also breed in the area. Given that some of the nesting sites around Potter Peninsula change their position over time, population figures are estimations.

Adelia and gentoo penguins are distributed around Stranger Point, between the Elefante shelter and Spur 7. Mammal concentrations are distributed along the coastline, between Spur 1 and Spur 7, and giant petrels nesting sites are usually distributed between Spur 7 and Spur 4 (see Map 1). There is an abundant development of plant communities in the Area, dominated by lichens and mosses, on rocky slopes and on the flat surfaces of paleo-beaches, respectively.

Natural features. Flora

The spatial pattern of vegetation is the combination of related variable: substrate type, exposure, slope stability and drainage (water availability). The Potter Peninsula comprises an area of several square kilometres free of permanent snow and ice coverage. Relatively stable substrate is found around the Three Brothers Hills. Moraines near the glacier are only sparsely covered by plants, whilst the vegetation coverage and species richness increase with the distance to the moraines. A plateau located south-west of the Three Brother Hills is covered by an exceptional rich vegetation. It consists in two layers of plants that can reach 100% coverage. Several moss and lichen species found on the Potter Peninsula are restricted to that area. The two native Antarctic vascular plants *Colobanthus quifensis* and *Deschampsia antarctica* are likely to be found near the coast or in places with high nutrient supply.

Pleurocarpous mosses such as *Sanionia uncinata* and *Calliergon sarmentosum* dominate, while rocks are commonly covered by the crustose lichen *Lecidea sciatrapha*. Higher up on the slope, where the ground is better drained and the snow coverage time is shorter, cushion forming mosses like *Andreaea regularis* and *Andreaea gainii* dominate, often together with *Himantormia lugubris*. Associations of Bryophilous lichens such as *Psoroma hypnorum* and a number of acrocarpous mosses are also frequently found. Where snow coverage rarely exceeds 10 cm, even in winter, a two layered canopy build of lichens and mosses is formed.

The upper layer is discontinuous and consists of fruticose lichens such as *Usnea aurantiaco-atra*, *U. antarctica* and *Pseudephebe pubescens*. The understorey consists in an assemblage of various species of mosses and hepatics. *U. aurantiaco-atra* and *Himantormia lugubris* are often interwoven mats of prostrate form without apothecia. In the apertures the dicranoid moss *Chorisodontium aciphyllum* and cushion forming fruticose lichens such as *Sphaerophorus globosus* are present. The most abundant bryophilous lichen is *Ochrolechia frigida*. (Wiencke *et al.* 1998)

6(iii) Access to the Area

Except for authorised exceptions, access to the Area shall be on foot, from the northern tip, close to the Carlini base helipad (62 ° 14' 17'' S; 58 ° 40' 42'' W), or from behind the northern slope of the Three Brothers Hill (see Map 1). Access to the Area by sea onto the beaches should be avoided when there is fauna present, especially between October and December because it is concomitant

with egg-laying and elephant seals breast feeding peak times.

Complementary information at section 7(ii)

6(iii) Location of structures within and adjacent to the Area

Structures within the area

Shelters: The Argentine shelter Elefante is located around 150 m from the coast, 1,000 metres northeast from Point Stranger. From March to October it is used by research groups conducting activities in the ASPA. The shelter can accommodate a maximum of 6 people (see section 7(ix) on Disposal of waste).

Signposts: signposts warning about the entrance to the Protected Area are located at: Mirounga Point (close to the helipad), at the north base of the Three Brothers Hill, and on the beach area close to Spur I. Signposts display information about the existence of the ASPA and the requirement to carry an access Permit.

Structures adjacent to the area

Carlini is a permanent Argentinean station located at 62 ° 14' Lat. S and 58 ° 39' Long. W, on Potter Cove, Potter Peninsula, in the SW portion of King George Island. It has several facilities including the Argentine-German *Dallmann* laboratory which is a entrepreneurship between the Alfred Wegener Institute (AWI) and the Argentinean Antarctic Institute (IAA).

Albatros is an Argentinean refuge located at 62°15'09" Lat. S and 58°39'23" Long. W / -62.2525, -58.65639 on Potter Cove, Potter Peninsula.

Other nearby stations are King Sejong, from Korea (62°13' 394'' S / 58° 47'190''W) and Arctowsky from Poland, (62° 9' 586''S / 58° 28' 399'' W)

6(iv) Location of other Protected Areas within close proximity

- ASPA No. 125, Fildes Peninsula, King George Island (25 de Mayo), South Shetland Islands lies about 20km to the east.
- ASPA No. 128, Western Shore of Admiralty Bay, King George Island (25 de Mayo), South Shetland Islands lies about 10 km northeast.
- ASPA N° 171 Narębski Point (south-eastern coast of the Barton Peninsula, King George Island (25 de Mayo)
- ASPA No. 133, Harmony Point, Nelson Island, lies about 30 km west-southwest.

6(v) Special zones within the Area

No special zones are designated within the Area.

7. Terms and conditions for entry permits

7(i) General permit conditions

Access to the Area is prohibited except in accordance with a Permit issued by appropriate national authorities.

Conditions for the issuance of a Permit to access the Area:

- the activity serves a scientific, ASPA management or outreach purpose, consistent with Management Plan objectives, which may not be served anywhere else, and any management activities (inspection, maintenance or review) are in accordance with the Management Plan; the Permit is carried by staff authorised to access the Area
- a post-visit report is supplied to the appropriate national authority mentioned in the Permit upon completion of the activity, within the terms established by national authorities issuing the Permit.

Neither tourism nor any other recreational activities are permitted.

7(ii) Access to and movements within the Area

Where practicable, movements within the Area shall be on foot, along existing tracks known by staff familiar with the Area and regular visitors to it. These are the beach area and the upper boundary of the Area, northeast of the Three Brothers Hill.

Vehicles of any kind are prohibited within the Area, except for those essential for the maintenance of the shelter, which shall only be operated by logistics staff and pursuant to an access Permit. In such a case, access to the ASPA will be through a gentle slope close to the Albatros shelter, and vehicles should be driven avoiding vegetated areas and bird and mammal concentrations (see Map 1).

Operation of aircraft over the ASPA shall follow, as a minimum standard, the provisions contained in Resolution 2 (2004), "Guidelines for the operation of aircrafts over bird colonies". As a general rule, no aircraft is allowed to fly over the ASPA below 610 metres (2000 feet). Maintain a horizontal separation of 460 m (1/4 nautical mile) from the coastline where possible. Aircraft landing operations on the Area are forbidden, except in cases of emergency or air safety.

7(iii) Activities which may be conducted in the Area

- scientific research which cannot be conducted elsewhere and which will not jeopardise the natural ecosystem of the Area;
- Essential management activities, including visits to assess the effectiveness of the Management Plan and management activities;
- Activities for educational and outreach purposes, contributing to raise awareness of scientific activities, under National Antarctic Programs.
- Maintenance of the shelter Elefante, except between October and December. During this period, maintenance of the shelter should be avoided or, if necessary, reduced to the maximum extent practicable, and tasks should always be performed pursuant to a Permit. This period is considered particularly sensitive because it is concomitant with egg-laying and elephant seals breast feeding peak times.

7(iv) Installation, modification or removal of structures

No new structures are to be erected within the Area, or scientific equipment installed, except for compelling scientific or management reasons and subject to the relevant Permit.

Any scientific equipment to be installed in the Area, as well as any research marker, shall be approved by a Permit and be clearly labelled, indicating the country, name of principal investigator and year of installation. All such materials should be of such nature as to pose minimal risks of contamination to the Area, or the risk of interfering with the fauna or damaging the vegetation.

Structures and installations must be removed when they are no longer required, or on the expiry of the permit, whichever is the earlier. No research traces are to remain once the Permit has expired. If a specific project cannot be finished within the timeframe specified in the Permit, such circumstance shall be informed in the post-visit report, and an extension of the validity of the Permit authorising any materials to remain in the Area shall be requested.

Tents will be allowed for the sole purpose of storing scientific instruments or equipment, or to be used as an observation post.

7(v) Location of field camps

To avoid major disturbance to the fauna, and taking into account that there are alternative places to accommodate, it is not allowed to camp at ASPA 132. Projects authorised to work within the ASPA may request accommodation at the Carlini Base, subject to availability. When necessary for scientific reasons, the Elefante shelter (located inside the Area) or the Albatros shelter (outside the Area, though very close) may be used. The use of the Elefante shelter for scientific purposes, by staff other than Argentine Antarctic Program staff shall be arranged in advance with such Program.

The location of camps on the vicinity of the ASPA, is responsibility of the corresponding National Antarctic Program, but for security reasons, it is recommended to inform the leader of Carlini Station.

7(vi) Restriction on material and organisms which may be brought into the Area

- No living animals or plant material shall be deliberately introduced into the ASPA. All reasonable precautions against the unintentional introduction of alien species to the Area shall be adopted. It should be taken into account that alien species are most frequently and effectively introduced by humans. Clothes (pockets, boots, velcro fasteners on garments) and personal equipment (bags, backpacks, camera bags, tripods), as well as scientific instruments and work tools may carry insect larvae, seeds, propagules, etc. For more information, refer to the “Non-Native Species Manual – CEP 2011”
- No uncooked poultry products shall be introduced into the Area.
- No herbicides or pesticides shall be brought into the Area. Any other chemicals, which shall be introduced with the corresponding Permit, shall be removed from the Area on or before the conclusion of the activity for which the Permit was granted. The purpose and type of chemicals shall be documented in as much detail as possible for other scientists' information.
- No fuel, food or any other materials are to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted, provided they are stored inside the Elefante shelter or close to it, for removal upon completion of the activity. Any fuel used at the Elefante shelter shall be handled pursuant to contingency plan established by the Argentine Antarctic Program for Carlini Station.

7(vii) Taking or harmful interference with native flora and fauna

Taking of, or harmful interference with, native flora and fauna is prohibited, except in accordance with a Permit.

Approach distances to fauna should be respected, except when scientific projects may require

otherwise, and provided that the relevant permits have been issued.

For penguins the recommended distance is 10 m during reproduction and moult periods and 5 m to juveniles. A 100 m distance is recommended to Giant petrels nests while in the case of Antarctic fur seals, Weddell seals, Leopard seals and Crabeater seals a minimum distance of 10 m should be kept. It is important to consider that these distances are aimed to orientate and must vary and become larger if the response to human proximity clearly stress the animal out.

Where an activity involves taking or harmful interference, it should be carried out in accordance with the SCAR Code of Conduct for Use of Animals for Scientific Purposes in Antarctica, as a minimum standard.

Information on taking and harmful interference will be duly exchanged through the Antarctic Treaty Information Exchange system and its record shall, as a minimum standard, be lodged with the Antarctic Master Directory or, in Argentina, with the National Antarctic Data Centre (Centro de Datos Nacionales Antárticos).

Scientists taking samples of any kind will shall refer to the EIES and/or contact the relevant National Antarctic Programmes in order to minimise the risk of a potential duplication.

7(viii) Collection or removal of anything not brought into the ASPA by the permit holder

Material may be collected or removed from the Area only in accordance with a Permit. Removal of dead biological specimens for scientific purposes be analysed case by case in order to not exceed such levels as to entail the deterioration of the nutritional base of local scavengers. It will depend on the species to be collected and, if necessary, advice from specialist should be required prior to the extent of the Permit.

7 (ix) Disposal of waste

All non-physiological waste shall be removed from the Area. Wastewater and liquid domestic waste may be dumped into the sea, in accordance with Article 5 of Annex III to the Madrid Protocol.

Waste from research activities conducted in the Area may be temporarily stored next to the Elefante shelter awaiting removal. Such waste must be disposed of pursuant to Annex III to the Madrid Protocol, labelled as trash and duly sealed to prevent accidental leaks.

7(x) Measures that may be necessary to continue to meet the aims of the Management Plan

Access Permits to the Area may be granted in order to conduct biological monitoring and site inspection activities, including the collection of plant material and animal samples for scientific purposes, the erection or maintenance of signposts, and any other management measures.

7(xi) Requirements for reports

The principal Permit holder for each Permit issued shall submit a report of activities conducted in the Area once the activity has been completed. Such report must respect the format provided previously, together with the Permit, and be sent to the authority issuing the Permit.

The information of the reports will be used for the purpose of any review of the Management Plan and in organizing the scientific use of the Area.

The records of ASPA permits and post-visit reports will be exchanged with the other Consultative Parties, as part of the Information Exchange system, as specified in Article 10.1 of Annex V.

Such reports shall be stored and made available for inspection by all interested Parties, SCAR,

CCAMLR and COMNAP, so as to provide the information on human activities within the Area necessary to ensure proper management.

8. Supporting documentation.

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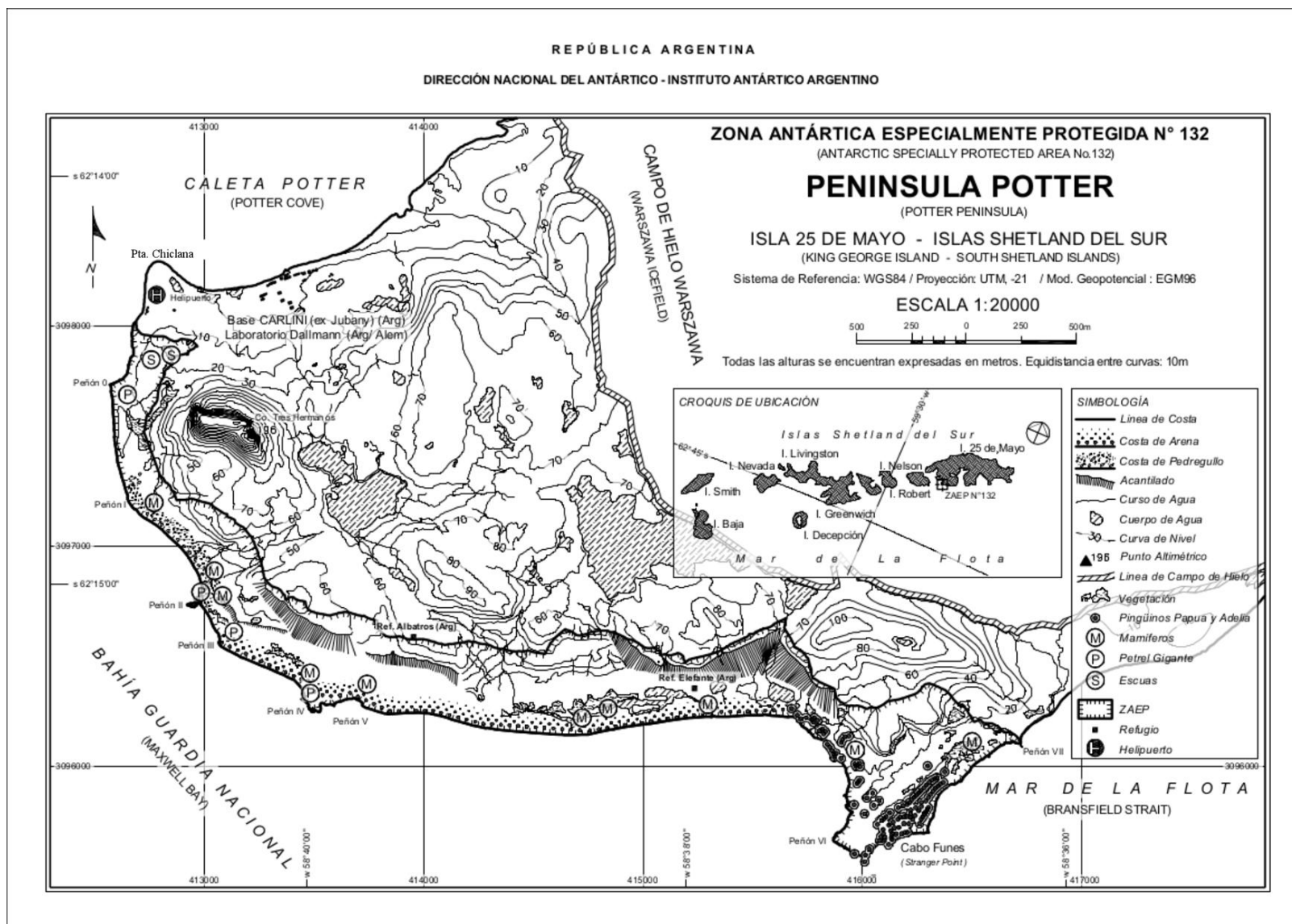
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Map 1: Management Plan for Antarctic Specially Protected Area No. 132 in relation to the Potter Peninsula. Permanent water bodies are shown in broken diagonal lines.