

THE INTERNATIONAL COUNCIL FOR SCIENCE
SCIENTIFIC COMMITTEE ON ANTARCTIC RESEARCH

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Decisions, Resolutions and Measures

The texts of the Decisions and Resolutions, and the text of Measure 1 (2004), together with a summary of the Management Plan for Antarctic Specially Managed area No. 2, McMurdo Dry Valleys, Southern Victoria Land, adopted at XXVII ATCM were reproduced in *SCAR Bulletin* No 155, October 2004. A summary of the Management Plan for Antarctic Specially Managed Area No. 3, Cape Denison, Commonwealth Bay, George V land, together with Measures 2–4, are reproduced here. The full versions of all the Decisions, Measures and Resolutions are on the Antarctic Treaty Secretariat website at <http://www.ats.org.ar/>

Measure 1 (2004)

Antarctic Protected Area System: Management Plans for Antarctic Specially Managed Areas

The Representatives,

Recalling Article 4 of Annex V of the Protocol on Environmental Protection to the Antarctic Treaty, providing for the designation of Antarctic Specially Managed Areas;

Noting that the draft Management Plans appended to this Measure have been endorsed by the Committee for Environmental Protection;

Recognising that these Areas support significant scientific, wilderness, ecological, heritage and aesthetic values and would benefit from improved coordination between

Parties active there;

Recommend to their Governments the following Measure for approval in accordance with paragraph 1 of Article 6 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty:

That the Management Plans for:

- Antarctic Specially Managed Area No. 2, McMurdo Dry Valleys, Southern Victoria Land; and
- Antarctic Specially Managed Area No. 3, Cape Denison, Commonwealth Bay, George V Land,

which are annexed to this Measure, be adopted.

**Management Plan for Historic Site and Monument No. 77 and
Antarctic Specially Managed Area No. 3**

Cape Denison, Commonwealth Bay, George V Land, East Antarctica

Latitude 67°00'13"S — 67°00'50"S; Longitude 142°40'00.1"E — 142°41'27"E

Introduction

Cape Denison, Commonwealth Bay is one of the principal sites of early human activity in Antarctica. It is the location of the base of the Australasian Antarctic Expedition of 1911-14 organised and led by Dr (later Sir) Douglas Mawson. An important symbol of the 'heroic age' of Antarctic exploration (1895-1917), it is one of only six

hut sites remaining from this period. Cape Denison hosted some of the earliest comprehensive studies of Antarctic geology, geography, terrestrial magnetism, astronomy, meteorology, glaciology, oceanography, biology, zoology and botany. It was also the base of numerous explorations inland and features artefacts associated with these sledging parties, including food caches and equipment. Due to the

considerable historical, cultural and scientific significance of Cape Denison, the entire area is designated as an Antarctic Specially Managed Area (ASMA) consistent with Articles 2, 4, 5 and 6 of Annex V of the Protocol on Environmental Protection to the Antarctic Treaty. It is also listed as a Historic Site and Monument in accordance with Article IX(1) of the Antarctic Treaty and Article 8(2) of Annex V of the Protocol.

Cape Denison is characterised by four valleys aligned northwest/southeast. The majority of Australasian Antarctic Expedition artefacts, including buildings ('Mawson's Huts') and other structures, are concentrated in the westernmost valley and on the ridges on either side of the valley. The historic huts and their immediate surrounds constitute Antarctic Specially Protected Area (ASPA) No. 162.

1.0 Description of Values to be Protected

1.1 Primary values

This ASMA is proposed on the grounds that Cape Denison is a site of historic, archaeological, social and aesthetic values.

Historic value

Antarctica's 'heroic age' was a period of great human adventure and discovery. Cape Denison, Commonwealth Bay, provides the setting for the buildings, structures and relics of the Main Base of the Australasian Antarctic Expedition (AAE) 1911–14, led by Dr Douglas Mawson.

Cape Denison contains numerous relics relating to the work of Mawson's expedition, including Mawson's Huts and other significant and relatively untouched artefacts from the 'heroic age'. While the majority is concentrated in the westernmost valley and its immediate surrounds, the historical boundaries of the Main Base extend further. Artefacts and other evidence of occupation, such as food caches, extend across the entire Cape, forming a rich resource of material available for research and interpretation, and potentially yielding scientific data and information about aspects of expeditioner life not included in official written accounts.

Aesthetic values

This ASMA is designated to preserve not only the artefacts remaining *in situ* but also the cultural landscape of Cape Denison in which Mawson and his men lived and worked. Cape Denison is characterised by its almost incessant blizzard conditions, which severely limit access to the region and activities at the site. System and katabatic winds pour down the plateau and funnel through the Cape's valleys; blasting the hut with gusts that in May 1912 reached 322 km/h. (The average wind speed for the month was 98 km/h). Cape Denison is the windiest place in Antarctica, and also the windiest place on Earth at sea level.

Educational values

Cape Denison's wildlife and undisturbed artefacts, framed against the dramatic backdrop of the Antarctic Plateau,

represent significant educational values. The Area's isolation and extreme weather provide visitors with a unique insight into the conditions endured by 'heroic age' researchers and explorers, and a chance to form a deeper appreciation of their achievements.

Environmental values

The paucity of relatively ice-free areas in the immediate region means that Cape Denison represents an important assemblage of life forms. The closest ice-free areas of equal or greater size to Cape Denison are approximately 20 km to the east of Cape Denison, and approximately 60 km to the west respectively. A haul-out site for Weddell, leopard and elephant seals, the Cape is also an important breeding area for Adélie penguins, Wilson's storm-petrels, snow petrels and south polar skuas.

Flora at Cape Denison is represented by 13 lichen species distributed on boulders and other moraines throughout the peninsula. No bryophytes are evident. The lichens' distribution on rocks, which are subject to different patterns of snow ablation, makes them vulnerable to trampling and other interference by visitors, however infrequent visitation may be.

Cape Denison has 13 small lakes. These are associated with glacial action, are a permanent feature, and are frozen for most of the year. Since such lakes are also susceptible to physical, chemical and biological modification within their catchment boundaries, a catchment-based approach to the management of human activities is required.

Scientific values

Mawson, a geologist, planned his expedition in order to examine the theories about continental connection and the processes of glaciation and climate. He also sought to study the South Magnetic Pole and magnetic charting for navigational purposes; to conduct biological studies, including the identification of new species; and to establish a weather station.

2.0 Aims and Objectives

Management of the Area aims to assist in planning and co-ordinating current and future activities in the Area, to avoid possible conflicts, and to improve co-operation between Parties in order to avoid degradation of, or substantial risk to, the values of the Area. Management objectives are:

- to prevent degradation of the Area, its features, artefacts, and values;
- to maintain the heritage values of the Area through planned conservation¹ and archaeological work programs; and
- to provide for management activities which support the protection of the values and features of the Area.

3.0 Management Activities

The following management activities may be undertaken to protect the values of the Area:

- research and other activities essential or desirable

for understanding, protecting and maintaining the values of the Area;

- the removal of objects not related to the AAE of 1911–14 and/or the British Australian New Zealand Antarctic Research Expeditions (BANZARE) of 1929–31 and that compromise the historic and aesthetic values of the Area, provided that removal does not adversely impact ;
- essential maintenance of other objects and infrastructure;
- installation of signage to indicate the boundaries of the HSM and ASMA;
- visitation of the Area to assess whether it continues to serve the purposes for which it was designated and to ensure that management activities are adequate; and
- consultation with other national Antarctic programs with a view to ensuring the above provisions are implemented effectively.

4.0 Period of designation

This ASMA is designated for an indefinite period.

5.0 Description of the Area

5.1 Geographical coordinates, boundary markers and natural features

Cape Denison (67°00'13"S—67°00'50"S; 142°39'02"E—142°41'28"E) is located in the centre of Commonwealth Bay, a 60 km-wide stretch of coast in George V Land some 3,000 km south of Hobart, Australia. The Cape itself is a rugged, 1.5 km-wide tongue of ice, snow, rock and moraine projecting into Commonwealth Bay from the steeply rising wall of the ice cap of continental Antarctica. On the western side of the Cape is Boat Harbour, a 400m-long indentation in the coast.

The designated ASMA (Map A) extends from Land's End (67°00'46"S, 142°39'24"E) in the west, along the coastline to the northern tip of the western shore of Boat Harbour (67°00'24"S, 142°39'28"E), across the mouth of Boat Harbour (in a straight north-easterly diagonal) to the northern tip of Penguin Knob (67°00'17"S, 142°39'31"E) on the eastern shore of Boat Harbour, and then along the coastline in a south-easterly direction down to John O'Groats (67°00'47"S, 142°41'27"E). The southern boundary extends in a straight line from Land's End to John O'Groats along latitude 67°00'47"S. With the exception of the boundary across the mouth of Boat Harbour, the northern coastal boundary extends to that land above the lowest tide.

Natural features: Topography and geomorphology

The topography of Cape Denison is defined by a series of four rocky ridges, running south-southeast to north-northwest, and three valleys. The largest, most westerly of these valleys contains the AAE buildings, which are protected within ASPA XXX. The basement of the Cape Denison area consists of partially migmatized, massive

felsic orthogneiss intruded about 2350 million years ago (Ma) into an older metamorphosed sequence. Above the basement the area features a lower zone of relatively polished rock and a higher zone of relatively unpolished rock; the former being especially prominent below 12 metres above sea level and indicative of more recent uplift and exposure than the upper zone. An upper and lower moraine are apparent, with the upper moraine, closer to the edge of plateau, containing a diversity of angular boulders. The lower moraine is dominated by local rocks sorted into bands, perhaps the result of an 'ice push' from the sea rather than being genuine glacial moraine.

Water bodies

The glacial lakes are generally oriented parallel to the foliation of the basement rocks. At the height of summer Cape Denison also features numerous melt streams which flow into Commonwealth Bay.

Biological features

Cape Denison is a site for breeding Adélie penguins, Wilson's storm-petrels, snow petrels and the south polar skua. Other species sighted include the Cape petrel, Antarctic petrel, southern giant petrel and emperor penguin.

Weddell seals, southern elephant seals and leopard seals have been recorded as hauling out and, in the case of elephant seals, moulting at Cape Denison.

The only flora evident at Cape Denison is lichens.

5.2 Access to the Area

Sea, land and air access to Cape Denison is difficult due to the rugged topography and climate of the area. Sea ice extent and uncharted bathymetry may constrain ship access to approximately 3nm from the coastline. Access is then gained either by small watercraft or by helicopter, although attempts to land are frequently hampered by heavy seas and prevailing north-westerly or katabatic winds. Boat landings may be made at Boat Harbour and due north of Sørensen Hut. The helicopter landing site and approach and departure flight paths are indicated on Map C.

There are no roads or other transport infrastructure on shore. Land vehicles should only be used in accordance with the Code of Conduct (see Section 8.0).

Pedestrian access within the Area is unrestricted except in places where AAE buildings, artefacts, or bird or lichen colonies are present, and should be conducted in accordance with the Code of Conduct (see Section 8.0).

5.3 Location of structures and other anthropogenic objects within and near to the Area

Cape Denison is notable for being the location of four historic buildings and a Memorial Cross constructed by the AAE of 1911–1914. The buildings and their immediate environs are protected by ASPA 162.

Within the ASMA there are several AAE structures, including survey markers and the mast on top of Anemometer Hill, about 150 m east of Mawson's Main Hut. On 5 January 1931 members of the BANZARE party (including Douglas Mawson) visited Cape Denison

to claim formal possession of George V Land on behalf of Great Britain, and used the mast to support the proclamation flag and canister containing the proclamation itself. A small timber plaque and proclamation are the only 'formal' artefacts of that visit remaining *in situ* today.

Cape Denison additionally features six other structures. The automatic weather station (AWS) is located at 67°00'33"S; 142°39'51"E on a rise near Round Lake and approximately 150 m southeast of Mawson's Main Hut.

Sørensen Hut is located about 400m east of Mawson's Main Hut at 67°00'29"S; 142°40'12"E. It was constructed by the Australian national program in 1986 to provide temporary shelter for parties conducting conservation works and contains some provisions and field equipment.

Granholt Hut is situated at 67°00'29"S; 142°39'26"E, some 160 m northwest of Mawson's Main Hut. It was constructed in 1978 to provide a temporary shelter and workshop for parties working on Mawson's Huts.

To the east of Granholt Hut is a stack of Oregon and Baltic pine timbers for use in conservation work on the Main Hut. This stack is secured with galvanised cables attached to rock bolts. A similar timber stack is located on rocks some 100 m southeast of the Main Hut and 10 m east of the designated helicopter landing site.

The HSM marker adjacent to the Main Hut will be replaced by appropriate signage to indicate that the whole of Cape Denison has been designated as a Historic Site.

Objects left by Mawson's expedition are scattered throughout the Area, and appear from year to year depending on snow cover.

5.4 Location of other protected areas in or near to the Area

ASPAXXX, encompassing the four AAE huts, is located within the Cape Denison ASMA, and exists to protect their historic and social values.

The Cape Denison ASMA is to be simultaneously listed as Historic Site No. XXX under the Antarctic Treaty.

There are no other ASPAs or ASMAs within 50 km of Cape Denison.

6.0 Zones within the Area

All activities within the Area are to comply with the provisions of the Madrid Protocol and the Code of Conduct contained in this management plan (see Section 8.0). In addition to these general guidelines, three zones are defined in which restrictions on certain activities are deemed necessary in order to meet the management objectives for the Area.

6.1 ASPA 162

ASPAX162 (Mawson's Huts) is located within the ASMA. This ASPA encompasses the four Australasian Antarctic Expedition huts in order to protect their historic and social values. Entry to the ASPA and activities within it require a permit and must be carried out in accordance with the ASPA Management Plan.

6.2 Visual Protection Zone

The visual catchment of Mawson's Huts and the Memorial Cross is of particular importance within the Cape Denison cultural landscape. In order to protect the landscape setting and 'sense of place' of Mawson's Huts, a Visual Protection Zone is defined within the ASMA and no new structures should be built within the Zone.

The Visual Protection Zone (see Maps A) is the area enclosed by the western and eastern ridge lines of the valley containing the historic structures. The boundary extends from the coastline (67°00'24.9"S, 142°39'14.3"E) and runs southeast along the western side of the westernmost ridge to the ice plateau (67°00'46.8"S, 142°39'37.2"E); northeast along the edge of the ice plateau to 67°00'43.9"S, 142°40'5.6"E; north-northwest between Round Lake and Long Lake to 67°00'33.7"S, 142°39'59.8"E; then as far as Magnetograph House (67°00'20.3"S, 142°39'46.6"E); and then northwest along the eastern side of the eastern ridge line to the sea (67°00'15.7"S, 142°39'28.2"E).

6.3 Helicopter Zone

Helicopter operations have the potential to disturb breeding and moulting wildlife. To minimise disturbance to seals and nesting birds at Cape Denison during the summer months, helicopters should only land at the site indicated on Map C and approach and depart in accordance with the flight paths indicated on the map. Departure paths have been selected to avoid wildlife concentrations as much as possible. Use of a single-engined helicopter is preferable; however twin-engined helicopters may be used with due regard for the potentially greater disturbance to wildlife. The presence of seals and the breeding cycle of birds nesting in the Area are charted at Appendices Bi and Bii; twin-engine helicopter operations should be avoided during weeks that birds are hatching eggs or raising chicks (late October to early March).

7.0 Maps of the Area

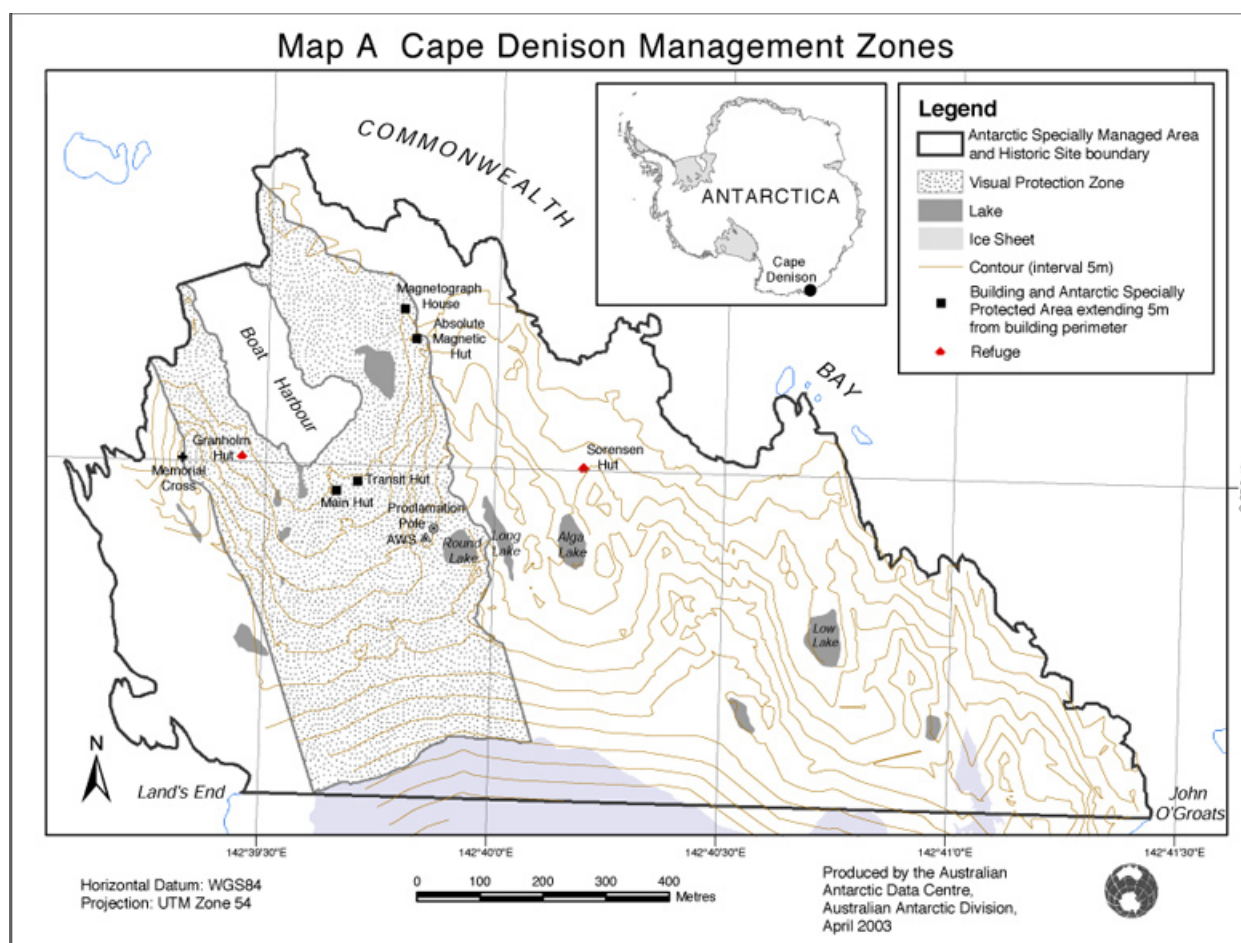
Map A: Cape Denison Management Zones. This map shows the boundaries of the ASMA, the Historic Site, the Visual Protection Zone, ASPA No. 162, and significant topographic features of the Area. The inset map indicates the location in relation to the Antarctic continent.

Map B: Cape Denison Visual Protection Zone (not reproduced here).

Map C: Cape Denison Flight Paths and Bird Colonies (not reproduced here).

8.0 Code of Conduct

The actions of individuals contribute significantly to protecting the Antarctic environment. This Code of Conduct is intended to provide general guidelines to help minimise environmental impacts at Cape Denison, but it cannot be expected to cover every situation. All visitors, including national program personnel and tourists, should consider their responsibilities and seek to minimise their impact on all aspects of the environment and most particularly the values described.



8.1 Access to and movement within or over the Area

- All land vehicles are prohibited within the Area, with the exception of small all-terrain vehicles which should be used on snow and ice surfaces only and with due consideration of historic artefacts.
- Pedestrian access within the Area is unrestricted but artefact-rich areas (such as the scatter immediately to the north of the Main Hut), bird or lichen colonies, and penguin 'highways' should be avoided.

8.2 Activities which are or may be conducted within the Area

- Historic conservation and archaeological work.
- Research, including scientific research.
- Visitation for the purposes of education or recreation, including tourism in line with Recommendation XVIII-1.
- Essential maintenance of non-historic infrastructure and removal of non-historic objects. These activities should be conducted by authorised personnel only.

8.3 The installation, modification, or removal of structures

- To preserve the historic, archaeological, social, aesthetic and environmental values of the ASMA, no

new structures should be constructed, nor additional scientific equipment installed in the Area, except for the conservation, research or maintenance activities specified in Section 3.0 above.

- All equipment and infrastructure left in the Area should be periodically reviewed for maintenance and potential removal.

8.4 The location of field camps

- Existing non-historic infrastructure should be used by Parties undertaking activities in accordance with this management plan, in preference to establishing new infrastructure.
- Tents should be pitched on the wooden platform adjacent to Sørensen Hut. Use of the huts and any supplies should be reported to the Australian national program as soon as practicable to ensure the safety of other people who may be reliant upon known stores.

8.5 The taking of or harmful interference with native flora and fauna

- Approach distances to wildlife should be consistent with those agreed within the Committee for Environmental Protection. Until guidelines are adopted by the Committee, Table 1 below provides guidance.

- Visitors should not wash, swim or dive in the lakes. These activities could contaminate the water body and disturb the water column, microbial communities, and sediments.

Table 1: Minimum distances to maintain when approaching wildlife on foot

Species	Phase of life	On foot (m)
Snow petrels	Nesting	15
Wilson's storm-petrels	Nesting	15
South polar skuas	Nesting	15
Adélie penguins	Summer: on ice or away from colony	5
	Summer: breeding birds in colonies	15
Breeding Weddell seals and pups (includes weaners)	All times	15
Mature seals on their own (all species)	All times	5

8.6 The collection or removal of anything not brought into the Area by the visitor

- Cape Denison is listed as a Historic Site under the Antarctic Treaty. In accordance with Annex V, Article 8 (4) of the Protocol, no historic structure or other artefact at Cape Denison should be damaged, destroyed or removed, unless removal of an artefact is essential for conservation purposes. Any artefacts may only be removed by authorised and appropriately trained personnel. The repatriation of the artefact to the location at Cape Denison from which it was removed is generally preferable unless further damage or deterioration may result from repatriation.
- If an artefact is to be removed, the Australian national program should be informed so that documentation regarding that program's archaeological research at Cape Denison may be amended accordingly.

8.7 The disposal of waste

- All wastes, including human wastes, should be removed from the Area.
- Refuelling of vehicles, generators and other essential equipment should be conducted with due care for the surrounding environment. Refuelling activities should not be conducted in the catchment areas of lakes or melt streams, at the ice edge, or in other sensitive areas.

8.8 Reports to be made to the appropriate authority regarding visits to the Area

To enhance cooperation and the coordination of activities in the Area, to allow for effective site monitoring and management, to facilitate the consideration of cumulative

impacts, and to fulfil the aims and objectives of this Management Plan:

- National program personnel, tourists and other non-government personnel proposing to visit, land, and/or conduct activities in the Area should inform the Australian national program of their intentions as soon as is practicable.
- The details of all field activities should be accurately recorded for transfer to the management database of the Australian national program. See Section 9.0 below.

9.0 Information exchange

Parties with active programs in the Area and non-government operators should exchange information obtained during visits to the Area that may have a bearing on the operation of this Management Plan. For example, the expedition or tour leader should submit to the appropriate authority a report describing the activities undertaken in the Area. Such reports should include, as appropriate, the information identified in the Visit Report form contained in Appendix 4 of Resolution 2 (1998)(CEP 1). Parties should maintain a record of such activities and, in the Annual Exchange of Information, should provide summary descriptions of activities conducted by persons subject to their jurisdiction, which should be in sufficient detail to allow evaluation of the effectiveness of this Management Plan.

Parties should, wherever possible, deposit originals or copies in a publicly accessible archive (eg the Mawson's Huts website at http://www.aad.gov.au/mawsons_huts) to maintain a record of visitation or usage of the site, to be used both in any review of this Management Plan and to assist in organising the use of the Area.

10.0 Supporting Documentation

Not reproduced here.

Appendix A

Fauna recorded at Cape Denison, Commonwealth Bay
Breeding populations (pairs) of seabirds at Cape Denison

Not reproduced here.

Appendix B

Helicopter operations: Breeding cycles of nesting seabirds at Cape Denison, Commonwealth Bay
Not reproduced here.

Appendix Bii

Helicopter operations: Seals at Cape Denison, Commonwealth Bay
Not reproduced here.

Appendix C

Flora recorded at Cape Denison, Commonwealth Bay
Not reproduced here.

Measure 2 (2004)**Antarctic Protected Area System: Management Plans for Antarctic Specially Protected Areas**

The Representatives,

Recalling Articles 3 and 5 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty, providing for the designation of Antarctic Specially Protected Areas;

Noting that the draft Management Plans for the following Antarctic Specially Protected Areas have been endorsed by the Committee for Environmental Protection;

Recognising that these areas support significant scientific, wilderness, ecological, heritage and aesthetic values, and would benefit from special protection;

Recommend that their Governments, in accordance with paragraph 1 of Article 6 of Annex V to the Protocol, approve the following Measure:

That the Management Plans for the following sites, and

which are annexed to this Measure, be adopted:

- Antarctic Specially Protected Area No. 113 Litchfield Island, Arthur Harbour, Anvers Island, Palmer Archipelago, Antarctic Peninsula
- Antarctic Specially Protected Area No. 122 Arrival heights, Hut Point Peninsula, Ross island
- Antarctic Specially Protected Area No. 139 Biscoe Point, Anvers Island, Palmer Archipelago, Antarctic Peninsula
- Antarctic Specially Protected Area No. 142: Svarthamaren, Muhlig-Hofmannfjella, Dronning Maud Land
- Antarctic Specially Protected Area No. 162: Mawson's Huts, Commonwealth Bay, George V Land, East Antarctica.

**Management Plan for Antarctic Specially Protected Area No. 113
Litchfield Island, Arthur Harbour, Anvers Island, Palmer Archipelago**

1. Description of values to be protected

Litchfield Island was originally designated on the grounds that "Litchfield Island, together with its littoral, possesses an unusually high collection of marine and terrestrial life, is unique amongst the neighboring islands as a breeding place for six species of native birds and provides an outstanding example of the natural ecological system of the Antarctic Peninsula area".

The current management plan reaffirms the original reasons for designation associated with the bird communities. In 1964 Litchfield Island supported one of the most extensive moss carpets known in the Antarctic Peninsula region, dominated by *Warnstorfia laculosa* which was then considered near its southern limit.

2. Aims and objectives

- avoid degradation of, or substantial risk to, the values of the Area;
- allow scientific research on the natural ecosystem and physical environment;
- minimize the possibility of introduction of alien plants, animals and microbes;
- allow visits for management purposes.

3. Management activities

- Copies of this management plan shall be made available at Palmer Station (US), Anvers Island.
- Markers, signs or other structures shall be secured and maintained in good condition.
- Visits to ensure management and maintenance measures are adequate.

4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

Map 1: Litchfield Island, ASPA No. 113, in relation to Arthur Harbour and Anvers Island.

Map 2: Litchfield Island ASPA No. 113: Physical features and selected wildlife. Not reproduced here.

6. Description of the Area

6(i) *Geographical coordinates, boundary markers and natural features*

Litchfield Island (64°46'15" S, 64°05'40" W, 0.35 km²) is situated in Arthur Harbour approximately 1500 m west of Palmer Station (US), Gamage Point, Anvers Island, in the region west of the Antarctic Peninsula known as the Palmer Archipelago (Map 1). The designated Area is defined as all of Litchfield Island above the low tide water level, excluding all offshore islets and rocks.

Few meteorological data are available for Litchfield Island. Longer-term data for Palmer Station show monthly air temperature averages recorded over a 22-year period ranging from -7.8°C in August to 2.5°C in January. The minimum recorded temperature is -31°C and the maximum is 9°C, while the annual mean is -2.3°C.

Litchfield Island is composed of an unusual assemblage of late Cretaceous to early Tertiary age rock types called the Altered Assemblage. The primary rock types are tonalite and trondhjemite. Also common are granite and volcanic rocks. The soils of Litchfield Island have not been described, although peaty soils may be found in areas where there is, or once was, rich moss growth.

There are a few small ponds on Litchfield Island: one contains the algae *Heterohormogonium* sp. and *Oscillatoria brevis*, another contains *Gonium* sp., *Prasiola crispa*, *P. tessellata* and *Navicula* sp.

The plant communities at Litchfield Island were surveyed in detail in 1964 when the vegetation was well-developed and comprised several distinct communities with a diverse flora. An outstanding feature was one of the most extensive moss carpets known in the Antarctic Peninsula region, dominated by *W. laculosa*. Rock surfaces supported a variety of lichen-dominated communities in addition to the numerous epiphytic species that occurred on the moss banks.

In recent years, increasing populations of Antarctic fur seals (*Arctocephalus gazella*) have caused significant damage to the moss banks and carpets at lower elevations. South polar skuas (*Catharacta maccormicki*) nest in the moss banks and cause some local destruction.

The invertebrate fauna of Litchfield Island has not been studied in detail. The tardigrades *Macrobiotus furciger*, *Hypsibius alpinus* and *H. pinguis* have been observed in moss patches, predominantly on north-facing slopes.

Seven bird species breed on Litchfield Island, making it one of the most diverse avifauna breeding habitats within the Arthur Harbour region. A small Adélie penguin (*Pygoscelis adeliae*) colony on the eastern side of the island has been censused regularly since 1971. Numbers of breeding pairs have declined substantially over a 30-year period.

Southern giant petrels (*Macronectes giganteus*) breed in small numbers on Litchfield Island. It is likely that Wilson's storm petrels (*Oceanites oceanicus*) breed within the Area, although numbers have not been determined. Up to 50 pairs of south polar skuas (*Catharacta maccormicki*) occur on the island and brown skuas (*Catharacta loennbergi*) are closely associated with the Adélie penguin colony. 12-20 kelp gulls (*Larus dominicanus*) are seen regularly and a small number of Antarctic terns (*Sterna vittata*) regularly breed.

Antarctic fur seals (*Arctocephalus gazella*) are now common on Litchfield Island from around February each year. Elephant seals (*Mirounga leonina*) a few Weddell seals (*Leptonychotes weddellii*) haul out on accessible beaches. Both crabeater seals (*Lobodon carcinophagus*) and leopard seals (*Hydrurga leptonyx*) may also be seen on ice floes near Litchfield Island.

The predominantly soft mud substrate approximately 200 m off the northeastern coast of Litchfield Island has been described as supporting a rich macrobenthic community, characterized by a high diversity and biomass of non-attached, deposit-feeding polychaetes, arthropods, molluscs and crustaceans. The fish species *Notothenia neglecta*, *N. nudifrons* and *Trematomus newnesi* have been recorded between 3 and 15 meters depth. The Antarctic limpet (*Nacella concinna*) is common.

In January 1989 the vessel *Bahia Paraiso* ran aground 750 m south of Litchfield Island, releasing more than 600,000 liters (150,000 gallons) of petroleum into the surrounding environment. The intertidal communities were most affected, and hydrocarbon contaminants were

found in both sediments and inter- and sub-tidal limpets (*Nacella concinna*), with an estimated mortality of up to 50% but, numbers recovered soon after the spill.

In the period 1978-92 only about 35 people visited Litchfield Island. Visitation was undoubtedly low over this period, and has remained at a minimal level, primarily related to censuses and work on terrestrial ecology.

6(ii) *Restricted and managed zones within the Area*
None.

6(iii) *Structures within and near the Area*

A permanent survey marker was installed by the USGS on 9 February 1999 near the summit of the island at 64°46'13.97"S, 64°05'38.85"W at an elevation of 48 m, about 8 m west of the cairn. A survival cache is located near the crest of a small hill approximately 100 m south of the small boat landing site.

6(iv) *Location of other protected areas within close proximity of the Area*

The nearest protected areas to Litchfield Island are: Biscoe Point (ASPA No. 139) 16 km E; South Bay (ASPA No. 146), 27 km SE; and Eastern Dallmann Bay (ASPA No. 153) 90 km NE, adjacent to Brabant Island (Map 1).

7. Permit conditions

Entry into the Area is prohibited except in accordance with a Permit.

7(i) *Access to and movement within the Area*

Access to the Area shall be by small boat, or over sea ice by vehicle or on foot. Vehicles are prohibited and all movement within the Area shall be on foot. Landing by aircraft is prohibited within the Area and any necessary overflight shall be conducted according to the height restrictions imposed in Table 3 (not reproduced here).

7(ii) *Activities that are or may be conducted in the Area, including restrictions on time or place*

- Scientific research that will not jeopardize the ecosystem values or the value as a reference site;
- Essential management activities;
- The appropriate authority should be notified of any activities/measures undertaken that were not included in the authorized Permit.

7(iii) *Installation, modification or removal of structures*

Structures shall not be erected within the Area except as specified in a Permit. All structures, scientific equipment or markers installed shall be for a specified period and adequately identified. All such items should be made of materials that pose minimal risk of harm to fauna or of contamination of the Area.

7(iv) *Location of field camps*

Camping should be avoided within the Area. However, when necessary for essential purposes specified in the Permit, temporary camping is allowed at the designated site on the terrace above the penguin colony. Camping on surfaces with significant vegetation cover is prohibited.

7(v) *Restrictions on materials and organisms which can be brought into the Area*

No living animals, plant material or microorganisms shall be deliberately introduced. Dressed poultry should be free of disease or infection and all parts shall be completely removed and incinerated or boiled long enough to kill any potentially infective bacteria or viruses. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, shall be removed at or before the conclusion of the activity. Fuel is not to be stored in the Area. Anything introduced shall be removed at or before the conclusion of the stated period.

7(vi) *Taking or harmful interference with native flora or fauna*

Taking or harmful interference with native flora or fauna is prohibited except in accordance with a permit.

7(vii) *Collection or removal of anything not brought into the Area by the Permit holder*

Collection or removal of anything not brought into the Area by the Permit holder shall only be in accordance with a Permit and should be limited to the minimum necessary to meet scientific or management needs. Anything of human

origin may be removed unless the impact of removal is likely to be greater than leaving the material *in situ*.

7(viii) *Disposal of waste*

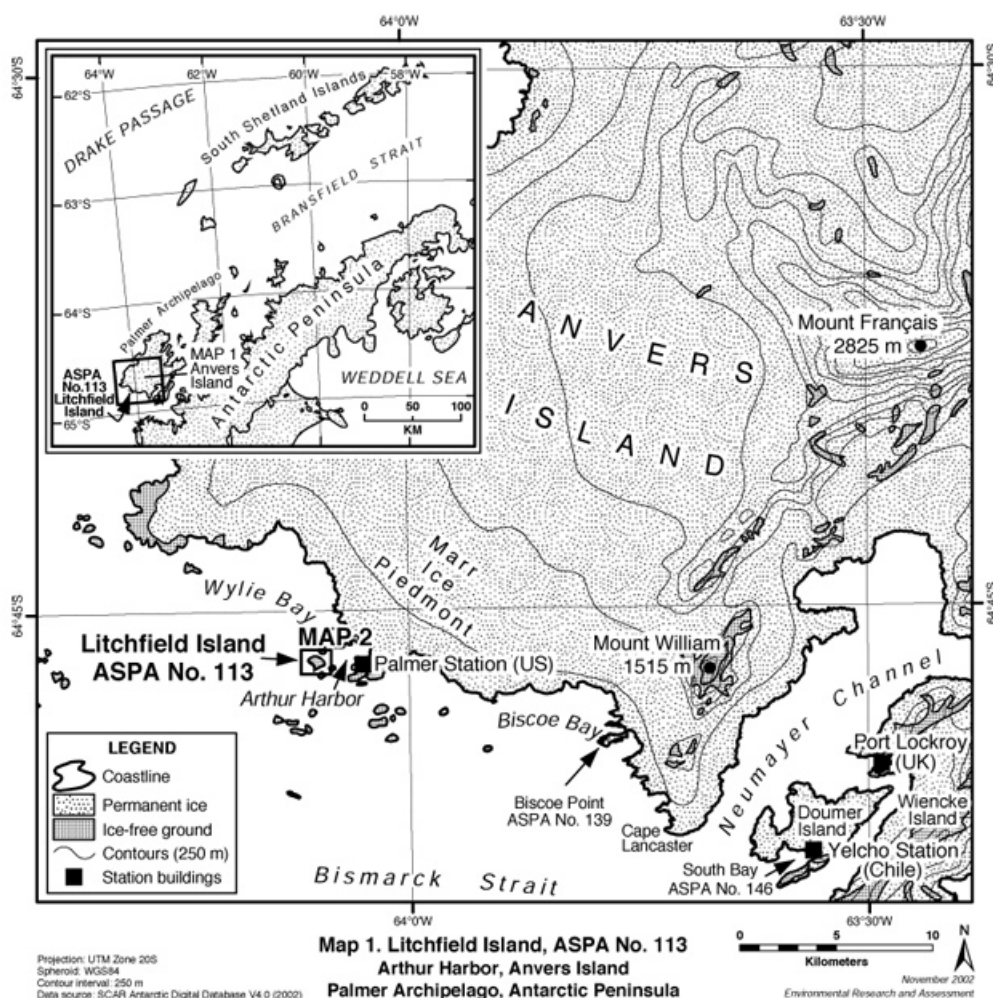
All wastes shall be removed from the Area. Human wastes may be disposed of into the sea.

7(ix) *Measures that are necessary to ensure that the aims and objectives of the Management Plan can continue to be met*

1. Permits may be granted to carry out biological monitoring and site inspection activities.
2. Any specific sites of long-term monitoring shall be appropriately marked.
3. Visitors shall take special precautions against introductions. Of concern are pathogenic, microbial, invertebrate or plant introductions sourced from other Antarctic sites or from regions outside Antarctica. Footwear and other equipment shall be thoroughly cleaned before entering the Area.

7(x) *Requirements for reports*

Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken.



Management Plan for Antarctic Specially Protected Area No. 122
Arrival Heights, Hut Point Peninsula, Ross Island

1. Description of values to be protected

An area at Arrival Heights was originally designated in Recommendation VIII-4 (1975, SSSI No. 2), after a proposal by the United States on the grounds that it was “an electromagnetic and natural ‘quiet site’ offering ideal conditions for the installation of sensitive instruments for recording minute signals associated with upper atmosphere programs.” While it is now recognized that the electromagnetically ‘quiet’ conditions have to some degree been degraded by base operation and radio communication activities adjacent on the Hut Point Peninsula, the nature, magnitude and extent of these transmissions is such that the original values for which the site was designated are still considered worthy of protection. Moreover, the original geographical characteristics of the site, such as its elevated position and thus broad viewing horizon, the volcanic crater morphology, and the close proximity to the full logistic support of nearby McMurdo Station (US) 1.5 km south and Scott Base (NZ) 3 km SE, continue to render the Area valuable for upper atmospheric studies and boundary layer air sampling studies.

In recent years increases in nearby science and support operations have raised the levels of locally generated electromagnetic noise since the site was first designated. It is recognized that the values of the Area as an electromagnetically ‘quiet’ site are at risk from broad and narrow band electromagnetic interference, particularly from the nearby stations, as identified in SCAR Recommendation XXIII-6 (1994). However, there are scientific, financial and practical constraints associated with any proposed relocation of the Area and the associated facilities. Thus, the current preferred option for management is to minimize both internal and external sources of electromagnetic interference to the maximum extent practicable, and to monitor these levels routinely so that any significant threat to the values of the site can be identified and addressed as appropriate.

The vulnerability of this research to disturbance through chemical and noise pollution, in particular electromagnetic interference, is such that this Area requires continued special protection.

2. Aims and objectives

Management at Arrival Heights aims to:

- avoid degradation of, or substantial risk to, the values of the Area;
- allow scientific research in the Area, in particular research on the atmosphere, while ensuring protection from incompatible uses and uncontrolled equipment installation;
- minimize the possibility of generation of excessive electromagnetic noise interference within the Area through regulating the types, quantity and use of equipment that can be installed and operated;
- encourage the consideration of the values of the Area in the management of surrounding activities and land uses, in particular to monitor the levels, and encourage the minimization of, sources of electromagnetic radiation;
- allow access for maintenance, upgrade and management of communications equipment;
- allow visits for management purposes; and
- allow visits for education or public awareness purposes associated with the scientific studies.

3. Management activities

The following management activities are to be undertaken to protect the values of the Area:

- Signs showing the location and boundaries with clear statements of entry restrictions.
- Signs showing the location of the Area shall be displayed prominently, and a copy of this management plan shall be available in the principal research hut facilities, at McMurdo Station and Scott Base.
- Markers, signs or structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition, and removed when no longer necessary.
- Visits shall be made as necessary to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.
- Electromagnetic noise surveys shall be undertaken within the Area bi-annually to detect equipment faults and to monitor levels of interference to identify and mitigate their sources.
- National Antarctic Programs shall consult together to ensure these steps are carried out and to appoint an Activity Coordinator.

4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

Map A: Arrival Heights regional topographic map.

Inset: Ross Island region, showing the location of McMurdo Station (US) and Scott Base (NZ), and the location of the other protected areas on Ross Island.

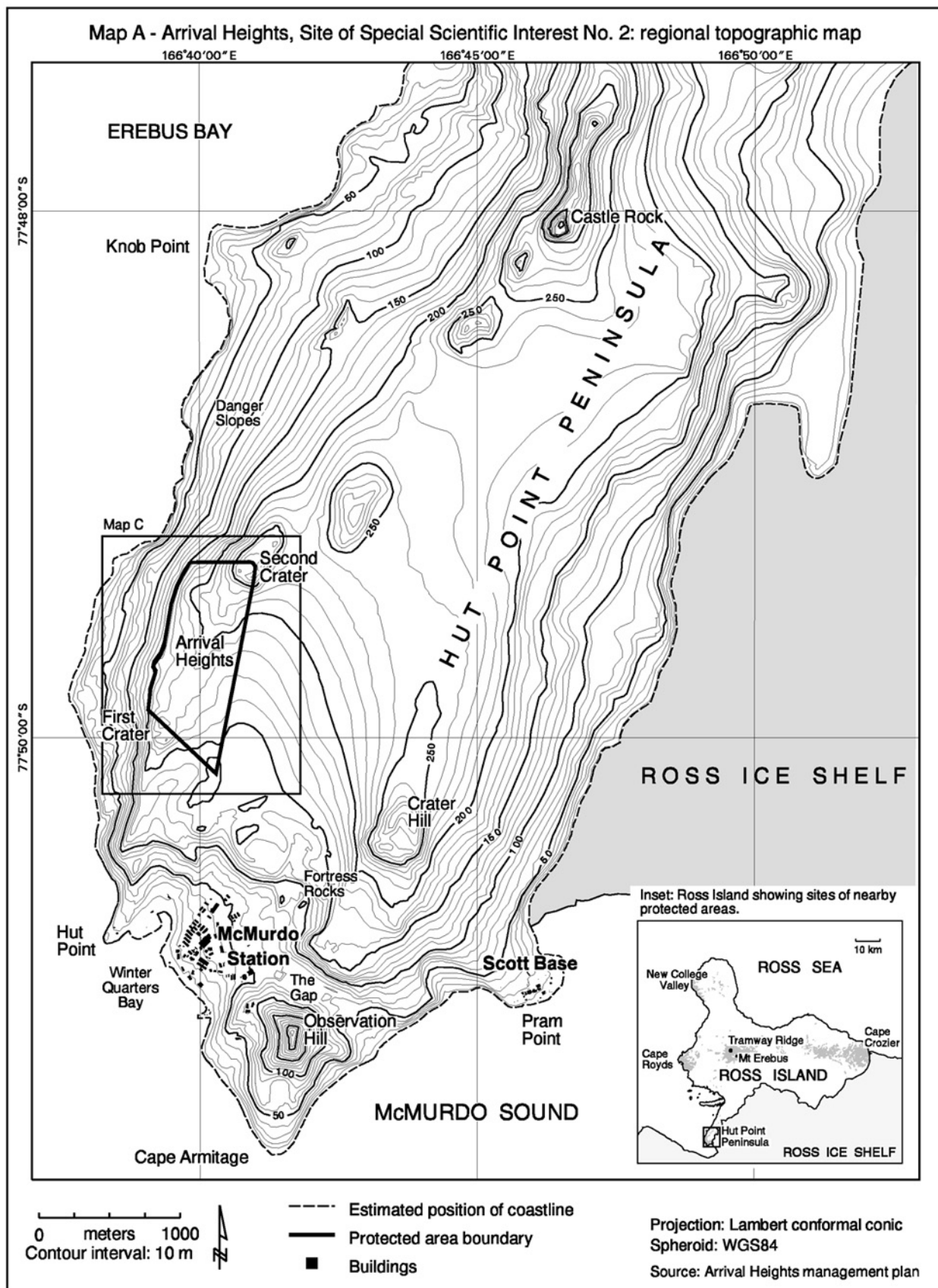
Map B: Arrival Heights site topographic map.

Not reproduced here.

6. Description of the Area

6(i) *Geographical coordinates, boundary markers and natural features*

Arrival Heights is a small range of low hills near the SE end of Hut Point Peninsula, SE Ross Island, 1.5 km north of McMurdo Station and 3 km northwest of Scott Base. Hut Point Peninsula is formed by a line of craters that extends



south from the flanks of Mt. Erebus. The basaltic rocks are particularly rich in ultramafic inclusions, including dunite, peridotite, pyroxenite, gabbro and sandstone. The soil consists mostly of volcanic scoria overlying volcanic tuffs from Mt Erebus, with rocky and weathered volcanic magma.

The highest elevation within the Area is Second Crater at 255 m, one of two inactive volcanoes that are a part of the boundaries of the Area. The boundary of the Area extends in a straight line from Trig T510 NW over First Crater to the 150 m contour. The boundary follows this contour north to a point immediately west of Second Crater. The boundary extends east to Second Crater, the lip of which forms the NE corner of the Area. The boundary then extends south in a straight line to Trig T510.

The research facility is at approximately 220 m (700 ft) above sea level, and has excellent views of McMurdo Sound, Mount Erebus and the Royal Society Range. The majority of McMurdo station is hidden from view, enhancing the radio-quiet characteristics of the area.

Arrival Heights is located at a geomagnetic latitude of about 80 degrees, right above the boundary between the auroral zone and the polar cap. It is also close enough to the geographic pole for total darkness to occur at local noon for a significant part of the year. This allows low intensity auroral events to be observed. Its location near the geomagnetic pole also means that Arrival Heights lies inside the polar cap at all times.

The Area is an electromagnetically quiet site offering good conditions for the installation of sensitive instruments to record high-resolution (less than a minute) signals associated with upper atmosphere research programs.

Science programs being conducted at Arrival Heights laboratories examine natural phenomena occurring in the earth's atmosphere and magnetosphere. The broad focus of these science programs is toward improved understanding of the mechanisms that couple solar processes with those of the terrestrial environment.

The instruments that measure local fields, including geomagnetic field sensors and very low frequency receivers, are sensitive to perturbations that propagate from remote generation regions

The VLF antennas are located in the crater of the larger cone, which provides shielding from local radio transmissions and station noise.

6(ii) Restricted and managed zones within the Area
None.

6(iii) Structures within and near the Area

Both the New Zealand and United States programs have research and living facilities within the Area. A Satellite Earth Station (SES) is located on First Crater.

6(iv) Location of other protected areas within close proximity of the Area

The nearest protected areas to Arrival Heights are on Ross Island: Cape Evans (ASPA 155) 22 km N; Backdoor Bay

(ASPA 157) 32 km N; Cape Royds (ASPA 121) 35 km NNW; Tramway Ridge (ASPA 130) 40 km N; Lewis Bay (ASPA 156) 50 km NE; New College Valley (ASPA 116) 65 km N; Cape Crozier (ASPA 124) 70 km NE; NW White Island (ASPA 137) 35 km S.

7. Permit conditions

Entry into the Area is prohibited except in accordance with a permit. Conditions for issuing a permit are that:

- it is issued for scientific study of the atmosphere, in particular for studies of electromagnetic radiation, trace gases, air particulates, auroras and geomagnetism or for other scientific purposes consistent with the management plan;
- it is issued for management and maintenance of science support facilities;
- it is issued for educational or public awareness activities associated with the scientific studies being conducted;
- it is issued for health and safety reasons, or for essential management purposes;
- the actions permitted are in accordance with the management plan and will not jeopardize the scientific values of the Area;
- the permit, or a copy, shall be carried;
- a report shall be supplied to the authority named;
- permits should be valid for a stated period.

7(i) Access to and movement within the Area

Access to the Area is permitted by vehicle and on foot. Landing of aircraft and overflight within the Area is prohibited. Transient overflight or landing may be allowed if specifically authorized by permit.

Entry by vehicle is restricted to those carrying out science, servicing or equipment maintenance, installation of new facilities in accordance with a permit, and those permitted persons accompanying such people at the time of the visit. All other visitors should enter the Area on foot, leaving any vehicles at the 'Glacier Road' intersection.

7(ii) Activities that are or may be conducted in the Area, including restrictions on time or place

Activities that may be conducted within the Area include:

- scientific research;
- management activities;
- use of radios by visitors is allowed but should be minimized.

7(iii) Installation, modification or removal of structures

No structures are to be erected within the Area except as specified in a permit. All scientific equipment installed within the Area outside of research hut facilities must be approved by permit and clearly identified by country, name of the principal investigator and year of installation. All such items should be made of materials that pose minimal risk of environmental contamination of the Area, and structures should be electromagnetically compatible with

activities in the Area. The time period for removal of equipment shall be specified in the permit.

No Radio Frequency (RF) transmitting equipment other than low power transceivers for local essential communication may be installed within the Area.

Installation or modification of structures or equipment is subject to assessment of the likely impacts of the proposed installations or modifications on the values of the Area, as required according to national procedures.

7(iv) *Location of field camps*

Camping within the Area is prohibited. Overnight visitation is permitted in buildings equipped for such purposes.

7(v) *Restrictions on materials and organisms that can be brought into the Area*

There are no specific restrictions on materials and organisms that can be brought into the Area.

7(vi) *Taking or harmful interference with native flora or fauna*

Taking or harmful interference with native flora or fauna is prohibited, except in accordance with a permit. Where animal taking or harmful interference is involved, this should be in accordance with the SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica.

7(vii) *Collection or removal of anything not brought into the Area by the permit holder*

Material may be collected or removed from the Area only in accordance with a permit and should be limited to the

minimum necessary to meet scientific or management needs. Material of human origin may be removed unless the impact of removal is likely to be greater than leaving the material *in situ*.

7(viii) *Disposal of waste*

All wastes shall be removed from the Area.

7(ix) *Measures that are necessary to ensure that the aims and objectives of the management plan can continue to be met*

- Permits may be granted to enter the Area to carry out scientific monitoring and site inspection activities, which may involve the collection of data for analysis or audit, or for protective measures.
- Any specific sites of long-term monitoring shall be appropriately marked.
- Spectral bands of specific science interests that warrant special protection should be identified by parties active within the Area and electromagnetic noise should be outside those frequencies.
- Intentional electromagnetic radiation outside the agreed frequency bands and power levels is prohibited except within agreed frequency bands and power levels or in accordance with a permit.

7(x) *Requirements for reports*

Parties should ensure that the principal holder for each permit issued submits to the appropriate authority a report describing the activities undertaken.

Management Plan for Antarctic Specially Protected Area No. 139 Biscoe Point, Anvers Island, Palmer Archipelago

1. Description of values to be protected

Biscoe Point was originally designated on the grounds that the "Site contains a large (approximately 5000 m²) but discontinuous stand of the two native vascular plants, Antarctic hair grass (*Deschampsia antarctica*) and, less commonly, Antarctic pearlwort (*Colobanthus quitensis*). The present management plan reaffirms the exceptional ecological and scientific values associated with the rich flora and invertebrate fauna within the Area. One stand of mosses in the prominent valley on the northern side of the main island extends almost continuously for 150 m along the valley floor, covering an area of approximately 6500 m².

Biscoe Point is also valuable for ornithological research. Long-term studies are being conducted on both Adélie (*Pygoscelis adeliae*) and gentoo (*Pygoscelis papua*) penguin colonies present within the Area.

Until recently, Biscoe Point was on a peninsula joined to Anvers Island by an ice ramp extending from the adjacent glacier. The ice ramp disappeared as the glacier retreated, and a narrow channel now separates Anvers Island from the island on which Biscoe Point lies.

In summary, the Area at Biscoe Point therefore has high value for its outstanding:

- examples of vegetation communities, soils and associated terrestrial ecology;
- ornithological interest, with several of the resident breeding bird species and associated paleoecological features possessing unusual properties, and which are the subject of long-term studies; and
- utility as a reference site for comparative studies and monitoring.

2. Aims and Objectives

- avoid degradation of the values of the Area by preventing human disturbance and sampling ;
- allow scientific research;
- minimize the possibility of introduction of alien plants, animals and microbes to the Area;
- allow visits for management purposes.

3. Management activities

- Copies of this management plan shall be available at Palmer Station and at Yelcho Station.

- Markers, signs or other structures shall be secured and maintained in good condition.
- Visits to ensure management and maintenance measures are adequate.

4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

Map 1: Biscoe Point, ASPA No. 139, in relation to Biscoe Bay and Anvers Island (not reproduced here).

Map 2: Biscoe Point, ASPA No. 139: Physical features and access guidelines.

Map 3: Biscoe Point, ASPA No. 139: Penguin colonies, approximate vegetation extent, and known contaminated sites (not reproduced here).

6. Description of the Area

6(i) Geographical coordinates, boundary markers and natural features

Biscoe Point (64°48'47"S, 63°47'41"W) is at the western extremity of a small island (0.53 km²), located close to the southern coast of Anvers Island (2700 km²) about 6 km south of Mount William (1515 m), in the region west of the Antarctic Peninsula known as the Palmer Archipelago.

The Area is defined to include all land above the low tide water level of the main island on which Biscoe Point is situated (0.53 km²), all offshore islets and rocks within 100 m of the shore of this main island, and most of the predominantly ice-free promontory 300 m to the north (0.1 km²) (Map 2). The landward (eastern) boundary on the northern promontory bisects the peninsula at the point where it protrudes from Anvers Island, distinguished by a small bay cutting into the glacier in the south and a similar, although less pronounced, coastline feature in the north. The total area including the main island and the northern promontory is approximately 0.63 km².

No meteorological data are available for Biscoe Point. Data for nearby Palmer Station show monthly air temperature averages recorded over a 22-year period ranging from -7.8°C in August to 2.5°C in January. The minimum recorded temperature is -31°C and the maximum is 9°C, while the annual mean is -2.3°C.

Specific descriptions are not available of the geology of island on which Biscoe Point lies, or of the peninsula to the north. However, the bedrock appears to be composed mainly of gabbros and adamellites of Late Cretaceous to Early Tertiary age belonging to the Andean Intrusive Suite, which dominate southeastern Anvers Island.

A number of small seasonal streams and ponds have not been scientifically described. The freshwater environment has thus far escaped significant disturbance from seals. Information on the hydrology of the separate promontory to the north is not available.

The most significant aspect of the vegetation is the abundance and reproductive success of the two native Antarctic flowering plants, the Antarctic hair

grass *Deschampsia antarctica* and Antarctic pearlwort *Colobanthis quitensis*.

The apterous midge *Belgica antarctica* has been observed associated with the well-developed loam and closed swards of grass.

At least six species of birds breed on the island on which Biscoe Point lies. The most numerous colony is of Adélie penguins (*Pygoscelis adeliae*), a gentoo penguin (*Pygoscelis papua*) colony was discovered in 1992-93. South polar skuas (*Catharacta maccormicki*) and brown skuas (*C. loennbergi*) breed within the Area and hybrids also occur. Kelp gulls (*Larus dominicanus*) and Antarctic terns (*Sterna vittata*) breed within the Area.

Small numbers of non-breeding Antarctic fur seals (*Arctocephalus gazella*), Weddell seals (*Leptonychotes weddellii*) and southern elephant seals (*Mirounga leonina*) have been observed on beaches in summer.

Human activity appears to have been minimal.

6(ii) Restricted and managed zones within the Area

None.

6(iii) Structures within and near the Area

No structures are known to be present within the Area.

6(iv) Location of other protected areas within close proximity of the Area

The nearest protected areas to Biscoe Point are: Litchfield Island (ASPA No. 113), 16 km W; South Bay (ASPA No. 146), 12 km SE; and Eastern Dallmann Bay (ASPA No. 153) 85 km NE.

7. Permit conditions

Entry into the Area is prohibited except in accordance with a Permit issued by an appropriate national authority.

7(i) Access to and movement within the Area

Access to the Area shall be by small boat, by aircraft, or over sea ice by vehicle or on foot (Map 2). When necessary for purposes consistent with plan objectives, aircraft may operate and land within the Area. Helicopter landing is permitted at two designated sites (Map 2)

7(ii) Activities that are or may be conducted in the Area, including restrictions on time or place

- Scientific research;
- Essential management activities;
- The appropriate authority should be notified of any activities/measures undertaken that were not included in the authorised Permit.

7(iii) Installation, modification or removal of structures

Structures shall not be erected within the Area except as specified in a Permit. Removal of structures, equipment or markers for which the period specified in the Permit has expired shall be a condition of the Permit.

7(iv) Location of field camps

Temporary camping is allowed within the Area at the designated site about 50 m north-east of helicopter landing

site (A), on the northern coast of the main island on which Biscoe Point lies. Camping on surfaces with significant vegetation cover is prohibited.

7(v) Restrictions on materials and organisms which can be brought into the Area

No living animals, plant material or microorganisms shall be deliberately introduced. Dressed poultry should be free of disease or infection and shall be completely removed and incinerated or boiled long enough to kill any potentially infective bacteria or viruses. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, shall be removed at or before the conclusion of the activity. Fuel is not to be stored in the Area. Anything introduced shall be removed at or before the end of the stated period.

7(vi) Taking or harmful interference with native flora or fauna

Taking or harmful interference with native flora or fauna is prohibited.

7(vii) Collection or removal of anything not brought into the Area by the Permit holder

Collection or removal of anything not brought into the Area by the Permit holder shall only be in accordance with a

Permit and should be limited to the minimum necessary to meet scientific or management needs.

7(viii) Disposal of waste

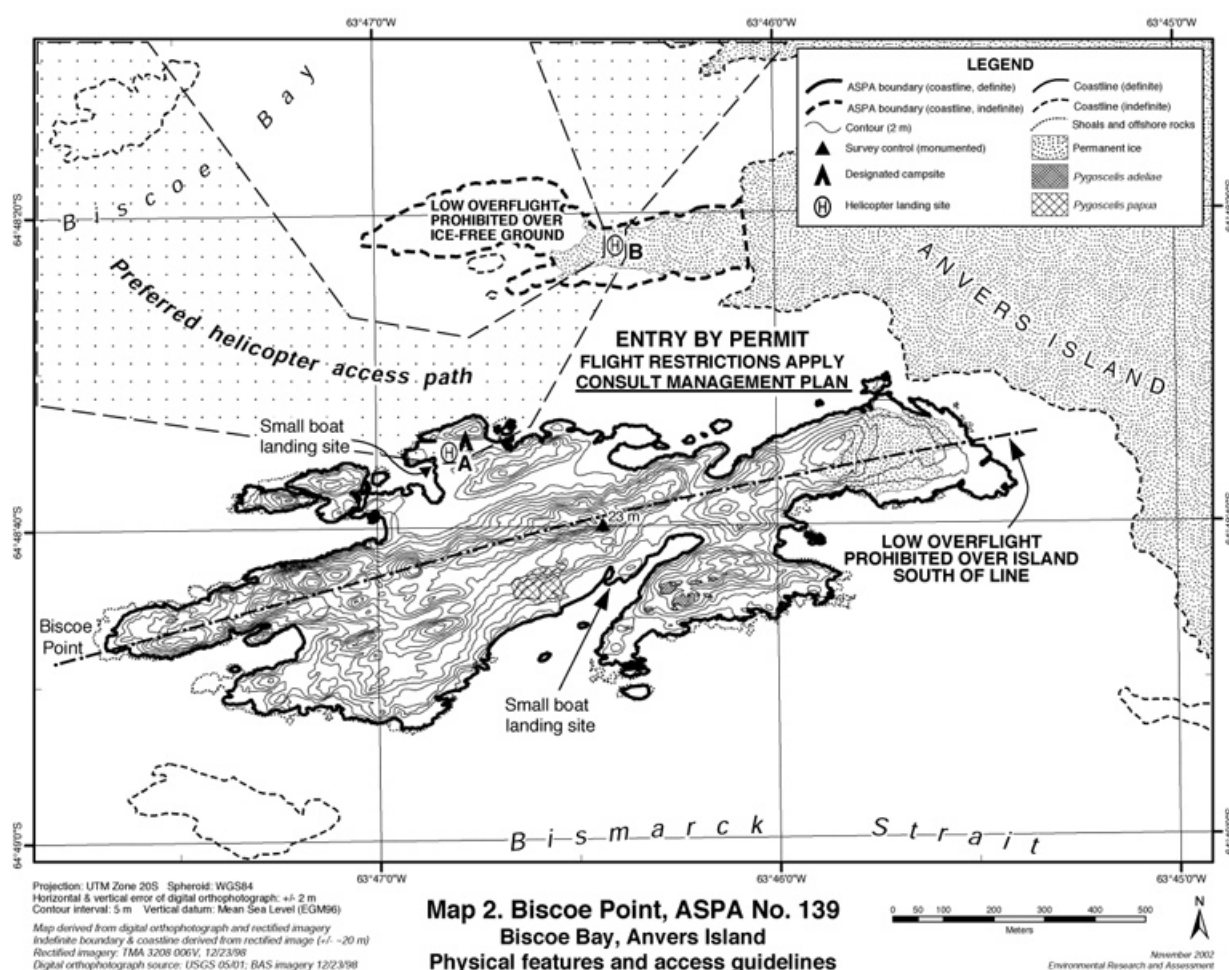
All wastes shall be removed from the Area. Human wastes may be disposed of into the sea.

7(ix) Measures that are necessary to ensure that the aims and objectives of the management plan can continue to be met

1. Permits may be granted to carry out biological monitoring and site inspection activities.
2. Any specific sites of long-term monitoring shall be appropriately marked.
3. Visitors shall take special precautions against introductions. Of concern are pathogenic, microbial, invertebrate or plant introductions sourced from other Antarctic sites or from regions outside Antarctica. Footwear and other equipment shall be thoroughly cleaned before entering the Area.

7(x) Requirements for reports

Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken.



Management Plan Antarctic Specially Protected Area No. 142 Svarthamaren

1. Description of values to be protected

- the colony of Antarctic petrels (*Thalassoica antarctica*) is the largest known inland seabird colony on the Antarctic continent
- the colony constitutes a large proportion of the known world population of Antarctic petrels
- the colony is an exceptional “natural research laboratory” providing for research on the Antarctic petrel, snow petrel (*Pagodroma nivea*) and south polar skua (*Catharacta maccormicki*), and their adaptation to breeding in the interior of Antarctica

2. Aim and objectives

- avoid human-induced changes to the population structure, composition and size of the colonies;
- prevent unnecessary disturbance to the colonies;
- allow for undisturbed research on the adaptations of the seabirds to the inland conditions;
- allow access for other scientific reasons.

The focus of the Primary Research is to improve the understanding of how natural and anthropogenic changes in the environment affect the spatial and temporal distribution of animal populations and how such changes affect interactions between key species in the ecosystem.

3. Management activities

- ensure the seabird colonies are adequately monitored by non-invasive methods;
- allow erection of signs/posters, border markers, etc. and ensure these are maintained;
- visits to assess the Area and to ensure management and maintenance measures are adequate

Any direct intervention management activity must be subject to an environmental impact assessment.

4. Period of Designation

Designated for an indefinite period.

5. Maps and Illustrations

Map A: Dronning Maud Land (not reproduced here).

Map B: Svarthamaren and surroundings (not reproduced here).

Map C: Antarctic Specially Protected Area No. 142, protected area topographic map.

6. Description of Area

6(i) Geographic co-ordinates, boundary markers and natural features

The Svarthamaren ASPA is situated in Mühlig-Hoffmannfjella, Dronning Maud Land, stretching from approx. 71°33'17"S, 5°09'12"E the north-west to approx. 71°55'58"S, 5°15'12"E in the south-east. The distance from the ice front is about 200 km. The Area covers approximately 6.4 km², and consists of the ice-free areas of the Svarthamaren nunatak.

The Norwegian field station Tor is located in the Svarthamaren nunatak at 71°53'S, 5°10'E. The station, including a 10-metre buffer zone around the station buildings, is excluded from the Svarthamaren ASPA. Access is by the shortest route from the ice.

The main rock types are coarse and medium grained charnockites with small amounts of xenoliths. No continuous weather observations have been carried through in the Area, but prevalent air temperature has been observed to range between -5° and -15°C in January, with somewhat lower minimum temperatures in February.

The flora and vegetation are sparse compared with other areas in Mühlig-Hoffmannfjella and Gjelsvikfjella. The only plant species occurring in abundance is the foliose green alga, *Prasiola crispa*.

The north-eastern slopes of Svarthamaren are occupied by a densely populated colony of Antarctic petrels (*Thalassoica antarctica*) divided into three separate sub-colonies. The total number of breeding pairs is estimated to be approximately 250,000 pairs. In addition, 500-1000 pairs of snow petrels (*Pagodroma nivea*) and approximately 80 pairs of south polar skuas (*Catharacta maccormicki*) breed in the area.

6(ii) Restricted zones within the Area

None

6(iii) Location of structures within the Area

There are no structures within the Area.

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

None

7. Permit Conditions

Permits may be issued only by appropriate national authorities.

7(i) Access to and movement within the Area

Access to the area is restricted by the following conditions:

- No pedestrian routes are designated but persons shall avoid disturbances to birds and also to the sparse vegetation cover;
- Vehicles should not enter the site;
- No flying over the Area is allowed;
- Helicopter landings are not allowed within the boundaries of the ASPA.

7(ii) Activities that are or may be conducted within the Area, including restrictions on time and place

- Primary biological research;
- Other research programs.

7(iii) Installation, modification or removal of structures

No structures are to be erected or scientific equipment installed except as specified in a permit.

7(iv) Location of field camps

No field camps should be established in the Area. The field station Tor should be used with permission.

7(v) Restrictions on materials and organisms which may be brought into the Area

- No living animals or plant material shall be deliberately introduced into the Area.
- No poultry products shall be taken into the Area.
- No herbicides or pesticides shall be brought into the Area.
- Any other chemicals (including fuel) shall be removed from the Area before or at the conclusion of the activity for which the permit was granted. Limited fuel storage at the field station Tor is acceptable.
- All materials introduced shall be for a stated period and shall be removed at or before the conclusion of that stated period,

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

Taking or harmful interference with native flora and fauna is prohibited, except in accordance with a permit. It is recommended that those responsible for the primary research in the Area should be consulted before a permit is granted for taking of birds for purposes not associated with the primary research.

7(vii) Collection and removal of anything not brought into the Area by the Permit holder

Material may be collected or removed from the Area only in accordance with a permit, except that debris of man-made origin should be removed and that dead specimens of fauna may be removed for laboratory examination.

7(viii) Disposal of waste

All wastes is to be removed from the area.

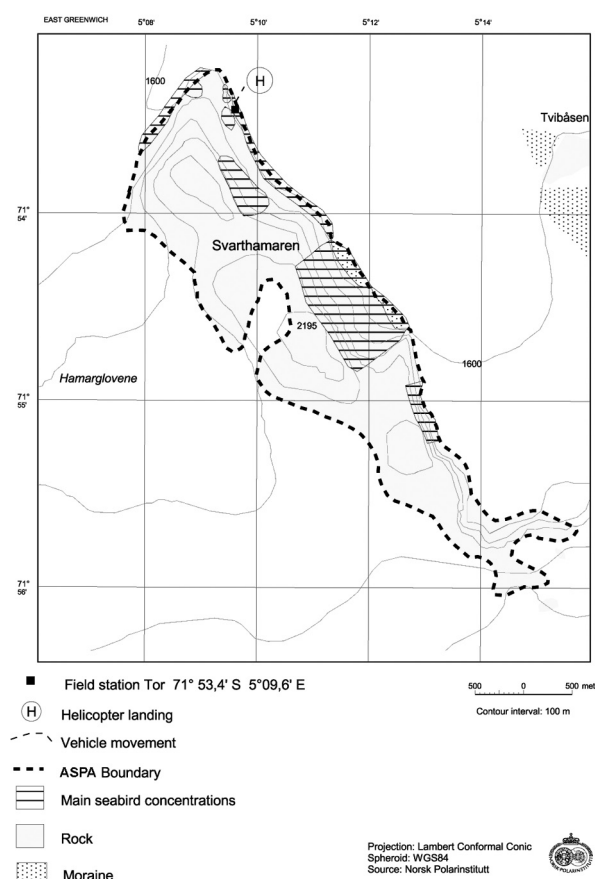
7(ix) Measures that may be necessary to ensure that the aims and objectives of the Management Plan continue to be met

Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities.

7(x) Requirements for reports

Parties should ensure that the principal holder of each permit issued submits a report to the appropriate authority .

MAP C: Svarthamaren - Antarctic Specially Protected Area No. 142



Proposed Management Plan for Antarctic Specially Protected Area No. 162
Mawson's Huts, Cape Denison, Commonwealth Bay, George V Land, East Antarctica
 Latitude 67° 00' 30" S, Longitude 142° 39' 40" E

Note: This abbreviated ASPA Management Plan should be read in conjunction with the Management Plan for ASMA 3.

Mawson's Huts are four timber huts that served as the winter base of the Australasian Antarctic Expedition of 1911–14 organised and led by geologist Dr Douglas Mawson. An important symbol of the so-called 'heroic age' of Antarctic exploration (1895-1917), the huts at Cape Denison are the least disturbed and altered of those structures remaining from the era. The achievements of the Mawson expedition include some of the earliest studies of Antarctic geology, glaciology, oceanography, geography, terrestrial magnetism, astronomy, meteorology, biology, zoology and botany.

In recognition of the rarity and richness of this social, cultural and scientific resource, all four Australasian Antarctic Expedition huts are designated as an ASPA, embedded within the Cape Denison ASMA 3.

1.0 Description of Values to be Protected

This ASPA is proposed on the grounds that Mawson's Huts are a site of historic, archaeological, technical, social and aesthetic values.

The two huts that form the Main Hut were built of Oregon timber frames clad with Baltic pine tongue-and-groove boards. They were prefabricated in Australia, and on-site construction was assisted by a branded letter code on framing members and coded colours painted on board

ends. The three other AAE huts are:

- The Absolute Magnetic Hut, constructed during February 1912.
- The Magnetograph House was erected in March 1912 to house equipment used to measure variations in the South Magnetic Pole.
- Construction of the Transit Hut commenced in May 1913, with packing case timbers being affixed to an Oregon frame.

Mawson's Huts are of aesthetic value; the building form of the huts themselves shows the functional and efficient planning that was undertaken in response to the site position and the elements endured by the expedition.

2.0 Aims and Objectives

- avoid degradation or risk to the value of the Area
- maintain the historic values of the Area;
- allow management activities; and
- prevent unnecessary human disturbance.

3.0 Management Activities

- conservation and archaeological work;
- visits for management purposes;
- review and update the Management Plan;
- consultation among national Antarctic programs to ensure these provisions are implemented; and
- installation of signage to indicate the boundaries.

4.0 Period of Designation

This ASPA is designated for an indefinite period.

5.0 Description of the Area

5.1 Geographical coordinates, boundary markers and natural features

Cape Denison is a 1.5 km-wide peninsula projecting into the centre of Commonwealth Bay. The ASPA covers four areas. Each area consists of one hut and a five (5) metre buffer zone extending from the perimeter of the hut. The huts are located at:

- Main Hut: 67°00'31"S, 142°39'39"E;
- Transit Hut: 67°00'30"S, 142°39'42"E;
- Absolute Magnetic Hut: 67°00'23"S, 142°39'48"E
- Magnetograph House: 67°00'21"S, 142°39'37"E.

5.2 Access to the Area

Sea, land and air access to Mawson's Huts is difficult due to the rugged topography and climate of the area. See ASMA 3 Management Plan.

5.3 Location of structures and other anthropogenic objects within and near to the Area

The ASPA is located within the Cape Denison ASMA

5.4 Location of other protected areas in or near to the Area

ASPA 162 is located within the Cape Denison ASMA 3.

6.0 Zones within the Area

There are no zones within ASPA 162.

7.0 Maps of the Area

See ASMA 3

8.0 Permit Conditions

A Permit may be issued by a national authority.

8.1 Access to and movement within or over the Area

Onshore access to and within the huts is on foot.

8.1.1 Visitor management

Day visits to Mawson's Huts may be permitted

- visitors do not touch the buildings or artefacts. provided that:
- Visitors may enter the Main Hut and Magnetograph House if accompanied by a person who has approved cultural heritage skills;
- visitation of the interior of the huts is limited to up to four (4) persons inside the Main Hut, and up to three (3) persons in the Magnetograph House; .

8.2 Activities which are or may be conducted within the Area

See ASMA 3

8.3 The installation, modification, or removal of structures

See ASMA 3

8.4 The location of field camps

Tents should be pitched on the wooden platform adjacent to Sørensen Hut.

8.5 Restrictions on materials and organisms that may be brought into the Area

See ASMA 3.

8.6 Taking or harmful interference with native flora or fauna

See ASMA 3

8.7 The collection or removal of anything not brought into the Area by the Permit holder

See ASMA 3

8.8 Disposal of wastes

All wastes should be removed from the Area.

8.9 Measures that may be necessary to ensure aims and objectives of the Plan can continue to be met

- Provision of information for visitors including a briefing video and interpretative literature;
- a post-visit survey to assist in the formal monitoring of visitor impact;
- off-site interpretation that maximises the use of available media, including the Internet; and
- the development of skills and resources to assist in the protection of the Area's values.

8.10 Reports to be made to the appropriate authority regarding visits to the Area

Parties should ensure the principal holder for each Permit submits a report describing the activities undertaken

9.0 Exchange of Information

Parties should maintain a record of activities approved for this ASPA and, in the Annual Exchange of Information, should provide summary descriptions of activities

conducted by persons subject to their jurisdiction, which should be in sufficient detail to allow evaluation of the effectiveness of this Management Plan.

Measure 3 (2004)

Antarctic Protected Area System: Historic Sites and Monuments: Cape Denison, Commonwealth Bay, George V Land and Plaque and Monument at India Point and, Humboldt Mountains, Central Dronning Maud Land.

The Representatives,

Recalling Recommendations I – IX, VI-14 and Measure 3 (2003);

Noting the requirements of Article 8 of Annex V to the Protocol on Environmental Protection to the Antarctic Treaty to maintain a list of current Historic Sites and Monuments and that such sites shall not be damaged, removed or destroyed;

Recommend to their Governments the following Measure for approval in accordance with paragraph 2 of Article 8 of Annex V and paragraph 4 of Article IX of the Antarctic Treaty:

1. That Historic Site and Monument numbers 12 and 13 be removed from the Antarctic Treaty list of Historic Sites and Monuments and be subsumed into the following new Historic Site and Monument to be added to the “List of Historic Sites and Monuments approved by the Antarctic Treaty Consultative Meeting” annexed to Measure 3 (2003):
No. 77: Cape Denison, Commonwealth Bay, George V Land, including Boat Harbour and the historic artefacts

contained within its waters. Site incorporated within ASMA No. 3 Part of this site is also designated as ASPA No. 162.

Location: 67°00'30"S, 142°39'40" Original proposing Party: Australia

Party undertaking management: Australia

2. That the following site be added to the List of Historic Sites and Monuments approved by the Antarctic Treaty Consultative Meeting” annexed to Measure 3 (2003):

No. 78: Memorial plaque at India Point, Humboldt Mountains, Wohlthat Massif, central Dronning Maud Land erected in memory of three scientists of the Geological Survey of India (GSI) and a communication technician from the Indian Navy – all members of the ninth Indian Expedition to Antarctica, who sacrificed their lives in this mountain camp in an accident on 8th January 1990.

Location: 71°45'08"S, 11°12'30"E

Original proposing Party: India

Party undertaking management: India

Management Plan for Historic Site and Monument No. 77 and Antarctic Specially Managed Area No. 3 Cape Denison, Commonwealth Bay, George V Land, East Antarctica Latitude 67°00'13"S — 67°00'50"S; Longitude 142°40'00.1"E — 142°41'27"E

Introduction

Cape Denison, Commonwealth Bay is one of the principal sites of early human activity in Antarctica. It is the location of the base of the Australasian Antarctic Expedition of 1911-14 organised and led by Dr (later Sir) Douglas Mawson. An important symbol of the ‘heroic age’ of Antarctic exploration (1895-1917), it is one of only six hut sites remaining from this period. Cape Denison hosted some of the earliest comprehensive studies of Antarctic geology,

geography, terrestrial magnetism, astronomy, meteorology, glaciology, oceanography, biology, zoology and botany. It was also the base of numerous explorations inland and features artefacts associated with these sledging parties, including food caches and equipment.

Note: a fuller version of the Management Plan is given as the second Annex to Measure 1 (2004) at the beginning of this issue of *SCAR Bulletin*.

Management Plan for Historic Site and Monument No. 78 Memorial plaque at India Point, Humboldt Mountains, Wohlthat Massif, central Dronning Maud Land Latitude: 71°45'08"S Longitude: 11°12'30"E

Proposed site

Plaque and Monument at India Point, Humboldt Mountains, Wohlthat Massif, central Dronning Maud Land.

Description

Memorial plaque erected in memory of three scientists of Geological Survey of India (GSI) and a communication technician from Indian Navy - all members of ninth Indian

Expedition to Antarctica, who sacrificed their lives in this mountain camp in an accident on 8 January 1990.

Background

In pursuance of the scientific goals set for the Ninth Indian Antarctic Expedition to Antarctica, a mountain camp was established on 6 January 1990 to facilitate geological mapping of Humboldt Mountains and related studies. The following expeditioners inhabited the camp:

1. V K Srivastava 33 Years Geologist (GSI)
2. B L Sharma 46 Years Geologist (GSI)
3. A K Bedi 42 Years Geophysicist (GSI)
4. N C Joshi 27 Years Naval Technician (Indian Navy)

It was in the remote parts of the mountains in Central Dronning Maud Land, that camp inmates lost their lives on 8 January 1990 in a tragic incident of gas poisoning. Their bodies were recovered next day during a routine visit by the leader of the expedition and flown home for necessary rituals. A black dolerite plaque engraved with the names of the departed was erected at the campsite in their memory in February 1991.

Management Guidelines

Declaration of the site as a monument aims at ensuring that the site of the tragic death is kept inviolate by preventing human disturbance and allowing visitation.

A detailed location map is prominently displayed at the Indian station "Maitri" and a sign describing the historical importance of the area will be placed and maintained near

the site. Use of vehicles should be carefully managed. All visits should recognize the values to be protected.

Description of the site

The memorial plaque is on the foothills of northwestern side of Flanuten peak in the southern Humboldt Mountains, east of Somovken Glacier. The site is at an altitude of 1900m at approximately 71°45'08"S; 11°12'30"E.

The area is marked by high jagged peaks exhibiting typical Alpine topography. The surrounding hills rise to a maximum elevation (2855m) east of Vindigghallet Glacier. Several glaciers originate from these hills and descend westward to join Somovken Glacier. A prominent ice field with flat to very gentle slopes exists north of the site..

The site comprises Proterozoic metamorphic rocks imprinted by Grenvillian and Pan-African orogenies. Gneissic rocks, including quartzofeldspathic gneiss, quartz-biotite gneiss, garnet-sillimanite gneiss and sillimanite-cordierite gneiss dominate the area. Foliation-parallel bands of 2-pyroxene granulites and calc-silicates occur within the country gneiss. Late stage intrusions of pegmatite, quartz veins and basic dykes are frequently observed. The paragneisses exhibit khondalitic affinity. The rocks exhibit a polydeformational and polymetamorphic history with at least 3 major phases of folding with associated metamorphism.

The maps and photographs are not reproduced here.

1. Map of part of southern Humboldt Mountains
2. Map showing details of the site.
3. Photograph of the plaque
4. Photograph of the persons.

Measure 4 (2004)

Insurance and Contingency Planning for Tourism and Non Governmental Activities in the Antarctic Treaty Area

The Representatives,

Concerned at the potential impacts, including the imposition of additional costs, that tourist or other non-governmental activities may have on national programmes, and the risks to the safety of those involved in search and rescue operations;

Desiring to ensure that tourist or other non-governmental activities undertaken in Antarctica are carried out in a safe and self-sufficient manner;

Desiring further to ensure that the risks associated with tourism or other non-governmental activities are fully identified in advance, and minimised;

Noting that the "Procedures to be Followed by Organisers and Operators", as set out in the Attachment to Recommendation XVIII-1, contain some elements relating to self-sufficiency and insurance;

Recommend to their Governments the following Measure for approval in accordance with paragraph 4 of Article IX of the Antarctic Treaty:

That Parties shall require those under their jurisdiction organising or conducting tourist or other non-governmental activities in the Antarctic Treaty Area, for which advance notification is required in accordance with Article VII (5) of the Antarctic Treaty, to demonstrate compliance with the following requirements:

- that appropriate contingency plans and sufficient arrangements for health and safety, search and rescue (SAR), and medical care and evacuation have been drawn up and are in place prior to the start of the activity. Such plans and arrangements shall not be reliant on support from other operators or national programmes without their express written agreement; and
- that adequate insurance or other arrangements are in place to cover any costs associated with search and rescue and medical care and evacuation.