Specially Protected Area No 16

Coppermine Peninsula, Robert Island: Lat 62º23'S, Long 59º42'W

Description: The area comprises all the land west of a line drawn from north to south across the Peninsula, 100 metres west of the two shelters found on the isthmus. The area is shown on the attached map.

Designated in Recommendation VI-10 on the grounds that Coppermine Peninsula is a biologically diverse area, supporting rich vegetation, together with a variety of terrestrial fauna, and that the ecosystem, which includes a rich avifauna, is of outstanding scientific interest.

Annex to Recommendation XVI-6

Management Plan for Specially Protected Area No. 16: Coppermine Peninsula, Robert Island, South Shetland Islands

1. Geographical location. Coppermine Peninsula (62°23'S, 59°42'W) is situated on the west side of Robert Island, which lies between Nelson Island to the east and Greenwich Island to the west, midway along the South Shetland Islands Archipelago.

2. Management Plan

i. Description of Area. The Area comprises all land west of a north-south line across the isthmus between Carlota Cove and Coppermine Cove, 100m west of a small group of Chilean refuge huts. The Peninsula is about 1.7 km from south-east to north-west and up to 0.6 km from north-east to south-west, and is largely surrounded by precipitous cliffs. There are three prominent low hills which reach a highest point at about 220 m. The easternmost lies close to the isthmus; there is a central hill composed of basaltic columns referred to as 'Neptune's Cathedral', and the westernmost is situated above Fort William at the extreme west of the Peninsula. The isthmus (mainly outside the Area) is a 250 m wide raised beach reaching about 10 m altitude. Much of the higher ground is permanently ice covered. There are numerous small streams and pools in summer.

ii. Reason for designation. Coppermine Peninsula is a biologically rich area with a diverse biota typical of the South Shetland Islands. It supports a wide range of plant communities with associated invertebrate fauna; the vertebrate fauna is also particularly well represented. The outstanding feature of the vegetation is a 1.5 ha closed carpet of the mosses *Calliergidium austro-stramineum, Calliergon sarmentosum* and *Drepanocladus uncinatus*, representing one of the largest continuous moss stands in the Antarctic. It overlies a thick layer of wet moss peat. Large stands of the foliose cyanobacterium *Nostoc commune* occur on moist slopes and in depressions. A large number of bryophyte and lichen species occur within the Area, and Antarctic hair grass (*Deschampsia antarctica*) is frequent. A small colony of Chinstrap penguins (*Pygoscelis antarctica*) occurs at Fort William. There are about 30 small colonies of Southern Giant petrels (*Macronectes giganteus*). Other breeding species include about 2,000 nests of Wilson's storm petrels (*Oceanites oceanicus*) in at least 13 colonies, up to 1,000 Antarctic terns (*Sterna vittata*) in nine colonies, 300-400 Dominican gulls (*Larus dominicanus*) in ten colonies, and numerous Brown skuas (*Catharacta lonnbergii*). Seals are common around the peninsula and frequently haul out at the isthmus, notably Elephant seals (*Mirounga leonina*), Weddell seals (*Leptonychotes weddellii*) and incresingly large numbers of Fur seals (*Arctocephalus gazella*).

iii. Date of designation and originator. November 1966, Recommendation IX-10, by Chile.

iv. Access points. Access should be from the isthmus outside the Area by sea from Coppermine Cove or Carlota Cove, or by helicopter also to the east of the Area.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of information for the same Antarctic season in which the activities were carried out.

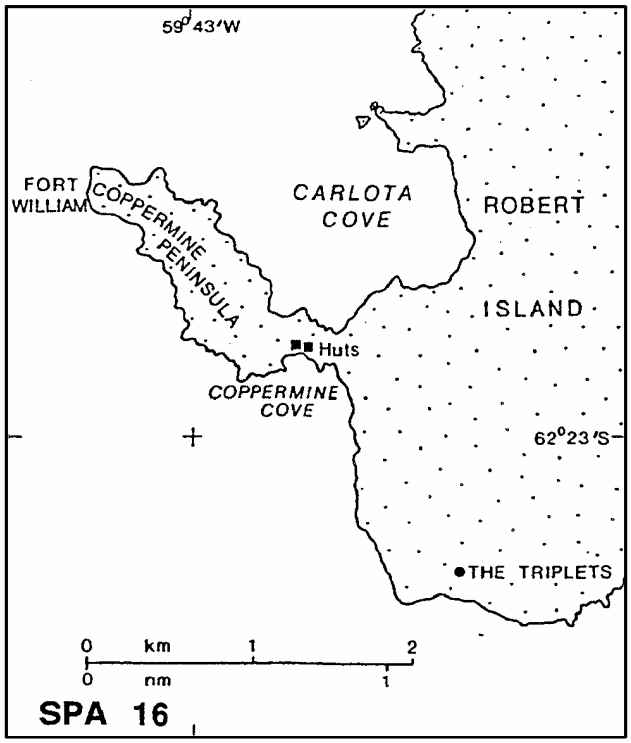
vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

a. drive any vehicle within the Area;
b. land a helicopter within the Area;
c. overfly the Area by any aircraft below 250 m above the highest point;
d. use any of the Area's coves or bays for anchoring or mooring seacraft, except in accordance with the permit;
e. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste must be removed from the Area;
f. leave depots of fuel, food, or any other supplies within the Area, unless they are required within the same season, at the end of which they must be removed;
g. erect any form of building within the Area.

vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of any breeding bird (especially Giant petrels, which pedestrians should not approach closer than 100 m) or seal or stand of vegetation (especially the extensive carpet of moss on the isthmus), unless required as specified in the permit.

viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits to the Area should be made at least once every three years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.



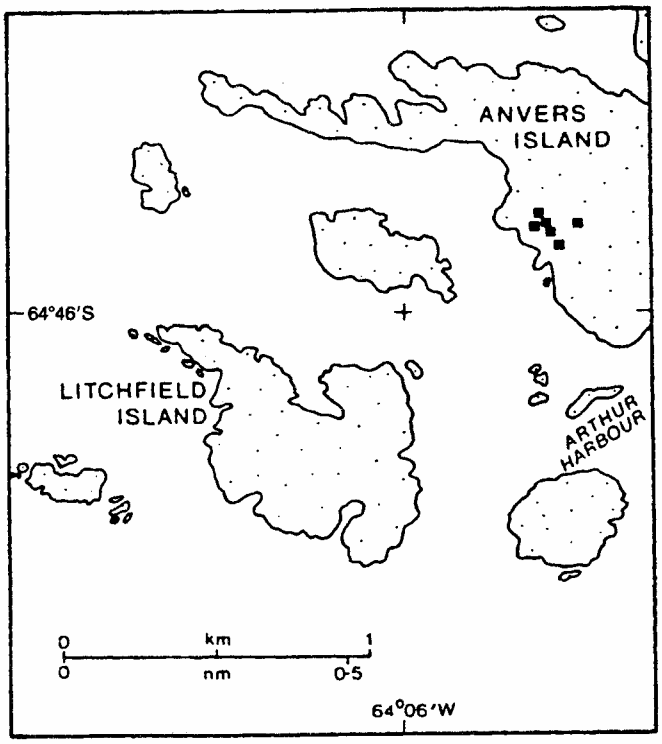
SPA 16, Coppermine Peninsula

Specially Protected Area No 17

Litchfield Island, Arthur Harbor, Palmer Archipelago Lat 66°16'S, long 64°06'W

Description: A small island, about 2.5 km² in area. The area is shown on the attached map.

Designated in Recommendation VIII-1 on the grounds that Litchfield Island, together with its littoral, possesses an unusually rich collection of marine and terrestrial life, is unique amongst the neighbouring 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.



SPA 17, Litchfield Island

Specially Protected Area No 18

North Coronation Island, South Orkney Islands:

Between Lat 60º31'S, Long 45º41'W and Lat 60º37'S, Long 45º36'W and Lat 60º32's, Long 45º29'w.

Description: The area lies on the central north side of Coronation Island, South Orkney Islands. It is bounded to the east by Foul Point (Lat 60°32'S, long 45°29'W) and to the west by Conception Point (60°31'S, 45°41'W); the entire area of these points is included in the area. The eastern boundary follows a precipitous ridge 6 km southwards to a position at 2,500 ft (750 m) altitude immediately to the west of Mt Nivea summit (60°35'S, 45°29' W), thence west-south-westwards for 5.5 km to a position at 2,000 ft (700 m) altitude to the north-east of Wave Peak summit (60°37'S, 45°36'W), and from there 4 km westwards across the Brisbane Heights plateau to Conception Point. The summits of Mt Nivea and

Wave Peak and the col known as High Stile are outside the area. Ommaney Bay and the unnamed bay to the west are included within the area south of the boundary between Conception and Prong Points (11.5 km). The area is shown on the attached map.

Designated in Recommendation XIII-10 on the grounds that the area bounded by Foul Point and Conception Point on the north coast of Coronation Island, South Orkney Islands, extending southwards to Wave Peak and comprising Ommaney Bay and the bay between Prong Point and Conception Point embraces areas of coastal ice-free terrain (Conception, Prong and Foul Points) with large seabird colonies and lichen-dominated cliffs, and permanent ice rising to the Brisbane Heights plateau which provides an excellent representative area of a pristine ice environment near the northern limit of the maritime Antarctic and the Antarcric Treaty Area, and that the interrelated terrestrial, permanent ice and

marine components of this area comprise an integrated example of the coastal, permanent ice and sublittoral ecosystems typical of the maritime Antarctic environment.

Annex to Recommendation XVI-6

Management Plan for Specially Protected Area No. 18: North Coronation Island, South Orkney Islands

1. Geographical location. Coronation Island (60°38'S, 45°35'W) is the largest of the South Orkney Islands, situated at the west end of the archipelago.

2. Management Plan

i. Description of the Area. The Area lies on the central north side of Coronation Island. It is bounded to the east by Foul Point (60°32'S, 45°29'W) and to the west by Conception Point (60°31'S, 45°41'W); the entire area between these points, together with the intervening sea, is included in the site. The eastern boundary follows a precipitous ridge 6 km southward to a position at 2,500 ft (c. 750 m) altitude immediately to the west of Mount Nivea summit (60°35'S, 45°29'W), thence west-south-westward for 5.5 km to a position at 3,000 ft (c. 900 m) altitude to the north-east of Wave Peak summit (60°37'S, 45°36'W), and from there 4 km westward across the Brisbane Heights plateau, then 4 km north-north-west to an unnamed summit at 3,532 ft (c. 1,060 m) and north for 6 km to Conception Point. The summits of Mount Nivea and Wave Peak and the col known as High Stile are outside the Area. Ommanney Bay and the unnamed bay to the west are included within the Area, south of the boundary between Conception and Foul points (11.5 km).

ii. Reason for designation. The Area embraces areas of coastal ice-free terrain (Conception, Prong and Foul Points) with large seabird colonies and lichen-dominated cliffs, and permanent icefields (two major glaciers and ice cliffs rising to the Brisbane Heights plateau) which provide an excellent representative area of a pristine ice environment near the northern limit of the maritime Antarctic and Antarctic Treaty area. The inter-related terrestrial, ice and marine components of the Area comprise an integrated example of the coastal permanent ice and sublittoral ecosystems typical of the maritime Antarctic environment.

iii. Date of designation and originator. October 1985, Recommendation XIII-10, by UK.

iv. Access points. None specified.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

a. drive any vehicle within the Area;
b. land a helicopter within 0.5 km of any bird or seal colonies or aggregations, or on any of the icefields;
c. overfly Conception, Prong or Foul Points below 250 m above their respective highest points;
d. use any of the Area's coves or bays for anchoring or mooring seacraft, except in

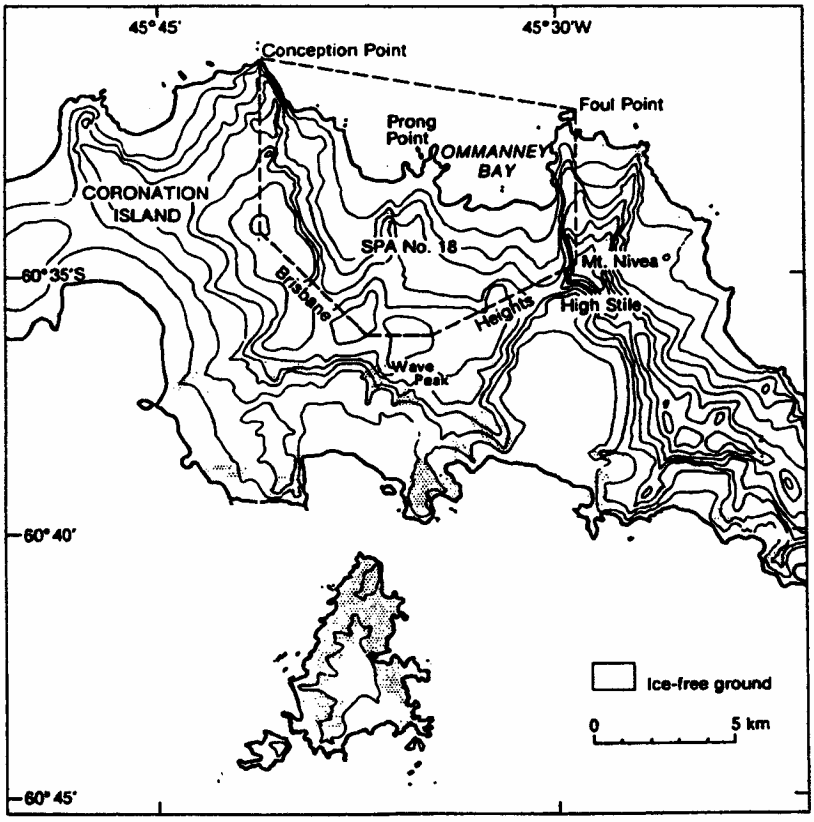
accordance with the permit; ships must not enter the Area;

e. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste, including human waste in all ice-covered areas, must be removed from the Area;
f. leave depots of fuel, food, or any other supplies within the Area, unless they are further required within the same season, at the end of which they must be removed;
g. erect any form of building within the Area.

vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of any breeding bird or seal.

viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits to the Area should be made no more than once every five years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.



SPA 18, North Coronation Island

Specially Protected Area No 19

Lagotellerie Island, Marguerite Bay: Lat 67º53'S, long 67º24'W.

Description: The area consists of Lagotellerie Island which lies about 3 km west of the southern part of Horseshoe Island, Margeurite Bay, south-west Antarctic Peninsula. The area is shown on the attached map.

Designated in Recommendation XIII-11 on the grounds that Lagotellerie Island contains a relatively diverse flora and fauna typical of the southern Antarctic Peninsula region; that of particular interest is the abundance of the only two Antarctic flowering plants (*Deschampsia antarctica* and *Colobanthus quitensis* which form stands up to 10m^2; that these are amongst the largest stands known south of the South Shetland Islands, being only 90 km north of their southern limit; that here both species flower profusely and the seeds have a greater viability than those produced in the South Orkney and South Shetland islands; that numerous mosses and lichens also form well developed communities on the island; that a few of the mosses are fertile, a rare phenomenon in most Antarctic localities; that the invertebrate fauna is rich and that the island is one of the southernmost sites for the apterous midge *Belgica antarctica*; that the shallow loamy soil developed beneath these swards and its associated invertebrate fauna and microbiota are probably unique at this latitude; that there is a colony of about 1,000 Adelie penguins (*Pygoscelis adeliae*) and one of the farthest south colonies of a few dozen blue eyed cormorants (*Phalacrocorax atriceps*) at the south-east corner of the island and that numerous pairs of brown and south polar skuas (*Catharacta lonnbergii* and *C. maccormicki*) breed on the island.

SATCM XII: Annex to Measure 1(2000)

Management Plan for Specially Protected Area No. 19

Lagotellerie Island, Marguerite Bay, Graham Land

1. Description of values to be protected

Lagotellerie Island (Latitude 67°53'20" S, Longitude 67°25'30" W, 1.58 km^2), Marguerite Bay, Graham Land, was originally designated as a Specially Protected Area through Recommendation XIII-11 (1985, SPA No. 19) after a proposal by the United Kingdom. It was designated on the grounds that the island "contains a relatively diverse flora and fauna typical of the southern Antarctic Peninsula region; that of particular interest is the abundance of the only two Antarctic flowering plants *Deschampsia antarctica* and *Colobanthus quitensis* which form stands up to 10 m^2; that these are amongst the largest stands known south of the South Shetland Islands, being only 90 km north of their southern limit; that here both species flower profusely and the seeds have a greater viability than those produced in the South Orkney or South Shetland Islands; that numerous mosses and lichens also form well-developed communities on the island; that a few of the mosses are fertile, a rare phenomenon in most Antarctic localities; that the invertebrate fauna is rich and that the island is one of the southernmost sites for the apterous midge *Belgica antarctica*; that the shallow loamy soil developed beneath these swards and its associated invertebrate fauna and microbiota are probably unique at this latitude; that there is a colony of about 1000 Adélie penguins (*Pygoscelis adelia*e) and one of the farthest south colonies of a few dozen blue-eyed cormorants (*Phalacrocorax atriceps*) at the south-east corner of the island and that numerous pairs of brown and south polar skuas (*Catharacta lonnbergii* and *C. maccormicki*) breed on the island". (It is probable the original reference to 1000 Adélie penguins was meant to be 1000 pairs).

These values were reiterated in Recommendation XVI-6 (1991) when a management plan for the site was adopted, and are largely reaffirmed again in the present management plan. In addition, Lagotellerie Island is notable for the occurrence of *Deschampsia antarctica* at the highest recorded altitude south of 56° S, with scattered small plants observed at heights of up to 275 m. The island therefore has a particular scientific value for study of the influence of altitudinal gradient on biological viability for plant species represented at this site. The values associated with the penguin and skua colonies are now considered to be their ecological interrelationship with the other biological features of exceptional value noted above. Fossiliferous strata present at the eastern end of the island are of particular geological value, as such formations are not commonly exposed in the Antarctic Peninsula Volcanic Group.

The island is 3.25 km west of the southern end of Horseshoe Island, 29 km NW of General San Martín Station (Arg.), almost 70 km east from Teniente Luis Carvajal (Chile) and 46 km SE from Rothera Research Station (UK). The island has not been subject to frequent visits, scientific research or sampling.

The boundary of the Area is defined in this management plan to include the whole island, and offshore islets within 200 m of the coast, above the low tide water level.

2. Aims and objectives

Management at Lagotellerie Island aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance and sampling in the Area;
- preserve the ecosystem of the Area for its potential as a largely undisturbed reference area;
- allow scientific research on the ecosystem in the Area provided it is for compelling reasons which cannot be served elsewhere, in particular research which is expected to improve knowledge of the features and communities identified of special value, and which gathers baseline data on the island's features for which information is poor or not available;
- minimise the possibility of introduction of alien plants, animals and microbes to the Area;
- allow visits for management purposes in support of the aims of the management plan.

3. Management activities

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

- Maps showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently at any operational research station located within 50 km of the Area, where copies of this Management Plan shall also be made available.
- Signs showing the location and boundaries of the Area and listing entry restrictions should be placed at the access beaches on the northern coast and eastern promontory of the island to help avoid inadvertent entry.
- 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 (no less than once every five years) to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.

4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

Map 1: Lagotellerie Island Specially Protected Area No. 19, Marguerite Bay, location map, showing the location of General San Martín Station (Arg.), the station Teniente Luis Carvajal (Chile), Adelaide Island, Rothera Research Station (UK) and nearby SSSI No. 9 at Rothera Point, also on Adelaide Island, and the location of the other protected areas in the region (Dion Islands (SPA No. 8) and Avian Island (SPA No. 21)). 'Base Y' (UK) (Historic Monument No. 63) on Horseshoe Island is shown. Inset: the location of Lagotellerie Island along the Antarctic Peninsula.

Map 2: Lagotellerie Island (SPA No. 19) topographic map.

Map specifications: Projection: Lambert Conformal Conic;

Standard parallels: 1st 63° 20' 00" S; 2nd 76° 40' 00"S; Central Meridian: 65° 00' 00" W;

Latitude of Origin: 70° 00' 00" S; Spheroid: WGS84; Datum: Mean Sea Level;

Vertical contour interval 20 m. Horizontal and vertical accuracy expected to be better than ±5 m.

Map 3: Lagotellerie Island (SPA No. 19) geological sketch map.

6. Description of the Area

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

Lagotellerie Island (Latitude 67°53'20" S, Longitude 67°25'30" W; area 1.58 km^2), is situated in Marguerite Bay, Fallières Coast, Graham Land, 46 km SE of Rothera Point on Adelaide Island, 11 km south of Porquois Pas Island and 3.25 km west of the south end of Horseshoe Island. Lagotellerie Island is 2 km by 1.3 km, oriented generally in an E-W direction. Two year-round scientific research stations operate in the vicinity: General San Martín (Argentina; Latitude 68°08' S, Longitude 67°06' W) which is 29.5 km SSE, and Rothera Research Station (UK; Latitude 67°34' S, Longitude 68°07' W) which is 46 km to the NW. A summer-only station, Teniente Luis Carvajal (Latitude 67°46' S, Longitude 68°55' W), has been operated by Chile at the southern end of Adelaide Island since 1985. Lagotellerie Island was first mapped by Jean-Baptiste Charcot during the Deuxième Expédition Antarctiques Française in 1908-10. There are no records of further visits until the 1940s, when the island was visited occasionally by American, Argentine and British field parties from nearby scientific stations. The island has not been the subject of any major scientific investigations and is thus largely undisturbed by human activities.

The designated Area comprises the entire main island, and offshore islets within 200 m of the coast, above the low tide water level, which is defined as the boundary of the Area (Map 2). Boundary markers have not been installed because the coast itself is a clearly defined and visually obvious boundary. Signs should be installed on the northern coast and at the penguin colony on the SE promontory of the island, as described in Section 6(iii) below.

Lagotellerie Island is steep-sided and rocky, with about 13% permanent ice cover, most of which is on the southern slopes. The island rises to twin peaks of 268 m and 288 m separated by a broad saddle at around 200 m, with precipitous cliffs up to this height on the south, west and east sides. The upper northern slopes also have steep cliffs, intersected by gullies, screes and traversed by broad rock terraces. The lower northern slopes are more gentle, particularly on the eastern half of the island, with a broad rocky terrace at an elevation of about 15 m which is formed of frost-shattered raised beach debris.

The bulk of Lagotellerie Island is formed of quartz diorite of unknown age, cut by pink, coarse-grained granodiorite and numerous basic and felsic dykes (Map 3). At the eastern end of the island the plutonic rocks are in fault contact with folded, mildly hornfelsed volcanic rocks of Jurassic-Cretaceous age. These consist of agglomerates, andesitic lavas and tuffs of the Antarctic Peninsula Volcanic Group, with

plant remains — probably Jurassic — present in shaly beds interbedded with tuff. Such fossiliferous strata are not commonly exposed in the Antarctic Peninsula Volcanic Group, and are therefore of particular geological importance.

Locally extensive areas of coarse sand and gravel derived from weathered quartz-diorite occur on slopes, ledges, gullies and depressions; the most extensive accumulations are on the saddle between the two summits where the soil is sorted into well-developed stone polygons, circles and stripes. On the broad rock terraces closed stands of moss and grass have developed a relatively rich loamy earth up to 25 cm in depth. Glacial erratics are common on the island.

The island has a relatively diverse flora and luxuriant development of plant communities, representative of the southern maritime Antarctic region. The rich terrestrial biology of Lagotellerie Island was first noted by Herwil Bryant, biologist at East Base (US, on Stonington Island; now Historic Monument No. 55), during a visit in 1940-41 when he observed growths of moss, the Antarctic hair grass *Deschampsia antarctica*, and "a small flowering plant" (almost certainly the Antarctic pearlwort *Colobanthus quitensis*), in a small gully — believed to be that found at the north-eastern end of the island — which he considered of such unusual richness for the region that he unofficially referred to it as "Shangri-la Valley". He did not describe the less luxuriant but more extensive communities of *Deschampsia antarctica* and *Colobanthus quitensis* found on the higher north-facing slopes of the island. These slopes and terraces also provide favourable microclimatic conditions for growth, with a relatively long snow-free growing season, and support an abundance of *Deschampsia antarctica* and *Colobanthus quitensis*, the grass forming closed swards of up to 10 m^2 on some of the terraces. These are among the largest stands of these plants known south of the South Shetland Islands. Both species flower abundantly and the seeds have a greater viability than those produced in the South Orkney or South Shetland Islands, yet they are close to the southern limit of their range. Lagotellerie Island, however, is notable for the growth of *Deschampsia antarctica* at the highest altitude recorded south of 56° S, with scattered small plants observed at heights of up to 275 m. *Colobanthus quitensis* has been observed growing up to 120 m on the island.

Lagotellerie Island also has a rich cryptogamic flora, with small stands of well-developed communities containing several mosses and lichens which are rare at this latitude (notably the mosses *Platydictya jungermannioides* and *Polytrichastrum alpinum*, and lichens *Caloplaca isidioclada, Fuscoparmelia gerlachei* and *Usnea trachycarpa*). The number of bryophyte species thus far identified include 20 mosses and two liverworts (*Barbilophozia hatcheri* and *Cephaloziella varians*), and there are at least 60 lichen species. A comprehensive floristic survey of the island has not yet been undertaken, and numerous species, especially of crustose lichens, remain to be accurately determined.

Vegetation is best developed on a series of rock terraces at around 30-50 m a.s.l. on the northern side of the island. Here, both *Deschampsia* and *Colobanthus* are abundant, and closed grass swards form stands of several square metres. Associated with these, especially on the moister terraces, are usually the mosses *Brachythecium austro-salebrosum, Bryum spp., Pohlia nutans, Polytrichastrum alpinum* and *Sanionia uncinata*, and liverworts *Barbilophozia hatcheri* and *Cephaloziella varians*. Many of these grass swards are used as nest sites by skuas.

In drier habitats, especially on scree and rock faces, there are locally dense stands dominated by the macrolichens *Usnea sphacelata* and *U. subantarctica*, with *Pseudephebe minuscula, Umbilicaria decussata,* and a large number of crustose taxa. Several lichens are associated with the grass and moss communities (e.g. *Cladonia s*pp., *Leproloma* spp., *Leptogium puberulum*, *Ochrolechia frigida, Psoroma* spp.). Near the penguin and cormorant colonies several colourful nitrophilous lichens are abundant (e.g. *Buellia* spp., *Caloplaca* spp., *Fuscoparmelia gerlachei*, *Xanthoria* spp.).

Numerous lichens (notably *Caloplaca isidioclada, Pseudephebe minuscula, Usnea sphacelata, Umbilicaria decussata* and many crustose taxa) and a few mosses (notably *Grimmia refelxidens*) occur close to the summit of the island, as do scattered individual plants of *Deschampsia*. Few bryophytes produce sporophytes at far southern latitudes, but several mosses are fertile on Lagotellerie Island (e.g. *Andreaea regularis*, *Bartramia patens, Bryum amblyodon, B. pseudotriquetrum, Grimmia reflexidens, Hennediella heimii, Pohlia nutans, Schistidium antarctici, Syntrichia princeps*).

Specific studies of the invertebrate fauna have not been conducted on Lagotellerie Island. However, at least six species of arthropod have been recorded: *Alaskozetes antarcticus*, *Gamasellus racovitzai*, *Globoppia loxolineata* (Acari), *Cryptopygus antarcticus*, *Friesea grisea* (Collembola), and *Belgica antarctica* (Diptera, Chironomidae). Several species of nematophagous fungi have been isolated from the soils associated with mosses and *Deschampsia* on Lagotellerie Island (*Cephalosporium balanoides*, *Dactylaria gracilis, Dactylella ellipsospora*), species widely distributed in similar habitats throughout the Antarctic and also commonly found in temperate soils.

Bryant reported several small pools present on the island in the early 1940s, which presumably are the same as, or close to, those observed more recently on the extensive flat low-lying ground on the northern side of the island. He recorded the pools contained many phyllopod crustaceans identified as *Branchinecta granulosa*. Rocks in one of the pools were coated in a bright green filamentous alga, on which the mites *Alaskozetes antarcticus* were observed. *A. antarcticus* was also common under pebbles on the pool floor. Other microorganisms of the trochelminth type were observed living in the algae, with a pink rotifer identified as *Philodina gregaria* being especially numerous. Small tufts of a grey-green alga were observed on large pebbles close to the pool bottom. The algae have not been described in more detail, although the presence of *Prasiola crispa* has been noted. More recent observations in the early 1980s suggested there were no permanent freshwater bodies on the island, but temporary runnels in summer were found, with some brackish pools in rock depressions near the northern coast. An inspection visit on 12 January 1989 again noted the presence of several small melt pools of around 5-10 m^2, some with fringing wet moss carpets, and suggested these were probably the habitat of *Belgica antarctica*. No record has been found of any more comprehensive freshwater surveys on the island.

A small Adélie penguin (*Pygoscelis adeliae*) colony occupies the eastern promontory of the island (Map 2). Numbers have varied from a low of perhaps 350-400 pairs based on an estimate made in December 1936 to a high of 2402 pairs recorded in an accurate nest count in November 1955. The colony was regularly used as a source of eggs for personnel stationed at the nearby British Base Y on Horseshoe Island between 1955-60. It was reported that some 800 eggs were taken during 1955. The number of breeding pairs dropped to around 1000 in 1959 and 1960. Adélie penguin colonies are known to exhibit high interannual change in numbers as a result of a variety of natural factors, and in March 1981 it was observed that all of the approximately 1000 chicks in the colony had died. A chick count made in February 1983 suggested the colony consisted of approximately 1700 pairs, which is considered accurate to within 15-25%.

A small colony of blue-eyed cormorants (*Phalacrocorax atriceps*) has been observed on the eastern promontory of the island, which is one of the most southerly breeding sites reported for the species. Some 200 immature birds were observed close to the island, within view of the colony, on 16 January 1956. The colony was reported to consist of 10 nests on 17 February 1983. However, the colony was not seen in the January 1989 inspection on Lagotellerie Island. Brown and south polar skuas (*Catharacta loenbergi* and *C. maccormicki*) are also present, with 12 nests reported in 1956, when it was noted that many of the chicks were definitely south polar skua (*C. maccormicki*). It was estimated in 1958 that five pairs nested around the penguin colony and that both species occurred. A group of 59 non-breeding birds of both species was recorded on 12 January 1989 mid-way along the northern side of the island.

Two Wilson's storm petrel (*Oceanites oceanicus*) nests were recorded on 14 January 1956. A kelp gull (*Larus dominicanus*) nest, with eggs, was recorded in the 'Shangri-La Valley' by Bryant in December 1940.

The inspection visit in January 1989 reported 12 Weddell seals (*Leptonychotes weddellii*) hauled out on a small shingle beach at the base of a rocky spit on the north coast, but no other seals were seen. However, southern elephant (*Mirounga leonina*) and Antarctic fur (*Arctocephalus gazella*) seals are commonly observed in Marguerite Bay and it is possible that they also haul out at accessible parts of the island.

The most significant environmental impact at Lagotellerie Island appears to have been from the practice of egg harvesting to feed personnel at bases operating nearby in the period 1955-60. The only evidence of human activity currently thought to exist on the island are the remains of a survey mast on the summit. The inspection visit of January 1989 reported there was no evidence of any recent physical or biological change on the island and it was concluded that the Area was continuing to serve the purpose for which it was designated.

6(ii) Restricted and managed zones within the Area

None.

6(iii) Structures within and near the Area

The remains of a mast erected for survey purposes in the 1960s are present on the summit of the island. No other structures are known to exist on the island. Signs marking the Area have yet to be installed. It is proposed to install two signs: one on the SE promontory close to the penguin colony, another on a prominent access point on the northern coast.

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

The nearest protected areas to Lagotellerie Island are the Dion Islands (SPA No. 8) about 55 km west, Avian Island (SPA No. 21) 65 km west, and Rothera Point (SSSI No. 9) 46 km to the NW (Map 1). Several Historic Sites and Monuments are located in the vicinity: 'Base Y' (UK) on Horseshoe Island (HSM No. 63); 'Base E' (UK) (HSM No. 64) and buildings and artefacts at and near East Base (US) (HSM No. 55), both on Stonington Island; and installations of San Martín Station (Argentina) at Barry Island (HSM No. 26).

7. Permit conditions

Entry into the Area is prohibited except in accordance with a Permit issued by an appropriate national authority. Conditions for issuing a Permit to enter the Area are that:

- it is issued only for compelling scientific reasons that cannot be served elsewhere, or for essential management purposes consistent with plan objectives such as inspection, maintenance or review;
- the actions permitted will not jeopardise the ecological or scientific values of the Area;
- any management activities are in support of the aims and objectives of the Management Plan;
- the actions permitted are in accordance with the Management Plan;
- the Permit, or an authorised copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period.
- The appropriate authority should be notified of any activities/measures undertaken that were

not included in the authorised Permit.

7(i) Access to and movement within the Area

Vehicles are prohibited within the Area and access shall be by small boat or by helicopter. Access from the sea should be to the northern coast of the island (Map 2), unless specifically authorised by Permit to land elsewhere or when landing along this coast is impractical because of adverse conditions. Access into the Area at the 200 m section of NE coast immediately below the "Shangri-la Valley", which contains the richest vegetation growth on the island, is strongly discouraged at all times (Map 2). No special restrictions apply to the sea or air routes used to move to and from the Area. These restrictions apply equally to persons wishing to access the Area via sea ice in the winter.

Overflight of the eastern end of the island over the penguin/cormorant colony is prohibited below 750 m (2500 feet) (Map 2). Landing of helicopters within the Area shall be at the designated location on the broad rock/permanent snow platform about half-way along the NW coast at about 15 m altitude, and 200 m inland from the sea (Map 2). Use of helicopter smoke grenades is prohibited within the Area unless absolutely necessary for safety, and all grenades should be retrieved.

Movement within the Area shall be on foot. Pilots, helicopter or boat crew, or other people on helicopters or boats, are prohibited from moving on foot beyond the immediate vicinity of their landing site unless specifically authorised by Permit. All movement should be undertaken carefully so as to minimise disturbance to the soil and vegetated surfaces, walking on rocky terrain if practical. Pedestrian traffic should be kept to the minimum consistent with the objectives of any permitted activities and every reasonable effort should be made to minimise trampling effects.

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

- Scientific research that will not jeopardise the ecosystem or scientific values of the Area and which cannot be served elsewhere;
- Essential management activities, including monitoring;

7(iii) Installation, modification or removal of structures

Structures shall not be erected within the Area except as specified in a Permit. All scientific equipment installed in the Area 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 contamination of the Area. Removal of specific equipment for which the Permit has expired shall be a condition of the Permit.

7(iv) Location of field camps

When necessary for purposes specified in the Permit, temporary camping is allowed at the designated site on the broad rock / permanent snow platform about half-way along the NW coast at about 15 m altitude, and 200 m inland from the sea (Map 2).

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 into the Area and the precautions listed in 7(ix) below shall be taken to prevent accidental introductions. In view of the presence of breeding bird colonies on the island, no poultry products, including products containing uncooked dried eggs, shall be taken into the Area. No herbicides or pesticides shall be brought into the Area. Any other chemicals, including radio-nuclides or stable isotopes, which may be introduced for scientific or management purposes specified in the Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted. Fuel is not to be stored in the Area,

unless specifically authorised by Permit for specific scientific or management purposes. Anything introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of any introduction into the environment is minimised. If release occurs which is likely to compromise the values of the Area, removal is encouraged only where the impact of removal is not likely to be greater than that of leaving the material *in situ*. The appropriate authority should be notified of anything released and not removed that was not included in the authorised Permit.

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

Taking or harmful interference with native flora or fauna is prohibited, except by Permit issued in accordance with Annex II to the Protocol on Environmental Protection to the Antarctic Treaty. Where taking or harmful interference with animals is involved, the *SCAR Code of Conduct for the Use of Animals for Scientific Purposes in Antarctica* should be used as a minimum standard.

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. Permits shall not be granted in instances where it is proposed to take, remove or damage such quantities of soil, native flora or fauna that their distribution or abundance on Lagotellerie Island would be significantly affected. Anything of human origin likely to compromise the values of the Area, which was not brought into the Area by the Permit Holder or otherwise authorised, may be removed unless the impact of removal is likely to be greater than leaving the material *in situ*: if this is the case the appropriate authority should be notified.

7(viii) Disposal of waste

All wastes, including all human 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

- Permits may be granted to enter the Area to carry out monitoring and site inspection activities, which may involve the small-scale collection of samples for analysis or review, or for protective measures.
- Any specific long-term monitoring sites shall be appropriately marked.
- To help maintain the ecological and scientific values of Lagotellerie Island special precautions shall be taken against introductions. Of concern are microbial, invertebrate or plant introductions from other Antarctic sites, including stations, or from regions outside Antarctica. All sampling equipment or markers brought into the Area shall be cleaned or sterilised. To the maximum extent practicable, footwear and other equipment used or brought into the Area (including backpacks, carry-bags and tents) 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. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. 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 the Management Plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be used both in any review of the management plan and in organising the scientific use of the Area.

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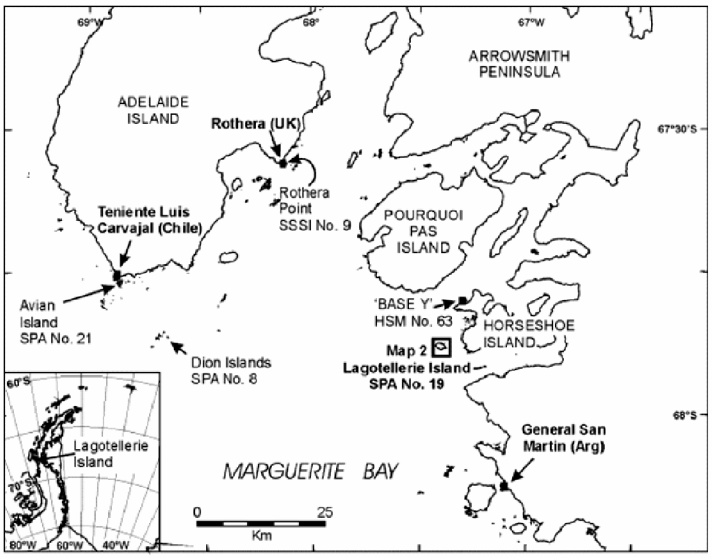
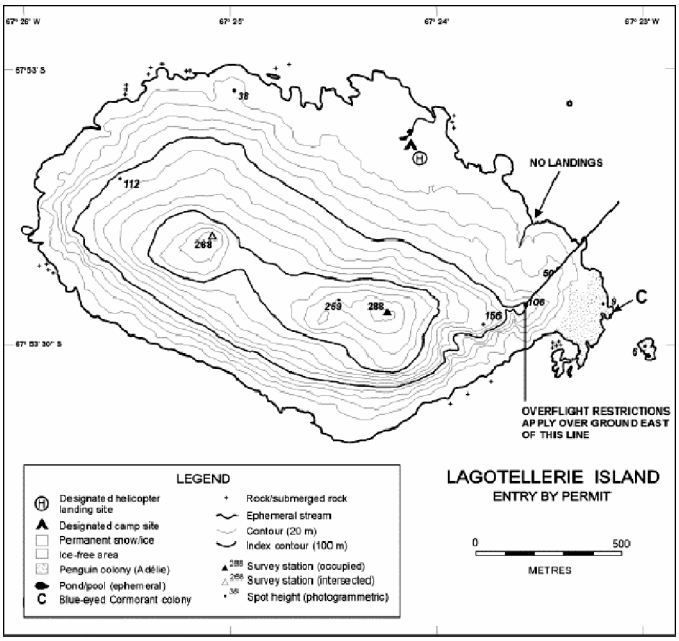
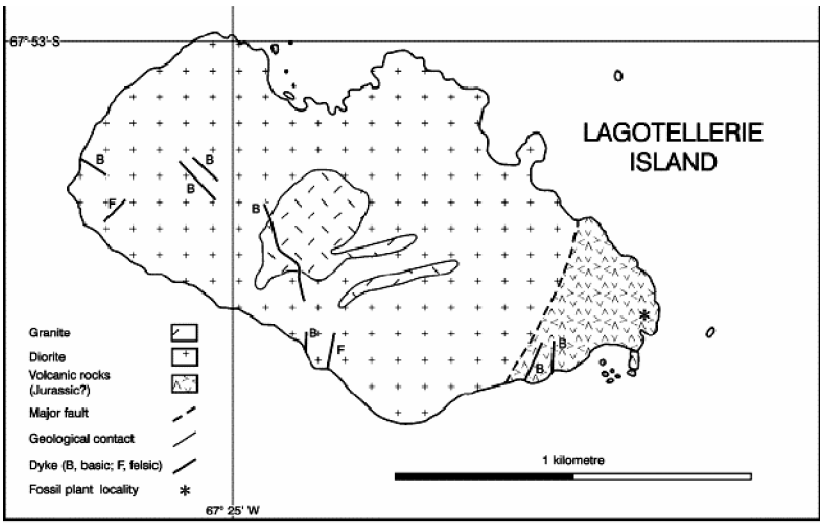






Annex to Recommendation XVI-6

Management Plan for Specially Protected Area No. 19: Lagotellerie Island, Marguerite Bay, Antarctic Peninsula

1. Geographic location. Lagotellerie Island (67°53'S, 67°24'W) lies about 3 km west of the southern part of Horseshoe Island, Marguerite Bay, south-west Antarctic Peninsula.

2. Management Plan

i. Description of Area. Lagotellerie Island is about 2 km from east to west by about 1 km from

north to south, and rises steeply to twin summits of c. 270 and 290 m altitude separated by a broad saddle. The north side of the island is largely snow-free with extensive low-lying ground. The south and east sides have precipitous cliffs up to 180 m high; much of the north side also has steep cliffs dissected by gullies and traversed by broad rock terraces. There are no permanent streams or pools.

ii. Reason for designation. The island has a relatively diverse flora and luxuriant development of plant communities, representative of the southern maritime Antarctic region. The north side supports an abundance of Antarctic hair grass (*Deschampsia antarctica*) which on some of the terraces form close swards up to 10 m2. Antarctic pearlwort (*Colobanthus quitensis*) is also frequent. Both species are close to the southern limit of their range. There is also a rich cryptogamic flora with well-developed communities containing several rare mosses and lichens. Beneath the closed grass and moss stands a rich loamy earth up to 25 cm deep has developed, with a rich invertebrate fauna and microbiota. The island is one of the southernmost sites for the apterous midge *Belgica antarctica*. There is a colony of about 1,000 pairs of Adélie penguins (*Pygoscelis adeliae*) at the south-east corner of the island. Here, there is also a small colony of about 30 pairs of Blue-eyed shags (*Phalacrocorax atriceps*), which is one of the farthest south breeding sites for the species. Brown and South Polar skuas (*Catharacti lonnbergii* and *C. maccormicki*) are abundant and several pairs of each nest on this island.

iii. Date of designation and proposer nation. October 1985, Recommendation XIII-11, by the UK

iv. Access points. None specified.

iv. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

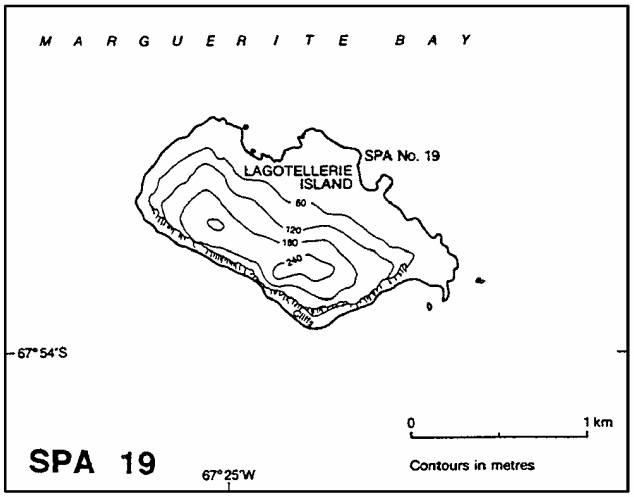
a. land a helicopter within the Area, except on the low-lying unvegetated ground in the mid north side of the island and on the saddle between the two peaks;
b. overfly the Area by any aircraft below 250 m above the highest point;
c. use any of the Area's coves for anchoring or mooring seacraft, except in accordance with the permit;
d. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste must be removed from the Area;
e. leave depots of fuel, food, or any other supplies within the Area, unless they are further required within the season, at the end of which they must be removed;
f. erect any form of building within the Area.

vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of any breeding bird or seal or stand of vegetation, unless required as specified in the permit.

viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits to the Area should be made at least once very five years to assess the state of the site and to monitor any significant biological or

environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.



SPA 19, Lagotellerie Island

Specially Protected Area No 20.

'New College Valley', Caughley Beach, Cape Bird, Ross Island:

Lat 77º14'S, Long 166º23'E.

Description: The area consists of the ice free terrain lying between the cliff top above Caughley Beach and about 100 m east of the Mt Bird Ice Cap, and between a line south of the main stream bed of 'Keble Valley' and the south ridge of 'New College Valley'. It is surrounded on three sides by Site of Special Scientific Interest No 10. The area is shown on the attached map.

Designated in Recommendation XIII-12 on the grounds that the area contains some of the most luxuriant stands of vegetation (algae, mosses and lichens) and associated microflora and microfauna in the Ross Sea sector of Antarctica; that because of the susceptibility of the cryptogamic vegetation to damage from trampling, the designation of the area provides protection for its biota, so that the area may serve as a conservation reserve representative of the adjacent Site of Special Scientific Interest No 10.

ATSCM XII: Annex to Measure 1(2000)

Management Plan for Specially Protected Area No. 20

New College Valley, Cape Bird, Ross Island

1. Description of values to be protected

An area of 0.33 km^2 at Cape Bird was originally designated in Recommendations XIII-8 (1985, SSSI No. 10, Caughley Beach) and XIII-12 (1985, SPA No. 20, New College Valley) after proposals by New Zealand on the grounds that these areas contain some of the richest stands of mosses and associated microflora and fauna in the Ross Sea region of Antarctica**.** This is the only area on Ross Island where protection is specifically given to these 'cold' ground plants. SPA No. 20 was originally enclosed within SSSI No. 10 in order to provide more stringent access conditions within this part of the Area. SSSI No.

10 and SPA No. 20 have been merged in the current plan, and a Restricted Zone provides the more stringent access conditions within the former SPA. The boundaries of the Area have been revised in view of improved mapping and to follow more closely the ridges enclosing the catchment of New College Valley. Caughley Beach itself was adjacent to, but never a part of, the original Area, and for this reason the entire Area has been renamed as New College Valley, which was within both of the original sites.

Mosses (bryophytes) are the most highly evolved terrestrial plant life in this region, restricted to small, localised areas of water-flushed ground. In addition to rich moss cushions and carpets up to $20m^2$, a diverse range of algal species inhabit streams in the Area, and collembolans (*Gomphiocephalus hodgsoni*) and mites (*Nanorchestes antarcticus* and *Stereotydeus mollis*) are plentiful on water surfaces and underneath rocks. The absence of lichens makes the species assemblage in this Area unique on Ross Island.

The proximity of the Cape Bird Hut (New Zealand) and the possibility of visits by tourists to Cape Bird means that this vulnerable area could easily be damaged by human impact if not provided with adequate protection. Designation of this Area is designed to ensure examples of this habitat type are adequately protected from casual visitors and overuse from scientific investigations. The susceptibility of mosses to disturbance by trampling, sampling, pollution or alien introductions is such that the Area requires long-term special protection. The ecosystem at this site is of exceptional scientific value for ecological investigations and the Restricted Zone is valuable as a reference site for future comparative studies.

2. Aims and objectives

Management at New College Valley aims to:

- avoid degradation of, or substantial risk to, the values of the Area by preventing unnecessary human disturbance to the Area;
- preserve a part of the natural ecosystem as a reference area for the purpose of future comparative studies;
- allow scientific research on the ecosystem, in particular on plants, algae and invertebrates in the Area, while ensuring protection from over-sampling;
- allow other scientific research provided it is for compelling reasons which cannot be served elsewhere;
- minimise the possibility of introduction of alien plants, animals and microbes into the Area;
- allow visits for management purposes in support of the aims of the management plan.

3. Management activities

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

- Signs showing the location of the Area (stating the special restrictions that apply) shall be displayed prominently, and a copy of this Management Plan shall be kept available, in all of the research hut facilities located within 10 km of the Area.
- Signs showing the location, boundaries and clearly stating entry restrictions shall be placed at appropriate locations at the boundaries of the Area and the Restricted Zone within to help avoid inadvertent entry.
- Markers, signs or structures erected within the Area for scientific or management purposes shall be secured and maintained in good condition.
- Visits shall be made as necessary (no less than once every five years) to assess whether the Area continues to serve the purposes for which it was designated and to ensure management and maintenance measures are adequate.
- National Antarctic Programmes operating in the region are encouraged to consult together

with a view to ensuring these steps are carried out.

4. Period of designation

Designated for an indefinite period.

5. Maps and photographs

Map A: New College Valley, Cape Bird, Ross Island, regional topographic map. Map specifications: Projection - Lambert conformal conic. Standard parallels - 1st 76° 40' 00" S; 2nd 79° 20' 00"S. Central Meridian - 166° 30' 00" E. Latitude of Origin - 78° 01' 16.211" S. Spheroid - WGS84.

Map B: New College Valley protected area topographic map. Specifications are the same as those for Map A. Contours prepared at 1:2500 with a positional accuracy of ± 1.25 m (horizontal) and ± 1.25 m (vertical).

Figure 1: Perspective view of Cape Bird. The perspective is from an elevation of 350 m, 3.8 km out from the Area at a bearing of 190° SW. The perspective is from almost directly over Inclusion Hill looking north toward Cape Bird. [not reproduced]

Figure 1a: An alternative perspective shows the preferred aircraft approach path from approximately 200 m offshore. The perspective is from an altitude of 420 m (1378 ft), 4 km out from the Area at a bearing of 210° SW. [not reproduced]

6. Description of the Area

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

Cape Bird is at the NW extremity of Mt. Bird (1800 m), an inactive volcanic cone which is probably the oldest on Ross Island. New College Valley is located south of Cape Bird on ice-free slopes above Caughley Beach, which lies between two Adélie penguin colonies known as the Cape Bird Northern and Middle Rookeries (Maps A and B). The Area, comprising veneered glacial moraines at the fore of the Cape Bird Ice Cap, consists of seaward dipping olivine-augite basalts with scoriaceous tops erupted from the main Mt. Bird cone.

The NW corner of the north boundary of the Area is approximately 100 m south of the Cape Bird Hut, while the southern boundary is about 700 m north of Middle Rookery (Map A). The north boundary of the Area extends NW upslope and eastward toward a prominent terminal moraine ridge 20 m from the Cape Bird Ice Cap. The boundary follows this ridge SE until the ridge disappears where it joins the glacier, from where the boundary continues SE following the glacier edge to the southern boundary. The south boundary is a straight line crossing the broad southern flank of New College Valley, and is marked at either end by two cairns, one in the western corner of the Area and the other on the hilltop 100 m from the Cape Bird Ice Cap glacier edge. The west boundary of the Area follows the top of the coastal cliffs of Caughley Beach for a distance of 650 m.

Northwest-facing New College Valley carries meltwater from the Cape Bird Ice Cap during the summer. Streams in the Area are fed by melt from persistent summer snow drifts and have eroded their own shallow gullies and channels. The ground is largely covered by stones and boulders of volcanic origin which have been reworked by glacial action.

The Area contains some of the more extensive ephemeral stream course distributions of the moss *Hennediella heimii* (formally *Bryum antarcticum*) on Ross Island. Surveys have shown that this moss, together with much lower occurrences of two other species — *Bryum subrotundifolium* (formally *Bryum argenteum*) and *Bryum pseudotriquetrum* — are confined almost entirely to the stream courses across

the steep till and scoria covered slopes. The Area includes the full course of three stream systems that contain significant growths of algae, together with the mosses. The mosses are generally associated with algal growths, namely rich, red-brown oscillatorian felts and occasional reddish-black growths of *Nostoc commune*.

The microfauna consists of abundant populations of Collembolans (*Gomphiocephalus hodgsonii*) and mites (*Nanorchestes antarcticus* and *Stereotydeus mollis*) found on water surfaces and beneath rocks. Nematodes, rotifers, tardigrades and protozoa are also found within the Area.

Skuas (*Catharacta maccormicki*) frequently rest on Caughley Beach and overfly, land and nest within the Area. Adélie penguins (*Pygoscelis adeliae*) from the nearby colonies do not nest in the Area, but have been observed occasionally to traverse across New College Valley.

6(ii) Restricted and managed zones within the Area

An area of New College Valley is designated a Restricted Zone in order to preserve part of the Area as a reference site for future comparative studies, while the remainder of the Area (which is similar in biology, features and character) is more generally available for research programmes and sample collection. The Restricted Zone encompasses ice-free slopes within New College Valley above Caughley Beach some of which are north-facing with snow drifts which provide a ready supply of melt water to foster moss and algal growth.

The NW corner of the Restricted Zone is 60 m to the south and across a small gully from the NW corner of the Area. The north boundary of the zone extends 500 m upslope from the NW corner, following a faint but increasingly prominent ridge SE to a point in the upper catchment of New College Valley marked by a cairn approximately 60 m from the ice terminus of the Cape Bird Ice Cap. The Restricted Zone boundary extends 110 m SW across the valley to a cairn marking the SE corner of the zone. The south boundary of the Restricted Zone extends in a straight line from this cairn 440 m NW down a broad and relatively featureless slope to the west boundary of the Area. A cairn is placed 40m upslope from the SW corner of the Restricted Zone to mark the lower position of the south boundary.

Access to the Restricted Zone is allowed only for compelling scientific and management (such as inspection and review) purposes that cannot be served by visits elsewhere in the Area.

6(iii) Structures within and near the Area

Structures known to exist in the Area include a United States Navy Astrofix marker, cairns marking the boundaries of the Area and the Restricted Zone, a signpost situated at the northern end of the Area and an approximately one meter square wooden frame marking the site of an experimental oil spill from 1982. The Cape Bird Hut is located 150 m north of the western corner of the Area (Map B). A water tank and associated hosing servicing the hut were removed from the Area in the 1995-96 season.

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

The nearest protected areas are: Lewis Bay, Mount Erebus (SPA 26), approximately 25 km SE; Tramway Ridge (SSSI No.11) 30 km SSE; Cape Crozier (SSSI No. 4) 75 km SE; Cape Royds (SSSI No.1) and Cape Evans (SPA No. 25) 35 km and 45 km south on Ross Island respectively; and Beaufort Island (SPA No. 5) 40 km to the north.

7. Permit conditions

Entry into the Area is prohibited except in accordance with a Permit issued by appropriate national authorities. Conditions for issuing a Permit to enter the Area are that:

- outside of the Restricted Zone, it is issued only for scientific study of the ecosystem, or for compelling scientific reasons that cannot be served elsewhere, or for essential management purposes consistent with plan objectives such as inspection or review;
- access to the Restricted Zone is allowed only for compelling scientific or management reasons that cannot be served elsewhere in the Area;
- the actions permitted are not likely to jeopardise the ecological or scientific values of the Area or other permitted activities;
- any management activities are in support of the objectives of the Management Plan;
- the actions permitted are in accordance with the Management Plan;
- the Permit, or a copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- the Permit shall be issued for a stated period.

7(i) Access to and movement within the Area

Vehicles are prohibited within the Area and access shall be by foot. Helicopters are prohibited from landing within the Area. A helicopter landing site is located outside the Area below the cliffs on Caughley Beach, 100 m west of the west boundary of the Area. Between October and February the preferred flight path is an approach from the south above Middle Rookery. Flights north of the helicopter pad may be necessary under certain wind conditions but should follow the recommended aircraft approach and departure routes. See Figures 1 and 1a and Map A for the recommended aircraft approach routes into and out of Cape Bird. Overflight of the Area lower than 50 m (~150 ft) above ground level is prohibited. Hovering over the Area is not permitted lower than 100m (~300 ft) above ground level. Use of helicopter smoke grenades within the Area is prohibited.

Access into the Area should preferably follow the path from the Cape Bird Hut (New Zealand). Visitors should avoid areas of visible vegetation and care should be exercised walking in areas of moist ground, particularly the stream course beds, where foot traffic can easily damage sensitive soils, plant and algal communities, and degrade water quality: walk around such areas, on ice or rocky ground. Pedestrian traffic should be kept to the minimum necessary consistent with the objectives of any permitted activities and every reasonable effort should be made to minimise effects.

Access to regions south of the Area from the Cape Bird Hut should be made by a route below the cliffs along Caughley Beach.

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

- Scientific research that will not jeopardise the ecosystem of the Area;
- Essential management activities, including monitoring and inspection.

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 in the Area must be authorised 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 contamination of the Area. Removal of specific equipment for which the Permit has expired shall be a condition of the Permit.

7(iv) Location of field camps

Camping within the Area 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 into the Area and precautions shall be taken against accidental introductions. No live poultry shall be brought into the Area. Dressed poultry should be free of disease or infection before shipment to the Antarctic and, if introduced into the Area for food, all parts and waste of poultry shall be completely removed from the Area, and incinerated or boiled for 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, which may be introduced for scientific or management purposes specified in the Permit, shall be removed from the Area at or before the conclusion of the activity for which the Permit was granted. Fuel is not to be stored in the Area, unless required for essential purposes connected with the activity for which the Permit has been granted. All materials introduced shall be for a stated period only, shall be removed at or before the conclusion of that stated period, and shall be stored and handled so that risk of their introduction into the environment is minimised.

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

This is prohibited, except in accordance with a Permit. Where animal taking or harmful interference is involved, this should, as a minimum standard, 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 likely to compromise the values of the Area, which was not brought into the Area by the Permit holder or otherwise authorised, may be removed from any part of the Area, including the Restricted Zone, unless the impact of removal is likely to be greater than leaving the material *in situ*: if this is the case the appropriate authority should be notified.

7(viii) Disposal of waste

All wastes, including all human wastes, shall be removed from the Area.

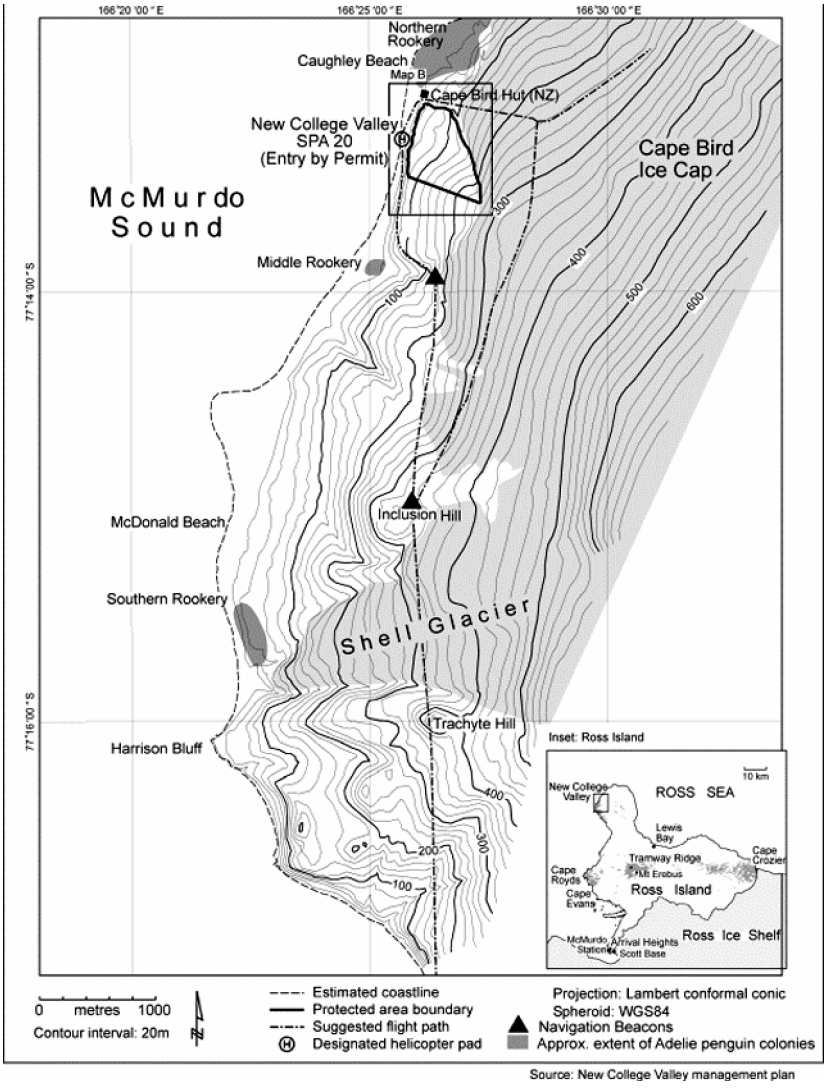
7(ix) Measures that are necessary to ensure that the aims and objectives of the Management Plan can continue to be met

- Permits may be granted to enter the Area to carry out biological monitoring and site inspection activities, which may involve the collection of small samples for analysis or review, to erect or maintain signposts or for management activities.
- Any specific sites of long-term monitoring shall be appropriately marked.
- To help maintain the ecological and scientific values of the isolation and relatively low level of human impact at the Area visitors shall take special precautions against introductions. Of particular concern are microbial or vegetation introductions sourced from soils at other Antarctic sites, including stations, or from regions outside Antarctica. To minimise the risk of introductions, visitors shall thoroughly clean footwear and any equipment to be used in the area — particularly sampling equipment and markers — before entering the Area.

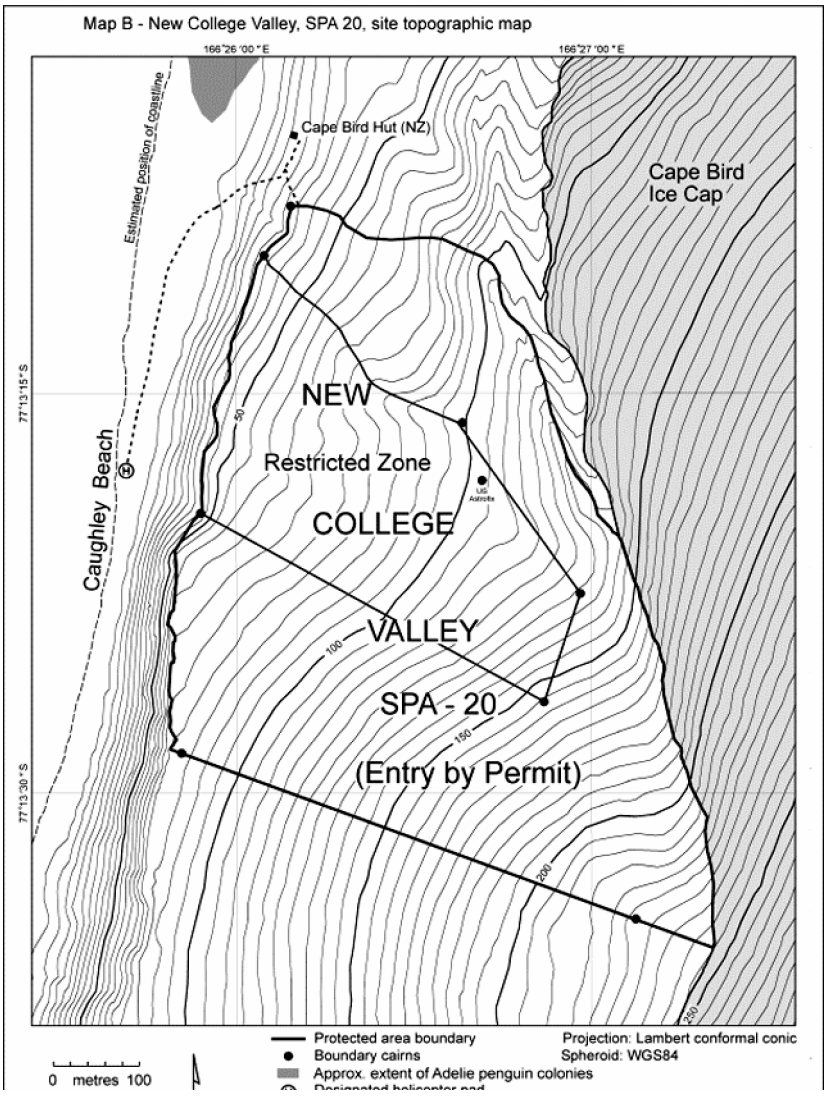
7(x) Requirements for reports

Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. 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 the Management Plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage to be used both in any review of the management plan and in organising the scientific use of the Area.



Source: New College Valley management plan


Map B - New College Valley, SPA 20, site topographic map
166°26 '00 " E
166°27 '00 " E
77°13'15" S
77°13'30 " S
Estimated position of coastline
Cape Bird Hut (NZ)
Cape Bird
Ice Cap
Caughley Beach
NEW
Restricted Zone
COLLEGE
VALLEY
SPA - 20
(Entry by Permit)
50
100
150
200
250
Protected area boundary
Boundary cairns
Approx. extent of Adelie penguin colonies
Projection: Lambert conformal conic
Spheroid: WGS84
0 metres 100

Annex to Recommendation XVII-2

Management plan for Specially Protected Area No. 20: 'New College Valley', Caughley Beach, Cape Bird, Ross Island

1. Geographical location. The site is in latitude 77°14'S, longitude 166°23'E, in the northern part of Cape Bird ice-free area. It lies between Northern Rookery and Middle Rookery and is about 250 m south of the summer research station.

2. Management plan

Description of Area

Topography. The Area consists of the generally west-facing ice-free slopes lying between the cliff top above Caughley Beach and a line parallel to and about 100 m east of the edge of the Mount Bird Ice Cap, and between a line south of the main stream bed of "Keble Valley" and the south ridge of "New College Valley". It is surrounded to the north, south and east by Site of Special Scientific Interest No 10, and to the west terminates at the cliff tops above Caughley Beach. Its total area is about 10 ha.

The ground is largely covered by stones and boulders of volcanic origin which have been reworked by glacial action. There are a few glacial erratic boulders of different origin.

The major feature of the site is "New College Valley" which has been cut by the vigorous flows of meltwater received from the Mount Bird Ice Cap during summer. Tributaries to this stream and two other smaller streams in the area are fed by melt from persistent summer snowdrifts and have eroded their own shallow gullies and channels.

Biological features. A general description of the vegetation is provided by Broady (1984/89) as part of a broad survey of vegetation at Cape Bird and two other ice-free areas on Ross Island. Longton (1973, 1974) classified the bryophyte community at Caughley Beach as the *Bryum antarcticum* Sociation in which *B. antarcticum* is dominant with occasional *B. argenteum*. It is not clear from the information presented whether the site examined was actually inside the SPA but, if not, it was certainly very close. Sketch maps of moss and algae stands within the SPA are provided by Broady (1984).

Stream vegetation includes luxuriant red-brown oscillatoriacean (*Cyanobacteria*) mats, rich epilithic green filaments and crusts of chlorophyte algae, and colonies of Nostoc (*Cyanobacteria*).

The more or less north-west-facing slopes of the main valley and smaller gullies support extensive moss stands as scattered small cushions and as confluent growths up to several square metres in extent (total cover, over 200 m^2). Often the plants and surrounding soil become covered with a white mineral encrustation if meltwater supply ceases during the summer and vegetation and soils dessicate. The maximum development of moss is found along the borders of shallow channels taking meltwater from snow drifts. Also scattered cushions no more than 5 cm in diameter are found on moist ground where melt percolations are not channelled but seep broadly over the surface. Bryophyte biomass at Caughley

Beach (Longton 1974) was estimated as 214 and 938 g dry weight per square metre for two stands, with 1.4% and 84.7% cover respectively.

The mosses are generally associated with abundant red-brown oscillatoriacean mats and occasionally with colonies of *Nostoc*. Other areas of soaked ground are dominated by either *Nostoc* colonies (approximately 100 m^2) or oscillatoriacean mats (approximately 200 m^2).

Skuas (*Catharacta maccormicki*) nest on the beach below the cliffs to the west of the site and frequently overfly and land within the SPA. Adélie penguins (*Pygoscelis adeliae*) from large nearby rookeries occasionally traverse the area. Nutrient enrichment of soils occurs from deposited guano as well as from windblown particulates from the large penguin rookeries to the north and south.

Reason for designation. The area contains some of the most luxuriant stands on Ross Island of moss and algae vegetation and associated microflora and microfauna. Because of the susceptibility of this vegetation to damage from trampling, the designation of the area provides protection for its biota, so that the area may serve as a conservation reserve representative of the adjacent Site of Special Scientific Interest.

Date of designation and originator. The site was established by Recommendation XIII-12 following its proposal to SCAR by New Zealand in October 1984.

Access points. The site can be accessed only by passing through the adjacent SSSI. It is best reached by a route directly south-east from the summer research station to the north. Care should be taken to avoid any areas of vegetation along the way.

Entry permit requirement. Entry to the area is only in strict accordance with a current permit, issued by the participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere or for site inspection (but see 'Inspection and maintenance' below), and which will not jeopardise any aspect of the natural ecosystem or its biota within the area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic station in which the activities were carried out.

Prohibition. To avoid or minimize human impact it is forbidden to:

a. drive any vehicle within the Area;
b. land a helicopter within the Area;
c. overfly the Area by an aircraft below 250 m above the highest point;
d. incinerate, bury or otherwise dispose of any non-human and human waste within the Area; all such waste must be removed from the Area;
e. leave depots of fuels, food, or any other supply within the Area;
f. erect any form of building within the Area;
g. use any sampling or other equipment within the Area which has not been sterilized using an acceptable method.

Pedestrian routes. Every precaution must be taken to keep clear of visible vegetation and also waterlogged ground, whether this has visible vegetation or not. During summer all these areas are easily damaged by trampling. Saturated ground, especially where situated on sloping terrain, is very prone to slip when traversed by foot and the marking of deep footprints would be unavoidable. Routes should be taken which pass upslope of persistent summer snow drifts, especially during times of thaw. In this way saturated ground would be most easily avoided.

Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area. Only for exceptional purposes would sampling of vegetation be permitted as there are similar areas of vegetation in the adjacent SSSI, as well as outside the designated areas to the south of the site.

Persons permitted to enter the site should take all reasonable precautions to avoid introducing plants and micro-organisms from elsewhere. All sampling apparatus should be sterilized before use and boots should be thoroughly cleaned before entry.

Inspection and maintenance. Inspection visits to the Area should be made once every year to assess the state of the site and to monitor any significant biological or environmental changed. However, entry to the site is not necessary for these visits as its state can be readily viewed from the surrounding SSSI. Also, as the site is small and contains rich terrestrial moss and algal vegetation, on site inspection visits could themselves cause damage.

3. Bibliography

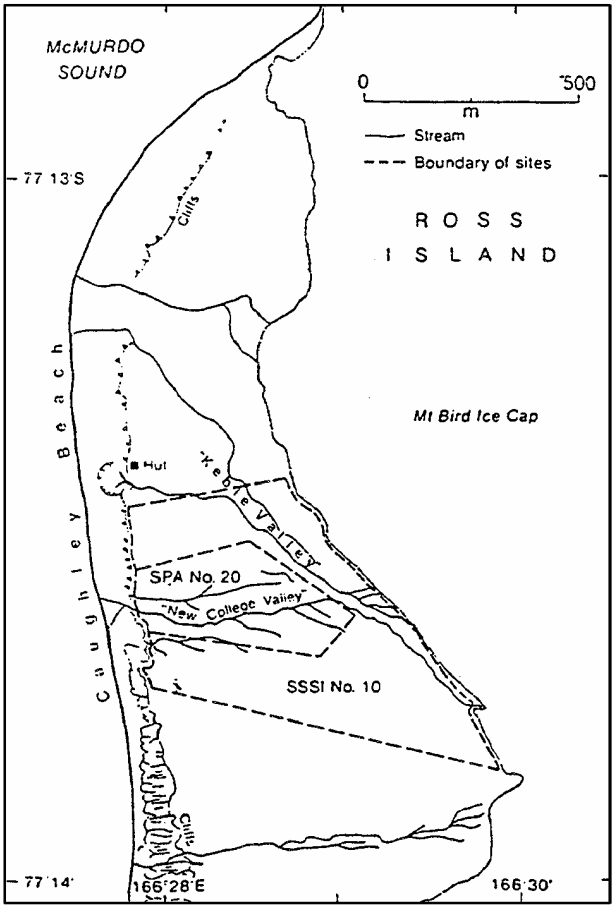
Broady, P.A. 1984. The Vegetation of Cape Bird, Ross Island, Antarctica. *Melbourne University Programme in Antarctic Studies,* Report No 62, 42pp, 15 tables, 140 figs.

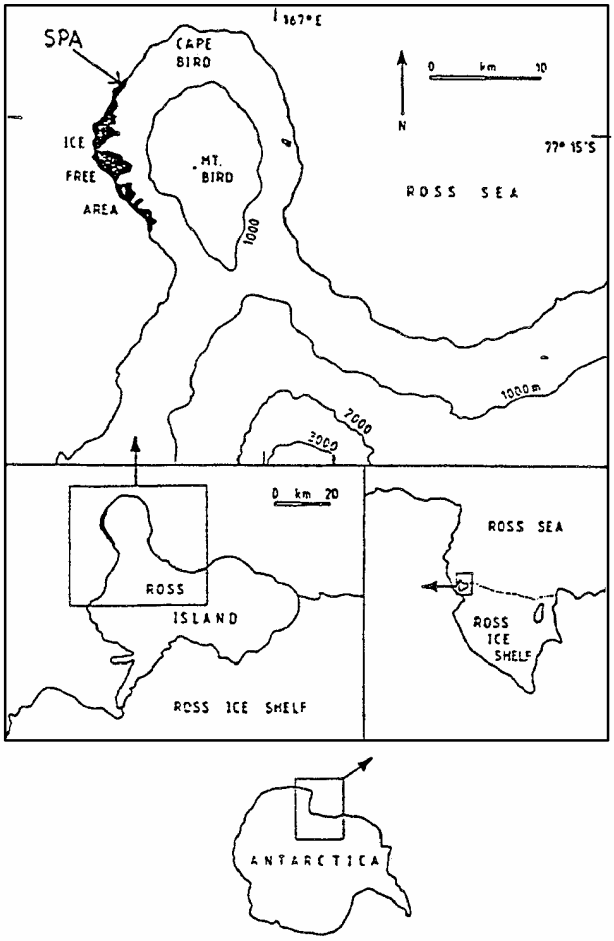
Broady, P.A.. 1989. Broadscale patterns in the distribution of aquatic and terrestrial vegetation at three ice-free regions on Ross Island, Antarctica. *Hydrobiologia*, 172: 77-95.

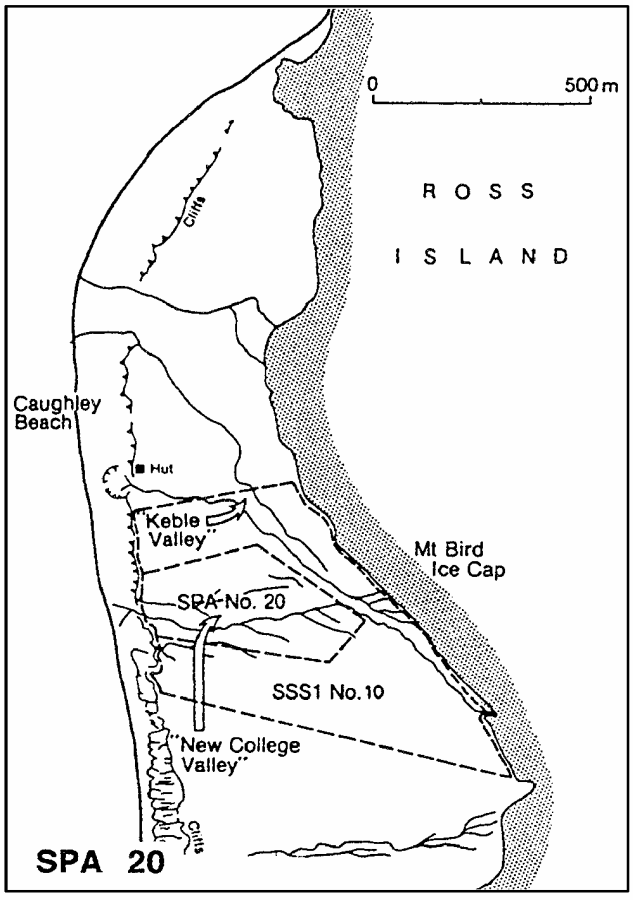
Longton, R.E. 1973. A classification of terrestrial vegetation near McMurdo Sound, continental Antartica. *Canadian Journal of Botany*, 51: 339-46.

Longton, R.E. 1974. Microclimate and biomass in communities in the Bryum association on Ross Island, continental Antarctica. *The Bryologist*, 77: 109-22.

(*Postscript:* It is intended to place signs close to the boundaries of this site and to choose boundaries which more closely follow natural features. The latter requires a more detailed map than presently available. Action on both of these will be taken this coming summer.)







SPA 20, Caughley Beach

Specially Protected Area No. 21

Avian Island, North-west Marguerite Bay

Note. This SPA was originally designated as SSSI No. 30 by Recommendation XV-6. Its designation as an SSSI was terminated, and its redesignation as an SPA was initiated, by Recommendation XVI-4. [see under SSSI No. 30 for the text of XV-6]

Annex to Recommendation XVI-4

Specially Protected Area No. 21: Avian Island, North West Marguerite Bay, Antarctic Peninsula

1. Geographical location. Avian Island (67°46'S, 68°54'W) lies 0.25 km south of the south-west tip of Adelaide Island in north-west Marguerite Bay, south-west Antarctic Peninsula

2. Management Plan

i. Description of Area. The Area consists of Avian Island together with its littoral zone. It is 1.45 km long by 0.8 km at its widest (total area about 49 ha), and rises to just over 40 m altitude in the south. It is almost entirely ice-free in summer. There are several shallow melt pools, the largest being on the eastern raised beach terrace. There are two small dilapidated refuge huts, one near the north-west and the other near the mid-east shores of the island.

ii. Reason for designation. The Area is unique in the Antarctic Peninsula region for its abundance and diversity of breeding seabirds, the most important of which are: Adélie penguins (*Pygoscelis adeliae*) about 36,000 pairs; Blue-eyed shags (*Phalacrocorax atriceps*) about 670 pairs; Southern Giant petrels (*Macronectes giganteus*) about 250 pairs; Dominican gulls (*Larus dominicanus*) about 60 pairs (total adult birds about 200); skuas (*Catharacta maccormicki*) 30 pairs (total adult birds about 200); Wilson's storm petrels (*Oceanites oceanicus*) several hundred pairs. Several other birds are frequent visitors, breeding elsewhere in Marguerite Bay. Weddell seals (*Leptonychotes weddellii*) breed in small numbers around the shores of the island, and other species of seals occasionally come ashore, particularly fur seals (*Arctocephalus gazella*) in increasing numbers during summer. Bryophyte vegetation is sparse but nitrophilous lichen communities are well-developed; vascular plants are absent. The Giant petrel colony is the farthest south known breeding location and represents about a quarter of the population breeding on the entire Antarctic Peninsula. The Blue-eyed shag colony is one of the largest known in the Antarctic and is very close to the southern limit of the species' breeding range; it represents about 85% of the total population breeding south of the Antarctic Circle. The Adélie penguin colony is the largest on the Antarctic Peninsula and contains a third of the total population breeding in the region.

iii. Date of designation and originator. Originally designated as SSSI No. 30, November 1989, Recommendation XV-6, by UK; proposed designation as SPA, July 1990, UK.

iv. Access points. Access should be from the sea as close as possible to either of the refuge huts.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for a site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

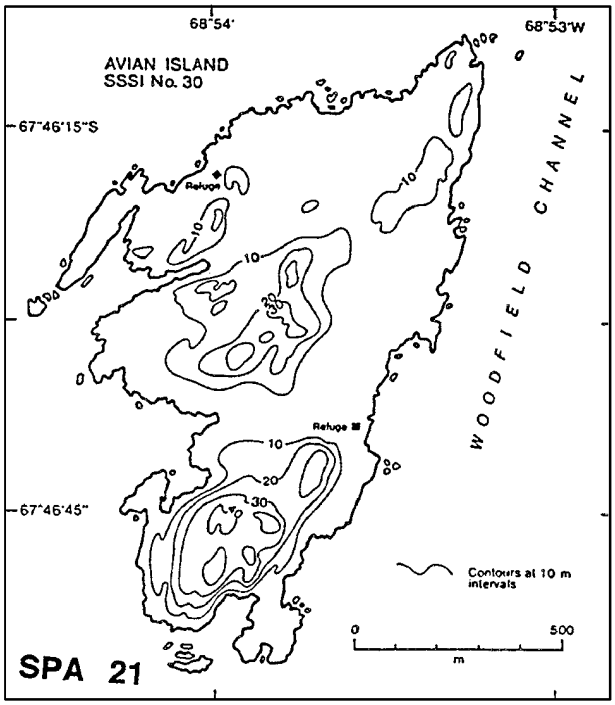
vi. Prohibitions. To avoid or minimise human impact it is prohibited to:

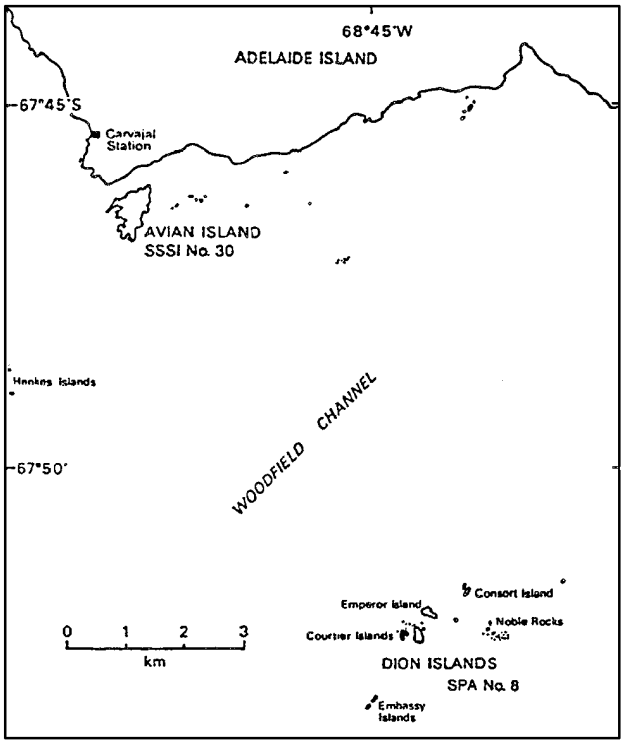
a. drive any vehicle within the Area over-snow vehicles used to visit the island must be left at the shoreline.;
b. bring any dog into the Area;
c. land a helicopter within the Area;
d. overfly the Area by any aircraft below 250 m above the highest point;
e. use any of the Area's coves or bays for anchoring or mooring seacraft, except in accordance with the permit;
f. incinerate, bury or otherwise dispose of any non-human waste within the Area; all such waste must be removed from the Area;
g. leave depots of fuel, food, or any other supplies within the Area, except at the refuges, unless they are further required within the same season, at the end of which they must be removed;
h. erect any form of building within the Area, besides the restoration and maintenance of the two existing refuges.

vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of any breeding bird (especially Giant petrels, which pedestrians should not approach closer than 100 m) or seal, unless required as specified in the permit.

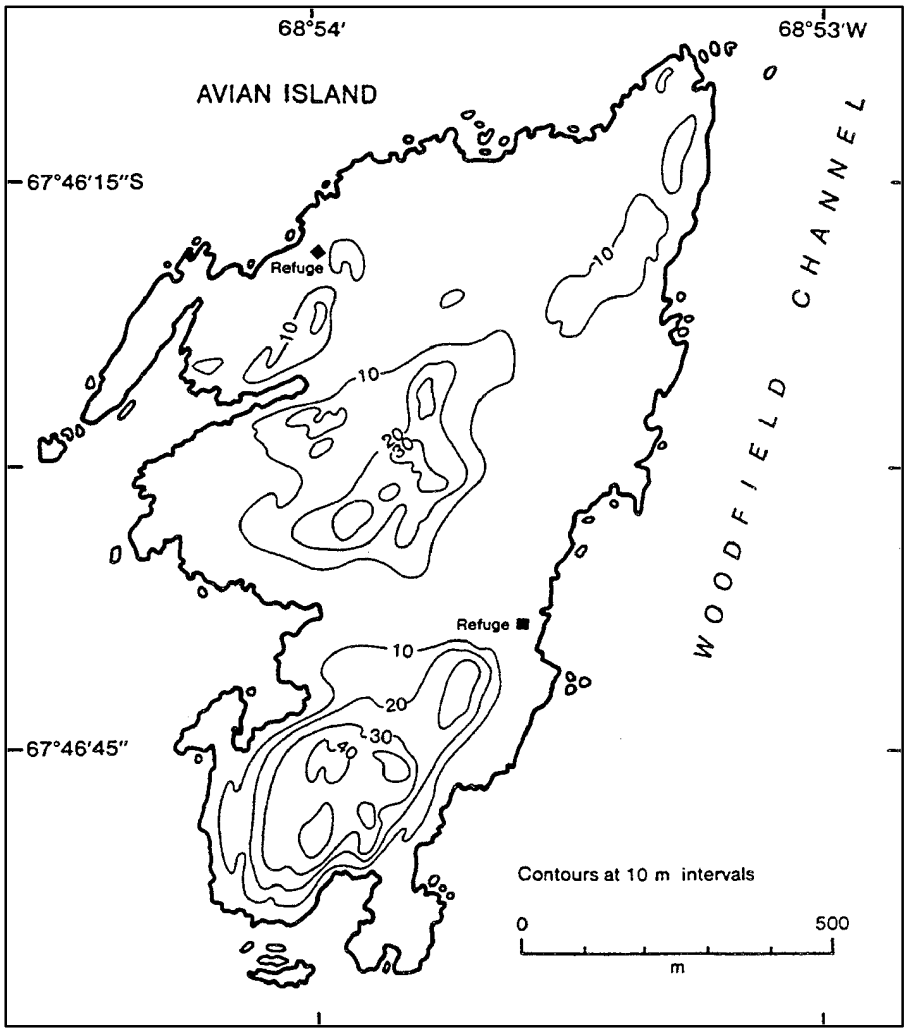
viii. Scientific research and sampling. All activities must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits should be made to the Area at least once every five years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.





SPA 21, Avian Island



Specially Protected Area No. 22

Annex to Recommendation XVI-8

Specially Protected Area No. 22: Cryptogram Ridge, Mount Melbourne, Victoria Land

1. Geographical location. Mount Melbourne (74°21'S, 164°42'W) lies between Wood Bay and Campbell Glacier, northern Victoria Land, on the western side of the Ross Sea.

2. Management Plan

i. Description of Area. The Area includes most of Cryptogram Ridge on the southern rim of the main summit crater (2,733 m altitude), and extends to about 1,200 m by 500 m. Geothermal activity occurs along about 300-400 m of the ridge and is marked by discontinuous areas of ice-free ground, surrounded by numerous ice hummocks up to 1 m high and scattered hollow ice towers up to several metres in diameter and 4 m high. The warm ice-free areas are mostly gently sloping with narrow terraces up to 1.5 m wide. More general details for the adjacent areas are given for the surrounding SSSI No. 24.

ii. Reason for designation. The geothermal ground within the Area supports a unique community of bryophytes, algae and microbiota, including the only known occurrence in the Antarctic of the moss *Campylopus pyriformis* and the very rare continental occurrence of the liverwort *Cephaloziella exiliflora*, otherwise unknown above about 500 m elsewhere in the Antarctic. This site is comparable with the only other known high altitude geothermally influenced ice-free area near the summit of Mount Erebus. This fragile and sterile habitat is of exceptional biological interest and should be afforded maximum protection from human influence to maintain its unique pristine state.

iii. Date of designation and originator. June 1990; New Zealand and Italy.

iv. Access points. Access should be only from either end of Cryptogram Ridge and not from the ridge slopes.

v. Entry permit requirement. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area (see Antarctic Treaty Agreed Measures for the Conservation of Antarctic Fauna and Flora, Article VIII). Details of the visit should be included in the national annual report of Exchange of Information for the same Antarctic season in which the activities were carried out.

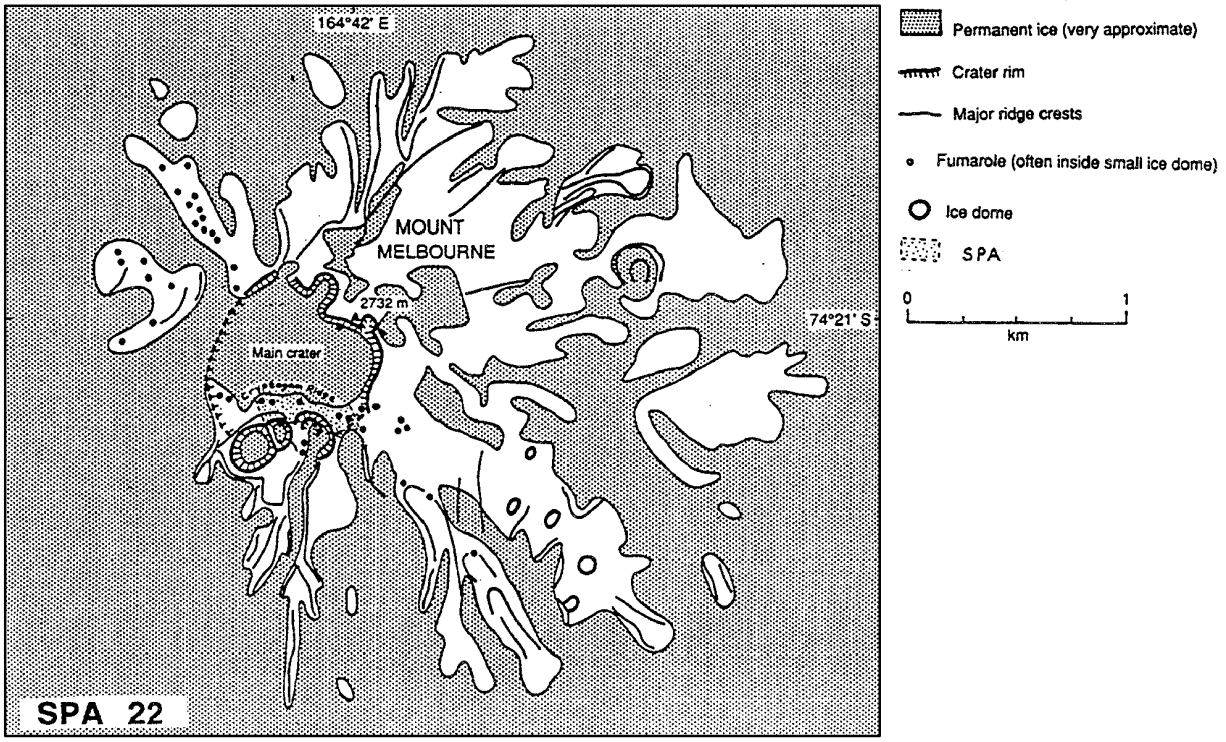
vi. Prohibitions. To avoid or minimise human impact is it prohibited to:

a. enter the Area without wearing sterile protective overclothing and footwear, to be provided by the supporting national operator;
b. use any sampling or other equipment within the Area which has not been first sterilised using an acceptable method;
c. land a helicopter within the Area; helicopters should land near the summit of Mount Melbourne only at a specified point in or adjacent to the main crater, no closer than 200 m from the boundary of the Area;
d. incinerate, bury or otherwise dispose of any waste, including all human waste, within the Area; all such waste must be removed from the Area;
e. bring into the Area any fuel or food, or leave any form of other supplies within the Area, other than markers required for monitoring studies;
f. erect any form of building within the Area.

vii. Pedestrian routes. None specified, but pedestrians must not use the ridge crest as a way of access to parts of the surrounding SSSI. Extreme precaution must be taken to avoid disturbance of all ice-free ground or interference with ice structures within the Area, unless required as specified in the permit.

viii. Scientific research and sampling. Where at all possible collections and general observations of geothermal soils and organisms should be made from positions outside the Area, unless directly related to the monitoring of Cryptogram Ridge; all activities within the Area must conform strictly with those specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits should be made to the Area no more than once every five years to assess the state of the site and to monitor any significant biological or environmental changes. Other visits should be made as necessary to maintain boundary markers, notices, etc.



Specially Protected Area No. 23

Annex to Recommendation XVI-9

Specially Protected Area No. 23: Forlidas Pond and Davis Valley Ponds

1. Geographical location. Forlidas Pond, about 100 m in diameter, is situated near the east end of the Dufek Massif in a small unnamed dry valley about 1 km east of the northern edge of Forlidas Ridge and about 1 km northwest of Davis Valley. The unnamed dry valley is separated from Davis Valley by a northeast trending ridge several kilometres long. The position of Forlidas Pond is 82°27'15"S, 15°21'W. The Area includes smaller ponds that occur along the ice margin at the northern edge of Davis Valley, a short distance east of Forlidas Pond.

2. Management Plan

i. Description of Area. The Area consists of two parts, shown on the attached map, about 500 m apart:

a. All that area within 500 m of the centre of Forlidas pond;
b. All that area within a 500 m radius of several meltwater ponds at the ice margin along the northern edge of Davis Valley.

ii. Reason for designation. The Area contains some of the most southerly freshwater ponds known in Antarctica containing plant life which would be threatened by possible contamination from human activity. The only visitors to Forlidas Pond have been geologists and geophysicists in 1957 and possibly one or two other parties. The ponds in Davis Valley were visited in 1978 by geologists. No botanists or zoologists have visited the Area. These ponds are located in SRA No. 1, north side of Dufek Massif, which could attract visitors such as scientists or tourists. They should be protected as examples of unique near-pristine freshwater ecosystems and their catchments.

iii. Date of designation and originator. October, 1991, USA.

iv. Access points. None specified.

v. Entry permit requirements. Entry into the Area is only in strict accordance with a current permit, issued by a Participating Government or its authorised representative, specifically for a compelling scientific purpose which cannot be served elsewhere, or for site inspection, and which will not jeopardise any aspect of the natural ecosystem or its biota within the Area. Details of visits should be included in national annual reports of Exchange of Information for the same Antarctic season in which the activities were carried out.

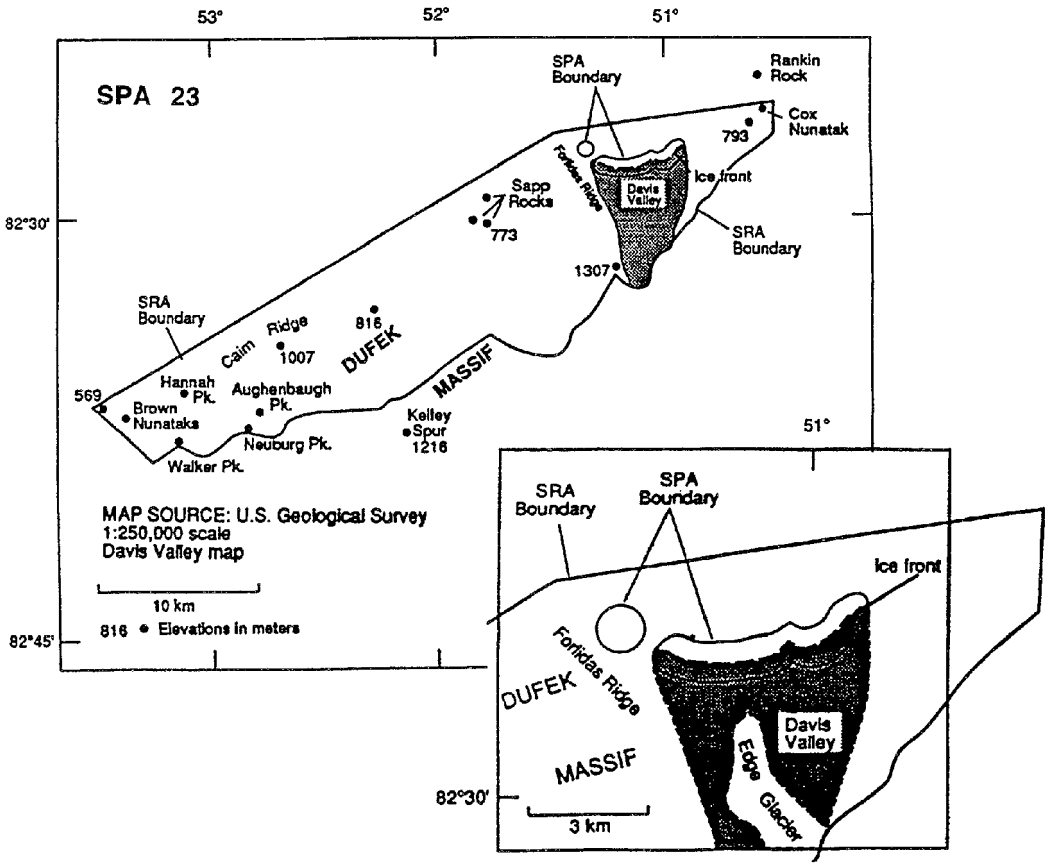
vi. Prohibitions. None specified, but camping and the landing of helicopters should be avoided within 1 km of the Area.

vii. Pedestrian routes. None specified, but every precaution must be taken to avoid disturbance of biota, soil, water, and periglacial features, unless required as specified in the permit.

viii. Scientific research and sampling. Taking of samples of biota or soil should be done only for a compelling scientific purpose and must conform strictly with the activities specified in the permit to enter the Area.

ix. Inspection and maintenance. Inspection visits should be made when opportunity arises to assess the state of the Area and to monitor biological and environmental change, and to

maintain boundary markers, notices, etc.



Specially Protected Area No. 24

XIX: Annex to Measure 3(1995)

Specially Protected Area No. 24: Pointe-Geologie Archipelago

Jean Rostand, Alexis Carrel, Lamarck And Claude Bernard Islands, Bon Docteur Nunatak And Marine Emperor Penguin Breeding Colony Management Plan

1. Description Of Values To Be Protected

Four islands and the breeding site of Emperor penguins are proposed for a new Specially Protected Area on the ground that it provides a representative sample of aesthetic, biological and geological values of terrestrial Antarctic ecosystems. One mammal specie, Weddell seal (*Leptonychotes weddeili*) and various bird species are nesting here: Emperor penguin (*Aptenodytes forsteri*); South Polar skua (*Catharacta maccormicki*); Adelie penguin (*pygoscelis adeliae*); Wilson's storm petrel (*Oceanites oceanicus*); Southern giant petrel (*Macronectes giganteus*); Snow petrel (*Pagodroma nivea*); Cape petrel (*Daption capensis*).

Well-marked hills display asymetrical transverse profiles with gently dipping northern slopes compared to the steeper southern ones. The terrain is affected by numerous cracks and fractures leading to very rough surfaces. The basement rocks mainly consist of sillimanite, cordierite and garnet-rich gneisses

which are intruded by abundant dikes of pink anatexites. The lowest parts of the islands are covered by morainic boulders (from a few centimeters to more than a meter across).

Long-term research and monitoring programmes have been continuing a long time already (since 1952 or 1964 according to the species). A data base implemented in 1981 is directed by C.E.B.C. (Centre d'Etudes biologiques de Chize).

The Emperor penguins breeding colony is a site of Special Scientific Interest which could further be included in the Convention on Conservation of Antarctic Marine Living Resources Environmental Monitoring Programme (CCAMLR/CEMP) in order to achieve the Convention's requirements.

2. Aims And Objectives

Management of Point-Geologie area aims to:

- prevent unnecessary disturbance on the area face to the growing flux of cruising tourist ship.
- permit research of a compelling scientific nature which cannot be served elsewhere.
- avoid major change to the structure and composition of flora and fauna and the association of different species of vertebrates harboured in the area, which therefore constitutes one of the most representative for both faunistic and scientific interest on Adelie coast.
- permit research on ethological, ecological, physiological and biochemical programmer in progress especially those related to demographic monitoring and impact assessment of surrounding human activities comprising tourism. Physiology and biochemistry programmes relating to fasting mechanisms and thermogenesis of emperor penguins could be pursued in compliance with permit provisions.
- permit research in geology with a particular attention to the programmation of visits, especially when thermomechanical means for sampling are required.

3. Management Activities

The Plan is kept under review to ensure that the values of the area are wholly protected. Any direct management action to the area would be subject to an environmental impact assessment before being undertaken.

Inspection visit are restricted to essential management purposes.

4. Period Of Designation

The Area is designated for an indefinite period.

5. Maps

Map 2 shows with dotted lines location of each island and other zones of the area inside Pointe-Geologie Archipelago.

6. Description Of The Area

i. Geographical coordinates, boundary markers and natural features

Jean ROSTAND. Alexis CARREL. LAMARCK and Claude BERNARD Islands. Bon Docteur Nunatak and Emperor penguins breeding colony are situated in the heart of Pointe-Geologie Archipelago, coastal area of Adelie Land (140° to 140°02'E; 66°39'30" to 66°40'30"S).

The area consists of the southernmost exposure of the Pointe-Geologie Archipelago, between

the Petrels Island and the Western edge of the Astrolable glacier. It is a very large ice free ground within Adelie Land.

As a whole, the surface of the outcropping rocks does not exceed 2 square kilometers. The highest points are distributed along NE-SW ridges (C1. Bernard Island: 47.6m; J.B. Lamarck Island: 22.2m; J. Rostand Island: 36.39m; Carrel Island: 28.24m and Nunatak: 28.50m). During the summer, only the southern flanks of the islands are still covered by compressed snow caps. There are no boundary markers since natural features delimit the wholly protected islands. However, makers could further be set up in Nunatak. No tracks or roads exist in the area.

Table 1. Annual breeding area of seabirds in the Specially Protected Area (SPA). The population breeding within the SPA is given compared to the Pointe Geologie (PG) population (from Thomas 1986).

Islands	**Emperor penguin**	**Adelie penguin**	**South polar skua**	**Snow petrel**	**Cape petrel**	**Wilson's storm petrel**	**Southern giant petrel**
Claude Bernard	-	3421	5	153	192	178	-
Lamarck	-	1007	1	38	15	45	-
Jean Rostand	-	4793	3	53	18	35	11
Alexis Carrel	-	4075	6	25	-	72	-
Nunatak	-	1961	1	11	-	41	-
Emperor Penguin Breeding Colony	3119	-	-	-	-	-	-
Total	3119	15257	16	280	225	371	11
%SPA/A	100	71	67	36	68	31	79

Table 2. Presence of birds on breeding colonies.

	Emperor penguin	**Adelie penguin**	**South polar skua**	**Snow petrel**	**Cape petrel**	**Wilson's storm petrel**	**Southern giant petrel**
First arrival	March	October	October	September	October	November	July
First laying	May	November	November	November	November	December	October
Last departure	January	March	March	March	March	March	April

Table 3. Sensibility to human disturbance and status of the Pointe Geologie populations.

	Emperor penguin	**Adelie penguin**	**South polar skua**	**Snow petrel**	**Cape petrel**	**Wilson's storm petrel**	**Southern giant petrel**

Sensibility to human disturbance	High	Medium	Low	Medium	High	High	High
Status 1952-1984	Decreasing	Increasing	Stable	?	?	?	Decreasing
Status 1984-1993	Stable	Increasing	Stable	Stable	Stable	?	stable

ii. Identification of restricted or prohibited zones

Access to every part of the area is prohibited unless authorized by a permit.

Location of breeding colonies is shown on the map. The birds are present in colonies from October to March, except Emperor penguins, which breed in winter (Table 2). Their sensibility to human disturbance varies depending on the species (Table 3). The implantation of the Dumont d'Urville station has resulted in a drastic decrease of the populations of Emperor penguins and Southern giant petrels in Pointe-Geologie Archipelago. For the last ten years the breeding areas of these birds have been protected and populations are now consecutively stable (Table 3).

No one, except permit holders, is allowed to approach or to disturb the Emperor penguin colony in any manner when eggs are incubating from mid-July, to mid-December when the chicks fledge. The particularly sensitive Emperor penguins are equally protected beyond the definite limits of their breeding area since the colony is not always located in the same place.

The southeastern part of Jean Rostand Island is designated as a Restricted Zone in order to preserve the remaining breeding colony of Southern giant petrels. All access to the Restricted Zone is prohibited during the breeding period from August to February. The access is restricted to one ornithologist permit holder in order to monitor the population three times each year. The boundary of the Restricted Zone is defined by a 20 meters-width buffer zone around the colony and is marked on the soil. The prohibition of access to the Restricted Zone shall be for an indefinite period, but shall be subject to reevaluation each time the Management Plan is reviewed.

iii) Location of structures in the Area

Prevost hut and a shelter are located on Rostand Island. There are no other buildings anywhere else in the Area.

iv) Location in or near the area of other "Antarctic Specially Protected Areas " or "Antarctic Specially Managed Areas"

The region nearby is being considered for an "Antarctic Specially Managed Area" (ASMA) including Dumont d'Urville station and other surrounding areas of activities.

7. Conditions Under Which Permits May Be Granted

i) Access to and movement within the Area

No helicopters, nor terrestrial vehicles are authorised within the Area. No overflights over the Area, either by helicopters or other aeroplanes are authorized.

Access to the area is therefore only permitted by foot or by zodiacs (in summer).

However, very rare departures of terrestrial vehicles from Nunatak are allowed. Only when sea ice conditions hinder from proceeding otherwise and with special attention to the presence of birds in the area.

Access to and movement within the area shall, in any case, be limited in order to avoid unnecessary disturbance to birds, especially by crossing their pathways and to ensure that breeding areas or their access are not damaged or endangered.

ii) Activities which are or may be conducted within the Area, including restrictions on time anyplace

- compelling scientific activities which cannot be conducted elsewhere and for necessary management activities with regard to the special provisions relating to Emperor penguins and the Restricted Zone of Southern Giant Petrels (see 6.ii).
- visitors granted entry in the Area by a permit shall ensure that no disturbances will occur from their visits to monitoring programmer.

iii) Installation, modification or removal of structures

No structures are to be erected in the area or scientific equipment installed except for essential scientific or management activities as specified in the permit.

iv) The location of field camps

Only safety tents should be erected with the intent of causing the least damage or disturbance to fauna.

v) Restriction on materials and organisms which may be brought into the Area

- no living animals or plant materials shall be deliberately introduced into the Area
- no poultry products, including food products containing uncooked dried eggs should be taken into the Area
- no chemicals shall be brought into the Area, except chemicals which may be introduced for a compelling scientific purpose as specified in the permit. Any chemical introduced shall be removed from the Area at or before the conclusion of the activity for which the permit was granted
- fuel, food and other materials are not to be deposited in the area, unless required for essential purposes connected with the activity for which the permit has been granted. Such materials introduced are to the removed when no longer required. Permanent depots are not permitted.

vi) The taking of or harmful interference with flora and fauna

Taking of or harmful interference with native flora and 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, as a minimum standard.

vii) The 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 a permit holder is prohibited unless specified in,the permit for scientific or management purposes. However, debris of man-made origin may be removed from the area and dead or pathological specimens of fauna or flora may be removed for laboratory examination.

viii) The disposal of waste

All non-human wastes shall be removed from the Area.

ix) Measures that may be 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 monitoring, other scientific programrnes

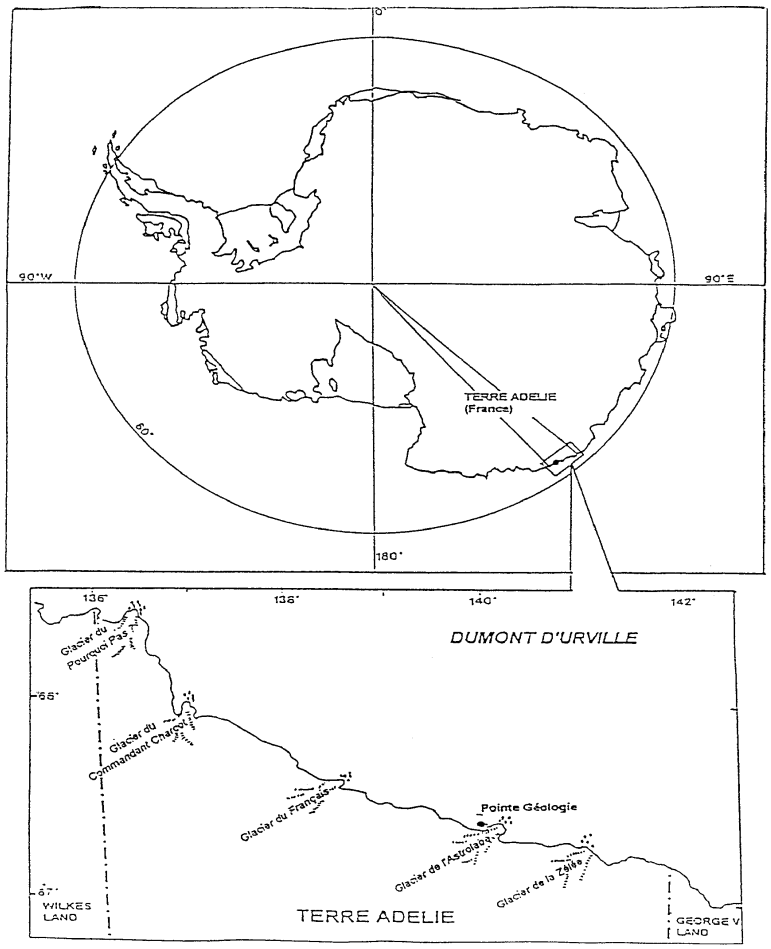
and sites inspection activities, which may involve the collection of small amounts of biological materials and animals.

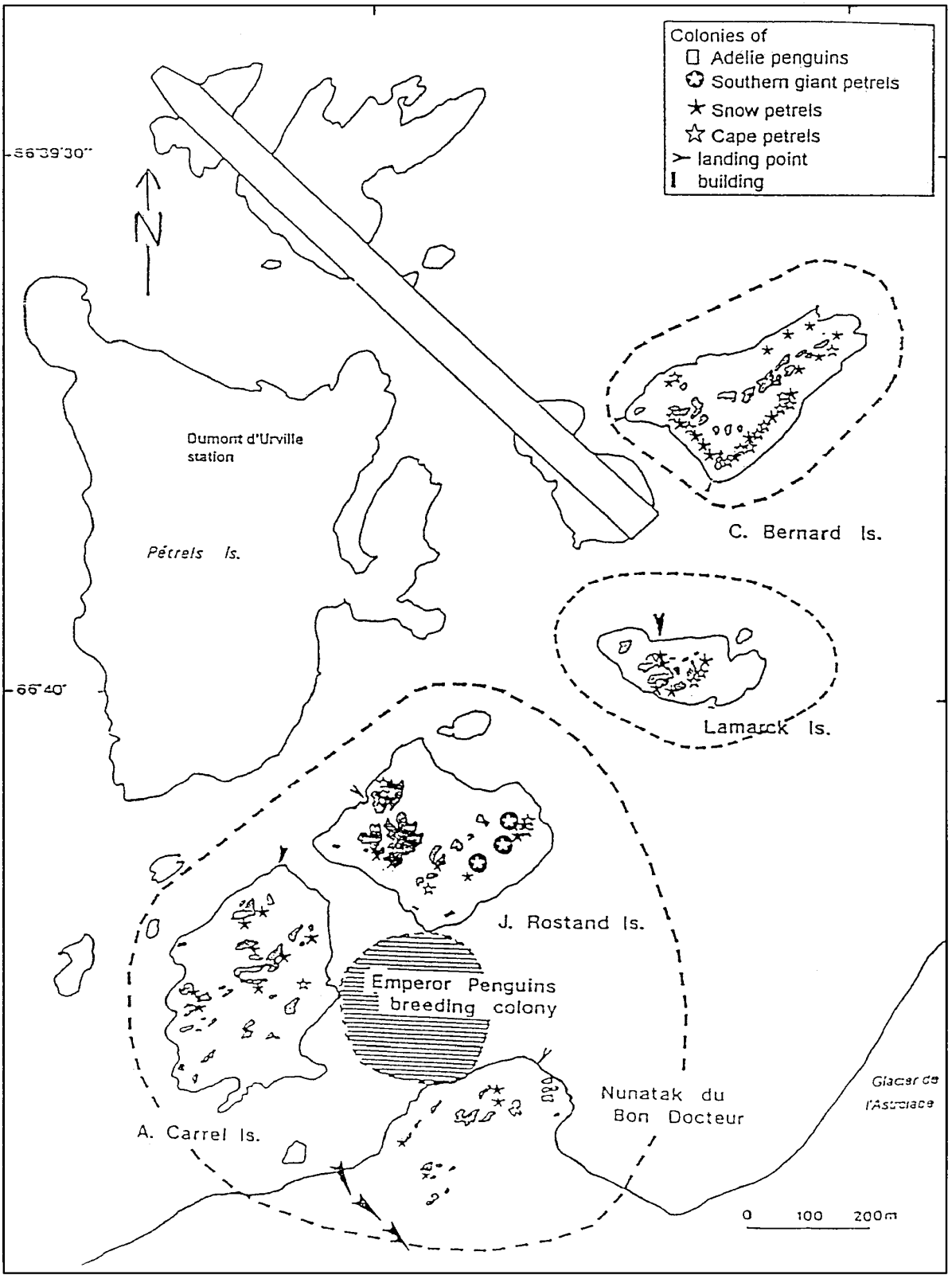
Permits shall specify the maximum number of persons allowed entry at one time.

Visits to the Area should be kept to the minimum necessary to achieve the scientific and management objectives.

x) Requirements for reports of visits to the Area

Parties should ensure that the principal holder of each permit issued submit to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report form suggested by SCAR. 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, in sufficient detail to allow evaluation of the effectiveness of the management plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage, to be used both in any review of the management plan and in organising the scientific use of the Area.





Map 2. Pointe Geologie Archipelago showing the Antarctic Specially Protected Area (dotted lines) and avifauna breeding sites. The South Polar skuas territories and the Wilson's storm petrels nests are not mapped (see tables). The additional access of terrestrial vehicles to the continent (Nunatak) is indicated with large arrows.

Specially Protected Area No. 25

XXI: Annex to Measure 2(1997)

Specially Protected Area No. 25: Cape Evans Historic Site and its Environs

Management Plan for Special Protected Area (SPA) No. 25 for Historic Sites No. 16 and 17 (containing the historic *Terra Nova* hut of Captain R F Scott and its precincts), Cape Evans, Ross Island (77°38'10"S, 166°25'04"E)

1. Description Of Values To Be Protected

This area was originally listed as Historic Sites 16 and 17 in Recommendation VII-9. The Terra Nova hut (Historic Site No. 16) is the largest of the historic huts in the Ross Sea region. It was built in January 1911 by the British Antarctic "Terra Nova" Expedition of 1910-1913 which was led by Captain Robert Falcoln Scott, RN. It was subsequently used as a base by the Ross Sea party of Sir Ernest Shackleton's Imperial Trans-Antarctic Expedition of 1914-1917.

Another major feature of this area is the Cross on Wind Vane Hill (Historic Site No. 17) which was erected in the memory of three members of Shackleton's Ross Sea party who died in 1916. In addition to this, there are also the anchors of the ship Aurora from the Imperial Trans-Antarctic Expedition, an instrument shelter, several supply dumps and dog kennels, and numerous artefacts distributed around the site.

The Cape Evans site is one of the principal sites of early human activity in Antarctica. It is an important symbol of the Heroic Age of Antarctic exploration, and as such, has considerable historical and cultural significance. Some of the earliest advances in the study of earth sciences, meteorology, flora and fauna are associated with the Terra Nova Expedition based at this site. The history of these activities and the contribution they have made to the understanding and awareness of Antarctica, give this Area significant scientific value.

2. Aims and Objectives

The aim of the management plan is to provide protection for the Area and its features so that its values can be preserved. The objectives of the plan are to:

- avoid degradation of, or substantial risk to, the values of the Area;
- maintain the historic values of the area through planned restoration and conservation work;
- allow management activities which support the protection of the values and features of the Area;
- prevent unnecessary human disturbance to the Area, its features and artefacts by means of managed access to the Terra Nova hut.

3. Management Activities

- a regular programme of restoration and preservation work shall be undertaken on the Terra Nova hut and associated artefacts in the Area;
- visits shall be made as necessary for management purposes;
- National Antarctic Programmes operating in, or those with an interest in, the region shall consul together with a view to ensuring the above provisions are implemented.

4. Period of Designation

Designated for an indefinite period.

5. Maps

Map A:Cape Evans regional map. This map shows the boundaries of the proposed Antarctic Specially Protected Area with significant topographical features, approaches, field camp sites and helicopter landing sites. It also shows the approximate location of significant historical items within the area. Inset: Ross Island showing sites of nearby protected areas and stations.

Map B:Cape Evans site map. This map shows the approximate location of specific historic artefacts and sites within the Area.

6. Description of the Area

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

Cape Evans is a small, triangular shaped, ice-free area in the south west of Ross Island, 10 kilometres to the south of Cape Royds and 22 kilometres to the north of Hut Point Peninsula on Ross Island. The ice-free area is composed of till-covered basalt bedrock. The designated Area is located on the north western coast of Cape Evans adjacent to Home Beach and centred on Scott's Terra Nova hut. The boundaries of the proposed ASPA are:

- South: a line extending east from a point at 77 degrees 38' 15.47" S. 166 degrees 25'9.48" E - 20 metres south of the cross on Wind Vane Hill;
- South/west: a line from the reference point above extended to follow the crest of the small ridge descending in a north westerly direction to the shoreline at 77 degrees 38' 11.50" - 166 degrees 24' 49.47";
- North/west: by the shoreline of Home Beach;
- North/east: by the line of the outlet stream from Skua Lake to Home Beach at 77 degrees 38'4.89" - 166 degrees 25' 13.46";
- East: by the line extending south from the western edge of Skua Lade at 77 degrees 38' 5.96" - 166 degrees 25' 35.74" - to intersect with the southern boundary at 77 degrees 38' 15.48" - 166 degrees 25' 35.68".

A major feature of the Area is Scott's Terra Nova hut located on the north western coast of Cape Evans at Home Beach. The hut is surrounded by many historic relics and include the anchors from the Aurora, dog skeletons, instrument shelters, dog line, meteorological screen, fuel dump, magnetic hut, coal, stores, rubbish dumps and flag pole. A memorial cross to three members of Shackleton's Ross Sea party of 1914-1917 stands on West Vane Hill. All these features are included within the boundaries of the Area.

Skuas (*Catharacta maccormicki*) nest on Cape Evans and Adelie penguins (*Pygoscelis adeliae*) from the rookery at Cape Royds may occasionally transit the Area. Weddel seals have also been seen hauled up on Home Beach.

6(ii) Restricted Zones within the Area

None.

6(iii) Structures within the Area

All structures located within the Area are of historic origin, although a temporary, modern protective enclosure around the magnetic hut remains in place.

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

SSSI No. 1 Cape Royds is 10 kilometres north of Cape Evans; SSSI No. 2 Arrival Heights, Hut Peninsula is 22 kilometres south of Cape Evans; and SSSI No. 11 Tramway Ridge is approximately 20 kilometres east of Cape Evans. All sites are located on Ross Island.

7. Permit Conditions

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

Permits shall be issued only by appropriate national authorities and may contain both general and specific conditions. A Permit may be issued by a national authority to cover a number of visits in a season. Parties operating in the Ross Sea Area shall consult together and with groups and organizations interested in visiting the site to ensure that visitor numbers are not exceeded.

General conditions for issuing a Permit to enter the site may include:

- activities related to preservation, maintenance, research and/or monitoring purposes;
- management activities in support of the objectives of the Plan;
- activities related to tourism, educational or recreational activities providing they do not conflict with the objectives of this plan.

7(i) Access to and Movement within the Area

Control of movement within the Area is necessary to prevent damage caused by crowding around the many vulnerable features within the Area. The maximum number in the Area at any time (including those within the hut is 40 people.

Control of numbers within the hut is necessary to prevent damage caused by crowding around the many vulnerable features within the hut. The maximum number within the hut at any time (including guides) is 12 people.

Avoidance of cumulative impacts on the interior of the hut requires an annual limit on visitor numbers. The effects of the current visitor level (approximately 1,000 per calendar year (1995)) suggest that an increase of more than 100 percent could cause significant adverse impacts. The annual maximum number of visitors is 2,000 people.

These limits have been set based on current visitor levels and on the best advice available from conservation advisory agencies (which include conservators, achaeologists, historians, museologists and other heritage protection professionals). The limits are based on the proposition that any significant increase in the current level of visitor numbers would be detrimental to the values to be protected. An ongoing monitoring programme of the effects of visitors is in place. This will provide the basis for future reviews.

Helicopter landings are prohibited within the area as they have the potential to damage the site by blowing scoria and ice particles and to accelerate the abrasion of the hut and surrounding artefacts. Landings may be made at the existing designated landing sites (see Maps 1 and 2). One site is approximately 150 metres to the north of the hut outside the Area. Another designated site is located adjacent to the field shelters erected approximately 200 metres beyond the south western boundary of the Area.

Vehicles are prohibited within the Area. Landings from the sea by boat may be made by visitors directly in front of the hut at Home Beach.

7(ii) Activities which may be conducted within the Area

Activities which may be conducted within the area include:

- visits for restoration, preservation and/or protection purposes;
- educational and/or recreational visits including tourism;
- scientific activity which does not detract from the values of the Area.

7(iii) Installation, modification and removal of structures

No new structures are to be erected in the Area, or scientific equipment installed, except for conservation activities as specified in 7(ii). No historic structure, relic or artefact shall be removed from the Area, except for the purposes of restoration and/or preservation and then only in accordance with a Permit.

7(iv) Location of field camps

Use of the historic hut for living purposes is not permitted.

Camping is prohibited in the Area under any circumstances. An existing field camp site is located approximately 300 metres beyond the south western boundary of the area (see Map 2). Two Antarctica New Zealand (New Zealand Antarctic Institute) field shelters are located at this site and should be used by all parties intending to camp in this area. The helicopter pad has been relocated away from the immediate vicinity of Scott s hut inside the Area, to a point immediately outside the Area near the north east boundary. To the north east of Scott's hut is the site of the Greenpeace year-round World Park Base which was removed in 1991-92. The plaque which marked this site was removed in January 1996.

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

No living animals or plant material shall be introduced to the Area.

No poultry products, including food products containing uncooked dried eggs, shall be taken into the Area.

Chemicals which may be introduced for management purposes shall be removed from the Area at or before the conclusion of the activity specified in the plan.

Fuel, food or other materials are not to be left in depots in the Area, unless required for essential purposes connected with the protection and conservation of the historic structures or associated relics. All such materials are to be removed when no longer required.

Smoking, or the use of any naked flame including lanterns, is not permitted in the hut under any circumstances.

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

This activity is prohibited except in accordance with a Permit. Where animal taking or harmful interference is involved, this should, as a minimum standard, 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 introduced by visitors

Material may be collected and removed from the Area only for restoration, preservation or protection reasons and only in accordance with the management activities detailed as necessary to protect the values of the area in a Permit. Visitors must remove objects, substances, and waste produced by them during their time in the Area. Samples from or specimens of fauna, flora and soil may be removed for scientific purposes only in accordance with an appropriate Permit.

7(viii) Disposal of waste

All human waste and grey water shall be removed from the Area. Waste generated by work parties shall be removed from the Area.

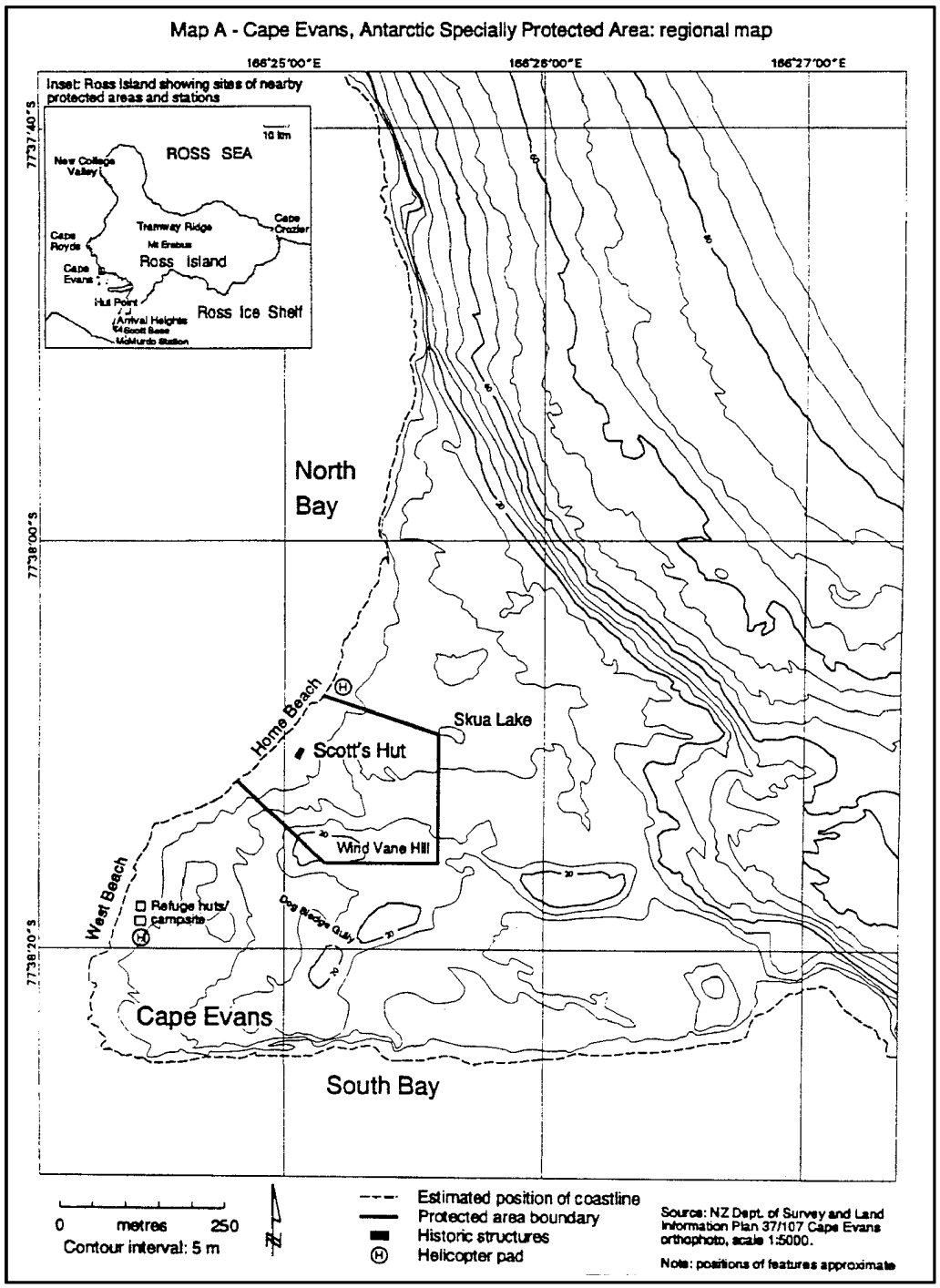
7(ix) Measures that may be necessary to ensure that the aims and objectives of the management plan continue to be met

1. the Permit, or an authorised copy, must be carried within the Area;
2. provision of information for visitors;
3. development of skills and resources, particularly those related to conservation and preservation techniques, to assist with the protection of the Area's values.

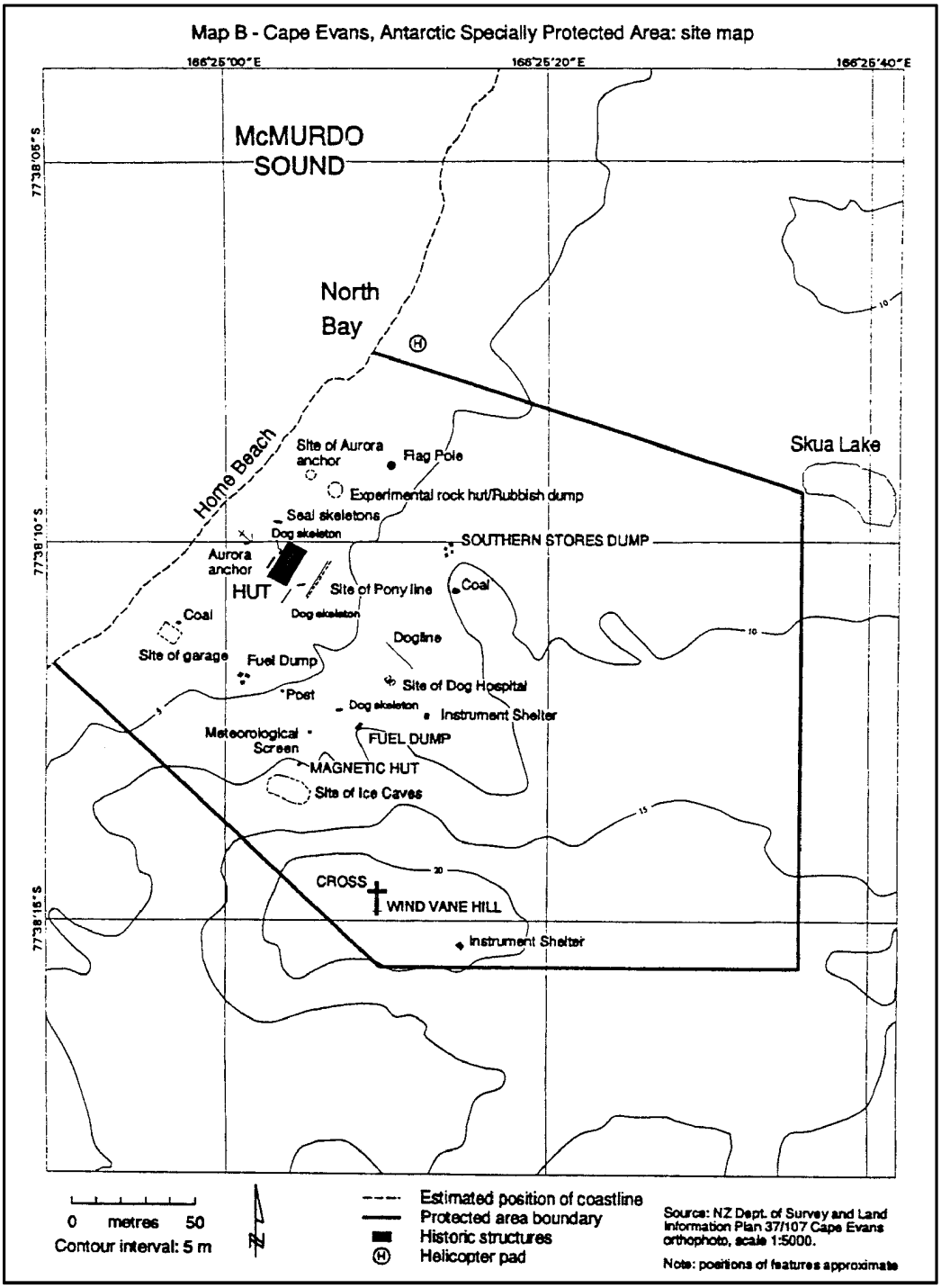
7(x) Requirements for Reports

Parties should ensure that the principal holder for each Permit issued submit to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report suggested by SCAR. 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, in sufficient detail to allow an evaluation of the effectiveness of the Management Plan. Parties should wherever possible deposit originals or copies of such reports in a publicly accessible archive to maintain a record of usage, to be used both for review of the Management Plan and in organising the use of the site.

Map A - Cape Evans, Antarctic Specially Protected Area: regional map



Map B - Cape Evans, Antarctic Specially Protected Area: site map



Specially Protected Area No. 26

XXI: Annex to Measure 2(1997)

Specially Protected Area No. 26: Lewis Bay Tomb (Annex B)

Management Plan for Specially Protected Area (SPA) No. 26, Lewis Bay Tomb, Mount Erebus, Ross Island

1. Description Of Values To Be Protected

An area on the lower slopes of Mount Erebus, above Lewis Bay on the north side of Ross Island, was originally declared a tomb in Recommendation XI-3 (1981) after notification by New Zealand that 257 people of several nationalities had lost their lives when the DC-10 aircraft in which they were travelling crashed at this site on 28 November 1979. In spite of the determined and courageous actions of the New Zealand and United States Antarctic expeditions the bodies of some of those who died could not be recovered. Expressing deep sympathy with the Government and people of New Zealand, the tomb was declared in order to ensure that the area be left in peace. These reasons for special protection are still valid, and the Area is to be kept inviolate as a mark of respect in remembrance and in order to protect the site's emotional values.

In late 1979 a six foot Oregon timber cross was erected close to the crash site as a memorial to those who lost their lives. After damage by wind, this cross was replaced on 30 January 1987 with a cross of stainless steel, located on a rocky promontory overlooking and approximately 3 kilometres from the site. This is not part of the protected area, but is an Historic Monument (Number 73) in recognition of the commemorative and symbolic values of the cross.

2. Aims and Objectives

Management at Lewis Bay aims to:

- avoid degradation of, or substantial risk to, the values of the Area;
- ensure the crash site is kept inviolate and prevent unnecessary human disturbance to the Area;
- allow visits to the nearby site of the memorial cross for the purposes of commemoration to to pay respects;
- allow visits for the purpose in support of the aims of the management plan.

3. Management Activities

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

- all pilots operating in the region shall be informed of the location, boundaries and restrictions applying to entry and overflight in the Area;
- visits shall be made as necessary (no less than once every five years) for inspection and to assess whether the Area continues to serve the purposes for which it was designated;
- National Antarctic Programmes operating in the region shall consult together with a view to ensuring these steps are carried out.

4. Period of designation

Designated for an indefinite period.

5. Maps and Photographs

Map A:Lewis Bay protected area topographic map. Note: Map A is derived from the Antarctic Digital Database (ADD) Version 1.0, 1993 which was prepared to a base scale of 1:250,000 under the auspices

of SCAR. Positional corrections have been applied to the ADD source data using 1993 and 1995 Global Positioning System (GPS) data and 1993 aerial photography. Accuracy of the map remains approximate pending publication of new and accurate Ross Island maps at 1:50,000 scale. The geographical coordinates of the crash site and other features are considered accurate to within approximately 100-200 m horizontally. Elevation data are considered accurate to approximately 100 m vertically.

Map A specifications: Projection: Lambert conformal conic; standard parallels: 1st 79°18'00"S; 2nd 76°42'00"S; Central Meridian: 167°30'00"E; Latitude of Origin: 78°01'16.211"S;

Spheriod: GRS80.

Inset: Lewis Bay, Ross Island location map, showing sites of nearby protected areas and stations.

Figure 1: Photograph of the Lewis Bay area and crash site from the Memorial Cross. [not reproduced]

6. Description of the Area

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

The designated Area on Ross Island (Map A) encompasses the crash zone (centred on 167°28'30"E, 77°25'29"S, elevation 520 m (1720 feet) and the surrounding glacial ice 2 km above and to either side of this position, extends as a 4 km wide "rectangle" down to the sea, and includes the airspace above this region to an altitude of 1000 m (3280 feet) with the exception of a 200 m wide air access "corridor" along the coastline. The west boundary of the Area is the 167°23'33"E meridian; the east boundary is the 167°33'27"E meridian. The south boundary is the 77°26'33"S parallel, while the north boundary is defined by the coastline. The aircraft's primary impact occurred at an elevation of 446.7 m: debris was spread up-slope 570 m from that point over an area 120 m wide to an elevation of 580 m (1900 feet). Much of the aircraft wreckage is now buried in ice and is slowly moving down-slope with the glacier (see Figure 1). The bodies of some of those who died could not be recovered and remain in the Area. Boundary markers have not been placed to mark the Area for two reasons: their presence is considered detrimental to the inviolate values of the site, and their maintenance would be impractical on the moving glacier.

6(ii) Restricted Zones within the Area

None

6(iii) Structures within and near the Area

The stainless steel memorial cross (Historic Site Number 73) is located on a rocky outcrop (167°33'43"E, 77°26'38"S; elevation 810 m (2660 feet)) approximately 3 km SE of the crash site, and is a symbol of the special significance of the Area. No other structures exist within or near the Area. Debris from the aircraft remains in situ.

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

The nearest protected area to Lewis Bay is SSSI-11 at Tramway Ridge (15 km distant) near the summit of Mount Erebus. Caughley Beach (SSSI-10) and New College Valley (SPA-20) (at Cape Bird) and Cape Royds (SSSI-1) are approximately 35 km west on Ross Island. Cape Crozier (SSSI-4) is 40 km to the east (Inset: Map A).

7. Permit Conditions

Entry into the Area is prohibited except in accordance with a Permit issued by appropriate national authorities. Conditions for issuing a Permit to enter the Area are that:

- it is issued only for compelling purposes that are in support of the aims of the Management Plan;
- the actions permitted will not compromise the values of the Area;
- the actions permitted are in accordance with the Management Plan;
- the Permit, or an authorised copy, shall be carried within the Area;
- a visit report shall be supplied to the authority named in the Permit;
- permits shall be issued for a stated period.

7(i) Access to and movement within the Area

Land vehicles are prohibited within the Area and access shall be by foot or helicopter. Overflight of the Area is prohibited below 1000 m (3280 feet) above sea level, except for essential access related to the values for which this site is protected, or for inspection and monitoring of the site (at least once every five years). An exception to the overflight restriction is provided by a 200 m wide access "corridor" through the Area immediately adjacent to the coastline (Map A), which allows transit of aircraft through the Area at times when visibility or conditions make avoidance of the Area otherwise impractical. No special restrictions apply to the air routes used to move to and from the Area by helicopter when access is permitted. Use of helicopter smoke grenades within the Area is prohibited unless absolutely necessary for safety, and these should be retrieved.

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

All visits to the Area for any purpose shall be made recognizing the principal values to be protected in the Area, and as far as possible the Area should be left in peace. Visits may be made for essential inspection to ensure the values of the Area are being maintained, and to determine if materials at the site present a problem by emergence from the ice and then possible wind dispersal, or for securing or removal of such items. Visits may also be made for removal of materials introduced into the Area subsequent to its designation, if appropriate.

7(iii) Installation, modification or removal of structures

No structures are to be erected within the Area except as specified in a Permit. It is prohibited to modify or remove any structure that was present within the Area at the time of special protection designation.

7(iv) Location of Field Camps

Camping is prohibited within the Area, unless under exceptional circumstances for management or protection. Where camping is required for such activities, the site selected shall be no closer than 200 m from the location of the wreckage at the time of the visit.

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

It is prohibited to introduce any materials into the Area. Smoke grenades used when absolutely necessary for safety of air operations should be retrieved.

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

Taking or harmful interference with native flora or fauna is prohibited within the Area.

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 is prohibited, unless it has been determined that materials at the site are emerging from the ice and their dispersal by wind presents a management problem. If this is the case, such materials should be appropriately disposed of with due regard to the families of victims and according to national procedures. Materials introduced into the Area subsequent to designation may be removed unless the impact of removal is likely to be greater than leaving the material in situ: if this is the case the appropriate authority should be notified.

7(viii) Disposal of Waste

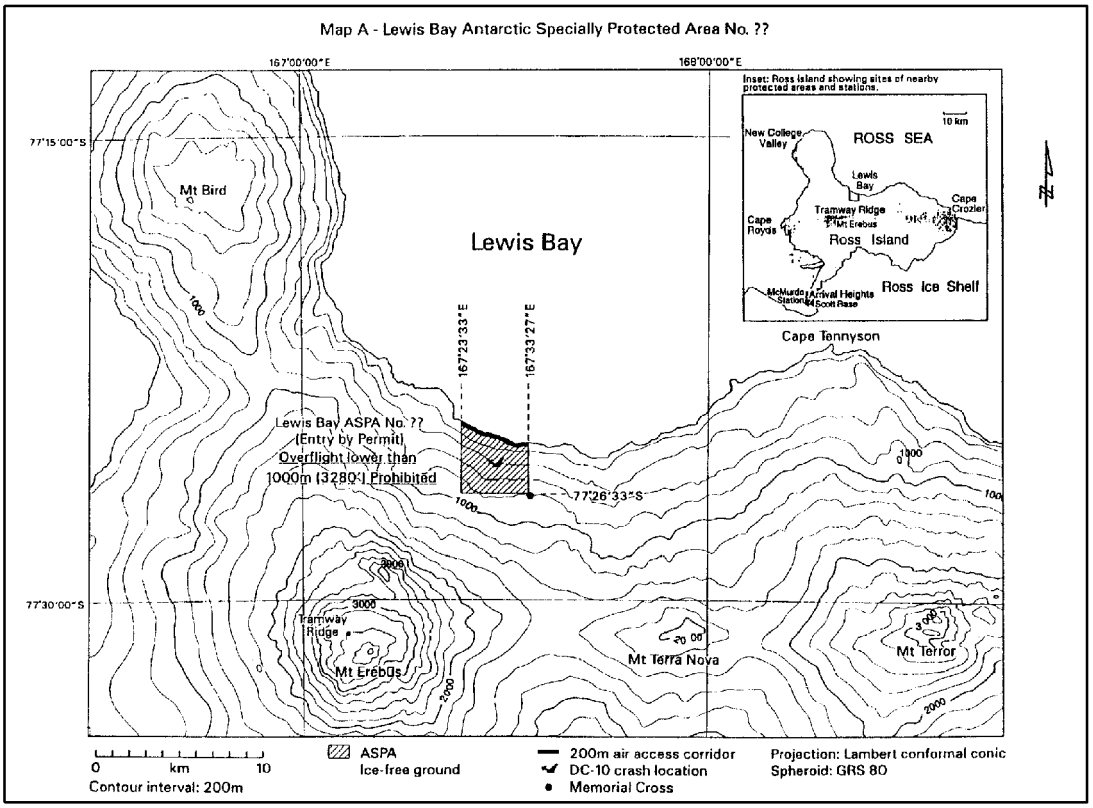
It is prohibited to dispose of any waste, including all human wastes, within the Area.

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

None specified.

7(x) Requirements for Reports

Parties should ensure that the principal holder for each permit issued submit to the appropriate authority a report describing the activities undertaken. Such reports include, as appropriate, the information identified in the Visit Report form suggested by SCAR. Parties should maintain a record of 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 the Management Plan. Parties should, wherever possible, deposit originals or copies of such original reports in a publicly accessible archive to maintain a record of usage in any review of the management plan.



Specially Protected Area No. 27

XXII: Annex to Measure 1(1998)

Management Plan for Specially Protected Area (SPA) No. 27 for Historic Site No. 15 (Containing the Historic Hut of Sir Ernest Shackleton and Its Precincts), Backdoor Bay, Cape Royds, Ross Island (Lat. 77° 33'10. 7"5, Long. 166°10' 6.5"E)

1. Description of Values to be Protected

This site was originally listed as Historic Site 15 in ATCM Recommendation VII-9 proposed by New Zealand.

The hut on which this Area is centred was built in February l 908 by the British Antarctic (Nimrod) Expedition of 1907-1909 which was led by Sir Ernest Shackleton. It was also periodically used by the Ross Sea Party of Shackleton's Imperial Trans-Antarctic expedition of 1914-1917.

Structures associated with the hut include stables, kennels, a latrine and a garage created for the first motor vehicle in Antarctica. Other significant relics in the Area include an instrument shelter, supply depots, and a rubbish site. Numerous additional artefacts are distributed around the Area.

Cape Royds is one of the principal areas of early human activity in Antarctica. It is an important symbol of the Heroic Age of Antarctic exploration and, as such, has considerable historical and cultural significance. Some of the earliest advances in the study of earth sciences, meteorology, flora and fauna in Antarctica are associated with the Nimrod Expedition which was based at this site. The history of these activities and the contribution they have made to the understanding and awareness of Antarctica give this Area significant scientific, technical, architectural, aesthetic and social values.

2 Aims and Objectives

The aim of the management plan is to provide protection for the Area and its features so that its values can be preserved. The objectives of the Plan are to:

- avoid degradation of, or substantial risk to, the values of the Area;
- maintain the historic values of the Area through planned restoration and conservation work which may include:
  a) an annual 'on-site' maintenance programme
  b) a programme of monitoring the condition of artefacts and structures, and the factors which affect them
  c) a programrne of conservation of artefacts conducted on and off site;
- allow management activities which support the protection of the values and features of the Area including:
  a) mapping and otherwise recording the disposition of historic items in the hut environs
  b) recording other relevant historic data.
- prevent unnecessary human disturbance to the Area, its features and artefacts through managed access to the Nimrod hut.

3. Management Activities

- A regular prograrnme of restoration and preservation work shall be undertaken on the Nimrod hut and associated artefacts in the Area.

- Visits shall be made as necessary for management purposes.
- Control of the number of visitors.
- National Antarctic Programmes operating in, or those with an interest in, the region shall consult together with a view to ensuring the above provisions are implemented.

4. Period of designation

Designated under Measure X(1998) for an indefinite period.

5 Maps

Map A: Cape Royds regional map. This map shows the location of the Area in relation to the existing SSSI No. I and significant topographic features in the vicinity. Inset: shows the position of the site in relation to other protected sites on Ross Island.

Map B: Cape Royds Area map. This map shows the boundaries of the Area and the adjacent SSSI No. 1. Also shown are the approaches, field camp and helicopter landing sites.

6 Description of the Area

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

Cape Royds is an ice free area at the western extremity of Ross Island, approximately 40 kilometres to the south of Cape Bird and 35 kilometres to the north of Hut Point Peninsula on Ross Island. The ice free area is composed of till covered basalt bedrock. The designated Area is located to the north east of Cape Royds adjacent to Backdoor Bay. It is immediately to the east of the existing SSSI No. 1, an Adelie penguin rookery. The Area is centred on Shackleton's Nimrod expedition hut.

The boundaries of the proposed Area are:

- South and East: by the shoreline of the eastern coast of Cape Royds including Arrival and Backdoor Bays.
- West: by a line following the boundary of SSSI No. 1, from the coastline to Pony Lake and then by a line following the eastern shore of Pony lake to its northern extremity.
- North/west: by a line extending from the northern extremity of Pony Lake along a gully leading to a point at 77°33' 7.5" S. 166°10' 13" E.
- North: by a line extended due east from a point at 77°33' 7.5" S. 166°10' 13" E to the coastline of Backdoor Bay.

A major feature of the Area is Shackleton's Nimrod expedition hut located in a sheltered basin. The hut is surrounded by many other historic relics including an instrument shelter, supply depots, and a dump site. Numerous additional artefacts are distributed around the site.

Adelie penguins (*Pygoscelis adeliae*) from the adjacent rookery at Cape Royds often transit the Area. Skuas (*Catharacta maccormicki*) nest in the vicinity.

6(ii) Restricted zones within the Area

None.

6(iii) Structures within the Area

Apart from a Treaty plaque all structures within the Area are of historic origin.

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

SSSI No 1 Cape Royds is immediately adjacent to this Area. SSSI No 2 Arrival Heights, Hut Peninsula is 32 kilometres south of Cape Royds; and SSSI No 11 Tramway Ridge is 20 kilometres east of Cape Royds. SSSI No 10, New College Valley, and SPA No 20, Caughley Beach are located 35 kilometres

north in the vicinity of Cape Bird. SPA No. 25, Cape Evans is 12 kilometres south, and SPA No. 26, Lewis Bay is 36 kilometres to the north east. All sites are located on Ross Island.

7 Permit Conditions

Entry to the Area is prohibited except in accordance with a permit.

Permits shall be issued only by appropriate national authorities and may contain both general and specific conditions. A permit may be issued by a national authority to cover a number of visits in a season. Parties operating in the Ross Sea Area shall consult together and with groups and organizations interested in visiting the Area to ensure that visitor numbers are not exceeded.

General conditions for issuing a permit may include:

- activities related to preservation, maintenance, research and/or monitoring purposes;
- management activities in support of the objectives of this plan;
- activities related to tourism, educational or recreational activities providing they do not conflict with the objectives of this plan;
- the permit should be valid for stated period;
- a copy of the permit must be carried within the Area.

7 (i) Access to and movement within the Area

Control of movement within the Area is necessary to prevent damage caused by crowding around the many vulnerable features within the Area. The maximum number in the Area at any time (including those within the hut) is: **40 people**

Control of numbers within the hut is necessary to prevent damage caused by crowding around the many vulnerable features within the hut. The maximum number within the hut at any time (including guides) is: **8 people**

Avoidance of cumulative impacts on the interior of the hut require an annual limit on visitor numbers. The effects of current visitor levels (approximately 1,000 per calendar year) suggest that an increase of more than 100% could cause significant adverse impacts. The annual maximum number of visitors is: **2000 people**

These limits have been based on current visitor levels and on the best advice available from conservation advisory agencies (which include conservators, archaeologists, historians, museologists and other heritage protection professionals). The limits are based on the proposition that any significant increase in the current level of visitors would be detrimental to the values to be protected. An ongoing monitoring prograrnme of the effect of visitors is in place. This will provide the basis for future review of the management plan, in particular whether the current annual maximum number of visitors to the area is appropriate. This could result in the annual maximum number either increasing or decreasing.

Helicopter landings are prohibited within the Area as they have the potential to damage the site by blowing scoria and ice particles and to accelerate the abrasion of the hut and surrounding artefacts. Landings may be made at the designated landing sites (see Map B.). One site is approximately 50 metres to the north of the New Zealand shelter, outside the Area. A further designated site is located 100 metres further north east.

Vehicles are prohibited within the Area. Landings from the sea by boat, or vehicle travelling on the sea ice, may be made by approaching from Backdoor Bay.

7(ii) Activities which may be conducted within the Area

Activities which may be conducted within the Area includes:

- visits for restoration, preservation and/or protection;

- educational and/or recreational visits including tourism;
- scientific activity which does not detract from the values of the Area.

7(iii) Installation, modification and removal of structures

No new structures are to be erected in the Area, or scientific equipment installed, except for conservation or scientific activities that do not detract from the values of the Area as specified in 1. No historic structure relic or artefact shall be removed from the Area, except for the purposes of restoration and or preservation and then only in accordance with a permit.

7(iv) Location of field camps

Use of the historic hut for living purposes is not permitted. Camping is prohibited within the Area. An existing field camp site and a New Zealand shelter is located at the north western boundary of the Area (see Map B).

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

No living animals or plant material shall be introduced to the Area.

No food products shall be taken into the Area.

Chemicals which may be introduced for management purposes shall be removed at or before the conclusion of the activity for which they are required.

Fuel or other materials are not to be left in depots in the Area, unless required for essential purposes connected with the preservation and conservation of the historic structures or the associated relics. All such materials are to be removed when no longer required.

Use of combustion type lanterns is not permitted in the hut under any circumstances.

Smoking in the Area is not permitted.

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

This activity is prohibited except in accordance with a separate permit issued by the appropriate national authority specifically for that purpose.

7(vii) Collection of anything not introduced by a visitor

Material may be collected and removed from the Area only for restoration, preservation or protection purposes, or scientific reasons consistent with the objectives of this plan, and only in accordance with a separate permit issued by the appropriate national authority specifically for that purpose.

Visitors must remove objects, substances and waste introduced by them during their time in the Area.

7(viii) Disposal of waste
All waste generated by work parties or visitors shall be removed from the Area.
7(ix) Measures that may be necessary to ensure that the aims and objectives of the plan continue to be met

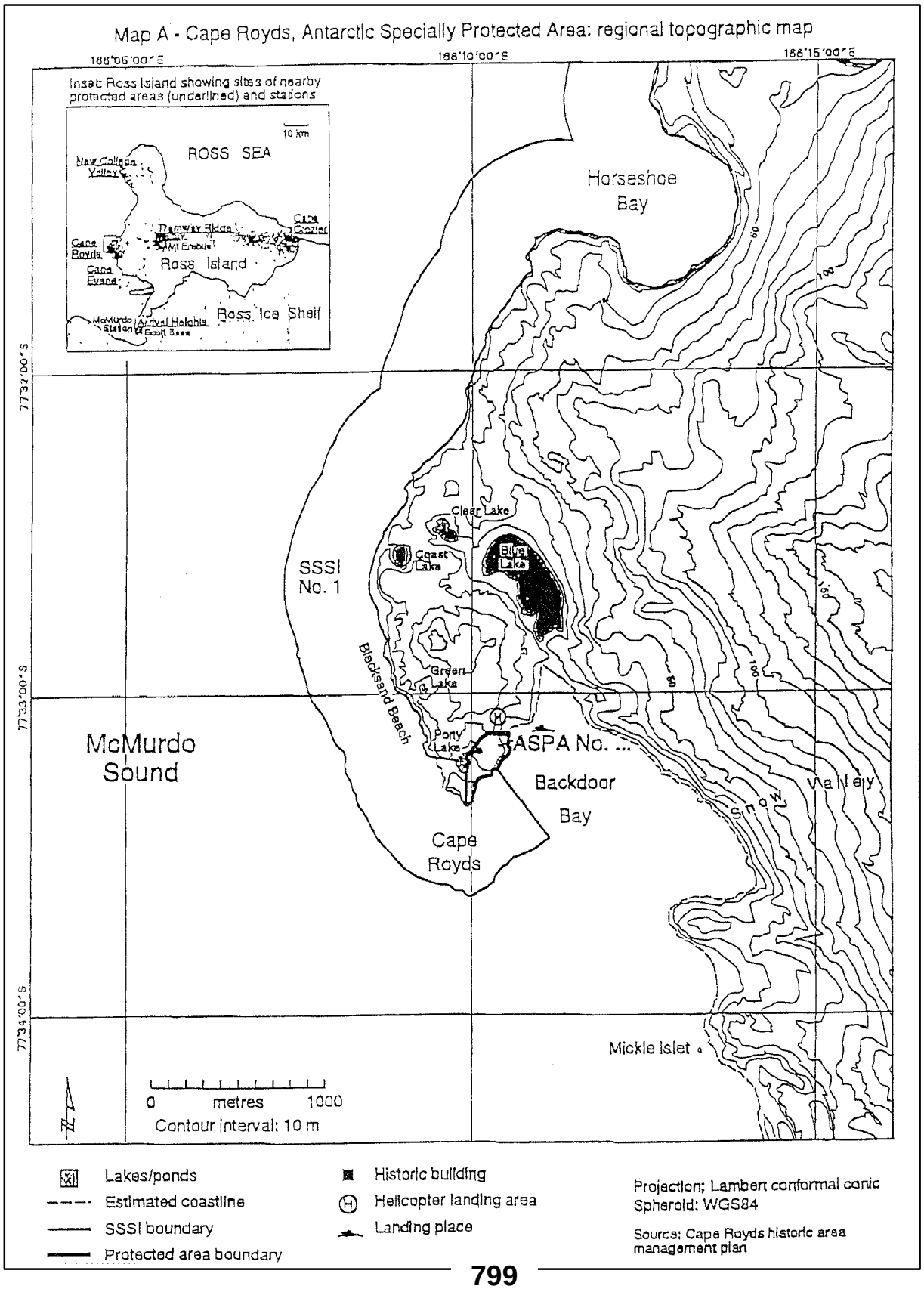
The provision of information for visitors.

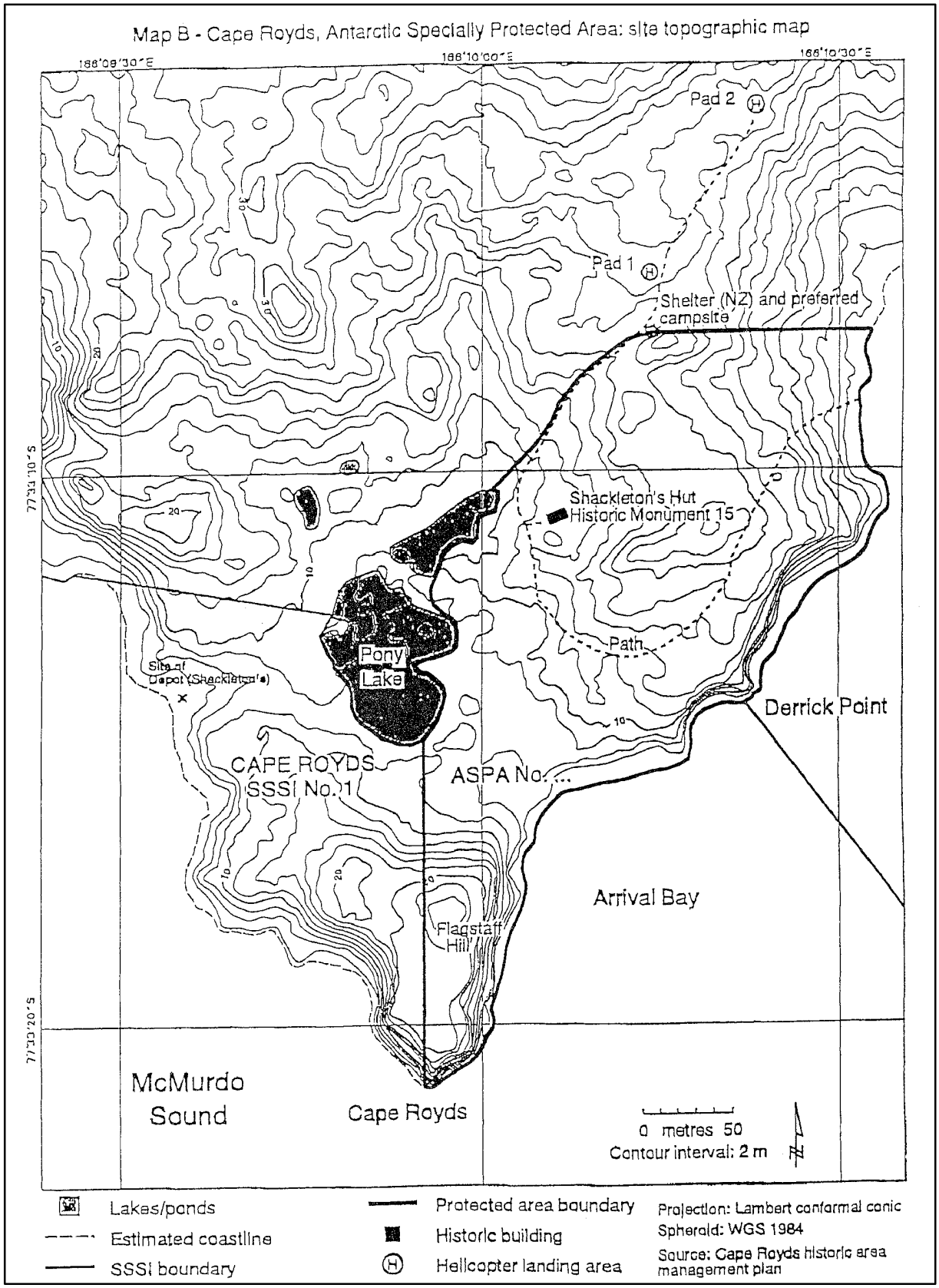
The development of skills and resources, particularly those related to conservation and preservation techniques, to assist with the protection of the Area's values.

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. Such reports should include, as appropriate, the information identified in the Visit Report Form suggested by SCAR. 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, in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should wherever possible deposit originals or copies of such reports in a publicly accessible archive to maintain a record of usage, to be used both for review of the Management Plan and in organising the use of the site.




Map B - Cape Royds, Antarctic Specially Protected Area: site topographic map
166°09'30"E
166°10'00"E
166°10'30"E
77°33'10"S
77°33'40"S
Pad 2
Pad 1
Shelter (NZ) and preferred campsite
Shackleton's Hut Historic Monument 15
Pony Lake
Site of Depot (Shackleton's)
Path
Derrick Point
CAPE ROYDS SSSI No. 1
ASPA No. ...
Arrival Bay
Flagstaff Hill
McMurdo Sound
Cape Royds
0 metres 50
Contour interval: 2 m
Lakes/ponds
Estimated coastline
SSSI boundary
Protected area boundary
Historic building
Helicopter landing area
Projection: Lambert conformal conic
Spheroid: WGS 1984
Source: Cape Royds historic area management plan

Specially Protected Area No. 28

XXII: Measure 1(1998)

Management Plan for Specially Protected Area (SPA) No. 28 for Historic Site No. 18 (Containing the Historic 'Discovery' Hut of Captain R F Scott), Hut Point, Ross Island (Lat. 77°50'50"S, Long. 166°38'E)

1. Description of Values to be Protected

This hut was originally listed as historic site No. 18 in ATCM recommendation VII-9 proposed by New Zealand.

The hut was built in February 1902 during the National Antarctic (Discovery) Expedition of 1901 - 1904, led by Captain Robert Falcon Scott who later found it a valuable advance staging point for journeys on the "Barrier" during his 1910-1913 expedition. It was also used by Sir Ernest Shackleton during the 1907-1909 British Antarctic Expedition and later by his stranded Ross Sea Party during the Imperial Trans-Antarctic Expedition of 1914- 1917. This building was prefabricated in Australia to an 'outback' design with verandahs on three sides.

The Hut Point site is one of the principal sites of early human activity in Antarctica. It is an important symbol of the Heroic Age of Antarctic exploration and, as such, has considerable historical and cultural significance. Some of the earliest advances in the study of earth sciences, meteorology, flora and fauna in Antarctica are associated with the Discovery Expedition based at this site. The history of these activities and the contribution they have made to the understanding and awareness of Antarctica give this Area significant scientific, technical, architectural, aesthetic and social values.

2. Aims and Objectives

The aim of the management plan is to provide protection for the Area and its features so that its values can be preserved. The objectives of the Plan are to:

- avoid degradation of, or substantial risk to, the values of the Area;
- maintain the historic values of the Area through planned restoration and conservation work which may include:
  a) an annual 'on-site' maintenance programme,
  b) a programme of monitoring the condition of artefacts and structures, and the factors which affect them,
  c) a programme of conservation of artefacts conducted on and off site;
- allow management activities which support the protection of the values and features of the Area including recording of any relevant historic data;
- prevent unnecessary human disturbance to the Area, its features and artefacts through managed access to the *Discovery* hut.

3. Management Activities

- A regular programme of restoration and preservation work shall be undertaken on the *Discovery* hut and associated artefacts in the Area;
- Visits shall be made as necessary for management purposes;
- Control of the number of visitors.
- National Antarctic Programmes operating in, or those with an interest in, the region shall consult together with a view to ensuring the above provisions are implemented;

4. Period of Designation

Designated under Measure X(1998) for an indefinite period.

5. Maps

Map A: Hut Point regional map. This map shows the wider environs of the Area with significant topographic features and the adjacent US McMurdo Station. Inset: shows the position of the site in relation to other protected sites on Ross Island.

Map B: Hut Point site map. This map shows the location of the historic hut, Vince's cross and other detail of the immediate environs.

6. Description of the Area

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

Hut Point is small ice free area protruding south west from the Hut Point Peninsula and situated to the west of the United States McMurdo Station.

The designated Area consists solely of the structure of the hut which is situated near the south western extremity of Hut Point.

6(ii)) Restricted zones within the Area

None.

6(iii) Structures within the Area

The designated Area consists solely of the structure of the historic Discovery hut.

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

SSSI No 1 Cape Royds, is 32 kilometres north of Hut Point. SSSI No 2 Arrival Heights, is 2 kilometres north of Hut Point on Hut Point Peninsula. SPA No 25 Cape Evans, is 22 kilometres to the north of Hut Point. All sites are located on Ross Island.

7. Permit Conditions

Entry to the Area is prohibited except in accordance with a permit.

Permits shall be issued only by appropriate national authorities and may contain both general and specific conditions. A Permit may be issued by a national authority to cover a number of visits in a season. Parties operating in the Ross Sea area shall consult together and with groups and organizations interested in visiting the Area to ensure that visitor numbers are not exceeded.

General conditions for issuing a permit may include:

- activities related to preservation, maintenance, research and/or monitoring purposes;
- management activities in support of the objectives of this plan;
- activities related to tourism, educational or recreational activities providing they do not conflict with the objectives of this plan;
- the Permit should be valid for a stated period;
- a copy of the permit must be carried within the Area.

7(i) Access to and movement within the hut

Control of numbers within the hut is necessary to prevent damage caused by crowding around the many vulnerable features within the hut. The maximum number within the hut at any time (including guides) is: **8 people**

Avoidance of cumulative impacts on the interior of the hut require an annual limit on visitor numbers. The effects of current visitor levels (approximately 1,000 per calendar year) suggest that an increase of more than 100% could cause significant adverse impacts. The annual maximum number of visitors is:
2000 people

These limits have been based on current visitor levels and on the best advice available from conservation advisory agencies (which include conservators, archaeologists, historians, museologists and other heritage protection professionals). The limits are based on the proposition that any significant increase in the current level of visitors could be detrimental to the values to be protected. An ongoing monitoring programme of the effect of visitors is in place. This will provide the basis for future reviews of the management plan, in particular whether the current annual maximum number of visitors to the area is appropriate. This could result in the annual maximum number either increasing or decreasing.

There are no designated helicopter landings sites in the vicinity of the hut as helicopters have the potential to damage the hut by blowing scoria and ice particles and to accelerate the abrasion of the hut and surrounding artefacts. Landings from the sea by boat may be made to the north of the hut. Vehicles may approach the hut along the road leading from the United States McMurdo Station.

7(ii) Activities which may be conducted within the Area

Activities which may be conducted within the Area include:

- visits for restoration, preservation and/or protection;
- educational and/or recreational visits including tourism;
- scientific activity which does not detract from the values of the Area.

7(iii) Installation, modification and removal of structures

No alteration to the structure shall be made except for conservation purposes or scientific activities that do not detract from the values of the Area as specified in 1. No historic relic or artefact shall be removed from the Area, except for the purposes of restoration and/or preservation and then only in accordance with a Permit.

7(iv) Location of field camps

Use of the historic hut for living purposes is not permitted.

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

No living animals or plant material shall be introduced to the Area.

No food products shall be taken into the Area.

Chemicals which may be introduced for management purposes shall be removed at or before the conclusion of the activity for which they are required.

Fuel or other materials are not to be left in depots in the Area, unless required for essential purposes connected with the preservation and conservation of the historic structure or the associated relics. All such materials are to be removed when no longer required.

Use of combustion type lanterns is not permitted in the hut under any circumstances.

Smoking in the Area is not permitted.

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

There are no native flora or fauna within the designated Area.

7(vii) Collection of anything not introduced by a visitor

Material may be collected and removed from the Area only for restoration, preservation or protection purposes, or scientific reasons consistent with the objectives of this plan, and only in accordance with a separate permit issued by the appropriate national authority specifically for that purpose.

Visitors must remove objects, substances and waste introduced by them during their time in the Area.

7(viii) Disposal of waste

All waste generated by work parties or visitors shall be removed from the Area.

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

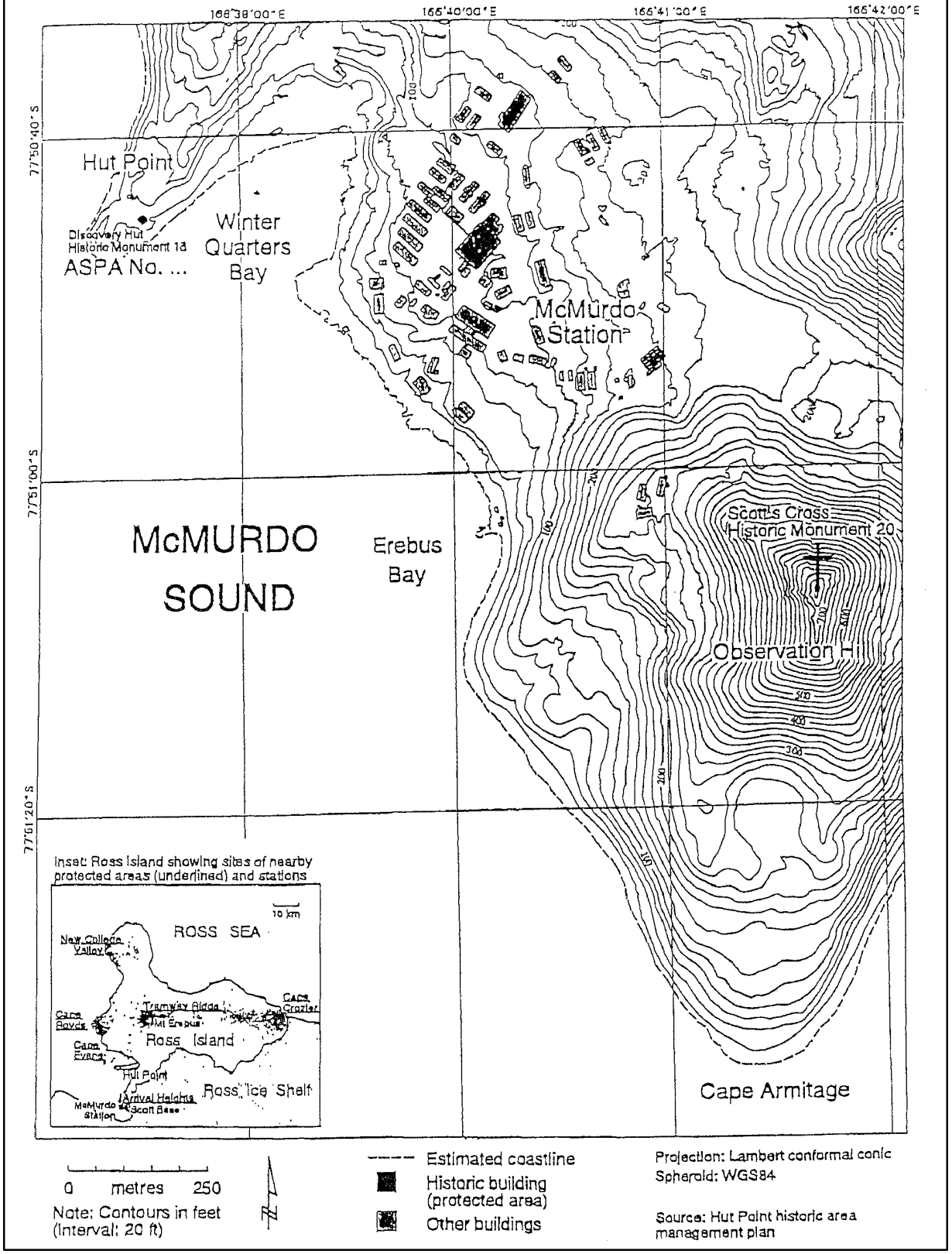
The provision of information for visitors.

The development of skills and resources, particularly those related to conservation and preservation techniques, to assist with the protection of the Area's values.

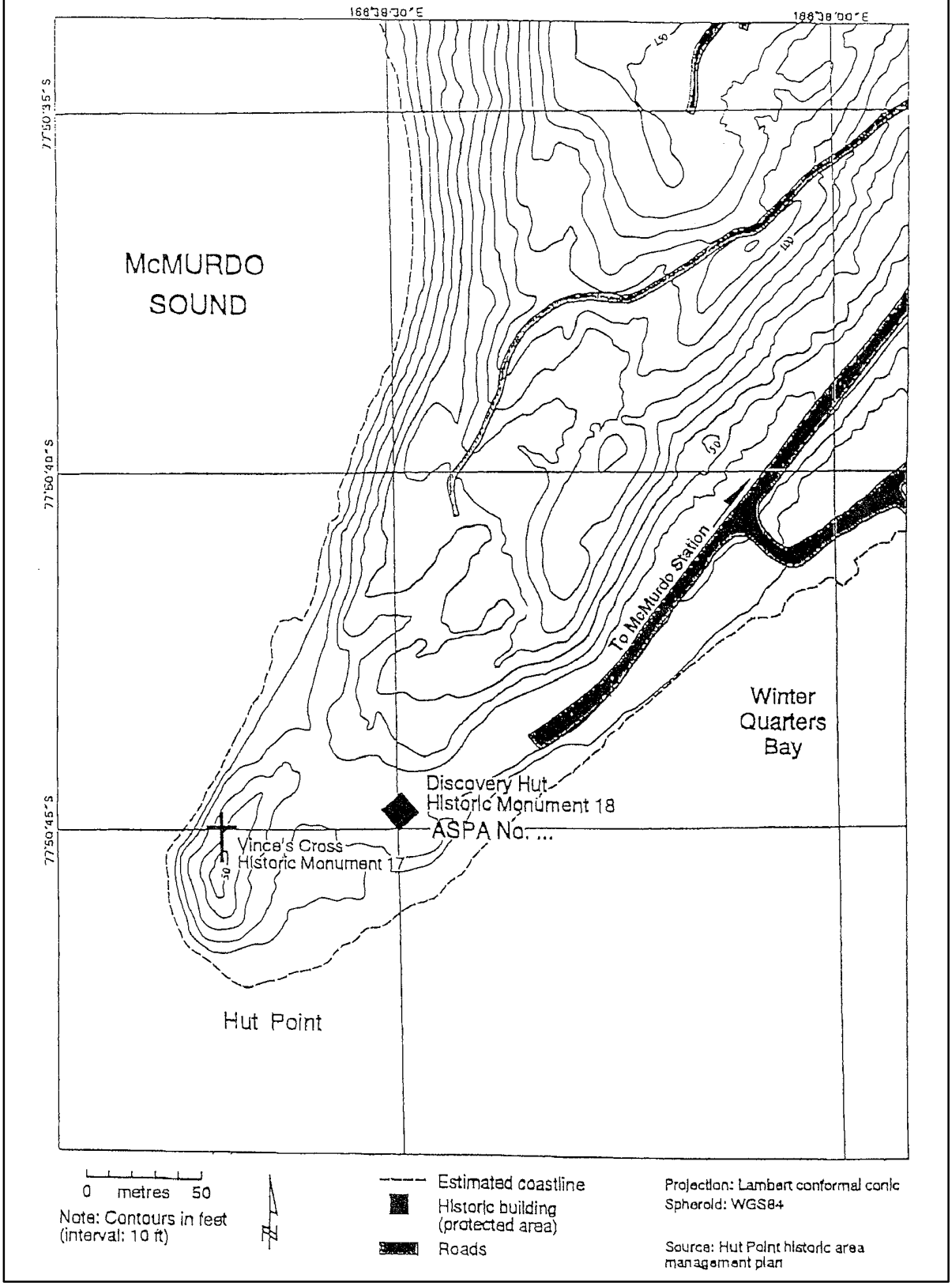
7(x) Requirements for reports

Parties should ensure that the principal holder for each Permit issued submits to the appropriate authority a report describing the activities undertaken. Such reports should include, as appropriate, the information identified in the Visit Report Form suggested by SCAR. arties 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, in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should wherever possible deposit originals or copies of such reports in a publicly accessible archive to maintain a record of usage, to be used both for review of the Management Plan and in organising the use of the site.

Map A - Hut Point, Antarctic Specially Protected Area: regional topographic map



Map B - Hut Point, Antarctic Specially Protected Area: site topographic map



Specially Protected Area No. 29

XXII: Measure 1(1998)

Management Plan for Specially Protected Area (SPA) No. 29 for Historic Site No. 22 (Containing the Historic Huts of Carster Borchgrevink and Scott's Northern Party and their precincts, Cape Adare (Lat. 71°18'S, Long. 170°09'E)

1. Description of Values to be Protected

This Area was originally listed as Historic site 22 in ATCM Recommendation VII-9 proposed by New Zealand.

There are three main structures in the Area. Two were built in February 1899 during the British Antarctic (*Southern Cro*ss) Expedition led by C.E. Borchgrevink (1898-1900). One hut served as a living hut and the other as a store. They were used for the first winter spent on the Antarctic continent.

Scott's Northern Party hut is situated 30 metros to the north of Borchgrevink's hut. It consists of the collapsing remains of a third hut built in February 1911 for the Northern Party led by V.L.A. Campbell of R.F. Scott's British Antarctic (*Terra Nova*) Expedition (1910-1913), which wintered there in 1911.

In addition to these features there are numerous other historic relics located in the Area. These include stores depots, a latrine structure, two anchors from the ship *Southern Cross* an ice anchor from the ship *Terra Nova*, and supplies of coal briquettes. Other historic items within the Area are buried in guano.

Cape Adare is one of the principal sites of early human activity in Antarctica. It is an important symbol of the Heroic Age of Antarctic exploration and, as such, has considerable historical and cultural significance. Some of the earliest advances in the study of earth sciences, meteorology, flora and fauna in Antarctica are associated with the two earliest expeditions based at this site. The history of these activities and the contribution they have made to the understanding and awareness of Antarctica give this Area significant technical, architectural, aesthetic and social values.

2. Aims and Objectives

The aim of the management plan is to provide protection for the Area and its features so that its values can be preserved. The objectives of the Plan are to:

- avoid degradation of, or substantial risk to, the values of the Area;
- maintain the historic values of the Area through planned restoration and conservation work which may include:
  a) 'on-site' maintenance
  b) monitoring the condition of artefacts and structures, and the factors which affect them
  c) conservation of artefacts to be conducted on and off site;
- allow management activities which support the protection of the values and features of the Area including;
  a) mapping and otherwise recording the disposition of historic items in the hut environs
  b) recording other relevant historic data;
- prevent unnecessary human disturbance to the Area, its features and artefacts through managed access to Borchgrevink's hut.

3. Management Activities

- A prograrnme of restoration and preservation work shall be undertaken on the *Southern Cross* hut and associated structures and artefacts in the Area.
- Visits shall be made as necessary for management purposes.

- Control of the number of visitors.
- National Antarctic Prograrurnes operating in, or those with an interest in, the region shall consult together with a view to ensuring the above provisions are implemented.

4. Period of Designation

Designated under Measure X(1998) for an indefinite period.

5. Maps

Map A: Cape Adare regional map. This map shows the Cape Adare region along with the boundaries of the Area with significant topographic features. It also shows the approximate location of significant historical items within the Area.

Map B: Cape Adare site map. This map shows the approximate location of specific historic relics and structures within the Area.

6. Description of the Area

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

Cape Adare is a generally ice free, prominent volcanic headland, at the northern extremity of Victoria Land, which marks the western approaches to the Ross Sea. The Area is located to the south west of the Cape on the southern shore of Ridley Beach, which encloses a large, flat, triangular area of shingle. The whole of the flat area and the lower western slopes of the Adare Peninsula are occupied by one of the largest Adelie penguin (Pygoscelis adeliae) rookeries in Antarctica. Penguins have almost completely occupied the Area and the need to avoid disturbance often restricts access to the huts.

The boundaries of the proposed ASPA are:

North, an east-west line drawn 50 metres north of the Northern Party Hut.

East, a north-south line drawn 50 metres to the west of Borchgrevink's stores hut.

West, a north-south line drawn 50 metros to the east of Borchgrevink's living hut.

South, the shoreline of Ridley Beach.

Major features of the Area include Borchgrevink's *Southern Cross* expedition living hut and the unroofed stores hut. Scott's Northern Party hut is situated 30 metres to the north of Borchgrevink's living hut and is in a state of collapse.

In addition to these structures there are many other historic relics distributed around the Area. These include stores depots, a latrine structure, two anchors from the ship *Southern Cross* an ice anchor from the ship *Terra Nova* and supplies of coal. Many of these items are either partly or completely covered in the guano of the Adélie penguins which also occupy the Area.

Skuas (*Catharacta maccormicki*) nest in the vicinity and Weddell seals also haul up along the beach.

6(ii) Restricted zones within the Area

None

6(iii) Structures within the Area

Apart from a Treaty plaque all structures within the Area are of historic origin.

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

There are no other Protected Areas in the vicinity.

7. Permit Conditions

Entry to the Area is prohibited except in accordance with a permit. Permits shall be issued only by appropriate national authorities and may contain both general and specific conditions. A permit may be issued by a national authority to cover a number of visits in a season. Parties operating in the Ross Sea area shall consult together and with groups and organizations interested in visiting the Area to ensure that visitor numbers are not exceeded.

General conditions for issuing a permit may include:

- activities related to preservation, maintenance, research and/or monitoring purposes;
- management activities in support of the objectives of this plan;
- activities related to tourism, educational or recreational activities providing they do not conflict with the objectives of this plan;
- the Permit should be valid for a stated period;
- a copy of the permit must be carried within the Area.

7(i) Access to and movement within the Area

Control of movement within the Area is necessary to prevent disturbance to wildlife and damage caused by crowding around the many vulnerable historic features within the Area. The maximum number in the Area at any time (including those within the hut) is: **40 people**

Control of numbers within Borchgrevink's hut is necessary to prevent damage caused by crowding around the many vulnerable features within the hut. The maximum number with. the hut at any time (including guides) is: **4 people**

Avoidance of cumulative impacts on the interior of Borchgrevink's hut requires an annual limit on visitor numbers. The number of visitors to the hut varies considerably from year to year but the effect of visitors to other floss Sea area historic huts suggests that similar limits should apply. The annual maximum number of visitors is: **2000 people**

These limits have been based on current visitor levels and on the best advice available from conservation advisory agencies (which include conservators, archaeologists, historians, museologists and other heritage protection professionals). The limits are based on the proposition that any significant increase in the current level of visitors would be detrimental to the values to be protected. An ongoing monitoring programme of the effect of visitors is in place. This will provide the basis for future reviews of the management plan, in particular whether the current annual maximum number of visitors to the area is appropriate. This could result in the annual maximum number either increasing or decreasing.

Helicopter landings are prohibited within the Area. There are no designated helicopter pads in the vicinity of the Area. For most of the access season it is unlikely that helicopters could be operated without causing harmful interference to wildlife.

Vehicles are prohibited within the Area. Landings from the sea by boat, or vehicles travelling on the sea ice, may be made directly onto the beach at several locations.

Movement on foot around the Area may need to be restricted to avoid harmful interference to penguins nesting around and on the structures and artefacts in the Area.

7(ii) Activities which may be conducted within the Area

Activities which may be conducted within the Area include:

- visits for restoration, preservation and/or protection;
- educational and/or recreational visits including tourism;
- scientific activity which does not detract from the values of the Area.

7(iii) Installation, modification and removal of structures

No new structures are to be erected in the Area, or scientific equipment installed, except for conservation or scientific activities that do not detract from the values of the Area as specified in 1. No historic structure relic or artefact shall be removed from the Area, except for the purposes of restoration and/or preservation and then only in accordance with a permit.

7(iv) Location of field camps

Use of the historic hut, or other structures in the Area, for living purposes is not permitted.

Camping is prohibited within the Area.

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

No living animals or plant material shall be introduced to the Area.

No food products shall be taken into the Area.

Chemicals which may be introduced for management purposes shall be removed at or before the conclusion of the activity for which they are required.

Fuel or other materials are not to be left in depots in the Area, unless required for essential purposes connected with the preservation and conservation of the historic structures or the associated relics. All such materials are to be removed when no longer required.

Use of combustion type lanterns, is not permitted in the hut under any circumstances.

Smoking in the Area is not permitted.

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

This activity is prohibited except in accordance with a separate permit issued by the appropriate national authority specifically for that purpose.

7(vii) Collection of anything not introduced by a visitor

Material may be collected and removed from the Area only for restoration, preservation or protection purposes, or scientific reasons consistent with the objectives of this plan, and only in accordance with a separate permit issued by the appropriate national authority specifically for that purpose.

Visitors must remove objects, substances and waste introduced by them during their time in the Area.

7(viii) Disposal of waste

All waste generated by work parties shall be removed from the Area.

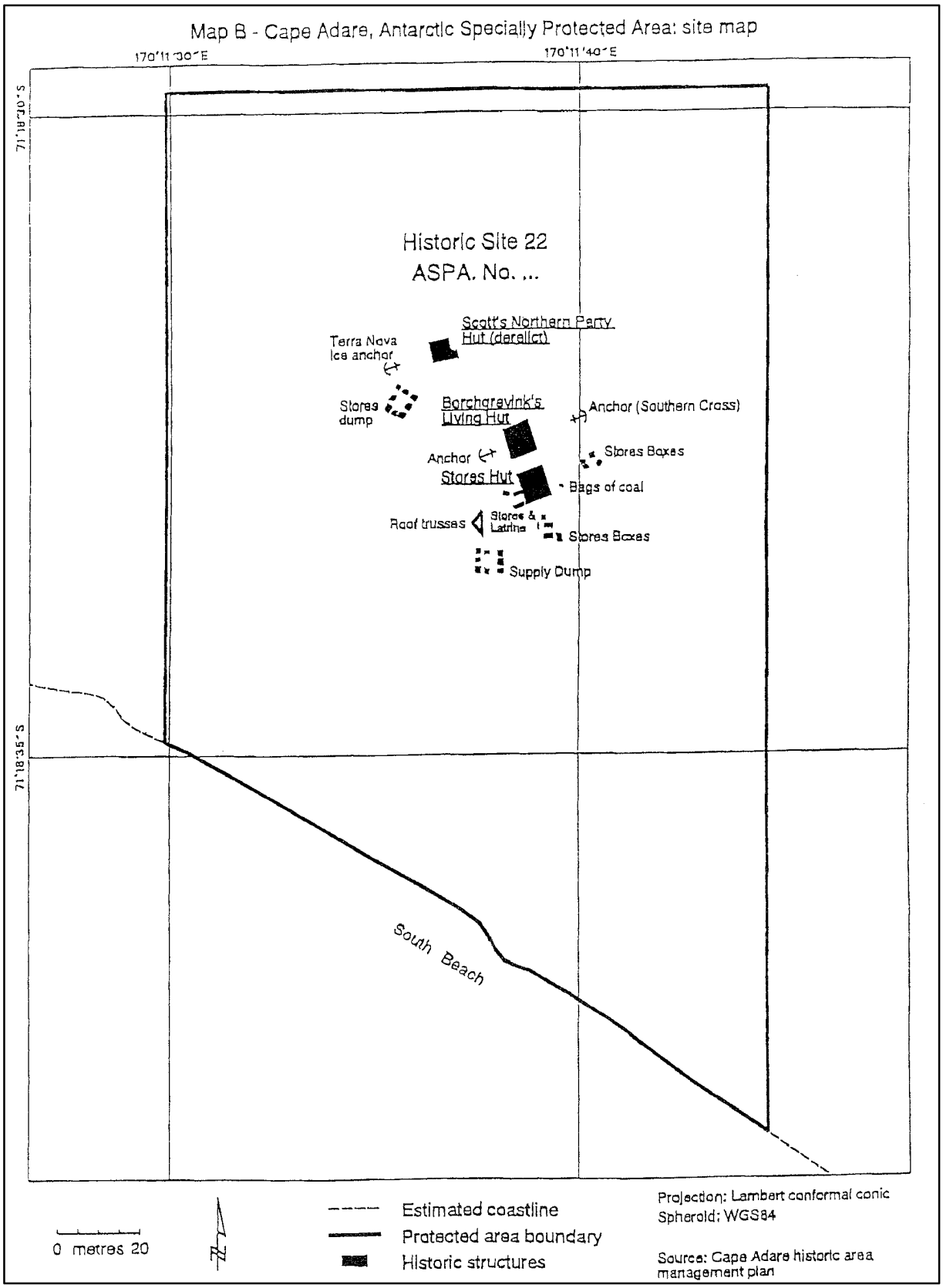
7(ix) Measures that may be necessary to ensure that the aims and objectives of the plan continue to he met

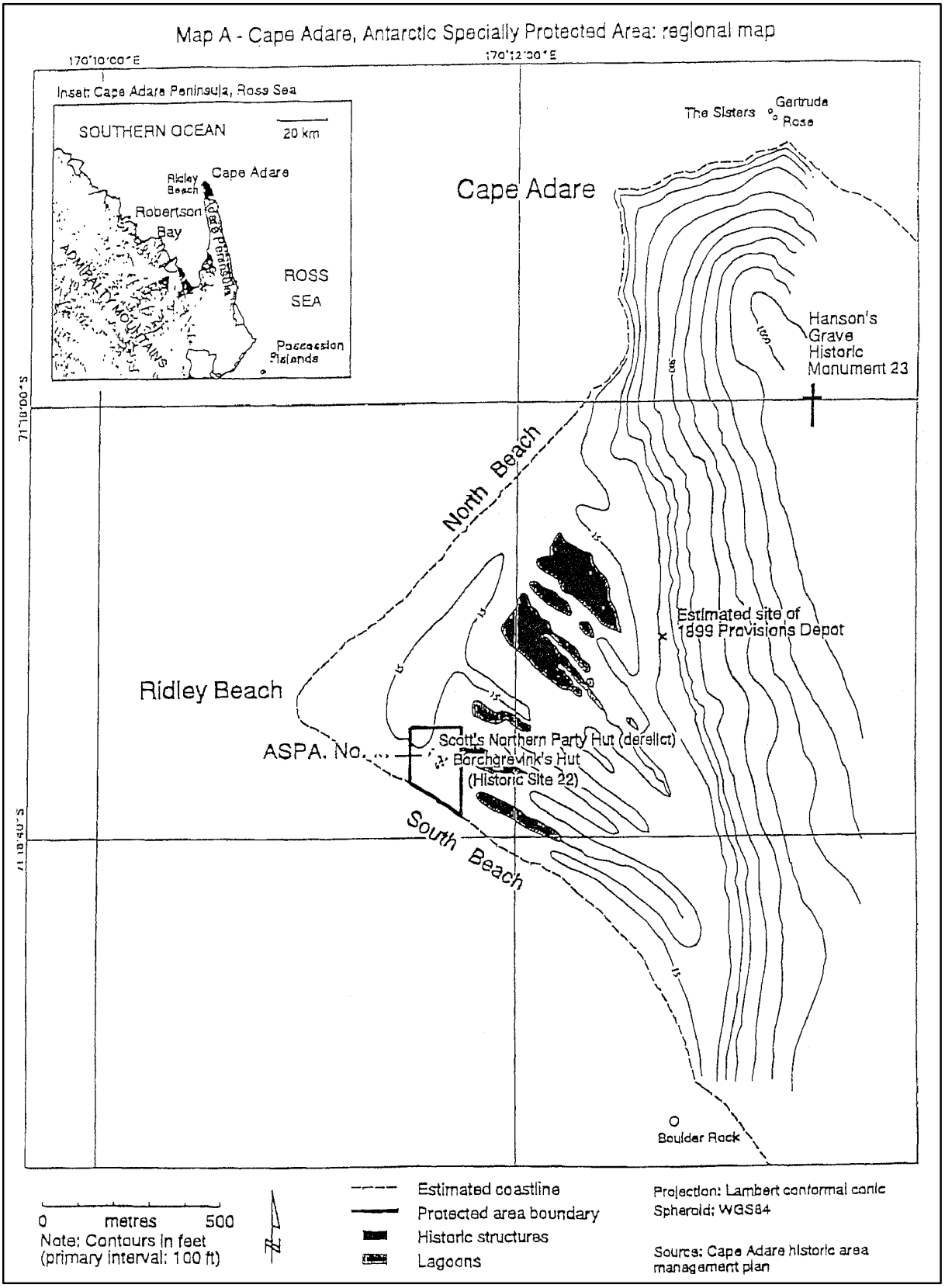
The provision of information for visitors.

The development of skills and resources, particularly those related to conservation and preservation techniques, to assist with the protection of the Area's values.

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. Such reports should include, as appropriate, the information identified in the Visit Report Form suggested by SCAR. 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, in sufficient detail to allow evaluation of the effectiveness of the Management Plan. Parties should wherever possible deposit originals or copies of such reports in a publicly accessible archive to maintain a record of usage, to be used both for review of the Management Plan and in organising the use of the site.


Map B - Cape Adare, Antarctic Specially Protected Area: site map
170°11'30"E
170°11'40"E
71°18'30"S
71°18'35"S
Historic Site 22
ASPA. No. ...
Scott's Northern Party Hut (derelict)
Terra Nova Ice anchor
Stores dump
Borchgrevink's Living Hut
Anchor (Southern Cross)
Anchor
Stores Boxes
Stores Hut
Bags of coal
Roof trusses
Stores & Latrine
Stores Boxes
Supply Dump
South Beach
0 metres 20
Estimated coastline
Protected area boundary
Historic structures
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Cape Adare historic area management plan


Map A - Cape Adare, Antarctic Specially Protected Area: regional map
170°10'00"E
170°12'30"E
Inset: Cape Adare Peninsula, Ross Sea
SOUTHERN OCEAN
20 km
Ridley Beach
Cape Adare
Robertson Bay
ADMIRALTY MOUNTAINS
ROSS SEA
Possession Islands
The Sisters
Gertrude Rose
Cape Adare
Hanson's Grave Historic Monument 23
North Beach
Estimated site of 1899 Provisions Depot
Ridley Beach
ASPA. No. ...
Scott's Northern Party Hut (derelict)
Borchgrevink's Hut (Historic Site 22)
South Beach
Boulder Rock
S.00.01'
S.05.18'
0 metres 500
Note: Contours in feet (primary interval: 100 ft)
Estimated coastline
Protected area boundary
Historic structures
Lagoons
Projection: Lambert conformal conic
Spheroid: WGS84
Source: Cape Adare historic area management plan